

Medical Certification of Cause of Death in Peninsular Malaysia

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THE VALUE OF mortality statistics is not always as apparent to doctors dealing with individual clinical problems as to workers in medical research and public health. Evidence concerning the distribution and trend of many diseases provide an indication of the character and relative importance of various medical problems encountered in medical practice. Much of the usefulness of mortality statistics depends on medical certification of cause of death.

Death registration in Peninsular Malaysia is provided for by the Births and Deaths Registration Ordinance, 1957 (Malaya, 1957). This Ordinance mandates that "Every registered medical practitioner, upon the death of any person who has during his last illness been attended by such medical practitioner, shall sign and deliver within twelve hours of the death to one of the persons required by this Ordinance to furnish particulars of the death or to the Registrar a certificate in the prescribed form". (Section 22(1)). In the event that no doctor has been in attendance, the cause of death is ascertained and recorded by the registrar, who is usually a police officer or the village headman. In some local authority areas, special personnel with some medical training are appointed as inspectors to certify deaths for which no medical certification is available. The number and percentages of these three types of registration in Peninsular Malaysia in 1972 is shown in Table 1.

The proportion of medically certified deaths is low compared to that in Singapore and England and Wales (Table 2). This percentage should improve with time if concomitant with improvement in

Table 1
Number and Percentage of Deaths by Type of Certification, Peninsular Malaysia, 1972

Type of certification	Deaths	
	Number	Percentage
Medically certified	20,140	31.7
Inspected*	2,135	3.4
Uncertified	41,247	64.9
Total	63,522	100.0

*Inspected by personnel with some medical training
Source: Vital Statistics, West Malaysia, 1972, Table 51.00

Table 2
Number and Percentage of Medically Certified Deaths, England and Wales, Peninsular Malaysia and Singapore, 1972

Country	Total deaths	Medically certified deaths	
		Number	Percentage
England and Wales	591,889	591,354*	99.9
Peninsular Malaysia	63,522	20,140	31.7
Singapore	11,522	9,670*	83.9

*Includes coroners' cases
Sources: The Registrar General's Statistical Review of England and Wales for the Year 1972, Part I, Tables, Medical, Appendix H5.
Vital Statistics, West Malaysia, 1972, Table 51.00
Report on the Registration of Births and Deaths and Marriages, 1973, Republic of Singapore, p. 12.

public education, availability and utilization of health services, a more favourable distribution of doctors, and perhaps a restructuring of the registration system. These considerations are too extensive for discussion within the scope of this paper.

In anticipation of such improvements it is appropriate at this point in time to examine the present practice in medical certification of cause of death in so far as it affects the accuracy of the information that is collected and published. Such knowledge will be useful in the planning of any future improvements of the system. The objective of this paper is to examine the portion of deaths that are medically certified with respect to accuracy, in particular by identifying the points where errors can arise.

In the process of contributing to statistics on cause of death, the doctor becomes involved in two critical steps: 1) making the diagnosis and 2) certifying the cause of death.

1) Making the diagnosis

The fact that a cause of death is certified by a doctor does not necessarily mean that it will be accurate, particularly if the diagnosis is based solely on clinical evidence of uncertain quality that could be enhanced by post-mortem examination. Heasman and Lipworth (1966) demonstrated the frequent lack of agreement between clinical and post-mortem diagnosis. Some idea as to the quality of certification diagnosis can be obtained by looking at the proportion of deaths allocated to the category reserved for ill-defined conditions, namely, B45 - "symptoms and ill-defined conditions" (WHO, 1967). Table 3 gives the number and percentage of deaths classified to this cause group among medically certified deaths for the same countries as shown in Table 2. It must be remembered that this proportion could have been inflated by varying degrees due to failure to report the underlying cause of death as the cause of death even when it is known, or by mistake in the selection from multiple entries during coding.

2) Certifying the Cause of Death

For international comparability, rules for selection of cause of death have been promulgated for primary mortality tabulation. They are based on the concept of an underlying cause of death which is defined as "(a) the disease or injury which initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury" (WHO, 1967).

Table 3
Number and Percentage of Deaths Classified to Cause Group B45* Among Medically Certified Deaths, England and Wales, Peninsular Malaysia and Singapore, 1972

Country	Medically certified deaths	Deaths classified to cause group B45	
		Number	Percentage
England and Wales	591,354***	3,802	0.6
Peninsular Malaysia	20,140	1,430	7.1
Singapore**	10,018***	616	6.1

*B45 - Symptoms and ill-defined conditions

**Data are for 1973 and includes 57 cases pending coroner's inquest

***Includes coroner's cases

Sources: The Registrar General's Statistical Review of England and Wales for the Year 1972, Part I, Tables, Medical, Appendix H5.
Vital Statistics, West Malaysia, 1972, Table 51.00

Report on the Registration of Births and Deaths and Marriages, 1973, Republic of Singapore, Table 39.

