REFRESHER COURSE FOR GENERAL PRACTITIONERS

DEATH CERTIFICATION*

BY

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A registered medical practitioner who attends a person in his last illness is required by law to give a certificate stating the cause of death "to the best of his knowledge and belief." This certificate, which must be on the prescribed form, has to be sent to the local registrar of births and deaths. The medical practitioner must also give a notice saying that he has signed the death certificate to the "informant"—that is, the relative or other person who will be giving information to the registrar in order that the death can be registered. For convenience this notice to the informant is in the form of a tear-off portion of the death certificate.

Any person who knows or suspects that a death was due to other than natural causes has the common-law duty of informing the coroner or police, and this duty rests upon doctors in the same way as upon other people. If the doctor reports a death to the coroner he should indicate that he has done so by initialling space "A" on the reverse side of the death certificate, which states: "I have reported this case to the coroner." The registrar of births and deaths, when he receives a certificate endorsed in this way, will not proceed with the registration of the death or the issue of a disposal certificate until the coroner gives him authority to do so. The fact that a death may have been reported to the coroner does not absolve a doctor from the requirement to issue a death certificate.

The local registrar has a special duty to report to the coroner any death which he thinks may have been unnatural; but there are several other circumstances in which he must also refer to the coroner, and it is desirable that certifying practitioners should know them. They are:

- (1) When there is no medical certificate either because no registered practitioner was in attendance or because for any other reason the registrar is unable to obtain a certificate.
- (2) When the death followed an operation necessitated by an injury; or the death occurred during any operation or before recovery from an anaesthetic.
- (3) When the death was due to poisoning of any kind, or to abortion, or to an industrial disease.
- (4) When the certifying practitioner had not seen the deceased either after death or within 14 days before death. However, it is not necessary that he should have done both.
- (5) When the death was directly or indirectly caused by any sort of accident, violence, or neglect, or when the cause of death is unknown.

Importance of Accurate Certification

Apart from the legal obligation upon the attending practitioner to certify the cause of death to the best of his knowledge and belief, and the obvious desirability in the public interest that this duty should be carried out with care and judgment, accuracy is required also because the medical statements of the cause of death are used in the compilation of the local and national mortality statistics

*This article deals with death certification in England and Wales. Much of what is said is applicable to Northern Ireland, but not to Scotland; there the procedure differs in a number of respects and a different form of death certificate is used, information about which may be obtained from the Registrar-General for Scotland.

published by the Registrar-General; and medical practitioners, or at least certain groups of them, are the principal users of these statistics. The value of mortality statistics, and indeed of any statistics, is not always apparent to doctors dealing with immediate individual clinical problems, but they are of the greatest help to workers in the fields of medical research and public health. Constantly and insidiously—and on occasion not so insidiously—mortality statistics provide evidence upon the trends of disease and upon the changing character of medical problems, indicating the size and nature of the problems that face the medical profession, their relative urgency, and, indeed, occasionally suggesting how they are to be solved.

Individual practitioners can get along very well without ever a thought for medical statistics, but in the absence of such information the scientific credit of the medical profession as a whole would suffer and a not unimportant section would lack essential data. In filling up death certificates conscientiously and carefully doctors are doing more than meeting a legal responsibility; they are providing information of direct scientific value to their colleagues, and information which will in the long run be useful to themselves.

Form of Death Certificate

The part of the death certificate that gives most trouble and requires the greatest care in its completion is the section for the statement of the cause of death, the form of which has been established by international agreement. This section, in the certificate used in England and Wales and in Northern Ireland, but not in Scotland, is arranged as follows:

CAUSE OF DEATH	
I	I
Disease or condition directly leading to death†	a due to (or as a consequence of)
Antecedent causes.	b due to (or as a consequence of)
Morbid conditions, if any, giving rise to the above cause stating the underlying condition last.	c due to (or as a consequence of)
II	II
Other significant conditions, contributing to the death, but not related to the disease or condition causing it.	

†This does not mean the mode of dying, such as, for example, heart failure, asphyxia, asthenia, etc., it means the disease, injury, or complication which caused death.

