Report of the Commissioner of Public Health / Western Australia.

Contributors

Western Australia. Public Health Department.

Publication/Creation

Perth : Govt. Printer, [1981]

Persistent URL

https://wellcomecollection.org/works/k2sghe45

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

PUBLIC HEALTH DEPARTMENT WESTERN AUSTRALIA



ANNUAL REPORT FOR THE YEAR ENDED DECEMBER 31 1981


22501397262

REPORT OF THE COMMISSIONER OF PUBLIC HEALTH FOR THE YEAR 1981



JAMES COLUMBA McNULTY,
J.P., M.B., B.Ch., B.A.O., D.I.H., D.P.H.,
F.R.A.C.M.A., M. (F.O.M.) R.C.P. (LOND.).

Commissioner

Presented to both Houses of Parliament

22686—1

WELLCOME INSTITUTE
LIBRARY
Coll. wellMOmec
Call No. f
WA28
.KAS
WS1
1981

THE HONOURABLE R.L. YOUNG

MINISTER FOR HEALTH

Sir,

I have the honour to submit the Report of the Department of Public Health for the year 1981.

The Report comprises individual reports by Heads of Branches within the Public Health Department and by certain statutory committees. There are a number of points which I would like to draw to your particular attention.

(a) Community and Child Health Services reports continuing success in improving the health of aborigines in the face of funding and staff problems. The report also outlines the very close involvement of aborigines in the services provided.

(b) There was an increase in venereal disease notifications which cannot be satisfactorily explained but appears to be part of a worldwide trend. Better liaison with doctors has also resulted in better notification.

(c) Increasing awareness and publicity regarding health problems in the work place has led to increasing demands for consultation and advice from all sections of the Occupational Health Branch. This is welcomed.

(d) Demand has continued on the State Health Laboratory Services which shows remarkable efficiency reflected in the quality of work performed with no increase in the cost per specimen for the fifth year running.

(e) A separate report from the Kimberley Public Health Region provides an indication of the value of regionalisation which permits better delineation of and attention to health problems in particular areas.

The reports of the Branches generally make interesting reading and provide detail on the very many activities of the Department, all of which are directed at the promotion of health and the prevention of disease in Western Australia.

I am grateful to staff of all levels in the Public Health Department for their continued dedication and application.

JAMES COLUMBA McNULTY,
J.P.,M.B.,B.Ch.,B.A.O.,D.I.H.,D.P.H.,
F.R.A.C.M.A. M.(F.O.M.)R.C.P.(LOND.).

COMMISSIONER OF PUBLIC HEALTH

Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

https://archive.org/details/b31480664

CONTENTS

Supplementary Reports—

Appendix		Page
I	Legislation, Regulations and Rules	1
II	Report by Dr.V. Blackman, Director, State Health Laboratory Services	7
III	Report by Dr. J.T. Cassidy, Director, Chest and Tuberculosis Services	73
IV	Report by Dr. R. Allen, Medical Officer in Charge, Epidemiology and Special Services	95
V	Report by Dr. M.M. Gollow, Director, Venereal Disease Control Branch	99
VI	Report by Dr. C.F. Quadros, Director, Community and Child Health Services	107
VII	Report by Dr. R.M. Spargo, Director, Kimberley Health Region	147
VIII	Report by Dr. L.J. Holman, Deputy Commissioner of Public Health, Community Health Programme	169
IX	Report by Mr. W.M. Griffiths, Principal Pharmacist, Pharmaceutical Services Branch	177
X	Report by Mr. J.L. Prichard, Director, Dental Health Services	183
XI	Report by Miss E.L. Bohan, Principal Director of Nursing, Nursing Administration Section	193
XII	Report by Dr. F. Heyworth, Director, Occupational Health, Clean Air and Noise Abatement Branch	203
XIII	Report by Mr. B.E. King, Physicist in Charge, State X-Ray Laboratory	233
XIV	Report by Dr. K.J.M. Carruthers, Assistant Commissioner of Public Health, Education Services Branch	243
XV	Report by Mr. R.C. Zehnder, Chief Health Surveyor, Health Surveying Branch	255
XVI	Report by Mr. J.R. Edinger, Food and Nutrition Officer, Food and Nutrition Section	279

Page

XVII—Report by Dr. M.M. Lugg, Health Statistician, Statistics Branch..... 285

XVIII—Incidence and Mortality of Notifiable Diseases..... 291

XIX—Anaesthetic Mortality Committee Report..... 293

XX—Congenital Malformations Register Report..... 295

XXI—Maternal Mortality Committee Report..... 305

XXII—Perinatal and Infant Mortality Committee Report..... 307

XXIII—Revenue and Expenditure..... 309

Appendix I

LEGISLATION

Legislative amendments undertaken for 1981 are set out hereunder:-

ACTS

Cancer Council of Western Australia Act

Proclamation made to bring into effect from 24 July, 1981, the amendments made to the Act in 1980.

Clean Air Amendment Act

Proclamation made giving effect from 27 November, 1981, to various amendments to the Act.

Dental Amendment Act

Proclamation made 26 August, 1981, giving effect from 28 August, 1981, to amendments to the Act made in 1980.

Medical Amendment Act

Proclamation made on 3 August, 1981, bringing into effect the Medical Amendment Act 1981 as from 7 August, 1981.

Noise Abatement Amendment Act

Proclamation published on 10 November, 1981 giving effect from 20 November, 1981, to various amendments to the Act.

Nurses Amendment Act

Proclamation made on 3 August, 1981, bringing into effect from 14 August, 1981, the amendments made to the Act in 1980.

Occupational Therapists Registration Amendment Act

A Proclamation was issued on 18 December, 1981, stating that the Act would have effect from 11 December, 1981.

Poisons Act

Proclamation published on 4 December, 1981, cancelling the proclamation made under section 22 of the Poisons Act (which was published in the Government Gazette on 21 December, 1979), and prohibiting the sale of specified substances, except with the consent of the Commissioner of Public Health.

Poisons (Scheduled Substances) Amendment Order

Order issued on 18 December, 1981, with effect from 1 February, 1982, prescribing amendments and additions to the chemicals in Appendix A of the Act.

REGULATIONS

Changes made during the year were:-

HEALTH ACT

Bacteriolytic Treatment of Sewerage and Disposal of Effluent & Liquid Waste Regulations

Amended on 18 December, 1981, to raise the fee payable for a permit under Regulation 23(1) and Schedule 'A' paragraph (d) to $10.

Food and Drug Regulations

Amended on 15 May, 1981, to require the date marking of food, commencing on 16 November, 1981. Regulation H.02 of the principal regulations amended to enable the date marking of milk in accordance with subregulation A.01.002B. Previous Regulations published in the Government Gazette on 16 May, 1980, relating to date marking of foods were repealed.

Regulation D.05, subregulation D.05.003 was amended on 9 October, 1981, to incorporate metric weights and decimal currency.

Regulation A.04 was amended on 20 November, 1981, to restate the permitted natural and synthetic colouring substances for food, and to specify the permitted proportion of colouring to food. Regulations 3 in the index was also amended to delete the word "Poisonous" from "Poisonous Metals in Food" to enable regulations to be made to more effectively control the level of all metals in food.

Health Laboratory Service (Fees) Regulations

Regulation 3 repealed and substituted on 28 August, 1981, to prescribe fees for Health Laboratory Services as notified in the Commonwealth of Australia Gazette on 31 October, 1981. Regulations to take effect from 1 September, 1981.

Regulation 3 was repealed and substituted on 27 November, 1981, to enable Health Laboratory pathology fees to be charged in accordance with the Health Insurance (Variation of Fees and Medical Services) Regulations notified in the Commonwealth of Australia Gazette on 13 November, 1981.

Health (Meat Inspection and Branding) Regulations

Regulation 5 and Schedules A, B and C were amended on 27 February, 1981, to incorporate Carnamah, a brand for Carnamah, the Carnamah Health District and the Shire of Carnamah respectively.

Amended on 14 August, 1981, to require all brands to be red, and made from the dye Erythrosine C.I.45430 or other approved dye. Schedule A was amended to include the word "Carnamah", under the brand for the Shire of Carnamah.

Regulation 6 amended on 2 October, 1981, to provide for exemption from meat inspection fees for meat inspected outside Western Australia. Schedule C was amended to move the Shires of Capel and Northam from Scale B to Scale C.

Health (Notification of Cancer) Regulations

Made on 24 July, 1981, to prescribe cancer as a notifiable disease for the purposes of Part IXA of the Health Act 1911 - 1979, with effect from 1 August, 1981.

Toxic and Hazardous Substances Amendment Regulations

Amended on 20 November, 1981, to prescribe the size of print on containers and to insert a new subregulation to require compliance with an Australian Standard for prescribed crayons, colours, toys, papers and wraps, containers or products liable to come into contact with food.

OTHER ACTS

Chiropodists Amendment Regulations

Amended on 31 December, 1981, by deleting paragraph (b) of Regulation 27 which prescribes qualifications recognised by the Chiropodists Registration Board.

Clean Air Appeals Regulations

New regulations were notified on 27 November, 1981 which prescribe a method of appeal against determinations made under the Clean Air Act.

Noise Abatement (Appointment of Inspectors) Regulations

Regulation 5, subregulation (2) was amended on 25 September, 1981, to require a Local Inspector to enforce the provisions of the Act in the district to which he is appointed.

Noise Abatement (Noise Abatement Directions) Regulations

These regulations came into effect on 20 November, 1981, to prescribe persons and bodies and classes or descriptions of activities for the purposes of section 33E (1) (b) of the Noise Abatement Act.

Poisons Act Regulations

Reprinted in entirety on 15 September, 1981, to incorporate amendments made from 23 December, 1971, to 7 November, 1980.

Amended on 6 November, 1981. Appendix 6 of the principal regulations was deleted and substituted with a revised Appendix of annual fees for licence and permits.

RULES

The following alterations were made:-

Dental Board Amendment Rules

The Second Schedule in Part 1 was amended on 6 November, 1981, to increase the annual licence fees payable by dentists and dental therapists.

Medical Act Amendment Rules

A new Rule 11A was inserted on 12 June, 1981, to enable the Medical Board to issue "Certificates of Good Standing".

Medical Board Amendment Rules

Amendment gazetted on 4 December, 1981, to increase the registration fee to $20.00, from 1 January, 1982.

Occupational Therapists Rules

New rules were gazetted on 11 December, 1981, with immediate effect, to require the registration of occupational therapists with the Occupational Therapists Registration Board. The rules also prescribed advertising restrictions, a scale of fees and other related matters.

Physiotherapists Registration Board Amendment Rules

Amended on 4 December, 1981, to raise the level of fees payable for registration as a physiotherapist.

Appendix II

STATE HEALTH LABORATORY SERVICES



V. Blackman,
M.B.B.S., M.R.C.S., L.R.C.P.,
F.R.C.Path., F.R.C.P.A., D.P.H., D.C.P.
Director

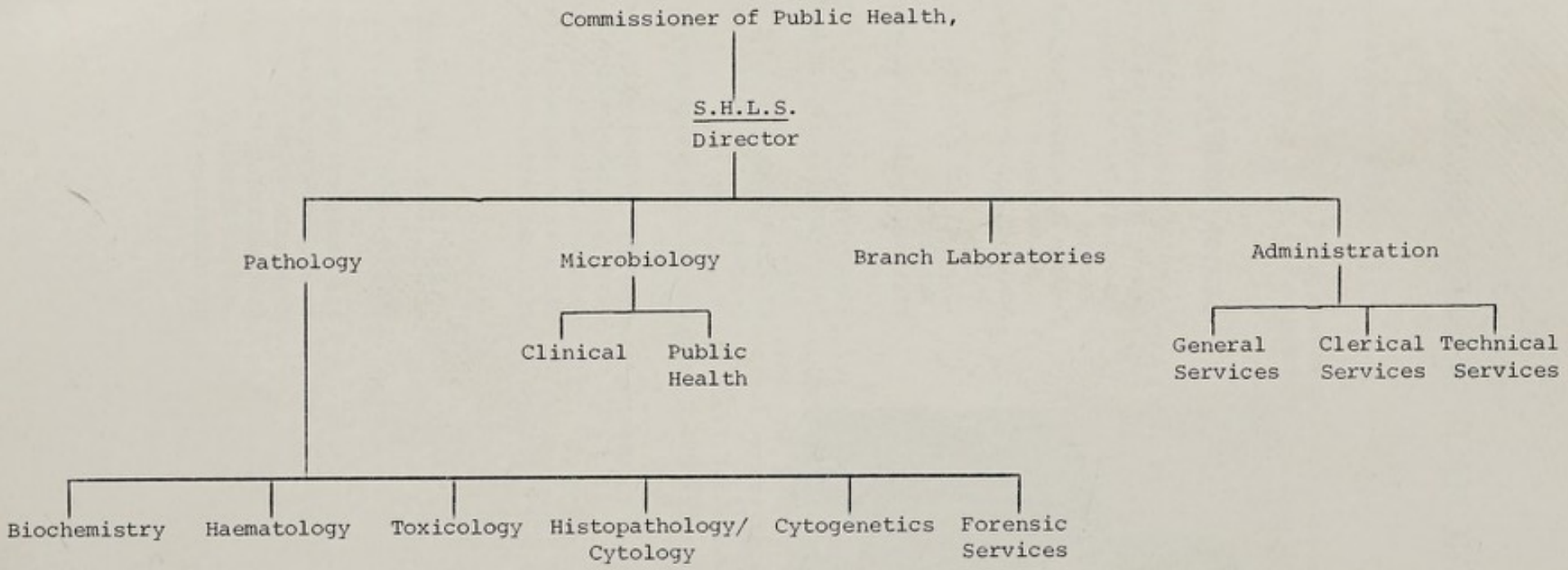
Senior Staff

Director: Dr. V. Blackman
Deputy Director: Vacant
Principal Technologist: Mr. A.R. Fergie
Deputy Principal Technologist: Mr. G.S. Faulkner
Administrative Officer: Mr. P.E. Payne
Clinical Pathologist: Dr. H.J. Woodliff
Clinical Pathologist: Dr. A.J.N. Gaman
Immunologist: Dr. M.S. Stuckey
Pathologist, Cytogenetics: Dr. M.T. Mulcahy
Microbiologist: Dr. A. Henderson
Forensic Pathologist: Dr. D. Hainsworth
Forensic Pathologist: Dr. J.M.N. Hilton
Forensic Pathologist: Dr. D.A. Pocock
Clinical Pathologist: Dr. J. Shapiro
Clinical Pathologist: Dr. J.A. Pollard
Clinical Pathologist: Dr. R.J. Glancy
Clinical Pathologist: Dr. V. Caruso

Directors And Heads Of Combined Units, Not S.H.L.S. Staff

Biochemistry: Professor D.H. Curnow
Toxicology: Professor J.W. Paterson
Haematology: Dr. D.W.G. Kennett
Histopathology/Cytology: Professor M.N.I. Walters
Microbiology: Professor N.F. Stanley

STATE HEALTH LABORATORY SERVICES - ORGANIZATION CHART



STATE HEALTH LABORATORY SERVICES

1. INTRODUCTION

The volume of laboratory work as measured by specimens received was almost the same in 1981 as in 1980. While the Central Laboratory area showed an increase of 1.07%, the Branch Laboratories (on a smaller turnover) recorded a decrease of 2.7% - the net result, no change. This is a welcome relief from the inflation of requests, that was customary year after year in the 1960's and 1970's and no doubt reflects a multitude of factors - fiscal pressure and education of medical practitioners into rational use of laboratory services amongst others. Unfortunately one of the less desirable features of laboratory organisation that continues to increase is the demand for more clerical attention from technological staff to the recording of patient data. Both the Commonwealth and the Health Insurance funds require strict adherence to detail on the request form. Auditors naturally also want a foolproof numbering system. Because requesting medical staff have no real inkling of the numerous details that have to be entered on request forms, and perhaps no great interest in the matter, and because Branch Laboratories to date have not been staffed with clerical officers, more and more time of technologists is devoted to checking forms, ascertaining patient details not entered and recording arrival and departure of specimens, allowing less and less time for the actual technical work that needs to be done. This trend as it continues will be a source of frustration to technical staff.

Once again, with the rise of revenue offsetting the increase in net costs of the laboratories, there has been no increase in cost per specimen - for the fifth year running.

With the formation of a combined microbiological service incorporating the University and Hospital Clinical Microbiology Unit and the Microbiology Service of the State Health Laboratories, another step was taken in the rationalisation of services at the Queen Elizabeth II Medical Centre. The new service, under the direction of Professor Neville Stanley, and with the senior State microbiologist Dr. A. Henderson as head, is probably the largest microbiological service in Australia and the most wide ranging, involving not only clinical work from the major teaching hospitals, all the Government non-teaching hospitals, but public health and environmental microbiology of the whole State. The unit, like other combined services, reports to the Laboratory Users' Management Committee. Both this committee and its sub-committee, the Pathology Advisory Committee have functioned continuously and satisfactorily during the year. To advise on technical and administrative detail of interest to the major bodies, the Pathology Advisory Committee was instrumental in setting up a Laboratory Administration Co-ordinating Committee consisting of senior technologists in each area and convened by Mr. Fergie, Principal Technologist.

During the year contracts were let for the completion of 'J' block and work is proceeding steadily on time. The new block should be finished towards the end of the 1982-83 financial year.

Computerisation has been seen as a worthwhile measure not only for laboratory administration, but also for entering test results and storing data of a technical nature. Although pursued for several years progress has been slow mainly due to paucity of trained staff having systems analysis and programming expertise as well as technical acquaintance with laboratory work in one or other of the appropriate disciplines. Consequently the administrative aspects of laboratory work have forged ahead and billing, stores accounting etc. are now computerised. Progress in laboratory disciplines is less obvious but Biochemistry has been a notable exception, being completely computerised. Technological staff in each section have undergone sufficient training in computer techniques to be able to assist the staff of Health Computing Services when they are available.

One noteworthy advance has been the extension of telex reporting. Now any result that justifies speed in transmission is telexed to the appropriate branch laboratories, obviating the delays that once occurred when postal services were used. One technologist - in Biochemistry - designed an interface between the computer and telex machine which made the sending of numerical data automatic. For sensitive information, adequate security is ensured by not telexing the name of the patient but merely an identifier known to the requesting laboratory.

2. ADMINISTRATIVE SERVICES

FINANCE

Expenditure continues to be contained within the budget allowance. This has been achieved by implementing strict budgetary controls over the individual laboratories, including the combined units.

With the introduction of a computerised stores system in February 1982 it should be possible to provide further information to the various units to assist them control their individual budget allowance.

STAFF

Staff changes are shown below:-

Position	Recruited	Resigned	Retired	Services Terminated	Transferred
Director			1		
Registrar	1	1			
Pharmacologist	1				
Laboratory Technologist-in-Charge	1				
Technologist	12	9			
Laboratory Assistant	33	27	2		
Laboratory Attendant	6	3	4		
Clerk	1				1
Typist	8	5			
Data Processing Operator	1	2			
Clerical Assistant	2	2			
Driver	1	1			
Cytotechnician	1	2			
Clerk Typist		1			
Mortuary Assistant		2			
Senior Animal House Attendant		1			
Technical Officer			1		
Programmer		1			

Important changes of senior staff are as follows:-

Dr. V. Blackman - Director, retired 31/3/81 and recommenced on a contractual basis 2/6/81.

Dr. T.L.M. Kyle - Registrar, commenced 12/1/81 and resigned 24/12/81.

Dr. R.L. Nation - Pharmacologist, commenced 7/9/81.

Miss N.E. Edwards - Typist in Charge, commenced extended sick leave on 29/6/81 and is not expected to resume.

SUPPLY

The computerisation of the stores and inventory system has been finished and is being test run. It is expected to go live in February 1982.

The committee system for the scrutiny of all requisitions continues to maintain effective management and control of the supply system.

SPECIMEN RECEPTION AND BILLING

The 18th February 1981 saw the commencement of microfilming of pathology laboratory request forms by the State Microfilm Bureau. Storage of these forms, which must be kept for seven years to comply with State Audit Department regulations, had become a problem. Now

one million forms are kept on microfilm cassette.

The 1st September 1981 saw revised health insurance arrangements introduced by the Commonwealth Government. This created another patient type, the hospital service patient, which added another complication to patient billing. However, extensive 'on the job' staff training saw the charging of hospital service patients proceed with very few problems arising.

Form Registration

Another two E.C.S. 4500 microcomputer machines were acquired during the year to help prepare data for patient billing. February 1981 had seen the change over from the key to tape method of data preparation for patient billing to the E.C.S. 4500 microcomputer system.

Work Volume

In the year 1981 there were 362,306 requests received by the laboratories for testing, which were given accession numbers. Requests from medical audits, public health etc. are not numbered in this system.

SURVEYS

Medical Audits Held in Conjunction with Community Health

No medical audit programme was carried out this year.

COMPUTERISATION

General

Work has continued on development of E.D.P. systems for the laboratories and several modifications were made to existing systems. Difficulties that were encountered were created by:-

(a) Several changes in Health Computing Services personnel engaged on the project due to resignations.

(b) E.D.P. trained medical technologists were taken off the project due to laboratory staffing shortages.

(c) Federal Government changes to the Health Insurance Act and subsequent changes in Medical Department procedures imposed substantial programming alterations to the Pathology Billing Sub-System.

(d) Work on a S.H.L.S. Clinical Microbiology system was almost completed when the project required modification due to an amalgamation with U.W.A. Department of Microbiology. After an interval of several months work recommenced.

(e) Enhancements to the Histopathology report telexing programmes were more complex than anticipated.

Major Areas of Development

In summary, the following developmental progress was achieved:-

(a) Pathology Billing Sub-System - In addition to the changes previously mentioned, 'fine-tuning' of the system has improved controls and gives cleaner data entry.

(b) Statistics Sub-System - A review of the Statistics programmes has been carried out and proposed enhancements will provide a wide range of management and epidemiological data.

The Laboratory Work Unit programme was reviewed and updated.

(c) Microbiology - Further analysis of the Virus laboratory requirements was carried out.

The Mycobacteria laboratory system was completed to the extent that present overall system restrictions permit.

Continuation of system analysis and further development for the State Health Laboratory Service and combined laboratories - e.g. dictionary updating, terminal information displays and report layouts were done.

(d) Histopathology - The punched tape method of report telexing was superseded by direct electronic transmission. Work is in hand to transmit this after hours at reduced rates via the Biochemistry PDP.11/34 computer.

(e) Stores - An Inventory/Supply system has been implemented and is running successfully. Data collection for expansion of this system has been completed.

Hardware

The following items of computer equipment were purchased and received during 1981:-

(a) One E.C.S. 450 wordprocessor.

(b) One Diablo daisy-wheel printer.

(c) One Almgren A.M.700 E telex interface.

Of the three C.S.1.E concentrators received in 1980, one is in use in the Stores system, one is being installed in the Clinical Microbiology system and the third held as backup and for carry overload for the PDP.11/34.

TRANSPORT AND COMMUNICATION

Motor vehicle replacements have been approved according to the new criteria. Seven cars will be replaced during 1981/82 including the Dampier and Pinjarra vehicles.

The telexing of haematology results commenced in November and is operating satisfactorily.

3. TECHNICAL SERVICES

MEDIA

The appointment of a Technical Officer for the direct supervision of the automatic plate pouring area has proved invaluable. Significant saving has been made on lost production.

Media Statistics

	1981	1980
Plates poured	1,333,637	1,363,813
Tubes/bottles	1,353,635	1,276,727
Volume (litres)	44,954	-

REAGENT PREPARATION

A slight increase in workload due mainly to increased demand from areas other than Biochemistry e.g. Haematology, Cytogenetics, Mycology and Toxicology. There has also been some specialised testing of laboratory equipment.

ANIMAL HOUSE

There was a slight decrease of animal usage compared with 1980. Because of this reduction and the prospect of animals being supplied by the Animal Resources Centre in 1982, one staff member was not replaced on his resignation.

INSTRUMENTATION

The work-load continued to increase. The section has greatly increased repairs to electronic components of equipment now that it has some expertise in this area.

4. MISCELLANEOUS

QUALITY CONTROL

Implementation of maintaining control in the various areas is practically complete. Both commercial and in-house programmes are utilised. Departmental Heads and Branch officers have been able to take corrective action where problems with reagents or technique are experienced.

General performance has been satisfactory with a high achievement in several disciplines.

FIRE AND SAFETY

Both aspects continue to be monitored closely. Evacuation drill and alarm testing have been undertaken on a regular basis.

The necessity for constant reminders of safety procedures has been recognised.

Accidents reported were all assessed for problem areas and corrective action taken. There was no serious injury to staff members.

IN-SERVICE TRAINING

Staff intake numbers have been limited and organised orientation courses have been unnecessary. Some practical updating on technical and administrative procedures are implemented on a regional basis. This has proved more economical with local problems being more easily recognised by officers in similar areas.

LIBRARY

The main change in the library services during the past year is the increased use of the computer terminal at the Public Health Department, to catalogue books and to retrieve information quickly.

The librarian has performed 33 searches on the Medlars and Biosis data bases. The enforcement of the new Copyright Act since August 1, 1981, has not decreased the heavy demand for photocopy material. The library has supplied 744 more copies than during the previous year. Book loans show a corresponding rise of 721 over last year, indicating a heavy use of inter-library loan services.

Library statistics are as follows:-

	1981/82	1980/81
Reference queries	1,014	N/A
Book loans -		
S.H.L.S.	431	476
Inter-library loans	766	-
Total:	1,197	476

	1981/82	1980/81
Photocopies -		
S.H.L.S.	3,257	3,127
Inter-library loans	614	-
	3,871	3,127
New books	105	170
New books on order	66	25
New journals	15	9
New journals on order	1	3

PATHNOTE COMMITTEE

During the year a total of 17 Pathnotes were produced:-

Biochemistry	4
Haematology	7
Serology/Immunology	3
Microbiology	3

New methods were introduced and others were revised, due to increased knowledge and technological changes. It is obvious that more revision of methods will be necessary during 1982.

The 1981 Annual Report of the Mycobacteria Section was produced during the year and widely distributed. Pathnotes are valuable in disseminating information not only to laboratory staff but to interested persons and institutions. In this regard they also serve to publicise the work done in these Laboratories, when otherwise it might be difficult to determine where a particular test was performed and what specimens need to be collected.

5. BRANCH LABORATORY SERVICES

STATISTICS

The total number of tests performed in branch laboratories during 1981 totalled 291,926 compared with a total for 1980 of 300,112. This is the first decrease in work for at least five years.

The major changes were:-

Geraldton	-	down 10,000 specimens
Derby	-	down 4,000 specimens
Narrogin	-	down 2,200 specimens
Albany	-	up 2,000 specimens
Bentley	-	up 3,800 specimens
Bunbury	-	up 1,500 specimens (excluding histopathology)

'Tests' in the context as used above relate only to the disciplines of blood banking, haematology, microbiology and biochemistry.

The increase at Bunbury therefore, is related only to an increase in these disciplines and does not take into account the number of specimens processed in histopathology, where for the first time the presence of a resident pathologist allowed histopathology to be performed.

The factors responsible for changing work-loads are always variable, e.g. doctors requesting habits, changing population numbers, varying health schemes etc. There is no doubt that the emphasis given in the media to pathology over-ordering and the measures adopted by the Commonwealth Government have had some effect.

It is interesting to note that the Bunbury branch laboratory has shown an increase in work, although an active private laboratory also competes for work in the same area. This may be partly due to the presence of a full-time pathologist at that branch.

BUILDINGS

The year of 1981 showed little building activity. The opening of the Broome laboratory was again delayed and a proposed new laboratory complex at Kununurra did not go past the planning stage. On the positive side, however, the new hospital (including laboratory) at Karratha progressed satisfactorily.

EQUIPMENT

Replacement of the ABA 100 Biochemical analyzer at Osborne Park and Geraldton, with the newer ABA 200 model was carried out. Problems with the computer programme tape have been a major worry with the new instrument and the agents are working to rectify this facet of the instruments operation. Several automated cell washers for use in cross-matching procedures were purchased and have proved a great help at laboratories with a high level of cross-matching. The installation of Gilford spectrophotometers, to replace the old spectronic 20 machines, continues as funds are available and the majority of laboratories are now equipped with Gilfords.

DEVELOPMENTS

The automatic telexing of histopathology reports to branch laboratories was initiated and, after some initial problems, is now functioning satisfactorily.

6. DIVISION OF MICROBIOLOGY

PAPERS PUBLISHED

Mr. Bamford, V.W.	:	S. senftenberg Foodborne Outbreak in W.A. C.D.I. Bulletin 81/5 March.
Mr. Bamford, V.W., Dr. Berry, R.J.	:	Campylobacter jejuni Carriers in Aboriginal Communities. Medical Journal Australia, April 4, 1981.
Mr. Blums, M., Dr. Gollow, M.M., Mr. Tyler, A.M.	:	Doxycycline in Non-specific Urethritis. Medical Journal of Australia.
Dr. Broom, A.K., Dr. Sneath, P.H.A.	:	Numerical Taxonomy of Haemophilus. Journal of General Microbiology (1981).
Dr. Glancy, J.F., Dr. Elder, J.L., Miss McAleer, R.	:	Allergic Bronchopulmonary Fungal Disease with Clinical Asthma. Thorax (1981), 36 (5) 345-349.
Prof. Goodwin, C.S., Dr. Bucens, M.R., Dr. Davis, R.E., Mr. Norcott, T.C.	:	High-dose Cotrimoxazole and its Penetration through Uninflammed Meninges. Medical Journal of Australia, 2: 24, 1981.
Mr. Harnett, G.B., Dr. Newnham, W.A.	:	Isolation of Adenovirus Type 19 from the Male and Female Genital Tracts. Br. J. Vener. Disease 57, 55-58, 1981.
Mr. Iveson, J.B.	:	Salmonella - A Biological Indicator and Foodborne Pathogen in W.A. W.A. Health Surveyor Journal, September.
Miss McAleer, R.	:	Fungal Infections of the Nail in W.A. Mycopathologia (1981) 73, 115-120.
	:	Fungal Infections as a Cause of Skin Disease in Western Australia, I Tinea Pedis. Aust. J. Derm. (1981) 22, 80-84.
	:	Fungal Infections as a Cause of Skin Disease in Western Australia, II Tinea Mani. Aust. J. Derm. (1981) 22, 85-87.
Miss McAleer, R., Kroenert, D.B., Dr. Elder, J.L., Mr. Froudist, J.H.	:	Allergic Bronchopulmonary Disease caused by Curvularia lunata and Dreschslera hawaiiensia. Thorax (1981) 36 (5) 338-344.

Dr. Pearman, J.W., Christiansen, Stewart, J.K., Bamford, V.W.	:	S. paratyphi A Infection in Travellers from S.E. Asia. C.D.I. Bulletin 81/13 July.
Peterson, D.J.	:	Water Sampling - Potable Supplies. W.A. Health Surveyor Quarterly, March 1981 Vol. 3, No. 9.
	:	Water Sampling - Recreational Waters. W.A. Health Surveyor Quarterly, March 1981 Vol. 3, No. 9.
Dr. Phillips, P.A., Mr. Harnett, G.B., Dr. Gollow, M.M.	:	Adenovirus type 19 and a Closely Related New Serotype in Genital Infections. British Journal of Venereal Diseases; Letter to Editor (in press).
Mr. Riley, T.V.	:	Agar dilution susceptibility of Bacteroides spp. to sulphamethoxazole and trimetho-prim: correlation with a disk diffusion method. Antimicrob. Agents Chemother 20, 731-735.

SEMINARS AND LECTURES

Mr. Bamford, V.W., Mr. Curtis R., Mr. Last, M.	:	Conducted a seminar in Perth on Food Sampling Techniques at the annual W.A. Health Surveyors Conference, September.
Dr. Bucens, M.R.	:	The Distribution of Antibodies to Various Serotypes of Legionella pneumophila in W.A. Paper presented at ASM meeting, Canberra, May 1981.
Dr. Bucens, M., Mr. Harnett, G.B.	:	The Distribution of Antibodes to Various Serotypes of Legionella Pneumophila in W.A. Presented at the Australian Society for Microbiology (ASM) Annual Scientific Meeting, Canberra, May 1981.
Miss Dunn, B.	:	Visited the Mycobacterium Reference Unit, University Hospital of Wales, U.K. August 1981.
Dr. Gollow, M.M., Mr. Harnett, G.B., Dr. Phillips, P.A.	:	Use of Routine Chlamydia Culture from Special Clinic Patients in Western Australia : Isolation Rate and Disease Association.
	:	Adenovirus Isolation from the Genital Tract and its Association with Disease.

Dr. Gollow, M.M., Mr. Harnett, G.B., Dr. Phillips, P.A.	:	Joint papers presented by Dr. M.M. Gollow at the Second Regional Meeting of the International Union against Venereal Diseases and Treponematoses Conference 1981, South East Asian and Western Pacific Regions, at Auckland, N.Z.
Mr. Harnett, G.B., Dr. Gollow, M.M., Dr. Newnham, W.A.	:	Isolation of Adenovirus from the Human Genital Tract. A.S.M. Scientific Meeting, Canberra, May 1981.
Mr. Harnett, G.B., Dr. Shellam, G.R., Mrs. Allen, J.E., Mr. Bancroft, R.G.	:	Genetic Control of Cytomegalovirus Replication in Cultured Cells. A.S.M. Scientific Meeting, Canberra, 1981.
Mr. Jansons, J.	:	Water Virology. West Australian General Meeting of Water and Waste Water Association.
	:	Virus Isolations at the Canning Vale Groundwater Recharge Scheme. December monthly meeting of Waterboard Engineers.
Mr. Last, M.	:	Attended the Third Australian Food Microbiology Conference, Melbourne, August 1981.
Mr. Peterson, D.J.	:	Microbiological Surveillance of Swimming Pools, August 1981. A lecture presented to the Swimming Pool Association of W.A.
Mr. Peterson, D.J., Mr. Schorsch, J., Mr. Iveson, J.B.	:	Routine Examination Incorporating Isolation of Salmonella from Water Supply (Surveillance) Samples. Australian Society of Microbiology Annual Scientific Meeting, Canberra.
Dr. Phillips, P.A.	:	Spent two months in Papua New Guinea (October-November 1981) at the invitation of the P.N.G. Medical Research Council. Aim of project: Isolation of Calymmatobacterium from Donovanosis Lesions.
Dr. Stuckey, M.S., Dr. Ryan, P., Dr. MacDonald, B., Dr. Hobday, J., Dr. Formby, D., Dr. Connon, B.	:	Mixed Connective Tissue Diseases in Children. Australian Society for Immunology. Annual Scientific Meeting, Canberra, May 1981.

COURSES OF FURTHER EDUCATION

Mr. Froudist, J.H.	:	Advances in Medical Mycology (Systemic Fungal and Actinomycotic Pathogens) July 1981, University Medical School (Dermatology Department) plus Centre for Disease Control, Atlanta, Georgia, U.S.A.
Mr. Maddin, P.J.	:	Achieved the Graduate Diploma in Computing at W.A.I.T.
Miss McAleer, R.	:	Computer Workshop, Association of Australian Clinical Biochemists, Association of the Institute of Medical Laboratory Scientists, Fremantle Hospital, July 1981.

COMBINED MICROBIOLOGY SERVICE

During October 1981 the Medical Microbiology section of State Health Laboratory Services and the Clinical Microbiology Department of Sir Charles Gairdner Hospital merged to form a combined Microbiology Service.

This report covers the State Health Laboratory Services moiety for the whole year together with the figures from the Sir Charles Gairdner Hospital Clinical Microbiology Laboratory for the period October to December 1981.

Clinical Bacteriology Section (State Health Laboratory Services)

A total of 12,067 specimens were examined in 1981, roughly the same as in 1980 (see Table II A for further details).

Notifiable Diseases

Brucellosis - Brucella abortus was found in a blood culture referred from King's Park Laboratory.

Diphtheria - Clinical cases of diphtheria were not found, but non-toxigenic Corynebacterium diphtheriae was isolated from:-

1. A child at Narrogin.
2. The intercostal drain tube of a patient in Sir Charles Gairdner Hospital who was suffering from mesothelioma.

Clinical Microbiology Laboratory (Sir Charles Gairdner Hospital)

A total of 43,887 specimens were received throughout the year.

An improved medium has been devised for the isolation of Clostridium difficile. A new test has been introduced to detect enterotoxigenic Escherichia coli.

Computer Programme

Progress has been made towards the introduction of a computer system to the Clinical Microbiology Laboratory. This system will allow for the recording and storage of all test results, the printing of patient's reports, and the production of required statistical information such as antibiotic sensitivity patterns, infection control reports, specimen registration lists and analysis of culture results.

1. CROSS INFECTION SECTION (State Health Laboratory Services)

A total of 4,012 examinations were performed compared with 2,556 in 1980. These 4,012 examinations were comprised of the following:-

Spore strips for steriliser efficiency examination	1,054
Lyophilisation of bacteria	969
Lyophilisation of fluids	640
St. Anne's Hospital	319
Princess Margaret Hospital (to assess cleanliness of carpets)	196
Red Cross Transfusion Service (to test sterility of products)	156
Others	678
	4,012

Sterility Test Service

We received 43 samples of antiseptics and creams prepared at the Government Pharmacy; all were sterile.

On behalf of the Red Cross Transfusion Service 156 samples of blood and blood products were examined; all were sterile. The country hospital sterilisation service continued to be monitored by means of examining 1,055 spore strips. The failure rate was 2.5%, very similar to the figure of last year.

Control of Hospital Infection

Hygiene surveys were carried out at the Homes of Peace, Sunset Hospital and Graylands Hospital. Pinjarra Hospital was visited in order to assess the cleanliness of the operating suite. The cleanliness was of a high standard. Eighty eight samples of water from theatre supplies were tested.

Outbreaks investigated by the Cross Infection and Phage Typing Laboratory

1. Toxic epidermal necrolysis or scalded skin syndrome.
   There were two cases: a year old male child was admitted to Princess Margaret Hospital with Staphylococcus aureus phage type 71.

In the second instance the child was admitted to Princess Margaret Hospital with Staphylococcus aureus of phage type 80/42E/47/54/75 instead of the more usual type 71.

2. Conjunctivitis

Between 22nd February and 21st May, 12 babies born at Osborne Park Hospital and one at St. Anne's Hospital had eye infections due to Staphylococcus aureus phage type 52/52A/80/81. One of the Osborne Park babies had to be admitted to Princess Margaret Hospital with dermatitis after living at home for two months.

Further investigations revealed that nine members of the staff were infected with this phage type.

3. Boils

During the past twelve months, 16 spastic children at Pyrton Training Centre have had boils; additionally one social worker had numerous boils. Of the 16 children, only six had had pus swabs examined. These six children, the social worker and a further staff member were infected with Staphylococcus aureus phage type 3C.

4. Toxic Shock

i) A 30 year old woman was admitted to Sir Charles Gairdner Hospital with the Toxic Shock Syndrome. Staphylococcus aureus type 29/52 was isolated from her vagina. She used tampons. Staphylococcus aureus was not isolated from unused tampons taken from the box which was in use. She was gravely ill and recovered only after a lengthy illness during which she required dialysis. Further examination of this strain by Professor Bergdoll, U.S.A., showed that this strain produced enterotoxins A. & F. and that the patient's antibody response was poor suggesting a susceptibility to recurrence.

She was readmitted to St. John of God Hospital with a skin rash and pyrexia. Staphylococcus aureus type 29/52 was isolated from her nose, but not from her vagina; this isolate was identical to the earlier vaginal strain. On this occasion her illness was much less severe.

ii) A 12 year old girl at Collie was admitted to Collie Hospital with the possible diagnosis of toxic shock; she used tampons. Staphlococcus aureus phage type 71 was isolated from her vagina.

5. Staphylococcus aureus phage type 96 was isolated from six babies at St. Anne's Hospital; on examination of the staff it was found that a similar strain was carried by three out of 32 members examined.

Staphylococcus aureus Phage Typing

The total nunber of cultures received was 4,470, an increase of 7.6%

over 1980. Included were 163 strains derived from poultry.

MYCOBACTERIA REFERENCE LABORATORY

A total of 7,666 specimens were received for mycobacterial examination during 1981, as compared with 9,133 during 1980. Of these, 475 were smears for microscopic examination of M. leprae. The percentage of positive smears for M. leprae remained similar to last year with 33.3% being positive for M. leprae (the figure for 1980 being 39.9%).

Although there was a decrease in the total number of specimens received compared to 1980, there was a marked increase in the number of specimens for culture yielding mycobacteria.

During 1981, the number of specimens yielding mycobacteria was 11.6 of the number of specimens received. The corresponding yield for 1980 was 8.6%.

The number of isolations of M. tuberculosis from new patients increased slightly from 2.7% in 1980 to 4.2% in 1981.

There were 51 laboratory reported cases of pulmonary tuberculosis and nine laboratory reported cases of non-pulmonary tuberculosis.

The marked increase in the overall yield of mycobacteria from specimens received can be attributed to the large number of isolations of M. intracellulare. This organism constituted 50.0% of the total number of isolations for 1981. More than half (66.3%) of the isolations of M. intracellulare from new patients were referred cultures from Royal Perth Hospital.

Isolations of other mycobacteria were consistent with the numbers isolated in previous years. There were a number of interesting cases of mycobacterial infection.

M. haemophilum was isolated from pus from skin lesions on the arm of a 38 year old female, renal transplant patient in Royal Perth Hospital. It is the first time this organism has been isolated in Western Australia.

M. marinum was isolated from two patients. The first patient was a 58 year old male and the organism was isolated from tissue from the right hand. The second patient was a 76 year old female and the organism was cultured from synovium from the right wrist; both isolates were referred from Royal Perth Hospital. The first patient had kept tropical fish and although the second patient had no history of keeping fish, she had pricked her finger with a fish bought several months before the onset of the infection, an observation of doubtful significance.

M. intracellulare was isolated from lymph glands of five children aged from 2-6 years old (one boy and four girls), referred from Princess Margaret Hospital. One isolate of M. intracellulare was serotype 21 and another isolate of M. intracellulare was serotype 22.

A mixed culture of M. intracellulare serotype 22 and M. scrofulaceum serotype 43 was isolated from gastric washings from a 12 month old boy from Princess Margaret Hospital.

M. intracellulare and M. gordonae were isolated from plastic tubing from a distilled water still at a metropolital hospital laboratory.

M. avium serotype 3 was identified from an isolate submitted by Fremantle Hospital, cultured from a cervical abscess from a six year old girl.

M. kansasii was isolated from four laboratory reported cases of pulmonary infection in two males, one aged 55 and the age of the other is unknown and two females ages 37 and 67.

M. bovis was identified from a culture referred from Royal Perth Hospital. The organism was isolated from tissue from the middle ear of a 27 year old female.

A total of 90 cultures were referred from the Department of Agriculture. Of these, 45 isolates were identified as M. bovis.

Examination of soil and water samples from Derby commenced at the end of 1981. So far two isolates of M. intracellulare have been cultured from 23 samples of soil and water.

PUBLIC HEALTH AND ENTERIC DISEASES UNIT

The five laboratory sections comprising the Public Health and Enteric Unit examined a combined total of 82,758 samples compared with 77,436 in 1980.

The increase of 5,322 samples was caused by demands on the Food Hygiene and Waters testing sections. Surveillance of both drinking and recreational waters expanded as a result of control measures against free living amoebae in treated and recreational waters throughout the State and there was more demand for Salmonella surveillance.

There was a slight increase in the work load of the Environmental Section despite reductions in monitoring water catchment areas and wildlife which may serve as carriers or reservoirs of salmonellosis. However, these reductions were largely offset by increased monitoring of poultry, cattle, pigs and feral animals which provide meats for human consumption, domestic pets and by-products for the animal feeding-stuffs industry.

A nation wide reporting scheme for Salmonella, Shigella and Campylobacter cases involved a total of 1,289 computer cards being forwarded to the Australian Department of Health National Reporting Centre.

ENTERIC DISEASES UNIT

A. Salmonella Infections

A total of 819 Salmonella cases were diagnosed by or reported to the section during 1981. This represents a further downward trend in

figures which are summarised in the following table:-

Year	Salmonella Case Total W.A.	
1977	1,036	S. chester outbreak source not proven.
1978	993	No major outbreak.
1979	1,701	S. muenchen outbreak traced to raw chicken.
1980	936	No major outbreak.
1981	819	S. senftenberg outbreak traced to meat smallgoods.
TOTAL (5 yrs.)	5,485	Approximately 1,050 cases associated with outbreakes.

A total of 70 serotypes were isolated from human infections; the most common serotypes were S. Typhimurium (219 cases), S. senftenberg (123), S. muenchen (64), S. chester (45).

Salmonella Food Poisoning Outbreaks

One major outbreak due to S. senftenberg occurred during the January to February summer period. Meat smallgoods from a single factory were found to be contaminated. It was necessary to close the manufacturing plant in order to clean plant machinery and environment and to examine the infected food handlers. A total of 12 foodhandlers employed at the factory were found to be carriers of S. senftenberg.

Gross contamination of meat smallgoods from other sources in the retail trade occurred during handling and display. A feature of the outbreak arising from the preventative monitoring programme was an early public health alert from the detection of an increase in S. senftenberg in metropolitan sewerage.

Typhoid and Paratyphoid

S. typhi phage type A was diagnosed at Princess Margaret Hospital from a blood culture of a 16 year old female from Christmas Island. The girl had visited India within the incubation period and no further cases were detected.

S. paratyphi A infection was diagnosed in two patients at the Royal Perth Hospital. Infections were contracted in Bali and Singapore.

S. paratyphi B was isolated from a 10 year old female at Mandurah; the source was not determined. No further cases have been recorded.

S. paratyphi C (biotype S. cholerae-suis) was isolated from a butcher's assistant at Narrogin. The source of infection was not determined and no further cases occurred. The patient did not present with classical paratyphoid symptoms or exhibit the more serious clinical manifestations which may occur with S. cholerae-suis.

Infection in this foodhandler as well as previous isolations of S. cholerae-suis from salami and the handwashings of two foodhandlers

in Perth resulted in extensive monitoring of pigs at major abattoirs. S. cholerae-suis was subsequently detected in two pigs by the Department of Agriculture laboratory and appropriate measures taken.

Exotic Infections

Apart from the typhoid and paratyphoid fever infections already referred to, a number of Salmonella infections were caused by serotypes not previously detected in Western Australia. S. agona, for example, which has been responsible for large scale outbreaks in many other countries, was detected in six immigrants from S.E. Asia. No further cases and no indigenous infections with this serotype have so far been detected in Western Australia.

Other exotic Salmonella infections were also detected in a small number of immigrants and travellers returning from Canada, Pakistan, Thailand, India, Malaysia and Bali. In recent years the number of Salmonella infections diagnosed in patients who had previously vacationed in Bali has steadily increased. S. javiana, S. kottbus and S. thompson as well as S. paratyphi A were isolated from these travellers during 1981.

Interstate Salmonella Infections

A total of four S. newport infections in two children and two adults were traced to the consumption of contaminated salami imported from Victoria. These cases were associated with the nationwide outbreak which occurred during the winter. Prompt recall of suspect and contaminated batches by the Public Health Department prevented the spread of infection in Western Australia.

B. Shigella Infections

A total of 294 Shigella cases were diagnosed in Western Australia during 1981 compared with 302 in 1980 and 655 cases in 1979. Overall the downward trend of recent years continued; however, individual serotypes showed localised increases, for example, in the Central region where the overall total was greater than the previous years, Sh. flexneri type 2 increased from 34 in 1980 to 63 in 1981. Sh. flexneri 6 also increased in the same region from 15 to 36.

Cases of bacillary dysentery due to Sh. flexneri 2 predomoniated at Mt. Magnet, Kalgoorlie, Port Hedland and Geraldton. One antibiotic resistant strain was prominent during the increase in case totals and was associated with the death of a five year old male child from Mt. Magnet.

An increase in Shigella flexneri 6 cases occurred in the last quarter of 1981 particularly at Port Hedland and Roebourne; Sh. sonnei showed a marked decline in cases with only 52 cases recorded compared with 124 in 1980.

Sh. flexneri type 1 was detected in three recently arrived S.E. Asian immigrants and two vacationers on return from Bali.

C. Other Infections

There were two incidents of Vibrio infection. Vibrio cholerae var. albensis was isolated from a one year old boy at Princess Margaret Hospital. Vibrio parahaemolyticus was isolated from a foot wound caused by a fish hook; this patient died of septicaemia in Fremantle Hospital.

Aeromonas hydrophila was isolated from the faeces of an adult male with symptoms of enteritis and also from his bore water tank.

D. Campylobacter jejuni

During the year ended 31 December 1981 a total of 5,105 faecal specimens were examined for the presence of C. jejuni. There were 196 isolations.

All specimens received from children under five years of age are now investigated as previous records indicated C. jejuni to be most prevalent in this age group.

Co-infection with other intestinal pathogens included Salmonella species 13, Shigella flexneri 4, Shigella sonnei 2 and intestinal parasites 12.

2. PARASITOLOGY SECTION

A total of 11,918 faecal specimens were examined for the presence of intestinal protozoa and helminths from which 1,429 positive identifications were made, some specimens having more than one species of parasite.

Regional distributions for parasites identified were:-

Metropolitan	248	South West	267
South East	14	Central	228
Pilbara	208	Kimberley	434

Giardia lamblia remains the most common parasite encountered in all regions with an overall prevalence of 58%.

A variety of parasites were identified in routine specimens from South East Asian immigrants including Hookworm, Strongyloides stercoralis, Trichuris trichiura, Ascaris lumbricoides and Giardia lamblia.

Notifiable Diseases

1. Amoebiasis: 1 case in an adult female patient who travelled regularly to Hong Kong, Singapore and Malaysia.
2. Ancylostomiasis: 95 cases.
3. Bilharziasis: Schistosoma mansonii was identified in an adult female patient from Dianella who had lived in Uganda between 1943 and 1950 and

had often bathed in Lake Victoria. She first became ill in 1944.

Parasites of Special Interest

1. Taenia saginata was found in two patients:-

   i) an adult female from Esperance who was probably infected in Indonesia; and

   ii) a 37 year old female in Derby.

2. An unusual tape worm, Raillietina species, (indigenous in Africa), was found in a 2 year old boy who had spent the first 18 months of his life in South Africa.

Ecto Parasites

1. Demodex folliculorum was found in the hair of an aboriginal patient.

2. Sarcoptes scabiei was found in skin scraping taken from a 10 year old Bassendean girl.

3. FOOD HYGIENE SECTION

In 1981 the Food Hygiene Laboratory examined a total of 8,908 samples compared with 4,387 in 1980 - an increase of 103%. The rise in work-load was mainly due to increase in surveillance of the meat smallgoods industry by the Public Health Department. This followed a food-poisoning outbreak due to S. senftenberg in meat smallgoods early in the year.

S. senftenberg Investigations

During the outbreak a total of 711 samples comprising of meat products, factory premises, equipment and food handlers were examined and 60 (8.4%) were positive for Salmonella. S. senftenberg was isolated on 34 (55%) occasions from samples originating in the contaminated factory and, as a result of cross infection problems, from other meats contaminated during distribution, storage and display at retail level.

Handwashings collected from food handlers at the meat plant also yielded S. senftenberg.

Handwashings

The examination of handwashings from food handlers during the processing and handling of meat products provides information on factory hygiene standards.

During the year a total of 1,614 handwash samples were collected from staff at all major metropolitan smallgoods producers and 56 (3.4%) yielded Salmonella comprising 19 serotypes. Isolation rates from different producers ranged from 0.9% with up to six different serotypes detected on single sampling runs. The value of these monitoring procedures was particularly evident at plants which

showed high contamination rates during the initial sampling period, but which fell to less than 1% after increased attention to hygiene.

An important finding during the year was the isolation of S. cholerae-suis from two handwashings and also from a salami. This serotype is a serious pathogen and following the isolation of this strain monitoring of pigs and abattoirs was expanded; S. cholerae-suis was recovered from two pigs by the Department of Agriculture, but was not detected in pigs sent to abattoirs or in further samples of meat products.

Meat Processing Equipment

A total of 558 swabs from equipment at major smallgoods factories were examined and 34 (6%) were positive for Salmonella; 16 serotypes were identified. S. senftenberg (11) was the major strain. Not surprisingly, many serotypes isolated from processing equipment were also detected in the handwashings of the operators.

The isolation of several serotypes which are normally of rare occurrence in the metropolitan or southern agricultural region of the State, including S. ball, S. orion, S. senftenberg, S. gaminara, S. lansing and S. tennessee, indicated that opportunistic serotypes were gaining entry to the food chains of humans in densely populated areas. The majority of these serotypes are prevalent in livestock and feral animals in the more remote regions of the State. During the year, for example, S. oranienburg was detected in 12 out of 22 (54%) samples of a consignment of buffalo meat imported from the Northern Territory for the gourmet meat trade. This particular consignment was rejected by the Public Health Department.

Beef mince imported from the Kimberleys was also found to be contaminated with S. muenchen and S. wandsworth and beef trims from the same region yielded S. senftenberg.

Sausage Casings

The survey of sausage casings begun the previous year continued. Rates of Salmonella contamination showed a marked decrease after the investigation into the treatment processes and no Salmonella were isolated from casings undergoing dry salting processes.

Poultry Monitoring

A total of 521 chicken carcases were tested during regular monitoring of major processing plants and 211 were positive for Salmonella. Major serotypes and isolation totals comprised of S. typhimurium 142, S. infantis 35, S. muenchen 8, and S. singapore 4. The rates of contamination were comparable with the previous year and no food-poisoning cases were traced directly to chicken. S. agona was detected in a local broiler farm, but was not subsequently isolated from processed chicken or animal feeding-stuffs.

Food Poisoning Complaints

A total of 77 complaints linking food poisoning with a suspect food were investigated; these included 26 originating from restaurants. Staphylococcus aureus was isolated on 23 occasions, C. perfringens on 11 and S. london on one. These investigations established the direct source of the food poisoning episodes on two occasions. In one outbreak at a girls' school in which 51 out of 195 girls suffered staphylococcus food poisoning, the source was a chicken casserole dish infected with S. aureus phage type 83/A85. The second outbreak at a popular seafoods restaurant showed seafood pate contaminated with S. Aureaus phage 53; however, no samples were submitted from those sick.

In four cases C. perfringens was implicated as the organism most likely to have caused symptoms of food poisoning.

The laboratory was also actively involved in the bacteriological monitoring of samples of raw milk retailers during an industrial dispute, as well as a survey of bulk milk supplied in the metropolitan area.

Imported Foods

Routine monitoring of a wide range of imported food items continued; however, with the exception of one consignment of dessicated coconut, no bacteriological findings were considered a public health hazard.

A total of 408 coconut samples were examined and 12 were found to be contaminated with 8 serotypes. The high degree of contamination was underlined further by repeat testing of the same batch which revealed Salmonella in 11 (33%) samples. This was the second occasion since the coconut health alert of 1960 that Salmonella contamination was detected.

Imported shellfish, in particular cooked and peeled prawns from Asian countries, were routinely investigated but no bacteriological findings of significance to public health were recorded.

Vibrio parahaemolyticus was detected in one sample of imported oysters.

The national alert associated with Salmonella newport contaminated salami manufactured in Victoria was reflected by the testing of 60 imported samples, these included 26 samples at distributor level. Of these 7 (27%) were positive for Salmonella comprising S. newport (5), S. ohio (1) and S. orion (1). As referred to earlier in the Clinical section report, a small number of S. newport cases in Western Australia were traced to imported salami.

National Health and Medical Research Council

The Food Hygiene Section has continued to participate in the nation-wide survey of all categories of foods. As a result of this study standards have now been drawn up for most foods. This examination involved the analysis of 265 samples.

4. WATER EXAMINATION SECTION

The Waters Section continued to show an increase in both potable and recreational waters examined, particularly with the monitoring of waters used for swimming.

Amoeba testing

The widespread incidence of free-living amoebae in water was revealed by the recover of amoeba species from 1,332 (21%) of the 6,296 samples examined.

Naegleria species were demonstrated in 201 (15.1%) of the total samples; however, pathogenic Naegleria fowleri was identified in only four samples; these comprised a semi-public pool in the Pilbara and three from marginally chlorinated piped distribution in the south west region of the State.

Water quality standards relying solely on assessments of non-Salmonella indicator organisms are not always a reliable guide to the presence or absence of pathogens; for example, during the year Salmonella were recovered from over 50 drinking waters that satisfied National Health and Medical Research Council current acceptable criteria.

During the year no cases of amoebic meningitis were recorded and no incidents or outbreaks of Salmonellosis were traced directly to the consumption of contaminated water.

Salmonella Isolations

A total of 4,215 samples were examined for Salmonella and 143 (3.4%) yielded Salmonella comprising of 35 serotypes. Multiple isolations were also recorded with up to three serotypes present in single samples. The number of positive samples and water categories are summarised in the following table:-

Water Category	Positive
Piped supply (treated)	42
Piped supply (untreated)	62
Bores and wells	29
Reservoirs and tanks	6
Treated recreational water	4
TOTAL	143

On a regional basis 64% of all Salmonella positive samples originated in the Pilbara region and 13% from the Kimberley. The southern and eastern regions comprised only 10%, including the Perth metropolitan area. In the Perth metropolitan region 9 of the 15 isolations originated from water storage facilities on Rottnest Island.

Surveys

In association with the Imperial Chemical Industries Australia a survey of domestic swimming pools was undertaken; this revealed a high incidence of inadequately maintained pools. A report of the findings is in preparation.

During September (in collaboration with the Gastroenterology Research Unit of Princess Margaret Hospital and water supply authorities) a survey of the incidence of Aeromonas was begun in water supplies at Perth and Bunbury.

5. ENVIRONMENTAL SECTION

Waters and Effluents

Routine bacteriological monitoring for coliform bacteria, faecal streptococci and Salmonella in coastal, estuarine, river and lake waters used for recreational purposes revealed very little contamination.

Particular attention was directed to recreational beaches and river waters adjacent to sewerage and abattoir and drain outlets. In summer months Salmonella were detected in 3% of coastal waters, 6% river and estuary and 14% wetlands samples examined from localities near such outlets.

Salmonella were frequently detected in abattoir and poultry process effluents throughout the year. S. anatum and S. derby were predominant in abattoir effluent and S. typhimurium, S. anatum and S. muenchen in poultry effluents.

Water Catchment Streams

In collaboration with the Metropolitan Water Supply, Sewerage and Drainage Board and the Public Works Department 4,221 samples were examined from catchment streams. A total of 566 samples yielded Salmonella; however, the vastmajority of strains were naturally occurring serotypes indigenous to the forest habitat and of minor significance in surrounding urban and agricultural areas.

Livestock Monitoring

In conjunction with the Food Hygiene Laboratory and Public Health Department, poultry and pigs were monitored for Salmonella. In pigs the Salmonella carrier rate in animals immediately prior to slaughter was 24% and the finished carcase rate was 31%. Rates varied widely at different abattoirs.

In poultry, carrier rates ranged from nil to 90% in birds examined prior to slaughter and averaged 5-10%. Serotypes predominant in poultry were S. typhimurium, S. muenchen, S. infantis, and in pigs S. derby and S. give.

