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coroner authority to order a post-mortem examination without necessarily committing the case to an inquest if death was found to be due to natural causes. Since that date every death in Birmingham from suspected suffocation of an infant dying in bed with its parents or others, or found dead in a cot, has been the subject of a post-mortem examination conducted by a skilled pathologist. It will be appreciated that all these deaths were entirely unexpected and that no doctor had recently been in medical attendance upon the child during life. The result of this altered procedure is reflected in the statistics in the following manner.

ACCIDENTAL INFANT SUFFOCATION

BY

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No special study of the true incidence of infant suffocation appears to have been made in this country or the U.S.A. (see *B.M.J.*, 1945, **1**, 524). The information necessary for an analysis is not available to the investigator except through the coroner, and then only by his closest co-operation, and as over 70% of coroners have no medical qualifications their interest is mainly confined to the purely legal aspect of each case. Further, the coroner's procedure precludes to a large extent the collection of comprehensive data by anyone but that official himself.

In England and Wales cases of death of infants from suspected suffocation are reported to the coroner of the district, either directly or indirectly, by the doctor called in to examine the child at death. If the doctor issues a death certificate certifying the cause of death as asphyxia or suffocation the case reaches the coroner through the Registrar of Births and Deaths under Statutory Rules and Orders, 1927, No. 485, thus ensuring that it does not escape investigation. It may be that a coroner will act on the strength of the doctor's opinion as to the cause of death without necessarily having the confirmation of a post-mortem examination. Prior to 1927 this was usually the case, as

Birmingham Statistics

During the seven years 1938 to 1944 the total number of deaths reported to me of which asphyxia was considered as a possible cause was 318. Of these, 108 occurred while the infant was in bed with its parent or other person, and as a result of post-mortem examinations only 18 of these 108 were shown to have died from asphyxia occurring mechanically. It is also significant that of the remaining 210 cases in which an infant died while sleeping alone in a bed, cot, or perambulator, post-mortem examination established mechanical suffocation as being the definite cause of death in only 6 cases. Of the deaths 280 were due to natural causes, 152 to respiratory infection alone, and 77 to a respiratory condition associated with otitis media. Table I sets out in detail the age distribution and causes of death in the 318 cases as determined by the post-mortem examination.

Available statistics show that the total number of deaths attributed to asphyxia while in bed with parents or other persons in the Birmingham coroner's area during the seven years 1918 to 1924 was 130 when the estimated population was 550,000, as compared with 18 occurring during the seven years 1938 to 1944 with an estimated population of 1,000,000.

All the post-mortem examinations were conducted by skilled pathologists, including Prof. G. Haswell Wilson, professor of pathology, University of Birmingham; Prof. J. M. Webster,

TABLE I.—*Causes of Death (1938-44)*

Age	No. of Deaths of Children, occurring in Bed with one or more other Persons, for which Asphyxia was considered a possible cause	No. of Deaths of Children, occurring while alone in Bed, Cot, Perambulator, or other form of Improvised Cot, of which Asphyxia was considered a possible cause	Asphyxia occurring by Mechanical Means while in Bed with Parents or other Person	Asphyxia occurring by Mechanical Means while in Bed, Cot, Perambulator, or other form of Improvised Cot, alone	Asphyxia, cause of which was not definitely established—i.e., by Mechanical Means or Natural Causes	Asphyxia due to Inspiration of Vomit	Bronchopneumonia, Capillary Bronchitis, Bronchiolitis, without Complications	Bronchopneumonia or Respiratory Disease with Otitis Media	Bronchopneumonia or other Respiratory Disease with Contributory Cause—i.e., Pyelitis, Toxic Hepatitis	Otitis Media and Mastoiditis	Disease of Larynx	Neonatal Intracranial Haemorrhage	Meningitis	Tracheitis with Infection in Liver and Spleen	Congenital Atelectasis with Enlarged Thymus	Tonsillitis	Status Lymphaticus	Enteritis	Congenital Heart Disease	Atelectasis	Birth Injury	Convulsion—no Apparent Reason	Encephalitis	Immaturity
Under 1 day	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Over 1 day and under 1 month	12	17	2	—	2	1	11	4	3	1	—	1	—	—	—	—	—	—	1	1	1	—	—	1
Over 1 month and under 2 months	31	37	6	2	—	—	38	12	9	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—
Two months and under 3 months	20	46	5	1	—	5	27	17	7	2	—	—	—	—	1	1	—	—	—	—	—	—	—	—
Three months and under 4 months	20	28	3	—	1	—	29	12	2	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Four months and under 5 months	9	23	—	1	—	2	14	10	3	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Five months and under 6 months	4	16	—	1	—	—	11	6	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Six months and under 7 months	4	15	—	1	—	1	9	3	—	2	1	—	—	—	—	—	1	—	—	—	—	—	1	—
Seven months and under 8 months	1	9	—	—	—	—	3	6	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Eight months and under 9 months	1	4	—	—	—	—	1	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nine months and under 10 months	—	7	—	—	—	1	3	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ten months and under 11 months	2	5	—	—	—	1	3	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Eleven months and under 12 months	2	3	—	—	—	—	3	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	108	210	18	6	3	11	152	77	28	8	1	1	1	1	1	1	1	2	1	1	1	1	1	1

