Food poisoning : steps to be taken in England and Wales by medical officers of health in the investigation of food poisoning.

Memo. 188/Med.

MINISTRY OF HEALTH

FOOD POISONING

Steps to be taken in England and Wales by Medical Officers of Health in the Investigation of Food Poisoning

Revised 1949

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FOOD POISONING

STEPS TO BE TAKEN IN ENGLAND AND WALES BY MEDICAL OFFICERS OF HEALTH IN THE INVESTIGATION OF FOOD POISONING.

Memorandum 188/Med. on Food Poisoning was issued in 1935. Since then there have been two developments of considerable importance in connection with the control of disease conveyed by food, namely the notification of food poisoning under Section 17 of the Food and Drugs Act, 1938, and, more recently, the establishment of the Public Health Laboratory Service administered by the Medical Research Council on behalf of the Ministry of Health. These developments call for a revision, and to some extent an amplification of what was said in the Memorandum of 1935.

NOTIFICATION

Section 17 (1) of the Food and Drugs Act, 1938, provides that if a registered medical practitioner becomes aware, or suspects, that a patient whom he is attending within the district of any Local Authority is suffering from food poisoning, he shall forthwith send to the Medical Officer of Health of that district a certificate stating (*a*) the name, age and sex of the patient, and the address of the premises where the patient is ; and (*b*) particulars of the food poisoning from which he is, or is suspected to be, suffering, and also stating whether the case occurs in the private practice of the practitioner, or in his practice as medical officer of a public body or institution. Part I of the Tenth Schedule of the National Health Service Act, 1946, now further requires that where the Local Authority is not the Local Health Authority as defined in that Act, the district Medical Officer of Health shall send a copy of the certificate within twelve hours after its receipt to the Local Health Authority.

The main object of Section 17 is to ensure that the Medical Officer of Health is informed of outbreaks of illness occurring in his district and believed to have been caused by food. Although food poisoning is not defined in the Act of 1938, the Minister does not think that notifications under Section 17 need include cases in which food causes an infectious disease which is otherwise statutorily notifiable as such. In practice this has not happened except on occasions when cases of illness clinically and epidemiologically indistinguishable from food poisoning have been so notified but have proved on investigation to be cases of bacillary dysentery. This is unavoidable and in general the experience of the last ten years has shown that the notification of food poisoning has achieved the purpose intended, namely that circumstances requiring further investigation and action of a kind which a general practitioner cannot be expected to undertake are brought promptly to the notice of the local Medical Officer of Health.

The Registrar General has requested Medical Officers of Health from the beginning of 1949 to include the notified cases of food poisoning in their weekly returns and also to make a quarterly return of the total of such cases amended by reason of corrected diagnoses. The publication of these figures at regular intervals by the Registrar General may help to bring to light hitherto unrecognised factors in the causation of food-borne disease.

INVESTIGATION OF NOTIFIED CASES

This usually involves intensive enquiries at the homes and other places connected with the affected persons as well as the collection of suitable material for laboratory examination. At any stage of the investigation it may become possible to prevent further cases by stopping the sale of suspected food or by recovering unconsumed portions already sold. Without attempting to deal comprehensively with the method of such enquiries, Appendix A gives the chief headings under which investigation ought to be made and Appendix C describes in detail the considerations which apply to the collection of material for laboratory tests, including the bacteriological examinations which will be undertaken free of charge to Local Authorities by the local and other laboratories of the Public Health Laboratory Service.

Qualified Sanitary Inspectors are competent to conduct a large part of these enquiries but such matters as the differentiation of the different types of food poisoning, which can often be made on clinical grounds (see Appendix B), and the collection of specimens for examination from patients or suspected carriers of infection require medical training and knowledge. In large outbreaks, however, when the amount of such work is likely to be beyond the medical resources of the public health department concerned, assistance may be sought either from the Ministry of Health or the nearest laboratory of the Public Health Laboratory Service.

Enquiries on lines suggested by clinical or epidemiological evidence should never be held up pending the results of bacteriological or chemical examinations. Where the contamination or infection of the suspected food is thought to have occurred outside the district of the Medical Officer of Health, he should inform the Medical Officer of Health of the other district.

