Research Paper

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Medical Certification of Cause of Death in a Tertiary Care Centre, A matter of concern?

Medical Science

KEYWORDS : death certificates, cause of death , death reporting , incomplete, inaccurate.

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ABSTRACT

Background: Death certificate (DC) is an important and universally accepted epidemiological tool for assessing mortality statistics. Inadequacy and inaccuracy in them results in loss of essential information for formulation of vital statistics and allocation of public health resources.

Objectives: To evaluate death certificates (DCs) and death report forms for completeness, accuracy and signing authority and to suggest suitable recommendation for improving the reporting.

Methodology: .All the deaths certificates, 229 with their respective death forms, obtained during Apr-June 2009 in the medical record section were analyzed for Accuracy, Completeness and Signing authority.

Results: Amongst all DCs, 133(58.08%) of the death certificates were completely filled of which 110(82.7%) had accurate cause of death written while 23(17.29%) had inaccurately filled cause of death. Reasons for incompleteness were, incomplete personal data(73.62%) , lacking manner of death(23.16%),cause of death not mentioned because opinion was reserved(2.10%), DC not signed(1.05%). 80(34.93%) death report forms were incomplete in some or the other information. In 51.97% DCs, signing authorities were residents and amongst them maximum signing authorities were Junior Residents-3. In some (17.29%) of the certificates, part 2 was kept vacant and the conditions were falsely included as antecedent cause. Study recommends that all DCs should be filled responsibly by trained a person without using abbreviations

Introduction:

Medical certification of cause of death (MCCD) scheme was launched as model registration scheme to survey cause of death by office of Registrar General, New Delhi during the social engineering phase of public health. It is an important tool for authentic and scientific information on cause of mortality.It was formulated by office of the Registrar General, India. It covers private and rural hospitals since 1998. It was introduced in Maharashtra, Pune, in 1951 and extended to Nagpur (1957), Mumbai (1962). Registration of births and deaths act,1969[1,2] was amended in 1976.Submission of MCCD to the local registrar is obligatory under the rule no.7 of "Maharashtra Registration Of Births And Deaths Rules, 2000".Globally registration of death is mandatory and same prescribed format given by WHO[3] is used for certifying deaths.

Uses of MCCD:-

1. Pattern of deaths by causes reflects health status of the community, provides rational basis for health planning of the communities.
2. Explaining trends and differentials in overall mortality.
3. Priorities for health actions.
4. Allocation of resources.
5. Designing intervention programs.
6. Assessment and monitoring of public health problems.
7. Providing information or clues for epidemiological research.

Death certification is believed to be very poor and inaccurate in most of the health institutions in India [4]. Unfortunately, errors in death certification are common [5,6,7] and range from incomplete certificates and illegible handwriting to inaccurate causes and manners of death [5,6,8]. Also seen is the use of medical abbreviations [6] rendering the certificate unintelligible to the general public. Morbidity and mortality statistical studies are mainly based on the analysis of these certificates [8] . Consequently, inaccuracies in the completion of death certificates may lead to biased estimation of several epidemiological parameters [9] . Effects of inaccurate or incomplete mortality data are -

1. Incomplete reporting of deaths
2. Inadequate resource allocations or intervention programs for the communities
3. Hampering of national and international comparability.

Responsibilities Of A Physician About MCCD Scheme:-

1. To write cause of death in details to the best of his knowledge.
2. Morbid conditions written in sequence, starting from immediate cause to underlying cause.
3. Name of disease written in full form.
4. Physician should follow guidelines by office of registrar general.
5. Detachable issued to relatives, retain confidentiality of cause of death.
6. Death certificates occurred in first week of neonatal period should be submitted to local registrar.

With this background, present study was undertaken to audit and evaluate death certificates reported through medical record section of a medical college.

Aims and objectives:

1. To evaluate death certificates and death report forms for completeness, accuracy and signing authority.
2. To suggest suitable recommendations for improving the certification of death.

Materials and Methods:-

Study period: April-June 2009

Study type:- Retrospective medical audit of death certificates along with death report forms available during study period in medical record section (MRS).

I. Death Certificates: All the deaths certificates with their respective death forms which were available during the study period were analyzed. Total 229 death certificates were analyzed for Completeness, Accuracy & Signing Authority.

Some definitions while assessing DCs used in the present study are:-

Complete Accurate: All the details including personal information completely filled with cause of death accurately written as prescribed by WHO.

Complete Inaccurate: All the details including personal information completely filled but cause of death inaccurately written and not as prescribed.

Incomplete Accurate: Personal details, incomplete but cause of death accurate.

Incomplete Inaccurate: Incomplete personal details with cause of death inaccurate.