Part I of this section is used for stating the direct cause of death together with, in the reverse order downwards, the medical conditions, if any, that led up to the final illness. The last of these antecedent conditions to be recorded, which will be the one that arose first, is called the "underlying cause of death," and it is this condition that is selected for statistical tabulation when more than one cause of death is mentioned on the certificate. Suppose, for instance, Part I states:

- (a) Peritonitis
due to (or as a consequence of)
- (b) Perforation of duodenum
due to (or as a consequence of)
- (c) Duodenal ulcer.

In this case the underlying cause of death was duodenal ulcer and the death would be assigned to this cause in the statistics.

Part II of the cause of death section is for the mention of any other conditions that had something to do with the death but did not by themselves play the major part or enter into the sequence of events directly leading to death and reported in Part I. If, in the case cited above, the patient had also been suffering from, say, disseminated sclerosis, it might be appropriate to mention it; but it would usually be unnecessary to mention conditions such as haemorrhoids or anxiety neurosis, which probably had nothing at all to do with the death.

Although these general principles of death certification are simple to describe and to understand, patients sometimes die from causes, or combinations of causes, that do not readily lend themselves to as simple a description as the death certificate demands, and the selection and arrangement of the causes to be mentioned can sometimes be difficult. It is impracticable to discuss here all the innumerable sequences or combinations that may occur, but one or two additional points should be mentioned.

Although the certificate provides the opportunity for the certifier to mention a number of conditions, he ought first to consider whether in fact it would not be possible to sum up the cause of death under one title only, as, for example, lobar pneumonia or pulmonary tuberculosis or carcinoma of bronchus; and, if so, this is the course to adopt, though nowadays it is done on less than half of the certificates issued. If only one condition is certified it is important that it should be the underlying cause of death—that is, the disease that initiated the sequence of events leading to death—and not a complication or a terminal development.

When stating the direct cause of death at line (a) of Part I the footnote on the certificate should be noted which explains that "this does not mean the mode of dying, such as, for example, heart failure, asphyxia, asthenia, etc., it means the disease, injury, or complication which caused death." It is much more informative to state that a person died from secondary carcinoma of the liver due to primary carcinoma of the transverse colon than that he died from coma, exhaustion, and cachexia due to abdominal tumour.

In entering the sequence of diseases in Part I of the certificate it is sometimes difficult to know how far back into the patient's medical history it is necessary to go, and here the certifier must exercise judgment and common sense, remembering that what is wanted is his opinion on the underlying cause of death as defined above, and not some hypothetical condition that was possibly a forerunner of a well-defined disease. For example, in the case of an elderly woman dying from uraemia due to chronic nephritis it would be unreasonable to add "due to toxæmia of pregnancy" simply on the grounds that she was known to have had children and might possibly therefore have had toxæmia of pregnancy. On the other hand, if it is known with reasonable certainty that a particular disease at some time in the past was in fact the initiating cause of the fatal illness, then it ought to be mentioned, however long the interval may be. Thus death at the age of 60 from nephritis may properly be ascribed to scarlet fever in childhood if it was known for a fact that the deceased had had scarlet fever in childhood and had suffered some permanent renal damage as a result.

Interval between Onset and Death

Alongside the cause of death section of the certificate there is a panel for statement of the *approximate* interval between onset of each condition mentioned and death, and there is a note that these particulars will not be entered in the death register—that is, they remain confidential and do not appear upon copies of the death certificate, nor are they disclosed to anyone outside the registration service. The details of interval are wanted primarily for the purpose of identifying the underlying cause of death when the certi-

fier has mentioned several conditions and may have inadvertently not arranged them in their correct order, but also for collecting information about the duration of various diseases. As it is usually not difficult to form some rough opinion about how long ago a disease started, and no more than an approximate indication is wanted, it is regrettable that this space is sometimes left blank.