it was then not possible for a coroner to order a post-mortem examination without holding an inquest; therefore the medical opinion as to the cause of death, based on circumstantial evidence and external examination only, was usually accepted. The Coroners' (Amendment) Act, 1926, however, gave the

director of the West Midland Forensic Science Laboratory; Dr. J. M. Smellie and Dr. W. Carey Smallwood, honorary physicians and clinical pathologists on the staff of the Birmingham Children's Hospital; also the pathologists of the Children's and the Maternity Hospitals, Birmingham, and others.

The findings as shown justify me in stating as my considered opinion that all deaths from suspected accidental infant suffocation should be the subject of post-mortem examinations, both from the point of view of correct statistical information and in some cases to relieve the mother from mental torture or reproach. Despite their grief, the relief of parents is often very apparent when informed that the death was due to circumstances beyond their control. Careful inquiries made in every case have revealed that there was a complete absence of prodromal symptoms or any departure from the normal sufficient to justify the parent in seeking medical advice—in other words, death was entirely unexpected, even in those cases in which the cause of death was found to be respiratory or due to otitis media. It would appear that an infant could develop bronchopneumonia or capillary bronchitis without complications, or even accompanied by otitis media, and die suddenly without warning, as is shown by a considerable number of the 229 deaths from these causes.

Quite a number of the children in all groups were found prone or with the face turned into the pillow—borne out by post-mortem hypostasis—suggesting death from obstruction to the air passages; and in the absence of other factors one might naturally conclude that death was caused by mechanical means.

In the 11 cases of death from inspiration of vomit, inquiry into the circumstances of how and when the child was fed did not seem to have any direct bearing on the death.

The total numbers of deaths due to mechanical suffocation in bed, cot, or cradle, etc., in England and Wales, taken from the Registrar-General's Returns, for the years 1940, 1941, and 1942, were 308, 379, and 358, respectively (*B.M.J.*, 1945, 1, 602). If the Birmingham figures are any guide, in view of the fact that the population is approximately one-fortieth of that of the country, it would appear that these figures are much too high, and that they would be corrected by the universal procedure of post-mortem examination.

My experience is that doctors who, at the time of reporting a death, honestly believed that a child had been suffocated by mechanical means have frequently expressed their surprise on attending the post-mortem examination, which showed that death was not due to these causes but to other factors. Consequently, I consider that every medical practitioner should act warily in such cases, and should so qualify his opinion as to the cause of death as to necessitate the coroner concerned using his powers to obtain the best opinion possible, by means of a post-mortem examination.