Examples:- Few examples of Inaccurate cause of death written as it

was written on DCs examined during study period-

1. Immediate cause of death- Cardio respiratory arrest in a case of operation # Lt

knee ¯c HT.

2. Immediate cause of death- Hepatic encephalopathy

Antecedent cause- k /c /o sys. HT ¯c DM ¯c chr alcoholism ¯c cirrhosis of liver

3. Immediate cause of death – Not known

4 . Immediate cause of death- Cause of death could not be accessible, pt was under investigation for # proximal tibia ¯c acute renal failure

5.Immediate cause of death:- Marasmic Kwashiorkor ¯c TBM ¯c respiratory failure (on ventilator) ¯c DIC ¯c shock ¯c CRA

6.Immediate cause of death:- Terminal cardiorespiratory arrest due to hypovolemic shock due to severe bouts of haematemesis in c/o chronic alcoholism ¯c liver disease ¯c alcoholic liver disease ¯c gross ascites ¯c liver abscess ¯c aspiration pneumonia.

7. Immediate cause of deaths: Terminal cardio-respiratory arrest ¯c k/c/o spinal cord stenosis ¯c sepsis ¯c septicemic shock ¯c scrotal wall cellulitis ¯c debridement done on 8/6/09.

8. Immediate cause of death: Bilateral Pulmonary Consolidation.

II. Death report forms: Death report forms of all the respective DCs were analyzed for completeness.

III. Signing authority: A medical person attending the deceased in his/her last illness after death of the person shall fill the form.

Statistical Test: Percentages were calculated. Chi-square test was computed by means of a statistical software package EPI Info, version 6.0.

Results:

I. Death Certificates

During the study period total 229 deaths were analysed of which 93 were females and 146 were male.

Amongst all, maximum deaths, 87(38%) were reported from medicine and allied departments followed by 53(23.44%) from surgery and allied. 43 deaths were from pediatrics (18.77%), 41 (17.9%) were medico-legal from forensic medicine department whereas 2(0.88%) deaths were from obstetrics and gynecology departments.

Amongst all DCs, 133 (58.08%) of the death certificates were completely filled of which 110(82.71%) had accurate cause of death written while 23(17.29%) had inaccurately filled cause of death. In almost all the DCs, abbreviations were used to write cause of death.

Amongst all DCs, 96(41.92%) were incompletely filled of which 75 (78.13%) had accurately written and 21 (21.87%) had inaccurately written cause of death.

When complete and incomplete DCs were compared for accuracy, there was no significant difference.

In 23(17.29%) certificates, part 2 was kept vacant and the conditions were falsely included in antecedent cause.

Reasons for incompleteness in death certificates were, incomplete personal data(73.62%) , lacking manner of death(23.16%), cause of death not mentioned because opinion was reserved (2.10%), DC not signed(1.05%).

II. Signing Authority: When death certificates were examined for signing authority, 119 (52%) signing authorities were resident doctors and amongst them maximum signing authorities were junior residents-3.

III. Death-Report Forms : Amongst all 229 death report forms, 80 (34.93%) death report forms were incomplete in some or the other information. In most of the death reports forms information regarding personal habits or addictions was not mentioned (74.6%) followed by death whether maternal or not (34.93%) in case of females, followed by occupation (24.45%). In some death report forms very important personal details like sex (2.6%) and place of death (0.44%) were missing and 1 death report form was not signed.

Discussion:

In the present study, 48% of the DCs (form no.4) were completely and accurately filled, findings similar with the study done by P F Katsakiori et al [9] , whereas studies done by D N Slater (1993) [10],Bobbi S Pritt et al (2005) [11], Elsie Helena Burger et al(2007) [12] and Madhao P Raje (2011) [13] had shown less completely accurate DCs.

The incompleteness of DCs (41.92%) was less as compared to studies by Elsie Helena Burger et al (91.7%) [12], Bobbi S Pritt et al (52%) [11]but it was more than study done by Madho P Raje (21%) [13]. When complete & incomplete DCs were compared for accuracy, there was no significant difference which is also reported by Madho P Raje. 73.62% incomplete certificates were lacking personal data like complete address of the deaseased which can be easily avoidable.

In the present study, 52% signing authorities were resident doctors and amongst them most of the signing authorities were Junior Residents-3 but it was just 13.06% in the study done by Christian P Selinger [14].

In some (17.29%) of the certificates, part 2 was kept vacant and the conditions were falsely included in antecedent cause which hampers reporting as per ICD coding which is used to translate diagnosis of diseases from words into alphanumerical code [15] . This permits easy storage, retrieval and analysis of data[3].

In the present study almost all reviewed death certificates showed use of either locally used short forms and abbreviations (HT, DM, TBM, ¯c, #).

In this study one DC and death report form was unsigned but Sibai AM et al reported that in Beirut, almost 50% of certificates didn't contain signature of certifying doctor [16].