In June S.agona in poultry litter at a local broiler farm was traced to fertile eggs imported from Queensland. However, apart from a

single isolation from poultry crate washings at the processing plant, no S. agona was isolated from finished carcases or by-products used in the manufacture of animal feeding stuffs.

A similar alert occurred during July when a major processor informed the Public Health Department that broilers were due for slaughter which had also originated from S. agona infected Queensland breeder flocks. Intensive monitoring failed to detect S. agona in 750 birds or their litter and also during processing of the flocks.

However, the latter intensive monitoring programme revealed an unexpected high S. typhimurium infection rate at one broiler farm. S. singapore was also detected at the processing plant.

Animal Feeding Stuffs

The re-cycling of Salmonella serotypes through contaminated animal feeding stuffs is a major worldwide problem responsible for infections in livestock and subsequently humans consuming contaminated foodstuffs.

In September an investigation commenced into the incidence of Salmonella at rendering plants and animal feed mills. This was an integral part of the meat smallgoods and poultry monitoring programme. Samples comprised of offal, meat meal and finished feed. Rates of contamination and the predominant serotypes are as follows:-

Sample	Contamination	Main Serotypes	Total Serotypes
Raw offal	80%	S.anatum, S.derby, S.typhimurium	16
Meat Meal	50%	S.anatum, S.give, S.havana, S.senftenberg, S.livingstone	20
Animal feed	22%	S.anatum, S.lille	10

Feral Animals

The use of raw meat derived from feral animals in food chains of humans, or domestic pets and animal feeding stuffs, provides an avenue for the introduction of opportunistic epidemic Salmonella serotypes.

During 1981 rectal swabs were collected from buffalo, donkeys, wild horses and pigs. Infection rates and major serotypes were as follows:-

Feral Animal	Number Tested	Number Positive	Major Serotypes	Total Serotypes
Buffalo	203	10 (5%)	S.oranienburg	9
Horse	200	147 (74%)	S.havana, S.oranienburg, S.infantis, S.orion, S.typhimurium	16
Donkey	89	0		
Pig	19	3 (15%)	S.eastbourne, S.tennessee	2
Cat	3	1 (33%)	S.decatur	1
TOTAL	514	161 (33%)		28

The buffalo, horse and donkey samples all orginated from the Northern Territory.

Wildlife

Monitoring of wildlife in the Cockburn Sound area for Salmonella continued with emphasis on Carnac, Garden and Penguin Islands. An interesting finding was the isolation of S.senftenberg from lizards examined close to the recreation beach on Penguin Island.

In conjunction with the International Zoological survey of the Mitchell Plateau area in the Kimberley region, rectal swabs were collected from 200 native mammals in the field, 29 (15%) were positive for Salmonella. A total of 11 serotypes including pathogenic strains commonly isolated from Aboriginal patients in the northern regions of the State were detected. These studies provide further evidence of the existence of both indigenous and exotic reservoirs of Salmonella infections in Australia and provide epidemiological and ecological information for Public Health, Environmental protection and wildlife management authorities.

6. MYCOLOGY SECTION

Specimen numbers received declined slightly compared with 1980. Of the 11,294 specimens examined by the laboratory approximately 30% yielded fungi. Cutaneous mycoses are very common in Western Australia; 6,357 specimens were examined and 33% of these patients had fungal infections. Systemic fungal infections, although still comparatively rare, seem to be occurring with increasing regularity as opportunistic infections in compromised hosts. Systemic mycoses are serious illnesses, difficult to diagnose and treat.

Superficial Mycoses

Probably because of our Mediterranean type climate Pityriasis versicolor remains common in this State. This year we saw 204 cases of this condition, approximately the number we diagnose each year.

Cutaneous Mycoses

Tinea corporis, most frequently caused by Trichophyton rubrum and Microsporum canis was the commonist tinea type this year. This was followed by Tinea pedis most frequently caused by T. rubrum, T. mentagrophytes and Epidermophyton floccosum, and Tinea crus due to T. rubrum and E. floccosum. Tinea capitis in children was mainly caused by M. canis; there were 36 cases of scalp ringworm caused by T. tonsurans in 1981. This fungus occurs more commonly in Aboriginals and adult caucasians.

Geophilic dermatophytes are an uncommon cause of ringworm in Western Australia; there were only 16 cases due to M. gyseum in humans this year despite the prevalence of this organism in our soils and the close association of the population of both rural and urban areas with the soil. Candida infections of the skin continue to be prevalent, the groin area and finger nails being the area most frequently affected. C. albicans caused 69% of these infections and C. parapsilosis 20%.

Finger nail infections in Western Australia are most often in the form of paronychia caused by Candida species, whereas toe nails are most commonly affected by dermatophyte fungi.

Ear Swabs

Seventy two cases of otomycosis were recorded this year. Aspergillus niger caused 54% and A. flavus 28% of these infections.

Vaginal and Cervical Swabs

Yeast infections were diagnosed from 32% of the 3,124 specimens examined, 87% of these due to Candida albicans.

Subcutaneous Mycoses

A case of sporotrichosis was recorded in a 40 year old male farmer. The fungus was grown in culture and confirmed by fungal serology. Subcutaneous infections were recorded on two other occasions. A swab from a 'boil' grew Nocardia braziliensis, and a wound on the right leg of an abattoir worker grew Fusarium.

Systemic Mycoses

Cases of interest this year:-

1. Cryptococcosis - Two cases of cryptococcosis were reported at Sir Charles Gairdner Hospital. One in a renal transplant patient who developed pulmonary lesions in which Cryptococcus was found; his blood contained cryptococcal antigen just prior to death. The other patient had cryptococcal meningitis; her cerebrospinal fluid grew fungus in culture and it was detected serologically also. A third case was a child in Princess Margaret Hospital with cryptococcal meningitis.

An interesting case was referred to us from Murdoch University. A goat supplying milk to a family, mother, father, infant and dog had respiratory disease. We isolated Cryptococcus neoformans from nasal turbinates, nasal swabs and lung tissue; the milk and mammary glands were free of the fungus. A blood sample from this goat was strongly positive for C. neoformans antigen, but blood samples from the family, including the dog, were free of any trace of C. neoformans.

2. Candidosis - For the second time in Western Australia two drug addicts using heroin administered intravenously injected from the same syringe infected themselves with systemic candidosis. The girl was first admitted to Royal Perth Hospital with malaise, nausea, vomiting and generalised constant headache; she later had ocular involvement. Her boyfriend was admitted with septicaemia.

   An immunosuppressed patient in Royal Perth Hospital, with acute myloid leukaemia and septicaemia, had very strong precipitin bands of the type indicating systemic candidosis. At autopsy we received some lung tissue which contained masses of Candida and confirmed our serological diagnosis.

3. Petriellidosis - A patient contracted terminal petriellidosis of the brain after being hit on the head with a shovel and receiving a depressed fracture of the skull. The causative organism, Petriellidium boydii, was isolated on several occasions from cerebrospinal fluid at Royal Perth Hospital and sent to us for identification. We also isolated it from cerebrospinal fluid and found a trace of P. boydii antibody in the patient's blood. At autopsy five swabs from different parts of the brain sent to us for examination all grew P. boydii.

   A case of pulmonary petriellidosis was recorded in an 80 year old man. The causal organism was isolated from six sputum specimens and antibodies were present in the three serum specimens examined.

4. Phycomycosis - A case of phycomycosis of the kidney confirmed serologically in eight successive serum samples over a two month period.

5. Aspergillosis - Two relatively uncommon forms of aspergillosis, invasive aspergillosis and aspergilloma, were recorded in a patient having pneumonectomy. Aspergillus fumigatus was isolated from the fungus ball and from lung tissue; serology for A. fumigatus was positive.

   Broncho-pulmonary aspergillosis was recorded in a patient with asbestosis. Two different species of Aspergillus were isolated from nine sputum specimens and Aspergillus antibodies were present in two serum samples.

   A patient with hydrocephalus and meningitis had Aspergillus fumigatus isolated from cerebrospinal fluid and ventricular

cathethers during life and at autopsy from the catheter.

6. Allergic Bronchopulmonary Disease due to Drechslera - Allergic bronchopulmonary disease caused by a dematiacious fungus was recorded for the fourth time in Western Australia. All patients have contracted their disease while living in the north of the State. Again the causative organism was a Drechslera species which was islolated from sputum specimens; antibodies to Drechslera were detected in the patient's blood.

7. Nocardiosis - A lung biopsy from a febrile immunosuppressed renal transplant patient with lesions in the lung and brain grew Nocardia asteroides.

   A 75 year old female had Nocardia asteroides isolated from her lung at autopsy.

8. Actinomycosis - A case of actinomycosis was recorded causing a submandibular abscess.

9. Mixed Infections - Nocardiosis lesions in the chest and shoulder due to Nocardia asteroides followed by leg ulcers due to Cryptococcus neoformans were recorded in a 60 year old female with chronic myeloid leukaemia.

   A 71 year old male with fibrosing alveolitis and a pulmonary embolus had a chest infection due to Nocardia braziliensis which, after treatment, was followed by a mixed infection of Aspergillus fumigatus, A. terreus and Candida albicans, grown from seven sputum specimens.

   Two male renal transplant patients had fungal infections. One had Candida albicans in the rejected kidney and the other, at autopsy, had C. albicans in the liver and A. fumigatus in the lung; Candida albicans had been isolated from an abdominal sinus of this latter patient during life.

   In this latter part of the year the serum of seven patients were found to contain precipitins to farmers' lung organisms.

7. SEROLOGY SECTION

The total number of samples received - 50,059, is 10% less than the figure of 55,913 for 1980 but about equal to the 50,960 samples received in 1979.

This drop is largely accounted for by the fall in the number of requests received for examinations for syphilis, which fell from 43,701 to 39,699; again the 1981 figure of 39,669 is about equal to the 39,350 recorded for 1979. One may conclude that the Serology Section is maintaining a more or less steady work-load, but this conceals the rise in the number of requests for more newly introduced tests such as anti DNaseB where there was a 385% increase.

Requests for Leptospirosis is one area that showed a real increase of 6%, but the number of positive results indicating current active infection showed a decrease compared with the previous year.

Having introduced a Yersinia agglutination test in 1980 it was encouraging to see the service being utilised to an extent that the statistics reveal an 83% increase in requests.

Toxoplasma requests continue to decline largely due to the fact that most private laboratories now perform their own haemagglutination test routinely, preferring to use the State Health Laboratory Services as a source of further investigation, where our indirect fluorescent antibody technique is performed for the detection of recent active infection.

There was a 23% increase in requests for Paul Bunnell tests for glandular fever compared with 1980; however, the total is still less than for 1978 and 1979.

The RAST for allergic diseases provided one of the most marked areas of increase. There was a 76% increase in the number of patient specimen requests and a 100% increase in the number of antibody tests performed to detect the cause of the allergy.

New Developments

1. A decrease in the number of FTA IgM tests for syphilis has taken place. This was brought about initially by a problem with insufficient antigen supply, and partly as a result of the technique being unavailable for some time. It was obvious that the test was of real use in only a small number of cases, hence it was decided to be more selective in its performance and, as an additional refinement, to perform the test on column separated sera only.

2. Latex agglutination tests for the detection of Listeria, Gonococcal and Bordetella antibody detection were made routinely available during 1981.

   Because of the prohibitive cost of these high performance kits which are imported from Italy, it has been impossible to conduct clinical evaluation trials. However, accepting the manufacturer's researched information and performing the tests routinely, indications are that adequate sensitivity and specificity is gained. The recent demand for Bordetella serology to detect whooping cough has resulted in a significant backlog of requests as we await the arrival of further reagent kits.

3. During the last few years a programme of expansion in the area of parasite serology has operated. In addition to the Toxocara and Amoebic tests introduced in 1980, tests for Filaria and Strongyloides antibody began routine operation in 1981. Further refinements in the Toxocara IFAT and Entamoeba histolytica CIEP methodology occurred in 1981 also.

4. In 1981 an ELISA technique for the detection of pneumococcal antibody was developed. It is anticipated that this technique will assume great importance in 1982 as a result of

the recent release of the Pneumovax vaccine.

5. Last year's annual report alluded to an evaluation of the 'Tennagen' assay in comparison with the CEA assay. The manufacturers of the Tennagen reagents subsequently withdrew the product from the market because of problems with specificity and hence the evaluation programme was not pursued.

6. Investigations aimed at increasing the sensitivity and effective quantitation of C reactive protein have taken place. A conclusion is expected shortly and will probably result in a significant change in methodology in 1982.

Quality Control

Our Serology Section participates in the U.S. Centre for Disease Control proficiency testing programme and the Royal College of Pathologists of Australasia quality control programme with excellent results.

Research

Evaluation of tests for allergic diseases will be carried out in 1982 using sera and questionnaire data from the 1981 Busselton survey. The study will be performed by using the RAST technique. At the same time, the important airborne allergens in that part of Western Australia will be defined, enabling completion of Dr. Stuckey's Telethon project for 1981 on genetic and environmental factors in allergic disease.

8. SEXUALLY TRANSMITTED DISEASE SECTION

The work-load increase in 1981 was 2.4% as compared with 1980. (See Table II B).

The number of β-lactamase producing N. gonorrhoeae isolated during 1981 shows, once more, a significant increase to the previous year.

Year	Total Number of N.gonorrhoeae Isolates	Number of β-lactamase Producing Strains of N. gonorrhoeae
1976	Not available	3
1977	Not available	8
1978	803	8 (1.0%)
1979	698	15 (2.2%)
1980	618	26 (4.2%)
1981	831	55 (6.6%)

Of these cases 43 were of Asian origin. Of the 12 local cases, five were contacts of people who in turn had Asian contracts, leaving seven patients of apparently genuine local origin.

No penicillin resistant, non β-lactamase producing strains have been detected.

Dark ground microscopy was performed on 265 specimens and T. pallidum were detected in 19 patients. The Australia-wide sensitivity testing programme was continued in 1981.

9. VIROLOGY SECTION

The total number of specimens for isolation received by the Virology Laboratory in 1981 was 45,557, which is an increase of 2% over the 1980 figure. There was a significant decrease in the number of specimens for rubella serology; this is probably due to the increasing number of private pathology laboratories offering this test. However, our laboratory still serves as the reference centre for the special tests used to indicate recent infection. There was a 10% increase in the number of specimens submitted for general serology.

Outbreaks

A record number of arbovirus infections (Ross River 74 and Australian Encephalitis 10) were diagnosed. It is unknown whether the increase in Ross River Virus infections was due to an epidemic or to an increased awareness by general practitioners. Ross River Virus infections occurred throughout the State extending as far south as Esperance. There were five other Group B arbovirus infections diagnosed in patients who had recently returned from India and South East Asia. These infections were probably Dengue and Japanese B encephalitis but further confirmatory laboratory tests are in progress.

The cases of Australian Encephalitis did not produce any fatalities although one Aboriginal boy was left with severe neurological sequelae. The cases demonstrated an unusual range of presentation varying from severe encephalitis to non-specific pyrexia, headache and joint pains. The race and age distributions were similar to the previous epidemics, i.e. the very young were Aboriginal and the adults were Caucasian.

The isolation rates for herpes simplex virus and Chlamydia trachomatis were again very high especially from genital specimens.

There were only four Influenza A isolations and no isolations of Influenza B but there was a moderate outbreak of Parainfluenza Type 1 in May/June/July followed by a large outbreak of respiratory syncytial virus in August and September; these latter two viruses affected mainly young children who presented with Bronchiolitis.

The rotavirus pattern was unusual; in addition to the usual winter peak there was a peak in November/December. The infections were diagnosed by electron microscopy and were all in young children with gastroenteritis. Six cases of Legionnaires disease were

diagnosed by serology. The patients were all male:-

1. An 8 year old from Albany admitted to Princess Margaret Hospital with bilateral pneumonia. Outcome was fatal.

2. A 53 year old gardener admitted to Fremantle Hospital with pneumonia. Responded well to treatment with Erythromycin.

3. A 35 year old from Merredin with chronic chest infection. Not admitted to hospital.

4. A 47 year old secondary school teacher from High Wycombe admitted to Royal Perth Hospital with acute severe bilateral pneumonia. Responded to treatment with Erythromycin.

5. A 56 year old from Belmont admitted to the Intensive Care Unit of Sir Charles Gairdner Hospital with bilateral pneumonia. This patient also suffered from a chronic bone-marrow disorder and was on corticosteroid treatment for this condition.

6. A 60 year old from Bassendean admitted to Royal Perth Hospital with bilateral pneumonia. Responded to treatment with Erythromycin.

Three cases of herpes simplex virus (HSV) encephalitis were diagnosed. A six week old baby died at Princess Margaret Hospital. The mother had genital herpes diagnosed in Canada two years ago. The baby's diagnosis was confirmed by seroconversion and isolation of the virus from the Tracheal aspirate and pernasal aspirate. The isolates were herpes simplex virus type II. The virus was also isolated from post mortem brain and CSF of a 74 year old man who was admitted to the Hollywood Repatriation Hospital with a chest infection. He became febrile, toxic and confused. A diagnosis of leukoencephalopathy was made pre-mortem. Serological diagnosis of HSV encephalitis was made in a 68 year old woman admitted to Sir Charles Gairdner Hospital with a diagnosis of viral encephalitis. She was treated with acyloguanosine and improved but has been left with a severe neurological deficit.

A 58 year old female was admitted to Fremantle Hospital with lateral rectus palsy and two vesicles on the forehead. She developed encephalitis which was confirmed to be due to Varicella by a stationary high complement fixing antibody titre.

There were 19 isolations of Echovirus 9, all from children with fever except one adult who had pancreatitis.

A patient from Mt. Newman was admitted to Royal Perth Hospital with inguinal lymphademitis. Lymphogranuloma venereum was confirmed by a four-fold rise in complement-fixing antibody titre.

There wer 18 isolations of Mumps and 17 cases were confirmed serologically. A significant number of cases presented with meningitis.

An outbreak of Hepatitis A occurred among eight nursing staff at Derby Hospital. The index case was thought to be a patient nursed in the paediatric ward at the beginning of September.

Survey

The laboratory took part in a survey of patients with gastroenteritis (conducted by Dr. M. Gracey, Princess Margaret Hospital), our role being to exclude viral agents in the submitted specimens. This work was predominantly done by the ELISA method using the Rotazyme kit but electron microscopy was sometimes used for comparative purposes.

Developmental Work

Developmental work was carried out in all areas of the laboratory. Complement fixation specific IgM tests for Mycoplasma pneumoniae, Coxiella burnetti (Q fever) and Chlamydiae were developed and put into routine use. The presence of a specific IgM is regarded as an indicator of recent infection.

Work has commenced on the development of monoclonal antibodies to certain viral antigens. These antibodies will then be used in the further development of specific IgM tests using the ELISA method.

In the Hepatitis section it was found that the routine commercial kit method used to diagnose recent Hepatitis A infections produced false positives in 6% of people who had previously had Hepatitis A.

The Water Board provided staff for the project to monitor the existence and survival of viruses in water. Mr. J. Jansons and a laboratory assistant have concentrated their efforts toward monitoring for the presence of human viruses in secondary effluent and groundwater at the Canning Vale groundwater recharge scheme. Some developmental work has also been done on improving the technique for virus recovery especially from large volumes of water.

Dr. Phillips was invited to Papua New Guinea (PNG) by the PNG Medical Research Council for a two month period to attempt the isolation of the causative organism of donovanosis. He worked at the Microbiology laboratory of Port Moresby General Hospital and at the PNG Institute of Medical Research at Goroka. Although Calymmatobacterium was not isolated from donovanosis cases, biochemically defective streptococci were isolated. This probably represents the first isolation fo these organisms in PNG. As a result of this project a method of isolation and cultivation of Haemophilus ducreyi was developed and used to make isolations from two cases of chancroid; one from PNG and the other from a patient attending a local Sexually Transmitted Diseases Clinic.

1. COMBINED CLINICAL BIOCHEMISTRY SERVICE

The combined service has continued to work in close collaboration with the University Department of Clinical Biochemistry and with the Royal Perth Hospital Department of Biochemistry. Joint management meetings with the Royal Perth Hospital department have been held each two months with benefit to both institutions, sharing expertise on equipment and procedures as well as sharing some of the more infrequent tests. Joint research activities with the University department have increased considerably and the consequent development of an atmosphere of scientific enquiry has been of obvious benefit to both bodies. The pattern of combined service, research and teaching developed in the short history of the Queen Elizabeth II Medical Centre is clearly successful and thanks are due to the three principals for patience and goodwill in its establishment. Further developments in staff unification are sought at all levels.

STATISTICS

By controlled reductions of quality control determinations, and of duplicate and triplicate assays, the total work-load has been reduced by 3.5% despite an increase of 1.7% in request work-load.

STAFF

Staff numbers have remained constant in 1981. Staff members were active in professional societies and in local national and international scientific events. Dr. Dick presented papers at the A.A.C.B. annual conference in Melbourne, Dr. Garcia-Webb presented papers to the Royal College of Pathologists of Australasia, the Australian Diabetes Society and the Endocrine Society of Australia. Professor Curnow chaired the meetings of the Education Committee/Commission in Belgium and Austria. He has now completed his term of eight years with the I.U.P.A.C./I.F.C.C. group.

QUALITY CONTROL

In the international quality control scheme the laboratory was placed 39th in 1,403 participants and 9th out of 239 in Australia. The laboratory, on the basis of performance, has been chosen as a referee laboratory in the new scheme introduced for Australia.

TEACHING, RESEARCH AND DEVELOPMENT

The four M.Sc. coursework students successfully completed the course. Mr. Frank Watson has submitted a thesis for the Fellowship of the A.I.M.L.S.

Dr. Garcia-Webb has now attracted a considerable amount of outside funds for research and his team now includes Dr. Julia Fry, Miss Zoe Meager and Mr. Steven Bottomley. Together with Mrs. Anne Bonser they form a most active research group in various aspects of non-insulin dependent diabetes.

Dr. Matt Dick, working with Mr. Frank Watson and Dr. John Beilby, has made further progress in the understanding of the association

of thyroxine binding globulin and α_1-antitrypsin.

Dr. E.J. Keogh continues as N.H. & M.R.C. Research Fellow. His work on the pulsatile administration of gonadotrophin releasing hormone has attracted considerable international interest.

Mr. Simon Ching has successfully prepared a new testosterone derivative with a view to the development of highly specific radioimmunoassay of the steroid.

Mr. Rossi has developed tests for the diagnosis and management of porphyrias with Lockwoods's screening methods followed by high performance liquid chromatography.

α_1-Antitrypsin phenotyping; red cell porphyrins and free thyroxine are among new tests introduced and a number of outdated tests have been modified or dropped.

The laboratory computer system continued to be developed by Mr. Ed Fletcher and although the main hardware is beginning to show its age the system has served the laboratory well, with only one major failure during the year.

In September a Cobas-Bio centrifugal analyzer was installed and both it and the ABA100 have been interfaced to the computer.

VISITORS

Among the many visitors to the laboratory during the year were Dr. L.C. Harrison, Dr. I. Percy-Robb and Dr. M.L. Wellby.

PUBLICATIONS

"Levels of Cholesterol, Triglyceride, High-Density Lipoprotein Cholesterol and Apoprotein-HDL in an Australian Rural Population".
J.R.L. Masarei, W.J. Lynch, K. Robertson, D.H. Curnow, R. Fullerton and Members of the Busselton Population Studies Group.
Pathology 13 (1981) 725-743.

"Tailings from a Lead Mine and Lead Levels in School Children - A Preliminary Report".
F. Heyworth, J. Spickett, M. Dick, B. Margetts, and B. Armstrong.
Medical Journal of Australia 2 (1981) 232-234.

"Serum Gastrin Levels Following Upper Gastrointestinal Endoscopy".
R.A. Joske, K.F. Maguire, B.M. Margetts and C.Y.B. Chin.
Australian and New Zealand Journal of Medicine 11 (1981) 563-564.

"C-Peptide Measurement and its Clinical Usefulness - A Review".
A.M. Bonser and P. Garcia-Webb.
Annals of Clinical Biochemistry 18 (1981) 200-206.

"A Possible Variant of Thyroxine-Binding Globulin in Australian Aborigines".
M. Dick and F. Watson.
Clinica Chimica Acta 116 (1981) 361-367.

"An Association Between α_1-Antitrypsin and Throxine Binding Globulin in Human Serum".
P. Kay, F. Watson and M. Dick.
Clinical Biochemist Reviews 2 (1981) 79 (Abstract).

"The Effects of Lysosomotrophic Agents on Insulin Binding to Isolated Hepatocytes".
J. Whittaker, V.A. Hammond, P. Garcia-Webb and K.G.M.M. Alberti.
Serono Symposium No. 41, "Current views on insulin receptors".
Ed. D. Andreani, R. De Pirro, R. Lauro, J. Olefsky, J. Roth.
Academic Press, London, 1981.

"Basal C-Peptide Levels in the Discrimination of Type 1 from Type 2 Diabetes".
T.A. Welborn, P. Garcia-Webb and A. Bonser.
Diabetes Care 4 (1981) 616-619.

"Glucose or Glucose Monohydrate for Glucose Tolerance Tests".
P. Garcia-Webb and A.M. Bonser.
Diabetologia 21 (1981) 580.

8. COMBINED UNIT OF CLINICAL PHARMACOLOGY & TOXICOLOGY

INTRODUCTION

The Unit is a combined service of the State Health Laboratory Services and the University of Western Australia Pharmacology Department. It provides both quantitative and qualitative measurements of drugs and other chemicals in biological specimens.

MEDICAL STAFF

Professor J.W. Paterson, M.B., B.Sc., F.R.A.C.P., F.R.C.P.
Honary Director of Unit.

Dr. J.M. Potter, M.B., B.Sc., Ph.D.
Lecturer in Pharmacology (U.W.A.)

Dr. R.L. Nation, Ph.C., M.Sc., Ph.D.
Pharmacologist.

Dr. K.F. Ilett, B. Pharm., Ph.D.
Senior Lecturer in Pharmacology (U.W.A.)

STAFFING

Specialist medical staff from the University Department of Pharmacology provided clinical pharmacology expertise for the Unit. Dr. Nation joined the staff in September 1981 to take up the position of Pharmacologist responsible for the day to day running of the Unit.

An on-call system is in operation in the Unit to deal with urgent after-hours' requests for emergency drug screens and clinical drug assays. During 1981 this service was used primarily by metropolitan

hospitals and there was an average of 23 hours per week of resultant overtime work.

WORK-LOAD

The work-load during 1981 has been quantified in three ways:-

firstly - from the number of specimens received;

secondly - from the number of analyses performed; and

thirdly - from the number of Canadian Work Units produced.

The numbers of specimens received by the laboratory in 1981 are shown in Table IV. A total of 17,664 specimens were received in 1981 and this figure is 7.5% higher than than for 1980. Specimens for clinical drug assays represented the majority (87%) of the total number received and there was a 7% increase in the number of specimens for these clinical assays in 1981 compared to 1980.

Data on the numbers of analyses conducted for individual drugs or groups of drugs in 1981 are available. These data provide another measure of work-load and also a greater insight into the nature of the work throughput.

It is relatively common that more than one assay is requested for any one specimen and in 1981 there was a total of 19,208 analyses performed on the 17,664 specimens received by the laboratory. The increased work-load for 1981 is evident, since the total of 19,208 assays was 8% higher than the figure of 17,840 for 1980.

In 1981 the antiepileptic drugs (carbamazepine, ethosuximide, phenobarbitone, phenytoin, sulthiame and valproic acid), the antiasthmatic drug theophylline and narcotic scans (mainly for the Alcohol and Drug Authority) together accounted for the majority of the analyses being 37%, 20% and 20% of the total assay count, respectively. Compared to 1980, there were increased numbers of analyses for theophylline, carbamazepine, quinidine, narcotic scans for the Alcohol and Drug Authority and forensic work. On the other hand there were decreased numbers for disopyramide, sulthiame, cholinesterase and clinical narcotic scans.

Work-load was also measured in terms of Canadian Work Units. During 1981 the individual analyses and test procedures were accurately timed for assignment of corresponding Work Unit Standards. In 1981, there was a total production of 849,449 Canadian Work Units and this also was an 8% increase on the figure of 786,900 for 1980.

Since one Canadian Work Unit is equivalent to one minute of productive time, the proportion of total work time spent on various analyses can be calculated. In 1981, clinical drug assays for antiepileptic drugs and theophylline accounted for 27% and 13% respectively of the yearly total of analysis time, while narcotic scans (mainly for the Alcohol and Drug Authority) and drug screens (mainly clinical) accounted for 13% and 24% respectively of the total. These four categories together accounted for 77% of the total analysis time.

THERAPEUTIC DRUG MONITORING

Therapeutic monitoring of drug levels in clinical samples is a major aspect of the service provided by the Unit and accounted for 67% of all assays in 1981.

Clinical drug assays are now offered for a total of 16 drugs. Since a plasma concentration/clinical effect relationship has been demonstrated for some tricyclic antidepressant drugs (amitriptyline, nortriptyline and imipramine) and for the antiarrhythmic, mexiletine, these drugs have been added to the repertoire of clinical drug assays. The acetylator pheno-typing test is another recent addition to the range of procedures offered and can be used clinically to help predict dosage and the possibility of toxicity with some drugs. There are increasing numbers of requests from physicians for all of these new tests.

The majority of requests for therapeutic monitoring drug assays are for the antiepileptic drugs and for theophylline; one aspect of the theophylline assay service is the on-line facility provided for out-patients in clinics at Sir Charles Gairdner and Fremantle Hospitals. There is an increasing demand for assay of antiarrhythmic drugs and this probably reflects the increasing awareness by cardiologists of the value of monitoring levels of these important drugs.

Meaningful interpretation of clinical drug levels required certain patient-related information and details of the drug dosage regimen (e.g. dose, dosage interval, drug formulation, time of last dose). So as to improve the yield of this information, two new drug assay request forms have been designed. The request form for specimens coming from Sir Charles Gairdner Hospital was modified during 1981. The new form has now been in use for many months and is considered to be a significant improvement on the previous form. In addition, a new drug assay request form for samples coming through the general State Health Laboratory system has been designed and will come into use early in 1982.

EMERGENCY DRUG SCREENS

The drug screen procedure which detects about 130 drugs that are commonly prescribed or illicitly used is available to assist in the emergency management of patients suffering from drug overdosage. During 1981 there was a modest increase in the number of requests for this service.

NARCOTIC SCANS

The narcotic scan procedure detects narcotics and some other drugs in urine. During 1981, more than 98% of the 3,835 requests for this scan came from the Alcohol and Drug Authority.

FORENSIC WORK

There was a 40-50% increase in 1981 in the number of analyses (drug screens and quantitative assays) conducted on samples submitted by the State Health Forensic Pathology Department.

QUALITY CONTROL OF CLINICAL DRUG ASSAYS

The Unit continued its participation in the international quality control programme run by Professor A. Richens from Cardiff University. Quality control specimens were received monthly from this source for theophylline and for all of the antiepileptic drugs except sulthiame. In addition, the level of in-house quality control on all clinical drug assays was increased during the year. These internal and external quality control programmes will be continued so as to maintain performance at the present high standard. During 1981 this laboratory was placed 9th in the total of 235 participating laboratories in the free world.

COMPUTERISATION

During the latter part of 1981 the recording of assay request details and results was computerised. The transition to computer-based recording proceeded smoothly and many advantages of the new system are already apparent. For example, since computerisation it is possible to quickly retrieve information, a very useful facility for answering physicians' telephone requests for drug assay results. Secondly, it is now possible to collect with relative ease the requisite operational statistics (including Canadian Work Units) for the laboratory. Thirdly, the computer facilitates the monitoring and management of laboratory work flow.

RESEARCH AND DEVELOPMENT

1. An HPLC method for the measurement in plasma of the tricyclic antidepressants, amitriptyline, imipramine and nortriptyline has been developed. Since nortriptyline and desipramine are pharmacologically active metabolites of amitriptyline and imipramine, respectively, the assay method has been designed to also measure these metabolites.

2. A method for the simultaneous analysis by HPLC of the antiarrhythmic drugs mexiletine, disopyramide (and its active N-desalkyl metabolite) and quinidine has been developed. There is an increasing demand by cardiologists for plasma level measurements of these drugs.

3. An HPLC method has been developed for the simultaneous analysis in plasma of procainamide and its pharmacologically active metabolite, N-acetylprocainamide. Plasma levels of these compounds are used to assist in setting antiarrythmic therapy.

4. A simple method has been developed for the HPLC analysis of sulphapyridine and its acetylated metabolite in plasma. This assay will be used to evaluate new and possibly improved ways of determining the acetylator phenotype of patients receiving sulphasalazine. The method will also be used in a collaborative research study of the therapeutic and pharmacokinetic properties of sulphasalazine in patients with rheumatoid arthritis.

5. An HPLC assay for nitroglycerin in injectable dosage forms has been developed. This assay is used routinely to monitor the potency and stability of nitroglycerin preparations

manufactured in the Royal Perth Hospital Pharmacy.

6. Similarly, an HPLC assay for salbutamol was developed during 1981 to monitor stability of this drug in intravenous fluids.

7. An HPLC assay for metronidazole in plasma has been developed. This method has been used in a collaborative study with Sir Charles Gairdner Hospital staff to compare the plasma metronidazole levels after rectal administration of suppositories with those after intravenous administration of a relatively expensive intravenous preparation.

8. The clinical and forensic drug screen procedures have been further developed by incorporating additional extraction and chromotography steps. These modifications have increased the number of drugs detected and provided confirmation of detection procedures for some important drugs.

9. A method for the determination of angiotensin converting enzyme in serum was established in the laboratory. Hippuric acid was cleaved from a synthetic tripeptide by the enzyme and then quantified by HPLC. The procedure was used in a research project which examined the activity of angiotensin converting enzyme in patients with gastrointestinal disease.

RESEARCH PUBLICATIONS

Hall, R.W., Swan, G.T., Oh, T.E. and Hackett, L.P. (1981). A pharmacy approach for modifying prescribing patterns in a hospital. 15th Fed. Conf. Soc. of Hospital Pharmacists of Australia, Melbourne, Sept. 1981.

Madsen, B.W., Tarala, R.A. and Paterson, J.W. (1980) A hand-held calculator program for individualised dosage adjustment of intravenous theophylline in acute asthma. Eur. J. Clin. Pharmacol. 17, 393-399.

9. COMBINED HAEMATOLOGY SERVICE

ORGANISATION OF THE SERVICE

From 1st April 1981 Dr. D. Kennett was appointed as Head of this Service in place of Dr. J. Raven. The other major organisational change during the year was the establishment of a permanent full seven day, twenty-four hour per day service after an initial six month trial period. This was necessitated by the increasing emergency work-load at the Sir Charles Gairdner Hospital. Four additional technologists appointed for this service are rostered on afternoon and night shifts and weekends, while service on Saturday mornings and Public Holidays is provided by rostered overtime. This full-time service has functioned efficiently and has relieved the previous heavy burden of overtime falling on laboratory staff.

WORK OF THE SERVICE

The work-load of the Service remains at essentially the same level as in the previous year, with approximately 63% of the work-load coming from Sir Charles Gairdner Hospital in-patients and out-patients. Assessment of the work-load is now based on the Canadian Work Unit System. Regular surveys of Vietnamese immigrants continue and routine haematological screening has proved worthwhile in detecting iron deficiency and haemoglobin abnormalities. During the year the following abnormalities have been found amongst samples from refugees referred by the State Community Health Department. (Samples referred from Darwin have not been included).

α-thalassaemia trait	-	32 cases
β-thalassaemia trait	-	21 cases
Hb.E trait	-	37 cases
Hb.E/α-thalassaemia double heterozygotes	-	7 cases
Hb.E/β-thalassaemia double heterozygotes	-	1 case
Variant thalassaemia trait or high Hb.F levels otherwise not classified	-	8 cases

Routine screening of peripheral blood films for malarial parasites, on the other hand, has had minimal yield, probably because of chemotherapy which is now routinely given to these immigrants.

The distribution of work-load in different sections of the laboratory is as follows:-

Routine Laboratory	42%
Blood Bank and Immunohaematology	28%
Coagulation	10%
Special Investigations	20%

This is not significantly different from the previous year. In addition, the Service, through Dr. J. Woodliff, organises a quality control programme for routine blood counts, blood banking and coagulation screening tests and a "Test and Teach" programme, which is distributed to all State Health Laboratory Services' branch laboratories and to several other laboratories in this State.

Antenatal serology referred to this laboratory provides an interesting example of the changing pattern which may occur in laboratory tests over a decade. Thus:-

	1971	1981
Number of patients screened for antenatal serology	3,600	6,232
Number of patients found to have red cell antibodies	63(1.75%)	358(5.74%)
- likely to be clinically significant ("warm" antibody)	44	65
- likely not to be clinically significant ("cold" antibody)	19	281
Number of patients with rhesus antibodies	41	52
- anti D (alone or in combination)	36(1.0%)	29(0.46%)
- multiple rhesus antibodies	7	13
- rhesus antibodies other than anti D	11	33

The decrease in patients developing anti-D results from prophylactic immunisation of pregnant women at risk during this time. However, as reported from other centres, the protection afforded is not complete and there is no protection against rhesus antigens other than D. The increased number of "cold" antibodies detected reflects the improvements in techniques and standards and the greater specialisation of staff in the blood bank section rather than a genuine change in frequency of these antibodies which were previously considered unimportant. This illustrates how participation in external quality control programmes can improve the standards of a laboratory.

New techniques introduced to the department during the year include screening for antiplatelet antibodies, two dimensional immunoelectrophoresis for factor VIII variants and preliminary work on in vitro agar culture of bone marrow for study of disordered haematopoiesis.

Results of all tests from country and metropolitan branch laboratories are now sent by telex whenever possible to overcome delays which were occurring through the postal system.

STAFF

Dr. G.P.M. Crawford completed his association with this department at the end of December to take up an appointment at Fremantle Hospital. The department continued to provide periods of training for State Health Laboratory Service technologists moving to country branches and to ADAB/WAIT health technicians. The department also provided locum cover for Fremantle Hospital from January - June, due to the resignation of their haematologist, and members of the department are regularly involved in teaching of undergraduate and postgraduate students and at W.A.I.T.

VISITORS TO THE COMBINED HAEMATOLOGY SERVICE

Dr. G. Lopez	-	Haematologist, Kuala Lumpur Hospital
Dr. G. McDonald	-	Haematologist, Royal Infirmary, Glasgow
Dr. L. Aston	-	Haematologist, Basingstoke Hospital, U.K.

VISITS

Dr. D. Kennett attended the Haematology Society and R.C.P.A. Annual meetings in Adelaide (August 1981).

Dr. J. Raven attended the meeting of the European African Division of the International Society of Haematology in Athens (September 1981).

Dr. J. Woodliff while on leave in the United Kingdom visited a number of centres and attended the annual meeting of the British Society for Haematology in Sheffield.

Mrs. V. VanRooyen spent three days in Dr. Metcalf's department at the Walter and Eliza Hall Institute, Melbourne, studying marrow agar culture techniques (February, 1981).

PUBLICATIONS

F.T. Cordingley and A. Rajanayagam:
Aeromonas Hydrophila Bacteraemia in Haematological Patients.
Med. J. Aust. 1, 364, 1981.

10. HISTOPATHOLOGY AND MORBID ANATOMY

GENERAL

During 1981 the Bunbury laboratory and the Clinical Pathologist stationed at Bunbury took over routine surgical biopsy work, autopsies, cytology and other pathology tasks in the South West region from the Central Laboratories. This is reflected in Table VI.A and accounts for some changes in specimens received in the Central Laboratories (Table I.A) and Branch Laboratories (Table I.B). The new service has been well received and embraces the Pinjarra-Mandurah area, Bunbury, Collie, Busselton and Manjimup.

STAFF

Dr. T. Kyle commenced in January as a Registrar Pathologist and resigned in December.

PUBLICATIONS

Ojeda, V.J. and Glancy, R.J.
Test and Teach, Parapineal Germinoma (Atypical Teratoma),
Parts 182, Pathology.

EQUIPMENT

Two vacuum impregnation processors for paraffin was tissue embedding were installed. These machines are capable of processing 300 tissue blocks each at one time and replace machines which processed only 60 tissue blocks when fully loaded.

In January a punch tape was coupled to the ECS4500 word processor as an

interim measure for telexing biopsy reports. This was replaced in July with an Alongren AM700E telex interface to enable direct telexing. The telexing of all country biopsy reports has been successful in speeding their delivery to branch laboratories.

MORTUARY

During the winter the Mortuary experienced some problems with flooding and electrical failures, possibly due to the building programme overhead. Some water damage has occurred in this area.

11. COMBINED CYTOLOGY SERVICES

The Combined Cytology Service has completed its second year of operation. In the past twelve months the unit has become more integrated and many of the original aims are gradually being realised. Work increased during the year (see Table VI.B). Comparisons with years pre-amalgamation are difficult: cases received from State Health Laboratories are mainly cervical in nature, those from the Sir Charles Gairdner Hospital have a bias toward sputa.

STAFF

The proposed staffing level outlined in the 1980 report has been achieved.

Mr. V. Williams has been appointed Technologist-in-Charge of the Combined Unit.

ADMINISTRATION

As the bulk of 29,000 reports is handled by mainly one typist, considerable difficulties were found. The installation of a word processor would increase the efficiency and productivity of the typist and provide much needed relief to an overworked section of the unit.

EDUCATION

Five staff members completed courses this year at Mount Lawley Technical College.

Miss C. Edwards, Miss G. Digney obtained the Diploma in Cytology and Miss J. Clarke and Miss A. Knowles the Certificate in Cytology.

Mr. R. McGuigan has been successful in gaining the Certificate in Laboratory Science.

The weekly cytology review sessions continued in 1981.

WORK-LOAD

Total specimens received in the Combined Service increased by 3.0% over those in 1980. Hospital out-patient specimens increased by 54%, while in-patients decreased by 6.6%. Total increase in H.U.P.S. specimens is 6.0% over 1980.

WORKSHOP/CONFERENCES

Dr. G. Sterrett attended the Annual General Meeting of the Australian Society of Cytology held in Adelaide and presented a paper "Fine Needle Aspiration of Mediastinal Lesions". Dr. Sterrett and Mrs. Patsy Swan presented a paper on the "Incidence of Actinomyces in Cervical Smears from patients with Intra Uterine Contraceptive Devices" at the November meeting of the W.A. Branch of the Australian Society of Cytology.

PUBLICATIONS

G. Sterrett, D. Whitaker, K.B. Shilkin, M.N-I. Walters.
Fine Needle Aspiration of Mediastinal Lesions.
Cancer (accepted for publication 1981).

G. Sterrett, D. Whitaker, J. Glancy.
Fine Needle Aspiration of Lung, Mediastinal and Chest Wall.
Pathology Annual (accepted for publication 1981).

D. Whitaker, J.M. Papadimitriou and M.N-I. Walters.
The Mesothelium : A Cytochemical Study of "Activated" Mesothelial Cells.
Journal of Pathology (accepted for publication 1981).

D. Whitaker, J.M. Papadimitriou and M.N-I. Walters.
The Mesothelium : Its Fibrinolytic Properties.
Journal of Pathology (accepted for publication 1981).

D. Whitaker, J.M. Papadimitriou and M.N-I. Walters.
The Mesothelium and its Reactions - A Review.
C.R.C. Reviews in Toxicology (accepted for publication 1981).

D. Whitaker and K.B. Shilkin.
Carcinoembryonic Antigen in the Tissue Diagnosis of Malignant Mesothelioma.
Lancet I. 1369 (1981).

12. FORENSIC SERVICES

FORENSIC PATHOLOGY

The volume of work did not change materially during the year, nor did the staff position. At the end of the year, some difficulties were brought to light regarding the removal of tissues for transplantation and investigation as to effects of radiation on body burden of radio-isotopes. It was proposed to amend the law relating to the transplantation of living tissues or those from the recently dead, and the conduct of autopsies.

Conferences etc.

Dr. D. Pocock attended the Forensic Symposium in Sydney.

FORENSIC BIOLOGY

Statistics for 1981 show there was an overall increase of 20% in the number of cases received from the Police Department and other authorities. A breakdown of these figures shows that the number of sex-related crimes was much the same as the previous year with an increase in crimes of violence.

A quality control programme was established in 1981 in South Australia and includes Forensic Biology laboratories in all States. So far no incorrect grouping has been made by any laboratory.

During the latter part of the year there was a dramatic increase in the number of meat samples received for the identification of species. This was a direct result of the controversy in the Eastern States regarding the export of beef containing horse and kangaroo meat. A large number of samples were received from the Department of Primary Industry, until in mid-September they established their own species-identification facilities. The facilities were set up with assistance rom the Forensic Biology section and we have since received occasional samples from them for confirmation.

The Commonwealth Police Department have sent a number of meat samples and continue to use our section for this purpose. There has also been an increase in activity from our Public Health Department due to the reaction by the public to the Eastern States controversy.

Statistics

Cases from Police Department:	Sexual offences	124
	Crimes of violence etc.	108
		232
Cases from other authorities		49
	Total Cases:	281
Total items received		3,199

Meat samples for species identification:	Department of Primary Industry	293
	Public Health Department	114
	Federal Police Department	11
	Total:	418

13. CYTOGENETICS UNIT

WORK-LOAD

1,784 specimens were received. Of these 590 were amniotic fluid specimens, and increase of 20% on 1980 figures for amniotic fluid cell culture.

NEW TECHNIQUES

1. Routine Laboratory

   Several new techniques for the examination of bone marrow specimens are being developed. Synchronization of cell cultures and examination of prometaphase chromosomes from selected patients has begun.

2. Research and Development Laboratory

   Cytogenetics work on approximately 110 neoplastic specimens was carried out.

TEACHING

Teaching duties have continued as before.

VISITORS

Visitors to the laboratory in 1981 included:-

1. Professor Sir Lance Townsend (Melbourne).
2. Miss Sarah Mould (Salisbury, United Kingdom).
3. Dr. Prakoso and Dr. Wiknjosastro (Indonesia).

The latter two visitors were especially interested in developing liaison with this laboratory for prenatal cytogenetic diagnosis on specimens of amniotic fluid sent from Indonesia. One case has already been successfully completed, and arrangements have been made for future co-operative efforts.

DEVELOPMENT WORK

Early in 1981 it was decided to bring into being a new section of the Cytogenetics Unit, State Health Laboratory Services : the primary function of this new section was to investigate the part which cytogenetics can play in the diagnosis of neoplasms in humans.

The first field of endeavour was to investigate the chromosome findings in peritoneal washings and ascitic fluids from gynaecology patients with cancer. This work was done at the request of Dr. A. McCartney, Surgeon-Oncogynaecologist at the King Edward Memorial Hospital for Women in Western Australia. A portion of all fluids sent to Cytogenetics was investigated by the Cytology Laboratory at that hospital and findings in the two laboratories compared. Studies were also made on solid neoplasms kindly supplied by the laboratory at King Edward Memorial Hospital.

WORK DONE ON SPECIMENS FROM KING EDWARD MEMORIAL HOSPITAL

During the year 91 specimens were received from King Edward Memorial Hospital from 76 women, known or suspected to be suffering from malignant neoplasms. The nature of these specimens and the cytogenetic findings are as follows:-

1. Peritoneal washings (65 specimens received)

SITE OF TUMOUR									
CERVICAL		ENDOMETRIAL		UTERINE		OVARIAN		OTHER	
Patients	Results	Patients	Results	Patients	Results	Patients	Results	Patients	Results
19	Negative	24	Negative	3	Negative	7	Negative	3	Negative
1	Positive	1	Positive	2	Positive	5	Positive	-	

"Positive" = evidence of malignancy, viz abnormal chromosome findings.

2. Ascitic Fluids

A total of eight samples was received, one from a patient with cervical malignancy and seven from patients with ovarian malignancy.

The single specimen from cervical cancer proved positive and six of the seven from ovarian cancers were positive.

3. Solid Tumour Tissue

In all, samples were received from 18 tumours.

Findings: Positive findings were made from four samples, of which one was G-banded successfully.

There was no growth from five samples.

Five samples showed only normal chromosomes possibly due to overgrowth by normal cells.

Two samples were predominantly normal cytogenetically, except for a few minor defects such as loss of one X chromosome or and extra B chromosome in some of the cells.

In the remaining two samples, growth of abnormal cells ("positive") started but was overtaken by normal fibroblasts.

Thanks to space and equipment being made available in the laboratories at King Edward Memorial Hospital it was possible to set up tests for direct processing of chromosomes on some fluids. In a few of these cases the direct technique proved more successful than the culture methods.

OTHER CANCER CYTOGENETICS WORK DONE

Cytogenetics experience was gained from working with established cell lines, viz:-

1. Nine cell lines from breast cancer: these were supplied by the Endocrinology Research Unit, King Edward Memorial Hospital, and included three cell lines from U.S.A.

2. Five cell lines from brain tumours supplied by the Neuropathology Department, Royal Perth Hospital.

3. University of W.A. Cytology Department supplied three different tumour cell cultures, a mesothelioma tissue culture from a rat and some normal rat tissue for culture.

Cytogenetics work, including G-banding was done on all above lines.

PUBLICATIONS

Two papers have been published:-

1. Pregnancy in Bloom's syndrome.
   Clinical Genetics 1981 : 19 : 156-158.

2. Is there a monosomy 10qter syndrome?
   Clinical Genetics 1981 : 20 : 33-35.

SEMINAL ANALYSIS

555 specimens were received for seminal analysis. The turn around time for reporting is still slow.

STAFFING

Staffing has been a chronic problem this year due to a combination of factors including illness, retirement and the transfer of a Senior Technologist to research/developmental work.

A serious problem was faced in August - October 1981 when large numbers of tissue culture failures occurred. The underlying cause for these failures was most probably improper cleaning of glassware at one of the teaching hospitals used in the collection of amniotic fluid samples, although evidence for this was not conclusive. This episode imposed a severe burden on the Technologist in Charge, and it is to Miss Watson's credit that she persisted with the work until the problem was eventually resolved.

TABLE I A

STATE HEALTH CENTRAL LABORATORIES (INCLUDING COMBINED UNITS)

SPECIMENS ANALYSED AND AUTOPSIES PERFORMED

1981

	1981	1980	% Change
Clinical Bacteriology	12,067	12,053	+ 0.12
Virology	45,557	44,664	+ 2.00
Mycology	11,294	11,865	- 4.81
Mycobacteriology	7,943	9,133	- 13.03
Sexually Transmitted Diseases	39,742	38,795	+ 2.44
Clinical Enteric Section	13,543	15,888	- 14.76
Parasitology	11,918	14,382	- 17.13
Foods	8,908	4,387	+ 103.05
Waters	28,898	24,250	+ 19.17
Environmental	19,491	18,529	+ 5.19
Phage Typing	4,470	4,155	+ 7.58
Cross Infection	4,012	2,556	+ 56.96
Serology	50,059	55,913	- 10.47
TOTAL MICROBIOLOGY:	257,902	256,570	+ 0.52
Biochemistry (including Radioisotopes)	171,781	168,910	+ 1.70
Toxicology	17,674	16,425	+ 7.60
Haematology	85,680	87,339	- 1.90
Cytogenetics	2,339	2,250	+ 3.96
Histopathology	17,429	20,710	- 15.84
Cytology	29,132	23,664	+ 23.11
Autopsies	1,271	1,251	+ 1.60
TOTAL PATHOLOGY:	325,306	320,549	+ 1.48
GRAND TOTAL:	583,208	577,119	+ 1.06

NOTE: Serology is now regarded as part of the Microbiology Service, not the Pathology Services.

TABLE I B

STATISTICS - BRANCH LABORATORIES

1980 - 1981

BRANCH	1981	1980	% Change
Albany	21,073	19,404	+ 8.6
Armadale	5,752	4,958	+ 16.0
Broome	5,290	5,170	+ 2.3
Bentley	12,887	9,086	+ 41.8
Bunbury	21,199	16,098	+ 31.7
Busselton	9,155	9,826	- 6.8
Carnarvon	9,366	8,907	+ 5.2
Collie	4,769	4,473	+ 6.6
Dampier	8,601	9,268	- 7.2
Derby	17,939	21,615	- 17.0
Esperance	5,707	5,744	- 0.6
Geraldton	25,850	35,937	- 28.1
Katanning	4,523	4,971	- 9.0
Kalamunda	2,931	2,522	+ 16.2
Kununurra	*	*	
Manjimup	11,658	11,300	+ 3.2
Merredin	9,290	9,320	- 0.3
Mount (Jan-May '80)	-	1,793	N/A
Narrogin	13,159	15,395	- 14.5
Newman	872	525	+ 66.1
Northam	10,046	9,051	+ 11.0
Osborne Park	19,805	21,171	- 6.4
Pinjarra	12,888	13,072	- 1.4
Rockingham	11,775	12,871	- 8.5
Port Hedland	19,762	21,568	- 8.4
Swan Districts	12,930	14,047	- 8.0
Tom Price	3,838	3,493	+ 9.9
Wyndham	6,731	7,274	- 7.5
Wanneroo	4,130	1,253 (Aug-Dec '80 1st year)	N/A
TOTAL	291,926	300,112	- 2.7

*Included with Wyndham

TABLE II A

CLINICAL BACTERIOLOGY - SPECIMENS 1981

	1981	1980	% Change
Medical Practitioners	1,922	1,498	+ 28.3
Country Hospitals	1,480	1,229	+ 20.4
Metropolitan Hospitals	750	1,039	- 27.8
Mental Health Services	820	507	+ 61.7
Department of Corrections	490	903	- 45.7
Family Planning Association & Women's Health & Community Centre	2,501	2,150	+ 16.3
Special Treatment Clinic, Queen Elizabeth II Medical Centre	2,164	2,595	- 16.6
Sexual Assault Referral Centre	300	203	+ 47.8
Aboriginal Medical Service	850	431	+ 97.2
Forensic etc.	150	147	+ 2.0
Referred Cultures	265	331	- 19.9
Others	375	1,020	- 63.2
TOTAL	12,067	12,053	+ 0.1

TABLE II B

SEXUALLY TRANSMITTED DISEASES - SPECIMENS 1981

	1981	1980	% Change
Specimens for N. gonorrhoeae	37,897	36,096	+ 5.0
Number Positive	831	618	
% Positive	2.2	1.7	
Specimens for Syphilis (D.G.I.)	265	264	-
Number Positive	19	17	
% Positive	7.2	6.4	
Other	1,580	2,435	- 35.1
TOTAL	39,742	38,795	+ 2.4

TABLE II C

PUBLIC HEALTH ENTERIC DISEASES UNIT - SPECIMENS 1981

LABORATORY SECTIONS	SPECIMENS	STATE PHD/SHLS	COMMON-WEALTH	LOCAL HEALTH	MKSSD	CTWS	PUBLIC HOSPITAL	PRIVATE SERVICE	OTHER	POSITIVE FOR PATHOGENS	TOTALS 1981	TOTALS 1980
CLINICAL ENTERIC BACTERIOLOGY SECTION	Human faeces	10,601	1,600	637			14	99		1,290	12,951	
	Cultures referred (human)	305	35				139	113		530	592	
	TOTAL:	10,906	1,635	637			153	212		1,820	13,543	15,888
PARASITOLOGY SECTION	Faeces	11,885								1,320	11,885	
	Skin scrapings	20								2	20	
	Parasites for identif.	13								10	13	
	TOTAL:	11,918								1,332	11,918	14,382
FOOD HYGIENE SECTION	Foodstuffs	5,530	599	2,402					377	1,011	8,908	
	TOTAL:	5,530	599	2,402					377	1,011	8,908	4,387
WATERS SECTION	Water supplies (distrib.)	311	2,185	4,363	8,587	3,540				664	18,986	
	Bores and wells	10	84	833	267	73				52	1,267	
	Reservoirs and tanks	61	15	292	349	238				44	955	
	Swimming pools	1,592	507	5,576	6	9				755	7,690	
	TOTAL:	1,974	2,791	11,064	9,209	3,860				1,515	28,898	24,250
ENVIRONMENTAL SECTION	Sewerage water & drains	625	67	577	1,485	51		12		523	2,817	
	Abattoir & meat process	499		288	8	1		6		329	802	
	Natural waters & soil	1,854		1,536	333	9		40		236	3,772	
	Water catchment & supply	21		5	3,142	1,053				566	4,221	
	Animals	4,937		3	14			2	1,781	1,500	6,737	
	Cultures referred (Environment)	101						982	59	1,092	1,142	
	TOTAL:	8,037	67	2,409	4,982	1,114		1,042	1,840	4,246	19,491	18,529
	GRAND TOTAL:	38,365	5,092	16,512	14,191	4,974	153	1,254	2,217	9,924	82,758	77,436
	(1980 for comparison:	36,374	4,798	13,489	15,484	4,800	157	1,722	612	9,848	77,436)	

TABLE II D

MYCOBACTERIA - SPECIMENS 1981

	1981	1980
Queen Elizabeth II Medical Centre	2,488	3,070
Perth Chest Clinic	784	1,117
Repatriation General Hospital & Kalgoorlie	750	906
Others	2,786	3,432
Cultures Referred	383	146
Smears for M. leprae	475	462
TOTAL	7,666	9,133
Positive Specimens - Mycobacteria - Atypical	528	536
Positive Specimens - M. tuberculosis/ M. bovis	304	213
TOTAL	832	749

TABLE III

CLINICAL BIOCHEMISTRY - CANADIAN WORK UNITS 1981

	1981	1980	% Change
Sir Charles Gairdner Hospital - In-patients	1,227,585	1,197,146	+ 2.5
Sir Charles Gairdner Hospital - Out-patients	605,350	561,261	+ 7.9
TOTAL	1,832,935	1,758,407	+ 4.2
State Health Laboratory Services	1,045,408	1,027,911	+ 1.7
Commonwealth Instrumentalities	102,349	120,553	- 15.1
Surveys, Research etc.	45,495	69,502	- 34.5
TOTAL REQUESTED	3,026,187	2,976,373	+ 1.7
Standards, Quality Control etc.	709,943	897,368	- 20.9
TOTAL WORK UNITS	3,736,130	3,873,741	- 3.55

TABLE IV

COMBINED UNIT OF CLINICAL PHARMACOLOGY & TOXICOLOGY

SPECIMENS 1981

	1981	1980	% Change
CLINICAL			
Drugs	15,400	14,377	+ 7.1
Alcohol	377	279	+ 35.1
Pesticides	373	412	- 9.5
Miscellaneous	519	665	- 22.0
FORENSIC			
Drugs	377	209	+ 80.4
Alcohol	618	483	+ 28.0
TOTAL	17,664	16,425	+ 7.5

TABLE V

HAEMATOLOGY - CANADIAN WORK UNITS 1981

	1981	1980	% Change
Sir Charles Gairdner Hospital - In-patients	1,574,192		
Sir Charles Gairdner Hospital - Out-patients	174,521		
TOTAL	1,748,713	1,776,806	- 1.58
State Health Laboratory Services	631,744	597,031	+ 5.81
State Health Laboratory Services Surveys	39,111	49,065	- 20.29
University and Repatriation General Hospital	1,378	10,414	- 86.77
TOTAL REQUESTS	2,420,946	2,433,316	- 0.51
Quality Control etc.	373,694	345,382	+ 8.20
TOTAL WORK UNITS	2,794,640	2,778,698	+ 0.57

TABLE VI A

HISTOPATHOLOGY & MORBID ANATOMY - SPECIMENS ETC. 1981

	1981	1980	% Change
Autopsies - Central	1,271	1,251	
Autopsies - Bunbury	64	-	
TOTAL AUTOPSIES	1,335	1,251	+ 6.7
Surgical Biopsies - Central	17,429	20,701	
Surgical Biopsies - Bunbury	3,616	-	
TOTAL SURGICAL BIOPSIES	21,045	20,701	+ 1.7
Blocks Cut (Autopsies)	18,932	18,467	
Blocks Cut (Biopsies) - Central	42,346	47,346	
Blocks Cut (Biopsies) - Bunbury	7,320	-	
TOTAL BLOCKS CUT (BIOPSIES)	49,666	47,346	+ 4.9
Frozen Sections - Metropolitan	457	531	
Frozen Sections - Bunbury	37	-	
TOTAL FROZEN SECTIONS	494	531	- 7.0

TABLE VI B

CYTOLOGY - SPECIMENS 1981

Since this is the first statistical report after the amalgamation, results are not easily comparable with those for 1980.