In practice many doctors in Malaysia are still unaware of the importance of the requirement of specifying the underlying cause of death. Inaccuracies due to failure to distinguish between the underlying disease and the complications or incidental conditions occur frequently. The problem is compounded by the fact that a large variety of forms are employed in certifying cause of death even though the Births and Deaths Registration Ordinance requires this to be done on a "prescribed form" (Fig. 1). Some of the methods used locally include:

a) The prescribed form (Fig. 1)

Although this form is prescribed under the Births and Deaths Registration Ordinance, its existence is not widely known among doctors. The form itself tends to cause confusion as it would appear that three entries are required, one each against "cause of death", "primary" and "secondary". Moreover, these terms are not defined and have been variously interpreted.

For clarity, the part of the form for entering the cause of death would be less ambiguous if laid out in the following manner:

b) *Direct entry in the death register or use of other forms*

Frequently, in a hospital where the registrar of births and deaths is within the premises, a direct entry of the cause of death is made in the death register without the intermediate step of having the doctor submit a medical certificate of cause of death, or in some instances a preliminary entry is made on some other form such as the burial permit. In the death register, and also in other forms, space is limited to a single entry of cause of death under "Sebab2 Kematian" (Fig. 3). If multiple entries are made in this space, it necessitates the selection of the "underlying cause of death" from among them for statistical tabulation. This process of selection is carried out in the Statistics Department by non-medically qualified workers or coders. With no assistance from the medical profession, these coders cannot be expected to select the underlying cause of death correctly in spite of whatever arbitrary rules of selection that they may employ. Thus an entry of "bronchopneumonia, subdural haemorrhage" may appear in the

statistics as a death due to broncho-pneumonia instead of subdural haemorrhage which is the underlying cause.

c) *The international form of medical certificate of cause of death (Fig. 4)*

This form is recommended by WHO in order to promote uniform application of the principle of tabulation based on the underlying cause of death. In this form, in Part I the immediate cause of death is put first and the preceding or antecedent causes which led to the fatality are listed in order underneath. The last cause listed in Part I is taken as the underlying cause of death.

This form allows the doctor to record multiple conditions on the certificate. The use of such a form would help the doctor, the registrar of births and deaths and the statistical clerk to sort out the part played by each condition in causing death and select the appropriate condition for tabulation.

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(R. & M. 22)
(No. 3.67)

NEGERI TANAH MELAYU

PERAKUAN KEMATIAN
(Salinan untuk Orang yang Memberi Tahu)

Kawasan Pendaftaran

Kawasan-kecil

Nama Jantina

Tarikh dan Waktu Mati Umur

Bangsa

Tempat Mati

Tempat Tinggal yang Biasa

Pekerjaan

Sebab2 Kematian

Nama dan Kelayakan orang yang memberi tahu sebab2 Kematian

* Doktor, Coroner, Laint Pegawai/Orang yang Memberi tahu

Tarikh Pendaftaran

Isi-perakuf ini-Nagai chabutan yang benar dari chatita dalam Daftar Kematian.

Tandatangan dan Jawatan Pendaftar

* Potong mana yang tidak di-pakai

S-J.C.K., K.L.

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(R. & M. 22)
(No. 3.67)

BORANG C

NEGERI TANAH MELAYU

DAFTAR KEMATIAN
(Salinan untuk P.B.B.M.)
Ordinance Pendaftaran Beranak dan Mati, 1957
(Sekhsen 4 (1) dan 18; Aturan 5)

Kawasan untuk Chatita, pindaan atau pembetulan

Kawasan Pendaftaran

Kawasan-kecil

Nama Penuh Simati Jantina

(Dengan Huruf Cherai Rumi, termasuk Nama-keluarga, Seh atau Nama Bayi)

Tarikh dan Waktu Mati Umur

Pekerjaan Bangsa

Tempat Mati

Tempat Tinggal yang Biasa

Sebab2 Kematian

Nama dan Kelayakan orang yang memberi tahu sebab2 Kematian * Doktor, Coroner, Laint Pegawai/Orang yang memberi tahu

Orang yang memberi tahu
Nama Tandatangan atau lain Tanda yang dibuat oleh Orang yang memberi tahu
Pekerjaan