COLLECTION OF DATA ON FOOD POISONING

Medical Officers of Health will undoubtedly wish that the greatest possible use should be made of information obtained by them during the investigation of cases of food poisoning. While the publication of such information in their annual report and in articles contributed to medical journals is of considerable value, it is only by the collection and review of data on a national basis that some of the factors concerned in food poisoning will be clearly discerned and their importance assessed. The references to this subject made in recent Annual Reports of the Chief Medical Officer have been based mainly on copies sent to the Ministry of special reports* made by Medical Officers of Health to Local Authorities and on information received through the Public Health Laboratory Service. Hitherto it has proved difficult to arrange the available material in a convenient form and to draw useful conclusions from the very incomplete data thus assembled. Although some Medical Officers of Health may not be in a position to undertake a full investigation of all cases of food poisoning, it is believed that many will be able to do so and that they will welcome suggestions as to the form in which the data they obtain might be sent to the Ministry for collection and analysis on a national basis.

Food poisoning outbreaks vary so much in respect of size, food vehicle, agent and source as to make it extremely difficult to devise a reasonable

* The specific duty of reporting to the Ministry any serious outbreak of notifiable disease and of sending to the Ministry a copy of any special report he may make to his Authority is laid on the Medical Officer of Health by Article 17 (6) and (7) of the Sanitary Officers (Outside London) Regulations, 1935, and in London by Article 14 (4) and (5) of the Sanitary Officers Order, 1926.

basis for classification and analysis. This has been attempted in Appendix D which comprises (i) a form on which it is suggested that an analysis of the total of notified cases of food poisoning might be sent annually by Medical Officers of Health to the Ministry of Health, together with (ii) a form on which may be summarised the data of small or large groups of cases recognised on investigation to constitute individual outbreaks (an outbreak being regarded as the whole of the cases either probably or certainly derived from a single contaminating or infecting source). The Ministry of Health would be glad to have a summary in the form of Appendix D (ii) as soon as convenient after each such outbreak. The headings under which information is requested in the annual analysis D (i) and in the separate form of summary D (ii) relating to individual outbreaks are those under which it is for the time being believed to be most important to collect information on a national basis for study by the Ministry of Health.

APPENDIX A

HEADINGS OF ENQUIRY INTO OUTBREAKS OF FOOD POISONING

1. Extent of Outbreak.

By means of visits to affected households, institutions, etc., by enquiries of Medical Practitioners in the area and of neighbouring Medical Officers of Health, a complete list of cases (notified or otherwise) should be prepared giving ages and occupations.

2. Clinical Features of Illness.

In each case a note should be made of the date and hour of the first symptoms, the nature of the initial and subsequent symptoms, their severity, their duration and whether accompanied by fever or followed by the development of physical signs of lesions of the central nervous system.

3. Evidence Implicating Particular Food.

There should be made:—

A note of the date and hour at which suspected food was consumed by each affected person.

A note of persons at risk by consumption of suspected food but remaining unaffected.

A note of persons taken ill at the same time who did not consume suspected food.

4. Identification of Agent Contaminating or Infecting Food.

Consideration should be given to:—(*a*) the type of agent which is suggested by the clinical features of the illness and the interval between consumption of the suspected food and onset of symptoms (see Appendix B attached), also to the properties of the suspected food as a culture medium for bacteria; (*b*) success or otherwise of attempts to isolate suspected bacterial or chemical agents from cases; and (*c*) results of attempts to isolate suspected agents from samples of suspected food.

5. Source and Means of Contamination of Food by Chemical or Bacterial Agent Suspected.

The source suggested by the epidemiology of the outbreak, i.e. its extent, the grouping of cases, origin and distribution of suspected food, etc.

The circumstances associated with the preparation, storage and distribution of suspected food.

A history of previous or current illness of a significant kind in persons associated with preparation and distribution of suspected food.

The results of laboratory tests on persons associated with preparation and distribution of suspected food.

APPENDIX B

(1) CLINICAL FEATURES OF THE ILLNESS ASSOCIATED WIITH VARIOUS FOOD POISONING AGENTS

(a) **Chemical,** e.g. zinc, antimony, cadmium.

A short interval between ingestion and onset varying from ten minutes to two hours is characteristic. Initial symptoms are nausea and abdominal pain but vomiting and diarrhoea may follow, usually within half an hour.

Except when deliberately added with malicious intent arsenic and lead in foods do not usually cause gastro-intestinal symptoms of an acute type.

When an acute abdominal disturbance of food poisoning type is followed by muscular paresis, ingestion of sodium fluoride (a white powder which has been mistaken for baking powder) should be suspected. Ortho tri-cresyl phosphate (an oily fluid sometimes mistaken for edible oils) likewise gives rise to flaccid paralysis which may be preceded by symptoms of gastro-enteritis ; paralysis, however, does not usually occur for 10 to 20 days after eating the contaminated food.