A question often asked is how much detail about the cause of death is really wanted. The correct answer would be that enough detail is wanted to allow the cause of death to be assigned to its proper category in the *International Statistical Classification of Diseases Injuries and Causes of Death**; but, as few practising doctors have ever seen or heard of this volume, an answer on these lines would not be particularly helpful. There is no general rule that can be universally followed about the amount of detail desired, since this varies with different diseases, but some guidance can be obtained by glancing through the list of "indefinite and undesirable terms" that are given near the beginning of each book of death certificates (also in the recently published World Health Organization guide to death certification†). Thus in describing a new growth it is desirable to state the variety—for example, carcinoma; the primary site, if known; and for some organs, such as the stomach, intestine, and uterus, also the part of the organ where the growth originated—for instance, lesser curvature of stomach, sigmoid colon, uterine cervix. Pneumonia should be described as, for example, lobar or bronchopneumonia; and if it occurred as a complication of another disease, such as influenza or measles, this should be stated. If the death is attributed to haemorrhage its source and cause should also be stated. Childbirth should not be mentioned alone—the complication should be stated, and where there may be doubt it should be made clear whether the complication arose before, during, or after delivery. A long series of further examples could be cited, but these should suffice to indicate the kind of detail that is wanted.

Additional Information: Medical Inquiries

Sometimes when a certificate is being issued the certifier knows that later on, possibly when a necropsy or laboratory report has been received, he may be able to supply additional information, or may indeed wish to revise his original statement. The back of the death certificate therefore provides a panel "B," which the certifier may initial to indicate that he "may be in a position later to give, on application by the Registrar-General, additional information as to the cause of death for the purpose of more precise statistical classification." A week or two after a certificate initialled in this space is received at the General Register Office a "medical inquiry" is sent to the doctor, asking whether he is now able to give any additional information.

Apart from these inquiries a large number of others have to be sent out each year to practitioners whose certificates have provided an insufficiently complete description of the cause of death for it to be accurately classified. Some 10,000 of these inquiries go out each year, involving approximately one certificate in every 50 issued. Replies are received in about 90% of instances. This helpful co-operation from busy practitioners is greatly appreciated.

Old Age

Certification of the cause of death of very old people often gives trouble, the attending physician being in doubt whether to specify the various pathological conditions present or whether he would do better to sum up the situation under the description of "old age" and leave it at that. Some old people die from quite definite and important diseases that can affect persons of any age, as, for example, pulmonary tuberculosis or cancer, and in these cases no question arises but that the death should be ascribed to the

**Manual of the International Statistical Classification of Diseases Injuries and Causes of Death*, vol. 1, 1948; vol. 2 (Alphabetical Index), 1949. W.H.O., Geneva.

†*Medical Certification of Cause of Death*. W.H.O., Geneva, 1952.

fatal disease. Other people die in old age with a number of pathological conditions present that have originated mainly from the process of ageing, as, for example, arteriosclerosis or myocardial degeneration. If among these senile conditions there is one that has mainly contributed towards causing the death to occur when it did, this condition should be given preference upon the death certificate, with old age or senility (these terms are synonymous) either unmentioned or shown entirely as a contributory condition. The third and last group of elderly people are those fortunate few who die without any particular disease or degenerative condition playing a recognizably major part, and in such cases it is reasonable and correct to certify that death was due only to old age. If the deceased was 70 years or more such a certificate will be accepted without question; but if death occurred at a younger age a medical inquiry will be sent to ascertain whether or not some other more definite condition was also present, and, if so, the death will be assigned to this other condition.

Next Refresher Course Article.—"Intermittent Claudication," by Mr. J. B. Kinmonth.

Nova et Vetera

SIR HANS SLOANE AND THE BRITISH MUSEUM

By a happy accident the Coronation of her Majesty Queen Elizabeth II coincides almost exactly with the bicentenary of one of our greatest national institutions. The British Museum—a term which very appropriately includes not only the vast collection at Bloomsbury but the no less important natural history collection at South Kensington—was founded by Act of Parliament passed on June 7, 1753. It was the direct result of the design of that great physician, Sir Hans Sloane, who died a few months earlier aged 93. With certain reasonable provisos, he left his immense collections to the nation, desiring that they should be used for public enjoyment and instruction and kept together "to the manifestation of the glory of God, the confutation of atheism and its consequences, the use and improvement of physick, and other arts and sciences, and the benefit of mankind." Parliament wisely and happily decided on June 7 of that year to combine with it two other considerable collections then available into one great national institution. This was the beginning of the British Museum. Of these collections, that of Sloane was by far the largest and most diverse. This fact and the action of the trustees named in his will, who brought the matter to the attention of Parliament, make Sloane the real founder of our national museum. Its two branches are rightly controlled by the same standing committee, thus emphasizing that any separation between the humanities and those other arts that we are accustomed to call the "sciences" is but accidental, artificial, and temporary, and that in many regions they do in fact overlap each other. This is wholly in accord with the feelings and outlook of the founder. The actual physical separation of the two types of objects was not effected for another century. It was in 1856 that the greatest of British comparative anatomists, Richard Owen (1804–92), was called as first director from the Hunterian Museum of the Royal College of Surgeons to South Kensington. It may well be that there is, for all institutions, an optimum size beyond which growth is harmful rather than helpful. Nevertheless the separation of the "sciences" from the "arts" is a misfortune which Sloane himself foresaw and one which the present cordial relations of the two great branches of our national museum are now doing much to remedy.

