Table showing Quinquennial Rates of Infant Mortality by Causes in England and Wales

Period	Measles	Whooping Cough	Tuberculosis (All forms)	Convulsions	Bronchitis	Pneumonia (All forms)	Diarrhoea and Enteritis	Hernia and Intestinal Obstruction	Congenital Malformation	Prematurity	Injury at Birth	Violence	Other Causes	All Causes
1901-05 ..	2.67	5.21	5.91	14.59	11.61	11.38	7.29	0.51	4.33	20.25	0.73	2.41	51	138
1906-10 ..	2.43	4.55	4.41	11.83	8.97	10.80	7.30	0.50	4.94	19.92	0.96	2.19	38	117
1911-15 ..	2.94	4.08	3.08	8.81	8.30	10.90	19.24	0.54	3.85	19.69	1.13	1.76	26	110
1916-20 ..	1.76	2.99	2.00	6.79	7.95	10.45	9.34	0.61	4.04	19.33	1.13	1.19	22	90
1921-25 ..	1.30	2.94	1.39	4.38	5.36	10.78	8.13	0.62	4.32	18.45	1.40	0.94	16	76
1926-30 ..	1.23	2.55	1.07	2.79	3.77	10.50	6.47	0.62	4.94	17.96	1.89	0.98	13	68
1931-35 ..	0.90	1.74	0.83	1.93	2.69	9.48	5.42	0.58	5.85	17.23	2.35	1.19	12	62
1936-40 ..	0.52	1.16	0.59	1.27	2.29	8.57	4.75	0.46	6.11	15.26	2.65	1.24	10	55
1941-45 ..	0.32	1.03	0.51	0.83	1.88	8.08	4.93	0.37	5.97	12.70	2.45	1.51	9	50

Rates expressed as a percentage of those during 1901-05:

1901-05 ..	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1906-10 ..	91	87	75	81	77	95	100	98	114	98	132	91	75	85
1911-15 ..	110	78	52	60	71	96	264	106	89	97	155	73	51	80
1916-20 ..	66	57	34	47	68	92	128	120	93	95	155	49	43	65
1921-25 ..	49	56	24	30	46	95	112	122	100	92	192	39	31	55
1926-30 ..	46	49	18	19	32	92	89	122	114	89	259	41	26	49
1931-35 ..	34	33	14	13	23	83	74	114	135	85	322	49	24	45
1936-40 ..	19	22	10	9	20	75	65	90	141	75	363	51	20	40
1941-45 ..	12	20	9	6	16	71	68	73	138	63	336	63	18	36

was accepted. This alteration broke the continuity of the mortality rates, and in general it is impossible to recast the older grouping of causes of death into the modern form.

Despite these serious limitations, which prevent an exact comparison being instituted, an attempt has been made to obtain the trend of mortality for the numerically important causes of death during the present century, and the rates are given for quinquennial periods in the accompanying Table. The table shows that a substantial decline in mortality has been recorded for most causes of death. The exceptions to the general decline are congenital malformations and injury at birth, both of which have shown an increase during the period. The mortality from convulsions provides the most spectacular fall: the death rate in 1941-5 was only 6% of the rate in 1901-6. The fall in the pneumonia death rate has been quite small; and deaths from this cause formed 17% of the total infant mortality in 1945, compared with 6% in 1901. Mortality from prematurity and from diarrhoea and enteritis has been almost halved during the period, but both are still very important causes of death and in 1945 accounted for 24% and 11% respectively of the total infant mortality. The decline in the death rate from prematurity was slow until the last decade. Mortality from violence decreased during the first half of the period, but then increased. Although the death rate from violence is small it represented 1,012 deaths in 1945. The largest causes under this heading in 1945 were: suffocation, 600; lack of care of the newborn, 195; burns, 41; homicide, 63.

These trends of the death rates by individual causes are interesting and provide material for considerable speculation. Any hypothesis formed can only be a matter of speculation, since the data in general do not permit of any further analysis being made. Some of the increase in the death rate from congenital malformations may be due to the larger proportion of first births in the total births. This is a possible explanation if the birth of a badly malformed child is a deterrent from having further children, but the probability of congenital deformity increases with increasing age of the mother, so that from the trend of the birth rate during the period a decrease in this cause would have been expected. The increase in the mortality from injury at birth might also be explained in part by the increase in primiparae among the mothers. Any satisfactory explanation of the rise in the death rate from injury at birth is difficult, since during the period of increasing mortality there has been an increase in the number of institutional confinements. It would have been expected that with the increase in deliveries in hospital the mortality from

this condition would have declined. A similar trend for this cause of death has been shown by the United States of America, where the death rate from injury at birth rose from 3.9 in 1920 to a peak of 5.3 in 1930, and then declined very slightly.