Diarrhoea and vomiting may follow the use of silver ware that has been cleaned with silver polish containing cyanide. The interval between ingestion and onset is considerably longer than in most kinds of chemical food poisoning, being usually 4 to 8 hours.

(b) **Salmonella organisms,** e.g. *Salm. typhi-murium* (*aertrycke*) and *Salm. enteritidis* (*gaertner*).

The ingestion-onset interval which is rarely shorter than 8 hours may be as long as 72 hours. It is most often between 12 and 18 hours. This variability in the interval between ingestion and the appearance of symptoms probably indicates that the illness is due to infection and not to preformed toxins (see (c) below). The onset is usually sudden. Abdominal pain with diarrhoea, frequent vomiting and prostration are the chief symptoms. Fever is nearly always present. There is a wide range in the severity and duration of the illness experienced by different individuals in the same outbreak. The length of the ingestion-onset interval and the degree of severity of the symptoms cannot be associated with the particular salmonella types. Anorexia and looseness of the bowels often persist for several days. Cases which show clinical evidence of a blood stream invasion or of meningitis may prove fatal.

(c) **Staphylococci.**

The ingestion-onset period is usually from 1-6 hours. Salivation, nausea, vomiting and abdominal pain are the chief symptoms but the associated diarrhoea and the prostration with a subnormal temperature and lowered blood pressure are sometimes severe. The illness varies in duration probably according to the amount of the preformed toxin ingested and the susceptibility of the individual, but does not commonly last more than a day or two and is not fatal to healthy persons.

(d) **Cl. botulinum.**

Symptoms of botulism usually appear from 12-36 hours after ingestion of the toxin. Change of voice such as hoarseness is often the first sign noticed. Often lassitude or fatigue accompanied by dizziness or headache are first symptoms, occasionally nausea and vomiting. Soon ocular disturbances such as double vision become the chief complaint ; later, difficulty in speaking and swallowing become prominent features and on examination there are ptosis and other signs of paralysis of the cranial nerves, especially the third and sixth, with loss of the light reflex and impaired function of the external rectus muscle. There is often abdominal distension but no pain and no fever unless pneumonia supervenes. Constipation is generally marked but there is no retention of urine. In fatal cases death commonly occurs from the third to the sixth day, usually from respiratory paralysis. The mentality remains clear up to a short time before death.

(e) **Other bacteria.**

In a considerable proportion of cases of bacterial food poisoning neither staphylococci nor salmonellae can be detected. Examination however, reveals the presence of gross contamination of the food with organisms that under normal conditions are non-pathogenic by the mouth, e.g. haemolytic streptococci, coliform and paracolon bacilli, proteus, aerobic and anaerobic spore-bearers. In these outbreaks the interval between ingestion and onset is usually between 8 and 18 hours. Vomiting is unusual and the foods concerned are ones that are peculiarly favourable to bacterial growth, such as gravy, made-up meat dishes, trifles, custards and purees.

(2) DIFFERENTIAL DIAGNOSIS OF FOOD POISONING FROM OTHER COMMUNICABLE DISEASES

Nausea, vomiting, diarrhoea, and abdominal pain are the chief clinical features of several common communicable diseases as well as of food poisoning. The chief diseases which, when they occur in the form of localised outbreaks, may be mistaken for food poisoning are:—

(a) **Bacillary Dysentery.** A disease of acute onset with diarrhoea as the chief symptom and often associated with fever and tenesmus. In severe cases the frequent stools contain blood and mucus. In milder cases the symptoms other than diarrhoea vary and recognition may be difficult except by means of laboratory examination. The disease is caused by various species of the genus *Shigella* (Flexner, Sonne, Shiga, etc.) which can readily be isolated from the faeces in the acute stage. Outbreaks are usually associated with institutions such as mental hospitals, childrens' nurseries, etc., and may be caused by contaminated food. Sulphonamides are usually effective in treatment.

(b) **Epidemic Sore Throat.** When this disease is caused by raw milk infected with haemolytic streptococci, vomiting is a frequent early sign. The isolation of Group A streptococci from the fauces readily enables this illness to be distinguished from food poisoning.