	1981	1980	% Change
Specimens:			
State Health Laboratories	24,368	23,664	+ 3.0
Sir Charles Gairdner Hospital - In-patient	3,259	-	(6.6%)
Sir Charles Gairdner Hospital - Out-patient	1,349	-	(54.0%)
TOTAL	28,976	-	
Slides:			
State Health Laboratories	31,256	-	
Sir Charles Gairdner Hospital - In-patient	13,984	-	
Sir Charles Gairdner Hospital - Out-patient	5,361	-	
TOTAL	50,601	-	

TABLE VII A

SEROLOGY - SPECIMENS 1981

TEST CATEGORY	1981	1980	% Change
Treponemal Serology	39,699	43,701	- 9.16
Bacterial Serology	3,633	4,493	- 19.14
Viral, Rickettsial, Helminthic and Protozoal	2,774	2,812	- 1.35
Hormone Serology	734	814	- 9.83
Others	3,219	4,093	- 21.35
TOTAL	50,059	55,913	- 10.47

Notifiable Disease Cases	1981	1980
Syphilis	361	408
Leptospirosis	22	26
Brucella	6	9
Hydatid	2	5
Filaria	4	1
Typhus	-	2
Malaria	1	-
Amoebiasis	1	-

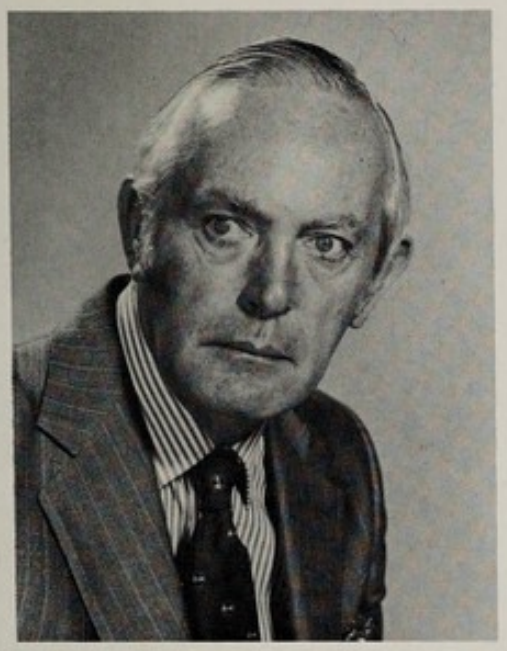
TABLE VII B

CYTOGENETICS - SPECIMENS 1981

	1981	1980	% Change
Chromosome Analysis	1,784	1,729	+ 3.2
Seminal Analysis	555	521	+ 6.5
TOTAL	2,339	2,250	+ 4.0

Appendix III

CHEST AND TUBERCULOSIS SERVICES

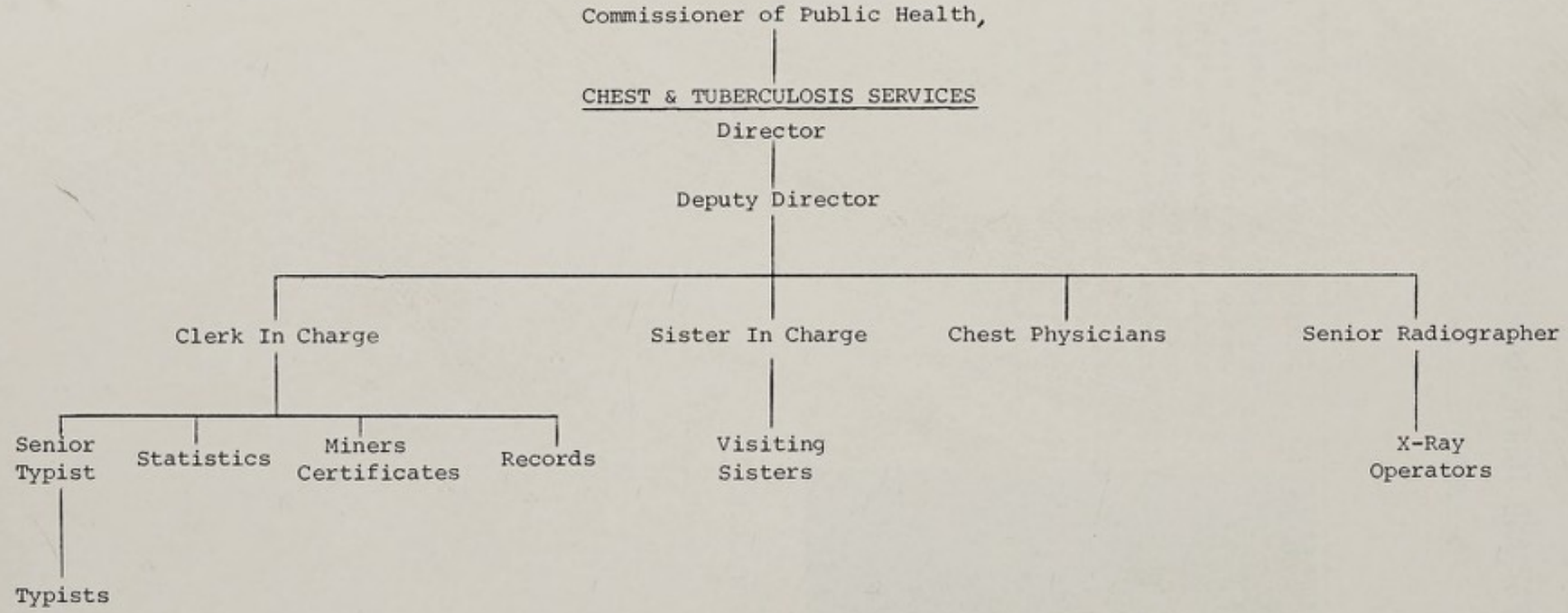


J.T. Cassidy
M.D., F.R.C.P., F.R.A.C.P.
Director

Senior Staff

Director: Dr. J.T. Cassidy
Deputy Director: Dr. H.S. Chan
Sister in Charge: Sister H. Gilgan
Senior Radiographer: Mr. R. Ward
Clerk in Charge: Mr. R. Fryer

CHEST AND TUBERCULOSIS SERVICES - ORGANIZATION CHART



CHEST AND TUBERCULOSIS SERVICES

As in previous years the work load for this year showed very little variation over 1980.

The figures are as follows:

		1980	1981
Attendances at—	Perth Chest Clinic	11,436	11,735
	Fremantle Chest Clinic	1,924	1,966
	Kalgoorlie Chest Clinic	94	63
	Domiciliary Assessment	32	44
		13,486	13,808
Country Chest X-Ray Film Readings—			
	Chest Clinic Requests	815	736
	Other	13,878	11,177
		14,693	11,913
Sisters Home Visits—			
	Supervision of anti-TB Drug Therapy	2,448	2,758
	Other Visits to Patients on TB Register	865	852
	Non TB Chest Patients	1,275	1,195
		4,588	4,805

TUBERCULOSIS

NOTIFICATIONS

The incidence rate for 1981 for new cases (per 100,000) of the population was 10.9 as compared with an incidence rate of 12.4 in 1980. This figure has varied little in the past few years ranging from 11.7 in 1978 to 13.7 in 1979 and 12.4 in 1980. 160 patients were notified during the year and of these 142 were new cases. There were four transfers in and fourteen reactivations.

The sex ratio for pulmonary disease showed the usual male preponderance about a 2:1 ratio.

Of the total 160 notifications 102 of these were born outside Australia. Of these 102, 56 were Vietnamese refugees (including one transfer in).

At the end of the year there were 120 cases of active pulmonary tuberculosis on the Register. The change in the extent of disease since 1973 when compulsory x-rays were phased out is shown below and no significant fluctuation is noted.

Year	Pleural Effusion	Minimal	Moderate	Advanced
1973	4.6	40.9	41.8	12.7
1974	6.7	34.6	46.2	12.5
1975	0.9	42.2	42.2	14.7
1976	2.4	39.8	38.5	19.3
1977	1.8	42.0	48.2	8.0
1978	0.7	52.5	38.0	8.8
1979	1.6	44.5	39.8	14.1
1980	1.5	57.4	32.3	8.8
1981	2.4	61.6	30.4	5.6
Average 1973-81	2.5	46.2	39.7	11.6

NON-PULMONARY TUBERCULOSIS

Non pulmonary notifications for the year were 22 which included 7 atypicals.

BACTERIOLOGY

60 of the 125 new pulmonary cases were bacteriologically positive. Of these 40 were positive for M TB.

No case of Bovine tuberculosis was notified during the year.

Drug resistant organisms were recovered from four Vietnamese refugees, one was resistant to both INH and Streptomycin.

REACTIVATIONS

There were 14 reactivations. Of these six had never had any anti-tuberculous drugs. Four of the remainder came from Vietnam or East Timor and had never had any adequate chemotherapy. Another case was treated in the early 1950's as a case of M TB but now has reactivated and is excreting M. intracellulare which probably was the cause of the original infection. Of the three remaining reactivations, one had definitely very inadequate chemotherapy, the compliance of the second one was very doubtful and as regards the third and final case, no bacteriological proof of the reactivation has as yet been obtained. It still remains true therefore that no case that has had what we now consider to be adequate treatment has reactivated.

ATYPICAL TUBERCULOSIS

28 of the notifications were for atypical tuberculosis. These included six cases of cervical adenitis, all caused by Group III organisms. Of the lung infections, all were caused by M. intracellulare except three which were caused by M. kansasii.

MIGRANTS AND REFUGEES

1,199 Vietnamese migrants arrived during 1981 compared to 1,332 for the previous year. As already stated, 55 of these refugees were notified. This figure has remained virtually unchanged over the past few years. Of these notified cases, many in fact were receiving treatment when they entered Australia.

TREATMENT

93 cases were admitted to the Tuberculois Ward of the Sir Charles Gairdner Hospital, a marked reduction on the 1979 figure of 164. The length of stay in hospital in 1981 averaged out at 46 days. This length of stay in many cases was not brought about by the medical condition of the patient but by the fact that for reasons of alcohol etc. it was felt that a reasonable initial treatment should be given under supervision. Our standard treatment now is Pyrazinamide, Rifampicin and Isoniazid for two months followed by Rifampicin and Isoniazid for a further seven months. This is one hundred percent effective and has had a nil breakdown rate.

We now cease follow-up two years after the cessation of drug therapy, because even in a six month course of chemotherapy, a breakdown, if it occurs, is practically always in the first or second year post drugs.

PREVENTION

Epidemiological tuberculin testing was carried out on 10 to 14 year olds and 15 to 19 year olds. The percentage of positive reactors was 3.26 and 1.93 respectively showing no great change from the previous year. A total of 18,839 children were given B.C.G., most of them by direct vaccination. There were no significant complications. Despite recent doubts on the efficacy of B.C.G. following the Madras survey, we feel that in Australia it is a useful tool in the fight against tuberculosis and I would be loath to see it terminated. Mass x-rays were carried out on a restricted scale during 1981 and the mobile unit visited eight local Government areas. A total of only 1,022 persons were examined, a very significant reduction on the previous year's 23,403. No case of tuberculosis was discovered as a result of mass miniature radiography during the year. Also homes for the aged were surveyed in the metropolitan area.

MINES MEDICAL SECTION AND OCCUPATIONAL HEALTH

A total of 8,791 x-ray examinations were carried out in respect of the mining industry as follows:

	New Applicants	Re-examinations	Total
Perth Chest Clinic	3,022	1,384	4,406
Kalgoorlie Chest Clinic	1,281	686	1,967
Mobile Unit	324	2,094	2,418
	4,627	4,164	8,791

The Pneumoconiosis Medical Board held 19 sessions at the Perth Chest Clinic and 6 at Kalgoorlie Chest Clinic and examined in all a total of 145 persons.

Mines surveys were carried out in the Kalgoorlie area.

RESPIRATORY DISEASES PROGRAMME

The Visiting Asthma Nurse and one of our sisters in the respiratory diseases section carried out the following visits:

Visits - initial	136
follow-up	782
Group discussions and lectures	30
Camps	1
Country trips	1
Hospital Team Meetings	120

Referrals to the Asthma Nurse came from the following sources:

Asthma Foundation	14
General Practitioners	7
Special Physicians	94
Community & Child Health Sisters	7
Self-Referral	11

In this programme we have also the services of a physiotherapist who attends for three sessions per week.

In 1981, 173 patients received treatment totalling in all 1296 units of treatment. We find the respiratory diseases programme very useful and it is very helpful to asthmatics and those with chronic lung disease.

The present position as regards tuberculosis in Western Australia must be considered satisfactory. The influx of refugees from areas of high tuberculosis incidence and the fact that most of our cases are now occurring in old age, will make improvement in our present notification figures difficult if not impossible.

TABLE 1

TUBERCULOSIS - MAIN STATISTICAL FIGURES

Year	Mean Population 1,000s	Notification (includes Transfers-in)				No. on Register (Pulm.) at 31st Dec	No. on Register per 100,000 (Pulm.)	Number Receiving TB Allowance at 31st Dec	Deaths			Death Rate per 100,000	
		Pulm. (incl. Pleural effus.)	Non-Pulm.	Total	Pulm. per 100,000				Pulm.	Non-Pulm	Total	Pulm.	All Forms
1950	558	586	18	604	104.8	2,100	376	515	125	3	128	22.4	22.9
1951	580	467	37	504	80.4	2,402	413	474	76	6	82	13.1	14.1
1952	601	508	49	557	84.5	2,574	428	396	75	7	82	12.5	13.6
1953	621	378	34	412	60.6	2,762	445	361	43	3	46	6.9	7.4
1954	640	348	34	382	54.3	2,769	432	326	57	4	61	8.9	9.5
1955	659	413	39	452	62.7	2,965	450	330	31	2	33	4.7	5.0
1956	677	424	44	468	62.6	2,900	428	264	43	3	46	6.3	6.8
1957	692	332	32	364	47.9	2,786	403	198	36	1	37	5.2	5.3
1958	706	355	24	379	50.3	2,726	386	213	22	4	26	3.1	3.4
1959	726	320	34	354	44.1	2,684	369	182	24	-	24	3.3	3.3
1960	731	296	34	330	40.5	2,388	327	148	29	1	30	4.0	4.1
1961	737	209	41	250	28.4	1,349	183	89	18	1	19	2.4	2.6
1962	755	243	25	268	32.2	1,333	177	90	24	4	28	3.2	3.7
1963	773	216	28	244	27.9	1,218	158	92	13	-	13	1.7	1.7
1964	790	176	32	208	22.3	1,221	154	88	20	-	20	2.5	2.5
1965	806	153	25	178	19.0	919	114	65	12	-	12	1.5	1.5
1966	836	134	36	170	16.0	840	100	64	16	-	16	1.9	1.9
1967	877	137	34	171	15.6	814	93	54	9	-	9	1.0	1.0
1968	910	145	37	182	15.9	680	75	44	8	1	9	0.9	1.0
1969	947	133	27	160	14.0	659	70	43	8	-	8	0.8	0.8
1970	983	113	35	148	11.5	653	67	32	10	-	10	1.0	1.0
1971	1,029	113	30	143	11.0	625	61	27	17	2	19	1.6	1.8
1972	1,053	125	30	155	11.9	569	54	40	8	-	8	0.8	0.8
1973	1,068	110	36	146	10.3	522	49	15	11	-	11	1.0	1.0
1974	1,090	104	36	140	9.5	480	44	17	8	1	9	0.7	0.8
1975	1,127	102	36	138	9.1	460	41	29	10	2	12	0.9	1.1
1976	1,145	83	27	110	7.3	437	38	13	4	-	4	0.4	0.4
1977	1,183	112	43	155	9.5	424	36	13	7	1	8	0.6	0.7
1978	1,222	137	28	165	11.2	442	36	24	8	-	8	0.7	0.7
1979	1,232	128	51	179	10.4	453	37	14	8	-	8	0.6	0.6
1980	1,265	136	31	167	10.7	483	38	16	5	-	5	0.4	0.4
1981	1,299	138	22	160	10.6	427	33	13	6	-	6	0.5	0.5

TABLE 2

CASES OF TUBERCULOSIS NOTIFIED AND NUMBER BACTERIOLOGICALLY PROVEN 1968 - 1981

(Excludes Inter-State Transfers In, Reactivations and Cases Caused by Atypical Mycobacteria)

Year	Pulmonary	No +ve	Non-Pulmonary	No +ve	Total	Total +ve
1968	104	74	25	12	129	86
1969	90	63	17	6	107	69
1970	75	52	25	10	100	62
1971	89	68	21	9	110	77
1972	100	72	17	8	117	80
1973	92	60	20	15	112	75
1974	80	61	26	17	106	78
1975	77	57	26	16	103	73
1976	64	46	21	11	85	57
1977	76	45	32	9	108	54
1978	104	60	20	10	124	70
1979	109	64	34	12	143	76
1980	113	49	19	7	132	56
1981	105	40	11	8	116	48

Table 3

PULMONARY TUBERCULOSIS

Year	Population in 1,000s	Notifications Received	Incidence Rate per 100,000 Population	Deaths Registered	Mortality Rate per 100,000 Population
1911	287	259	90.2	190	66.2
1912	301	429	142.5	220	73.1
1913	313	424	135.5	206	65.8
1914	323	353	109.3	229	70.9
1915	321	336	104.7	233	72.6
1916	313	511	163.5	225	71.9
1917	306	464	151.6	217	70.9
1918	308	432	140.5	245	79.5
1919	320	467	145.9	289	91.6
1920	330	442	139.9	259	78.4
1921	334	424	126.9	277	82.9
1922	341	387	113.8	256	75.1
1923	351	361	102.8	216	61.5
1924	363	381	104.6	228	62.8
1925	373	403	108.4	259	69.4
1926	381	415	108.2	252	66.1
1927	392	409	104.3	231	56.4
1928	408	395	96.8	282	69.1
1929	421	400	95.0	245	53.4
1930	429	569	132.6	218	50.8
1931	432	372	86.1	223	51.6
1932	435	339	77.9	203	46.7
1933	439	295	67.2	207	47.2
1934	442	287	64.9	218	49.3
1935	447	270	60.4	210	47.0
1936	452	338	74.8	193	42.7
1937	457	239	53.0	172	37.6
1938	464	247	53.2	177	38.1
1939	470	202	43.0	179	38.1
1940	473	231	48.8	181	38.3
1941	474	154	32.5	185	39
1942	477	113	23.7	175	36.7
1943	477	273	57.3	144	30.2
1944	481	219	45.4	134	27.9
1945	488	271	55.5	149	30.5
1946	493	343	69.6	163	33.1
1947	502	372	74.0	128	25.4
1948	515	325	63.1	157	30.5
1949	533	499	93.6	123	23.1
1950	558	586	104.8	129	23.1
DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST					
1950	558	586	104.8	125	22.4
1951	580	467	80.4	76	13.1
1952	601	508	84.5	75	12.5
1953	621	378	60.6	43	6.9
1954	640	348	54.3	57	8.9
1955	659	413	62.7	31	4.7
1956	677	424	62.6	43	6.3
1957	692	332	47.9	36	5.2
1958	706	355	50.3	22	3.1
1959	726	320	44.1	24	3.3
1960	731	296	40.5	29	4.0
1961	737	209	28.4	18	2.4
1962	755	243	32.2	24	3.2
1963	773	216	27.9	13	1.7
1964	790	176	22.3	20	2.5
1965	806	153	19.0	12	1.5
1966	836	134	16.0	16	1.9
1967	877	137	15.6	9	1.0
1968	910	145	15.9	8	0.9
1969	947	133	14.0	8	0.8
1970	983	113	11.5	10	1.0
1971	1,029	113	11.0	17	1.6
1972	1,053	125	11.9	8	0.8
1973	1,068	110	10.3	11	1.0
1974	1,090	104	9.5	8	0.7
1975	1,127	102	9.1	10	0.9
1976	1,145	83	7.3	4	0.4
1977	1,183	112	9.5	7	0.6
1978	1,222	137	11.2	8	0.7
1979	1,232	128	10.4	8	0.6
1980	1,265	136	10.7	5	0.4
1981	1,299	138	10.6	6	0.5

TABLE 4.

ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*

Year	Parenchymal Disease						Pleural Effusion		Total
	Minimal		Moderately Advanced		Advanced				
1952	122	24.0%	275	54.1%	101	19.9%	10	2.0%	508
1953	122	25.9	210	55.5	65	17.2	5	1.4	378
1954	96	27.6	178	51.1	74	21.3	-	-	348
1955	111	26.9	225	54.5	64	15.5	13	3.1	413
1956	127	38.0	217	51.1	72	17.0	8	1.9	424
1957	102	30.7	163	49.1	61	18.4	6	1.8	332
1958	91	25.6	187	52.7	72	20.3	5	1.4	355
1959	103	32.2	151	47.2	55	17.2	11	3.4	320
1960	89	30.1	144	48.6	49	16.6	14	4.7	296
1961	90	43.1	73	34.9	34	16.3	12	5.7	209
1962	117	48.1	84	34.6	36	14.8	6	2.5	243
1963	99	45.8	89	41.2	26	12.0	2	1.0	216
1964	71	40.3	81	46.0	23	13.1	1	0.6	176
1965	75	49.0	60	39.2	17	11.1	1	0.7	153
1966	59	44.0	54	40.3	18	13.4	3	2.2	134
1967	56	40.9	59	43.1	20	14.6	2	1.4	137
1968	71	48.9	59	40.7	11	7.6	4	2.8	145
1969	57	42.9	62	46.6	13	9.8	1	0.7	133
1970	51	45.1	47	41.6	10	8.9	5	4.4	113
1971	42	37.2	52	46.0	17	15.0	2	1.8	113
1972	51	40.8	50	40.0	20	16.0	4	3.2	125
1973	45	40.9	46	41.8	14	12.7	5	4.6	110
1974	36	34.6	48	46.2	13	12.5	7	6.7	104
1975	43	42.2	43	42.2	15	14.7	1	0.9	102
1976	33	39.8	32	38.5	16	19.3	2	2.4	83
1977	47	42.0	54	48.2	9	8.0	2	1.8	112
1978	72	52.5	52	38.0	12	8.8	1	0.7	137
1979	57	44.5	51	39.8	18	14.1	2	1.6	128
1980	78	57.4	44	32.3	12	8.8	2	1.5	136
1981	82	59.4	45	32.6	8	5.8	3	2.2	138

*Classified according to Diagnostic Standards N.T.A.

Table 5.

ANALYSIS OF REGISTER AS AT 31ST DECEMBER 1981

A. Pulmonary Tuberculosis
(excluding Pleural Effusions)

Activity	Number on Register According to Original Extent of Lesions			Total
	Minimal	Moderate	Advanced	
Active	57	56	7	120
Inactive:				
0 - 1 years	92	28	8	128
1 - 2 years	32	35	8	75
2 - 3 years	23	21	5	49
3 - 4 years	13	10	3	26
4 - 5 years	4	10	6	20
5 + years	1	-	-	1
TOTAL	222	160	37	419

B. Pleural Effusion 8

C. Non-Pulmonary Tuberculosis 80

Total All Forms 507

TABLE 6

TUBERCULOSIS NOTIFICATIONS FOR YEAR ENDED 31ST DECEMBER 1981

SHOWING AGE, SEX, FORM AND STAGE OF DISEASE

Age Group	Males					Females					Persons					Total
	Pulmonary			Non Pulm	Pleur Effus	Pulmonary			Non Pulm	Pleur Effus	Pulmonary			Non Pulm	Pleur Effus	
	Min	Mod Adv	Adv			Min	Mod Adv	Adv			Min	Mod Adv	Adv			
0-4	2			2			1	1	4		2	1	1	6		10
5-9	2					1			2		3			2		5
10-14						1					1					1
15-19	1			1			2				1	2		1		4
20-24	4	1	1			6	1	1	1		10	2	2	1		15
25-29	8	1				5	1			1	13	2			1	16
30-34	11	4	1	1	1	3		1			14	4	2	1	1	22
35-39	3	2		2		2	1		1		5	3		3		11
40-44	2	3				3					5	3				8
45-49	2	2				1	1				3	3				6
50-54	3	4	1	1			3				3	7	1	1		12
55-59	2	3		2			2		1	1	2	5		3	1	11
60-64	3	3	1			2	1				5	4	1			10
65-69	3	4		2		3	1		1		6	5		3		14
70-74		2				2					2	2				4
75 and over	6	1	1			1	1		1		7	2	1	1		11
TOTAL	52	30	5	11	1	30	15	3	11	2	82	45	8	22	3	160

TABLE 7

SITE AND TYPE OF DISEASE (excludes transfers-in)

Pulmonary				Extrapulmonary			
Diagnosis	No.	% of		Diagnosis	No.	% of	
		Pulmonary Cases	All Cases			Extra-Pulmonary Cases	All Cases
Primary				Genito-urinary	4	19.0	2.6
Pleural effusion	3	2.2	1.9	Lymph glands	12	57.1	7.7
Post-Primary				Bone & Joint	3	14.3	1.9
1. Minimal	81	60.0	51.9	Meninges	1	4.8	0.6
2. Mod. Adv.	44	32.6	28.2	Ear	1	4.8	0.6
3. Advanced	7	5.2	4.5				
TOTAL	135	100	86.5	TOTAL	21	100	13.5

TABLE 8.

BACTERIOLOGICALLY PROVEN TUBERCULOSIS CASES NOTIFIED 1972 - 1981

(EXCLUDES INTERSTATE TRANSFERS-IN AND DISEASE CAUSED BY ATYPICAL MYCOBACTERIA)

PULMONARY	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	TOTAL
Primary	1		1	2			1	1			6
Pleural Effusion	1	3	4	1	1		1	1		1	13
POST PRIMARY											
Min.	28	20	15	18	17	20	21	17	18	17	191
Mod.	36	30	34	30	19	25	29	30	22	25	280
Adv.	11	13	11	12	11	7	10	16	10	2	103
	77	66	65	63	48	52	62	65	50	45	593
EXTRA PULMONARY											
Genito-Urinary	7	10	13	10	7	6	2	6	5	3	69
Lymph Glands		2	1	3	2	2	3	1	1	4	19
Bone & Joint	1	3	2	3		2	3*	3	1	3	21
Meninges					2						2
Generalised							1				1
Abdominal								2			2
Chest Wall	1										1
Empyema			1	1							2
Mastoiditis			1								1
Ear							1	1	1	1	4
	9	15	18	17	11	10	10	13	8	11	122
TOTAL	86	81	83	80	59	62	72	78	58	56	715

TABLE 9.

REACTIVATIONS

Previous Treatment	Number of Reactivations									
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
(1) No chemotherapy	4	3	3	4	3	1	2	1	3	6
(2) Inadequate Chemotherapy										
Without Surgery	3	4	3	7	1	5	4		3	8
With Surgery			1	1			1	1	2	
(3) Apparently Adequate Chemotherapy	1		1	1		2	3*	6		
TOTAL	8	7	8	13	4	8	10*	8	8	14

* Includes 1 with atypical tuberculosis due to M. Kansasii

TABLE 10.

REACTIVATION RATES

Year	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of reactivations	8	7	8	13	4	8	10	8	8	14
As % of total cases	5.2	4.8	5.7	9.4	3.7	5.2	6.1	4.5	4.8	8.7
Per 100,000 population	0.8	0.7	0.7	1.2	0.4	0.7	0.8	0.6	0.6	1.1

TABLE 11.

WESTERN AUSTRALIA: TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH 1972 - 1981: MALES

Country of Birth	Pop. at June 30 1976 Thousands (Census)	Incidence per Thousand Persons										Total Notifications 1972-81
		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	
U.K. & Rep. of Ireland	90.8	0.23	0.21	0.29	0.12	0.13	0.26	0.19	0.06	0.13	.09	144
Germany	3.7	0.56	0.56	-	0.28	-	0.56	-	0.27	-	-	8
Greece	2.4	1.11	0.74	0.74	-	-	0.74	-	0.42	-	-	10
Italy	16.1	0.41	0.29	0.41	0.12	-	0.35	0.12	0.12	0.18	.12	36
Netherlands	5.8	0.16	-	0.16	0.16	-	0.16	-	0.17	0.17	-	6
Poland	2.5	1.07	0.36	-	0.36	-	-	0.40	-	-	.40	7
Yugoslavia	6.0	0.16	0.16	1.29	0.81	-	0.32	0.33	0.83	0.33	.33	28
Other European	8.0	0.05	0.93	0.23	0.23	0.12	0.23	0.75	0.25	0.25	.12	27
Other Birthplaces	28.9	0.67	0.50	0.55	0.92	0.76	0.59	1.21	1.45	1.45	1.60	262
Total Non-Aust. born	164.1	0.48	0.31	0.37	0.29	0.20	0.33	0.38	0.36	0.38	.38	528
Australian born	417.1	0.22	0.12	0.10	0.13	0.09	0.15	0.10	0.15	0.10	.09	457

TABLE 12.

WESTERN AUSTRALIA: TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH 1972 - 1981: FEMALES

Country of Birth	Pop. at June 30 1976 Thousands (Census)	Incidence per Thousand Persons										Total Notifications 1972-81
		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	
U.K. & Rep. of Ireland	85.8	0.16	0.09	0.12	0.12	0.17	0.07	0.06	0.08	0.07	.05	77
Germany	3.7	-	-	-	0.86	-	-	-	-	0.27	-	4
Greece	2.1	0.43	0.87	0.43	0.87	0.43	-	0.48	0.48	0.95	.47	12
Italy	13.2	0.15	0.15	-	-	0.07	0.07	-	0.08	-	-	12
Netherlands	4.9	-	-	0.20	-	0.20	-	0.20	-	0.20	-	4
Poland	1.9	0.50	1.00	0.50	-	0.50	1.00	-	-	0.53	.53	9
Yugoslavia	4.4	0.51	0.51	0.26	0.51	0.51	0.51	0.45	-	0.68	.23	17
Other European	6.4	0.68	0.34	-	0.71	0.34	0.34	0.31	-	0.16	.16	15
Other Birthplaces	26.0	0.47	0.36	0.41	0.47	0.41	0.62	0.96	0.81	0.81	1.23	152
Total Non-Aust. born	148.4	0.21	0.18	0.16	0.20	0.22	0.18	0.24	0.20	0.24	.27	302
Australian born	415.3	0.11	0.08	0.07	0.06	0.04	0.07	0.06	0.07	0.06	.05	233

TABLE 13.

PATIENTS FROM WHOM MYCOBACTERIA WERE ISOLATED (FOR THE FIRST TIME) IN 1981 (OTHER THAN M. TB)

Type	Isolations not clinically significant	Atypical Tuberculosis			Total
		Pulm.	Non-Pulm.	Total	
M. Kansasii	1	3		3	4
M. Scrofulaceum	2				2
M. Gordonea	13				13
M. Flavescens	3				3
M. Avian	1				1
M. Intracellulare	170	17	3	20	190
M. Terrae	2				2
M. Fortuitum	5				5
Mixed	1				1
M. Chelonei	2				2
M. Marinum	1				1
M. Triviale					
M. Haemophilum					
Total Patients	201	20	3	23	224

TABLE 14.

MYCOBACTERIAL DISEASE OF LYMPH NODES IN CHILDREN

Year	M. Scrofulaceum Identified	M. intracellulare Identified	M. TB (Human) Identified	Cultures Negative	Total Cases
1971	-	3	-	3	6
1972	3	7	-	5	15
1973	6	8	-	1	15
1974	2	5	-	5	12
1975	-	5	-	3	8
1976	-	2	1	2	5
1977	1	6	-	9	16
1978	-	6	-	2	8
1979	6	9	-	15	30
1980	-	6	-	6	12
1981	-	5	-	2	7
TOTAL NUMBER OF CHILDREN 1961 - 1981	30	97	2	104	233

TABLE 15.

PATIENTS NOTIFIED WITH ATYPICAL TUBERCULOSIS

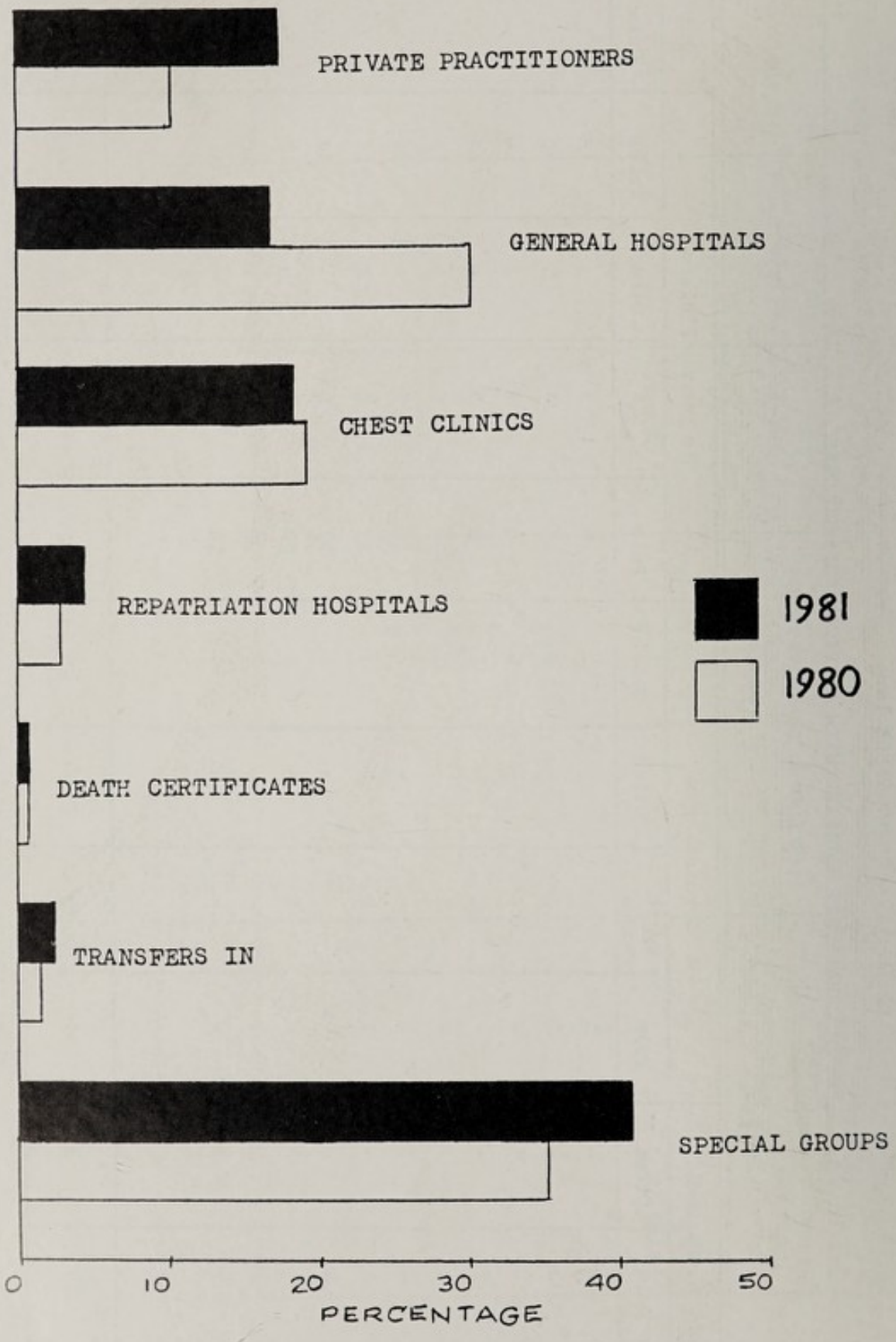
(INCLUDING REACTIVATIONS)

Year	M. Kansasii		M. Scrofulaceum				M. Intracellulare				Rapid Growers	
	Pulm	Other	Pulm	Lymph Nodes	Other	Total	Pulm	Lymph Nodes	Other	Total	Pulm	Lymph Nodes
1971	-	-	1	-	-	1	5	3	-	8	-	-
1972	2	-	1	3	-	4	12	7	1	20	1	-
1973	-	1	-	6	-	6	8	8	-	16	-	1
1974	2	-	-	2	-	2	9	5	-	14	-	-
1975	2	-	-	1	-	1	8	6	1	15	-	-
1976	-	3	-	-	-	-	10	2	-	12	-	-
1977	2	-	1	2	-	3	17	6	2	25	1	-
1978	1	-	-	-	-	-	13	6	-	19	-	-
1979	-	1	-	6	-	6	10	9	-	19	-	-
1980	2	2	1	-	-	1	11	6	1	18	-	-
1981	3	1	-	-	-	-	18	6	-	24	-	-
TOTAL 1955-81	23	8	32	32	1	65	251	103	5	360	3	1

Plus: Two patients with mixed pulmonary disease (1963 and 1970)

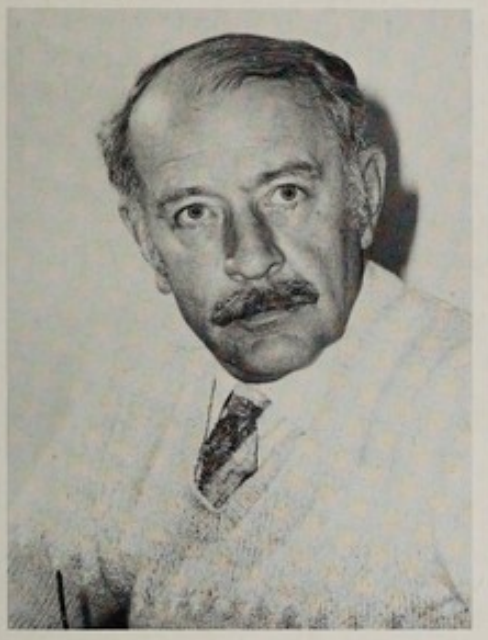
Two patients with mixed pulmonary disease and one haemophilum (1980)

DIAGRAM SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS A PERCENTAGE OF TOTAL NOTIFICATIONS



Appendix IV

EPIDEMIOLOGY AND SPECIAL SERVICES

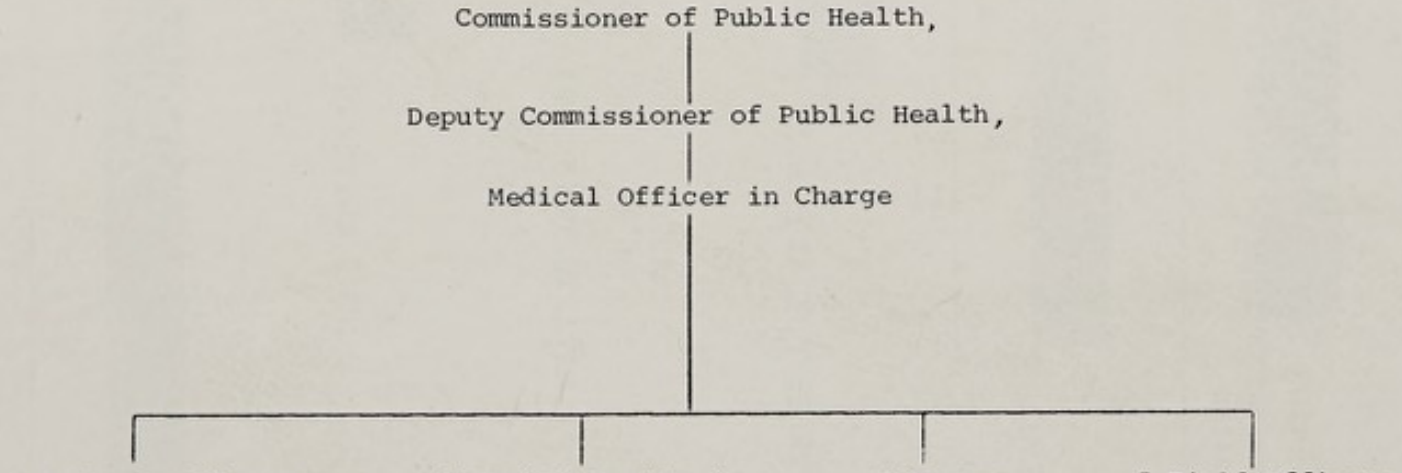


R. Allen,
M.B.B.S.
Medical Officer in Charge

Senior Staff

Medical Officer in Charge: Dr. R. Allen

EPIDEMIOLOGY AND SPECIAL SERVICES BRANCH - ORGANIZATION CHART



EPIDEMIOLOGY AND SPECIAL SERVICES

IMMUNISATION

Although total injections carried out by the Branch during 1981 showed a decrease of 1920 to 43959, this is more than accounted for by a reduction of over two thousand in the attendances of adults for Tetanus Toxoid following extension of the recommended time interval between tetanus boosters from five to ten years.

In fact attendances for the recommended childhood immunisations showed an increase of 2.3% to 26509, a figure exceeded only once in the past eight years. This may well be as a result of a publicity campaign initiated by the Health Education Unit during the early part of the year.

The acceptance rate among Year 8 girls for Rubella Vaccine increased again to a record 83.3%, and a total of 88,841 girls have been vaccinated.

It now seems likely that a combined Measles/Mumps Vaccine will be made available to Clinics during the latter part of 1982 replacing the Measles Vaccine currently in use.

Mobile country clinics have been stretched to the limit this year due to staff shortage following the prolonged illness of a medical officer. It is hoped that this will be rectified early in the coming year.

The following immunisations were carried out during 1981:-

Sabin Vaccine		48,568
Triple Antigen	14,719	
C.D.T.	9,958	
A.D.T.	1,832	
Tetanus Toxoid	2,237	
Measles	6,141	
Rubella	8,989	
Miscellaneous	83	
Total Injections	43,959	43,959
Total Treatments		92,527

MALARIA

30 Cases of malaria were notified during the year - a decrease of 40% from the 50 cases during 1980. This is due to the arrangement by Community Health Services to administer anti-malarial treatment to all Vietnamese immigrants who arrived in Australia via staging camps in islands off the Indonesian coast.

Details of these cases are as follows:-

Indonesia	Pl. vivax	13	
	Pl. falciparum	1	
	Pl. vivax + falciparum	2	16
Papua New Guinea	Pl. vivax	6	
	Pl. falciparum	2	8
Solomon Islands	Pl. vivax	2	2
India	Pl. vivax	2	2
Malaysia	Pl. vivax	1	1
Thailand	Pl. vivax + falciparum	1	1
			30

Pl. vivax	24
Pl. falciparum	3
Pl. vivax + falciparum	3
	30

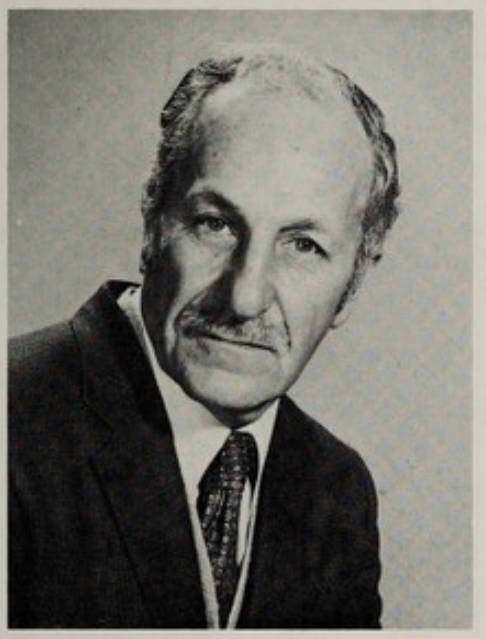
Males 20 - average age 25.0 years

Females 10 - average age 25.6 years

It is of significance to note that, of the six cases in which Pl. falciparum was involved, four proved to be of the emerging chloroquine-resistant strain.

Appendix V

VENEREAL DISEASE CONTROL BRANCH

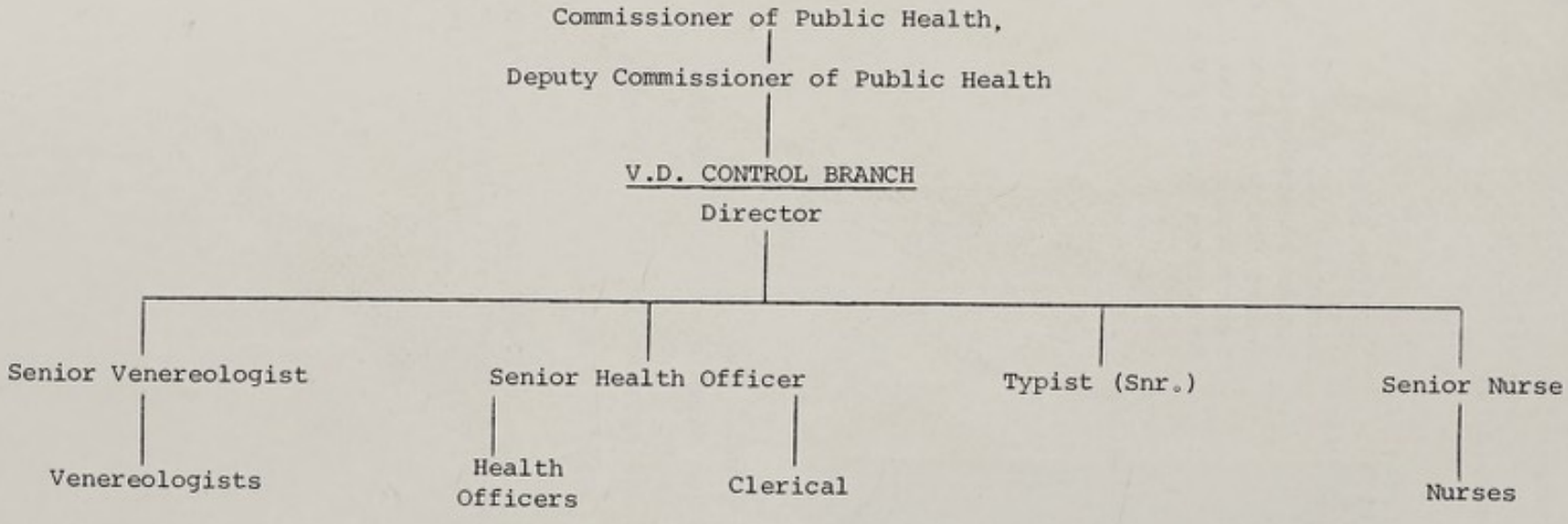


M.M. Gollow,
M.R.C.S. L.R.C.P. Dip. Ven. (Lond.)
Director

Senior Staff

Director: Dr. M.M. Gollow
Senior Venereologist: Vacant
Senior Health Officer: Mr. G.C. Ross
Senior Nurse: Sister C. Graham
Secretary: Mrs. J. Van Bavel

V.D. CONTROL BRANCH - ORGANIZATION CHART



VENEREAL DISEASE CONTROL BRANCH

Notification of Venereal Diseases in Western Australia during the year 1981 increased by 298 cases. The incidence of gonorrhoea was 112.82 per 100,000 population, and the incidence of syphilis was 17.80 per 100,000 population, based on a population estimate of 1,292,300 at June 30, 1981. This increase is part of world-wide trend, to which Western Australia is linked by rapid air travel.

TABLE 1

VENEREAL DISEASE - WESTERN AUSTRALIA, 1980-1981

	GONORRHOEA	SYPHILIS	GRANULOMA	CHANCROID	TOTAL VENEREAL DISEASE
1980	1215	179	4	1	1399
1981	1458	230	8	1	1697

1981 was the first year in which the results of the medical student teaching programme became effective to the community. Doctors, fully trained in the management of venereal diseases, were working as residents in Government hospitals and as private practitioners. Their diligence in detecting and notifying venereal diseases will have been a contributing factor to the increased incidence.

The maximum incidence of venereal diseases was in the 20-24 year age group. 68% of infections occurred in the 15-29 year age group.

TABLE 2

VENEREAL DISEASE - W.A.

VENEREAL DISEASE AGE DISTRIBUTION - 1981

0-14 YEARS	15-19 YEARS	20-24 YEARS	25-29 YEARS	30-34 YEARS	OVER 35 YEARS	AGE NOT STATED	TOTAL
19	295	531	324	235	292	1	1697
1.12%	17.38%	31.29%	19.09%	13.85%	17.21%	0.06%	

Total consultations at the three Government clinics were 42,753 with distribution of patients as

Moore St. Clinic	37,937
Queen Elizabeth II Medical Centre	3,066
Fremantle Hospital Clinic	1,750

Postgraduate education of staff at Hospitals has continued successfully, and the consultation service for inpatients has been utilised over the past year. Grateful acknowledgement is made for the help afforded by the staff and Medical Superintendents of Royal Perth Hospital, Queen Elizabeth II Medical Centre and Fremantle Hospital.

King Edward Memorial Hospital

The number of consultations and disease detection rate this year was almost the same as in 1980. The close co-operation of two organisations dealing with a similar age group of people, and the advantages afforded to both is a further exemplification of what can be done with good will and co-operation.

Grateful acknowledgement is made by the V.D. Control Branch to the Medical Superintendent, Dr. S. Reid, the Deputy Medical Superintendent, Dr. G. Bird, and all the staff of the King Edward Memorial Hospital.

Community & Child Health Services

The close co-operation of the V.D. Control Branch with the Community & Child Health Services at all levels has continued. We are grateful for the opportunity to provide them with inservice training. Without their activity as field officers on our behalf all over the State we would have an insuperable problem. Appreciation is expressed to the Director, Dr. F. Quadros, the Deputy Director, Dr. J. Henzell, and all the staff, for their co-operation.

Laboratory Services

The dedication of the microbiological and serological assistance afforded to the V.D. Control Branch is incomparable, and the level of expertise obtained by this branch is in no small part due to our laboratory services. To the Director, Dr. V. Blackman, and all his staff, sincere thanks are expressed.

Beta Lactamase producing Gonococci

Numbers detected in Western Australia more than doubled in 1981. Continual vigilance is essential, as increasing numbers of these organisms are being detected locally. Rapid contact tracing is only just containing the situation and unfortunately a parallel situation seems to have occurred in the rest of the world. Any improvement in the situation is not foreseen.

Education

130 formal lectures and over 300 tutorials were given by the V.D. Control Branch. In addition to which postgraduate lectures were given at all teaching hospitals and continuous in-service education within the Branch has continued. Residents from Royal Perth Hospital have continued to serve their time at the Moore St. Clinic. These residents are chosen from those who are most likely to enter into family medicine, and their expertise will be available to the community in the near future.

Metropolitan area

The programme of personal visits to private practitioners in the metropolitan area has continued, and the utilization of our services for referral of patients and provision of contact tracing services and all our other facilities, is now being recognized and increasingly utilized.

Rural areas

The following towns were visited -

Albany, Denmark, Kojunup, Northam, Mandurah, Derby, Kununurra, Fitzroy Crossing, Meekatharra, Wiluna, Cue, Kalgoorlie, Menzies, Laverton, Leonora, Warburton

at each of which lectures were given to lay people, medical practitioners and nurses. Consultation regarding problem patients was undertaken with the local doctors.

Education Services Branch

The close co-operation between the V.D. Control Branch and the Education Services Branch has continued. A publication entitled "Sexually Transmissible Diseases - Elementary Handbook for Health Workers" was produced co-operatively, and this has been distributed to all interested people in Western Australia, and many requests have been received for this booklet from all over Australia. Gratitude to the Director, Dr. K. Carruthers, and all his staff, is expressed.

V.D. Co-ordinating Committee for the Control of Venereal Diseases in Western Australia

The activity of this Committee has continued under the Chairmanship of Professor J.D. Martin. The expertise of all the members of this committee has been of assistance in formulating plans for activities of the V.D. Control Branch. The assistance of all members of this committee in venereal disease control in W.A. is acknowledged with gratitude.

Kalgoorlie and Eastern Goldfields

A lecture/consultation visit was made to Kalgoorlie, Leonora, Laverton, Menzies and Warburton, and in each of these areas lectures were given and consultations held with the local practitioners, and as many doctors and nurses from surrounding areas as were possible to contact attended these. At Warburton the doctor from the Pitjanjatjara Homelands Medical Services

flew in with his staff to attend the lecture.

Kimberley Region

The programme of V.D. control in this region has continued with the assistance of the Director of Public Health, Kimberley region, Dr. R. Spargo, and his staff, with all medical officers of the Kimberley hospitals and the one private practitioner in the area, Dr. F. McConnel at Kununurra.

The utilization of policies for patient management and V.D. control have been carried out.

The V.D. Co-ordinating Committee for the Kimberley Region has met at regular intervals under the able Chairmanship of Mr. J. Edwards, Kimberley Regional Administrator, in each of the Shires, and was attended by the Director of the V.D. Control Branch of W.A. Meetings of the local V.D. Co-ordinating Committees have continued and involvement of the population in these Committees have continued and involvement of the population in these Committees has resulted in greater public interest and increasing numbers of patients coming forward for examination and diagnosis.

A visit by Dr. R.D. Catterall, Specialist Advisor to the World Health Organization on Sexually Transmissible Diseases, was arranged to coincide with a Committee meeting in Derby in October, 1981 in order to permit him to see at first hand the difficulties involved in population dispersion over a large geographic area as occurs in W.A., and the unique method we have in containment of venereal diseases. Dr. Catterall was delighted with the concept of involving people who acquire these diseases with efforts to control them, and considered the V.D. Co-ordinating Committees to be a step in the right direction.

My sincere thanks are expressed to the Director of Public Health, Kimberley Region, Dr. R. Spargo, and all his staff, and to Dr. W. Roberts, Commissioner of Hospitals and Allied Services for their continued assistance with V.D. Control in the Kimberley Region.

Visit of Dr. R.D. Catterall F.R.C.P.E., F.R.C.P.

Dr. Catterall who is Consultant Advisor in Genito-Urinary Medicine to the Department of Health and social Security, London, as well as being Specialist Advisor to the World Health Organization and President of the International Union against the Venereal Diseases and Treponematoses, visited the V.D. Control Branch of W.A. in October, 1981.

With the assistance of Community & Child Health Services, an afternoon symposium was arranged, with Dr. Catterall as the Keynote speaker. Dr. M.M. Gollow, Dr. E. Pixley and Dr. J. Schneider further contributed towards the programme, which was attended by approximately 200 people, and was considered to be eminently successful.

Dr. Catterall also gave a postgraduate lecture at Royal Perth Hospital, Queen Elizabeth II Medical Centre and Fremantle Hospital. He visited the King Edward Memorial Hospital for Women and had a demonstration of the activities of the V.D. Control Branch in this establishment. He visited the State Health Laboratory Services, and finally, he visited the

Kimberley Region. His eventual report on these activities indicated his consideration of a first class world-wide standard of all services within the V.D. Control Branch of W.A.

It is hoped that Dr. Catterall will be able to provide us with a further external evaluation of our services in a few years' time.

Publications produced by the V.D. Control Branch

1. Sexually Transmissible Diseases - Elementary Handbook for Health Workers, by V.D. Control Branch, Department of Public Health.

2. Doxycycline in non-specific Urethritis - Medical Journal of Australia, by M.M. Gollow, A.M. Tyler and M. Blums.

3. The Director of the V.D. Control Branch attended the Second Regional Conference of the International Union Against the Venereal Diseases and Treponematoses, South East Asian and Western Pacific Region, held in Christchurch, New Zealand in October, 1981, and delivered two papers which will be published in New Zealand :

   "Chlamydia Trachomatis" by M.M. Gollow, G.B. Harnett and P.A. Phillips

   "Adenovirus Isolation from the Genital Tract and its Association with Diseases" by M.M. Gollow, G.B. Harnett and P.A. Phillips.

The Director of the V.D. Control Branch attended the National Health and Medical Research Council meeting on Sexually Transmissible Diseases in Melbourne in February, 1981 on behalf of the Commissioner of Public Health. Discussions were held regarding uniformity of management of these diseases throughout Australia. Many of the recommendations that were made at this meeting were already in force in Western Australia.

Conclusion

Particular thanks are expressed to the Doctors, Nurses and Clerical staff of the V.D. Control Branch of W.A., without whose active co-operation and assistance the volume of work undertaken would not have been possible, and finally gratitude is expressed to the Commissioner of Public Health, Dr. J.C. McNulty, the Deputy Commissioner of Public Health, Dr. L.J. Holman AO, and the Assistant Commissioner of Public Health, Dr. K. Carruthers all of whom have given invaluable advice, assistance and co-operation for the well-being of the V.D. Control Branch of the Public Health Department of Western Australia.

