

### Certification of Hypothermia Deaths

SIR,—I read with interest the article on body temperatures in the elderly by Dr. R. H. Fox and others (27 January, p. 200). The authors have discussed the subject with me and have asked me to comment on the classification of hypothermia and related conditions. Accordingly I offer the following notes.

First it must be borne in mind that any discussion of the classification of causes of death has to be based on what appears on the certificate itself; it cannot take account of the criteria on which diagnoses have been made or the completeness with which they have been recorded. In the case of hypothermia there are additional difficulties which lead to confusion. In particular, the internationally agreed rules for classifying deaths by cause specify how to select a single cause from among those appearing on a death certificate; furthermore, the classification does not have an exclusive rubric for accidental hypothermia.

In the International Classification of Diseases, (I.C.D.)<sup>1</sup> hypothermia falls within the rubric 788.9 (Other specified symptoms—such as chills and rigors—not elsewhere classified). Other rubrics with similar connotations are E901 (excessive cold), E904 (hunger, thirst, exposure, and neglect), and 778.3 (cold injury syndrome—of newborn). But it does not follow that every death in which hypothermia is mentioned will be assigned to one or other of these four categories. For routine single-cause statistics—as agreed by international convention—hypothermia is treated as a symptom and is disregarded when an acceptable cause is mentioned in addition. Thus when the certificate reads “bronchopneumonia due to hypothermia” bronchopneumonia is chosen. Only when there is no relevant information other than hypothermia is the death assigned to 788.9. However, if the certification suggests that exposure was a factor the case is assigned to either E901 or E904, depending on the wording.

Thus for routine tables cases with “exposure to cold” or “hypothermia” on a death certificate may appear under any of the four rubrics or, alternatively, may not be counted at all in these categories because a coincident disease is chosen. When hypothermia is certified together with a disease, the hypothermia is sometimes given as the cause and sometimes as the intervening mode of dying, this variation possibly reflecting the difficulty in distinguishing what came first when there is interdependence. In some cases the disease itself gives the clue; for example, in 1971 in England and Wales there were 15 cases in which the cause was shown as myxoedema (see table). To overcome the inevitable shortcomings of single-cause analyses we have, since the beginning of 1971, introduced an additional code to identify all cases in which “hypothermia” appears on the certificate, regardless of their assignment under the rules. A summary of the findings for 1971 is given in the table, which includes all cases in which hypothermia was mentioned as well as whole categories which relate to cold in any way.

There are two main reasons why it is difficult to arrive at any meaningful total of deaths from hypothermia. Firstly, hypothermia is frequently reported on certificates without adequate indication as to whether it

*Deaths with Mention of Hypothermia or Related Concepts, Shown by Single Cause as Selected by Rules of the I.C.D., England and Wales 1971. (I.C.D. categories in parentheses.)*

Cause	All Ages		Under 1		1-64		65+	
	Males	Females	Males	Females	Males	Females	Males	Females
Myxoedema (244)	3	12	—	—	—	1	3	11
Diseases of the circulatory system (390-458)	41	79	—	—	2	1	39	78
Diseases of the respiratory system (460-519)	39	55	4	1	5	1	30	53
Cold injury syndrome of newborn (778.3)	4	0	4	0	—	—	—	—
Other specified symptoms not elsewhere classified (including hypothermia (788.9))	4	11	—	—	—	2	4	9
All other diseases (remainder 000-796)	36	27	11	2	8	4	17	21
All diseases (000-796)	127	184	19	3	15	9	93	172
Excessive cold (E901)	29	30	—	—	18	1	11	29
Other accident, poisonings, and violent deaths (E800-999 excluding 901 and 904)	11	26	1	—	3	4	7	22
All causes excluding E904	167	240	20	3	36	14	111	223
Hunger, thirst, exposure, and neglect (E904)	40	47	10	19	15	5	15	23
All causes	207	287	30	22	51	19	126	246

is a secondary or the primary cause of death. Secondly, exposure to cold is sometimes combined with other adverse circumstances in varying and unknown amounts, both in homes and out of doors; category E904 includes cases which have no mention of cold. Of the 420 records including the word “hypothermia,” 50 were coded to category E901 and 26 to E904.

The total number of deaths in which hypothermia played some part (whether underlying cause or not) probably lies somewhere between the overall total and the total without category E904. (that is, for 1971, between 494 and 407). It is to be hoped that the 9th revision of the I.C.D., now in preparation, will take account of new knowledge of hypothermia. Even so, we shall have to continue to rely on the accuracy of certificates.

May I take this opportunity to remind doctors to be as precise and comprehensive as the information allows whenever they have to certify causes of death; hypothermia is only one example in which the circumstances of death are important for analysis and research. May I also add a note of encouragement by saying how valuable the day-to-day observations of individual doctors are when reports of them can be brought together for research.—I am, etc.,

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<sup>1</sup> *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death*, 2 vols. Geneva, W.H.O., 1967, 1969.

### Hypothermia

SIR,—The article by Dr. R. H. Fox and others (27 January, p. 200) reminds me strongly of our own discovery in paediatrics of hypothermic deaths in young infants about a generation ago. I well remember some 20-24 years ago, at the Radcliffe Infirmary in Oxford, these infants coming into the children's ward, often from large, cold, stone farmhouses and cottages in the Cotswolds in the extreme winter weather. I found the same thing happening in Northamptonshire and the North Cotswolds in 1954, when I moved there. At first we called this the “refrigerator syndrome” because extreme examples reminded one of a chicken

taken out of a refrigerator. The condition is insidious in onset, the baby still looking pink and well but becoming lethargic, going off food, and eventually developing respiratory symptoms.

We found that these babies were often exposed for bathing in an unheated bathroom or nursery, became chilled, and then were wrapped up well in clothes and blankets and again put in a large, cold bedroom or in the open air in a pram. Because these small infants lose their power to produce their own heat, they just remained cold, like the ice blocks wrapped in hessian or stored in straw in ice houses in the summertime on country estates before the days of refrigerators. I notice that Dr. Fox and his colleagues do not mention chilling in unheated bathrooms, although they mention the absence of running hot water as a possible initiating point for the syndrome. Also emphasis is not placed on the metabolic and food aspects of the syndrome. The elderly become in so many ways like infants, unable or unwilling to bother to feed themselves, and only then on the cheapest and poorest food. The wasting of tissues and loss of subcutaneous fat makes them more liable to chilling. The running down of the endocrine and metabolic systems lowers the normal body defences to chilling. Wasting of the fat reserves and the glycogen and protein reserves in muscles leaves little in the way of nutritional reserves.

The geriatricians may have a lot to learn from the past-generation experience of the paediatricians.—I am, etc.,

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### Nomenclature of the New Vagotomy

SIR,—Vagotomy may be “truncal” if the vagal nerve fibres are divided cephalad to the coeliac and hepatic vagal branches. “Selective” vagotomy means the division of the vagus immediately caudad to the coeliac and hepatic vagal branches. The new vagotomy aims to cut only the vagal nerve supply to the part of the stomach that contains parietal cells.

In 1971 the Surgical Research Society asked us to suggest standardized terms and abbreviations to be recommended for use for