(c) **Epidemic Nausea and Vomiting.** Among a group of diseases of unknown origin commonly called "gastric flu," this appears to be a separate entity. The symptoms are chiefly nausea with irritation of the upper alimentary tract but an associated diarrhoea is not uncommon, although fever is unusual. In an affected household an interval of two or three days often separates the first from subsequent cases (c.f. the common cold) and although food poisoning may be suspected it can usually be excluded on circumstantial grounds as well as by the completely negative results of the laboratory examination of all specimens and samples. It is possible that a virus (or a group of viruses) is the cause of this condition and that the modes of transmission resemble those of influenza.

APPENDIX C

FIELD AND LABORATORY INVESTIGATION

Speed is essential in the investigation of an outbreak of food poisoning. Medical practitioners should be reminded that when food poisoning is first suspected steps should immediately be taken to ensure that no vomit or left-over food is thrown away. On becoming aware of an outbreak of food poisoning a Medical Officer of Health should forthwith warn the nearest public health laboratory. A Sanitary Inspector sent to begin the investigation of an outbreak should concentrate on preventing any further consumption of suspected foods and on arrangements for the collection and conveyance to the laboratory of samples of these foods as well as specimens of vomit and faeces from the persons affected.

Enquiries carried out along the lines suggested in Appendix A should narrow down suspicion to one or two particular articles of food. Any left-over remnants of these foods, however small, should be taken at once to the public health laboratory. A summary of the circumstances of the outbreak revealed by the initial investigation should be sent as soon as possible to the laboratory concerned because a knowledge of the interval between the time when the suspected food was eaten and the onset of symptoms of the illness will be a guide in the search for the causative agent, i.e. chemical poison, staphylococci, salmonellae or other micro-organisms.

Within 24 hours the laboratory should be able to give a preliminary report that will help to direct further investigation towards tracing the source of contamination or infection and to define the conditions that contributed to the occurrence of the outbreak.

Chemical poisoning.

If acute poisoning by a heavy metal is suspected, it is most important to secure specimens of the vomit as well as of suspected food. Should any of the cases prove fatal, the stomach and its contents, together with a portion of the liver, should be reserved for examination.

Discovery of the mode of contamination of the food with chemical substances may necessitate the examination of packages, bags, or containers from which the food has been taken (e.g. for evidence of staining with a chemical agent such as arsenical weed-killer; for traces of tar oil in barrels and drums subsequently used for edible oils). Samples of all suspected articles should be obtained for laboratory investigation. It may also be important to examine in the laboratory cooking utensils such as galvanized iron pans in which acid fruits have been boiled or powders whose identity is in doubt, and unusual types of cleaning material or polish that has been used. All such samples and articles should first be taken to the public health laboratory, and the bacteriologist there, after excluding the likelihood of bacterial food poisoning, will pass them on to a Public Analyst for chemical examination.

Staphylococcal toxin food poisoning.

If the interval between ingestion and onset as well as the clinical symptoms suggest poisoning with staphylococcal enterotoxin and if coagulase-positive staphylococci are found in large numbers in the suspected food as well as in the vomit or faeces of the patients, an attempt should then be made to find out how the food became contaminated.

Primary attention should be directed to the food handlers, e.g. kitchen staff, among whom a carrier of the infecting strain should be sought. A clinical examination should be made for evidence of septic lesions of the hands, arms or face, a purulent discharge from the nose or ear, or obvious abnormality of the upper respiratory tract. Swabs should be taken from the anterior nares and hands of all food handlers and in addition from the local lesions of those found to be suffering from sepsis. It is advisable that persons with septic lesions should not continue to work and the technique of the establishment should immediately be reviewed with the aim of avoiding as far as possible any contamination of food from human sources and also of checking any opportunity for the multiplication of staphylococci which may gain access to it.

The isolation of coagulase-positive staphylococci from any of the material examined is not alone sufficient to warrant the person from whom it came being regarded as the cause of an outbreak. About 40 per cent. of adults carry such organisms in the nose and 10-20 per cent. on the hands. The next step should be to submit the strains isolated to a reference laboratory for serological or bacteriophage typing. If it can be shown that any of the strains are of the same type as that to which belong those isolated from the food and from the patients, then a presumptive case can be made out against the food handlers from whom they were derived.

The final stage in the laboratory is to prove that the organisms isolated are capable of producing enterotoxin. Unfortunately no laboratory animal is really satisfactory for this purpose, and unless human volunteers can be obtained this cannot be done. Recent experience however suggests that practically all enterotoxin producing strains of staphylococci fall into two or three bacteriophage types. The finding that what appears to be the causative strain of staphylococcus belongs to one of these types may therefore be regarded as strong indirect evidence that it was capable of producing enterotoxin, and measures to protect food against contamination from persons harbouring such strains are justifiable.