Appendix VI

COMMUNITY AND CHILD HEALTH SERVICES



C.F. Quadros,
M.B., B.Ch., B.A.O., D.P.H.
Director

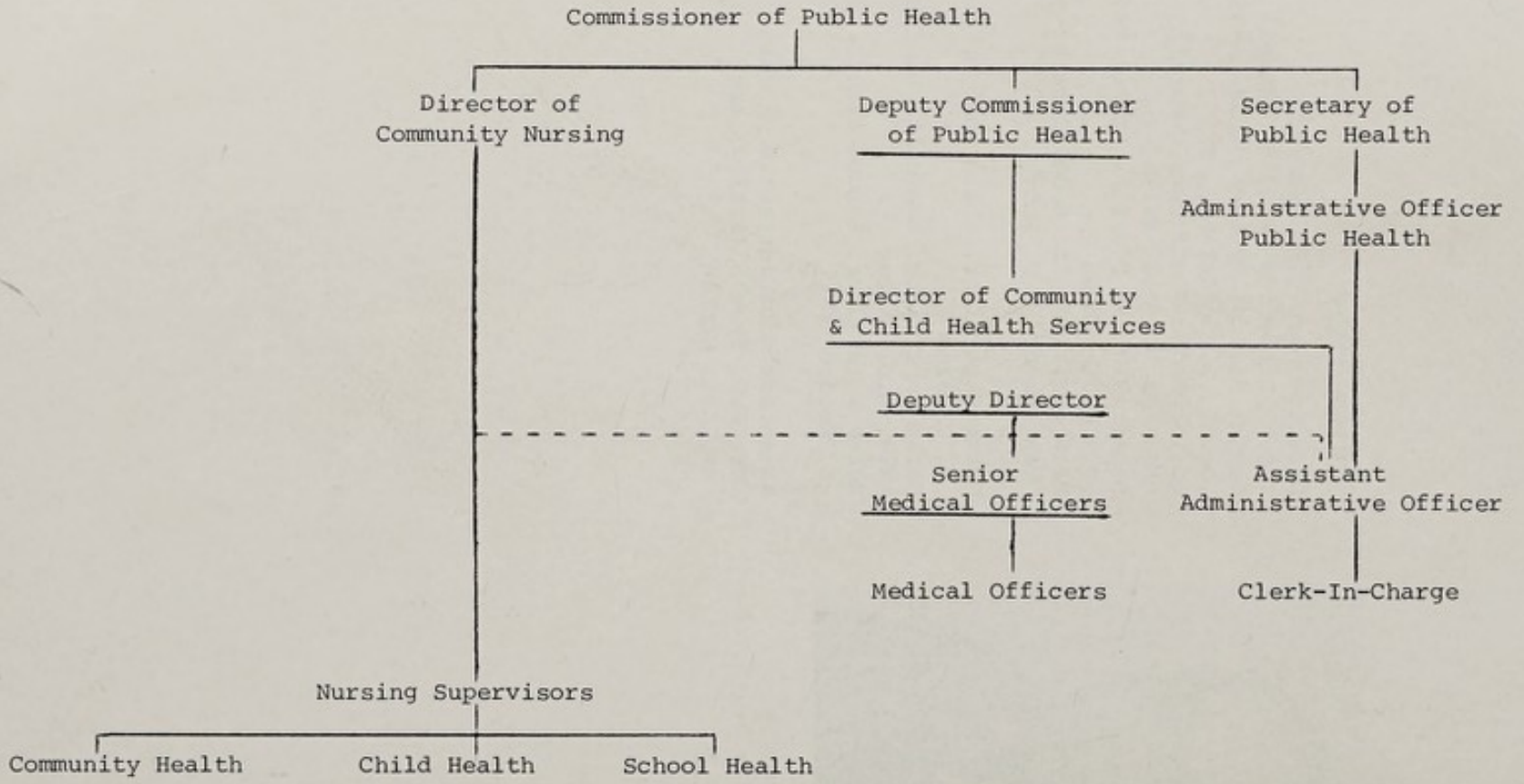
Senior Staff

Director: Dr. C.F. Quadros
Deputy Director: Dr. J.M. Henzell
Senior Medical Officer, Child Health: Dr. T. R. Henderson
Senior Medical Officer, Community Health: Dr. D.G. Hicks
Senior Medical Officer, School Health: Dr. M.J. Gibson
Paediatrician, Child Development Centre: Dr. T.S. Parry

Nurse Supervisor, Child Health: Miss N. Chidlow
Nurse Supervisor, Community Health: Mrs. E.D. Panter
Nurse Supervisor, School Health: Miss L. Keddie

Assistant Administrative Officer: Mr. F.G. Skeels (Acting) and Mr. J.L. Castle

COMMUNITY AND CHILD HEALTH SERVICES - ORGANIZATION CHART



COMMUNITY AND CHILD HEALTH SERVICES

INTRODUCTION

The main thrust of activities of the Community and Child Health Service has continued in the direction established over the previous years. Funding restraints and a virtual no growth situation has meant very stringent reviews of programmes and redeployment of staff as necessary. Difficulties in recruitment of nursing staff to remote areas continued during the year, despite wide advertising throughout Australia and overseas.

There has been an increase in the total number of registered births over the previous two years (1573) and an increase in attendances at Child Health clinics. Group activities have been emphasised to meet the demand of these increases, especially with parent groups, to give a better understanding of child development. Telephone consultations relating to child health have surged while the need for correspondence sisters writing to mothers in remote areas has decreased because of the availability of nurses in most areas. During the year the demand for speech therapy services, especially in the metropolitan and south west areas of the State were greatly in excess of the ability of the small speech therapy staff to met this need. Most children referred to speech therapy have complex problems which require thorough speech and language assessments. Treatment programmes have continued to range from home or school programmes to individual and group treatment sessions.

The School Health Section continued its normal activities and worked closely with the Education Department in a special programme to identify children who have severe visual impairment. Two full time occupational therapists are employed at the special schools in Willetton and Koondoola. They provide individual and group therapy according to specific needs. Audiology services by the Senior Audiologist have been possible during the year following the purchase and installation of equipment and testing room. Assessment of the physical and psycho-social problems of youth indicate a requirement for establishing a health resource team in the next year.

Because of the diminished Public Health role of Community nurses with flight duties in the lower half of the State and the increased emergency escort intensive nursing care service that is required, the West Australian Branch of the Royal Flying Doctor Service commenced employment of their own nursing personnel. Community Health Flight Sisters are made available to the Eastern Goldfields and Victorian (Kimberley) Royal Flying Doctor Service Sections. It is with great regret that we report the death of one of our flight sisters, Sister Judy Osborne, which occurred in the course of duty in a plane crash on a return flight evacuating a young woman and baby from the Central Reserves to Kalgoorlie. Four people died as a result of the crash. Our deepest sympathies are extended to all their families.

In Aboriginal Health there has been greater consultation developed with communities in the policy and delivery of service. The appointment of the Aboriginal Health Co-ordinator, Mr. Willaway, has greatly facilitated this

process. A great number of Aboriginal Health Workers have been employed. Their selection and role has been made in consultation with Aboriginal communities. Training programmes for Aboriginal Health Workers have been enhanced. The nutritional status of Aborigines has been improving gradually over the past decade. Breast feeding has been encouraged and mothers have been encouraged to see that Aboriginal children receive at least three good meals per day.

The State Trachoma programme has continued during the year with the co-operation of the members of the Royal Australian College of Ophthalmologists and in close liaison with Aboriginal communities. Over 8,000 'at risk' persons were screened in the endemic areas. An incorporated body consisting of Public Health Department officers, members of the Royal Australian College of Ophthalmologists (WA Branch) and representatives of various Aboriginal organisations, including the Aboriginal Advisory Council, the National Aboriginal Conference and the AMS has been established to oversee the State programme. This is a precedent in Australia. The Branch made available the services of a highly experience Medical Officer - Dr. J. Williams to this group to be Medical Co-ordinator.

In other areas screening has continued for the Indo-Chinese refugees. After initial assessment and treatment this group is encouraged to make use of available health and medical services and they have adapted well and are able to successfully utilise the facilities, especially after becoming conversant with the language.

Preliminary figures for 1981 indicate that there continues to be a decline in the stillbirth and infant mortality rates (Tables 1, 2 and 3). The infant mortality rate for the whole State has decreased from 15.7 in 1972 to 8.4 in 1981. Amongst the non-aboriginal population there has been a continuing decrease between 1976 and 1981 in stillbirth rates (11.0 down to 6.9), neonatal death rates (8.4 down to 4.9) and post-neonatal deaths (3.8 down to 3.0). Amongst the Aboriginal population the figures tend to be difficult to interpret because of the large annual fluctuations. However, the graphs contained in the Community Health Section report show that there is a continuing downward trend in Aboriginal stillbirth, neonatal and post-neonatal death rates. This is reflected in the fall from 45.6 in 1976 to 18.3 in 1981.

I am grateful to Dr. Henzell, my Deputy, for compiling the following report from reports received from senior staff within the Branch. My thanks and appreciation go to all the staff who have worked with great endeavour during the past year.

TABLE 1

INFANT MORTALITY IN WESTERN AUSTRALIA 1972-81

Year	WHOLE STATE		
	Live Births	Infant Deaths	I.M. Rate
1972	22,177	348	15.7
1973	20,510	394	19.21
1974	20,207	327	16.18
1975	20,338	271	13.32
1976	20,670	273	13.21
1977	20,651	251	12.15
1978	20,611	230	11.2
1979	20,517	218	10.6
1980	20,534	194	9.4
1981*	22,203	186	8.4

NOTE: Figures quoted in earlier years were supplied by the Registrar General's Office which counts the event in its year of registration rather than in its year of occurrence. This table has been adjusted to count events in their year of occurrence.

*Preliminary figures.

TABLE 2

W.A. PERINATAL MORTALITY RATES

YEAR	STILLBIRTH RATE		NEONATAL DEATH RATE		PERINATAL DEATH RATE	
	Aboriginal	Non-Aborig.	Aboriginal	Non-Aborig.	Aboriginal	Non-Aborig.
1976	19.3	11.0	18.7	8.4	37.7	19.3
1977	18.0	9.2	18.3	8.4	35.9	17.5
1978	10.2	9.3	17.8	7.3	27.9	16.5
1979	14.2	8.3	10.4	7.1	24.6	15.4
1980	13.5	9.1	20.5	5.5	33.7	14.3
1981*	20.6	6.9	12.8	4.9	33.1	11.8

TABLE 3

W.A. INFANT MORTALITY RATES

Year	NEONATAL DEATH RATE		POST-NEONATAL DEATH RATE		INFANT DEATH RATE	
	Aboriginal	Non-Aborig.	Aboriginal	Non-Aborig.	Aboriginal	Non-Aborig.
1976	18.7	8.4	26.8	3.8	45.6	12.2
1977	18.3	8.4	12.1	3.4	29.6	11.8
1978	17.8	7.3	9.4	3.5	27.5	10.7
1979	10.4	7.1	13.4	3.2	24.0	10.3
1980	20.5	5.5	10.6	2.9	31.2	8.4
1981*	12.8	4.9	5.5	3.0	18.3	7.9

NOTE: There are approximately 1,000 Aboriginal births per annum and 19,000-20,000 non-Aboriginal births. The death of an Aboriginal infant affects the Aboriginal rate by approximately 1/1,000 whereas the death of a non-Aboriginal infant affects the rate by approximately .05/1,000.

*Preliminary figures

ADMINISTRATION SECTION

1. FINANCE

Funds provided from Consolidated Revenue Fund were restricted to the cost escalation of 9.5% on goods, services and construction materials and 17½% on petroleum products.

2. TRANSPORT

There was a reduction of twenty four vehicles in the Community Health fleet. The Child Health fleet remained as for the previous year.

3. BUILDINGS

3.1 New staff accommodation was provided for the Lake Varley Community Health Centre and a new Child Health Clinic was opened in Heathridge.

3.2 Extensive repairs and renovations were carried out to buildings in all regions. Extensive works included buildings in Graylands, Bremer Bay, Cundeelee, Kalgoorlie, Mt Magnet, Jigalong, Port Hedland, South Hedland, Mullewa and Wiluna.

4. STORES

The cancellation of delivery contracts and the inclusion of delivery and courier services in the duties of existing stores' staff resulted in considerable savings in expenditure.

5. STAFFING

There was a re-deployment of staff members within the Metropolitan Region owing to the changing needs of the community.

CHILD HEALTH SECTION

Throughout the year emphasis has been placed on staff development to equip nurses to conduct small group meetings of parents at centres. This has become necessary because the overall attendances at Child Health Centres continue to rise. Particular attention was directed to the formation of postnatal groups as well as first time parent groups. Three orientation courses were conducted throughout the year to introduce a total of 24 new staff members to the Child Health Section. All country positions remained filled throughout 1981.

NEW CHILD HEALTH CENTRES

One new Child Health Centre was opened at Heathridge within the Shire of Wanneroo.

CHILD HEALTH CENTRE ATTENDANCES 1979 - 1981

	1979	1980	1981
Birth Notifications Received at Child Health Centres	20,046	20,044	21,440
Births Registered	20,469	20,607 (a)	22,042 (b)
Gross Attendances	289,180	296,880	305,213
Individual Attendances			
0-1 year	23,903	23,946	24,745
1-2 years	13,812	14,403	14,945
2-5 years	13,457	15,946	17,479
TOTAL	51,172	54,295	57,169
Home Visits	36,862	36,243	36,103
Telephone Consultations	62,703	79,250	104,560
Hospital Visits	21,327	21,188	22,077
Stycar Screenings	99,090	107,085	114,405
Referrals	N/A	N/A	3,313

(a) Corrected figure for 1980
(b) Preliminary A.B.S. figure.

CHILDREN'S DAY CARE HEALTH TEAM

This team consists of 1 Medical Officer and 4 Child Health Nurses, a social worker, speech therapist and typist.

Workload Statistics

NUMBER OF CHILD CARE CENTRES AS AT DECEMBER 1981
IN METROPOLITAN AREA

Day Care	68	(49 private and 19 government subsidised)
Occasional Care	21	
Family Care	321	

Private	132
Balga Scheme	54
Wanneroo Shire	75
Communicare	36
Town of Cockburn	32

No. of Children

Day Care	2178	(actual number 2973)
Family Care	1316	
Occasional Care	N/A	

TABLE 4

NURSES' WORKLOAD, JANUARY 1 - DECEMBER 31, 1981

	Total	Boys	Girls
Number visits to DCC	919		
Counselling contacts:			
with parents	500		
with centre staff	791		
with ECS* advisers	97		
home visits	65		
Number Full Health Appraisals	1952	1106	846
Number Review Examinations	600	323	277
Number Children referred to:			
Medical Officer	161	108	53
Family Doctor	90	46	44
Speech Pathologist	30	23	7
Social Worker	7	4	3
Hospital	2	1	1
NAL/CCHS audiologist	20	14	6
Dental attention	37	31	6
Home attention	124	72	52

*ECS = Early Childhood Services, Department for Community Welfare.

TABLE 5

Shows the eventual outcome of children referred by the nurses, and Medical Officer for specialist opinion.

N = 270

Speech	20 assessed 21 on assessment waiting list 20 receiving therapy 10 on therapy waiting list 43 on review
Hearing	29 surgery or medication 1 sensorineural hearing loss 4 normal hearing 4 acute otitis media 4 on review 28 results pending
Heart	1 VSD - no action 1 under review by specialist 1 result pending
Vision	8 strabismus 8 refractive error 15 needed glasses 11 on review 1 parent not yet kept specialist appointment after 6/12 21 normal vision 12 results pending 3 no reply from G.P.
Development	10 some degree intellectual delay and on review
Testes	1 under review by GP 1 surgery
Inco-ordination	7 needed therapy programmes
Vaginitis	1 needed treatment
Social	12 closed cases 1 ongoing

This table shows 184 confirmed cases which is 68% of specialist referrals.

CORRESPONDENCE RESOURCES UNIT

The following centres were visited:

Murchison - Meekatharra, Wiluna, Mt. Magnet, Cue, Yalgoo

Total Number of Children Examined : 755

Leinster

Total Number of Children Examined : 309

Tea and Sugar Train

The Child Health Nurse acted as Co-ordinator for the multi-disciplinary team and arranged 10 train trips for the year. The Child Health Nurse undertook every trip with representation from the Education Department (Early Childhood Itinerant Teacher). A Social Worker from the Department for Community Welfare travelled intermittently. 150 children were examined during the year.

STAFF EDUCATION AND DEVELOPMENT

The Child Health Certificate Curriculum was reviewed and updated at a series of workshops with the Child Health Nurse Educators, the Nurse Educator from Ngal-a and Mrs. Pauline Lambert, Education Officer from the Nurses' Board. The final document was prepared and forwarded to the Nurses' Board of W.A. in September 1981.

PARENTHOOD UNIT

During 1981, this Unit provided an information Centre for parents and expectant parents. It also has resources which have been used by professionals in both medical and paramedical fields and by students.

Services Provided by the Parenthood Unit

Information Centre
Introductory Night
Parenthood Classes
Sewing Group
Talks for Parents (Dr. Parry)
Public Relation evenings entertaining physiotherapists/midwives
Availability of teaching resources and consultation for Child Health Sisters conducting classes in country areas.

In Association with Physiotherapist

Father-Coached Preparation for Birth Classes
Post-natal Classes
Keep Fit Classes
Individual Counselling for clients when called upon (e.g. "Pregnancy Help Centre").

Attendances at:	Information Centre	1,059
	Introductory Parent Lecture	612

Parenthood Classes

Each programme is made up of 11 sessions - 8 talks and 3 film nights. 16 sessions were held each week at 10 different centres from mid January to mid December.

Programme provided in association with the staff Physiotherapist

Father-coached Preparation for Birth Classes conducted at Rheola Street remain popular. Four sessions with nine couples in each are held each week. Each course consists of seven classes.

Post-Natal Classes for clients who have attended the above classes, are held at 3 and 5 weeks post delivery. With these groups, leadership is shared by a Child Health Nurse and Physiotherapist.

Post-Natal Keep Fit - These classes are available to any new mother following her 6 week post-natal medical check. They have proved most beneficial and popular.

SCHOOL RESOURCES UNIT

For the third consecutive year over 7,000 high school students, boys and girls participated in the Parenthood Course for students with their teachers. The students were from 60 schools both Independent and State of which 44 were in the city and 16 in country towns.

Statistics for 1981

	Parenthood Course for Students Year 9		
	Boys	Girls	Total
City	3344	2788	6132
Country	1313	634	1947
	4657	3422	8079

Supplementary Attendances of

Primary School Students
Senior High School Students (Year 10-12)
Parent Groups, Commonwealth Youth Support Scheme Groups
Student and Post Graduate Nurses

No. of classes	696	
No. of students		2370
Parenthood students		8079
		10449

Intensives for teachers and others	19
Teachers attending - city	135
Community and Child Health Staff etc.	30
Total Attendances	165

SENIOR MEDICAL OFFICER AND PAEDIATRICIAN (DR. R. HENDERSON)

Throughout 1981, Community and Child Health Services continued to provide consultant paediatric services to the Northern, Pilbara, Kimberley and Eastern Goldfields Region through the activities of the Senior Medical Officer and Paediatrician. Six weekly outpatient and inpatient consulting clinics were provided to the larger centres of each Region with less frequent visits to smaller communities. A wide range of acute and chronic physical, behavioural and education related problems from differing cultural and social environments reflect the diversity of the State's geography and populace.

Lectures, tutorials and group discussions by the Paediatrician complement formal consultation as a means of inservice teaching in Child Health for staff at differing skill levels from the professions and departments concerned with children. Observations from the Paediatrician's privileged involvement with Western Australia's remote communities emphasises the effect that mutually co-operative endeavours of committed sensitive personnel from various disciplines in the community can have on promoting the continuing improvement in the State's health statistic. It is imperative that the thrust in health related community and personal development to which this Department is committed must continue if the alarming potential for harm to children's health daily threatened by infection, poor nutrition alcohol and family decompensation is to be contained. These disorders are not only evident in the Aboriginal community but are equally visible in the predominantly European mining, industrial and regional centres. Public Health Department services must continue to expand to cater for community needs in this area.

The paediatrician's teaching commitments have expanded in the Branch, encompassing Child Health Nurse Training, inservice courses and regional conferences together with the traditional involvement in undergraduate and postgraduate paediatric training. Princess Margaret Hospital and the Royal Australian College of Physicians have appointed the Visiting Consultant Paediatrician as supervisor in advanced training to the Paediatric Registrars seconded to Derby and Port Hedland Hospitals. A similar training position in Kalgoorlie would be of considerable advantage to the Eastern Goldfields community.

CHILD DEVELOPMENT CENTRE

CLINICAL WORK

The policy of the Child Development Centre is to accept requests for referrals from other professionals working in the community.

REFERRAL PATTERN

1977	261
1978	595
1979	1,199
1980	1,147
1981	1,394

Of this total, 792 came as direct referrals to the Child Development Centre team, 480 were referred to a specific professional rather than the team and there were 122 separate telephone referrals.

CLINICAL COMMITMENTS

	1979	1980	1981
New Cases seen	1,171	1,253	1,393
Review Appointments	1,087	1,203	1,541
Ongoing Treatment	2,106	2,651	2,769
Telephone Follow-up	3,178	4,567	7,136
Patients seen elsewhere	2,517	2,494	2,490

The work load of the Centre has increased not only in direct referrals but with ongoing reviews and treatment programmes. Because of the pressure on the Centre, attempts are being made to channel clients to be seen in other facilities attended by the Centre's professional team.

SOURCES OF REFERRAL

There has been very little significant change in the overall referral pattern which can be compared with the percentage referral source for 1980.

From country areas there were 25% referrals and services to rural areas have expanded during the year. Dr. Brenda Hammersley, Paediatrician with the Community and Child Health services is involved in assessment and management of referrals in southern regions of the State. Dr. Rex Henderson, Paediatrician/Senior Medical Officer, Child Health, also has links with the Child Development Centre and maintains contact with the Child Development Centre clients who live in the Pilbara, Kimberley and Goldfields Regions. In addition, the Senior Developmental Paediatrician and the Senior Physiotherapist of the Child Development Centre have commenced six monthly visits particularly to the Nickol Bay area and have been seeing a large number of children with developmental problems in Port Hedland and Karratha. This service is in conjunction with the Special Education Branch of the Education Department and attempts to foster and encourage local teams of professionals who have skills relevant to child development and developmental disabilities.

SOURCES OF REFERRAL

WITHIN THE SERVICE	1980		1981	
	No.	%	No.	%
Child Health Nurses	362	31.6	390	27.9
Internal from CDC Team	129	11.2	221	15.9
Medical Officers of Community and Child Health Services	121	10.5	185	13.3
School Health Nurses	22	1.9	23	1.6
Pre-School Nurses	11	0.9	6	0.4
Community Health Nurses	5	0.4	12	0.9
Sub-Total	650	56.5	837	60.0

OUTSIDE THE SERVICE	1980		1981	
	No.	%	No.	%
General Practitioners	137	11.9	104	7.5
Education Department -				
Guidance Officers	116	10.1	161	11.5
Teachers and Principals	47	4.09	31	2.2
Direct Parent Referrals	106	9.2	103	7.4
Dental Health	38	3.3	47	3.4
KEMH and PMH	19	1.6	36	2.6
Community Welfare	7	0.6	17	1.2
Child Guidance	2	0.2	-	-
Miscellaneous	25	2.17	58	4.2
Sub-Total	497	43.30	557	40.0

MANAGEMENT

Following assessment, individual treatment programmes where relevant are arranged. Waiting lists for individual therapy continue to be too long and at the end of 1981 the occupational therapy waiting list was 35 and the speech therapy waiting list was 112.

Group management has continued as an alternative approach for some problems.

Occupational therapists and physiotherapists conducted a weekly group for physically disabled preschool children concentrating on everyday activity skills and mobility. A second group of four to five developmentally delayed but not physically handicapped children commenced during the year.

For both groups, parents have been involved within the group and continue to have a separate discussion time with a social worker.

Social Workers, in addition to the above parent group, have run a self esteem group for ten to twelve year olds and another group for mothers experiencing difficulties in coping.

EDUCATIONAL ACTIVITIES

Three registrars with advanced training in paediatrics were involved in the Child Development training programme during the year, two for twelve months and one for six months. Training placements were also taken up by social work, psychology, occupational therapy and physiotherapy students.

Some 158 lectures were given throughout the year and a one week course in the use of the Griffiths Developmental Scales for Children was held and attended by both interstate as well as state professionals. The proposed five week course in Developmental Paediatrics was not held because of funding problems. The staff of the Centre continued to be involved in in-service training experiences within the Community and Child Health Services branch and to be involved in fifth year medical student teaching. Public lectures in parent craft continue to make a positive contribution.

RESOURCES

A series of eight pamphlets under the title "As You Crow" was published during the year and have been well received. These are available for public purchasing and interstate interest has also been expressed in their use.

The Play Information Mobile Service (PIMS) is now well established and as indicated in the following table has continued to provide ideas concerning child play, toy resources and child rearing to a number of groups.

PIMS GROUPS

	No. of Group Sessions	Total Attendance
Parent groups	162	1,918
Parents of handicapped	2	16
Students	33	813
Other	15	166

SPEECH THERAPY

9 full time and 3 sessional speech therapists provide a service at the Child Development Centre, the 2 special schools (Koondoola and Willetton) and at 3 metropolitan Child Health Services Centres. Referrals are accepted for children up to 12 years of age with a greater number of referrals in the younger children which increases the opportunity for early intervention and prevention of secondary problems.

Because of the large waiting lists and small number of speech therapy staff, priority is given to children of certain ages (2-3 years) and categories of disorders, e.g. dysfluent children under 5. Country children are also given priority assessment.

SCHOOL HEALTH SECTION

NUMBER OF SCHOOLS VISITED 1981

	METROPOLITAN	COUNTRY	TOTAL
GOVERNMENT SCHOOLS			
Primary and Pre-Primary	394	334	728
High	53	27	80
District High	1	51	52
Special Schools	14	8	22
NON-GOVERNMENT SCHOOLS			
Primary and Pre-Primary	80	57	137
Secondary	20	9	29
Primary and Secondary	28	9	37

STUDENT ENROLMENTS FOR 1981

GOVERNMENT SCHOOLS		NON-GOVERNMENT SCHOOLS	
Pre-Primary	23,938	Pre-Primary	2,172
Primary	139,474	Primary	26,998
Secondary	66,003	Secondary	21,509
Special Schools	1,649		
TOTAL	231,064	TOTAL	50,679

TOTAL NUMBERS GOVERNMENT AND NON-GOVERNMENT SCHOOLS 281,743

NEW HIGH SCHOOL MEDICAL CENTRES

Nine (9) new high school medical centres were opened in 1981:

- Como
- Forrestfield
- Maddington
- Swan View
- Willetton
- Collie
- Harvey Agricultural
- John Willcock, Geraldton
- Manjimup

This makes a total of 46 metropolitan and 24 country high schools with a nurse permanently on the staff and working from a purpose built health centre within the school.

Students made 148,712 visits to consult the School Nurse during the year. This was an increase of 922 student visits compared with 1980.

PRIORITY SCHOOLS PROGRAMME

The numbers of nurses in this programme remained unchanged. Of the 10 staff involved, 4 nurses provided health services on a paired basis to each of the two metropolitan high schools at Hamilton Senior High School and South Fremantle Senior High School while one nurse was based in each of the following schools.

Balga Senior High School
East Fremantle Primary School
Highgate Primary School
Lockridge Primary School
Midland Primary School
Roebourne Primary School

SPECIAL SCHOOLS FOR PHYSICALLY HANDICAPPED CHILDREN

The integrated school programmes of education, medical and therapeutic assessment for the children attending the Koondoola and Willetton Special Schools were consolidated over the year.

SPECIAL SCHOOLS FOR INTELLECTUALLY HANDICAPPED CHILDREN

School nurses who work from district offices visit these special schools for intellectually handicapped children to offer screening for visual and hearing impairment. Other aspects of health services are provided by teams from the Division for the Intellectually Handicapped of the Mental Health Services.

SCREENING AND ASSESSMENT PROGRAMMES

Full Health Appraisal

31,763 full health appraisals were carried out by nurses in 1981. This showed an increase on the previous year of 9%.

62% of these were carried out on children in pre-primary classes and 18.5% on children in year 1.

Vision and Hearing Screening

Audiology Services

Miss S. Weeks, the Senior Audiologist reports:

The installation of the diagnostic audiometric testing equipment was the highlight of early 1981. Several technical difficulties with the sound treating and internal finish of the testing room delayed its use until mid June. Major acoustic problems have also been resolved and the testing room and equipment are now fully operational. The value of the infant testing equipment has been illustrated consistently. Accurate sound field

thresholds and screening information can now be reliably obtained on infants down to six months of age, as well as difficult to test children.

Referrals:			202
Sources:	Child Development Centre		84
	Child Health Sisters		77
	School Health and other sources		41
Ages:	0-18 months	19 mths. - 4 years	School Age Children
	38	97	67
Additional Rechecks:	67		

Nine country trips, involving 12 weeks, were made during the year, in conjunction with the Ear Health Team, and Dr. J. Sunderman, the Consultant ENT Surgeon. These involved mass screening of children 0-12 years of age in the Pilbara, Murchison and Goldfields areas, as well as limited screening and referrals of children and older Aboriginal children in the Kimberley region. Approximately 10 hearing aids were fitted to children and adults in the Kimberley area. Trips to the Kimberley were made with the Senior Education Officer, Special Education Branch, who was an invaluable part of testing children in the schools.

Other activities during the year included making a video on hearing aid maintenance and repair, providing inservice workshops for School Health Medical Officers, participating in nurse orientation, liaising with Special Education, the National Acoustics Laboratory, and the schools for hearing impaired children; and consulting on new equipment purchase.

During 1981, a great amount of growth has been seen in audiological services. However, because of the demand, secondary screening procedures have been instituted with the effect that only selected children are seen for complete audiological assessment. Where possible, it is encouraged that local medical and nursing staff try to cope with the child rather than refer. Concern has been growing because of the lowered availability of the National Acoustic Laboratory as a referral source. This has had the greatest effect on the school age population and has placed further burdens on the School Health personnel.

To facilitate continued assessments and follow-up during the audiologist's country visits and to cope with the build up of waiting lists, particularly with the reduced availability of the National Acoustic Laboratory, a second audiologist position will be necessary. This would also ensure maximum utilisation of the testing facility.

Table Showing Numbers of Vision and Hearing Tests for Pre-Primary and Primary School Children 1980 and 1981

		1980	1981	% Change
Numbers of Vision Tests	Metro	65,747	66,261	+ 0.8%
	Country	27,463	32,442	+18.1%
	Totals	93,210	98,703	+ 5.9%
Numbers of Hearing Tests	Metro	58,888	60,389	+ 2.6%
	Country	26,185	30,529	+16.6%
	Totals	85,073	90,918	+ 6.9%

Table Showing Numbers of Vision and Hearing Tests for Students Attending Secondary Schools 1980 and 1981

		1980	1981	% Change
Numbers of Vision Tests	Metro	20,363	21,699	+ 6.6%
	Country	7,101	7,970	+12.2%
	Totals	27,463	29,669	+ 8.0%
Numbers of Hearing Tests	Metro	1,923	2,651	+37.9%
	Country	1,593	2,073	+30.1%
	Totals	3,516	4,724	+34.4%

Scoliosis Screening Programme

A total of 35,788 students were screened by nurses and 9,017 by medical officers. 732 of these were referred for further opinion and management and 37 students needed active intervention in the form of a brace or surgery as a result of this programme.

Home Visits

A total of 9,908 home visits were made by staff of the School Health Section during the year.

Immunisation

In 1981 the parents of 3,551 primary school children were notified that immunisation needed to be completed, the majority of these were for completion of their primary course of immunisation. This represents a 33% decrease on the previous year, an indication of parental awareness for primary prevention.

Table to Show Numbers of Notifications for Immunisation in 1981 and % Change Over Previous Year

		Numbers of Children Notified 1980	Numbers of Children Notified 1981	% Change
Metro-politan Schools	Primary and Pre-Primary	2739	1949	-29%
	Secondary	3724	4726	+27%
Country Schools	Primary and Pre-Primary	2557	1602	-37%
	Secondary	801	2278	+184%

DISABILITIES IDENTIFIED

Infections of Skin and Hair

Table Showing Numbers of Children with Pediculosis who were brought to the Attention of School Health Staff

		1979 Numbers	1980 Numbers	% Change on Previous Year	1981 Numbers	% Change on Previous Year
Metropolitan	Primary School Students	7485	5263	-30%	4234	-20%
	Secondary School Students	308	246	-20%	169	-31%
Country	Primary School Students	4508	3963	-12%	3827	- 3%
	Secondary School Students	482	352	-27%	451	+28%

Overall there was a 12.6% reduction in numbers of primary school children with pediculosis compared with 1980. The greatest decrease occurred in metropolitan schools, a 9.6% decrease compared with a 3.4% decrease in country schools.

Dental Caries

Table to Show Numbers of Children with Dental Caries Identified by School Health Staff in 1979, 1980 and 1981

		1979 Numbers	1980 Numbers	% Change on Previous Year	1981 Numbers	% Change on Previous Year
Metropolitan Schools	Primary School Students	977	762	-22%	601	-21%
	Secondary School Students	430	400	- 7%	267	-33%
Country Schools	Primary School Students	712	1033	+45%	430	-58%
	Secondary School Students	112	98	12.5%	72	-27%

Visual Defects

1,699 children were confirmed to have refractive errors in 1981 and this continues to be the largest single disability identified. Glasses were prescribed for 1,262 children of whom 341 (27%) were in pre-primary or year 1 classes. The largest number of students prescribed glasses in any one year was for 204 students in year 8. This supports the continuity of providing screening for visual problems for high schools students in their first year.

224 students were confirmed to have strabismus and 132 (59%) of these were in pre-primary or year 1 classes.

96 children were found to have amblyopia and 33 children underwent surgery as a result of referral for visual problems.

HEALTH EDUCATION

Table to Show Periods Taken for Health Education in 1979, 1980 and 1981

	1979	1980	1981
Primary Schools	2625	2901	3067
High Schools	4002	4615	4131
TOTALS	6627	7516	7198

SPECIAL ACTIVITIES DURING THE YEAR

Children with Severe Visual Impairment

School health service and the Special Education Branch of the Education Department have started a programme to identify those children who have severe visual impairment. The Education Department's policy is to endeavour to place where possible all children in the normal school environment.

The aims of this programme are:

- To locate which school these children attend
- To provide visual aids where necessary
- To refer children for expert technical assistance where indicated for the provision of visual aids
- To monitor the child's educational progress
- To monitor the child's medical condition
- To provide advisory services for rural and remote country children who have severe visual impairment in conjunction with the Lions Professor of Ophthalmology and the Lions Save Sight Foundation.

Lectures Given by Staff

School Health staff continue to have extensive involvement in giving lectures and talks both within the service in orientation and continuing inservice programmes and for other groups such as:

School children, teachers, trainee guidance officers, staff of Aboriginal Education Branch, Parent and Citizens' Associations, groups of expectant parents, country school principals, student groups at Western Australian Institute of Technology, nurses at Ngal-a child health course, community nursing students, trainee nurses and medical students.

Research Projects

The following projects have been carried out by staff of the school health service during 1981.

1. Assessment of hearing loss and ear disease in Aboriginal children who live in remote communities and the evaluation of a simple irrigation method of ear toilets.

2. A point prevalence study to determine hearing loss in a representative sample of young primary school metropolitan children.

3. An enquiry into the health concerns of adolescents from the adolescent and the high school nurse perspectives.

CLASSIFICATION OF CONFIRMED DISABILITIES AND HANDICAPS UNDER SYSTEMS 1981

OPHTHALMOLOGISTS' ASSESSMENTS

Refractive Errors	1699
Infections	61
Trachoma	265
Strabismus	224
Amblyopia	96
Other	74
TOTAL POSITIVE FINDINGS	2419
Spectacles Prescribed	1262
Surgery	33
Normal Vision	281

HEARING ASSESSMENT

Sensorineural Deafness	147
Serous Otitis Media (Glue Ear)	321
Dry Perforation	27
Perforation with Discharge	137
Foreign Bodies	25
Otitis Externa	19
Transient Hearing Loss	152
Wax (Cerumen)	98
Acute Otitis Media	71
Other	63
TOTAL POSITIVE FINDINGS	1060
Hearing Aids Supplied	14
Surgery	171
Normal Hearing	96

CARDIOVASCULAR SYSTEM

Congenital Heart Disease	20
Rheumatic Heart Disease	7
Other	62
TOTAL POSITIVE FINDINGS	89

MUSCULOSKELETAL SYSTEM

Muscular Dystrophies	-
Scoliosis Under Review	521
Scoliosis Require Active Treatment	37
Feet (Pes Planus, etc.)	13
Perthes Disease 'Irritable Hip'	-
Genu Valgum	-
Fractures and Trauma	21
Other	23
TOTAL POSITIVE FINDINGS	615

SKIN DISORDERS	46
DISORDERS OF GROWTH AND NUTRITION	
Under Weight	9
Obesity	98
Growth Retardation	20
Malabsorption	-
Anaemia	88
Thyrotoxicosis	-
Hypothryoidism	-
Diabetes	-
Other	14
TOTAL POSITIVE FINDINGS	229
GENITO-URINARY SYSTEM	
Bilateral Undescended Testes	18
Unilateral Undescended Testes	57
Hydrocoele	16
Inguinal Hernia	16
Enuresis	54
Other	19
TOTAL POSITIVE FINDINGS	180
CENTRAL NERVOUS SYSTEM	
Cerebral Palsy	6
Epilepsy	17
Migraine and Recurrent Headache	18
Other	20
TOTAL POSITIVE FINDINGS	61
PSYCHOSOCIAL AND DEVELOPMENT DISORDERS	
Speech Disorders	490
Developmental Delay	55
Behaviour Problems (Referral Other Agencies)	98
Behaviour Problems (Managed Within the Service)	55
Learning Difficulties	50
Mental Retardation	16
Encopresis	26
Other	22
TOTAL POSITIVE FINDINGS	812
TOTAL NUMBER OF DISABILITIES AND HANDICAPS	5511

COMMUNITY HEALTH SECTION

CENTRES OPENED AND CLOSED DURING 1981

Closed - Jandakot

Opened - Exmouth

Reopened - Nullagine

ABORIGINAL HEALTH

During 1981 the work done by the Branch to establish improvements in Aboriginal Health has been maintained in all areas. Increasing Aboriginal involvement and influence on the policy and delivery of services by State authorities has been encouraged. These changes are gathering momentum and there will by greater Aboriginal involvement over the ensuing twelve months. It has been considered more appropriate to follow a gradually expanding low key policy than to introduce hastily planned large scale changes. As mentioned previously, Mr. G. Willaway has been appointed as Aboriginal Health Coordinator. His duties include discussion and liaison with Aboriginal communities and he reports regularly to the Director of Community and Child Health Services on their views.

Great emphasis is placed upon the importance of Aboriginal Health Workers in communities. Prior to the selection of a health worker, discussions are held with the community to decide what the role of that health worker should be and nominations are called for. The final selection is made by the Department but every attempt is made to involve the community as much as possible. The role of the health worker is again seen as a two way process interpreting the community's needs and cultural precepts to the Department while at the same time translating the Department's good health precepts back to the community.

CLIENT ENCOUNTERS

During 1981, there were 266,654 encounters by field staff with Aboriginal clients, as shown in Table 1. 35,000 of these encounters were related to the monitoring of children under the age of five years. A further 15,000 encounters were related to the screening and management of people with ear disease and 13,000 were for the screening and management of people with eye diseases. 6,000 of these encounters were also with children under the age of 5 years. 20,000 encounters were related to the diagnosis and management of people with skin diseases. 10,000 encounters were with people over the age of 65 years. These figures do include work performed by Aboriginal Health Workers. The figures do not include casual encounters and those seen by medical officers.

TABLE I

COMMUNITY HEALTH SERVICES ENCOUNTERS WITH ABORIGINAL CLIENTS

WESTERN AUSTRALIA - 1981

ENCOUNTER CODES	0-5	6-14	15-19	20-49	50-64	65+	Unknown	TOTAL
UNDER FIVE PROGRAMME	28,415	829	432	1,664	81	131	4,077	35,629
HEALTH SCREENING	2,172	10,472	436	1,287	528	347	12,793	28,035
EAR DISEASE	4,047	5,271	200	769	211	136	4,283	14,917
EYE DISEASE	1,920	4,911	214	1,362	730	671	3,785	13,593
HANSENS DISEASE	325	980	353	1,520	855	612	319	4,964
ANTE OR POST-NATAL CARE		120	1,614	2,954			1,545	6,233
ACCIDENTS OR INJURIES	831	1,926	569	3,445	640	286	630	8,327
ALCOHOL OR OTHER DRUG ABUSE	7	8	41	1,175	176	32	210	1,649
SKIN DISEASES	3,672	7,021	972	3,915	1,034	446	3,150	20,210
GASTRO-INTESTINAL DISEASE	1,193	292	75	564	146	124	243	2,637
RESPIRATORY DISEASE	2,361	716	355	1,662	939	540	669	7,242
MUSCULAR DYSTROPHY	4	3	2	18	1	4	129	161
MULTIPLE SCLEROSIS			3	54	12	4	75	148
RHEUMATOID ARTHRITIS	1	17	8	84	133	44	116	403
EXTEMDED CARE								
BALGA OUTREACH								
HOSPITAL VISITS METRO	697	490	215	935	373	201	5	2,916
OTHER	7,362	10,920	5,280	30,559	10,866	6,996	47,607	119,590
TOTAL	53,007	43,976	10,769	51,967	16,725	10,574	79,636	266,654

NUTRITIONAL ANTHROPOMETRY

Graph 1 shows a steadily declining percentage of W.A. Aboriginal children below the third percentile for height at the age of 12 months. The percentage below the third percentile for weight at the age of 12 months has shown a less striking decline. Changes in nutritional habits are always slow to occur and since its inception, the Community Health Section has been encouraging breast, cup and spoon feeding and discouraging bottle feeding. The Under Fives educational programme for Aboriginal health workers will probably be of assistance in continuing to bring about these changes.

During 1980, a team headed by Dr. Michael Gracey of the Princess Margaret Children's Medical Research Foundation carried out nutritional anthropometry measurements on over 600 Aboriginal children throughout Western Australia. Preliminary data from this confirms the findings by Community and Child Health Services staff.

TRACHOMA AND EYE HEALTH

During 1981, several changes have been made to increase the effectiveness of work done in trachoma screening and management. The Department has appointed Dr. J. Williams as full time Medical Coordinator of the Western Australian Trachoma and Eye Health Programme and a Committee has been established to overview the programme as mentioned previously. Organisations represented on the Committee are the:

Public Health Department
Royal Australian College of Ophthalmologists
University Department of Ophthalmology
National Aboriginal Conference
Aboriginal Advisory Committee
Aboriginal Lands Trust
Aboriginal Medical Services
Hospital and Allied Services Department
Department of Aboriginal Affairs

It is proposed that an Aboriginal Coordinator be appointed for the programme and several Aboriginal Liaison officers throughout the State.

During 1981, 8,645 people were screened for trachoma.

TABLE 2

TRACHOMA SURVEYS 1981

Regions	No. of People Screened
Kimberley	4,578
Pilbara	1,577
Eastern Goldfields	845
Northern	1,120
Metropolitan	429
South West	96
TOTAL	8,645

GRAPH 1.

HEIGHT OF W.A. ABORIGINAL CHILDREN, PERCENTAGE BELOW THE THIRD PERCENTILE FOR EACH ANNUAL COHORT AT THE AGE OF 12 MONTHS

W.A. Aboriginals - Percentage below the Third Percentile at Age 12 months.
ANNUAL COHORT AT THE AGE OF 12 MONTHS

EAR HEALTH PROGRAMME

The Ear Health Programme continued during 1981 with visits to Mt. Magnet, Meekatharra, Cue and Wiluna in the Northern region; Jigalong, Warralong, Strelley and Roebourne in the Pilbara and Laverton, Mt Margaret, Leonora, Menzies, Cundeelee and Coolgardie in the Goldfields.

The team for each visit comprised two Child Health Medical Officers, Audiologist and Child Health Nurse from Perth and local community and school health staff in each area.

The aims of the programme are:

1. To identify and treat children with middle ear disease and/or hearing loss.

2. To liaise with local education and health personnel regarding the management of children with ear disease and hearing defects.

3. To liaise with parents and local communities regarding the significance and management of ear disease and to encourage their involvement in treatment and prevention.

4. To assess the effectiveness of a treatment programme of ear toilets.

5. To refer children for specialist E.N.T. treatment where necessary.

6. To inform the Special Education Branch of the Education Department of children with hearing loss.

A total of 1,549 children were screened for evidence of middle ear disease and hearing loss. Some were seen on more than one occasion making a total of 1,640 examinations.

The prevalence of perforations of the tympanic membrane in Aboriginal children varied from 15% at Meekatharra and Mt. Magnet to 56% at Cundeelee. The prevalence of hearing loss varied from 11% at Menzies to 56% at Cundeelee and Strelley.

Following each visit a management programme of syringing chronic discharging ears once or twice daily with tap water was implemented. Measures to improve hearing loss with the use tranistorised tape recorders is also being undertaken in conjunction with the Education Department.

Evaluation of the programme is showing that the results are disappointing as far as the resolution of wet perforations is concerned. However, on a subjective basis, the ears that are regularly syringed are cleaner with less debris, smell and excoriation of facial skin. An alternative approach by Dr. H. Coates, an ear, nose and throat specialist, using suction instead of syringing is being considered with the assistance of funds from the Telethon Research Foundation. It is anticipated that a comparison of the two methods will be made in 1982 and 1983.

LEPROSY

In both the Kimberley and Pilbara Regions of Western Australia, most of the Aboriginal people are seen each year and are screened for early symptoms and signs of leprosy. Therefore, new cases of leprosy found each year represent an annual incidence figure for leprosy in that community. Tables 3 and 4 show the annual incidence of new cases of leprosy per thousand Aboriginal people per annum in each of those regions. At present the annual incidence is somewhere between 0.4 and 0.8 new cases per thousand people per annum and these compare favourably with other parts of the world where leprosy is endemic. Since leprosy has such a long incubation period it is several years before a screening programme will completely reduce the incidence of leprosy.
However in both of these regions the incidence has been falling over the last 5 or 10 years and it is anticipated that this trend will continue in the future.

Notification of new cases for 1981 = 9 of which 7 (Aboriginal) were from the North West and 2 from the metropolitan (non Aboriginal).

TABLE 3

KIMBERLEY REGION -WESTERN AUSTRALIA

ANNUAL INCIDENCE OF LEPROSY AMONGST ABORIGINES

Year	Aboriginal	No. of New Cases Notified	Incidence - New Cases/ 1000/annum
1971	7790	21	2.7
1972	8077	8	1.0
1973	8368	10	1.2
1974	8641	14	1.6
1975	8930	8	0.9
1976	9221	9	1.0
1977	9463	11	1.2
1978	9679	6	.6
1979	9858	9	.9
1980	10094	4	.4
1981	10266	4	.4

TABLE 4

PILBARA REGION - WESTERN AUSTRALIA

ANNUAL INCIDENCE OF LEPROSY AMONGST ABORIGINES

Year	Aboriginal Population	No. of New Cases Notified	Incidence - New Cases/ 1000/annum
1971	2873	1	0.3
1972	2999	0	0.0
1973	3099	4	1.3
1974	3219	1	0.3
1975	3346	3	0.9
1976	3451	8	2.3
1977	3525	5	1.4
1978	3575	5	1.4
1979	3639	1	0.3
1980	3731	3	0.8
1981	3813	3	0.8

MORTALITY RATES IN THE ABORIGINAL POPULATION

This has been difficult to ascertain in the past because racial groups of deceased persons were not recorded on death certificates. During 1981, arrangements have been finalised with the Registrar General for this information to be recorded so that from 1982 onwards, more reliable figures will be available.

To determine racial groups since 1976 a manual check of stillbirths and infant deaths has been performed. From this information it has been possible to calculate stillbirth rates, neonatal death rates and post-neonatal death rates for Aboriginal and non-Aboriginal children (see Table 2 at commencement of this report).

Trends in stillbirth, neonatal death rates and post neonatal death rates are shown in Graphs 2, 3 and 4. The post neonatal death rate shows the most striking fall.

A previous retrospective survey of Aboriginal women delivering over a 12 month period had shown that only 25% present for antenatal care before 20 weeks gestation. The survey also showed that approximately 60% of women attend for a post natal check, 22% go on to use a reversible method of family planning and 7% have a surgical sterilization following the delivery. The Aboriginal Health Workers are receiving an education

programme to help them to influence women in their community to present earlier for antenatal care as well as being more receptive to family planning programmes. The programme is aimed at influencing birth weights and delivery outcomes.

ABORIGINAL STAFF

The number of Aboriginal staff involved in the delivery of Aboriginal Health Services is shown in the table below.

TABLE 5

a) Health

Aboriginal Health Co-ordinator	1
Aboriginal State registered nurses	5
Aboriginal registered enrolled nurses	10
Aboriginal Health Workers	81
Aboriginal Camp Nurses	75
	172

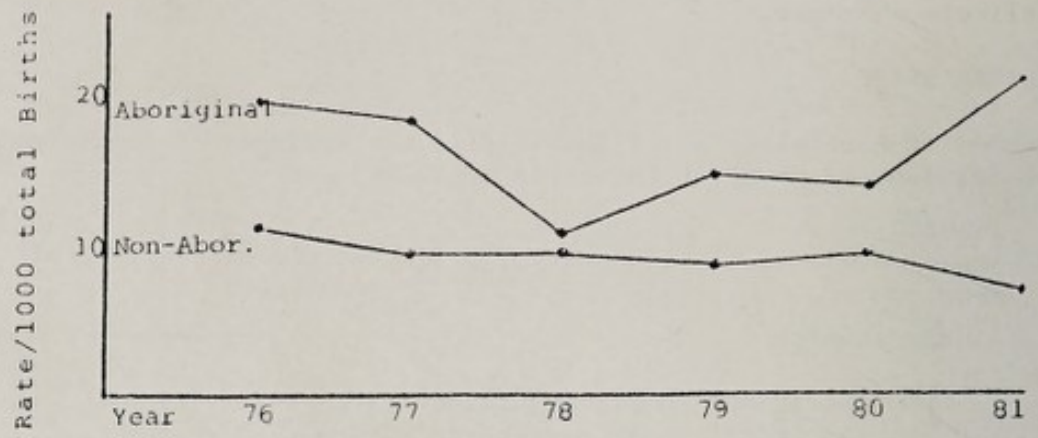
b) General Administration

Storeman/Driver	1
Typists	2
Clerical Assistant	1
Store/Clerk	1
	5

This shows a total of 177 Aboriginal staff employed by the Branch.

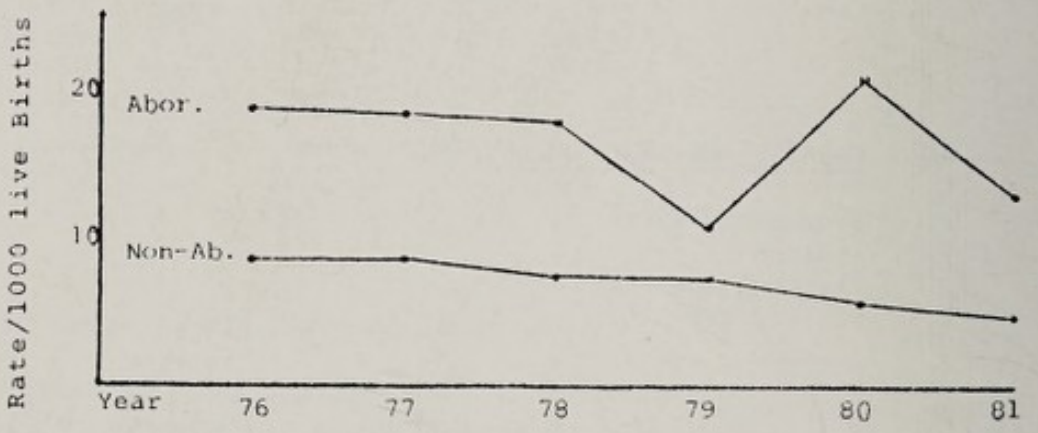
WESTERN AUSTRALIAN STILL BIRTH RATE

GRAPH 2.



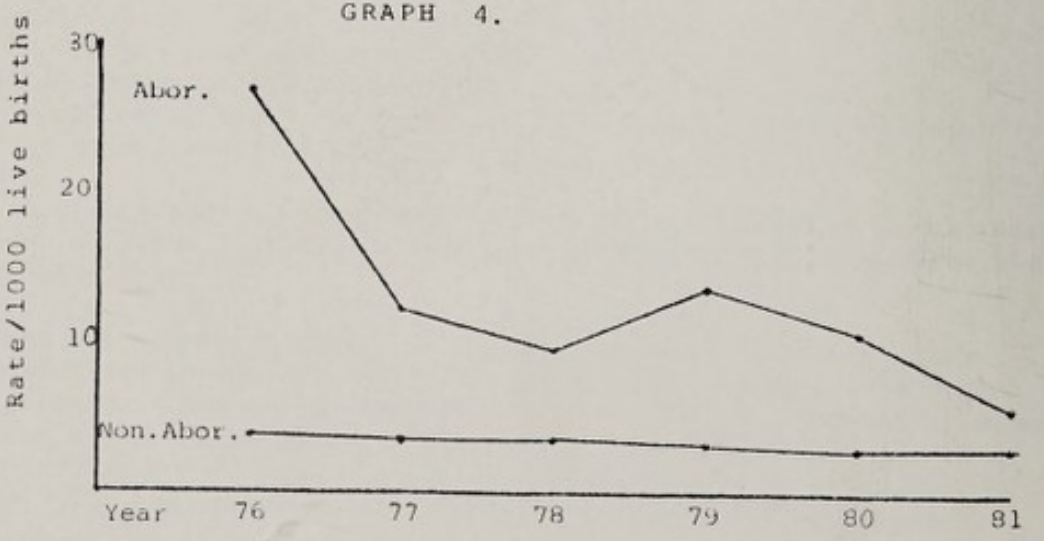
WESTERN AUSTRALIAN NEONATAL DEATH RATE

GRAPH 3.



WESTERN AUSTRALIAN POST NEONATAL DEATH RATE

GRAPH 4.



ABORIGINAL HEALTH WORKERS - THEIR ROLE

The Aboriginal Health Worker is the designated member of the health team selected by and representing the target community. They are exemplars and it is expected that they are able to exert some influence on the health of other Aboriginal people.

Training of Health Workers

This occurs in 3 ways:

1. On the job training by the nurse with whom the Health Worker works.

2. Group training by educational staff on specific health matters. Courses completed are as follows:

First Aid	40
Under Fives Programme	73
Maternal Health Programme	76

3. Further general education

The Mt. Lawley College of Advanced Education provides external courses supervised by a tutor at two levels and it is a condition of employment to Health Workers that they participate in these courses. The general education certificate gives a basic competence in mathematics, communication and community studies. The Adult Education Entry Certificate gives sufficient skills in mathematics, communications and community studies to be able to enter tertiary institutions as mature age students. Tables 6 and 7 show the number of students who have passed or are currently enrolled in each of these units.

TABLE 6

GEC COURSE

Unit	No. Completed	No. Currently Enrolled
Mathematics C10	3	4
Mathematics C11	0	0
Communications C10	6	4
Communications C11	2	6
Community Studies C10	2	3
Community Studies C11	0	0

TABLE 7

AEEC COURSE

Unit	No. Completed	No. Currently Enrolled
Mathematics C20	4	6
Mathematics C21	0	0
Communications C20	3	3
Communications C21	1	1
Community Studies C20	4	4
Community Studies C21	0	0

TABLE 8

COMMUNITY HEALTH SECTION ENCOUNTERS WITH NON ABORIGINAL CLIENTS

WHOLE STATE 1981

	0-5	6-14	15-19	20-49	50-64	65+	Unknown	TOTAL
ENCOUNTER CODES								
UNDER FIVES PROGRAMME	4619			315	10	6	294	5244
HEALTH SCREENING	455	1643	171	290	36	36	1020	3651
EAR DISEASE	111	139	11	108	14	17	33	433
EYE DISEASE	111	150	21	186	43	62	92	665
HANSEN'S DISEASE	10	27	40	360	47	36	1	521
ANTE OR POST-NATAL CARE		3	154	856			342	1355
ACCIDENTS OR INJURIES	124	287	91	536	101	115	77	1331
ALCOHOL OR OTHER DRUG ABUSE	1	5	2	163	59	16	17	263
SKIN DISEASES	183	293	165	361	110	106	208	1426
GASTRO-INTESTINAL DISEASE	145	93	25	180	38	28	20	529
RESPIRATORY DISEASE	352	336	38	390	112	151	77	1456
MUSCULAR DYSTROPHY	2	24	43	185	69		39	362
MULTIPLE SCLEROSIS				298	137	8	71	514
RHEUMATOID ARTHRITIS	1	14	2	174	428	167	30	816
EXTENDED CARE								
S.T.D. (Kimberley)				4				4
CARDIOVASCULAR (Kimberley)				5				5
OTHER	965	1543	582	6914	1392	4064	3214	18674
TOTAL	7079	4557	1345	11325	2596	4812	5535	37249

GENERAL POPULATION

The Community Health Section does provide some services to members of the general community. Table 8 shows the number of encounters with non-Aboriginal clients during 1981.

There are many group activities either initiated or run by Community Health Section staff. Some of these groups include day care activities for elderly people, keep fit exercise classes for the elderly, weight reduction groups, antenatal classes, health education to CYSS groups and general health promotion groups incorporating a wide range of topics

SPECIALISED NURSING ROLES

W.A. Arthritis and Rheumatism Foundation

TABLE 9

ARTHRITIS COMMUNITY SERVICE

Home Visiting Programme

	1980	1981
Home Visits	944	884
Patient Time Units*	2025 = 39.5%	1814 = 44.5%
Travel Time Units*	2117 = 41.25%	1415 = 34.5%
Other Time* (Talks, GP contact, Allied Health Contact)	988 = 19.25%	862 = 21.0%

*Each Time Unit is 20 minutes.

Arthritis Rehabilitation and Advisory Service Clinics

	1980	1981
Clinics Attended by Field Nurses	14	18
Patient Clinic Time	941 = 53.5%	1398 = 59.5%
Travel Time to Clinics	420 = 24.0%	548 = 23.5%
Clinic Preparation Time	394 = 22.5%	403 = 17.0%

Multiple Sclerosis

The Multiple Sclerosis Nurse received 29 new referrals during 1981 and paid 586 visits. The total number of clients registered is 197.

Muscular Dystrophy

There is one Nurse employed in this work, working in close liaison with Professor Kakulas of the Department of Neuropathology. The work consists of home visiting and assessments, assisting in the completing of "family trees"

and counselling both clients and relatives.

Independent Living Centre

This was made a full time position in June 1981, and nursing involvement has continued especially in connection with:

a) Liaison with nurses, private and public hospitals, and the community, both in metropolitan and country areas.

b) Responsibility for specific nursing orientated enquiries, such as the management of incontinence and the prevention of pressure sores.

c) Talks to nursing students and post graduate nurses.

d) Talks to other community groups.

During the year a complete review of the whole catalogue system was commenced, so that all information was updated and specifications changed to metric.

Flight Sisters

In 1981, the W.A. Branch of the Royal Flying Doctor Service received funds to employ their own nursing personnel. The nurses employed by the Community Health Section in this area were offered positions by the RFDS and those who did not wish to transfer were offered other positions with the Department. After much negotiation a smooth changeover without any disruption of the service being offered to the public was effected.

Hospital Liaison Section

This Section has continued its work and is or great value not only to the clients but also to the Public Hospitals visited by the staff.

Problems experienced during 1981 have been mainly in connection with IPTAAS, but this has gradually improved as the scheme has become better understood.

During 1981, the Hospital Liaison Section was involved in the transport of 616 people from metropolitan hospitals back to their homes.

VIETNAMESE REFUGEES

During 1981, 1,191 refugees from Vietnam arrived as immigrants in Western Australia. As in previous years, health screening was performed on these people soon after arrival and the conditions found are set out in Table 11.