Tarikh Pendaftaran

Tandatangan dan Jawatan Pendaftar

* Potong mana yang tidak di-pakai

Fig. 3
The Death Register

INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF CAUSE OF DEATH

CAUSE OF DEATH	Approximate interval between onset and death
I	
<p><i>Disease or condition directly leading to death*</i> (a) due to (or as a consequence of)</p> <p><i>Antecedent causes</i> (b) due to (or as a consequence of)</p> <p>Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last (c)</p>	<p>.....</p> <p>.....</p> <p>.....</p>
II	
<p><i>Other significant conditions contributing to the death, but not related to the disease or condition causing it</i> {</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p>
<p>* This does not mean the mode of dying, e.g., heart failure, asthenia, etc. It means the disease, injury, or complication which caused death.</p>	

Fig. 4
International Form of Medical Certificate of Cause of Death

The use of this form is not without danger of causing further confusion in an existing system of death registration such as that used in Peninsular Malaysia. As seen earlier, limited space is provided in the death register for making a single entry, namely, "the cause of death". There are more than 1000 registrars of births and deaths in Peninsular Malaysia and except for registrars in hospitals, these are mainly made up by police officers and village headmen. They cannot be expected to select correctly for entry into the death register, the underlying cause of death from such a form particularly when it has no fixed position in the form because it depends on how many entries are made in Part I. Even less so can they be expected to be able to recognise and deal with improbable sequences, incorrect or vague entries. Another danger is that the registrar will try and "squeeze" into the limited space provided in the death register all the entries made by the doctor in the international form of the medical certificate. This generally results in illegibility but more important is that the order of copying

will follow the order as listed in the form: the immediate cause being put first and the contributory cause in Part II comes as the last entry, the underlying cause usually ending up being somewhere in between. When such an entry in the death register reaches the coder's hands in the Department of Statistics, the tendency is for the first mentioned condition to be coded for tabulation since no provision is made for indicating which is the underlying cause of death in the local death register. Thus care taken in certifying the cause of death by a doctor on such an elaborate certificate, will be vitiated.

- d) *Some other forms printed for private use*
These usually incorporate the locally prescribed form or the international form or may even be individually designed.
- e) *A "letter" from the physician*
This method is frequently used by private practitioners. It may take the form of a simple statement of the cause of death or a lengthy description of the

medical history of the deceased with or without an indication as to the underlying cause of death. (Fig. 5)

To Whom It May Concern

(name of deceased)

Re:.....

The above named is an old case of hypertension with right hemiplegia following stroke. He is also a case of ?recurrent renal stones and has been bedridden for the past 2 years. He is also a case of ?Ca bladder. He died at home last night at.....on.....

Please do the needful.

Thank you.

(signed by doctor)

Fig. 5
Sample of letter from the doctor

This latter method requires the registrar, who in this situation is usually a police officer to decide which, among the many medical terms mentioned in the letter, should be selected as the cause of death. This may be an insurmountable task for a layman particularly if it is written in undecipherable hand writing. Thus one can understand it if under these circumstances, he ignores the doctor's letter and proceeds to ascertain the cause of death himself from the informant, the doctor's efforts then amount to nought.

Conclusion

The present system of medical certification of cause of death is ineffective and unclear to most doctors as well as various personnel involved in the whole system of registration of deaths. A system

was provided in the Births and Deaths Registration Ordinance 1957, but the practice has since become obscured or deviated from the original system. If the quality of cause-of-death statistics is to improve, the system needs to be reviewed with a view to improving the accuracy of certification and registration of cause of death as well as improving the proportion of medically certified deaths.

Much can and should be done by the medical profession to improve certification practices. Attention is drawn to what Logan (1953) said: "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."

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References

- England and Wales (1974): The Registrar General's Statistical Review of England and Wales for the Year 1972, Part I, Tables, Medical. HMSO, London.
- Heasman, M.A., and Lipworth, L. (1966) Accuracy of certification of cause of death. Studies on Medical and Population Subjects, No. 20. HMSO, London.
- Logan, W.P.D. (1953) Death Certification. British Medical Journal, 1, 1272-1274.
- Malaya (1957): The Births and Deaths Registration Ordinance, No. 61 of 1957, Federation of Malaya.
- Malaysia (1974): Vital Statistics, West Malaysia 1972, Department of Statistics, Kuala Lumpur.
- Republic of Singapore: Report on the Registration of Births and Deaths and Marriages, 1973. Singapore National Printers (Pte) Ltd.
- WHO (1967): Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death. Eighth revision 1965, Vol. I. Geneva.