



## Wellcome Film Project

### **The Wellcome Trust in Jamaica: Infant Malnutrition**

**The Wellcome Trust, © The Trustees of the Wellcome Trust, 1987.**

**Script by Dr Michael Golden and Dr Leonard Goodwin.**

**Narrator: Ray Moore.**

**Direction & Photography: Douglas Fisher.**

**VT Editors: Anthony Palmer; Robert Fisher.**

**Graphic Artist: Calvin Brett.**

**Wellcome Trust ...*for the improvement of the physical condition of mankind.***

**Henry Solomon Wellcome, 1932.**

**Colour**

**Duration: 00:09:44:06**

**00:00:00:00**

**<Opening titles>**

**<Narration over still photographs and film>**

The Wellcome Trust supports five research units in the tropics; one of them is in Kingston Jamaica and studies malnourished children. Its director is Dr Michael Golden.

Jamaica is a country that one associates with holidays, Bob Marley, rum and plenty of food, but surprisingly in Jamaica there is malnutrition. The reasons are complex and not entirely due to poverty or shortage. As long ago as 1954, the Medical Research Council set up the Tropical Metabolism Research Unit in Kingston to investigate the problem of malnutrition. The laboratories have been supported by the

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Wellcome Trust for many years. In 1970, the unit became a full department of the University of the West Indies.

This child is badly malnourished; he has kwashiorkor. He has stunted bodily and mental development. He is apathetic and dull. His hair colour has changed and the roots have atrophied so that it can be pulled out without causing the slightest pain. He has chronic infections of his chest and intestines. His liver is enlarged and fatty. He also has lesions and infections of his skin and pitting oedema, the sure sign of kwashiorkor. Malnourished children frequently have thin buttocks and there are often signs of rickets. The disordered metabolic processes that go on in these young patients are being carefully studied by frequent clinical assessment and measurement. Blood is collected from the jugular vein. Urine and faeces are collected in plastic bags attached to the skin. Infections are identified and treated.

The unit uses sophisticated, modern analytical techniques such as mass spectrometry, atomic absorption spectrophotometry and whole body impedance measurements, all essential on the spot if meaningful measurements are to be obtained. However, there are often difficulties in maintaining instruments like these in third world environments and in obtaining spares for them.

The results show that in Kwashiorkor, the plasma and tissue copper is low. Zinc is low. Vitamin E is low. Glutathione is low. And although the red cell count is down, the plasma ferritin and liver iron are higher than normal. This represents a severe depletion of the antioxidant defence mechanisms – they are unable to cope. The lipids of the cell membrane literally go rancid and the child dies with the liver loaded with fat and with iron.

It appears that although the defences are normally able to deal with the free radicals generated by normal metabolism, in malnutrition infections and bacterial and fungal toxins give a much greater stress. The deficient defences are then unable to cope. Anorexia and iron overload further affect the balance and lead to kwashiorkor and ultimately to death.

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As a result of their work, members of the unit have developed great expertise in designing treatments for their young patients. Antibiotics and other appropriate medicines are given to control infections and the children are fed with various milk formulae every two hours around the clock. The diets contain trace elements, electrolytes, vitamins and added energy in the form of sugar or fat. The children are weighed and measured every day.

With successful treatment, the oedema usually clears rapidly causing a loss of weight during the first few days and then rapid growth occurs. This child gained 10% of her original body weight every week during her period of recovery. The effect of treatment is dramatic.

When the child is sent home, usually after about six weeks in hospital, a careful follow-up is made. Only about one child in two hundred develops severe malnutrition despite the seemingly hostile environment that these children are brought up in. This is because of the social structure in which families help each other in times of need. Once a month, a mobile team goes to study the child's home to appraise conditions to ensure that the diet is being given correctly and to weigh the child. Between these visits, the mother brings her child to the clinic for examination and assessment. If at any time the child gets sick, the mother can always bring the child to the ward to see a doctor. Potentially, the most important effect of severe malnutrition is its effect on the mental development of the children in later life. The unit is trying to find out the answer to whether mild, moderate or severe malnutrition delay or impair intelligence. This is being studied and simple strategies have been developed to try and alleviate any delay in mental development. An important aspect of these studies is the assessment of the psychological improvement by carefully standardised tests. The service is providing great benefit for the families and a great deal of scientific information.

The TMRU, a four university department, also has a key teaching function. There are frequent ward rounds, research seminars to discuss results, and postgraduate students study for higher degrees. In this unit, the medical and scientific teams are able to practise first world science in a third world environment because Jamaica has



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a sufficiently developed infrastructure. The problem of malnutrition is not complicated by the traditional tropical infectious diseases so that malnutrition can be studied in isolation and in detail. In this way, the unit in Jamaica is usefully tackling a major problem of Africa and other developing countries.

**<Background music over credits: “Could you be loved?” by Bob Marley and the Wailers>**

**<End credits>**