TABLE 11

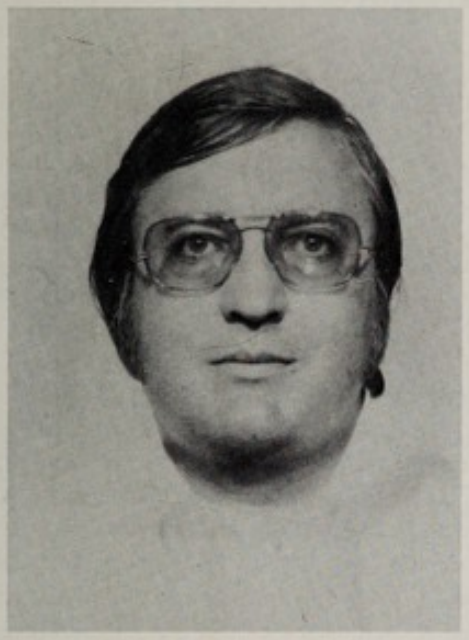
VIETNAMESE REFUGEE IMMIGRANTS

RESULTS OF INITIAL SCREENING - 1981

DISEASE/PROBLEM	NUMBER DETECTED	PERCENTAGE
Dental Caries	440	36.94
Pediculosis	469	39.38
Scabies	261	21.91
Trachoma	29	2.43
Tinea	53	4.45
Pityriasis Versicolor	129	10.83
Thalasemia trait	37	3.11
Tuberculosis	44	3.69
Syphilis	17	1.43
Previous treponemal infection	34	2.85
Otitis Media	12	1.01
Hypertension	24	2.02
Anaemia	15	1.26
Poor Vision	17	1.43
Hansen's Disease	NIL	-
Giardia lamblia	20	1.68
T. trichiura	43	3.61
Ascariasis	11	0.92
Strongyloidiasis	11	0.92
Chlonorchiasis	NIL	-
S. Typhi	NIL	-
Other Salmonella	43	3.61
Hookworm	22	1.85
TOTAL IMMIGRANTS:	1,731	100

Appendix VII

KIMBERLEY HEALTH REGION



R.M. Spargo,
M.B.B.S., E.C.F.M.G.
Director

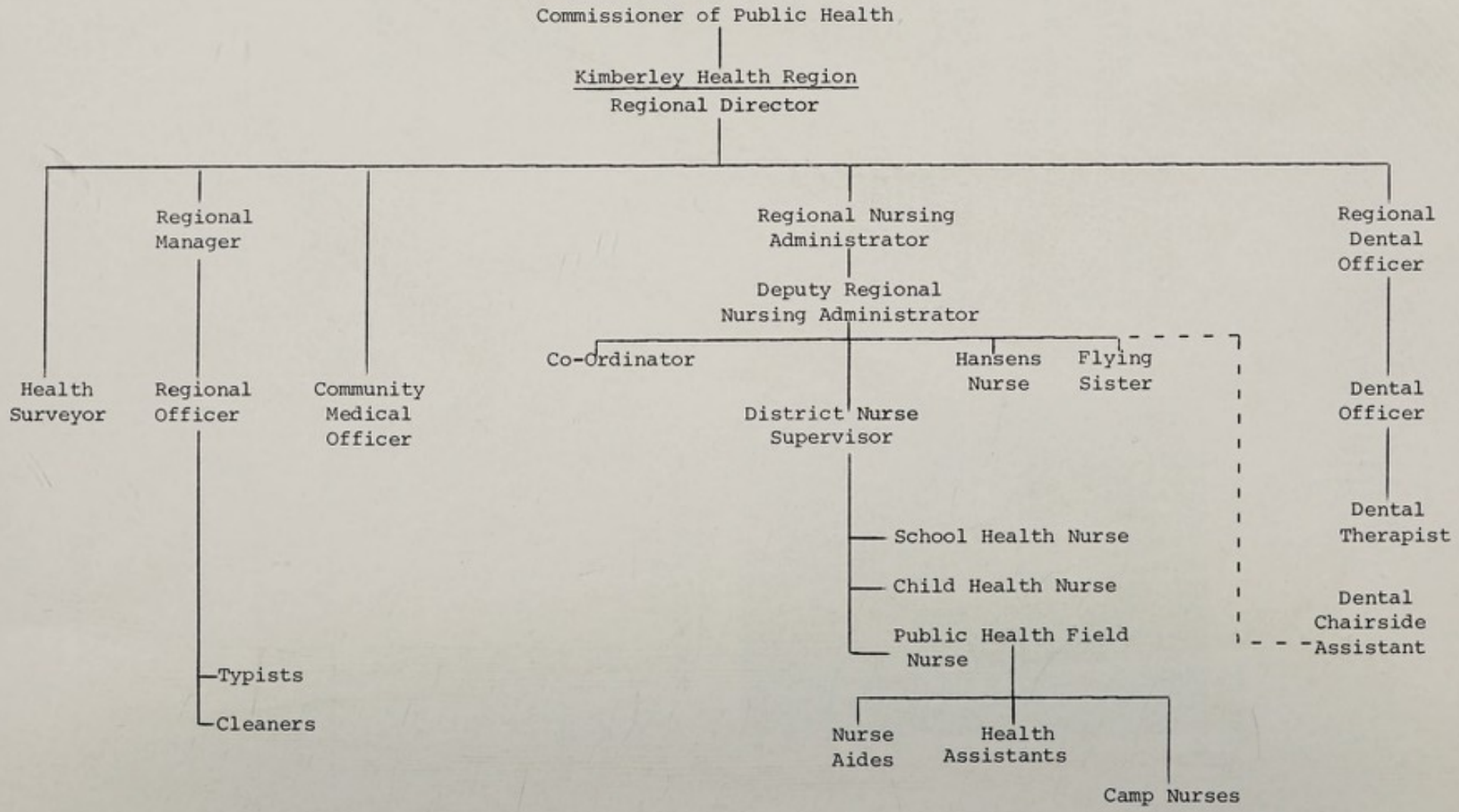
Senior Staff

Director, Dr. R.M. Spargo
Regional Nursing Administrator, Mrs. P. Humphris
Senior Dental Officer, Mr. W. Evans
Regional Manager, Mr. J. Altimira

Community Medical Officers

Dr. L. Anderson
Dr. P. Schindler
Dr. W. Griffiths

KIMBERLEY HEALTH REGION - ORGANIZATION CHART



KIMBERLEY HEALTH REGION

The pilot scheme in the Kimberley, of a regionalised public health service, has now run for its first full year. We anticipate that, with continued progress, the formation of the first regionalised Public Health Branch will be realised.

During 1981, the region was visited by the Commissioner of Public Health and other Public Health Branch Directors who contributed toward achieving the aims of a regionalised service and we take this opportunity to thank them for their time.

The year began with a significant staff shortfall but this position improved over the course of the year. The staff situation at the end of the year is seen in Table 1.

With the improvement in staffing the region was able to introduce a middle management level of Nurse, the District Nurse Supervisor, which had the thrust of decentralising responsibility to the District level. This, in keeping with the philosophy of bringing decision-making in relation to client affecting activities closer to those affected. The District Nurse Supervisor works with the Community Medical Officer at the District Level.

In June, 1981, a Senior Dental Officer was appointed to the Kimberley to facilitate a 'Dental Plan' for the Kimberley.

During the year, communication systems were upgraded to allow co-ordination of the network of nurse bases throughout the Kimberley from the Derby Headquarters.

TABLE 1

STAFF AS AT 31/12/81

CATEGORY	APPROVED ESTABLISHMENT	ACTUAL INCUMBENT
Nursing		
Intinerant Health	42	35
C.H. Programme	5	4
Child Health	3	2
School Health	2	1
Health Workers	26	23
Medical Officers	6	4
Dental Officers	5	5
Dental Therapists	4	4
Dental Chairside Assistants	11	11
Health Surveyors	2	2
Administrative/Clerical	9	9

TABLE 2

REGISTERED CLIENTS -
ALL RACES KIMBERLEY AS AT DECEMBER, 1981

AGE GROUPS	MALE	FEMALE	TOTAL
0-5	1,000	996	1,996
6-14	1,538	1,383	2,921
15-19	497	506	1,003
20-49	1,928	1,889	3,817
50-64	554	473	1,027
65+	351	287	638
UNKNOWN	34	21	55
TOTAL	5,902	5,555	11,457

TABLE 3

REGISTERED CLIENTS OF ABORIGINAL DESCENT -
KIMBERLEY AS AT DECEMBER, 1981

AGE GROUPS	MALE	FEMALE	TOTAL
0-5	916	904	1,820
6-14	1,356	1,211	2,567
15-19	483	486	969
20-49	1,684	1,679	3,363
50-64	490	452	942
65+	282	279	561
UNKNOWN	24	19	43
TOTAL	5,235	5,030	10,265

FLYING SISTERS

The Victorian Section of the Royal Flying Doctor Service facilitates an important contribution to the delivery of health care services to isolated communities in the Kimberley. Three aircraft operate from bases at Wyndham and Derby.

TABLE 4

R.F.D.S. (VICTORIAN SECTION)

PATIENT STATISTICS KIMBERLEY (1981)

CLINIC CONSULTATIONS	HINTERLAND TO HOSPITAL EVACUATION	HOSPITAL TO HINTERLAND REPATRIATION
Aboriginal Descent 6659	Emergency 478	522
Non-Aboriginal 758	Routine 611	

TABLE 5

ABORIGINAL PERINATAL, NEONATAL, POSTNEONATAL AND INFANT MORTALITY

KIMBERLEY, 1981

ALL BIRTHS	334
STILL BIRTHS	6
LIVE BIRTHS	328
DEATHS NUMBER:	
1ST WEEK	4
PERINATAL	10
NEONATAL	7
POSTNEONATAL	3
INFANT	10*
RATES PER 1,000 BIRTHS	
PERINATAL (TOTAL BIRTHS)	29.94
NEONATAL (LIVE BIRTHS)	21.34
POSTNEONATAL (LIVE BIRTHS)	9.14
INFANT (LIVE BIRTHS)	29.94

*These infant deaths include all infants that died outside the region but had a Kimberley origin.

TABLE 6

ABORIGINAL MORTALITY BY AGE AND SEX, KIMBERLEY, 1981

AGE CATEGORIES	MALE	FEMALE	TOTAL
0+	4	6	10
1-4	-	-	-
5-14	2	1	3
15-49	8	5	13
50-64	12	8	20
65+	28	24	52
COLUMN TOTAL	54	44	98

Table 6 shows the breakdown of Aboriginal mortality in the Kimberley by age and sex. From this table, the proportional mortality ratio age 50 years and over (the PMR 50+) for the Kimberley Aboriginal population in 1981 was 73.5%.

COMMUNITY HEALTH PROGRAMME

A small number of senior Public Health Field Nurses funded through the Community Health Programme are based in the Kimberley. These nurses are mostly District Nurse Supervisors, having a middle management function at the District or Local Authority Area level.

With the Community Medical Officers, they have responsibility for directing the activities of the health team, as necessary, toward meeting the needs of the wider community. Activities include the promotion of preventative health programmes and the implementation of those public health control functions which arise from time to time.

EAR DISEASE

The Ear Health Programme continues in the Kimberley. Health Workers and nurses receive on-going instruction in the screening for deafness and the detection and management of discharging otitis media at each visit of the E.N.T. team to the Kimberley. The Kimberley has been fortunate over the last few years in having the same specialised provider, Mr. J. Sunderman, visit the Kimberley on a regular basis.

The Health team pays particular attention to two demographic groups amongst the Aboriginal population. The pre-school population is checked as part of the Under 5 Programme.

The school population is checked during the annual school medical examination. Every school child is examined by a Community Medical Officer each year in the Kimberley. In addition, as part of an on-going research programme, the Aboriginal school population has been monitored for ear disease and hearing impairment by Mr. Sunderman's team.

DENTAL SERVICES

During 1981, a Senior Dental Officer was appointed to the Kimberley to facilitate the implementation of a refurbished 'Dental Plan' for the region.

A part of this plan was to extend dental and dental therapy services on a regular basis to communities in the hinterland of the Kimberley which did not have easy access to the facility based dental services found in the major towns in the region. An Itinerant Programme was commenced mid-year for this purpose.

It is recognised that the Aboriginal population has increasing dental health problems. For reasons that are not completely understood, this population in transition has increased susceptibility to caries and periodontal disease. In addition, they are a population which under-utilises preventative and curative dental services, partly because of a limited range of options in the past and partly because of limited information about the importance of such services.

To reduce these problems of access to dental services by the Aboriginal population, a Dental Outreach Programme was evolved as part of the 'Dental Plan'. The aim initially has been to actively facilitate the utilisation of curative dental services by target groups within the Aboriginal population. In addition, a regional-wide programme of dental health education within the school system, coupled with the provision of brushes and paste with teeth brushing supervised by the teachers, has been implemented to emphasise the importance of regular and correct mouth cleansing.

ALCOHOL AND ALCOHOL RELATED PROBLEMS

The wider society of the Kimberley has problems from the excessive use of alcohol. The Aboriginal population in particular is heavily burdened from the consequences of excessive alcohol use.

There is a high frequency of users who exercise no control over alcohol intake. The visible physical, social and mental decline of such persons consequent upon the alcohol dependence syndrome reinforces the Aboriginal stereotype. Their behaviour impacts heavily upon Aboriginal groups, both at the family and community levels, shaping values and diverting income from basic sustenance needs.

It is recognised that alcohol abuse poses a problem of some magnitude within the region. All medical and health providers need to cope with its consequences on an individual basis daily.

Encouragement continues to be given to community based groups that direct support to those who would change their lifestyle. Health Workers positions have been seconded to Milliya Rumurra in Broome. These positions are for Alcohol Counsellors who have received training in detecting persons with alcohol problems and in giving support to such persons who elect to abstain.

As alternative funding sources are arranged for the Alcohol Counsellors in Broome, the positions that they occupy will be offered to other groups that evolve throughout the region.

HEALTH SURVEYING

Routine surveillance of environmental health inputs in the Kimberley continued with the efforts of the two Officers based in the region, each being responsible for two local authority areas.

These Officers work closely with other Departmental health providers and benefit from the access that regionalisation has provided to resource persons within this remote region.

There are now many independent Aboriginal communities in the Kimberley. The service infrastructures and the capacity to maintain these infrastructures are at various levels of development.

Attention has been paid to the suitability of local water supplies, sewerage disposal systems, store buildings, sanitary and ablution facilities, refuse disposal and pest control programmes. We are of the opinion that conditions have been observed to improve. This, in no small part, has been due to the information inputs made by the Health Surveyors. The workload of these Officers in this area has been markedly increased.

In collaboration with the Department of Microbiology, University of Western Australia, a sentinel chicken programme has been established in the Kimberley, to monitor arbovirus activity and to function as an early warning system for Australian Encephalitis virus activity during the wet season. In addition, Health Surveyors have been active in a long-term mosquito monitoring programme which was terminated during 1981. This involved the capture, sorting and identification of mosquitoes.

SCHOOL HEALTH

During 1981, there were two School Health Nurses resident in the Kimberley. Those schools without a school health nurse are visited on a regular basis by community based Outpost Nurses or from the Itinerant Nurse system in the towns.

Because of the high proportion of school children who are of Aboriginal descent and because of the presence of certain infectious diseases endemic within the region, there is utility in each school child being examined annually by a doctor. These examinations are carried out by Community Medical Officers.

Teachers within the region give great support to public health control functions carried out within the school population, e.g. treatment of trachoma, and our thanks are extended to them.

HANSENS DISEASE

Leprosarium

The Leprosarium is a specialised facility at Derby which accepts patients with leprosy or leprosy related problems from the Kimberley and other regions.

TABLE 7

ANALYSIS OF ACTIVE LEPROSY ADMISSIONS BY ORIGIN, SEX, AGE AND LEPROSY TYPE 1981

Registered Number	Origin	Sex	Age	Classification
New Admissions				
1234	Pilbara	Female	51	B.T.
1235	Kimberley	Female	31	-(1)
1236	Kimberley	Female	27	LL
1237	Kimberley	Female	69	B.T.
1238	Pilbara	Male	12	B.B.
1239	Kimberley	Female	29	B.T.
Readmissions				
574	Kimberley	Male	72	LL

(1) No histopathological classification of leprosy was possible - no definite diagnosis of leprosy was made.

TABLE 8

LEPROSARIUM PATIENT CATEGORIES BY SEX

CATEGORY	MALE	FEMALE	TOTAL
Patients as at 1st January, 1981	10	12	22
ADMISSIONS			
New (Multibacillary)	-	1	1
New (Paucibacillary)	1	4	5
Bacillary Relapse	1	-	1
Disability	14	7	21
Kimberley Origin	15	11	26
Other than Kimberley Origin	1	1	2
Aboriginal Descent	16	12	28
DISCHARGES	15	15	30
Patients as at 31 December	11	9	20
Multibacillary	5	6	11
Paucibacillary	1	-	1
Disabilities	4	-	4
Social Placement	1	3	4
Kimberley Origin	9	8	17
Other than Kimberley Origin	2	1	3
Aboriginal Descent	10	9	19
Non-Aboriginal Descent	1	-	1

22686—11

TABLE 9

DRUG SENSITIVITY TESTING

PATIENT NUMBER	THIAMBUTOSINE	DAPSONE
1084	Sensitive	Sensitive
999	Resistant	Sensitive
1266	Sensitive	Sensitive
966	(Failed Experiment)	
1022)	(Result not yet available)	
699)		
1236)	(Experiment in progress)	
574)		

This work is being carried out by the Leprosy Research Unit, Malaysia.

TABLE 10

DETAILS OF LEPROSY REGISTER, KIMBERLEY, DECEMBER, 1981

On Treatment	236
Surveillance only	191
Lost to Surveillance	6
Out of Region	24
Deceased during 1981	19
N.T. Registered Patients Managed by Kimberley	20

TABLE 11

POPULATION SURVEY RESULTS, KIMBERLEY 1980

	Number & Leprosy Classification	Rate
New Cases	(3) LL.,BT.,BT.	0.026%
Bacillary Relapse	(1) LL.	

Susceptible population base taken as 11,500. It can be assumed that all new cases are revealed.

TABLE 12

DERBY LEPROSARIUM

ADMISSIONS AND DISCHARGES FOR 1981

MONTH	ADMISSIONS							DISCHARGES									Inmates remaining in Leprosy		Total Male & Female
	MALE			FEMALE			Total Male & Female	MALE				FEMALE				Total Male & Female			
	Admitted	Re-admitted	Total	Admitted	Re-admitted	Total		Discharged	Deceased	Absconded	Total	Discharged	Deceased	Absconded	Total		Male	Female	
JAN.		1	1	1		1	2										11	13	24
FEB.		2	2		1	1	3										13	14	27
MARCH		3	3	1	1	2	5	1			1					1	15	16	31
APRIL		3	3				3					1			1	1	18	15	33
MAY					2	2	2	3			3	2			2	5	15	15	30
JUNE								4			4					4	11	15	26
JULY		1	1	1	1	2	3					4			4	4	12	13	25
AUG.		1	1	1		1	2					3			3	3	13	11	24
SEPT.	1	1	2		1	1	3	2			2					2	13	12	25
OCT.				1	1	2	2	3			3	2			2	5	10	12	22
NOV.	1	1	2				2	1			1					1	11	12	23
DEC.		1	1				1	1			1	3			3	4	11	9	20
TOTAL	2	14	16	5	7	12	28	15			15	15			15	30			

SEXUALLY TRANSMITTED DISEASES

Control actions in relation to the sexually transmitted diseases were increased during 1981.

TABLE 13

SEXUALL TRANSMITTED DISEASE CONFIRMED CASES BY CATEGORY

KIMBERLEY, 1981

GONORRHOEA	GRANULOMA INGUINALE
626	5

Granuloma Inguinale has not been present in the Kimberley for at least the last 15 years. The first cases were detected amongst a population group in the S.E. Kimberley having regular contact with similar groups in the Northern Territory. This disease is expected to be a problem in communities in the arid southern Kimberley.

Control functions applied to the sexually transmitted diseases increases the number of cases detected. The workload increases, with increases in the prevalence pool, of a disease such as syphilis which requires at least several years of follow-up.

TABLE 14

NUMBER OF PATIENTS WITH NEWLY FOUND TREPONEMAL SEROREACTIVITY 1981

MALE	FEMALE	TOTAL
55	60	115

The extent of the work generated from control functions can be appreciated from the following Tables compiled from data collected by the Community Medical Officer for Wyndham-East Kimberley.

TABLE 15

CONFIRMED GONORRHOEA BY MONTH AND SEX -
WYNDHAM-EAST KIMBERLEY, 1981

MONTH	MALE	FEMALE	TOTAL
January	20	5	25
February	5	11	16
March	10	7	17
April	8	4	12
May	9	7	16
June	9	6	15
July	9	2	11
August	8	2	10
September	10	2	12
October	3	2	5
November	5	1	6
December	6	3	9
TOTAL	102	52	154

A male/female ratio of 1.96 : 1 was found for this local authority area. The ratio for the whole region was 2.5 : 1. The Aboriginal/Non-Aboriginal ratio for confirmed cases was 3.96 : 1.

TABLE 16

NUMBER OF PERSONS HAVING GENITAL SECRETIONS SUBMITTTED FOR LABORATORY EXAMINATION BY AGE GROUP AND SEX, WYNDHAM HOSPITAL 1981

	0-9	10-14	15-19	20-29	30-39	40-49	50+	TOTAL
Male	7	8	27	121	69	42	29	303
Female	10	21	98	299	137	27	20	612
TOTAL	17	29	125	420	206	69	49	915

TABLE 17

PERCENT CONFIRMED N. GONORRHOEA

	MALES	FEMALES
Persons Examined	303	602
N. Gonorrhoea	102	52
% Confirmed	33.6%	8.6%

TABLE 18

TREPONEMAL SEROLOGY TESTS DONE BY AGE AND SEX

WYNDHAM HOSPITAL, 1981

	0-9	10-14	15-19	20-29	30-39	40-49	50+	TOTAL
Male	11	42	61	191	111	66	131	613
Female	12	65	96	270	156	62	73	734
Antenatals		2	22	78	21			123
TOTAL	23	109	179	539	288	128	204	1470

TABLE 19

NEWLY DETECTED TREPONEMAL INFECTIONS,

WYNDHAM/EAST KIMBERLEY, 1981

MALE	FEMALE	TOTAL
26	16	42

Five (5) patients had lesions, the secretions from which were positive on Dark Ground Illumination (D.G.I.) Microscopy for treponemal organisms.

Six (6) of these patients also had confirmed N. Gonorrhoea infections concurrently.

VENEREAL DISEASE CO-ORDINATING COMMITTEE

A Regional Venereal Disease Co-ordinating Committee has been formed and meets regularly each quarter in a different town in the Kimberley. This Committee is Chaired by the Regional Administrator for Kimberley and the North West, Mr. John Edwards. The Director of the Venereal Disease Control Branch, Dr. M. Gollow, has attended each meeting and has made significant contributions at each of these and has proven himself to be an important resource person to the region by carrying out an on-going educational programme for health providers and making himself available to Medical Officers for consultation, whilst contributing to the planning of control function in relation to the Sexually Transmitted Diseases.

Meetings have been attended by a wide range of interested members of the public, including Aboriginal persons.

There is considerable utility to be had from the development of the concept of the Co-ordinating Committee as only the widespread promulgation of information about the sexually transmitted diseases and cognizance by the public of the individual's responsibility in the control of the sexually transmitted diseases, will result in a reduction of their incidence.

In October, the Regional Meeting was attended by Dr. R.D. Catterall, Specialist Adviser to the World Health Organisation on Sexually Transmitted Diseases.

SPEECH THERAPY

During 1981, Mrs. K. Revell, B.Sp.Thy. continued work in the Kimberley. Mrs. Revell, a resident of Hall's Creek, visits major centres in the Kimberley on a periodic basis. The frequency and the length of time spent in particular centres is determined by patient load, the constraints of sessional funding and the large region to be covered.

Major referral sources are the schools and pre-schools within the region. Other referrals are generated from concerned parents and from the medical and health systems.

The service provided is the assessment of speech and language disorders. In Hall's Creek, Mrs. Revell is able to provide regular therapy. In other centres, home and school remedial programmes for individuals are prescribed. These patients are reviewed by Mrs. Revell at each visit. This situation is not the optimum, with reliance on teachers who in many cases do not have the time and, more importantly, the expertise for the specialised inputs necessary to each individual with a speech or language problem. Parents often have more difficulty with remedial effort without a resource person being readily available.

Being the only professional resident in the Kimberley, an important part of Mrs. Revell's role is in acting as a resource person to professionals of other disciplines and to those agencies which have contact with those with speech and language problems.

TABLE 20

NUMBER OF PATIENTS ASSESSED AND UNDER REVIEW BY LOCAL AUTHORITY AREA KIMBERLEY, 1981

Shire	No. of New Assessments*	No. Under Review**
Hall's Creek	10	16
Wyndham/East Kimberley	52	18
West Kimberley	27	22
Broome	9	22
TOTAL	98	78

* The majority of new assessments have a speech or language problem.
** Most under review would receive formal speech therapy if this were possible.

In the town of Hall's Creek, twelve patients received regular speech therapy during 1981 from Mrs. Revell.

CONFERENCES AND COURSES ATTENDED

1. Leprosy Seminar

   Dr. Spargo was an invited speaker at a Leprosy Seminar conducted in Darwin by the Northern Territory Department of Health.

2. North Australia Research Unit Seminar

   "Service Delivery to Remote Communities."

   This Seminar was attended by Dr. Spargo.

RESEARCH ACTIVITIES

The Kimberley Health Region is involved in the on-going programmes of a number of research groups. Joint research activities included:-

Baker Medical Research Institute, Melbourne.

The aim of this research programme which is under the direction of Dr. Kerin O'Dea is to understand why the Aborigines are so susceptible to diabetes when they are subjected to rapid urbanisation. What are the underlying metabolic characteristics which make them so susceptible? And which aspects or urban lifestyle are the most important trigger factors? Only by answering these questions will we be able to offer new approaches to what has so far proved an intractable and increasing health problem.

We have shown that the frequency of diabetes is much lower (less than 5%) in an Aboriginal Community which has had less exposure to many aspects of Western lifestyle (Kalumburu Mission) than in other, more exposed Communities (e.g. Mowanjum Community 17%). Obesity was much less severe and widespread at Kalumburu and this may be the most important factor protecting these people from diabetes to date. About 12% of the Kalumburu people surveyed showed impaired glucose tolerance and the group as a whole was hyperinsulinemic - both of which may indicate potential for developing diabetes. Furthermore, detailed metabolic studies on lean young men from rural (Kalumburu) and urban (Mowanjum) Aboriginal communities and age and weight-matched causcasians showed that both Aboriginal groups had mild impairment of glucose tolerance and hyperinsulinemia which, we are suggesting, were the characteristics which favoured survival via efficient fat deposition in the traditional hunter-gatherer lifestyle, but which now promote obesity and diabetes in the urban lifestyle.

More recent work[2] has shown that after only two weeks on a diet derived almost exclusively from seafood (i.e. very low carbohydrate, high protein), these Aborigines showed improvement in both glucose tolerance and insulin sensitivity, i.e. amelioration of the very characteristics which predispose them to diabetes. In 1982, we plan to test the therapeutic potential of these findings by studying the effect of 2 months reversion to traditional lifestyle in a group of established Aboriginal diabetics.

An unexpected finding in the 2 week seafood diet study was a striking increase in the proportion of arachidonic acid in the plasma lipids of the participants[3]. Arachidonic acid is a long chain polyunsaturated fatty acid (W-6 series) which is usually synthesized in the body from oils of vegetable origin (linoleic acid). It is an extremely important component of cell membranes all over the body as well as being the precursor of prostaglandins which, amongst many other functions, are involved in hemostatic function (thrombosis, etc.). Seafood from temperate and cold waters are not rich sources of either arachidonic acid or its precursors. However, they are rich in another series of polyunsaturated fatty acids (W-3 series) which are thought to protect fish eating populations such as the Eskimos from coronary heart disease. We have analysed the fatty acids of the tropical fish and shellfish eaten in the Kimberley and found them to be a rich source of both types of polyunsaturated fatty acids (W-6 and W-3). This is a unique nutritional situation. In future studies, we plan to investigate the physiological and nutritional significance of these findings. This work is currently being funded by the N.H. & M.R.C. and the Australian Institute of Aboriginal Studies for three years (1982-84).

Princess Margaret Children's Medical Research Foundation, Perth.

During 1981, Mr. Michael Gracey and other members of the Gastroenterology and Nutrition Unit completed a major study of nutrition of more than 600 Aboriginal children aged up to 2½ years in the Kimberley and other Regions of the State[4]. They found a widespread fall-off in growth in the second half of infancy which was most pronounced in the most remote areas. Overall, 14% of infants (up to 12 months) and 22% of older children (12-30 months) were underweight. Twelve percent of all subjects were stunted, indicating chronic undernutrition. However, only three children were severely malnourished and none had kwashiorkor, the classical form of protein malnutrition seen in developing countries.

The members of his team, which included nutritionists and dietitians, visited most Kimberley communities and used their own specially calibrated and checked equipment for the anthropometric measurements. Importantly, there was no significant difference between their results and those obtained "routinely" by CCHS nursing staff. This emphasizes the value of regular, carefully taken anthropometric measurements as sensitive indicators of improvements of health and nutritional standards in Aboriginal communities.

The findings of this survey show that under-nutrition and infectious diseases are still widespread and serious problems amongst Aboriginal infants anc children. However, they are not as marked as in developing countries and there have been significant improvements over recent years. This is reflected by a decline of more than 40% in the incidence of gastroenterities in Aboriginal infants and children as a result of preventive health programmes being undertaken by staff in the Kimberley.

The Princess Margaret Children's Medical Research Foundation workers have completed some long-term studies of diarrhoeal diseases in remote Kimberley communities. They have found that enterotoxigenic E.coli, which in previous reports have been associated with watery diarrhoea in children in developing countries, are common in symptomless Aboriginal children under 5 years of age, particularly in "the wet" during summer when gastroenteritis tends to peak. Their studies found that a recently

proposed sero-typing system to identify this bacteria would not have been effective in the Kimberley. Studies are now in progress to establish best methods to detect diarrhoea-producing bacteria. The results of these studies will help with epidemiological information about childhood gastroenteritis which is basic to effective control and prevention of this disease.

With Dr. Jennie Brand, of the Commonwealth Institute of Health, Sydney University, they have been investigating an important aspect of the biology of Australian Aboriginals, their ability to digest lactose (milk sugar)[5]. Using a "breatholyser" method to detect concentrations of hydrogen in the breath, they found that 85% of the healthy, full-blood Aboriginal adults investigated were unable to tolerate an administered load of lactose. These results show that, in common with almost all other non-European populations, adult Aborigines are lactose intolerant. This is consistent with their traditional custom, as with other hunter-gatherer societies, of not consuming milk after being weaned. It seems that European man is the exception in being the only animal or human mammals to continue to be able to digest and tolerate milk and other lactose-containing foods after childhood.

Department of Obstetrics and Gynaecology, University of Adelaide : Division of Human Nutrition, C.S.I.R.O., Adelaide.

During 1981, work on the trace metal status of Aboriginal people in the Kimberley region was continued in the coastal missions and information was published on work carried out there in 1980 (6, 7). The published work reported on the zinc, copper and iron content of blood plasma from three hundred residents, five to seventy years old, in Beagle Bay, Lombadina and One Arm Point. Half of those tested showed hypozincaemia and in some groups - fifteen to twenty year old females at Lombadina - the prevalence of hypozincaemia approached 100%. Most age groups exhibited hypercupraemia and hypoferraemia was common. Children in the missions were growth retarded. They averaged around the fifth percentile in weight for age and around the tenth percentile in weight for height. Growth is dependent on adequate dietary zinc and the findings suggested a state of zinc deficiency, perhaps due to peculiarities of diet or perhaps associated with excessive copper intake.

New work undertaken in the coastal missions during 1981 has been confined to children five to fifteen years in the coastal missions, One Arm Point, Lombadina, Beagle Bay and La Grange, the latter site not having been studied before. In August, 1981, 208 children in those missions were examined anthropometrically for height, weight and arm circumference and blood samples and samples of scalp hair were taken for trace metal analysis. Hair analysis provides a record of trace element status over several months and is of greater diagnostic value than analysis of plasma. The findings from this work are currently in process of publication (8,9,10) and reveal a highly significant depletion of hair zinc levels in the population studied in comparison with caucasian norms. Both the level of growth retardation and the prevalence of hypozincaemia were similar to those shown before for children in the region and the new evidence reinforces the suspicion of primary zinc deficiency.

Further and very extensive work is now planned and being initiated in which the same population of children will be tested for any response in growth and health to extra zinc in the form of a daily supplement. Simultaneous measurements will be made of the incidence of gastro-intestinal infection and of dietary zinc intakes of some of the children. Measurements will also be made to assess the extent of zinc loss in sweat. Aborigines sweat much more freely than Europeans and sweat contains substantial amounts of zinc. This may account for the apparent vulnerability of Aborigines to depletion of zinc reserves.

Work on hair zinc and copper levels in children at One Arm Point early in 1981 had revealed exceptionally high levels of hair copper. This was traced to corrosive water in one particular bore which dissolved large amounts of copper from pipes through which it was pumped. Removal of the pipes was followed by satisfactory reduction in hair copper levels but plasma copper was no different from that in other missions and did not fall. It now seems likely that the elevated plasma copper found in Aborigines of all ages throughout the entire region may represent a genetic trait and may not be a matter of nutritional concern.

If suitable funding is obtained, the proposed work will settle conclusively the existence and health significance of the low zinc status of Aborigines in the Kimberley region.

RESEARCH PAPERS

1. J.C. Brand, M. Gracey, R.M. Spargo and S. Dutton.
"Primary low lactose activity in Australian Aboriginals".
PROC. NUTR. SOC. AUST. (1981) 6.

2. K. O'Dea, R.M. Spargo and P.J. Nestel.
"Impact of Westernisation of Carbohydrate and Lipid Metabolism in Australian Aborigines".
Accepted for Publication, (Diabetologia).

3. K. O'Dea and A.J. Sinclair.
"Increased proportion of arachidonic acid in plasma lipids after two weeks on a diet of tropical seafood".
Submitted for publication.

4. K. O'Dea and R.M. Spargo.
"Metabolic adaptation to a low carbohydrate - high protein (traditional) diet in Australian Aborigines".
Submitted for publication.

5. Donald B. Cheek, Randolph M. Spargo and A.B. Holt.
"Evidence for Zinc Deficiency in Aboriginal Settlements in North Western Australia".
Med. J. Aust. Spec. Suppl. 1981. 1 : 4-5.

6. D.B. Cheek, R.M. Smith, R.M. Spargo and N. Francis.
"Zinc, Copper and Environmental Factors in the Aboriginal Peoples of the North West".
Aust. N..Z. Med. J. (1981) pp 508-512.

7. Smith R.M., Spargo R.M., Cheek D.B., Field J.B., King R.A. and Buckley R.A.
Retarded growth in Australian Aboriginal Children Associated with Low Hair Zinc.
In preparation.

8. D.B. Cheek, R.M. Smith and R.M. Spargo.
"Hair and Plasma Zinc Levels in Aboriginal Australians".

Chapter in Clinical Applications of Recent Advances in Zinc Metabolism.
Eds. B.S. Hetzel, I.E. Dreosti and A.S. Prasad.
Alan R. Liss Inc., New York (In Press).

REFERENCES

1. "Impact of westernisation on carbohydrate and lipid metabolism in Australian Aborigines".
K. O'Dea, R.M. Spargo and P.J. Nestel.
Accepted for publication, Diabetologia.

2. "Metabolic adaptation to a low carbohydrate - high protein (traditional) diet in Australian Aborigines".
K. O'Dea and R.M. Spargo (Submitted for publication).

3. "Increased proportion of arachidonic acid in plasma lipids after two weeks on a diet of tropical seafood".
K. O'Dea and A.J. Sinclair (Submitted for publication).

4. Report to the Director of Community and Child Health Services of a Nutritional Survey of Aboriginal children in Western Australia, undertaken in 1981.

5. Primary low lactose activity in Australian Aboriginals.
J.C. Brand, M. Gracey, R.M. Spargo and S. Dutton.
Proc. Nutr. Soc. Aust. (1981) 6.

6. "Zinc; copper and environmental factors in the Aboriginal people of the North West".
D.B. Cheek, R.M. Spargo, R.M. Smith and N.O. Francis.
Aust. N.Z. Med. J. 1981. p. 508-512.

7. "Evidence for zinc deficiency in Aboriginal Settlements in North Western Australia".
Med. J. Aust. Spec. Suppl. 1981. 1 : 4-5.

8. Retarded Growth Associated with Low Hair Zinc Levels in Australian Aboriginal Children.
R.M. Smith, R.M. Spargo, D.B. Cheek, J.B. Field, R.A. King and R.A. Buckley.
In process of submission to Lancet.

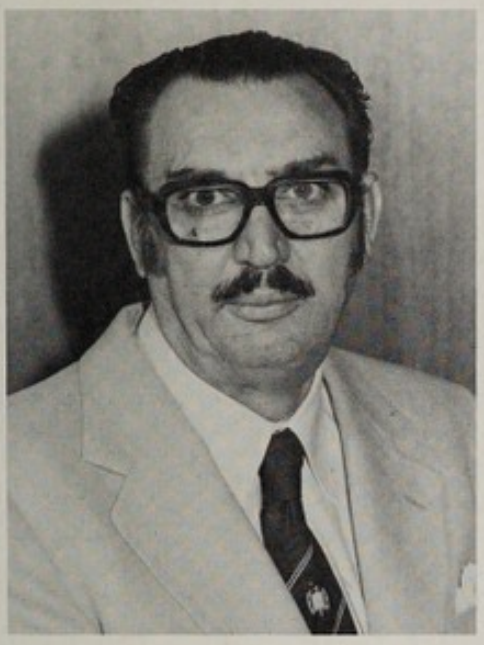
9. "Hair and Plasma Zinc Levels in Aboriginal Australians".
D.B. Cheek, R.M. Smith and R.M. Spargo.

Chapter in Clinical Applications of Recent Advances in Zinc Metabolism.
Eds. B.S. Hetzel, I.E. Dreosti and A.S. Prasad.
Alan R. Liss Inc., New York (In Press).

10. "Zinc Deficiency in the Aboriginal People in the North West".
Cheek D.B., Spargo R.M., Hay H.J. and Smith R.M.
Chapter in "Trace Metals of World Significance".
Ed. Prasad, A.S., Alan R. Liss, New York (In Press).

Appendix VIII

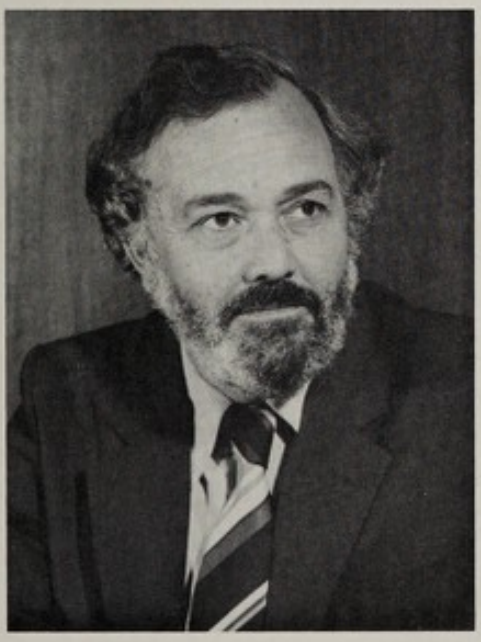
COMMUNITY HEALTH PROGRAMME



L.J. Holman,
J.P., M.B.B.S., F.R.C.S.E., D.P.H.,
F.A.C.M.A.
Deputy Commissioner of Public Health

Senior Staff

Deputy Commissioner of Public Health: Dr. L.J. Holman
Senior Physiotherapist: Mrs. C. Diamond
Senior Chiropodist: Mr. L.C. Foley
Social Work Supervisor: Mr. F.C. Parker
Acting Assistant Administrative Officer: Mr. A.R. Boreham

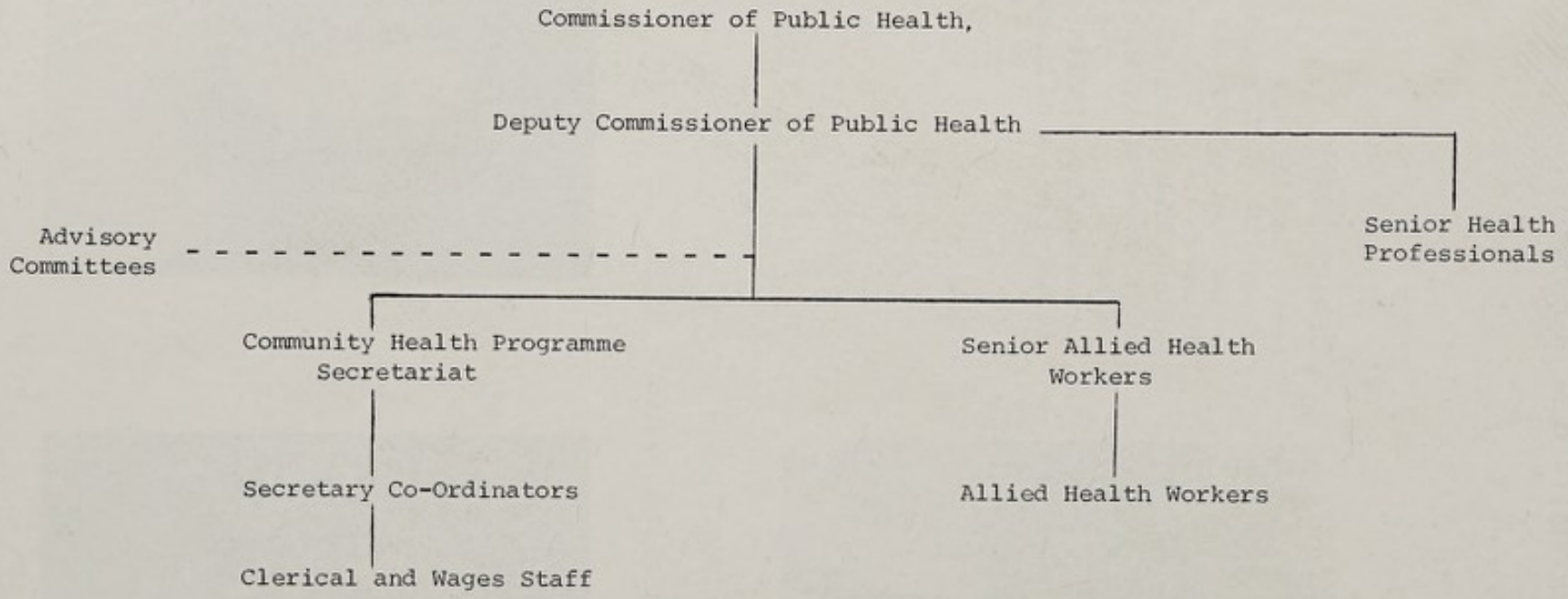


F.C. Parker,
B.Ap.Sc., Dip.Soc.Stud.
Social Work Supervisor



Mrs. C. Diamond
Dip.Phys.
Senior Physiotherapist

COMMUNITY HEALTH PROGRAMME - ORGANIZATION CHART



COMMUNITY HEALTH PROGRAMME

Although major changes occurred in the arrangements between the Commonwealth and State Governments for the funding of the Community Health Programme existing services have been maintained and some improvements undertaken.

Prior to July 1st, 1981, the Commonwealth provided a specific grant which was matched by the State and spent on approved projects.

As from July 1st, 1981 the State will be paid one total allocation for health purposes in place of separate grants previously made in respect of public hospitals, Community Health Programme and School Dental Service.

The grant paid by the Commonwealth for 1981-82 was determined by the amount provided in 1980-81 to the State for these services plus 10 percent for inflation and deducting from that sum 60 percent of the Commonwealth's assessment of the States capacity to raise additional revenue, if charges for hospital services were to be imposed.

These changes have meant that the State is now fully responsible for the administrative and financial control of the programme. The change has had little direct impact on the day to day operation of projects although restrictions on State funds have meant that there has again been no real growth in the programme. Activities and services similar to those detailed in previous reports have been continued. It should be noted that the direct administration of many activities funded under the Community Health Programme is undertaken by the branches of this Department eg. Community and Child Health Services, Education Services Branch. Information relating to these projects is contained in the respective branch reports.

The abolition of the cost sharing arrangement between the Commonwealth and State created the opportunity for changes in the funding arrangements for women's refuges. As from September 1st, 1981 all available government funds for women's refuges have been allocated without the previous requirement that refuge sponsors match a fixed proportion of the government allocation. This does not mean that all costs will be subsidized by the State Government but it allows the refuge more flexibility in expenditure of the grant and in maintaining the service by voluntary workers, fund raising and donations.

The total Government allocation for women's refuges in 1981-82 is $641,000. Unlike the figures given for previous years this amount does not include any contribution from refuge sponsors.

The Community Health Programme Branch has remained responsible for the processing of applications for State and Commonwealth subsidies for certain services and facilities for aged persons.

The total allocation made available to the Community Health Programme for operating costs in 1981-82 was $6,389,500.

This figure is represented by the following block grant allocations in respect of:

General projects	$5,662,500
Ethnic/Interpreter Services	$ 86,000
Women's Refuges	$ 641,000

For the first time specific appropriations for Community Mental Health Services and the West Australian Alcohol and Drug Authority were made separately and are not included in the figures quoted above.

The physiotherapy service provided by the Community Health Programme has remained stable during this year. The new areas opened up last year have been consolidated, notably the post-natal programme from Child Development Centre and the specialist service to the Multiple Sclerosis Society.

The fitness programme for older people continues to develop with 30 classes now operational. Three functions were organised for combined groups. One at the Cottesloe Civic Centre, one at Kings Park and a mini-olympics to finish the year at Perry Lakes.

Both 3rd and 4th year physiotherapy students are now attending our classes which should ensure that future programmes will be well run.

A new programme has been introduced in co-operation with the Education Department to assist primary school children with poor motor skills development.

1981 proved to be the most stable period for the Department's Chiropody services since its inception in 1978. The four full-time positions were occupied by the same practitioners over the year, which helped maintain a continuous service to the public. It was also possible during this period to ensure all the clinics had the required equipment to provide the service. Geraldton Health Centre was allocated funds for an appliance laboratory and this will be completed early in 1982.

Funds were also granted for a domiciliary chiropody service from the State Grants Home Care Act. The Silver Chain Nursing Organisation will be able to assist in the running of this service in the new year.

Final year students attended the Claremont Community Health Centre during the year for clinical chiropodial experience and exposure to the health team concepts. It is hoped this will be an annual commitment.

Social work services funded by the Community Health Programme remain inadequate to respond to the needs of individual clients. The Social Workers also act as resource people to support and enable referring agencies to deal with the clients themselves.

At the Child Development Centre alone there were 2,590 significant consultations with other health professionals seeking Social Work assistance. This situation has some positive aspects in terms of logistics and economics and in helping a variety of health workers to develop additional skills, but it is far from ideal and often results in a lowering of standards.

The demands of crisis intervention work has left insufficient time for vital more preventative orientated work. Nevertheless some time has been found for community work and group work.

Current programmes include:-

- Stroke Clubs
- Developmentally handicapped childrens parents groups
- Aged persons support services
- Personal development groups
- Support for community health related self help groups

Over 3,000 individual attendances were recorded at formal group work sessions alone.

STATISTICS

Tables A and B provide a summary of some of the work undertaken by Social Workers in different positions throughout the State.

TABLE A

BREAKDOWN IN PERCENTAGE TERMS OF REFERRALS

	Total Referrals	Doctors	Nurses	Self Referred	Other Agencies	Other Professionals	Hospitals	Home Visits	Office* Interviews	Groups# (Individual) Attendances
COMMUNITY HEALTH CENTRES										
Busselton	268	48%	12%	24%	9%	4%	3%	340	603	778
Claremont+	90	19%	19%	31%	22%	8%	1%	72	212	1,383
Lockridge	198	28%	6%	41%	17%	5%	3%	556	709	160
Geraldton	265	26%	22%	26%	15%	6%	5%	385	610	-
Karratha	239	30%	4%	33%	14%	2%	17%	92	1,252	-
Kwinana	341	14%	11%	41%	26%	2%	6%	214	823	182
Mandurah	204	24%	10%	36%	18%	4%	8%	360	503	-
South Hedland	240	8%	5%	20%	26%	1%	40%	227	1,142	-

+20 Hours per week spent with Aged Persons Support Scheme.
*Office Interviews include interview sessions in hospitals.
#Group individual referrals not included in total referrals (first column).

TABLE B

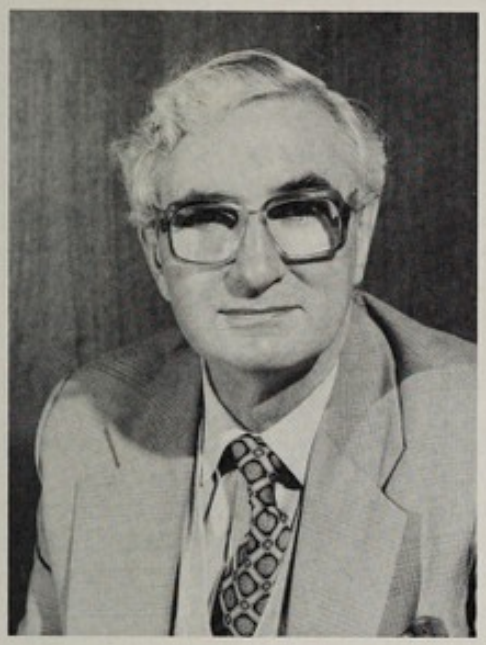
BREAKDOWN IN PERCENTAGE TERMS OF REFERRALS

	Total Referrals	Drs.	Nurses	Hospitals	Self Referred	Other Professionals	Home Visits	Office Interviews	Groups (Individual) Attendances	Professional+ Consultations
COMMUNITY & CHILD HEALTH SERVICES										
Child Development Centre* Social Workers (2.5 full-time)	274	43%	27%	-	14%	16%	417	480	252	2,590
CHILD HEALTH SERVICE CENTRES										
Queens Park 14½ hours per week	27	-	59%	-	26%	15%	51	73	156	128
Koondoola 23 hours per week	83	20.5%	54%	1%	13%	11.5%	185	42	148	449
Southwell 20 hours per week	49	3%	57%	-	30%	10.0%	169	8	56	60

*Includes referrals from other sections of Community and Child Health Services.
+Significant consultations requested by nurses and other health professionals.

Appendix IX

PHARMACEUTICAL SERVICES BRANCH

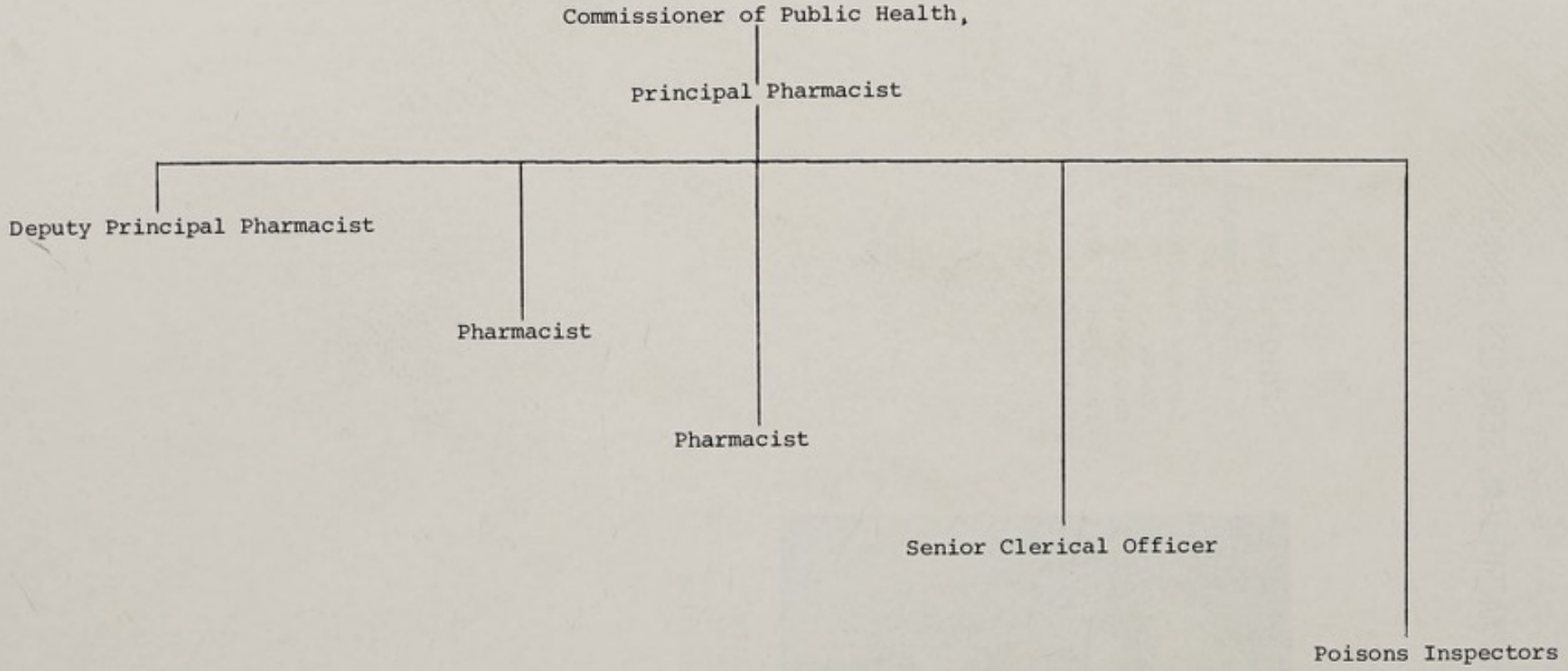


W.M. Griffiths,
B. Pharm., F.P.S. (G.B.), M.P.S.
Principal Pharmacist

Senior Staff

Principal Pharmacist: Mr. W.M. Griffiths
Deputy Principal Pharmacist: Mr. G.F. Foley
Pharmacist: Mr. M. Cousins
Pharmacist: Mrs. J.A. Luke
Senior Clerical Officer: Mr. C. Hayes

PHARMACEUTICAL SERVICES BRANCH - ORGANIZATION CHART



PHARMACEUTICAL SERVICES BRANCH

POISONS ACT

During 1981, the Poisons Schedules were amended and reprinted as a consolidated list. The prohibited substances list and the Poisons Act Regulations were reprinted. New drugs approved for release by the Australian Drug Evaluation Committee were included in the Fourth Schedule, and various new agricultural chemicals were added to the Fifth and Sixth Schedules. On the advice of the National Health and Medical Research Council and the Western Australian Poisons Advisory Committee, preparations based on Nitrofuran and sulphanilamide, packed and labelled for the treatment of ornamental caged birds or ornamental fish only, were released from a prescription-only requirement and allowed for sale.

PESTICIDES COMPUTERISATION

A Committee formed in 1979 and known as the Pesticides Registration Steering Committee (P.R.S.C.) recognised the need to improve Pesticide Information Systems in this State. A subsequent report prepared by the Computer Services Division of the Treasury Department and received by the P.R.S.C. during 1980 recommended development of a Pesticide Information System under control of the Director, Health Computing Services for use by the Department of Public Health and the Department of Agriculture.

Design and development of this system continues and will be of use not only to the Department of Agriculture and this Department but also to major potential users such as the Poisons Information Centre at Princess Margaret Hospital and the Drugs Information Centre used by Hospitals throughout the State.

Data contained within the system will be made available to users through;

i) the production of regularly Updated Computer Output Microfiche;

ii) the production of Pesticide Colour Label Microfiche; and

iii) through the filming on microfiche film of "Clearance Documents" produced by the Commonwealth Department of Primary Industry and used in the registration of new products.

Indexes will be produced to access data available within the system through the name of any product, chemical, crop or pest.

To date, technical problems of film quality have prevented the production of colour label microfiche on schedule.

Alternative film types are being tested with some success and will be used in the system. Considerable assistance has been received from the Victorian Department of Agriculture in the establishment of part of the

initial data base. It is expected that the system will be implemented during the second half of 1982 though component parts of the system will become available before and after this period.

ADMINISTRATION

Mr. Gerard Foley, Deputy Principal Pharmacist, continued attendance at various committees associated with the work of the Pharmaceutical Service Section: Mr. Foley also inspected premises at Wyndham, Derby, Kununurra, Broome and checked drug stocks in hand, procedures and ordering methods and found them satisfactory.

The work associated with the recall of some surgical dressings after samples had been found to be contaminated or not sterile added considerably to the branch workload.

Contingency arrangements were reviewed to ensure continuation of supplies of essential therapeutic items in the event of an emergency.

Mr. Michael Cousins continued to collate and prepare working papers for the Pesticides Advisory Committee, attended a meeting of the National Therapeutic Goods Committee in Canberra on behalf of the Department, and continued as a member of the Pest Control Operators Licensing examining board.

Mrs. Joyce Luke, Pharmacist, commenced duties in August, 1981 and took part in the service of replying to enquiries on poisons and hazardous substances received from industry and the general public, and the examination of labels and package of poisons. Mrs. Luke has taken charge of the monitoring scheme on supplies of drugs of addiction and she is the confidential officer responsible for communication with health professionals on matters concerning patients in relation to certain controlled medications, as well as licensing and inspection reports concerning poisons.

Mr. Stephen Hu was promoted to the position of Regional Pharmacist at Albany Regional Hospital to replace Mrs. Savill who retired for maternity reasons. He was in turn replaced in the Branch by Mrs. Luke. At the end of the year, the Hospital Salaried Officers Award was amended and all Regional Pharmacists were upgraded to Level 3 on the Hospital Pharmacist Salary Scale.

Mr. David Liversidge, a graduate of Murdoch University School of Environmental and Life Sciences, commenced work on the establishment of a data base to be used in the Computerised Registration System for Pesticides. Mr. Liversidge and his wife had a second son in September, 1981.

Miss Pat Graser, Systems Analyst, and Mr. Arthur Shirley, Programmer, both of Health Computing Services were responsible respectively for the implementation of the Pesticides System and the development of the necessary programmes under the management of Mr. Stewart Green, Manager of Health Computing Services.

Close collaboration has been maintained in the establishment of this system with the Department of Agriculture principally through its Pesticides Co-ordinator, Mr. Peter Rutherford.

Miss Lisa Clarko joined this Department at Easter to replace Miss Meredith Peacock as C-IV Clerk.

During the year there were 5 meetings of the Poisons Advisory Committee and 8 meetings of the Pesticides Advisory Committee. Pesticide formulations registered as at 31 December, 1981 totalled 1,235; 206 new applications were received of which 112 were registered, the remainder being still under consideration. 87 applications were received for Clearance of new agricultural chemicals or new uses in co-operation with the National Technical Committee on Agricultural Chemicals based in Canberra, 5 of these being new substances and 82 of the applications being applications for extensions or modifications of use of previously cleared chemicals.