Summary

The rate of infant mortality in England and Wales in 1947 was 41 deaths per 1,000 live births, a figure less than one-third of that recorded at the beginning of the century. The decline in the rate has been greater among girls than among boys, greater in the urban than in the rural districts, and, as is well known, much greater in the later months of the first year than in the neonatal period. Regional differences continue to exist. The seasonal distribution of infant deaths has been completely changed: at the beginning of the century the highest rate lay in the September quarter; now that quarter has the lowest rate. A large improvement in mortality has been recorded for infectious diseases, bronchitis, and convulsions. The death rates for pneumonia and for prematurity are still more than one-half the rates of forty-five years ago. Mortality from congenital malformations and from injury at birth has tended to increase during the period reviewed.

Medical Memorandum

The Oxford Vaporizer in the Hands of Midwives

"Trilene" administered by way of the Oxford vaporizer has been in constant use for over two years in the midwifery department of the Guernsey Hospital. More than 1,400 patients have had the benefit of trilene, and approximately 50% of these did not have a doctor in attendance at any stage of the confinement. There is no resident doctor at the hospital. This statement may well bring forth the censure of eminent anaesthetists. It is chiefly to them that this short report is addressed, for it is within their power to spread the benefit of trilene to thousands of midwives and their patients.

In April, 1946, patients were given trilene by way of the vaporizer under close personal supervision. By June, 1946, all the doctors working in the midwifery department had consented to its use by the gas-air-trained midwives for their cases. It has continued to be an unqualified success.

First a warning against one pitfall, admittedly a serious one. The rubber-flap type non-return valve incorporated in the expiratory-valve tube becomes unserviceable after about six months. As a result patients who were becoming distressed and were not obtaining analgesia were found to be inhaling and re-inhaling their own breath. Since those who administer it have been taught to test the valve this has not recurred. Another small point is that the patient occasionally has inadvertently screwed up the expiratory valve. This does not

happen now that the valve thread is wrapped with cotton to prevent closure.

What are the supposed dangers and disadvantages of the method in the hands of midwives?

DISADVANTAGES

1. Overdosage is evidently the bugbear. At the start I impressed upon them that under no circumstances should they exceed 1.5% trilene (7.5% on the ether calibration). A mark was fixed at this point, beyond which they must not go. To my surprise I have never found an unsupervised midwife using such a high percentage. This is understandable when we consider that during a normal labour midwives want a patient who is co-operative and who understands what she is told.

2. Delay in labour is not experienced provided the patient is not pushed to the stage at which the voluntary muscles no longer help the uterus.

3. No adverse effects on the child have ever been noted.

ADVANTAGES

The advantages of the method are numerous; the following are but a few:

1. In the vaporizer we have a machine which safely and very simply produces ideal conditions for forceps delivery and other procedures not requiring relaxation, including caesarean section. Without the patient's knowledge the lever is set at 4-5% while forceps are being boiled. About 7-10 minutes later it is dropped to 1.5%, and the doctor need have no anxieties about the "other end of the patient," provided the midwife can hold the mask accurately. The percentage will of course gradually be dropped still lower.

2. Every patient, irrespective of her constitution, has adequate analgesia. The patients are as enthusiastic as the midwives. The gas-air machine has occasionally had to be given to a patient who has started on trilene when both vaporizers have been required for other cases. Without exception strong disapproval has been registered.

3. During a long labour patients have been encouraged to take nourishment, and vomiting has not resulted.

4. It is necessary to assess the percentage required for each individual, and, subject to this, any midwife trained in gas-air analgesia can use the vaporizer.

5. Maintenance difficulties, the changing of cylinders, and the cartage of cylinders do not arise. If patients knew the low running costs of the method they might scorn it!

COMMENT

It appears that efforts are being made at Oxford to produce a machine which will give a fixed percentage in all circumstances. Is this really what is wanted? Surely an accurate but variable percentage is required, both for the doctor and for the midwife. If a machine with a fixed output is used the relief afforded to many patients will be no better than that afforded by gas-air. We know, for instance, that whereas Mrs. X. gains adequate analgesia and is co-operative on 1.3%, Mrs. Y. becomes uncontrollable on 0.9%, while Mrs. Z., who is desperate in early labour, is provided with 0.3% as an effective placebo. Variability is essential to get the best out of trilene analgesia.