In the rare instances in which staphylococcal food poisoning proves fatal, the stomach with its contents and the upper part of the jejunum should be reserved for bacteriological examination. Very few records are available of the post-mortem appearances in this type of toxaemia and particulars of any carefully observed cases will be welcomed by the Ministry of Health.

Food poisoning due to salmonella infection.

Salmonella food poisoning is due to a true infection of the gastro-intestinal tract, and the most frequent interval between ingestion of the food concerned and onset of symptoms is about 18 hours. Although causative organisms can only rarely be found in the vomit they can usually be isolated from the faeces during the first two or three days of the patient's illness; subsequently this is more difficult except when, as in some patients, they persist for a week or longer.

Indirect evidence of infection may sometimes be obtained by the findings of specific agglutinins in the sera of patients. Occasionally however such agglutinins are present in normal sera and serological results must therefore be interpreted with caution. A considerable rise in the agglutinating titre of a patient's serum to a particular organism during convalescence is more convincing than the simple finding of a high titre after the illness is over; but this necessitates two blood specimens of which the first has to be taken during the actual attack of food poisoning. It is usually possible to collect a faecal specimen or to take a rectal swab as easily

as to take blood and, because the isolation of salmonella organisms from the faeces gives much more reliable evidence of infection than that obtained by serological methods, an examination of the patient's serum for specific agglutinins is only of secondary importance at the stage of acute illness. The main value of a serological examination is to enable a presumptive diagnosis to be made retrospectively, i.e., a week or two after the illness is over, when specimens of faeces generally prove to be negative on culture. This, however, is often impracticable, e.g., when the patient fails to develop sufficient antibody, or owing to the difficulty of interpreting the results in patients who have previously had a salmonella infection or who have received T.A.B. inoculation.

When salmonella infection proves fatal, and if a diagnosis has not already been made, post-mortem specimens of ileum, spleen, and liver should be submitted to the laboratory. Infants, the aged and those debilitated by some chronic disease form a majority of the deaths from salmonella infection.

In searching for the cause of an outbreak it should be remembered that some organisms of the salmonella group find their natural habitat in domestic animals such as cattle, pigs, and poultry, and others in vermin such as rats and mice. Human food poisoning may therefore be caused by consuming the products of salmonella infected domestic animals (e.g., beef, pork or offal derived from animals with a septicaemic salmonella infection or contaminated in the slaughter-house by infected intestinal contents; milk from salmonella infected cows or contaminated by their faeces; eggs, specially those from the duck, an animal whose alimentary or genito-urinary tract is particularly liable to be infected; imported dried or frozen eggs prepared from infected pulp) and also by any food contaminated with the faeces of salmonella infected rats or mice.

The experience of recent years shows that outbreaks of food poisoning have often been caused by transient human carriers who have usually been infected directly from food. Carriers of this type are probably much more numerous than was originally believed, and their existence must therefore be regarded as a considerable danger. When employed in kitchens they may easily contaminate food, and when the food prepared by them happens to be of a sort favourable to bacterial multiplication, such as made up meat dishes, custards, trifles, and sweets garnished with synthetic cream, or when it is left a few hours at a warm temperature, it may become highly infective. When an outbreak caused in this way has occurred, interpretation of the bacteriological findings may become particularly difficult because, by the time the infecting organism has been isolated and a bacteriological search has been made among the kitchen staff, the individual who contaminated the food may have ceased to be a carrier, or along with others may have partaken of the infected food.

The investigation of outbreaks of salmonella food poisoning often requires the most painstaking enquiry guided by extensive knowledge and experience of potential sources of infection. The food that caused an outbreak has often been completely consumed or thrown away by the time the enquiry is made, and the tests which can then be done therefore afford only circumstantial evidence of the mode of infection.

When the suspected food is not available, and no other food from the same batch or consignment can be obtained, attention should be directed towards the most probable sources of infection. For this purpose investigation at slaughter-houses and farms may be required and the examination of human food handlers for evidence of infection is usually advisable. Difficulty may be experienced in persuading all members of the kitchen staff to provide faecal specimens; to minimise this it should always be explained that the object is not to cast blame on anyone but to make certain that recurrence from a human source will be prevented.

Sporadic single cases of salmonella food poisoning constitute a considerable proportion of all reported salmonella infections and deserve much more attention than they usually receive. Full information is needed about the sources from which these apparently isolated cases are infected, also as to whether they act as reservoirs of infection. Only careful epidemiological enquiries accompanied by exact serological identification of the infecting organisms will provide this knowledge.