When the findings of present study were compared with those of other studies conducted in various tertiary care hospitals & medical colleges at various places, following differences were observed-

Particulars	Present Study (India) 2009	Other Studies					
		UK[14] 2004	Rotherham[11] 1991	Burlington[12] 2002-2003	Greece[10] 1999-2006	Cape Town[13] 2003-2004	India[14] 2006-2007
1.%Complete accurate	48.04	_	2	4	39.4	9.3	1
2.%Complete inaccurate	10.04	_	_	_	_	_	78
3.%Incomplete accurate	32.75	_	_	_	_	_	Nil
4.%Incomplete inaccurate	9.17	_	_	52	_	91.7	21
5.%Sign not done	0.04	48.6	_	_	_	_	15
6.%Signing Authority-Resident doctors	51.97	13.06	_	_	_	_	_

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The present study also demonstrates 34.93% inadequately filled death report forms lacking in some of the very important personal details like sex of the deceased which is an important parameter for reporting.

Conclusions and Recommendations :

Death certificates and death report forms are important and integral part of the reporting under health information system hence should be dealt with caution while writing these documents.

These documents should be signed by senior staff members and if signing authority are resident doctors, then all the resident doctors should be trained at the beginning of their course by organizing one day work shop on MCCD scheme and filling of DCs and death reports forms completely and accurately as well as responsibly as all the lacunae's are correctable and easily avoidable as also recommended by other studies [6,9,18] .

All DCs & death report forms should be screened and signed by senior staff members of the respective departments before sending them to medical record section.

Death certificate and form should be completely and accurately filled without the use of any abbreviations so that non-medical statistical person who is entering and processing this data further will do this with understanding and without any mistake.

Last line of part 1(c) and part 2 of the certificates are used for determining the morbid conditions behind the death and taken as a tool for ICD-10 classification, hence should be judiciously filled.

Table 1: Death Certificates Analyzed For Completeness And Accuracy :-

Dept.	Complete		Incomplete		Total No
	Accurate	Inaccurate	Accurate	Inaccurate	
Medicine+TB chest	53 (60.91)	6 (6.91)	22(25.28)	6(6.90)	87
Surgery+ Ortho	11(20.75)	11(20.75)	23(53.41)	8(15.09)	53
Pediatrics	25(58.14)	5(11.63)	10(23.26)	3(6.97)	43
FM	19(46.34)	1(2.43)	19(46.34)	2(4.87)	41
OBGY	2 (100)	-	-	-	2
Casualty	-	-	1(33.34)	2(66.67)	3
Total	110(48.04)	23(10.04)	75(32.75)	21 (9.17)	229

Figures in parentheses indicate percentages. X^2= 0.754, df=1, p >0.05

Table2: Reasons for Incompleteness of Death Certificates (form 4)

Reasons For Incompleteness (n=229) (Form 4)	No.
Personal data lacking	71 (31)
1)Complete address of the deceased	68
2) Name of the deceased	1
3) Age of the deceased	2
Manner of death lacking	22 (9.60)
Sign not done	1 (0.44)
Cause of death not mentioned	3(1.31)

Figures in parentheses indicate percentages.

Table 3: Death report forms for Incompleteness .

Questions unanswered in form 4A	No. (n=229)
Whether maternal death or not	80 (34.93)
Occupation	56 (24.45)
Chewing areca nut	46 (20.08)
Habitual tobacco chewer	45 (19.65)
Habitual smoker	43 (18.77)
Drink alcohol	41 (17.9)
Religion	11 (4.8)
Cause of death medically certified or not	10 (4.37)
Sex	6 (2.6)
Medical attention , received or not	5 (2.18)
Name of the disease and actual cause of death	3 (1.31)
Informant's name	2 (0.87)
Place of death	1 (0.44)
Sign not done	1 (0.44)

Figures in parentheses indicates percentages.

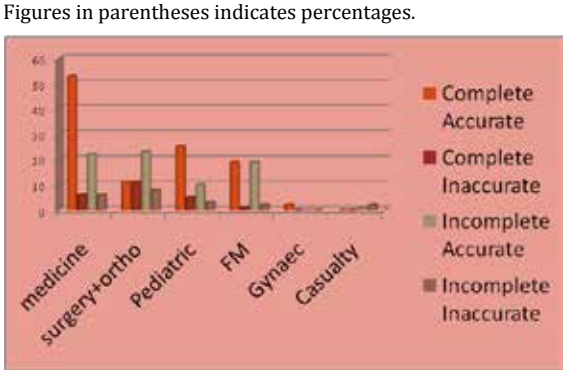

Fig : Department-wise Complete/Incomplete- Accurate and Inaccurate DCs.

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