It will be observed from Table I that all cases of children asphyxiated while in bed with the parents occurred during the first four months, and that all cases of asphyxia by mechanical

TABLE II.—Seasonal Incidence, 1938-44 (7 years)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Respiratory infections with or without contributory cause	40	27	31	17	16	7	10	7	19	22	24	37	257
Asphyxia in bed with parents	2	1	.3	—	2	—	1	—	—	2	5	2	18
Asphyxia while sleeping alone	—	2	—	—	—	—	—	—	2	—	1	1	6

Summary

Attention is drawn to the fact that statistics relating to infant suffocation are misleading and err on the side of over-estimation. Circumstantial evidence that suffocation was the cause of death is not sufficient.

Accurate information regarding the true position in a city of 1,000,000 inhabitants revealed an incidence very much lower than is generally accepted.

During the years 1938 to 1944, of 318 deaths considered as possibly due to asphyxia only 38 were shown to have been so caused; 18 of these resulted from mechanical suffocation while in bed with some other person, and 6 from mechanical suffocation while sleeping alone. The remaining 280 deaths were definitely ascribed to natural causes, principally bronchopneumonia, often with an associated otitis media.

A post-mortem examination is indispensable as part of the routine investigation in every case where suffocation is considered a likely cause of death. Evidence in support of this is furnished by the Birmingham deaths, which show such a pronounced fall from 1929 onwards, when this procedure was adopted.

The number of deaths in infants reported to the coroner during the past three decades shows a very marked and progressive fall. This is undoubtedly due to many factors, including improved social and housing conditions, and the activities of the child welfare section of the public health authorities; but in the group in which death was the result of mechanical suffocation I feel that the present statistics for the whole country do not do justice to the real improvement that has taken place in recent years.

The remedy rests in the first instance with the medical practitioner, and, failing him, with the coroner.

POLYNEURITIS AFTER JUNGLE SORES

A SERIES OF TWENTY-ONE CASES

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In a recent campaign in the Burmese jungle British and Indian troops were fighting for upwards of five months under appalling geographical and climatic conditions. During the operation many of these men developed multiple indolent ulcers, mainly on their limbs, and commonly known as "jungle sores." It was noticed that several of those who had suffered from jungle sores contracted a peripheral neuritis later. This paper describes a series of such cases. Owing to war conditions it has been impossible to make satisfactory laboratory investigations; for the same reason the literature on the subject was not available. Therefore this description must be considered from the purely clinical standpoint.

Clinical Data

Twenty-one cases of peripheral neuritis were seen in hospital. Of these, 11 were admitted complaining of symptoms referable to their neuritis; nine because of malarial relapse, and one with jungle sores. All of them had suffered from jungle sores, but, except for Case 19, the ulcers were healed at the time of admission. The number of ulcers on each man varied from 2 to 40, with an average of 14. The commonest sites were the lower leg and forearm. Ulcer scars were also found on the wrists, ankles, arms, buttocks, and shoulders, in that order of frequency. The average healing time was 8 weeks, but varied from 4 to 17. The description of the jungle sores as given by the patients in no way differed from the unhealed sores seen by us. A typical one was about ¼ in. in diameter, circular or oval in shape. It presented a punched-out appearance, with a necrotic sloughing

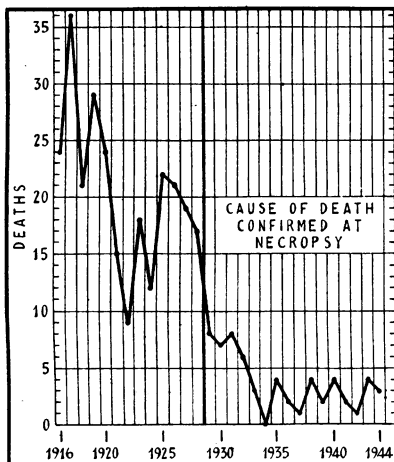


Chart showing annual deaths from mechanical suffocation while in bed with parents, or others, in Birmingham from 1916 to 1944.

means occurred during the first seven months of life. Seasonal incidence in deaths from respiratory infections and mechanical asphyxia is shown in Table II. Annual deaths from suffocation while in bed with parents or others occurring in Birmingham from 1916 onwards are shown in the accompanying chart.