Finally, if I were to concede that there is danger in allowing specially trained midwives to use the vaporizer for analgesia I would argue that this is more than offset by an alternative and graver danger. How many G.P.s have not had to stop in the middle of a forceps delivery to give artificial respiration or deal with vomiting or lack of anaesthesia, when the midwife has taken over the "rag and bottle"? Many of us have found a new pleasure in midwifery with the confidence we have in our midwives' anaesthetic ability. They would never have gained this ability were they permitted to use the vaporizer only occasionally for full general anaesthesia under a doctor's supervision.

We have been lucky here in Guernsey in having such a keen and co-operative nursing staff. Their observations and help have been so encouraging that I felt I must try to bring a report of their 1,400 cases to the notice of those who can spread their enthusiasm.

P. S. A. HEYWORTH, M.R.C.S., L.R.C.P., D.A.

Reviews

RURAL PRACTICE IN THE U.S.A.

Public Health and Medical Care. By F. D. Mott, M.D., and M. I. Roemer, M.D., D.P.H. (Pp. 610; illustrated. \$6.50 or 39s.) New York, Toronto, London: McGraw-Hill Book Company, Inc. 1948.

"With broad social perspective it describes the economic and historical developments out of which arise present difficulties in rural medical services . . . it offers recommendations for future action which merit careful study." Thus in a nutshell Surgeon-General Thomas Parran, the writer of the short and pithy foreword to this valuable book, places before the reader the aims and brilliant achievement of the joint authors.

Surely few in Britain know of the economic conditions in rural America which are dispassionately described here, albeit with an occasional vivid touch which might almost have been copied from a page of *Piers Plowman*. "Years of drought and soil erosion spell bankruptcy for farmer and country doctor alike. Too much rain or a sudden wind or an insect pest may wipe out most of a year's income in a matter of days or minutes." The proverbial rude health of the country dweller is questioned in no uncertain terms. Typhoid kills four times as many in rural as in urban districts, malaria nine times and diphtheria three times as many per 100,000 population. In the case of measles, scarlet fever, and whooping-cough the advantage is much in favour of the large towns. Infant mortality is 34.3 for towns of 100,000 and over, 44.6 for small towns, and 43.3 for rural districts. City children are heavier and taller for their age. Actual pellagra and its subclinical manifestations are associated with malnutrition.

The authors are emphatic that there is a large proportion of the rural population which is unable to obtain adequate medical attention, but they show a ready appreciation of the difficulties of the country doctor and the country dentist though forming a just estimate of their deficiencies. They indicate the great gulf fixed between services available to town dwellers and those available to country dwellers—the coloured people faring much worse than any. The outcome of this becomes obvious. The State must take more part in the prevention and treatment of disease. "Circumstances in rural America make national planning and action essential," and the people of the United States are rapidly learning that health security is attainable.

Among the farming class a flat-rate prepayment plan is much favoured for medical, nursing, and hospital services, and there is a feeling that there should be a full application of medical science to meet the need of all individuals in every section of the community. All this points to the establishment of a comprehensive State medical service, of which we have now the beginnings in this country. The authors appear to be fully alive to this, and their own predilection is for a salaried service.

This book is a memorable achievement and one which all interested in public health and social medicine should read. It is easy to read, were it not for the multiplicity of footnotes. Many of these are references and point to the thoroughness of the authors' work, but their place is surely at the end of each chapter; others could be incorporated in the text. The hasty reader may be tempted to ignore them and then find, as does the reader of Gibbon, that some of the most interesting information in the book is being missed. But we say with conviction that this book can be read equally with profit and with pleasure.

WILLIAM N. PICKLES.

IDENTIFICATION OF INSECTS

A Handbook for the Identification of Insects of Medical Importance. By John Smart, M.A., D.Sc. With Chapters on Fleas by Dr. Karl Jordan, F.R.S., and on Arachnids by R. J. Whittick, B.Sc. Second edition. (Pp. 296; 178 figures; 13 plates. 20s.) London: Trustees of the British Museum. 1948.

In his preface to the first edition, which was reviewed in this *Journal* on Jan. 1, 1944 (p. 13), Dr. Smart pointed out that his handbook was particularly intended to assist medical officers serving overseas under wartime conditions, since under these circumstances it is difficult to send specimens to the expert or to obtain the necessary literature for their identification on the