Appendix X

DENTAL HEALTH SERVICES

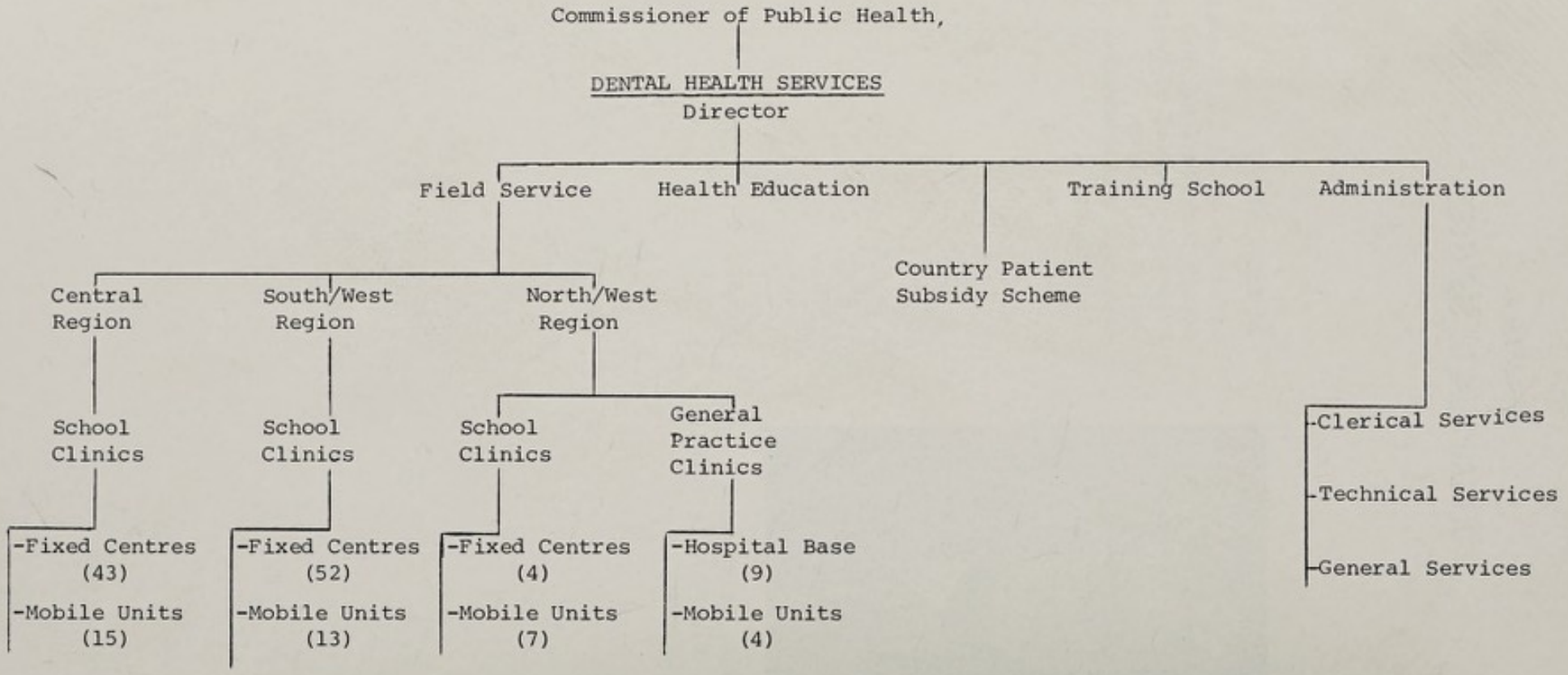


Mr. J.L. Prichard,
Dip. D.S., B.D.Sc., F.I.C.D.
Director

Senior Staff

Director: Mr. J.L. Prichard
Deputy Director: Mr. H.G. Lamplough
Principal, School of Dental Therapy: Mr. D.C. Neesham
Assistant Administrative Officer: Mr. G. Drimatis

DENTAL HEALTH SERVICES - ORGANIZATION CHART



DENTAL HEALTH SERVICE

1. CLINIC SERVICE

1.1 RURAL AND REMOTE AREAS

1.1.1 Kimberley Region

Dental clinics were maintained in Kununurra, Wyndham, Derby and Broome with visiting services to Fitzroy Crossing, Halls Creek, Koolan Island, to aboriginal settlements at Lombadina, Beagle Bay, La Grange and One Arm Point and to the Derby Leprosarium.

1.1.2 Pilbara Region

Dental clinics were maintained at Port Hedland, Exmouth, Paraburdoo and Tom Price. These clinics provided regular visiting services to Goldsworthy, Shay Gap, Marble Bar, Telfer, Yandi Yarra, Strelley, Nullagine, Jigalong and Onslow.

The dental clinic at Wickham was transferred to private practice during the year.

1.1.3 Central and South-Eastern Regions

Mobile Road Dental Clinics provided services to the North Eastern Goldfields, Trans-Line, Murchison and Gascoyne Regions, Southern Agricultural areas and Jurien Bay-Lancelin areas.

An Aerodontal Service provided dental treatment for the Eyre Highway, Trans-Line, Nullabor Stations, Giles Weather Station and Warburton Ranges Central Reserves.

1.1.4 On Behalf of the Commonwealth

One visit was made to the Cocos Islands to provide dental care.

1.2 SCHOOL DENTAL THERAPY CLINICS

1.2.1 At 31 December 1981, 901 primary and pre-primary schools were serviced by 134 Dental Therapy clinics and training schools.

A total of 184,615 primary and pre-primary children were eligible for dental care. This represents 93.81% of the total enrolled primary and pre-primary school child population.

COVERAGE BY SCHOOL DENTAL SERVICE

YEAR	TARGET POPUL. (Primary School) children	NUMBER OF DENT. THERAPY CENTRES	NO. OF CHILDREN WITH ACCESS TO DENTAL THERAPY CENTRE	% OF CHILDREN WITH ACCESS TO DENTAL THERAPY CENTRE
1973	150247	3	2663	1.77%
1974	152280	9	9810	6.44%
1975	154089	14	18099	11.74%
1976	157359	39	46466	29.52%
1977	162081	65	70942	43.76%
1978	165086	89	98319	59.55%
1979	165245	102	110905	67.11%
1980	165317	127	149422	90.38%
1981	184615*	134	173198	93.81%

*Primary and Pre-Primary children.

2. TRAINING COURSE FOR SCHOOL DENTAL THERAPISTS

2.1 FIRST YEAR

10 trainees commenced their first year in February 1981.
7 trainees satisfactorily completed the first year and will commence second year in February 1982.
2 trainees withdrew from the course for personal reasons.
1 trainee failed to complete second term examinations and withdrew from the course.

2.2 SECOND YEAR

9 trainees commenced second year training in February 1981.
8 trainees successfully completed second year and will officially graduate on 1 February 1982.
1 trainee is required to complete additional practical training and will be re-assessed at the end of April 1982.

3. DENTAL HEALTH EDUCATION

3.1 The Dental Health Education Unit continued to provide advisory and support services for dentists, dental therapists and other health and educational personnel throughout the State. 28 schools were visited following requests from School Dental Service staff and teachers for assistance in educational

programmes.

13 field seminars for dental therapists were held.

3.2 In addition to the above, the Unit provided an educational service for health professionals and other community groups as requested.

A total of 127 lecture/discussion sessions were conducted as listed below:

Schools of Nursing	12
Child Care and Mothercraft courses	19
Dental Nurse training courses	4
Teacher Education courses	14
University dental students	2
Canteen Managers course	2
CYSS and Community Care Groups	11
School Dental Therapy training course	13
Pre-school Parents groups	44
Other groups	6

3.3 GUIDELINES FOR DENTAL HEALTH EDUCATION

This guide was published in four volumes in 1981. It is now available to the teaching profession through dental therapy centres and the resource centres of the Education Department. The guide recommends a continuous classroom programme for dental health education from pre-primary to Year 7, to support the programme of clinical preventive care delivered by the School Dental Service.

3.4 EPIDEMIOLOGY

Examination of high school students in Albany, Bunbury, Geraldton, Kalgoorlie and Esperance in 1981 showed a marked improvement in the dental health of students who had been exposed to school dental care in primary school, compared with students examined in 1978, who had no contact with School Dental Services.

The major changes were:

1. Reduction in the number of decayed (unfilled) teeth from 230 per 100 students to 90 per 100 students.

2. Number of permanent teeth missing or needing to be extracted because of acute dental caries had fallen from 200 per 100 children to 90 per 100 children.

3. Improvement in oral hygiene.

This improvement in dental health which is apparent in high school students is a result of the combined efforts of fluoridation and School Dental Services in primary schools.

4. CONSTRUCTION OF SCHOOL DENTAL CLINICS

The objective of the School Dental Services was to complete coverage of the primary school population by 1980. The clinics commissioned during 1980 virtually completed this coverage.

The source of Capital funds for the building and equipping of School Dental Clinics is shown in the following table.

YEAR	STATE	COMMONWEALTH
1973-4)	-	-
1974-5)	-	$ 271,006
1975-6	-	$1,523,033
1976-7	$103,041	$ 927,373
1977-8	262,458	$ 787,375
1978-9	No Allocation	No Allocation
1979-80	225,000	225,000
1980-1	-	-
1981-2	150,000	-
TOTAL	$740,499	$3,733,787

5. SUBSIDISED DENTAL CARE

5.1 The country patients subsidy scheme enables eligible persons in areas with no Government Dental Clinic to receive care from the local private practitioner and obtain a cash subsidy from the Government towards the cost of the treatment. The amount of subsidy is calculated in accordance with an income test. The patient is responsible for payment of the balance of the account to the dentist.

5.2 Persons eligible for assistance include:

5.2.1 School children, subject to family size and family income... Primary school children are excepted. They may receive care from either the School Dental Service, or a dentist of their choice at their own cost.

5.2.2 Pensioners (aged, widowed and invalid).

5.2.3 Recipients of benefits (supporting parent, sickness, unemployment).

5.2.4 Missionaries.

Persons receiving benefits who are under the age 17 years, are considered to be the responsibility of the parent (unless they are living away from home). Applications relating to such persons should be completed and signed by the responsible parent. Total family income is required to be detailed. With respect to recipients of pensions and benefits, eligibility is dependent on a qualifying period of 6 months; i.e. the applicant must have been in the eligible category for at least 6 months prior to application for subsidy. The qualifying period does not apply to school children for whom eligibility is established by income test only; and not as a result of parents being in receipt of a pension or benefit for a stated time.

Emergency treatment includes the relief of pain, treatment of infection, treatment of traumatic injuries and repairs to dentures, may be undertaken without prior approval.

Persons who belong to private health funds and who have cover for ancillary benefits are not eligible for subsidy assistance.

5.3 PAYMENTS

Payments were made to dental practitioners during 1981. Without their assistance the programme could not be extended to the many eligible recipients.

During 1981 payments were made as follows:

5.3.1 Total number of approved applications : 3859.
- 388 children
- 1,531 age pensioners
- 1,940 others

5.3.2

Number of examinations (complete)	1,795
Number of teeth extracted	2,512
Number of fillings placed	4,965
Number of denture patients	1,167

5.3.3 Total cost of services rendered : $594,078
- $ 30,093 (children)
- $273,347 (pensioners)
- $290,638 (others)

5.3.4 Payments made by the Department : $472,990
- $ 24,909 (children)
- $213,939 (pensioners)
- $234,142 (others)

5.3.5 Payment by recipients : $121,088

6. STAFF

Appointments made during the year resulted in a staff total of 532.

Distribution of staff at 31 December 1981 was as follows:

6.1 ADMINISTRATION

Dental Officers	(6)	(includes 3 Regional Dental Officers)
Therapists	(7)	(1 Principal Dental Therapist, 2 Senior Dental Therapists, 1 Research and Planning Assistant, 2 Dental Health Education Therapists and 1 Librarian).
Clerical and General	(19)	
Radiographer	(1)	
Wages	(8)	
Dental Clinic Assistants	(4)	
Dental Cadets	(14)	

6.2 CLINIC SERVICE

6.2.1 Metropolitan Region

Dental Officers (14)
Dental Therapists (142)
Dental Nurses/Assistants (77)
Dental Technicians (2)

6.2.2 Country Region (South West)

Dental Officers (15)
Dental Therapists (80)
Dental Nurses/Assistants (41)

6.2.3 Rural and Remote Region (North West)

Dental Officers (13)
Dental Therapists (14)
Dental Nurses/Assistants (28)
Wages (3)

6.2.3 Dental Therapy Training School

Dental Officers (7)
Dental Therapists (4)
Dental Nurses/Assistants (10)
Dental Technicians (1)
Trainee Therapists (17)
Clerical and General (1)
Wages (4)

7. ACKNOWLEDGEMENTS

Throughout the year this Branch has enjoyed the support and assistance of the Commissioner of Public Health, Dr. J.C. McNulty and the Deputy Commissioner of Public Health, Dr. L.J. Holman, as well as the continued co-operation of all Branches and sections of the Public Health Department.

As Director, I wish to acknowledge this support and in particular;

a) Principal Psychologist, Mental Health Service, Mr. R. Smith for assisting in arranging the Psychology and the Human Relations Course. Clinical Psychologist, Mr. G. Van Ierland conducted Psychology and Human Relations lectures to first and second year trainees.

b) Dr. V. Blackman, Head of Division of Microbiology, State Health Laboratories Service, for assisting in arranging the Microbiology practical classes. Mr. M. Elliott assisted in conducting these classes.

c) The Health Education Services Unit for providing lectures on health education and topical social issues.

The assistance of these persons and organisations is appreciated.

In addition the successful accomplishment of the Dental Health Service could not occur without the loyal and dedicated service of the personnel of the Branch. To these members I record my personal thanks.

Appendix XI

NURSING ADMINISTRATION SECTION



Miss E.L. Bohan,
I.S.O., F.C.N.A., D.N.A.,
Principal Director of Nursing

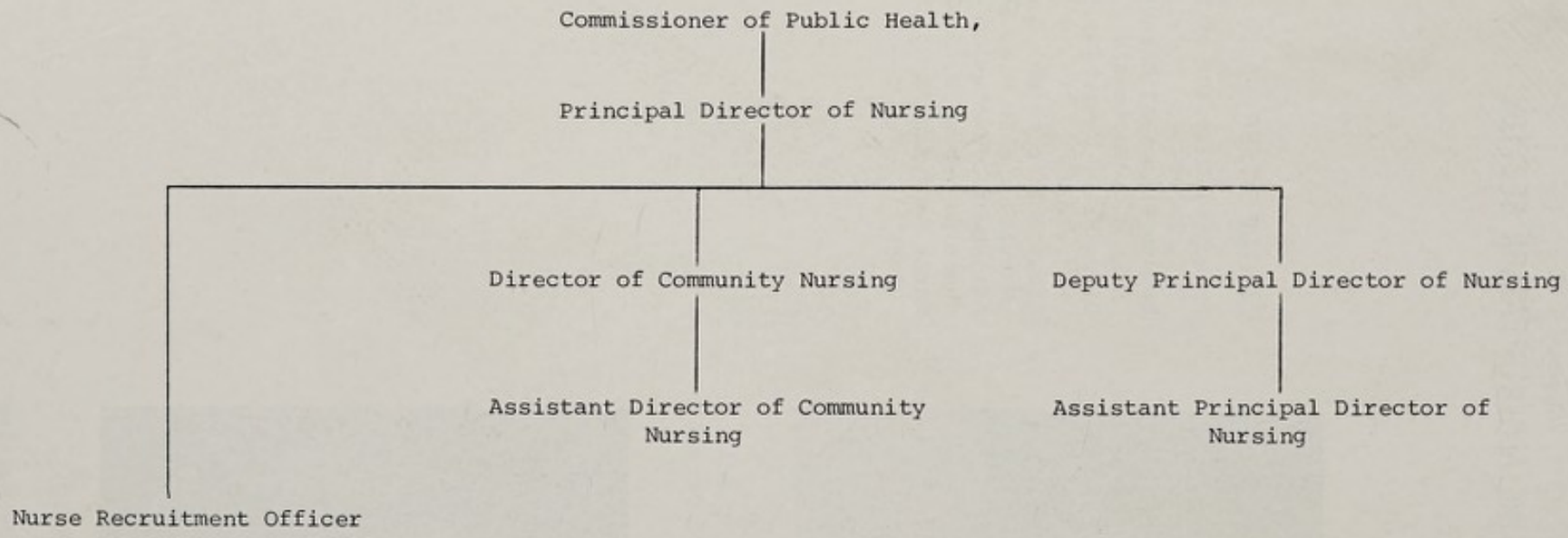
Senior Staff

Principal Director of Nursing : Miss E.L. Bohan
Deputy Principal Director of Nursing : Miss C.J. MacDonald
Director of Community Nursing : Miss P.M. Reid
Assistant Principal Director of Nursing : Miss M.R. Squire
Assistant Director of Community Nursing : Mrs. P. Baskin
Nurse Recruitment Officer : Mrs. G. Clark



Miss P.M. Reid
F.C.N.A.
Director of Community Nursing

NURSING ADMINISTRATION SECTION - ORGANIZATION CHART



NURSING ADMINISTRATION SECTION

NURSING SECTION

Apart from the Community Nursing Service which is the subject of a report from the Director of Community Nursing (Miss M. Reid), activities of the Nursing Section have related to the Health Act and the relevant regulations: Private Hospitals Regulations 1970, the Midwives Regulations 1976 and the Maternity, Homes Regulations 1944.

1. PRIVATE HOSPITALS AND NURSING HOMES

Supervision in this area has been effected through 193 inspections, of which 15 were for licensing purposes and 34 initiated by complaints or reviews following investigation of complaints.

1.1 Nursing Homes Closed

Parkside (33 beds) 7/7/81
Nadezda (38 beds) - Spastic Welfare Association - 1/12/81

Patients from these homes were transferred to Concorde and Hillroyd (Spastic Welfare Association) respectively.

1.2 New Licences and Addition of Beds which have involved considerable consultation with the principals concerned as well as examination of plans:-

Bicton Hospital (general) 72 beds 5/3/81, increased to 73 beds on 4/12/81.

St. John of God Hospital, Subiaco (general and midwifery) total beds now 355.

Undercliffe Hospital (general) 42 beds, 30/10/81
Undercliffe Nursing Home 42 beds, 29/05/81

Cambridge Annexe (psychiatric) 57 beds, 05/11/81

Concorde Nursing Home, from 33 to 92 beds, 07/07/81

Hillroyd, relicensed for 32 adult beds, 11/12/81

Tandarra-Ningana Nursing Home:
Tandarra Wing, 100 beds, 26/02/81
Total: 146 beds

The total number of private hospitals and nursing homes at 31/12/81 was 121.

2. HOME BIRTHS

The number of home births was 57, and 46 inspections were carried out by Nursing Section Officers. Of the remainder: nine were in the south-west, and were inspected by the Director of Nursing, Bunbury Regional Hospital or her Deputy; two were not visited: one of these was delivered by Dr. Singh in Newman; and the other was not intended to be a home birth. A Family Practice Physician and a Silver Chain Nurse were called to attend.

3. REVISION OF REGULATIONS

Revision of the Midwives Regulations 1976 was undertaken in collaboration with the Nurses' Board of Western Australia; and revision of the Private Hospitals Regulations 1970 has almost been completed.

4. NURSE EDUCATION

Both hospital-based and community nurses have enjoyed the stimulus of Nursing Seminars conducted by the College of Nursing, Australia, in association with the Margaret Beard Memorial Project, at the following centres:-

April	04-05	Karratha
July	11-12	Derby
Aug.	15-16	Geraldton
Sept.	12-13	Carnarvon

4.1 Nursing Scholarships

Because of financial constraint only one of the 10 scholarships tenable in 1982-83, was awarded to a Community Health Nurse. She was Miss Joan Bedford, to undertake a Graduate Diploma in Health Science, majoring in Health Research and Evaluation.

5. EMERGENCY NURSING SERVICE

In meeting the immediate need which cannot be met otherwise, the Emergency Nursing Service continues to serve both the Community Nursing and Hospital Services. In Community Nursing ENS Nurses have been allocated for a total of 38 weeks in the following situations:

Balgo Hills
Beagle Bay
One Arm Point
Kalgoorlie

6. COMMUNITY NURSING SERVICE REPORT

A separate report will be prepared by Director of Community Nursing.

In conclusion I wish to express appreciation of the help and courtesy which are readily extended by officers of other sections to the personnel of the Nursing Section.

COMMUNITY NURSING SERVICE

STAFFING	1 Jan. 1981	31 Dec. 1981
Chest & Tuberculosis Services		
Visiting Nurses	13.5	13.5
Child Health Section		
Child Health Nurses	137	148
Community Health Section		
Enrolled Nurses	10	8
Field Nurses	148	109
Health Workers	48	47
Kimberley Public Health Region		
Child Health Nurses	2	2
Enrolled Nurses	1	1
Field Nurses	30	35
Health Workers	22	32
School Health Nurses	1.5	1
Miscellaneous Registered Nurses	2	3
Occupational Health		
Occupational Health Nurses	3	3
Special Treatment Clinic Nurses	6	6
School Health Section		
Enrolled Nurses	4	4
School Health Nurses	128	135

As demonstrated above there was a decrease in the number of incumbent staff during 1981. Despite this there was a general increase in measured services delivered to the public although the service per se was not increased.

Several factors caused the understaffing, the chief factors being:-

1. Financial restraints: Federal arrangements precluded guaranteed funding for all items in Community Health Section and there was a tightening of State financial restraints.

2. General uncertainty in the longevity of Public Health Nursing Services following major changes in Federal-State financial arrangements and the fear of effects of financial review committees. Rumours became widespread resulting in general insecurity and unease among nursing staff. Nurses, understandably, became unwilling to apply for positions which they considered may be of short duration.

3. The "freeze" on recruitment resulted in a number of outpost positions not being filled. It usually takes several months from the time a position is advertised until the appointee actually begins work in a remote locality. This slow process was interrupted and the effects felt many months later.

4. Because of the unavoidable delay in replacing nurses who resigned from outposts the work-load on the remaining staff increased to unwelcomed proportions. This, in turn, increased severance rates and provided unfavourable publicity regarding working conditions. Kimberley was affected worst because of its greater number of outposts.

5. Decreased job satisfaction: Nurses from small Kimberley towns relieved at outposts in an attempt to maintain an elementary service. Consequently the usual work fell behind with loss of job satisfaction and increased frustration. The reduced number of nurses led to stress and problems for Aboriginal Health Workers as the nurses act as buffers between the health workers and the unlimited demands communities tend to make on their Health Workers.

I wish to pay tribute to the staff who maintained the service by extreme effort and sometimes at considerable personal cost for several grim months. This applies particularly to Kimberley where the Public Health nursing network reached a point of collapse. It was most unfortunate that this unprecedented disruption coincided with the first trial year for regionalisation of Kimberley. Some personnel outside the Region who were unsympathetic to the concept of decentralisation mistakenly tended to ascribe these disruptions and associated problems to the regionalisation process instead of to the severe shortage of staff.

Mrs. Pauline Humphris, Regional Nursing Administrator, Kimberley is particularly commended for her tenacity and devotion to service during this period. Also commended is Mrs. Mary Ann Knowles, Acting Regional Nursing Supervisor, in the Eastern Goldfields for ably maintaining a far flung nursing service in distressing times.

Miss Noreen Chidlow continued to relieve the Director of Community Nursing from January 1 until mid February, acting with considerable skill.

The new position of Assistant Director of Community Nursing was filled by Mrs. Pat Baskin and throughout the remainder of the year she demonstrated the necessity for the position.

Division of the Department

In May the Department of Health and Medical Services was divided in two, i.e. the Public Health Department and Hospital and Allied Services. This created serious problems for the executive nursing staff. Many of these problems were not resolved by the end of 1981. Of concern remained the function of certain Public Health Act responsibilities with the nursing staff of the Department of Hospital and Allied Services. This is confusing to nursing situations effected by the Public Health Act. Nevertheless, positive working relationships were maintained between the senior nurses of the two departments and will continue.

Death of Sister Judith Osborne

Deep shock and sadness were felt when, on the 30th April, one of the Royal Flying Doctor Services' (Eastern Goldfields Section) planes was caught in a line squall in Kalgoorlie and crashed. Our flight nurse, Sister Judith Osborne, was killed as were the pilot and co-pilot. The rescue party

found Judith dead but still holding and protecting her baby patient. The baby survived the crash because of this but died later of the original illness. Sister Osborne's other patient, although badly injured, also survived. It is a remarkable tribute that the only survivors were the flight nurse's two patients.

Health Workers

Further refinement was made to the health worker programmes. Each position now has an individually constructed duty statement which provides for the stated needs of the community, the aims of the department and the ability of the Health Worker. The Departmental policy of requesting the Aboriginal community to nominate persons acceptable to the community for the role of Health Workers was further consolidated.

An achievement record was designed and implemented. This means that in addition to provision of a record of the education and training received, the Health Worker is given specific goals and recognition of achievement.

GENERAL

Education

Comprehensive in-service education continued during the year. Seminars and workshops (1-3 days) were conducted throughout the State for nurses and health workers. Community and Child Health Services held its annual conference in Perth for nurses.

Three registered nurses, Miss J. Hides, Mrs. G. Bernard and Miss D. Lewis completed their full time study towards a post basic degree at the Department of Nursing, W.A.I.T.

One nurse, Miss M. Bayley, commenced full time study for her post basic degree.

In addition to this three registered nurses had approved leave to undertake midwifery training and two health workers went on a study tour of China.

Industrial

Another proposal for rationalisation of the industrial cover for nurses employed by the Public Health Department, was put to the Royal Australian Nursing Federation mid year. Unfortunately it was rejected outright and no negotiations or discussions were forthcoming. This has meant that another year has gone by without having proper industrial cover for our enrolled nurses and a steadily increasing number of registered nurses continued to be employed in categories not covered by the existing awards.

Visits

The Director of Community Nursing visited the Kimberley, West Pilbara and several metropolitan suburbs in company with the Commissioner of Public Health, the Deputy Commissioner of Public Health and a senior Administrative Officer. Although such visits were cumbersome and we spent very little time with individual staff, these disadvantages were more than offset by having senior personnel simultaneously assessing situations from

each individual's perspective and then adopting a collective approach to any action or problem solving that was required.

Chronic Diseases

The public continued to demonstrate their appreciation of nursing services provided to persons and families affected by specific chronic diseases, i.e. arthritis and rheumatism, multiple sclerosis, muscular dystrophy, and asthma. Co-operation with the voluntary organisations continued.

Royal Flying Doctor Service - West Australian Section

In July the West Australian Section of the Royal Flying Doctor Service commence employment of their own flight nurses. A specific agreement was drawn up to allow transfer of departmental flight nurses to the R.F.D.S. without loss of accrued benefits and entitlements.

School Nursing

Scoliosis Screening by nurses in schools was further extended. 44,808 children were screened in 1981 and 732 of these were referred for further opinion and management. 37 serious cases required a brace or surgery.

Visual defects continued as the largest number of disabilities identified in school children by nursing staff. Subsequently 1,262 children were prescribed spectacles of which 27% were in pre-primary or the year 1 classes. School Health Services and the Special Education Branch of the Education Department worked together to place all children with a severe visual impairment in a normal school environment. This involved the provision of technical assistance and aids and the monitoring of the medical condition and the educational progress.

Child Health

Nursing staff development in Child Health Section emphasised the equipping of nurses to conduct small group meetings of parents at centres. Particular attention was directed to the formation of post-natal groups and first-time-parent groups.

"Father Coached Preparation for Birth Classes" continued to be well attended. Post-natal classes for clients who had attended these earlier classes were held at three and five weeks post-natally and concentrated on the transition to parenthood as well as physical fitness in the puerperium.

"Post-natal Keep Fit Classes" were also provided for any mother following her six-week post-natal medical check and proved both beneficial and popular. Nurses found that peer group support was an extra bonus to the above programmes. Many mothers formed groups among themselves at the completion of the classes.

Refugees

During 1981, 1,480 Indo-Chinese refugees and 798 Europeans arrived and were screened at Graylands Migrant Hostel. Although this service creates considerable work-load for Tuberculosis and Community Health nurses it is considered an important public health service because of the problems

found and rectified. In contrast to the Indo-Chinese some European migrants were most unco-operative.

Tuberculosis

Tuberculosis and chest disease nursing service continued in 1981 when 161 new notifications of tuberculosis occurred.

Occupational Health Nursing

Miss Wilkinson retired towards the end of the year and the resultant void was filled by Mrs. K. Howell, an experienced and well qualified occupational health nurse. Social and professional expectations and trends indicate that this is going to be a most challenging and demanding role in the 1980's.

Leprosy

Nurses have continued to be actively involved in the effective surveillance, control and long term management of this disease. The stigma and the general public and professional ignorance associated with this disease continue to cause more problems than the disease itself.

Sexually Transmitted Diseases

The nursing network has maintained its tracing and treating activities in regard to these prevalent diseases. Fortunately the treatments are completed within days instead of months or years as in Leprosy.

Research

Miss Joan Bedford (Community Health) has continued to work full time with Dr. F. Stanley on the Midwives Notification System, Perinatal and Infant Mortality, Aboriginal Morbidity and Mortality - and has been involved with the preparation of various associated reports.

Departmental Nursing Representation

The membership of the Nurses' Board was extended to include the representation of community nursing administration within the Department. The Minister recommended Miss P.M. Reid as the initial nominee to this role.

Other Committees and Subcommittees Miss Reid has continued to participate in include:-

Administration of Drugs Committee (Nurses Board)

Expanding Role of the Nurse Committee (Nurses Board)

Child Health and Mothercraft Subcommittee (Nurses Board)

Nursing Education Evaluation Project Advisory Committee, W.A.I.T.

The Assistant Director of Community Nursing, Mrs. Baskin, was appointed to the Department's Expenditure Review Committee prior to the budget preparation in 1981. Not only did she provide the nursing expertise

necessary for decision making but she also gained much benefit from the experience.

Mrs. Baskin is also on:

The Advisory Committee for Nursing, W.A.I.T.

The State Advisor for Kellogg Nursing Fellowships) independently

The State Selection Committee - Kellogg Nursing Fellowships) independently

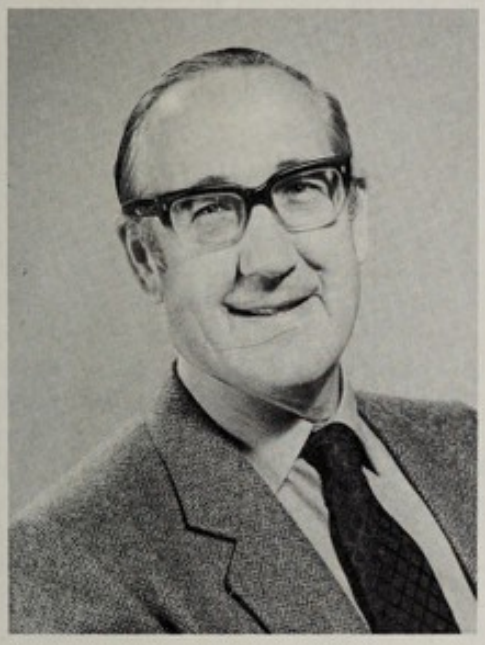
CONCLUSION

From the Public Health nursing perspective 1981 was not an easy year. On a number of occasions senior nursing personnel expressed their appreciation for the scores of nurses who quietly continued to provide nursing care while senior staff's attention and time was taken up by more demanding issues.

Such staff are the backbone of an organisation and their integrity and dedicated approach to their responsibilities contributed immeasurably to the service provided and was greatly appreciated by all concerned.

Appendix XII

OCCUPATIONAL HEALTH, CLEAN AIR AND NOISE ABATEMENT BRANCH

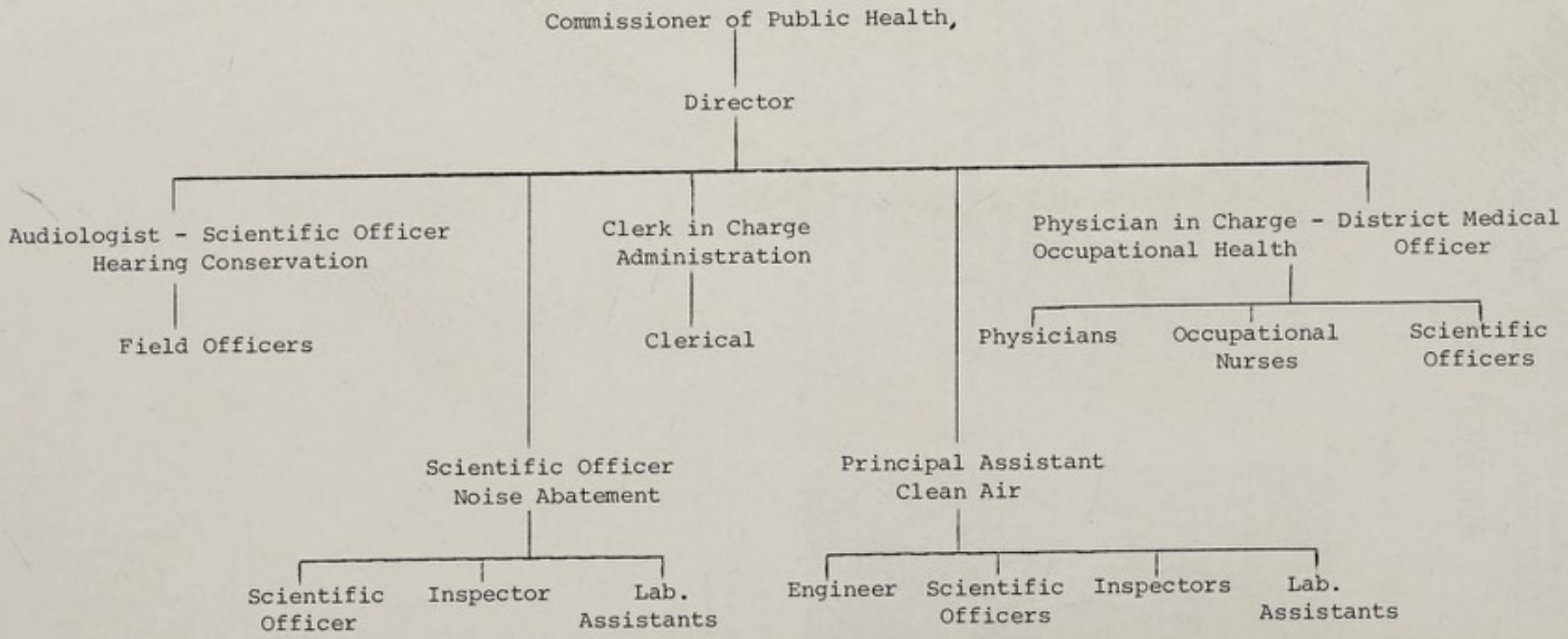


F. Heyworth
M.B., Ch.B., L.M.S.S.A.(Lond.) M.R.C.P.
F.R.A.C.P., D.I.H.(Apoth.), D.I.H.
(Conjoint)

Senior Staff

Director: Dr. F. Heyworth
District Medical Officer: Dr. P. Psaila-Savona
Principal Assistant, Clean Air: Mr. R. Powell
Physician, Occupational Health: Dr. K. Wan
Scientific Officer, Hearing Conservation: Ms. P. Gunn
Scientific Officer, Noise Abatement: Mr. C. Roberts

OCCUPATIONAL HEALTH, CLEAN AIR AND NOISE ABATEMENT - ORGANIZATION CHART



OCCUPATIONAL HEALTH, CLEAN AIR AND NOISE ABATEMENT BRANCH

GENERAL

The year continued the struggle to keep abreast with the growth of demand. Strains on staff due to demand were accentuated by vacancies and, as usual, members of staff rose to the occasion. Grateful thanks should be expressed to other branches which temporarily filled breaches from time to time and so assisted in continuing the services provided. Public concern regarding workplace health hazards and effects of chemicals has grown rapidly in 1981. Much of the Branch's work involved answering requests for information on toxicity, prevention of exposure, and appropriate handling of chemicals. Such requests have been overwhelming in number and often urgent in nature. Frequently the Branch has provided unbiased expert advice against a background of industrial disputes about health issues. The growth of these demands has strained the ability of the Branch to maintain routine evaluation in the field. The policy of the Branch is to encourage self regulation and self management by industry where possible, aided by suitable advice and assistance of the Branch. The growth of on-site occupational health services may in the long term make for greater independence and uplift the standard of occupational health in Western Australia.

The Noise Abatement Amendment Act 1981 was proclaimed on November 20th and the Clean Air Amendment Act 1981 was proclaimed on November 27th. The Air Pollution Control Council set up a sub-committee to study ambient fluoride emissions. Activities by associated societies increased in vigour. A report on blood lead levels in Northampton school children was published: a paper on ambient fluoride monitoring was presented to a national meeting of the Clean Air Society, and a paper entitled "What is the Pure Tone Audiogram Really Telling Us" was presented at the 1981 Australian Acoustical Society Conference.

A notable event was the completion of the first regional centre of the Branch at Karratha. This Branch will serve the North West shelf development and the Pilbara with a local advisory establishment in occupational health. Joint activities with the Mines Department and the Department of Labour and Industry facilitated operations in the field. Hearing Conservation Regulations have been re-drafted and are in the course of preparation.

STAFF CHANGES

Resignations:

Mr. C. Roberts, Scientific Officer, Noise Abatement
Mr. D. Dunn, Inspector, Occupational Health
Mr. G. Hepworth, Engineer, Clean Air
Sr. L. Woodland, Occupational Health Nurse
Mr. J. Sanders, Occupational Hygienist
Miss C. Bowers, Clerical Assistant

Retirements:

Miss M. Wilkinson, Occupational Health Officer
Mrs. M. Theobald, Typist

Appointments:

Dr. L. Glossop, Scientific Officer, Occupational Health
Sr. K. Howell, Occupational Health Nurse
Mr. P. Ashton, Inspector, Clean Air
Mr. N. Davies, Engineer, Clean Air
Mr. F. Magaraggia, Laboratory Assistant Noise Abatement
Miss D. Lund, Laboratory Assistant, Clean Air
Mr. T. Turi, Laboratory Assistant, Clean Air
Miss M. Baker, Typist
Miss J. Buhl-Keeling, Clerk
Miss G.Cox, Clerical Assistant

OCCUPATIONAL HEALTH SECTION

MEDICAL EXAMINATION OF MINERS AND WORKERS IN DUSTY TRADES

In accordance with practice in previous years, radiological surveys have been conducted in co-operation with the Perth Chest Clinic.

As required by the Mines Regulation Act, 1964-74, 4,627 men who entered the mining industry during 1981 were examined and, as required by the Mine Workers' Relief Act, 1932-40, 3,781 miners were re-examined.

In the examination under the Mine Workers' Relief Act, 115 miners were found to be suffering from silicosis, 4 from silico-asbestosis. Five of the silicosis cases were new cases, as against only one the previous year. Since the x-ray surveys are done in the same area of the goldfields only every other year, this fluctuation is not surprising. The 5 new cases were discovered from a total of 456 x-rays done in the goldfields.

For the eighth successive year there were no newly diagnosed cases of tuberculosis in miners.

FIGURE 1

Year	Total No. of examinations	Cases of silicosis	Incidence of new cases of silicosis	Rate per 10,000 examinations (silicosis)
1925-29	13,800	-	847	614
1930-34	19,600	-	380	194
1935-39	34,100	-	111	33
1940-44	29,000	-	238	82
1945-49	26,000	-	293	113
1950-54	29,400	-	274	93
1955-59	30,200	-	259	85
1960-64	36,377	-	409	112
1965-69	36,477	-	196	53
1970-74	24,122	1,704	119	49
1975	8,696	302	35	40
1976	5,788	291	20	35
1977	7,414	242	18	24
1978	3,789	197	17	44
1979	3,712	197	10	27
1980	4,927	148	1	2
1981	3,781	115	5	13

The asbestosis, silicosis registers and a record of mesothelioma cases have been maintained. It is emphasized that, although it is realised that the registers may be incomplete, and that they can only include known cases, they are nevertheless useful indicators of the annual position. It must also be observed that the figures given in the Registers are not only the cases diagnosed under the above quoted legislation but come from various sources such as the Pneumoconiosis Medical Board established under the Workers' Compensation Act.

Although a record of mesothelioma cases is kept at the Occupational Health Branch, the Cancer Registry has taken over the Mesothelioma Registration as from October 1981.

REGISTERS

Year of Diagnosis	Mesothelioma	Asbestosis	Silicosis
Unknown	5	)	-
Pre 1974	13	)	-
1974	4	)78	-
1975	9	)	-
1976	5	)	-
1977	9	)	-
1978	13	11	29
1979	5	8	24
1980	12	16	16
1981	17	9	17
TOTAL	92	122	86

60 cases of mesothelioma and 227 of asbestosis are known to have been associated with blue asbestos at Wittenoom.

DISTRICT MEDICAL OFFICER'S REPORT

There has been a continued increase in attendance at the Police Department.

At the request of the Road Traffic Authority, 21 persons were examined in connection with applications for, or renewals of, special licences, e.g. bus drivers and driving instructors. In addition, 30 medical examinations for licensing were carried out following referral from court, medical practitioners and from applicants themselves. The number of these examinations should continue to decrease with the firm establishment of the set procedure for assessment of medical fitness to drive.

Year	Medical Consultations	Pre-employment Med. Exams	Periodic Med. Exams	Med. Assessments of Fitness to Drive
1979	5570	371	170	129
1980	6820	249	209	899
1981	6905	374	86	1821

The permanent Medical Advisory Committee on Road Traffic Injuries established in 1979 has met on a regular basis.

ABATTOIR OCCUPATIONAL HEALTH

An occupational health physician provides a consultation service to the Western Australian Meat Commission, Robb Jetty Abattoir, in the operation of its inplant medical facility run by a full-time nursing sister. The most common injuries were to hands and fingers which accounted for 2208 or 54% of injuries.

Year	Attendances	Injuries	Lost Time Accidents	Workers' Comp.	% on Workers' Comp.
1979	12,658	2981	390	421	14
1980	16,033	3828	216	412	10.8
1981	12,654	4075	303	343	8.4

In 1981 the Occupational Health Branch continued to provide a consulting service to the Meat Commission whereas in 1980 an Occupational Health Physician from the Branch was providing an on-site service.

The Safety Committee had six meetings in 1981. A variety of accident and occupational health hazards were discussed and rectified. Safety induction, inservice training and safety promotion programmes have been initiated during the year. The injuries for the latter half of 1981 have been much lower than for 1980 although this effect is not demonstrated in the overall annual statistics.

OCCUPATIONAL HYGIENE

Hazard Evaluations

Fifty-three hazard evaluations were performed on a diverse number of industrial and consumer materials. These evaluations included exposure tests, biological sampling, toxicity investigation, and inspections. Major efforts involved lead, asbestos, silica, fibreglass, P.C.B., solvents, pesticides, formaldehyde, mercury, sulphur dioxide and isocyanates. Others included vanadium, cadmium, beryllium, carbon monoxide, ammonia, graphite, mineral dust, styrene, chrome, tar, hydrogen

sulphide, arsenic, oil mist, talc, air conditioning, sodium hydroxide and ethylene oxide.

Pesticides

Work load on pesticide problems, operator, licensing, complaints, oil testing, educational classes and general pesticide queries has increased. Educational activities included organisation of the two courses for commercial pesticide operators and 14 lectures and seminars on pesticides. Examinations were held for pesticide operators' licences every first and third Thursday each month.

Tests were done to measure 2,4-D, 2,4,5-T and other pesticides in air, blood and urine.

Educational Activities

Besides the educational activities on pesticides, lectures and seminars were given on various occupational health topics including dust monitoring, nursing, pesticides and industrial health to the Industrial Foundation for Accident Prevention (IFAP) Trade Union Centre and other agencies.

Professional Consultation and Review

Twenty-two consultative projects were carried out through co-operation with various governmental bodies on potential occupational health problems. Agencies included the Commonwealth Departments of Health, Army, Air Force, Environment, Transportation, Telecom, Australia Post, and State Departments of Mines, Labour and Industry, Police, Fire Brigade, Forests, Agriculture, Main Roads, Education and Westrail.

Committee meetings, consultation, and reviews, were maintained with the National Health and Medical Research Council. Proposed Australian Standards were reviewed on hazardous chemicals, chemical spills and identification, and respiratory protection.

Environmental Concerns and Public Queries

Many public queries were answered relating to home insulation materials, hair dyes, hair driers, consumer items, pesticides, and potential carcinogens. Environmental measurements were made in homes, public buildings, and workplaces.

OCCUPATIONAL HEALTH NURSING

Staff comprises three trained nurses - two stationed in Perth and one at Kwinana Community Health Centre. As in previous years chest x-ray film surveys have been carried out in co-operation with the Perth Chest Clinic (Mobile Units). Industrial chest x-ray films are read by a Perth Chest Clinic Doctor and Occupational Health Physician.

Industrial workers from other sources including sandblasters, asbestos workers and foundry workers, report to Perth Chest Clinic, Fremantle Chest Clinic or the nearest regional hospital.

Kwinana Occupational Health Unit

The occupational health service provided by a full-time occupational health nursing sister at the Kwinana Community Health Centre carried out the following activities during the year:

Treatments	354
Lung Function Tests	393
Audiograms	401
Blood Pressure Checks	524
Factory Visits	269
Urine Tests	16

Nursing Education

Students from the larger training hospitals report to this Department for instruction and guidelines for a future career in Occupational Health Nursing. In co-operation with Nursing Education, nurses wishing to learn more of this branch of nursing are sent for a period of up to 10 days to centres that have trained nurses on site. Lectures and promotional activity are ongoing including first aid, occupational health exhibitions, talks in factories and counselling of workers on occupational health problems.

Health Surveillance

A major activity is monitoring of workers who are exposed to hazardous materials such as lead, mercury, arsenic, and fluoride.

Lead in blood	353
Lead in urine	53
Mercury in urine	22
Vanadium in urine	88
Fluoride in urine	53
Pesticides in blood	121
Pesticides in urine	24
Arsenic in urine	2

Medical Examinations of Pearl Divers

Approved	63
Restricted to 65 ft (20 metres depth)	2
Not Approved	0

KINETICS/ERGONOMICS

The role of this sub-section continues to be essentially one of work situation assessment and appropriate education of the public in the principles and application of ergonomics.

Lectures and demonstrations	8
Workplace evaluations	20
Response to requests for information	377
Consultations	14

There has been further development work on an adjustable height foot stool for office workers.

The following pamphlets were developed:

1. Working with Lead
2. Welding and Health

A respiratory questionnaire for use by Mines in conjunction with the Mines Ventilation Board and a vibration questionnaire were prepared.

NORTH-WEST OCCUPATIONAL HEALTH CENTRE, KARRATHA

The premises has been completed and equipped. Services can commence as soon as a scientific officer and an occupational health nurse are posted. Applicants for the Scientific Officer Level 1 position have been interviewed and the position is expected to be filled in March 1982.

NOISE ABATEMENT SECTION

The Noise Abatement and the Hearing Conservation Teams are being re-organised into a Noise Section. The re-organisation is a team effort and the final product should increase the efficiency of the Section.

An audiometric testing chamber has been built in the cellar of 57 Murray Street. The chamber meets ISO, ANS, ASA Standards. The thermal ventilation system and the exterior door are yet to be completed.

The duties of the Noise Abatement Section of the Public Health Department can be described in four main headings :

(1) Environmental Noise
(2) Calibration of noise measurement instruments
(3) Education
(4) Statutory Duties

ENVIRONMENTAL NOISE

1. Traffic Noise. The final traffic noise report was submitted to the Minister for Health from the Inter-departmental Committee on Traffic Noise. Subsequently a report on implementing the findings of the Inter-departmental Committee on Traffic Noise has been submitted to the Minister through the Noise and Vibration Control Council.

2. Background noise monitoring along the new, yet unopened Kwinana Highway extension to the Leach Highway has been completed. When the highway is open another survey will be conducted.

3. Special noise investigations were also conducted:

   a) noise levels of 17 child health centres for the Child Development Centre;
   b) noise on board water police boat;
   c) vehicle noise for ADR 28.

4. The Noise Section environmental monitoring van is operational.

5. Community noise and vibration investigations continue : air conditioners, quarries, pool pumps, compressors, factories, amplified music, traffic, public address systems, pile drivers, bus depot and other premises.

CALIBRATION

The Noise Laboratory calibrated 26 sound level meters and 23 audiometers during the year. There is continuing development of computer software for noise analysis and equipment calibrations. Other laboratory activities have included : frequency and statistical analysis of noise, maintenance and calibration of other noise laboratory equipment.

EDUCATION

A seminar was organized to discuss off-road vehicle legislation with : Road Traffic Authority, WA Police, Department of Local Government, NSW State Pollution Control Commission and NSW Police. Representatives attended interstate Australian Environmental Council meetings.

STATUTORY DUTIES

The Noise and Vibration Control Council have approved changes to the requirements for practical experience necessary for appointment as Local Inspectors pursuant to section 34 of the Noise Abatement Act. Two courses were conducted and assessment given for noise inspectors. The results have been submitted to the Noise and Vibration Control Council. The approved noise inspectors have been gazetted.

New regulations relating to noise abatement directions under section 33(E) of the Noise Abatement Amendment Act 1981 were approved by the Noise and Vibration Control Council.

HEARING CONSERVATION

GENERAL

The team consists of a Scientific Officer, and Audiologist (only part-time since August), an Instructor and a Clerk/Audiometrist. Since July funding by the Commonwealth Community Health Grant has ceased, so the team is now fully supported by State Government funds and plans are being formulated to amalgamate it with the Noise Abatement Section. During 1981, the team continued its advisory services in hearing conservation to industry and government establishments.

Year	Preliminary Noise Surveys	Full Noise Surveys	Audiograms
1979	9	6	207
1980	25	42	560
1981	24	38	310

NOISE SURVEYS

Twenty-four preliminary noise surveys and thirty-eight full noise exposure surveys with detailed reports were carried out during the year. Five of the latter were for government establishments (three technical colleges and two training centres) and the rest private companies. Most of the surveys were conducted in response to requests from the management of the companies or organisations themselves, but five resulted from requests from Department of Labour and Industry Inspectors and two from the Coal Mines Inspector. One study of noise received by truck drivers was arranged at the request of the Transport Workers' Union. Only two places surveyed were considered to have no hazardous noise exposures (a laundry and a computer centre). The highest noise exposures measured were received by workers using arc-air gouging equipment (leq_{A8} = 110 dB(A) and those who constructed and repaired metal tanks (Leq_{A8} = 107 dB(A)). The majority of measured noise exposures were between 85 dB(A) and 100 dB(A).

Measurements of background noise in audiometric booths and areas where it was desired to carry out audiometry, were taken for three companies who wished to determine if their facilities met Australian Standards.

Assistance was given with the training of health surveyors and noise technicians at four WAIT-AID courses.

AUDIOLOGY

A total of 310 audiograms were taken during the year. Thirty-nine of these were of individuals who were concerned that noise had affected their hearing ability and the rest were part of company or organisation hearing conservation programmes. Most tests were conducted in the team's audiometry van whilst it was stationed in Carlisle. During the year the van was moved for short periods of time to Kwinana, Jandakot, Fremantle and Bayswater to cater for various groups.

In December an audiometric testing chamber was completed in the basement of 57 Murray Street. This facility meets both ISO and Australian Standards for background noise levels for audiometric testing. It will be used for more detailed audiological tests and for testing people who find the central location more convenient than the van site.

The computerisation of audiometric and noise survey data was delayed due to problems with storage space and the link-up to the main Cyber Computer. These problems have now been resolved and data entry is to proceed early in 1982.

Assistance was given with the training of audiometric officers at two WAIT-AID courses and in a screening of the general public's hearing at Fremantle.

EDUCATION

The team's education activities have continued with the three part programme commenced last year:

i) Educating management and employees;
ii) Educating trades apprentices;
iii) Educating high school students prior to leaving school.

The first part involved the Instructor in 42 sessions with groups of employees (shop floor to middle management) from 12 companies and one Government Department. Talks were also given to trade union organisers and a computer users' group. The team participated in three exhibitions on occupational health organised by the Trades and Labour Council at shopping centres in the Kwinana/Fremantle area.

The second part involved gathering more noise level and audiometric data at three technical colleges (two in country areas) and giving talks to the 'working group on noise' set up by the Technical Education Directorate. It is anticipated that this group will continue the work started by the team, who will provide specialist advice when requested.

Thirdly, participation in the 1981 'Decibel Danger' programme (funded this year by the I.Y.D.P.) involved the Instructor in talks to 13-15 year olds at seventeen high schools (166 sessions). This programme has now concluded after a two year run and it is hoped that its information and ideas will be included in the main Health Education syllabus, currently being revised.

A new facet of the team's educational work this year was a course of 15 weekly sessions given to factory and shops inspectors. This covered the basic theory of sound, the effects of noise, noise measurement, noise control principles, audiometry and worker education.

CLEAN AIR SECTION

The activities of the Section are described under the following headings:

A. MONITORING OF AIR POLLUTANTS
B. SPECIAL INVESTIGATIONS AND TESTING
C. ADVISING ON AIR POLLUTION CONTROL AND EDUCATION
D. COMPLAINTS AND STATUTORY DUTIES

A. MONITORING OF AIR POLLUTANTS

1. Dust Monitoring

The Central Electricity Research Laboratories (CERL) directional dust gauge and the standard New South Wales glass deposit gauges are used in W.A.

Perth Area

At the end of 1981 21 CERL gauges were sited in the metropolitan area as follows:

City Beach	Perth Airport	Munster (3)
East Perth	Welshpool	Hazelmere
Lathlain Park	Kewdale	Viveash (2)
Rivervale	Maddington (2)	
Gosnells (2)	Kwinana (4)	

For results see Appendix A.

The results for deposit gauges situated at City Beach, East Perth, Perth Airport and Welshpool are shown in Appendix B.

Port Hedland

Six gauges were maintained in Port Hedland during 1981 and were located as follows:

Gauge No.	Location
1	Anderson Street, Port Hedland
2	Howe Street, near Hospital
3	Spinifex Hall, near Shire Office
4	Cooke Point
5	Leslie Salt, Redhill
6	Stanley Street, South Hedland

The dust samples from each gauge were collected by officers of the Shire of Port Hedland and processed in the Section's laboratory in Perth. For results see Appendix C.

Cape Lambert/Dampier/Karratha

Eight CERL dust gauges were maintained in the area during 1981 and located as follows:

Gauge No.	Location
1	Port area, Port Sampson
2	Immediately south of Cape
3	North of Wickham
4	South of Wickham
5	Parker Point, Dampier
6	Bowling Club, Dampier
7	Karratha Airport
8	Fire Station, Karratha

The Health Surveyor of the Shire of Roebourne, has continued to collect the dust samples and maintain the gauges in the area and forward the samples to Perth for processing. For results see Appendix D.

Kalgoorlie

Seventeen CERL gauges are processed for the Goldfields Dust Abatement Committee and located as follows:

Gauge No.	Location
1	Trafalgar Townsite
2	Lionel Street
3	Mafeking Street
5	Lane Street
6	Chesapeake Street, Boulder
7	Burt Street
9	Maritana Street
10	North Kalgoorlie Primary School
11	Killarney Street, Lamington
12	Piccadilly Street
14	Great Eastern Highway, West Kalgoorlie
15	Boulder Rifle Range
16	Kambalda Road, Mt. Hunt
18	Brown Hill
19	Bulong Road, East Kalgoorlie
20	West Kalgoorlie
21	East of Trafalgar

For results see Appendix E.

Two gauges at the Mines Department and Boulder Road have been maintained by the Kalgoorlie Mines Department during the last 12 months.

Gauge No.	Location
1	27 Boulder Road, Kalgoorlie
3	Mines Department, Brookman Street, Kalgoorlie

For results see Appendix F.

2. Particulate Monitoring

The United States Environmental Protection Authority high volume sampler is used in W.A.

Perth City

Four samples are sited in the city:

a) Bureau of Meteorology, Hill Street, Perth, sample point 10 metres above ground and 10 metres from the pavement.

b) Queens Building, William Street, Perth, sample point 4.5 metres above pavement.

c) State Energy Commission, Murray Street, Perth, sample point 5 metres above pavement.

d) Occupational Health, 57 Murray Street, Perth, sample point 1.5 metres above ground, 2 metres from pavement.

Outer Metropolitan

St. Brigid's School, Morrison Road, Midland, sample point is 1.5 metres above the ground, 10 metres from the road.

The collected particulates are analysed for lead by the Government Chemical Laboratories and the Western Australian Institute of Technology.

For results see Appendices G & H.

Bunbury

A high volume sampler was maintained at the Bunbury Port Authority near the harbour and serviced by the Health Surveyors of the City of Bunbury. For results see Appendix I.

Port Hedland

The Department is grateful to officers of Mt. Newman Mining Company who maintained three high volume samplers in Port Hedland during 1981. The samplers are located as follows and the results shown in appendix J.

Sampler No.	Location
1	Howe Street, near Hospital
2	Swimming pool, near Shire Offices
3	Stanley Street, South Hedland
4	Port Hedland Airport

3. Sulphur Dioxide and Smoke

Perth Area

Monitoring of sulphur dioxide and smoke has continued, but only with the help of residents in the many suburbs who have continued to assist the Clean Air Section by accommodating and operating these samplers in their homes. The Department of Health and Medical Services wishes to thank them all for their most valuable help. For results see Appendices K & L.

Kalgoorlie

Western Mining Corporation staff have continued to maintain the section's monitors in the Kalgoorlie and Boulder area. For results see Appendix M.

4. Oxides of Nitrogen

The sampling site at 57 Murray Street, Perth, has continued to be operated on a 24 hour basis during 1981. For results see Appendix N.

5. Carbon Monoxide

Monitoring for carbon monoxide has continued at 57 Murray Street, Perth, and at the corner of William and Murray Streets, Perth. For results see Appendices O and P.

6. Lead

Lead was monitored at the corner of William and Murray Streets, Perth and at the Bureau of Meteorology, and the results are shown in Appendix H.

B. SPECIAL INVESTIGATIONS AND TESTING

1. Special Investigations and Testing

Superphosphate Works

Four superphosphate manufacturing plants were tested during the year. For results see Appendix Q.

Vineyard Monitoring

During the grape growing season commencing September 1980, and continuing into April 1981, injury was again sustained following a lower ambient air level of fluoride to which the vines were subjected. Modifications were made to the continuous air monitoring instrument used and a new instrument was designed and constructed by the Department resulting in much greater confidence in the monitoring results now obtained. Further monitoring during the 1981/82 growing season will be necessary. The average monthly fluoride concentrations are shown in Appendix R.

The assistance given by officers of the Department of Agriculture for leaf sampling and the analysis of the leaves by the Government Chemical Laboratories is gratefully acknowledged.

Fluoride emissions were measured from several brickworks to evaluate scrubber efficiencies, and at a tile works to evaluate total and peak emission levels.

2. 2,4-D Monitoring in Geraldton

Officers of the Section continued to support the Agriculture Department with monitoring instrumentation and general assistance.

3. Source Testing

Source sampling has been carried out at ten works during 1981 using the USEPA source sampling train. A sulphuric acid plant was tested for sulphuric acid mist and sulphur dioxide emissions, all other works chimneys were tested for particulate emissions.

The results are shown in Appendix S.

4. Miscellaneous

The Clean Air Section continued to support other Government Departments, Local Authorities, and private companies when called on during the year.

C. ADVISING ON AIR POLLUTION AND EDUCATION

As in past years, numerous enquiries were received by the Clean Air Section from students and the public for information on air pollution and allied matters. Lectures were given to various professional organisations and tertiary educational institutions.

Two officers delivered papers at the Seventh International Clean Air Conference in Adelaide.

D. COMPLAINTS AND STATUTORY DUTIES

During the year similar numbers of complaints received in past years were again dealt with. The cause of the complaints varied from dust to odours, originating from a wide range of industries and commercial premises.

Routine inspections and special inspections of industrial premises were carried out by the Section's officers as required by the Scientific Advisory Committee and the Air Pollution Control Council.

All meetings of the Scientific Advisory Committee and the Air Pollution Control Council, or special sub-committee meetings, were attended by the Principal Assistant or senior officers of the Section.