Study in France

Hans Sloane was born at Killyleagh, County Down, Ireland, in 1660. The name Hans—a shortened form of Johannes or John—implies no German relationship but was

a recognized Scottish-Irish form used at that time. He came of a fairly well-to-do family and seems never to have been in want. He had a sickly youth and never enjoyed perfect health, though this did not prevent him from reaching extreme old age. At 19 he came to study in London, and there he made friends of the illustrious naturalist, John Ray (1627–1705), and the "father of chemistry," Robert Boyle (1627–91). Both of these distinguished men influenced him deeply. After four years he left for further study in France, where he attended medical, botanical, chemical, and anatomical lectures in Paris and Montpellier and took his degree at the obscure and now extinct university of Orange in Provence. He returned to London in 1684 and called on that distinguished physician Thomas Sydenham (1624–89) with a letter from Boyle commending him as skilled in scholarship, botany, and anatomy. Sydenham read the letter, looked at the young man, and said: "That is all mighty fine, but it won't do—Anatomy, Botany—Nonsense! Sir, I know an old woman in Covent Garden who understands botany better, and as for anatomy, my butcher can dissect a joint full as well; no, young man, all this is Stuff: you must go to the bedside, it is there alone that you can learn disease."

Nevertheless the two became fast friends, both professionally and personally. Sloane went to the bedside and became, beyond doubt, one of the most effective practitioners of his day, for, despite the unscientific state of medicine, he was a very careful observer and had just that calm and cautious yet optimistic temperament that inspires hope and confidence in the patient. He disliked complex prescriptions, preferred to try one remedy at a time, and was deeply aware of the influence of the mind on disease. Under all circumstances and in any age he would have been a first-class physician.

It is not necessary here to recount Sloane's life, which has just been admirably told in an attractive little book by G. R. de Beer,¹ the Director of the British Museum (Natural History). In 1687 Sloane sailed for the West Indies in the suite of the Duke of Albemarle, Governor of Jamaica. He spent some sixteen months in that island, and his report on its natural history is a classic. He returned to practice in London, occupying his spare time in accumulating, arranging, and cataloguing his collections. In 1695 he married and settled at 3, Bloomsbury Place, where he practised for many years. In 1712 he became physician to Queen Anne and in 1706 Physician-General to the Army. In 1716 he was made a baronet, being the first medical man to receive that title. In 1719 he became President of the Royal College of Physicians, and in 1727, on the death of Newton, he succeeded him as President of the Royal Society. Among his medical activities is his physiciancy of Christ's Hospital for thirty-six years, his assistance to Captain Coram (1668–1751) in instituting the Foundling Hospital in 1739, and his attempt to establish a free dispensary. He practised till he was 82, when he retired to Chelsea. He died there eleven years later and was buried there.

Varied Collections

The number and variety of the collections that Sloane accumulated are truly astonishing. There were about 50,000 printed books that formed the basis of the British Museum Library, about 3,800 volumes of manuscripts, about 32,000 medals and coins, 334 volumes of dried plants which formed the basis of the British Museum Herbarium, 12,500 other specimens of plants, 5,500 insects, 1,900 quadrupeds, 1,500 fishes, 1,200 birds, and thousands of other specimens under other headings, including anatomical preparations. Some idea of the variety of the collection can be gathered from a special issue of the *British Museum Quarterly*² that has just appeared as a special bicentenary number. In its articles by keepers of various departments, under the general charge of the Director and Principal Librarian, Sir Thomas Kendrick, K.C.B., details may be learned of the nature of the treasures in their keeping. It is noteworthy that in the great Sloane collection of manuscripts a very high pro-