Food poisoning due to other bacteria.

Some outbreaks of food poisoning occur in which laboratory examination gives no evidence of staphylococcal or salmonella infection. In many of these outbreaks the suspected food is one favourable to bacterial multiplication and culture in the laboratory shows the presence of enormous numbers of micro-organisms that are not normally pathogenic by mouth. As a rule one type of organism of this kind such as a paracolon bacillus, an alpha-haemolytic streptococcus, a member of the proteus group, or one of the aerobic or anaerobic spore bearers is predominant.

Except by using human volunteers for feeding experiments, it is impossible to prove that any one particular organism is a cause of such outbreaks. The few experiments of this kind that have been made together with other evidence leave no doubt that some of these organisms when present in the food in large numbers may cause vomiting and diarrhoea; as already mentioned in Appendix B, illness caused in this way usually occurs about 8-18 hours after ingestion. Symptoms are seldom severe, and recovery is ordinarily rapid.

Most of these outbreaks have followed the eating of food prepared in kitchens attached to communal establishments, such as schools and canteens. Articles of food such as stews, gravies, custards and trifles that have been prepared on the day before the meal, and have been allowed to cool down slowly at atmospheric temperature or even, if the food is in large containers, in the refrigerator overnight are particularly suspect in this connexion. Bacterial multiplication can occur very readily in such foods and samples for examination in the laboratory should be taken at the earliest possible moment. Unless the samples can reach the laboratory within an hour they should first be cooled down and then well packed in ice. When food residues have been kept in a warm place before being sampled it may be impossible to form an opinion on the degree of bacterial contamination at the time the food was eaten.

Outbreaks of this sort are particularly liable to occur under unhygienic conditions of food preparation. When investigating them it is advisable to take note of the condition of the kitchen walls, floors, equipment, sinks, etc., as well as of the standard of kitchen hygiene, the cleanliness and intelligence of the staff, the adequacy of the arrangements for hand washing by the staff after use of water closets, for the washing of utensils, and for the control of flies, vermin, etc.

APPENDIX D (i)

(See page 4)

ANNUAL RETURN OF FOOD POISONING NOTIFICATIONS (Corrected)

1. **LOCAL AUTHORITY** **YEAR**

2. **FOOD POISONING NOTIFICATIONS (Corrected) RETURNED TO R.G.**

1st Quarter	*2nd Quarter*	*3rd Quarter*	*4th Quarter*	*TOTAL*

3. **OUTBREAKS DUE TO IDENTIFIED AGENTS.**

Total outbreaks	*Total cases*

* Outbreaks due to:—

(a) Chemical Poisons
(b) Salmonella Organisms
(c) Staphylococci (including toxin)
(d) *Cl. botulinum*
(e) Other bacteria

4. **OUTBREAKS OF UNDISCOVERED CAUSE.**

Total outbreaks	*Total cases*

5. **SINGLE CASES.**

Agent identified	*Unknown cause*	*Total*

* Details of each outbreak to be given as in Appendix D (ii).

APPENDIX D (ii)

(See page 4)

FOOD POISONING OUTBREAK (Summary of details)

1. **FOOD CAUSING OUTBREAK.** **AGENT CAUSING OUTBREAK.**

2. **CASES FORMING OUTBREAK** which occurred from to .
   TOTAL notified *TOTAL ascertained* *FATAL*

3. **CLINICAL FEATURES.** Average interval ingestion to onset (Hrs.)=
   Main symptoms, etc.
   Severity of Illness *Duration of illness*

4. **RESULTS OF LABORATORY INVESTIGATION** (Summary).
   Cases *Food Handlers*
   Food samples *Other*

5. **ORIGIN AND PREPARATION OF FOOD CAUSING ILLNESS.**

6. **PLACE AT WHICH FOOD CAUSING ILLNESS WAS CONSUMED.**
   Estimated number of consumers at risk

7. **PROBABLE ORIGIN OF INFECTION OR CONTAMINATION OF FOOD.**
   Contributory Factors

Notes

1. **Agent causing outbreaks** when identified should be stated, i.e. chemical poison, type of salmonella organism, staphylococci, etc.
6. **Place at which food causing illness was consumed** should be stated, i.e. home, school, public restaurant, canteen or railway restaurant car, etc.
7. **Contributory factors** such as poor food storage facilities, lack of refrigeration should be stated if known.

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