22686—15

APPENDIX A

DUST TESTING PROGRAMME - PERTH METROPOLITAN AREA, 1981

Mean total dirtiness for the 12 months
period January - December 1981

GAUGE	TOTAL DIRTINESS
City Beach	1.6
East Perth	1.7
Lathlain Park	1.9
Rivervale	2.8
Perth Airport	1.9
Kewdale 1	4.2
Maddington 1	10.3
Maddington 2	3.7
Gosnells 2	1.3
Gosnells 3	2.8
Hazelmere	2.5
Welshpool 2	3.8
Viveash 1	1.9
Viveash 2	3.0
Kwinana 2	2.6
Kwinana 3	3.4
Kwinana 4	1.9
Kwinana 5	2.8
Munster 2	1.5
Munster 4	3.2
Munster 5	2.9*

* 5 months only

APPENDIX B

DEPOSIT GAUGES - 1981

Deposition (milligrams per sq. metre per day)

Sampling Point	Total Insolubles	Total Inorganic
Belmont	28	15
City Beach	17	8
East Perth	44	27
Welshpool	40	20

APPENDIX C

DUST TESTING PROGRAMME - PORT HEDLAND 1981

Mean total dirtiness and Mean per cent Iron Ore in total dust from dust gauges for the twelve months period January - December, 1981.

Gauge No.	Location	Total Dirtiness	Per cent Iron Ore
1	Anderson Street, Port Hedland	21.9	44
2	Howe Street, near Hospital, Port Hedland	13.6	46
3	Spinifex Hill	4.6	14
4	Cooke Point, Port Hedland	2.6	9
5	Leslie Salt, Redhill	5.2	15
6	Stanley Street, South Hedland	2.4	6

APPENDIX D

DUST TESTING PROGRAMME -CAPE LAMBERT/DAMPIER/KARRATHA

Mean total dirtiness and mean per cent Iron Ore in total dust from dust gauge for the twelve months period January - December, 1981.

Gauge No.	Location	Total Dirtiness	Per Cent Iron Ore
1	Port Area, Port Sampson	2.1	
2	Immediately S of Port Area	1.6	
3	North of Wickham Town Site	1.9	
4	South of Wickham Town Site	1.7	
5	Parker Pt. Dampier	6.2	13
6	Bowling Club, Dampier	1.6	24
7	Karratha Airport	5.9	6
8	Fire Station, Karratha	2.7	8

APPENDIX E

DUST TESTING PROGRAMME, GOLDFIELDS DUST ABATEMENT, KALGOORLIE DISTRICT

Mean total dirtiness from dust gauge for the twelve months period January - December, 1981.

Gauge No.	Total Dirtiness
1	9.6
2	2.9
3	8.4
5	3.1
6	2.6
7	2.6
9	2.3
10	2.7
11	2.5
12	3.4
14	3.1
15	1.3
16	1.2
18	3.8
19	1.9
20	1.9
21	9.8

APPENDIX F

DUST TESTING PROGRAMME - KALGOORLIE MINES DEPARTMENT, 1981

Mean total dirtiness for the twelve month period January - December, 1981.

Gauge No.	Total Dirtiness
1	2.0
3	1.7

APPENDIX G

PARTICULATES IN AIR

All results in micrograms per cubic metre of air

Site	Annual Average	Highest 24 Hour
Bureau of Meteorology	46	79
Cnr. Murray and William Streets	59	91
S.E.C. Murray Street	-*	72
57 Murray Street	-*	75
St. Brigids School, Midland	53	157

*Commenced October, 1981

APPENDIX H

LEAD IN AIR

Calendar quarter averages of 24 hour high volume samples taken every sixth day.

All results in micrograms per cubic metre of air.

Site	Jan-Mar.	April-June	July-Sept.	Oct-Dec.
Bureau of Meteorology	0.7	1.1	1.0	0.6
Cnr. Murray & William Streets	1.4	2.8	2.8	2.1
S.E.C. Murray Street	-	-	-	1.3
57 Murray Street	-	-	-	1.8
St. Brigids School Midland	1.3	1.8	1.2	0.9

APPENDIX I

HIGH VOLUME SAMPLING, BUNBURY

All results in micrograms per cubic metre

	Monthly Average	Maximum Daily Concentration
January	37	42
February	57	92
March	66	85
April	59	116
May	38	45
June	66	95
July	43	60
August	79	119
September	71	86
October	53	69
November	46	69
December	43	53

Annual arithmetic mean : 57
Annual geometric mean : 53

APPENDIX J

HIGH VOLUME SAMPLING, PORT HEDLAND

(All results micrograms per cubic metre)

Howe Street, (near Hospital)

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Monthly Average	140	45	62	154	128	134	97	115	99	125	111	64
Maximum daily concentration	240	72	94	333	233	223	143	178	148	230	258	126

Annual arithmetic mean: 106 Annual geometric mean: 87

Swimming Pool (near Shire Offices)

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Monthly Average	99	43	41	33	29	33	30	30	36	66	169	81
Maximum daily concentration	192	68	65	39	40	44	37	48	43	124	318	238

Annual arithmetic mean: 70 Annual geometric mean: 46

Stanley Street (near PWD pressure tank)

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Monthly Average	70	25	26	37	-	26	28	36	28	45	61	56
Maximum daily concentration	154	39	49	50	-	28	39	56	33	90	142	173

Annual arithmetic mean: 41 Annual geometric mean: 34

Airport

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Monthly Average	80	37	31	41	26	20	26	48	33	52	70	42
Maximum daily concentration	195	48	56	50	36	27	28	34	45	77	163	88

Annual arithmetic mean: 41 Annual geometric mean: 35

APPENDIX K

METROPOLITAN SULPHUR DIOXIDE CONCENTRATIONS 1981

(All results expressed in micrograms per cubic metre.)

SITE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	SEVEN HIGHEST 24 HOUR VALUES FOR YEAR							ANNUAL AVERAGE
PERTH	21	15	19	16	18	11	18	11	13	15	9	7	205	68	62	51	51	49	49	14
BANGANUP	9	12	18	11	3	1	1	3	3	7	8	11	98	75	59	55	53	50	49	7
BENTLEY	14	12	7	9	5	10	6	7	10	31	29	25	90	86	73	71	66	66	63	14
CLAREMONT	6	7	6	3	4	3	2	2	3	4	4	8	59	34	34	34	29	26	25	4
HILLMAN	9	2	4	4	3	2	3	5	3	3	4	1	48	37	25	25	22	21	18	4
INGLEWOOD	4	4	2	2	1	1	0	1	1	1	3	7	21	18	14	14	13	12	12	2
LYNWOOD	1	2	1	1	2	1	0	1	2	1	2	7	28	22	22	21	17	12	10	2
MEDINA	-	11	11	6	5	6	4	3	1	0	11	29	91	63	45	42	38	38	35	8
ORELIA	5	2	4	5	4	4	2	5	5	4	3	31	73	67	64	50	50	46	42	6
ROCKINGHAM	9	6	5	4	2	3	1	2	2	1	1	1	38	32	30	28	25	24	24	3
WATTLEUP	-	62	76	30	16	20	15	31	29	49	66	86	248	210	186	176	167	165	162	44
WEMBLEY DOWNS	5	3	4	2	1	1	1	4	2	3	3	7	69	25	20	15	14	14	14	3

WORLD HEALTH ORGANISATION RECOMMENDED LONG TERM GOALS

Sulfur Oxides - British Standard Procedure

Annual mean $_3 60 / ug/m^3$

98% of observations below $200 / ug/m^3$

APPENDIX L

METROPOLITAN SMOKE READINGS 1981

All results in micrograms per cubic metre

Site	Annual Average
Perth	7
Bentley	4
Bangarup	3
Claremont	4
Hillman	2
Inglewood	4
Medina	2
Orelia	2
Rockingham	2
Wembley Downs	5
Lynwood	3
Wattleup	3

APPENDIX M

KALGOORLIE/BOULDER SULPHUR DIOXIDE
CONCENTRATIONS 1981
(all results expressed in micrograms per cubic metre).

SITE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	Seven highest 24 hour values for year							Annual Average
Boulder Moran Street	35	9	3	3	4	1	2	5	6	12	15	35	261	180	155	151	145	145	137	11
Kalgoorlie Whitlock Street	51	11	7	5	2	1	4	5	10	16	15	33	125	116	105	98	96	93	92	13
Lamington Campbell Street	24	15	11	9	9	6	6	12	10	16	14	29	141	88	83	81	77	75	72	13

APPENDIX N

METROPOLITAN OXIDES OF NITROGEN CONCENTRATIONS 1981

All results expressed in micrograms per cubic metre.

SITE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	HIGHEST 24 HOUR AVERAGE.	LOWEST 24 HOUR AVERAGE.	ANNUAL AVERAGE
Perth	43	28	36	48	47	55	57	55	50	44	34	37	144	2	45

APPENDIX O

CARBON MONOXIDE AT 57 MURRAY STREET, PERTH

Results in parts per millin

1981	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly Average	-	0.6	0.6	0.6	-	1.2	1.6	1.5	1.3	1.0	0.9	0.8
Highest 1 hour Average	-	2.2	2.4	1.4	-	8.3	10.4	8.9	6.2	7.1	3.7	3.6
Highest 8 hour Average	-	1.6	1.7	1.2	-	4.6	4.9	4.3	3.7	3.1	2.6	2.3

Yearly Average : 1.0

APPENDIX P

CARBON MONOXIDE NEAR CORNER OF MURRAY AND WILLIAM STREETS, PERTH

Results in parts per million

1981	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly Average	***	MONITOR		TEMPORARILY		RE-SITED		***	2.8	3.0	2.1	1.3
Highest 1 hour Average		"		"		"			12.3	11.5	10.1	4.9
Highest 8 hour Average		"		"		"			10.0	10.4	8.1	3.1

Yearly Average : 2.3

APPENDIX Q

FLUORIDE EMISSIONS FROM SUPERPHOSPHATE WORKS

Location	Kilograms/hr of Fluoride
Albany	0.86
Bunbury	0.25
Esperance	0.10
Geraldton	1.90
Geraldton*	1.03

The increase in fluoride emissions at Geraldton, Albany and Bunbury is attributed to the necessary increased use of rock phosphate having a higher natural fluoride content.

*A notable reduction in fluoride emissions was demonstrated by further testing at the Geraldton Works following a reduction in the percentage of high fluoride phosphate added to the mix.

APPENDIX R

AMBIENT AIR FLUORIDE CONCENTRATIONS MEASURED AT A VINEYARD AS HYDROGEN FLUORIDE, 1980/81 GROWING SEASON

Month	Average Concentrations (HF ug/m^3)
September	0.09
October	0.08
November	0.11
December	0.15
January	0.16
February	0.17
March	0.32
Seasonal Average	0.15

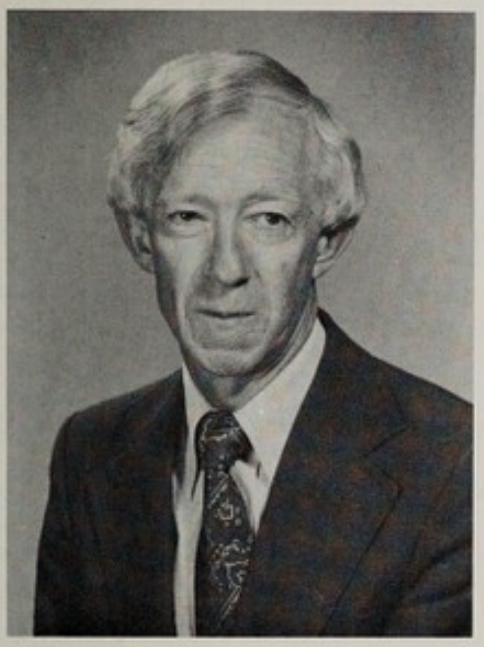
APPENDIX S

SOURCE TESTING

Description of Works	Location	Average Particulate Emission (gram per cubic metre of flue gas corrected to 0^{o} and 1 atmos. pressure)
Brick Kiln fired on sawdust	Byford	0.065
Brick Kiln fired with oil	Maylands	0.23
Vanadium Plant	Wundowie	1.2
Cement Plant	Munster	0.10
Bitumen Plant	Cannington	
New Plant		0.25
Old Plant		1.5
Brick Kiln old kilns	Armadale	0.51
fired with coal		0.02
and with oil		0.17
New Kiln		
Power Station	East Perth	1.0
Power Station	South Fremantle	0.16
Cement Works	Rivervale	0.10
		Acid Mist
Sulphuric Acid Plant	Australind	0.15 gram per cubic metre
		Acid Gases
		8.7 gram per cubic metre

Appendix XIII

STATE X-RAY LABORATORY - PHYSICS DIVISION

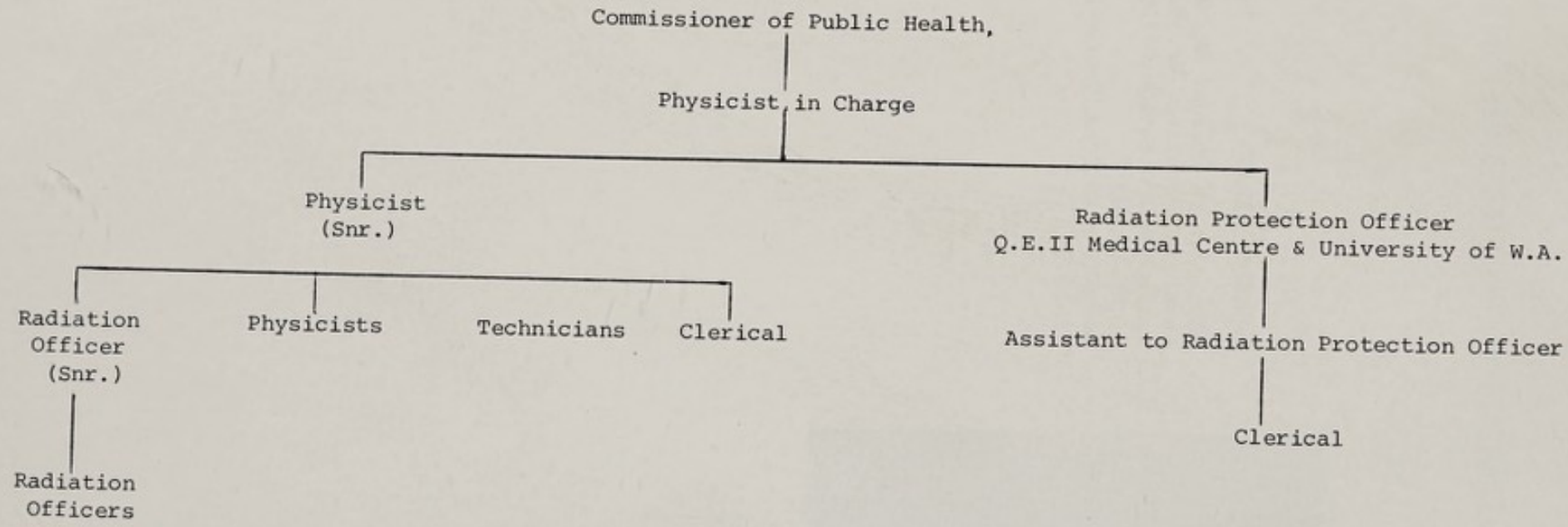


B.E. King,
M.Sc., B.Sc.
Physicist in Charge

Senior Staff

Physicist in Charge: Mr. B.E. King
Physicist (Senior): Dr. B.M. Hartley
Radiation Protection Officer: Mr. L.M. Davies
Radiation Officer (Senior): Mr. B.J. Cobb

STATE X-RAY LABORATORY, PHYSICS DIVISION - ORGANIZATION CHART



STATE X-RAY LABORATORY

INTRODUCTION

The Physics Division of the State X-Ray Laboratory provides Western Australia's radiation protection service. The Division is concerned with safety in the use of x-rays, radioactive substances, microwaves, ultraviolet, visible and infra-red radiation, all of which can be produced in modes and intensities which are known to be hazardous but when properly utilised, the hazard can be kept to a low level commensurate with the benefits to be gained.

The statutory body responsible for radiation safety is the Radiological Council, an authority appointed under the Radiation Safety Act 1975. The Physics Division provides the necessary administrative and technical services in support of the Council, including administering the system of licencing and registration, provision of field staff and laboratory services.

While the primary objective of the Council and the Division is to ensure that all use of radiation is in accordance with the Radiation Safety Act and Regulations, it is no less important to minimise all unnecessary exposure to radiations which can be potentially hazardous.

The work of the Physics Division is described in this report. The Radiological Council makes a separate Annual Report to the Minister for Health and matters of particular interest to the Council are described in that report.

DIAGNOSTIC USE OF IONISING RADIATION

The National Health and Medical Research Council's Report "Contributions to the genetic and mean bone-marrow doses of the Australian population from Radiological procedures" published in 1980, showed that the annual genetically significant dose to the Australian population in 1970 was 176 µGy of which 149 µGy was the result of x-ray diagnostic examinations. The latter figure is above that for New Zealand and the U.K. but less than the figure for a number of other developed countries. It compares with a nominal dose from the natural background, including cosmic rays, of 1000 µGy per annum. At the present time, other man made sources of radiation exposure of human beings are trivial compared with those resulting from radiological procedures. In consequence a significant part of the resources of the Physics Division are devoted to surveillance, radiation protection advice, investigations etc. relating to this area of radiation useage.

During the year the number of licences and registrations applicable to x-ray units used for medical purposes rose from 704 to 738, an increase of 5%. It is a policy of the Radiological Council, supported by the Division that medical x-ray equipment comply with appropriate Australian and International Standards. Officers of the Division periodically inspect these x-ray units for compliance with the appropriate Standards with particular emphasis being placed on those aspects of the equipment which have a direct bearing on the radiation dose delivered to the patient. At

the end of 1981, there were 1249 x-ray units for medical, dental and chiropractic radiography in Western Australia. A further 25 units were used for therapeutic purposes.

PERSONAL RADIATION MONITORING

At the present time, ionising radiation is the only type of radiation which lends itself to a convenient system of measuring radiation doses received by individuals. Knowledge of the radiation dose has an important educational influence on radiation workers, radiation safety officers etc., and encourages the improvement of working procedures. For over 20 years the Division has provided a Film Badge Radiation Monitoring Service and the figure below shows the changes in numbers of films assessed each year in the past decade. As the numbers of radiation workers wearing film badges have increased, attempts have been made to reduce the workload on the film badge monitoring service. This has been achieved by extending the period of monitoring. Most films worn by individuals now monitor the dose over a two month period. In the case of dental practices, a single area monitoring film is left in place for 3 months. With a few exceptions, the dose recorded per film is now very low and most users do not need dose information as frequently as in the past. The exception is industrial radiography, an occupation in which the risk of radiation exposure is higher, and for this group the monitoring period has not been extended.

Statistics for the Film Badge Service are given below:

FILM BADGE MONITORING SERVICE

NUMBERS OF EMPLOYERS USING THE SERVICE

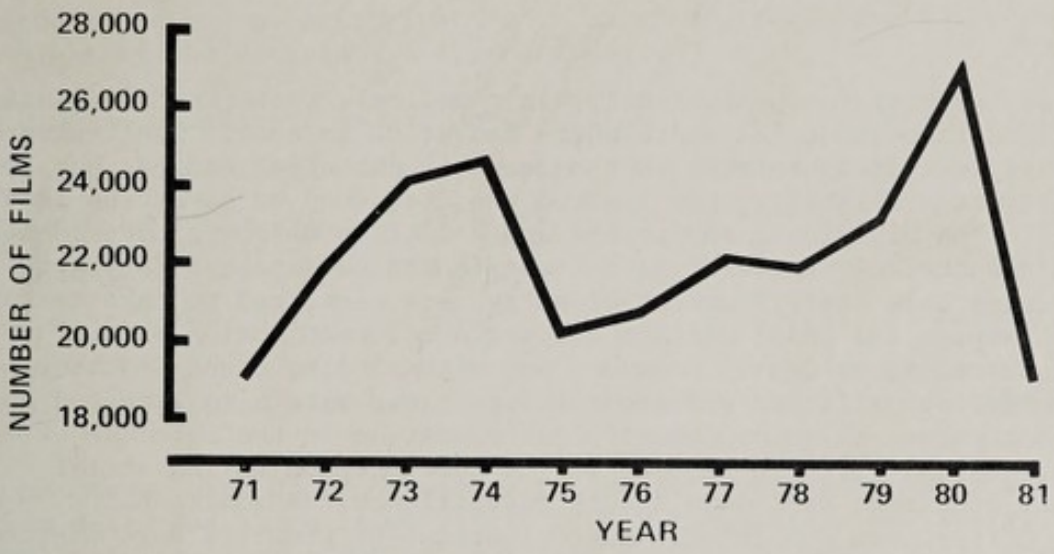
PERSONS MONITORED AND FILMS ISSUED, 1981

Employer	No. of Employers	Persons Monitored	Films Issued*
Hospitals	120	510	5768
Radiologists	21	122	1024
General Practitioners	23	76	588
Medical Miscellaneous	9	77	586
Dentists	427	-	2500
Chiropractors	23	37	296
Veterinarians	85	315	2520
Industrial and Other Non-Medical	86	516	9328
TOTAL	794	1653	22610

*Not all films issued are returned for assessment. During 1981 19,008 films were processed and doses evaluated.

In line with Government policy it was decided that non-Government users of the Film Badge Service be charged a fee for each film issued. This charge will be introduced in 1982.

NUMBER OF FILMS ASSESSED EACH YEAR



INSTRUMENT AND EQUIPMENT CALIBRATION

Whereas a considerable time may elapse between a film badge being exposed to radiation and the dose being estimated, immediate information on radiation levels is often required. For ionising radiation, dose rate instruments are a valuable tool in the assessment of radiation hazards and in providing information to permit radiation safety decisions to be made. It has been found that many of the instruments commonly used are subject to change in their calibration during field operations. The Radiological Council requires users of these instruments to keep them in proper calibration and for this purpose, the Division maintains an instrument checking service. Approximately 100 monitoring instruments were checked during 1981. The Service has been extended to include the microwave monitoring instruments used for testing microwave ovens for leakage. Again in accordance with Government policy a charge has been introduced for this service.

The Laboratory has a sub-standard x-ray dosemeter which has been calibrated against the Australian Primary Standard and this is used for the calibration of monitoring instruments and of superficial therapy x-ray apparatus. The Radiological Council requires treatment apparatus to be calibrated at approximately annual intervals.

RADIATION PROTECTION PLANNING

Before granting or renewing licences, the Radiological Council is required by the Radiation Safety Act to be satisfied that the premises and equipment are adequately safeguarded. The Division encourages early consultation between its officers and persons proposing to establish radiation facilities. This allows radiation protection requirements to be discussed in the planning stages, ensuring that due regard is paid to radiation safety and avoiding the additional expense which might be incurred if alterations have to be made at a later stage.

FIELD WORK

Officers of the Division periodically visit medical, research and industrial installations throughout the State where radiation is used. The frequency of visits approximately relates to the level of potential hazard, but in practice, staff availability has limited the frequency to something less than ideal. The Division's Physicists and Radiation Officers have been appointed "authorised officers" as defined in the Radiation Safety Act. These officers have certain powers of entry, are permitted to take measurements and samples and under certain circumstances take action when a radiation hazard is evident. However, not withstanding these Statutory powers, authorised officers endeavour to use their visits to licenced and registered premises as an opportunity for education in the safe use of radiation. During 1981, in recognition of the increase in industrial development requiring radiation safety surveillance, an additional Radiation Officer was appointed. Approximately 400 premises were visited during the year and a total of 17 country trips were made.

NON-IONISING RADIATION

There were no Regulations in effect in 1981 covering those "electronic products" which may produce non-ionising radiation. However, the Division is equipped with measuring equipment which enable safety tests to be carried out on microwave ovens, lasers and on electronic products which emit ultraviolet light.

It has been commented in previous reports that the Division is handicapped by the lack of equipment for analysis of radiofrequency radiation. This type of equipment is expensive and it seems that in the current financial climate, its purchase will be delayed some years.

RADIATION MEASURING AND RADIOACTIVITY COUNTING EQUIPMENT

The Division is equipped with a range of portable monitoring instruments to measure the ionising and some of the non-ionising radiations covered by the Radiation Safety Act. There are fixed installations for counting and analysis of radioactive substances using sodium iodide and semi-conductor detectors. A range of calibrated ratioactive sources is available for the standardisation of the gamma ray analysis equipment.

EDUCATION

While the Division has continued to put a major effort into education of users of radiation, especially in industrial uses of radiation, this has been an increasing burden on the limited staff. During 1981, on the recommendation of the Radiological Council, discussions were held with the Education Department and personnel of Mt. Lawley Technical College and it was agreed that courses on radiation safety in the use of radiation gauges in industry would be undertaken by the College. The first two courses given by the College were held in the latter half of 1981. The College also instituted courses on radiation safety in industrial radiography and two of these were held in 1981. The Division's personnel continue to have some participation in these courses. The following courses were given by the Division in the past year.

Radiation Safety - Radiation Gauges	2 courses, 31 participants
Basic Radiography - Country Hospitals*	4 courses, 46 participants
Basic Radiography - G.P.'s Practices	2 courses, 16 participants
Radiation Safety - Well Logging	2 courses, 17 participants
Radiation for Health Surveyors	1 course, 13 participants

*In association with Department of Hospital and Allied Services.

In some cases, when a person wishes to engage in radiation work with minimum delay and there is no safety course immediately available, the Council requires that a radiation safety exam be passed. These examinations are conducted by the Division and are usually in the areas of industrial radiography, radiation gauges, well logging or service of x-ray equipment. 50 applicants were examined in 1981.

PUBLIC INFORMATION

The Division receives a steady stream of enquiries on radiation matters from the public and this generally intensifies following any media coverage on this subject. Enquiries cover topics such as nuclear explosions, background radiation, radioactive luminous watches, microwave ovens and the possible risk of exposure to diagnostic x-rays.

VISITS OF NUCLEAR POWERED WARSHIPS

There were 14 visits of Nuclear Powered Warships to the Naval Base, HMAS Stirling at Garden Island during 1981. Routine monitoring is provided by personnel of the Australian Atomic Energy Commission but 4 officers of the Physics Division are rostered and are on call should an emergency arise requiring additional personnel and expertise.

RADIATION PROTECTION OFFICE, QEII MEDICAL CENTRE

In 1975 the Radiation Protection Office serving users of radiation on the site of the QE II Medical Centre was established within the Division. Radiation users at this site include the Sir Charles Gairdner Hospital, University of W.A. Medical School, State Health Laboratory Services and the State X-Ray Laboratory. In 1977, the role of the office was extended to serve the nearby main campus of the University of W.A. The University assists by funding the salary of the Assistant to the Radiation Protection Officer and half the salary of the Clerk Typist.

MEMBERSHIP OF COMMITTEES

Officers of the Division serve on a number of committees representing the Department at the Commonwealth and State level:

B.E. King	N.H. & M.R.C. Radiation Health (Standing) Committee
B.M. Hartley	Commonwealth/State Consultative Committee on Nuclear Codes of Practice
	Commonwealth/State Consultative Committee on Disposal of Radioactive Waste

The above officers represent the Public Health Department on the State Nuclear Power Warships Visits Committee, Transport of Dangerous Goods Co-ordinating Committee and on various ad hoc committees concerned with nuclear codes, legislation etc.

L.M. Davies	Executive Officer QE II Medical Centre Site Radiation Committee
	Industrial Foundation for Accident Prevention Laboratory Safety Committee
	Environmental Emissions Technical Committee of the Q.E. II Medical Centre (Chairman)
	University of W.A. Safety Committee

Officers of the Division act in an executive capacity for the Radiological Council and its Committees.

STAFF AND FACILITIES OF THE DIVISION

The staff of the Division consists of 5 Physicists, 4 Radiation Officers, 3 Technicians and 4 Clerical. The staff of the Radiation Protection Office, QE II Medical Centre consists of 2 Physicists and one clerical.

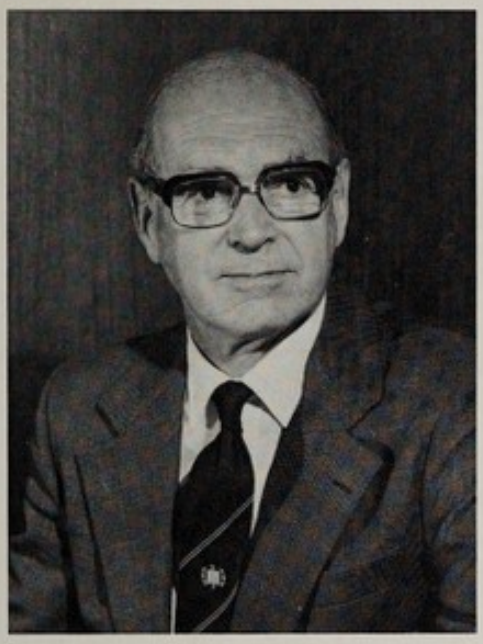
The Physics Division shares the State X-Ray Laboratory Building with the Engineering Division, a branch of the Department of Hospitals and Allied Services. This arrangement has the advantage of sharing certain common facilities, but with increases in staff numbers over the years, there is

an acute shortage of space for the work of the Physics Division. Approval has been given for modest additions and it is hoped that these will commence during 1982.

It has been an active and difficult year for the staff of the Division and I would like to express my appreciation for the effective and enthusiastic manner in which they perform their duties.

Appendix XIV

EDUCATION SERVICES BRANCH

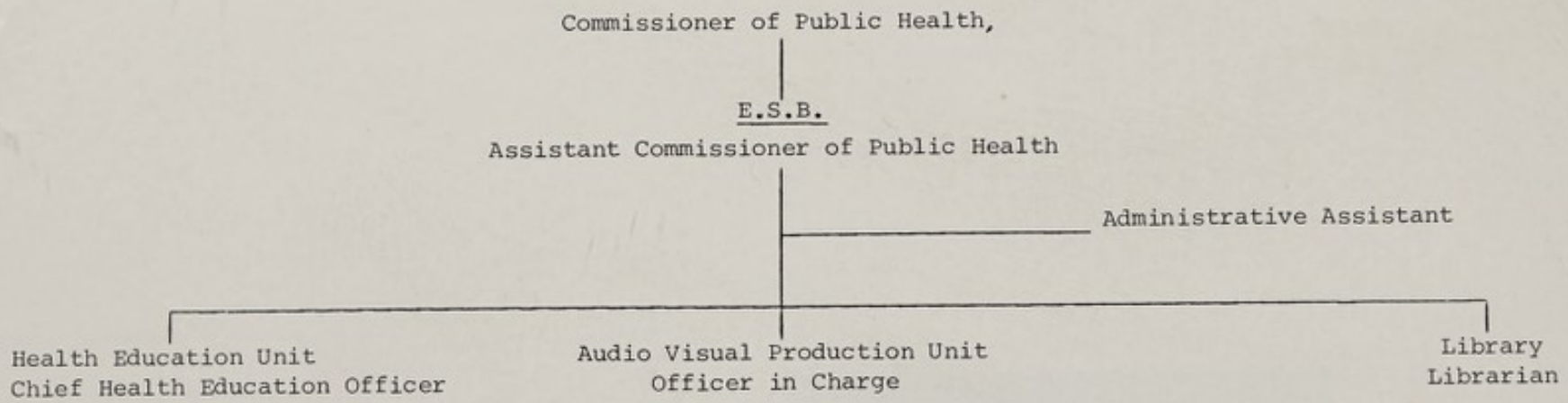


K.J.M. Carruthers,
J.P., M.D., B.S., M.R.C.S., L.R.C.P.,
D.P.H., F.C.C.P., F.A.C.M.A., A.K.C.
Assistant Commissioner of Public Health

Senior Staff

Assistant Commissioner of Public Health: Dr. K.J.M. Carruthers
Chief Health Education Officer: Mr. C. O'Doherty
Officer in Charge, Audio Visual Production Unit: Mr. P. Wilson
Librarian: Mrs. B. Proud

EDUCATION SERVICES BRANCH - ORGANIZATION CHART



EDUCATION SERVICES BRANCH

1. INTRODUCTION

1981 was largely a year of consolidation for this branch which was established in March 1980. All three sections were bedevilled by staff shortages, the Audio Visual Production Unit being the hardest hit. Many of the staff problems were overcome by the end of the year and 1982 should see the branch operating more smoothly and effectively to fulfil its dual role of developing and maintaining the knowledge and skills of health professionals in the department and promoting health among the general population.

Mrs. B. Proud (Librarian-in-Charge), Mr. C. O'Doherty (Chief Health Education Officer) and Mr. P. Wilson (Acting Officer-in-Charge, Audio Visual Production Unit) have reported briefly on the work of their sections as follows.

2. LIBRARY

A new branch library was established in April to serve the Occupational Health Branch (including Clean Air and Noise Abatement) and the Health Education Unit in the old records building between 57 Murray Street and 514 Hay Street. Library service to Dental Health Services had to be reduced in order to staff the new branch as no new staff item was provided.

After many years of attempting to provide library services to the country hospitals by utilising staff on a part-time basis, we were able to appoint a Hospitals Librarian who will devote his time to promoting and improving library services and facilities in non-teaching government hospitals.

The enactment of a new Copyright Act in August created many difficulties in providing services and has involved the library in increased costs. Unfortunately the new Act has made it impossible to maintain our Selective Dissemination of Information service in its previous form and scope. The requirement that no photocopies can be provided until the requestor has personally signed a declaration has had profound effects on the service in general, but particularly in the case of requestors living outside of Perth. The extra clerical work involved in dealing with declaration forms and the extra printing costs incurred are considerable.

The new Copyright regulations which also came into force in August have affected our inter-library loans service. Inter-library loans, both incoming and outgoing, dropped by approximately 25% after August. The extra work and restrictions imposed by the regulations have inhibited the flow of information considerably.

"Capsules" increased in popularity in 1981. The average number of requests for articles per issue was 66, as compared to 53 in 1980. Articles concerning food proved to be the most popular, although

alcohol drinking followed close behind. The Copyright Law also had an effect on Capsules requests. Prior to August the average number of requests per issue was 73. After August it dropped to 55.

A highlight of the year was the official launching of the late Dr. Dudley Snow's book, 'Progress of Public Health in Western Australia'. The Minister for Health, Hon. Ray Young, launched the book at a function in the library which was attended by approximately 80 distinguished guests. The Librarian-in-Charge was responsible for the publication of the book through the University of Western Australia Press.

The Librarian-in-Charge attended the Medical Librarians' Conference in Sydney in January, delivered a paper at the National Cataloguing Conference in Perth in August and attended a seminar on the URICA on-line Library System in September.

The HEMLOC data base became available for use in October through the MEDLARS network. It has been agreed that this library will be the network centre for Western Australia when remote input of data to HEMLOC becomes possible. This will enable the library to operate an on-line catalogue.

New library shelving was installed in head office library. We have now replaced approximately half of the industrial shelving and hope to complete the changeover within the next two years. The new shelving enabled us to rearrange the collection and provide more room for seating.

The Branch librarians have continued to provide an excellent service in their areas of expertise and their statistics in general show an increased work-load with no increase in staff. Tables 1 to 4 summarise the year's activities.

TABLE 1

BOOKS ACCESSIONED, 1981

Public Health (Head Office)	1382
Community & Child Health Services	583
State Health Laboratory Services	90
State X-Ray Laboratory	185
Dental Health Services	38
Occupational Health/Health Education	132
Community Health Centres	38
Hospitals	607
Alcohol and Drug Authority	16
Total	3071

TABLE 2

AUDIO-VISUAL MATERIAL ACCESSIONED, 1981

Video Cassettes	8
Audio Tapes	60
Films	12
Slide Sets	12
Total	92

TABLE 3

INTER-LIBRARY LOANS

3.1 INTERSTATE AND OVERSEAS LOANS

	1977	1978	1979	1980	1981
Australia	155	471	707	643	350
Overseas	4	13	13	9	19
TOTAL	159	484	720	652	369

3.2 INTRASTATE LOANS

	1977	1978	1979	1980	1981
Courier Service	758	826	1057	948	829
Other	370	646	657	653	569
TOTAL	1128	1472	1714	1601	1398

3.3 EXTERNAL BORROWINGS

		1977	1978	1979	1980	1981
Interstate and Overseas		696	436	529	519	290
Intrastate	Courier	1185	1564	1434	1528	1456
	Other	355	350	412	500	327
TOTAL		2236	2350	2375	2547	2073

TABLE 4

BRANCH LIBRARIES

	SHLS	CCHS	DHS	OH/HEU	SXRL
Reference Queries	1014	420	122	280	NA *
Book loans	1103	3599	562	350	NA *
Photocopies provided (items)	3871	9194	493	962	NA *
Books borrowed (not through H.O.)	94	65	-	58	NA *
A/V loans (HEU only)				3265	

*Position vacant 18/3/81 - 31/12/81.

Book Loans (Head Office)	2945	
New Journals	33	
Annual Reports	155	
Photocopies	2574	(average per month from Head Office)
Computer Searches	629	
Australian Standards	58	

3. HEALTH EDUCATION UNIT

No new staff items have been created and temporary limitations on recruitment and replacement made it impossible to maintain a full complement throughout the year.

The amount of work generated by the Unit continues to increase to meet professional and public demand. Efforts to inform the public about health services through its publications have been expanded. Press statements are released from time to time and this has resulted in an increased number of requests from health workers, teachers and the public generally.

Staff Development has been maintained and three day workshops were arranged in May and November. All Health Education Officers participated in these sessions which provided an invaluable meeting ground both for the exchange of ideas and for a review of health education methods and practice.

SPECIALIST SUPPORT FOR HEALTH WORKERS AND EDUCATORS

Officers of the Unit have assisted the Community and Child Health Services Branch by contributing to orientation courses and by conducting a workshop on the use of film in health education as part of the annual conference.

The Unit has increased its commitment to school health education and its primary and secondary school specialists travelled extensively,

visiting metropolitan and country schools. All Regional Officers were involved in assisting teachers to plan and implement integrated health education programmes and teachers in all subject areas took advantage of the expertise offered.

In March 1981 a Committee established by the Minister for Education to advise on health education in Western Australian Government schools presented its interim report. The Public Health Department has four representatives on this Committee, including two from the Health Education Unit. The Unit's school specialists assisted with the planning and management of a two week in-service course which began the process of developing the new K-10 curriculum in Health Education, and continue to work with the curriculum branch of the Education Department.

The Unit has maintained liaison with and provided support for other branches of the Public Health Department including the Dental Health Service and the Health Inspection Services. There has been increased co-operation with the W.A. Alcohol and Drug Authority and support for a number of agencies including the National Heart Foundation.

Regional Officers assisted Community Youth Support Scheme Workers. Advice is provided on programme planning and implementation, and health educational material is distributed.

REGULAR PUBLICATIONS

The Unit's regular monthly publication *Health Education Reading*, presents an integrated approach to health education.

The publication of the abstracting journal *News and Views* has increased and this year a revised edition of the special issue on smoking was published. A special issue on Alcohol Education was also produced.

Health in Schools is produced each term and has been well received. Copies are sent to individual subscribers and two complimentary copies are sent to all primary and secondary schools in the State.

SPECIAL PUBLICATIONS

A programme entitled *Communicating, Deciding and Understanding Self and Others* was developed by the Armadale Regional Officer in 1980 for a high school class of Year 10 students.

Safe Driving, a kit designed to support a high school driving programme was compiled for teachers and youth education officers. This material is also being used by other departments and agencies in their training programmes. *The Moderate Drinkers Guide, Let's Talk About Alcohol* and a revised edition of *Facts About Drinking* have been prepared in co-operation with the Alcohol and Drug Authority.

A survey of pharmacists in the Fremantle Area highlighted the need for foreign language material and leaflets were produced on over-the-counter and prescription drugs.

A number of smoking education programmes were updated and reprinted. These include foreign language material for migrants. Following evaluation in 1980, a booklet setting out a smoking education programme for upper primary school students was made available to teachers on request.

DISTRIBUTION OF PUBLICATIONS 1981

Health Education Readings and Special mailings	663,876
Information Bulletins	11,496
Technical Information Bulletins	2,000
News and Views	2,101
News and Views Smoking Special	350
News and Views Alcohol Special	200
Health in Schools	6,000
TOTAL	686,023

St. George's Hall

Following the production of a series of plays for the International Year of Disabled Persons this Hall is now being used as a venue for programmes to promote health education. Health promotion through the mass media will be integrated with these programmes.

REGIONAL ACTIVITIES

The Health Education Unit employs Regional Officers in the metropolitan and country areas listed below. Some of the officers are located in health centres. All regional officers initiate and develop school and community based programmes within their areas.

Central Western Metropolitan Region (Claremont)

Activities included participation in the health education component of the Child Care Certificate Course and a special programme of activities for teenagers. Assistance was also given to groups such as the "Stroke Club".

A seminar to inform Independent schools of current Health Education Unit resources for the development of health education programmes at secondary school level was arranged for principals and teachers of these schools.

Kwinana/Rockingham Region (Kwinana)

Parent education programmes have been maintained. "Loved, Good and Wanted", a three session child/parent programme was further developed and implemented in the health centre. A six session behaviour management programme was also conducted for parents.

The home visitors training programme initiated in 1980 was again conducted in 1981. Sessions including craft, sharing skills and socialisation were offered to unemployed youth and to members of the public.

Printed material on issues related to drugs and society was provided for the Rockingham Youth Centre. Programmes and literature particularly relevant to unemployed youth have been prepared.

North East Metropolitan Region (Midland)

Sex Education Workshops were conducted for teachers. Health Education sessions, including drug education were held with community groups.

North West Metropolitan Region (Warwick)

Programmes initiated during 1981 have included:

A drug education programme with a private senior college;
A healthy lifestyle programme with a community group in Wanneroo;
A seven session programme on drugs with a technical college;
Work with youth groups including planning with the Wanneroo CYSS project officer.

South East Metropolitan Region (Armadale)

In order to establish priorities for future health education activity a Needs Assessment Programme was conducted amongst community groups and opinion leaders in the Armadale Region.

South West Metropolitan Region (Fremantle)

The Regional Officer continued to conduct programmes for personnel at the Naval Base HMAS Leeuwin. Special projects were arranged jointly with the Fremantle City Council Health Department and Library. These included displays and films on issues such as noise awareness and the International Year of Disabled Persons programme.

The officer responsible for migrant groups operates from the Fremantle Office. Contacts are initiated and maintained with all welfare workers assisting ethnic groups in the metropolitan area. Sessions on health issues were conducted for migrant education classes. The demand for translations of health education information has increased. A programme entitled "Barriers to Communication with Migrants" was conducted for the Royal Australian Nurses Federation symposium on migrants, the Citizens Advice Bureau and dental therapists.

COUNTRY REGIONS

Busselton

The Regional Officer's work extended into the Manjimup, Pemberton and Bunbury areas. Support for junior sports council activities continued in the Region. "Ket Ball", a game to provide exercise and enjoyment for people of all ages, was developed for use as an activity for a Service Club in the area and a booklet was produced for distribution. The Regional Officer continued smoking education programmes in schools.

Geraldton

At the request of local community groups and health workers, a special day for the International Year of Disabled Persons was arranged at the Community Health Centre. Display material, printed and audio-visual, was provided by the Unit. A five day integrated programme also with the theme International Year of Disabled Persons was held at a local high school.

A two day workshop "Living in the Eighties" was conducted in Geraldton; Health Education Officers from Geraldton and Port Hedland conducted a workshop on understanding stress.

Mandurah

Increased local demand for health education resulted in the position, previously a half-time one, being upgraded to full-time in June 1981. The Officer was actively engaged in programmes related to the International Year of Disabled Persons, including an immunisation programme for the area.

Smoking cessation programmes were conducted in the community. Teachers in all local primary schools were encouraged to use the Unit's smoking education material.

Port Hedland

A thirteen-session programme on Communication and Personal Growth was conducted at the Paraburdoo District High School at the request of a local parent group. The programme aimed to improve parent/child and peer group communication.

Social issues/personal development programmes have been conducted for apprentices employed by Mt. Newman Mining Company.

Information/discussion programmes on health issues continued for caravan dwellers. Difficulty of continuity is experienced due to the transient nature of the settlement.

SPECIAL PROJECTS

"Wrap Up Flies This Summer" Campaign

Pamphlets and other written material were produced to support a campaign mounted by metropolitan local authorities. In co-operation with the Health Inspection Branch of the Public Health Department, television commercials were prepared for the purpose of creating community awareness.

Immunisation

A campaign to inform the public about the importance of immunisation, with particular emphasis on Rubella, was conducted as part of the Unit's contribution of the international Year of Disabled Persons. General Practitioners throughout the State were circulated with information.

Research and Evaluation

Although the position of Research Officer was vacant for much of 1981, the Unit has endeavoured to maintain its commitment to research and evaluation. The following are some of the programmes for which evaluation was possible. The most extensive baseline study was the Armadale Needs Assessment discussed above. Foundations were laid for the evaluation of a school nutrition programme, "What's for Breakfast". In order to assess the future format and material of *Health Education Readings*, a survey of a sample of readers was carried out.

4. AUDIO VISUAL PRODUCTION UNIT

The Unit maintained its service to Medical Illustrations, Audio Visual and Television Productions to cater for a broad spectrum of medical and health educational needs ranging from schools to post graduate programmes, for the following organisations:-

Public Health Department.
Hospital and Allied Services.
Q.E. II Medical Centre.
State Health Laboratories.
Princess Margaret Hospital.
King Edward Memorial Hospital.
Fremantle Hospital.
Repatriation Hospital.
Mental Health Services.

and for approved health agencies. A number of staff movements during the year left the Unit under-staffed for a prolonged period. The situation is now being resolved and it is envisaged that the Unit will be able to develop full production capabilities during 1982.

Mr. Plummer, the Officer-in-Charge, first formed the medical photography unit in July, 1953, but was regrettably retired on medical grounds during the year. During his 28 years with the Department he developed a unit which is recognised for its high standard of service and technical ability.

The Unit has been allocated additional accommodation in the podium of the new ward block of the Q.E. II Medical Centre. This will accommodate the television and audio visual section, and provide a patient photographic studio. Planning is proceeding and the new area should be fully operational by late 1982.

Despite staff shortages and hospital economies, requests have remained stable in most areas with the exception of the Audio Visual and Television, this being the section where the staff shortage occurred.

Projects completed were as follows:_

Static Exhibitions	15
Tape/Slide Programmes	18
Television Productions	13
General Requests (photography and art)	3,131
	3,177

Appendix XV

HEALTH SURVEYING BRANCH

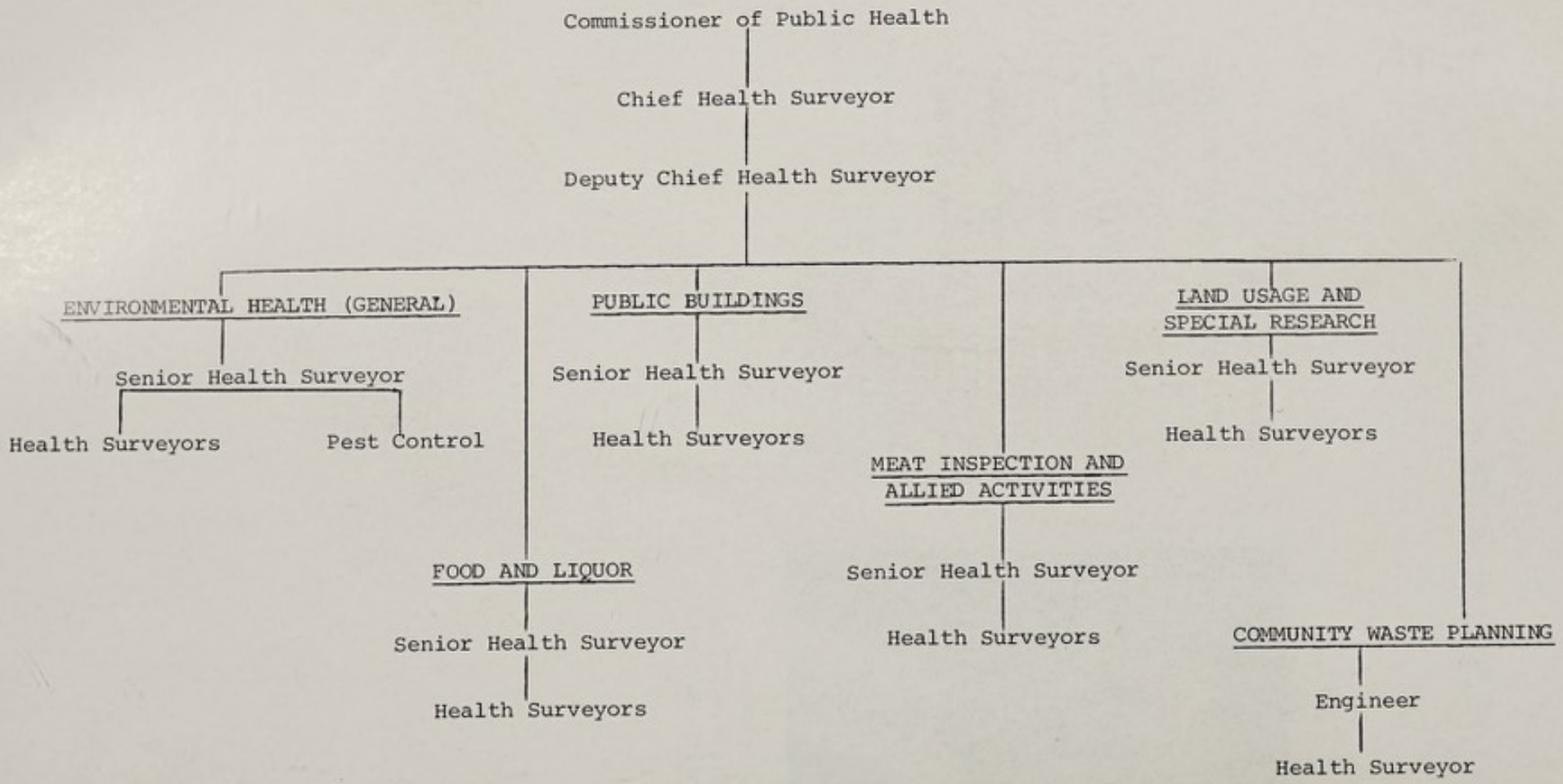


R.C. Zehnder
M.R.S.H., M.A.I.H.S.
Chief Health Surveyor

Senior Staff

Chief Health Surveyor: Mr. R.C. Zehnder
Deputy Health Surveyor: Mr. R.W. Sweetman
Senior Health Surveyor (General): Mr. R.L. Moss
Senior Health Surveyor (Food & Liquor) Mr. A.L. Layton
Senior Health Surveyor (Public Buildings) Mr. K. Watt
Senior Health Surveyor (Meat): Mr. G.F. Jeffries
Senior Health Surveyor (Land and Usage): Mr. B. Devine
Engineer (Community Wast Planning): Mr. S.B. Hansen

HEALTH SURVEYING BRANCH - ORGANIZATION CHART



HEALTH SURVEYING BRANCH

INTRODUCTION

The year under review was marked by the retirement of the Chief Health Surveyor, Mr. J.F. Slattery, and four very senior officers, namely Messrs. Allan, Kaiser, Oliver and Fox.

It was to be expected that with the loss of these officers and their great depth of experience and personal knowledge of the many facets of the Environmental Health field that there would be a marked impact on the administration and general functioning of the Branch. This was true initially, however it is worth comment that the officers who acted and were eventually placed in the senior positions responded creditably on assuming increased responsibilities and as the incumbent senior officer in charge of the Branch, I wish to record my appreciation of their support and co-operation. My appreciation is also extended to Mr. John Edinger, our Food and Nutrition Officer, who was most encouraging and helpful at all times.

The following is a compilation of reports submitted by the various sectional senior officers and it represents a very brief outline of the activities carried out by the Health Surveying Branch during the 1981 period.

ENVIRONMENTAL HEALTH (GENERAL) SECTION

STATUTORY APPEALS AND INVESTIGATIONS

157 statutory appeals and 403 general health complaints were subject to investigation and determination during 1981.

WATER SAMPLING

Bacteriological routine water sampling activities included:-

Ocean Samples	-	Coliform/Salmonella	- 830
Lakes Samples	-	Coliform/Salmonella	- 133
Rivers Samples	-	Coliform/Salmonella	- 504

Miscellaneous Water Samples:-

Abattoir Samples	-	Coliform/Salmonella	- 124
Domestic Water Supplies			- 142
Public Swimming Pools			- 310

KIMBERLEY REGION

Two Departmental Officers continue to maintain health surveillance duties throughout the region.

There has been a marked increase in population due to increased industrial and mining activities.

A number of new aboriginal villages have been developed and an overall increase in the workload of the officers has resulted.

EASTERN GOLDFIELDS AND LOWER MURCHISON HEALTH REGIONS

An increase in Departmental supervision of these regions was extended from a quarterly basis to two weeks in every six weeks, to be continued until the end of 1982 when it is expected that the two regions would provide their own Health Surveyor.

The Eastern Goldfields region included the Shires of:-

Leonora
Laverton
Wiluna
Menzies

and the Lower Murchison region included:-

Meekatharra
Mount Magnet
Cue
Sandstone

CARAVAN PARKS

Thirteen new caravan parks were opened during the year, each being subjected to Departmental examination from pre-planning through to completion.

Surveillance of tourists' facilities on the Eyre Highway continued throughout 1981.

PEST CONTROL

Increased requests for services were noted during 1981 and regular baiting in sewers for rodents, was carried out in conjunction with officers of the M.W.S.S. & D.B. and the results were quite successful.

Pest control officers have been engaged in lecturing and demonstrations on pest control for the benefit of school and hospital gardeners, students and nurses.

Pest control treatments for the year are as follows:-

Cockroach	310	Bed Bug	6	Cat	3
Redback spider	244	Lice	2	Dead Cat	2
Termite	153	Fly	5	Midge	11
Pigeon	71	Fly larvae	6	Tick	1
Ant	56	Wasp	2	Grain beetle	2
Silverfish	39	Cricket	20	Sand fly	2
Rats and mice	241	Mosquito	8	Possum	4
Pigeon lice	12	Cigarette beetle	1	Moth fly	2
Bee	41	Weevil	1	Spider	3
Flea	36	Scorpion	2	Mites	5

Fly control inspections and treatment:-

Metropolitan abattoirs	31
Railway truck washing yards	16
Skin drying sheds	70
Government hospitals and institutions	89
Sewage treatment works, Shenton Park	22
Sewage treatment works, Swanbourne	22

TOWN PLANNING

Land appraisals carried out on behalf of the Town Planning Board amounted to:-

Metropolitan	320
Country	131

Assistance was given to the Hon. Minister for Town Planning on a number of appeals concerning subdivision disputes.

ROTTNEST ISLAND

Frequent departmental visits were made by departmental officers with emphasis given to times prior to and during holiday periods.

The island's water supply was improved by the cleaning and roofing of No. 6 water tank, which was put back into use during 1981.

Additional chalets and a shopping centre have been constructed and are in use. A "take away" food shop is proposed.

SEPTIC TANKS

There was a decrease in the number of septic tank approvals of 430 during the year over 1980 approvals. The extensions of sewerage schemes in metropolitan and country areas and a depressed building industry being the main reasons for this downturn.

Applications approved - 5,645, comprising -
2,648 metropolitan
2,997 country

FIBREGLASS SEPTIC TANKS

Only seven installations were approved in 1981, which is 16 less than last year. The cost of manufacture is reflected in this steady decline over the years.

EFFLUENT DRAINS

Continued examination of various effluent disposal drain sections and approvals given for local authority acceptance.

FOOD AND LIQUOR SECTION

Activities during the year included investigations of marketing of food products, compliance with the Food and Drug Regulations regarding wholesomeness, compositional standards, additives and labelling, together with routine and specific sampling.

SAMPLING

Routine and special investigations resulted in 3,527 food samples and 2,370 non food samples being submitted for bacteriological, chemical and mycological examination.

FOODS SAMPLED

FOOD SAMPLED	CHEMICAL	BACTERIAL	MYCOLOGY
Beer	11		
Bread	2		
Brewed Soft Drink	2		
Cake and Pastries	3		
Chicken	25	419	
Chicken Livers	30	25	
Chicken Necks		29	
Chicken Viscera	20		
Coffee	5		
Confectionery		2	
Cool drink and cordial	6		
Crustacea	22	23	
Desiccated coconut	173	390	
Dietary Formula		3	
Edible Fats and Oils	6		
Fish	890	43	
Fish (Canned)	13	3	
Flour	1		
Fruit	13	13	
Fruit Juice	14		
Guinea Fowl	2		
Human Breast Milk	6		
Infant Food	6		
Mayonnaise	3		
Meat and Meat Products	55	71	
Milk and Milk Products	22	108	
Mineral Water	2		
Normacol	1		
Peanut Butter			5
Peanuts			1
Pheasant	15		
Pickled Onions	8		
Potable Water	1	13	
Prawns	15	284	
Prepared Fish Meals	10	6	
Prepared Meals		41	
Rice	11	6	
Sandwiches		14	
Sauce		1	
Shellfish	157	351	
Take Away Foods - Various		40	
Tea	13		
Tripe	37		
Vegetables	22	14	
TOTAL	1,622	1,899	6

GRAND TOTAL = 3,527

LABELLING

The submission of drafts of proposed labels for approval increased in quantity and complexity.

With the introduction of Date Marking Ingredient Labelling and Lot Identification, the appraisals have become more complicated and time consuming.

It has been necessary to effect changes to labels on some imported foods and with current trends with the import of food, an increase of this is anticipated.

FOOD COMPLAINTS

Investigations and assessment of State-wide food complaints totalled 337. The food involved included:-

FOOD	NO.
Beer	9
Biscuits	4
Bread	28
Butter	1
Cakes, Pastries and Pies	20
Cereal	7
Champagne	1
Champignons	1
Cheese	2
Chicken	29
Chinese Meals	9
Coffee	1
Confectionary	13
Cool Drink	10
Cordial	2
Crab Meat (Canned)	2
Crayfish	1
Date Marking	13
Duck	1
Edible Fats and Oils	1
Eggs	8
Fish	6
Fish (Canned)	4
Flour	1
Food Handling	10
Food Premises	17
Fruit (Canned)	7
Fruit (Dried)	1
Fruit (Fresh)	7
Fruit Juice	7
Honey	2
Icecream	5
Infant Food	5

FOOD	NO.
Jam	2
Mayonnaise	1
Meat (Canned)	4
Meat and Meat Products	38
Milk	16
Mixed Seafood Meals	4
Mushrooms	1
Nuts	8
Olives	1
Oysters	3
Pasta	1
Pickled Onions	4
Pizza	2
Popcorn	1
Potato Chips	4
Prawns	1
Prepared Meals	17
Quiche	1
Rice	1
Sandwiches	6
Spaghetti	3
Spreads	4
Squid	1
Tea	1
Tomato Juice	1
Tomato Paste	1
Turkey	1
Vegetables	3
Vegetables (Canned)	5
Vitamin Pills	1
Wheat Hearts	1
Whiskey	2
Yeast	2
TOTAL	377

1981

MISCELLANEOUS SAMPLES

BACTERIOLOGICAL	NO.
Faeces	162
Poultry Processing Establishments	
Band saw - swab	1
Cloacal swabs	1,836
Feather meal	9
Final effluent	4
Final effluent - swab	74
Post evisceration drain - effluent	54
Post evisceration drain - swab	46
Skin swab	1
Spin chiller - effluent	52
Spin chiller - swab	44
Graylands Hostel	
Table Top - swab	1
Meat slicer - swab	1
Cooks's knife - swab	1
Cutting board - swab	1
Wall over sink - swab	1
Potato chipper - swab	1
Hand basin - swab	2
Salad sink - swab	2
Table top No. 1 - swab	2
Table top No. 2 - swab	1
Table top No. 3 - swab	1
Sink - swab	3
Servery top - swab	1
Wash up room - swab	1
Dish washer interior - swab	2
Sandwich table top - swab	1
Meat chiller wall - swab	1
Dairy chiller wall - swab	1
Vegetable chiller wall	1
Drain - swab	1
Left grease trap - swab	1
Right grease trap - swab	1
(Kiosk) top of icecream fridge - swab	1
(kiosk) handle and door of counter fridge - swab	1
Counter top No. 1 - swab	1
Counter top No. 2 - swab	1
Para Quad Hospital - Shenton Park	
Pantry sink - swab	2
Pantry work top - swab	1
Pantry servery top - swab	1
Pantry fridge - swab	1

BACTERIOLOGICAL	NO.
Pantry dishwasher - swab	1
Pantry cupboard - swab	1
Pantry hot box - swab	1
St. Hilda's College - Mosman Park	
Food preparation table No. 1 - swab	1
Food preparation table No. 2 - swab	1
Meat slicer - swab	1
Stainless steel bench - swab	1
Exposed woodwork - swab	1
Table wood frame - swab	1
Wooden serving trolley - swab	1
Frames inside chiller - swab	1
TOTAL	2,331

CHEMICAL	NO.
Aluminium foil	1
Bird seed	1
Cake mould	4
Child's toy	1
Cosmetics	1
Deep Litter (from pheasantry)	1
Dust off food containers	4
Foreign matter	5
Glass fragments	1
Leachate	2
Perspex	1
Petroleum jelly	1
Piece of wood	1
Pyrinate liquid	1
River water	4
Sikes hydrometer	3
Soap	1
Soup bones	1
Tampons	1
Thallium sulphate	1
Toothpaste	1
Water	2
TOTAL	39

SPECIAL INVESTIGATIONS

MARKET BASKET SURVEY

Four seasonal sampling programmes were effected involving a wide variety of foods for a national determination of pesticides and metal residues.

POULTRY PROCESSING ESTABLISHMENTS MONITORING

Salmonella and surveillance programme continued at the four major processing establishments and data collected enabled improvements to factories and farms to be effected.

MICROBIOLOGICAL MONITORING

Food samples at retail outlets were taken twice weekly throughout the year.

SUSPECT CHOLERA

George's River Oysters

Extensive investigations were made and monitoring and sampling of New South Wales oysters resulted following advice from the Commonwealth Department of Health in July 1981 that the oysters were a possible source of Cholera. All examinations proved negative.

EMERGENCY MILK SUPPLY

Industrial disputations resulted in the disruption of the delivery of milk throughout the State. An emergency bottling depot was established at Midland Abattoir for two periods during the strikes.

Departmental officers were continually present during bottling operations and bacteriological sampling of all consignments was carried out.

VICTORIAN SMALLGOODS - STATEWIDE RECALL

Smallgoods from an Eastern State's smallgoods company were found to be contaminated with Salmonella and all suspected products were recalled.

Representative samples submitted to the State Health Laboratories confirmed that Salmonella organisms were present.

A total of 13,078.5 kgs were condemned and destroyed.

Assistance and co-operation of all concerned with the recall was commendable.

IMPORTED DESICCATED COCONUT

Condemnation

A total of 10,750 kgs of desiccated coconut from an overseas country was condemned and destroyed. The coconut was found to be contaminated with Salmonella bereilly, Salmonella senftenberg and Salmonella bovis morbificans.

BOTTLED PICKLES

Excess SO^2 in some lines of pickles ex South Australia resulted in condemnation and destruction of the affected products.

FROZEN FRUIT AND VEGETABLES

Containers carrying frozen fruit and vegetables ex U.S.A. were examined at Fremantle Wharf and indicated thawing and refreezing en route.

Subsequent bacteriological and chemical examinations resulted in 8,590.5 kgs being condemned and destroyed.

Other special investigations included:-

SPANISH OLIVE OIL

Suspected contamination with mineral oil. Results proved negative.

FOOD VENDING MACHINES FOR HOT FOODS

Various machines and proposals were examined and only one, a potato chip vending machine, was considered suitable.

LIAISON WITH ARCHITECTS AND BUILDERS - FOOD HYGIENE REQUIREMENTS

This advisory service continued and included schools, Q.E. II Medical Centre, Canning Vale Prison, Fremantle Wharf and other Government authorities. The service included plans and specifications examination, on site inspection and professional advice.

EATING HOUSES - GOVERNMENT PREMISES

On site inspections and advice on existing premises in response to enquiries and complaints and on routine basis.

FOOD HYGIENE REGULATIONS

The Department continued to liaise with local authorities and the Public Works Department regarding proposed changes to ventilation and extraction regulations.

HEALTH EDUCATION - FOOD

A service in the form of films and lectures continued throughout the year and was given to organisations and people connected with all facets of the food industry.

Assistance was given to the Health Education Unit in the preparation and distribution of pamphlets, posters and the compiling and amending of publications for use by local authority health surveyors and the general public.

IMPORTED FOODS

Imported foods were kept under surveillance and samples taken at Fremantle Wharf, Kewdale Depot, Perth Airport and various premises receiving containers throughout the metropolitan area.

Samples drawn for analysis:-

Chemical	1,150
Bacteriological	1,083
	2,233
Water Samples	111
	2,344

ITEMS CONDEMNED AS UNSUITABLE FOR HUMAN CONSUMPTION - FISH AND FOODS

Fish

King Crab (Legs and Claws)	60.64	kg
Dried Mussels	110.00	kg
Dried Oysters	60.00	kg
Shucked Oysters	500.00	kg
Fillets Hake	47.5	kg
Fillets Cod	2.0	kg
Fillets Flounder	1.0	kg
Fillets Red Snapper	5.0	kg
Fillets South African	5.0	kg
Fillets Type Unspecified	5.0	kg
Fillets Ocean Perch	2.0	kg
Fillets Whiting	2.0	kg
Fillets Ocean Bream	10.0	kg
Mussels	2,260.00	kg
Fish Fingers	19.375	kg
Fish Snackeroos	0.4	kg
Fish Sticks	0.375	kg
Shrimp	2.5	kg
	3,092.79	kg
Rollmops	1.75	kg
	3,094.54	kg

Foods

Corn Cobs	8.50 kg 114 x 8 cartons
Broccoli	3,002.00 kg
Rhubarb	1,200.00 kg
Strawberries	4,380.00 kg
Tapioca	50.00 kg
Mutton Mince	299.00 kg
Dates	1,675.00 kg
Lima Type Beans	25.00 kg
Desiccated Coconut	10,750.00 kg
	21,389.50 kg 114 cartons

Chinese Foods

Preserved Lime	1 Part Carton
Honey and Lime	1 Part Carton
Broad Nuts	1 Part Carton
How How Balls	1 Part Carton
Dry San Char	1 Part Carton
Ikan Belis	1 Part Carton
Pon Pon Cuttlefish	1 Part Carton
Balmacan	1 Part Carton
Approximate weight	60.00 kg
Dried Seaweed	100.00 kg
Dried Lily Flowers	8.00 kg
	168.00 kg

Total Weight Condemned - Fish and Food

Fish	3,094.54 kg
Foods	21,389.50 kg
Chinese Foods	168.00 kg
	24,652.04 kg
Food Wrapping Quality Celophane	2,000.00 kg
	26,652.04 kg

Total Weight of Imported Fish Inspected

5,357,079 kg (1980 - 5,921,056 kg)

Total Fees Raised for Inspections

$9,659.00 (1980 - $9,875.35)

Inspections of Containers of Frozen Fish Discharged at Fremantle Wharf

Wharf Office

Fremantle and adjoining area cold stores	263

Head Office

Perth and adjoining area cold stores	145
TOTAL CONTAINERS	408

Livestock Export

Following live animal export, all wharf areas are inspected to ensure a satisfactory standard of cleanliness and freedom from excreta contamination. Export of livestock continues at approximately the 1980 rate, i.e.

	1981	1980	1979
No. of Vessels Loading Live Animals	113	113	102

Commonwealth Health Liaison

Frozen Pre-cooked Foods

The pattern of inspection of pre-cooked foods established in 1980 has continued. All foods subjected to Quarantine Department control have been inspected and sampled by the Departmental Officer stationed on the wharf.

During the year a programme of sampling imported fish for Mercury content on behalf of the National Health and Medical Research Council was implemented.

The close association between the Wharf Officer and the Quarantine Department has been maintained.

Changing Wharf Procedures

The change towards containerisation of cargo was completed. No vessel using conventional methods of refrigerated transport was unloaded at Fremantle during 1981.

The placing of refrigerated goods into cold store is now reduced to a minimum by containers being transported directly to the cold store premises.

LIQUOR

Liquor Inspection	Town	Country	Total
Hotel	97	14	111
Tavern	72	6	78
Ltd. Hotel	7	-	7
Winehouse	7	-	7
Cabaret	2	1	3
Restaurant	58	2	60
Theatre	2	-	2
Club	67	10	77
Packet	-	-	-
Canteen	-	-	-
Aust. Wine Lic.	-	-	-
Function Permit	-	-	-
Catering	-	-	-
Others (R.A.S.)	10	-	-
	322	33	345

Spirits Tested During Visits to Licensed Premises - 1981

Spirits Tested	Imported	Australian
Whiskey	715	54
Brandy	31	289
Rum	193	205
Gin	144	133
Vodka/Ouzo	43	251
Other Spirits	146	46
	1,272	978

Various Liquors Submitted to the Government Chemical Laboratories for Determination of Spirit Strength.

Whiskey/Bourbon	Imported	3
Brandy	Australia	2
Vodka	Australia	1
Wine	Australia	10
Beer	Australia	3
		19

Complaints Investigated - 1981

The following complaints were investigated:-

Watered, Adulterated Beer

Taverns	3
Hotels	2

Legal Action - 1981

Below Standard Spirit

Hotel - dismissed as first offender.
Costs = $55.10

Hotel - fined = $10.00
Costs = $85.60

Absence of Blue Dye

Club - fined = $100.00
Costs = $ 35.10

Bar, Coolroom Hygiene, Blue Dye Provision - 1981

22 dye orders were served on licensees to make provision of blue dye to drip trays.

AMOEBIC MENINGITIS

A comprehensive surveillance of public swimming pools was again carried out by local authority and Public Health Department officers. This type of programme will need to be carried out during all forthcoming summers.

The campaign has proved very effective as only two amoebae of the Naegleria group, both of non pathogenic strains, were isolated from pool water. As a precautionary measure these pools were closed forthwith and not reopened until the problem was identified and corrected and further treatment and testing proved that they were of an acceptable standard.

Summer vacational school swimming lessons were again precluded from fresh water swimming venues which were not chlorinated. Several of these non chlorinated swimming areas in natural pool waters were subject to comprehensive temperature testing which showed that the majority reach a temperature of 25° or above, which meant that the safety of the water could not be guaranteed.

The Health Education Unit is providing informative literature for owners of private pools and in addition to this, a successful public educational programme was held at the Kelmscott pool for domestic pool owners.

As a result of sampling to December 1981, 147 Naegleria organisms were isolated, of which four only were identified as the disease causing amoeba Naegleria fowleri.

No cases of Amoebic meningitis occurred during 1981.

MEAT INSPECTION AND ALLIED ACTIVITIES

The main event which caused concern in the meat industry during 1981 was the export meat substitution fraud in Victoria.

This had ramifications right throughout Australia, resulting in the setting up of a Royal Commission into the export meat trade.

In Western Australia an extensive specie testing programme was instigated and all cold stores were visited. All samples proved negative.

The "Substitution Fraud" also resulted in the formation of a committee of the Australian Agricultural Council (A.A.C.) to establish guidelines for the introduction of uniform Pet Meat Regulations. Western Australia has completed draft regulations based on the A.A.C.'s guidelines, with the exception that identification strip branding is favoured rather than the total dye of all pet meat adopted by other States.

SMALLGOODS MONITORING

Microbiological monitoring of the seven major smallgoods premises and staff continued throughout 1981. This has enabled early detection and preventative action to be taken when food poisoning organisms have been isolated.

The programme provides for handwash and faecal samples of staff, testing of raw and finished products, effluent from the product area and sewage outlets and specie testing.

MEAT INDUSTRY AUTHORITY

A working liaison has been established with this Authority.

Abattoir inspections were made conjointly with its members and officers of this Department.

MEAT INSPECTION INQUIRY

A high level working group was established with representatives from all States and the Commonwealth Government, to examine and report to the Australian Agricultural Council on two options which were then submitted to the Hon. Minister for Primary Industry, Mr. Nixon.

Option 1 The Commonwealth assume total responsibility for inspection at export establishments.

Option 2 Delegation of Commonwealth responsibility for export meat inspection to those States which wish to assume it.

The working party failed to agree unanimously on either option; the Commonwealth, together with the Northern Territory and South Australia favouring Option 1 and New South Wales, Queensland, Victoria, Western Australia and Tasmania favouring Option 2, with the requirement that satisfactory financial arrangements would be made between the States and the Commonwealth. The matter is still unresolved.

KILL FIGURES - 1981

Robb Jetty	Export	Local
Beef	56,837	22,703
Veal	1,353	737
Sheep and Lambs	487,821	183,089
Goats	50,707	283
Watsons		
Pigs	655	220,154
Karnet		
Beef	938	
Sheep and Lambs	4,371	
Veal	Nil	
Pigs	674	

ABATTOIR INSPECTIONS

50 abattoirs operated to December 1981

4 changed ownership

Goomalling reopened

2 closed down

45 had Departmental work orders served on them

1 closed till work orders completed

Approximately 90 inspections

Majority visited twice during the year

ABATTOIR DATA

Registered local country abattoirs	50
Registered export abattoirs	11
Registered abattoirs with no inspection	11
New abattoirs	Nil

IMPORTS FROM OTHER STATES

Lamb carcases	25,297
Cartons	-
Beef bodies	1,244
Cartons	14,956 + 18 tonne
Veal carcases	2,140
Pork carcases	100
Pork cartons and bags	2,491
Offal cartons	975
Poultry cartons	9,776 + 16 tonne
Kangaroo carcases	3,182
Bulk	167 tonne
Rabbit cartons	79
pairs	579
Buffalo cartons	76
Deer carcases	33
Bulk	118 kg

LABORATORY

Total of 4,790 samples submitted - Up approximately 3,600 on 1980.

Effluent waters	126
Smallgoods	519
Meat	343
Staff handwash	1,548
Faecal	232
Equipment swabs	434
Moore swabs - drains, etc.	76
Carcase swabs	434
Pork, kidney and lymph nodes	208
Poultry shed swabs	152
Poultry cloacal swabs	179
Meat meal samples	269
Sausage casings	154
Water samples	10
Milk samples	23
Chicken samples	6
Serological samples	77

PUBLIC BUILDINGS

ROLLER RINKS

Skating was again predominant and a further 13 rinks were approved. The increase in rinks has distributed the loading and the apparent overcrowding in previous years is not now being experienced.

PLAN APPROVALS

A total of 288 plans for public buildings, including seven hospitals, were approved. The total value of the buildings was $9 million. All buildings

were subjected to the normal inspections and country on site inspections were carried out in conjunction with the Public Works Department Architectural Division.

SWIMMING POOLS

All main pools connected to the Goldfields Water Supply and those covered by the Swimming Pools Regulations were examined. Special emphasis was placed on pools associated with enquiries concerning Amoebic Meningitis.

HOTEL ENTERTAINMENT

Problems of overcrowding and locked exit doors in entertainment areas of hotels worsened towards the end of the year and meetings with the Western Australian Fire Brigade, Licensing Court, Australian Hotels Association and Local Governments were held in an attempt to solve this problem.

PRIVATE HOSPITAL REGULATIONS

Upgrading of these Regulations, where they pertain to public buildings, is receiving attention.

ROUTINE SURVEILLANCE

In addition to the electrical inspections attached to the Public Buildings Section, the following existing public buildings were checked on a routine basis:-

CINEMAS

A good standard was noted generally, however some of the older buildings have outdated systems which, although within the regulations, are not up to today's standards.

NIGHT CLUBS

All night clubs were inspected during the year - exit signs not operating and lack of internal general lighting were the main problems noted.

HOTELS

General surveillance of metropolitan hotels continued with emphasis being placed on adequate lighting, exits and exit signs, maintenance of electrical installation in entertainment areas and location and condition of switchboards.

CIRCUSES

The electrical installations at two visiting circuses emphasised the need for more frequent and stricter inspections. Cables and electrical equipment used in the daily running of these shows have increased dramatically over the past three or four years. Methods often being employed to run cables between the supply, main tents, caravans and side shows are dangerous. Switchboards are often found to be in a dangerous condition.

It appears that the only inspections in Western Australia are made by this Department's Electrical Inspectors when the circus initially arrives in this State.

FOOD AND NUTRITION SECTION



J.R. Edinger,
B.Sc. A.R.A.C.I.
Food and Nutrition Officer

Senior Staff

Food & Nutrition Officer: Mr. J.R. Edinger

FOOD AND NUTRITION SECTION

1. GENERAL COMMENT:

1.1 The past year has proved to be an exceptionally busy and challenging one, mainly due to the final adoption of the legislation for date-marking, ingredient labelling and lot identification.

Despite all the effort which had been put into industry meetings, seminars and publicity through the various media channels, there were many manufacturers, packers, wholesalers and distributors who experienced difficulty in meeting the dead-line of 16 November 1981, even after a phasing in period of eighteen months.

There are still problems between States in the interpretation of ingredients where ingredient labelling is concerned. It is anticipated that these problems will be solved over a period of time by consultation between State food officers.

The concept of date-marking of foods has been well accepted by consumers and the various problems associated with its introduction have now been overcome by the use of modified systems of marking where required.

The identification of producing factory and production lot, in many cases was not understood by industry or resisted in principle. Many of the misconceptions and misgivings within industry have now been resolved, especially when it was realised that it was to the manufacturer's advantage to be able to identify a particular production lot of packaged food. This obviated the total condemnation and destruction of the complete stock of that food, thus making a considerable economic saving.

1.2 The recall of faulty lots of packaged foods is improving because of the implementation of recall procedure manuals by companies. Moreover, States and Commonwealth Departments of Health have gained experience in mutual co-operation. A major recall of a Victorian small-goods company illustrated this point. Unfortunately, many companies have not introduced recall procedures, or lot identification, resulting in severe economic loss.

1.3 Because of the importance of the correct storage of food where date-marking is concerned the Health Education Unit, Public Health Department, published in October 1981 an excellent booklet titled "Food Life, Date-Marking of Food Packages", which details information on date-marking itself and storage of the six food groups.

1.4 The concept of a Uniform Food Act was approved by Cabinet and a Bill is in course of preparation for final presentation.

1.5 Uniform Food Regulations made under the new Uniform Food Act progressed a step further towards finality with a week-long meeting held in Canberra and attended by all State food officers. These model regulations will replace the National Health and Medical Research Council's "Approved Food Standards and Approved Food Additives", which are routinely adopted into legislation by all States.

1.6 The food packaging label advisory service introduced in 1980 met with extremely heavy demands due to the introduction of ingredient labelling, date-marking and lot identification. Existing food labels had to re-designed and re-printed to meet this legislation finally adopted in November.

Such a service has proved to be extremely popular with industry which now actively is aware of the value of labelling packaged foods in conformity with food legislation.

1.7 An awareness of the importance of food legislation is now being displayed by tertiary education institutions such as W.A.I.T.'s departments of Environmental Health and Home Economics and Consumer Affairs and the College of Advanced Education. Appropriate lectures have been delivered to students in these institutions.

1.8 Throughout the year meetings were attended of the National Health and Medical Research Council Food Legislation Committee, the Working Party on Model Food Regulations and the National Therapeutics Goods Committee.

1.9 Desiccated coconut from Malaysia was found to be contaminated with salmonella, leading to its condemnation and final destruction.

2. SAMPLING PROGRAMMES, INVESTIGATIONS AND ALLIED WORK:

The routine sampling of foods carried out by the Food Inspection Branch increased by approximately 50% over 1980, when a total of 3527 samples were examined chemically and bacteriologically. There were 78 less food complaints than in 1980, 337 complaints being registered. Full details are given in the various appendices in the report of the Chief Health Surveyor under the Food and Liquor Section.

Other items of particular interest are detailed hereunder.

2.1 PESTICIDES AND TOXIC RESIDUES IN FOOD SURVEYS

The annual National Health and Medical Research Council "Market Basket Survey" was conducted using State and Commonwealth Officers to purchase food as specified in the "shopping list". The foods are carefully packaged and sent to the Australian Government Analyst for examination and finally all States' comparisons are made.

2.2 ORANGE JUICE AND ORANGE FRUIT JUICE DRINKS

Sampling procedures and juice examinations were carried out as in previous years.

States other than W.A. are now examining the products offered for retail sale in their own State to ensure conformity with the regulations. There is now an awareness of a need to do this.

The National Health and Medical Research Council Food Standards Committee is revising the Standard for Fruit Juices with the possible introduction of a set of parameters commonly used in the analysis of orange juice products by W.A.

2.3 PESTICIDES IN TEA

A sampling programme was instigated to look at pesticide levels in tea. All samples of brands of tea marketed were found to be well within the prescribed limits by regulation.

2.4 SPIRITUOUS BEVERAGES

Consideration has been given to the labelling of spirituous beverages whereby the alcohol content is stated on the label. Various samples were analysed to look at this aspect of labelling, as regards to tolerances.

2.5 SPECIAL SAMPLING PLAN FOR MERCURY IN FISH

Samples of imported and local fish were collected in accordance with a plan as proposed by the National Health and Medical Research Council for the analysis of mercury content. The results were forwarded over a period of three months during a feasibility study.

The sampling plan has now been recommended for adoption by all States.

3. FOOD REGULATIONS:

3.1 Three meetings of the Food and Drug Advisory Committee were held during the year.

3.2 The following items received special consideration.

Alcohol Labelling of beer, wines, cider, perry, spirits and liqueurs
Labelling Claims
Vitamins and Minerals
Maximum Pesticide Residues in foods
Date-marking of 'out of date foods'
Sampling plan for mercury in fish
Metals in foods
Metrication of all food regulations
Food Colours
Fish Inspection Fees

Meat Inspection Fees
Meat Branding Regulations
Meat Branding Ink
Aflatoxins in Foods
Fees to be charged for the Analysis of Food and Drugs
Date-Marking of Bread
Reduced Alcohol Beer and Wines

3.3 The following regulations and amendments to regulations were gazetted in final form.

A.01 Date-Marking
A.01 Ingredient Labelling
A.01 Identification of Factory and Lot
A.04 Flavourings and Colourings
A.04 Flavour Enhancers
A.08 Metals in Foods
D.01 Fish and Fish Products
D.05 Inspection and Examination of Fish
Meat Branding Regulations

3.4 The following legislation is at drafting stage with Parliamentary Counsel.

A.01 Date-Marking, special amendment for bread
A.07 Pesticide Residues in Foods
A.06 Prevention of Contamination of Food
G.02 Olive Oil and Edible Oils
0.06 Nut Paste

4. APPRECIATION:

The year 1981 saw the retirement of the Chief Health Surveyor and the Senior Food Health Surveyor, Mr. George Kaiser, with whom I had worked for ten years, and I can only in this report attempt to express my deepest gratitude for his unfailing kindly assistance and advice during this period. Mr. L. Layton has stepped into the breach and I thank him for his co-operation during the balance of the year. Mr. R. Zehnder, the new Chief has radiated enthusiasm and help in the new sectional re-organisation.

My thanks are also tendered to the Director, Government Chemical Laboratories and his staff for their co-operation in the increasing load placed on them for their assistance in routing analyses, sampling plans, and product complaints.

Appendix XVII

STATISTICS BRANCH

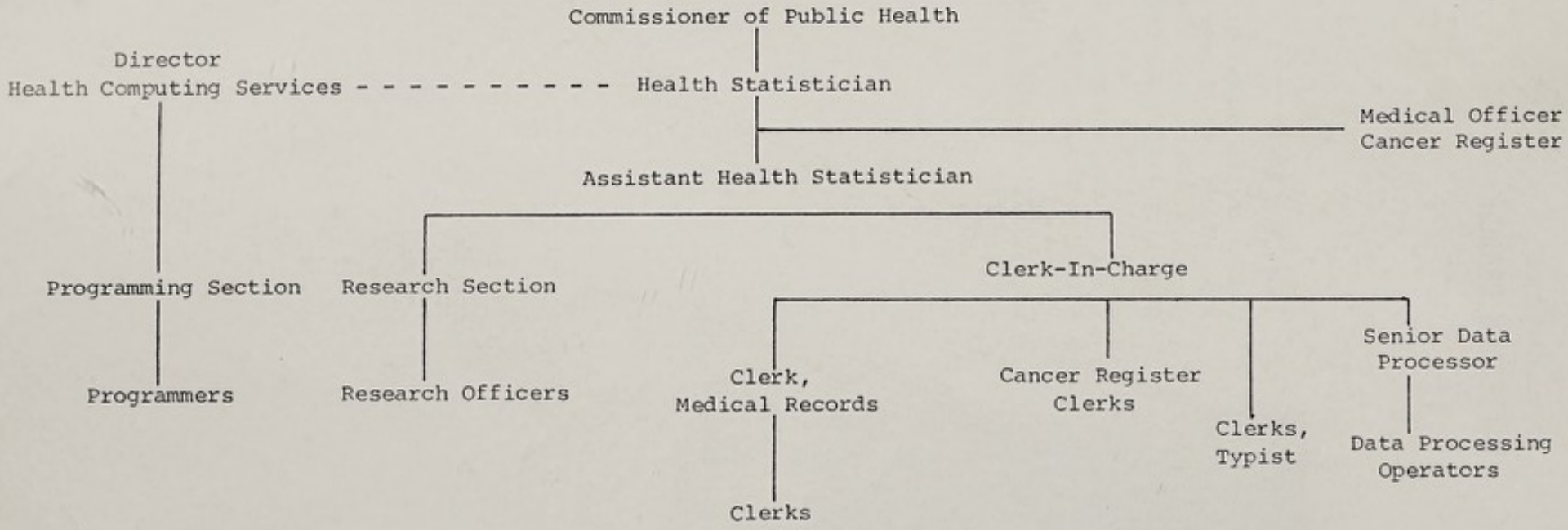


M.M. Lugg,
M.T., B.Sc., M.Sc., Sc.D., M.P.H.,
Dr.P.H., F.H.A., F.A.P.H.A., F.R.S.H.
Health Statistician

Senior Staff

Health Statistician: Dr. M.M. Lugg
Medical Officer, Cancer Register: Dr. W.M. Hatton
Assistant Health Statistician: Mr. M.J. Hartfield
Clerk-In-Charge: Mr. A.H. Boreham
Clerk, Medical Records: Ms. S. Stevens
Senior Data Processor: Mrs. E. Clydesdale

STATISTICS BRANCH - ORGANIZATION CHART



STATISTICS BRANCH

HOSPITAL MORBIDITY SYSTEM

During January, 1981, the remaining portions of the Hospital Morbidity System were handed over to the Statistics Branch from the Australian Bureau of Statistics, which had previously carried out coding and data takeups on our behalf. Due to a delay of six months in the Public Service Board's approval for the appointment of specialist coding and classification officers, 1981 was a year of backlogs and frustration. On commencing work, the officers were over 400 man-days behind schedule. It is to their credit that they coped and survived. By the end of 1981, the backlog was almost cleared from the coding section. It has of course, now created an extra burden on the key-to-disk data entry operators, but additional temporary operators and machines have been promised for next year by the Public Service Board. It is hoped that 1981 data will be available by October 1982, and 1982 data by April 1983. Thereafter, semi annual turn-around is planned. The coding team is headed by an experienced ICD coder who is also a registered nurse. She has carefully trained the other classifiers/coders, who are now working in this section. There has been a gradual increase in requests for hospital morbidity data from within the Public Health Department and from hospitals and medical staff. Analysis of hospital catchment areas and projected population have been the basis of numerous hospital requirement studies for the Department of Hospitals and Allied Services.

MIDWIVES DATA SYSTEM

The Midwives Data System continues to furnish valuable data for Health Services Planning, and for the Congenital Malformations Register, which is operated on behalf of the Public Health Department by Dr. Fiona Stanley of the National Health and Medical Research Council Unit in Epidemiology. The Annual Report of the Register may be found at page 284.

CANCER REGISTER

Having maintained a voluntary population based Registry for many years, regulations were enacted during 1981 requiring pathologists and radiotherapists to notify cases of cancer. These regulations came into effect on August 1 and have led to major improvements in notification and registration.

All malignancies with the exception of squamous and basal cell skin cancers are now recorded. Morphological details are derived from the pathology reports and demographic information obtained from other sources. Monthly visits are made to the Registrar General's Office to obtain mortality details. At present data is handled on a manual basis but in 1982 with the availability of a number of computer programmes, data will be stored on magnetic tape.

Between August 1st and December 31st, 1981; 1435 cases were registered. It is anticipated that incidence rates and other statistics will be published following the first complete calendar year of operation.

The purpose of the Cancer Registry is to accumulate a data bank which will yield a unique fund of material. This will be available to medical and other researchers subject to the confidentiality guidelines, for studies in many areas of cancer research.

CO-OPERATION WITH OTHER BRANCHES AND OUTSIDE ORGANIZATIONS

MENTAL HEALTH SERVICES

Statistics Branch research officers are continuing to oversee the operation of the Mental Health Statistical Research Unit. The Mental Health Register computer system is being redeveloped to improve the accessibility of the data contained therein. A shortage of manpower resources has delayed completion of the 1980-81 volume of the "Psychiatric Care Data Annual Tables". More detailed information on these activities is available in the Report of the Director of Mental Health Services.

MEDICAL AND NURSING MANPOWER

The short-form Nurses' Survey and computerised addressing of re-registration forms was carried out for the Nurses' Registration Board.

Revision of the medical manpower data collection form was completed and mailed out in December, with the 1981 Medical Board re-registration forms, which must be returned by March 1982.

GENERAL

A major part of the Statistics Branch's activities is associated with the analysis of information either collected on a routine basis (eg. Hospital Morbidity) or special ad hoc surveys. The analysis of this information plays an integral role in the planning of health services within this State. Numerous requests for assistance are received from hospitals, doctors, Government Departments and other organisations.

Within the Public Health Department, special assistance was given to the Road Traffic Accident Working Party, the Food Service (Food Handling) Training Committee and the Health Education Unit.

A first-ever Health Surveyors' Manpower Survey was developed in conjunction with the Public Health Department Health Surveyors and the Australian Institute of Health Surveyors. This survey will be carried out next year.

An in-depth analysis of data needs for the Community and Child Health Services was begun. Hopefully this will result in the development of a vastly improved patient and management information system.

Assistance was given to the Catholic Education Commission in their endeavour to estimate future school needs and locations.

Doctors Gracey and Stoelwinder of Princess Margaret Hospital for Children continued to use hospital morbidity data for their studies of hospitalization of the under 14 year olds.

OTHER ITEMS OF INTEREST

The Branch continues to participate in the development of health policy and information systems at National, State and Departmental level. The Health Statistician continues to serve on the National Committee on Health and Vital Statistics, and the State Statistical Requirements and Co-ordinating Committee.

The State reply to the Baume Report Recommendations ("Through A Glass Darkly, Evaluation in Australian Health and Welfare Statistics") was completed by the Health Statistician and the Department of Community Welfares' Policy and Planning officer.

The Health Statistician continued to serve on the Board of Advisory Consultants for the Department of Home and Consumer Studies at the Western Australian Institute of Technology, and was appointed to the Advisory Board of Management for Mt. Lawley Technical College. She continues to serve on the Education Committee of the Australian College of Health Services Administrators and the Advisory Board of the Diploma course in Hospital Administration at Perth Technical College. She presented a paper on Medical Manpower in W.A. to the Royal College of General Practice Symposium; and a paper on Health Statistics to the W.A. Branch of the Australian Medical Records Association.

The Statistics Branch continued to be one of the more advanced in Australia in the development of health related data collections. The development of these data bases provide a sound basis on which health planning policies can be developed. Advice and assistance in the development of other States' data systems has been given through the National Committee on Health and Vital Statistics, and on specific request.

Visitors to the Branch included several short-term W.H.O. fellows and Dr. H.L. Blum, Professor of Health Planning, School of Public Health, Berkley (California).

The Health Statistician visited several overseas centres during her holiday overseas. These included the University of British Columbia School of Health Administration; the Graduate School of Public Health, University of Pittsburgh; the University of Wisconsin - Milwaukee; and The School of Public Health, University of California at Los Angeles (U.C.L.A.). Topics of interest at these Universities included Health Planning, Health Information Systems, Manpower Studies and Specific Disease Registers.

My sincere gratitude goes to Statistics Branch Officers who have maintained work schedules during a year of increased responsibilities, in spite of staff shortages. Apologies must also go to all those health and hospital officers who were inconvenienced by the unavoidable delays in data production which were caused by those staff shortages. Hopefully the next year will see adequate staff to cope with the Branch's much increased responsibilities.

Appendix XVIII

INCIDENCE AND MORTALITY OF NOTIFIABLE DISEASES

Diseases Notifiable	1978		1979		1980		1981	
	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths
Amoebiasis	4	-	5	-	6	-	4	N/A
Ancylostomiasis	4	-	1	-	-	-	-	N/A
Anthrax	-	-	-	-	-	-	-	N/A
Bacillary Dysentery	122	-	163	1	87	-	74	N/A
Bilharziasis	-	-	-	-	-	-	-	N/A
Brucellosis	-	-	1	-	3	-	-	N/A
Cholera	1c.o.s.	-	-	-	-	-	-	N/A
Diphtheria	-	-	-	-	-	-	-	N/A
Encephalitis Lethargic	3	-	3	-	-	-	1	N/A
Filariasis	-	-	-	-	-	-	-	N/A
Homologous Serum Jaundice	42	2	30	2	16	-	17	N/A
Hydatid	-	-	-	-	-	-	-	N/A
Infective Hepatitis	260	1	127	1	227	1	143	N/A
Leprosy	15	1	12	-	9	-	8	N/A
Leptospirosis	1	-	1	-	9	-	11	N/A
Malaria	32c.o.s.	-	35c.o.s.	-	50c.o.s.	-	30c.o.s.	N/A
Meningococcal Infection	1	5	1	1	-	-	1	N/A
Ornithosis	1	-	1	-	-	-	-	N/A
Paratyphoid	2	-	-	-	-	-	3	N/A
Plague	-	-	-	-	-	-	-	N/A
Poliomyelitis	-	-	-	-	-	-	-	N/A
Puerperal Fever	3	-	1	-	-	-	-	N/A
Relapsing Fever	-	-	-	-	-	-	-	N/A
Salmonella Infection(A)	194	1	451	2	219	1	16	N/A
Scarlet Fever	21	-	6	-	3	-	3	N/A
Small Pox	-	-	-	-	-	-	-	N/A
Tetanus	-	-	-	1	-	-	-	N/A
Tuberculosis	165	15	179	11	167	7	160	N/A
Typhus Fever	-	-	1	-	-	-	-	N/A
Typhoid Fever	3	-	4	-	4	-	-	N/A
Yellow Fever	-	-	-	-	-	-	-	N/A

c.o.s. - Contracted out of State
(A) - Other Salmonella Infection
N/A - Not available

Appendix XIX

ANAESTHETIC MORTALITY COMMITTEE REPORT

Chairman, Dr. T.M. McAuliffe

CASES CONSIDERED BY THE COMMITTEE IN 1981

Case 1.

The patient was a 75 year old female admitted to hospital with a bowel obstruction and oligaemic shock.

The Committee found that the anaesthetist acted with all due care.

Case 2.

The patient was a 71 year old female with a history of Parkinson's Disease and hypertension, admitted with a fractured neck of femur. Pre operatively she had signs of cardiac failure and renal failure.

The Committee felt that the hospital staff should have taken more care with cardiac and renal monitoring after surgery had been undertaken.

Case 3.

The patient was a 79 year old female with dehydration, jaundice and heart failure who underwent an emergency operation for carcinoma of the bile duct.

The Committee found that the anaesthetist acted with due care.

Case 4.

The patient was a 33 year old female with paraplegia, spina bifida, and severe deformity of the spine and pelvis. She had a renal calculus and respiratory inpairment. She had surgery for refashioning of her ileal stoma.

The Committee could not reach a firm conclusion as to the cause of death. It felt that the anaesthetist had exercised reasonable care.

Case 5.

The patient was a 78 year old female who was scheduled for a gynaecological procedure. Pre operatively she was known to have cardiomegaly and E.C.G. evidence of myocardial ischaemia. She became hypotensive after the induction of anaesthesia and had a cardiac arrest soon after.

Anaesthesia was administered by an inexperienced resident who had not been able to assess the patient pre operatively.

The Committee felt that this anaesthetic should have been given by an experienced anaesthetist who should have assessed the patient pre operatively. It felt that the patient may have been resuscitated had a large

bore intravenous cannula been in situ before anaesthesia was commenced.

Case 6.

The patient was a severely ill 55 year old diabetic female who had an amputation of a leg for gangrene. Pre operatively she had severe ischaemic heart disease. She was not assessed by the anaesthetist.

The Committee found that the patient should have been assessed by the anaesthetist assigned to the case. The wisdom of carrying on with surgery in the presence of severe angina was questioned and it was felt that an E.C.G. monitor should have been used.

Case 7.

The patient was a 43 year old lady with lymphangitis carcinomatosis. She had anaesthesia for a trans bronchial lung biopsy and died soon after the induction.

The Committee felt that death was caused by an anaphylactic reaction to alcuronium. Anaesthesia and resuscitation were carried out with due care.

Case 8.

The patient was an obese 68 year old female scheduled for surgery on her varicose veins. She had a cardiac arrest soon after being turned to the prone position.

The Committee considered it unwise to turn such an obese patient without first making sure that ventilation was adequate.

Case 9.

The patient was a 98kg female who vomited and inhaled gastric content during anaesthesia for dilation and curettage of the uterus. She died 27 days later.

The Committee considered that insufficient care had been taken to secure the patient's airway during the anaesthetic.

Appendix XX

CONGENITAL MALFORMATIONS REGISTER

Dr. F.J. Stanley and Dr. C. Bower

ACKNOWLEDGEMENTS

We are grateful to all the Midwives, Doctors, Community and Child Health sisters and others who have sent in notifications to the Register; to Mr. M.J. Hartfield, Deputy Health Statistician, for help with computing and programming; and to the Department of Public Health and the Australian Bureau of Statistics for their continued co-operation.

The Congenital Malformations Register was funded by the Federal Department of Health for 1980 and 1981. From 1982 onwards it is jointly funded by the Lotteries Commission and the Western Australian State Public Health Department. We are grateful for their support.

The Western Australian Congenital Malformations Register was established to collect data on congenital malformations throughout Western Australia, occurring in children born on or after January 1st, 1980. The basic data sets used are the Midwives Notification of Birth Form, which is filled in on every birth in the State, and the Perinatal Death Certificates. Added to this, voluntary notification on special notification cards is requested from hospital nurseries, Princess Margaret Hospital, child health sisters, special treatment and investigation centres and private practitioners.

Demographic, diagnostic and notification information is coded and computerised, without name. This report summarises the data received by April 1982 on children born from January 1, 1980 to December 31, 1981. These data are necessarily incomplete, as malformations in children born in 1980 and 1981 continue to be diagnosed and notified to the Register. Data for 1980 have been updated, so figures may be slightly different from those in the previous Annual Report.

TABLE 1

TOTAL CASES - 1980, 1981

	All Births in W.A.	Congenital Malformations Notified	Percentage of W.A. Births with Malformation
1980	20,861	927 (21)*	4.3%
1981	22,042	831 (5)*	3.8%

*The figures in parentheses refer to the number of children notified to the Register who were born in other Australian states or overseas. They have been excluded from the calculation of percentage of Western Australian births with a malformation. The percentage of congenital malformations in 1981 is less than in 1980 due to cases in 1981 not yet diagnosed/notified to the Register.

NOTIFICATIONS

2033 notification cards were received on the 927 cases for 1980, and 1977 cards for the 831 cases in 1981, some cases having up to 10 cards. Multiple notifications have been shown to improve both accuracy of diagnosis and completeness of ascertainment.

TABLE 2

NOTIFICATIONS

Basic Data Sources	1980	1981
Midwives Notification	368	359
Death Certificates	80	76
Additional Notifiers		
Princess Margaret Hospital	532	618
Private Practitioners	366	353
Obstetric Hospitals	172	214
Child Health Sisters	182	127
Genetics, cytogenetics	161	104
Pathology	80	86
Other (Irrabeena, Fremantle Hospital, Register staff, etc.)	92	40
	2033	1977

It is of interest, that in children born in 1980, there were 101 defects not identified to the Register until the child was over a year old. Of these 35 were inguinal and other herniae, but other important defects were also included - 6 heart defects, 9 central nervous system abnormalities, 8 syndromes identified, 4 eye abnormalities, and 3 urinary tract defects.

AREA OF RESIDENCE, RACE AND SEX

The distribution of all malformations with respect to area of residence and race mirrors that for total births. The significant excess of males with malformations is noted, and has been observed in other studies of birth defects throughout the world.

TABLE 3

AREA OF RESIDENCE, RACE, SEX

		All Births	Congenital Malformations 1980	Congenital Malformations 1981
Area of Residence:	Metro	70%	72%	71%
	Rural	30%	28%	29%
Race:	Non-Aboriginal	95.5%	95%	95%
	Aboriginal	4.5%	5%	5%
	Unknown*		142	67
Sex:	Male	51%	61%	60%
	Female	49%	39%	40%

*In many instances (142 cases in 1980, 67 in 1981) race was not specified on the card. These are excluded from the above calculation of percentage by race.

DIAGNOSES

The diagnostic information is grouped into major and minor categories based on a classification from the Centre for Disease Control in Atlanta. Only a few minor defects are recorded by the Register - a list of exclusions is tabulated below.

Exclusions:

- Skin tag)
- Naevus, angioma)
- Haemangioma)
- Lymphangioma) Unless multiple or
- Birthmark) giant (>4cm^2) or
- Mongolian Blue Spot) requiring treatment
- Clicky hip)
- Small ear anomalies)
- Undescended testis)
- Hydrocoele testis) Unless requiring surgery
- Umbilical hernia)
- Small anomalies of toes
- Two cord vessels
- Postural foot deformity
- Tongue tie

TABLE 4

DIAGNOSES BY GROUPED CATEGORIES

	1980	1981
Single minor	78	79
Multiple minor	2	5
Single major ± minor	714	620
Multiple major ± minor	133	127

Thus, approximately 10% of the cases included in the Register have only minor malformations.

Examples of Malformations:

Minor: poly and syn-dactyly, bifid uvula large (>4cm^2) birthmarks.

Major: talipes, congenital dislocation of hip, neural tube defect, chromosome disorders.

Each individual defect is also coded according to the 5 digit British Paediatric Association expanded ICD 9 system.

The following table (Table 5) lists out the frequencies of some of the more common or important defects. The figures refer to the number of defects, not the number of cases - one case may have several individual defects.

The difference in numbers between 1980 and 1981 which occurs with many of the defects could be due to: improvement in notification and verification practices; a more comprehensive cover of rural births in 1981 (both leading to an apparently higher 1980 incidence) or late diagnosis of defects (leading to an apparently lower 1981 incidence). At this stage, only the most discrepant values will be analysed further, e.g. Tracheo-oesophageal fistulae. Only when the Register has been operating for several years will trends be able to be analysed with confidence.

Data on malformations not included in these tables are available on request.

TABLE 5

NUMBERS AND RATES (PER 1,000 BIRTHS) OF CERTAIN CONGENITAL MALFORMATIONS IN CHILDREN BORN IN WESTERN AUSTRALIA

(Rates have not been calculated where numbers of any individual defect are less than 15).

DIAGNOSTIC CATEGORY AND B.P.A. CODE	1980		1981	
	NO.	RATE	NO.	RATE
NERVOUS SYSTEM DEFECTS				
Neural Tube Defects (74000-74209)	44	2.1	33	1.5
Microcephaly (74210)	7		5	
Congenital Hydrocephalus (74230-74239)	20	1.0	15	0.7
CONGENITAL HEART DISEASE				
Transposition of Great Vessels (74510-74519)	5		5	
Tetralogy of Fallot (74520)	2		3	
Ventricular Septal Defect (74540-74549)	81	3.9	51	2.3
Atrial Septal Defect (74550-74559)	24	1.2	21	1.0
Hypoplastic Left Heart Syndrome (74670)	3		5	
Coarctation of Aorta (74710-74719)	7		7	
RESPIRATORY SYSTEM DEFECTS				
Choanal Atresia (74800)	2		1	
Hypoplasia/Dysplasia Lung (74850-74858)	21	1.0	19	0.9
CLEFT LIP AND PALATE				
Cleft Palate (74900-74909)	14)		15)	
Cleft Lip (74910-74919	8)	2.0	7)	1.5
Cleft Lip and Palate (74920-74929)	19)		11)	
GASTRO-INTESTINAL DEFECTS				
Tracheo-oesophageal Fistula with oesophageal atresia (75031)	3		12	
Stenosis/Atresia Small Intestine (75110-75119)	4		13	
Stenosis/Atresia Anus (75123-75124)	14		9	
Hirschprung's Disease (75130-75133)	3		6	
Pyloric Stenosis (75050-75058)	39	1.9	37	1.7
GENITAL DEFECTS				
Undescended Testis (75250-75253) (Surgically treated)	18		14	
Hypospadias, Epispadias (75260-75262)	77	7.2 per 1,000 male births	58	5.2 per 1,000 male births

TABLE 5 (Continued)

NUMBERS AND RATES OF CERTAIN CONGENITAL MALFORMATIONS

DIAGNOSTIC CATEGORY AND B.P.A. CODE	1980 NO.	1980 RATE	1981 NO.	1981 RATE
URINARY SYSTEM DEFECTS				
Renal Agenesis/Dysgenesis (75300-75301)	10		6	
Obstruction Deformities (75320-75329) of Kidney and Ureter	15		4	
Ureteric Reflux (75348)	8		10	
MUSCULOSKELETAL DEFECTS				
Congenital Dislocation of Hip (75430-75431)	88	4.2	106	4.8
Talipes Equinovarus (75450, 75473)	61	2.9	53	2.4
Polydactyly (75500-75509)	17	0.8	16	0.7
Syndactyly (75510-75519)	28	1.3	28	1.3
Diaphragmatic Hernia (75661)	9		10	
Exomphalos (75670)	6		3	
Gastroschisis (75671)	1		6	
Achondroplasia (75643)	1		2	
Osteogenesis Imperfecta (75650)	4		1	
Inguinal Herniae	193	9.3	120	5.4
CHROMOSOME DEFECTS				
Down's Syndrome (75800-75809)	22	1.1	20	0.9
Trisomy 13 (75810-75819)	2		-	
Trisomy 18 (75820-75829)	2		5	
Turner's Syndrome (75860-75861)	1		4	
OTHER				
Congenital Rubella Syndrome	1		-	
Congenital Cytomegalovirus Disease	4		-	
Congenital Toxoplasmosis	1		-	
Cystic Fibrosis	4		4	
Phenylketonuria	1		-	
Naevi	28	1.3	32	1.5

DEATHS

TABLE 6

DEATHS 1980, 1981

	1980	1981
All stillbirths in W.A.	179	188
Stillbirths with malformation	35	39
Percentage of stillbirths with malformation	20%	21%
Neonatal deaths in W.A.	170	124
Neonatal deaths with malformation	51	54
Percentage of neonatal deaths with malformation	30%	44%

In addition, 26 deaths in children with malformations born in 1980 occurred beyond the neonatal period, and 20 in 1981 births, and these numbers may be expected to increase, as children born in these years die with malformations at older ages.

Of the stillbirths with malformations in 1981 74% had a post mortem examination performed (66% in 1980); and 83% of the neonatal deaths had a necropsy in 1981 (78% in 1980).

However, it must be remembered that these were infants with obvious defects. The overall rate of necropsy in Western Australia for all neonatal deaths and stillbirths is much less than this, but an increase has been observed in recent years. This is encouraging, and the information so obtained is of value not only to the Register, but most importantly, to doctors, parents and genetic counsellors.

It is probable that notifications of malformations in fetuses delivered before 20 weeks gestation may be under-represented. We wish to stress the importance of notifying these cases to the Register, to make ascertainment complete. It should also be remembered that these families may benefit from genetic counselling services.

The Western Australian Congenital Malformations Register has been in operation since January 1980, and this report summarises the data collected during the first 2 years. Already, the Register has been used for several projects, and a case control study by Registry staff of neural tube defects is under way.

Sir Lance Townsend from Victoria and Dr. Les Sheffield from South Australia have visited the Register to observe its mode of operation, with a view to setting up registers in their home states.

Dr. Paul Lancaster, Director of the National Perinatal Statistics Unit, Sydney, Mr. Warwick Bruen, Department of Health, Canberra, and Sir Richard Doll, Regius Professor Medicine, Oxford, have also visited the Register during the past year.

A Congenital Malformations Symposium was organised by the Post Graduate Committee at King Edward Memorial Hospital, in April 1982. Several invited guests came from interstate and overseas: Dr. Les Sheffield from Adelaide; Dr. Patricia Jacobs and Dr. Newton Morton from Hawaii; and Professor Frank Majewski from Germany, each speaking on different aspects of congenital malformations. The symposium was very well attended and reflected the interest in, and the importance of, malformations in paediatric and obstetric practice.

PUBLICATIONS

Seward, Jane F. and Stanley, Fiona J. - The Congenital Malformations Register in Western Australia. Med. J. Aust. 1:218-224, 1981

Bower, C. - Report of the West Australian Congenital Malformations Register. Abstract. Aust. Paed. J., 17 (2):137, 1981

Stanley, Fiona J. - Fetotoxic Chemicals and Drugs. Med. J. Aust. 1:688-693, 1981

Bower, C. and Stanley, F.J. - Herbicides and Cleft Lip and Palate. Letter. Lancet, 2:1247, 1981

Stanley, Fiona J. - Neural tube defects in relation to 2,4,5,-T Usage. (Letter). Chemistry in Australia, 48(3), 1981

Bower, C. - The Western Australian Congenital Malformations Register. In "Beyond Normalisation - Philosophy, Theory and Practices in Services for the Intellectually Handicapped in Australia". Vol 1., University of Western Australia Press. (In Press).

Bower, C., Seward J.F., and Stanley, F.J. - The Western Australian Congenital Malformations Register: A tool in the estimation of Disability and its prevention. Abstract. A.N.Z.S.E.R.C.H./ APHA Annual Conference. Community Health Studies. Vol 5(2): 190, 1981

Appendix XXI

MATERNAL MORTALITY COMMITTEE REPORT

Chairman, Professor J.D. Martin

No maternal deaths occurred in 1980 however in 1981 four women died. During the year there were 21,877 live births giving a maternal mortality rate of 0.18 per 1,000 live births.

CASES CONSIDERED BY THE COMMITTEE

Case 1.

A 22 year old woman had an emergency caesarean section in labour because of slow descent of a breech presentation. During closure of the abdominal wound the patient became blue and pulseless and died an hour later in spite of intensive resuscitative procedures. Death was due to pulmonary embolism and found to be unavoidable.

Case 2.

A 30 year old woman collapsed seven minutes after her fifth caesarean section had been completed. She responded to intensive resuscitation but died in the intensive care ward of a metropolitan hospital 9 days later. The cause of her collapse was uncertain (possibly a pulmonary embolism) and at postmortem extensive bronchopneumonia and massive retroperitoneal haemorrhage were found. Death was found to be unavoidable.

Case 3.

This 35 year old woman collapsed and died at home of a ruptured extrauterine pregnancy in the 26th week of her 4th pregnancy. Death was judged to be unavoidable.

Case 4.

A 22 year old primigravid Australian woman, 27 weeks pregnant died of a primary intracerebral haemorrhage of the left parietal region probably at the site of an arterio-venous malformation. Death was found to unavoidable.

Appendix XXII

PERINATAL AND INFANT MORTALITY COMMITTEE REPORT

Dr. V.P. Waddell and Dr. F.J. Stanley

The Perinatal and Infant Mortality Committee was set up in accordance with the amended Health Act. The objective of the Committee is to increase the quality of care of women in pregnancy and labour and of their babies up to the age of one year. The Committee is an educational body, its efforts being directed towards individuals and groups. The Committee has a total of ten members: these include specialist and general practitioner obstetricians, paediatricians, epidemiologists and a midwife. The Committee first met in 1979.

Each year in Western Australia there are about 350 deaths between 20 weeks gestation and 1 year of life. Some information is collected about all of these deaths and about one quarter are selected for further investigation. The three-quarters that are not investigated are the deaths which are considered unavoidable at the present, e.g. those due to major congenital malformation, very low birth weight, cot deaths, etc. It is encouraging that the perinatal mortality rate in the State in 1979 was 15.8 per 1,000 live births: this compares favourably with the best in the world.

Once a case has been selected for further investigation, all relevant clinical and pathological information is obtained and a detailed case-report is prepared. The Committee considers each report and forms an opinion as to whether the death was "unavoidable" or "potentially avoidable". This opinion is notified in writing to the medical practitioner concerned, together with any other constructive comments decided upon.

It should be stressed that only the Chairman and the Investigator concerned know the identity of the patients, doctors and hospitals involved in a case. This maintains confidentiality.

PROCEEDINGS

1979

In the latter half of 1979, 102 deaths were recorded. Of these, 25 were investigated with 23 being designated unavoidable and 2 potentially avoidable.

1980

In 1980, 210 deaths were notified to the Committee. Forth-three were investigated, 34 were found to be unavoidable and 9 potentially avoidable. In September 1981 the Committee produced its First Annual Report.* This Report included an analysis of the 1980 perinatal/infant deaths as well as four educational papers written by members of the Committee, entitled:

i) Post-term pregnancy;

ii) Meconium staining of the liquor amnii;

iii) Induction of labour in pregnancy induced hypertension;

iv) When to call personnel to be present at delivery for resuscitation of the baby.

A note was included on the desirability of a higher necropsy rate.

1981

In 1981, 370 deaths were recorded. This year, access to the Registrar General's files has made recording of deaths more complete (in the previous two years the Committee relied upon notification directly from medical practitioners). Eighty-six cases were chosen for investigation. To date, 54 have been finalised with 40 being designated as unavoidable and 14 potentially avoidable.

The 14 potentially avoidable deaths were due to:-

1,2,3,	Pre-eclampsia;
4,	Gestational age not adequately assessed, proteinuria in pregnancy;
5,	Pre-eclampsia and fetal distress in labour;
6,	Gestational diabetes;
7,	Post-term pregnancy with abnormal glucose tolerance test;
8,	Post-term pregnancy with pre-eclampsia;
9,	Post-term pregnancy;
10,	Delay in delivery of second twin;
11,	Breech presentation, prolonged first stage, fetal distress;
12,13,14	Mother refused care or did not present for care.

In addition to the individual educational letters to doctors and the Annual Reports, statistics are being produced to help evaluate obstetric and neonatal care and to search for preventable causes of perinatal death.

*Copies available from Dr. V.P. Waddell, 60 Beaufort Street, Perth.

Appendix XXIII

PUBLIC HEALTH DEPARTMENT

REVENUE FOR YEAR ENDED 31/12/1981

	$	$
LICENCES		
Anatomy	459	
Fumigation	580	
Poisons Act	20 840	
Radioactive Substances Act	3 071	
Optical Dispensers	20	
Private Hospitals	5 065	
Clean Air Act	17 655	47 690
FEES		
Fish Inspection	12 064	
Building Inspection	6 592	
Perth Medical Officers	566	
Pest Control Collections	8 589	
Pesticide Registration	21 522	
Septic Tank Plans	33 887	83 220
MISCELLANEOUS		
Other	76 614	
Recoup of V.D. Costs	405 308	
Recoup of T.B. Costs	744 534	
Busselton Health Centre	8 077	
Mandurah Health Centre	8 184	
Karratha Health Centre	20 580	
South Hedland Health Centre	30 172	
Geraldton Health Centre	35 963	
Kwinana Health Centre	1 150	
Lockridge Health Centre	8 219	
Claremont Health Centre	35 577	
X-Ray Examinations	4 358	
Almalgam Waste	646	
Sale of Publications - Health Education	944	
Audio Visual	80 564	
Recoup Inspection Serv.	750	1 461 640
COMMONWEALTH GRANT		12 980 276
LABORATORIES (Fees and Services)		3 765 156
DENTAL		
Fees		340 047
GRANT TOTAL		$18 678 029

PUBLIC HEALTH DEPARTMENT

EXPENDITURE FOR YEAR ENDED 31/12/1981

		$	$
1.	Salaries Including Administration and Other Health Services		4 527 086
2.	Administration Expenses		740 678
3.	Payroll Tax		1 647 790
4.	Government Printer		9 327
5.	Child Health Services		
	Salaries	5 007 712	
	Generally	515 842	5 523 554
6.	Dental Health Services		
	Salaries	7 705 606	
	Generally	729 543	
	Training Centres	88 322	
	Therapy Centres	752 050	
	Dental Clinics	278 854	9 554 375
7.	Epidemiology		
	Salaries	295 858	
	Generally	123 191	419 049
8.	Community Health Services		
	Salaries	4 640 916	
	Generally	1 405 942	6 046 858
9.	Community Health Programme		
	Salaries	3 544 488	
	Cenerally	3 388 439	6 932 927
10.	Laboratories		
	Salaries	7 490 001	
	Generally	3 743 071	11 233 072

11.	Other Health Services			
	Health Services Centre	27 894		
	Pharmaceutical Services	26 333		
	Statistics	175 247		
	Health Surveyors & Inspection	95 808		
	Pest Control	11 633		
	Occupational Health	69 657		
	Clean Air	127 737		
	Abatement of Noise	17 600		
	Physics Division	140 001		
	V.D. Control	35 712		
	Health Services Planning & Research	138 344		
	Guthrie Testing P.M.H.	13 323		
	Food and Nutrition	3 531		
	Ord River Ecological Research	100 992		
	East Pilbara Shire Council Subsidy Appt. Health Surveyor	3 026		
	Hypothrodism	20 000		
	Senior Citizens Services	75 779		1 082 617
12.	T.B. Control			
	Salaries	715 372		
	Generally	267 376		982 748
13.	Meat Inspection			
	Generally			304 500
14.	Education Services			
	Health Education			
	Salaries	135 617		
	Generally	91 080	226 697	
	Drug Education			
	Salaries	106 138		
	Generally	42 663	148 801	
	Audio Visual			
	Salaries	279 637		
	Generally	101 264	380 901	
	Library Services			
	Salaries	162 887		
	Generally	134 877	297 764	1 054 163
	GRAND TOTAL			$50 058 744

22686/11/82—800—O

WILLIAM C. BROWN, Government Printer, Western Australia