The accuracy of death certificates

Summary

The death certificate is an important source of data on disease incidence, prevalence and mortality. It should therefore be as accurate and complete as possible. Death certificates from 433 autopsied hospital patients were reviewed and matched against the results of post-mortem examinations. Significant discrepancies between the two documents were observed in 50% of patients. In 25%, the immediate cause of death was incorrectly stated on the certificate, having been assigned to a different organ system in the majority of those cases. In 33%, there was disagreement on major disease other than the immediate cause of death. In 9%, the death certificate was signed before the autopsy was performed. The extent of disagreement was largely independent of whether the certificate was signed before or after the autopsy. We conclude that: (1) there is a significant discrepancy between autopsy diagnoses and entries on death certificates; (2) disagreement is not due to unavailability of autopsy data at the time of completion of the certificate; (3) death certificates should be completed or amended utilizing data gained at autopsy.
Percentages of deaths with different causes of death identified by autopsy and death certificate in Iceland. In 25%, the immediate cause of death was incorrectly stated on the certificate, having been assigned to a different organ system in the majority of those cases. In 33%, there was disagreement on major disease other than the immediate cause of death. In 9%, the death certificate was signed before the autopsy was performed. The extent of disagreement was largely independent of whether the certificate was signed before or after the autopsy. We conclude that: (1) there is a significant discrepancy between autopsy diagnoses and entries on death certificates; (2) disagreement is not due to unavailability of autopsy data at the time of completion of the certificate; (3) death certificates should be completed or amended utilizing data gained at autopsy.

Key words: Death certificate – Autopsy – Diagnostic discrepancy – Health statistics

Introduction

Health statistics, in particular national mortality statistics, and data on disease prevalence in society, are derived largely from death certificates. In completing death certificates, physicians shape the content of these important files, destined to play a key role in decision making processes regarding the distribution of resources in the fields of medicine and health. It is therefore of vital importance that death certificates be as accurate and complete as possible. Inaccurate, vague or incomplete certificates provide misleading data regarding diseases and

Materials and methods

We analysed, retrospectively, all autopsies performed during two entire years, 10 years apart, 1976 and 1986, at the Department of Pathology, University of Iceland. This institution is responsible for over 85% of all autopsies in Iceland. Excluding stillbirths, perinatal deaths and forensic cases, a total of 434 hospital autopsies were analysed. Copies of death certificates, written by the patients’ hospital physicians, were obtained from the Statistical Bureau of Iceland. We matched death certificates with provisional and final autopsy reports and compared the following parameters: (1) overall diagnostic discordance; this was further subdivided according to whether the disagreement was on the (1a) immediate cause of death or on (1b) other major diseases. In cases of discrepancy

Table 1. Discrepancies between entries on death certificates and post-mortem diagnoses

<table>
<thead>
<tr>
<th></th>
<th>1976</th>
<th>1986</th>
<th>Total</th>
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<tbody>
<tr>
<td>Total number of autopsies</td>
<td>190</td>
<td>243</td>
<td>433</td>
</tr>
<tr>
<td>Overall disagreement</td>
<td>97 (51%)</td>
<td>120 (49.4%)</td>
<td>217 (50.1%)</td>
</tr>
<tr>
<td>Disagreement on cause of death</td>
<td>47 (24.7%)</td>
<td>63 (25.9%)</td>
<td>110 (25.4%)</td>
</tr>
<tr>
<td>assigned to incorrect organ system</td>
<td>35 (18.4%)</td>
<td>46 (18.9%)</td>
<td>81 (18.7%)</td>
</tr>
<tr>
<td>assigned to correct organ system</td>
<td>12 (6.3%)</td>
<td>17 (7.0%)</td>
<td>29 (6.7%)</td>
</tr>
<tr>
<td>Disagreement on other major diseases</td>
<td>64 (33.7%)</td>
<td>81 (33.3%)</td>
<td>145 (33.5%)</td>
</tr>
</tbody>
</table>

Table 2. Discrepancies between entries on death certificates and post-mortem diagnoses, separated as to whether the death certificate was dated before (before autopsy) or on the same day as, or later than, the provisional autopsy report (after autopsy)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Total number of autopsies</td>
<td>22 (54.5%)</td>
<td>168 (50.6%)</td>
<td>16 (50%)</td>
<td>227 (49.3%)</td>
<td>38 (52.6%)</td>
<td>395 (47.8%)</td>
</tr>
<tr>
<td>Overall disagreement</td>
<td>12 (18.2%)</td>
<td>85 (50.6%)</td>
<td>8 (25%)</td>
<td>112 (49.3%)</td>
<td>20 (21%)</td>
<td>197 (25.8%)</td>
</tr>
<tr>
<td>Cause of death</td>
<td>4 (18.2%)</td>
<td>43 (25.6%)</td>
<td>4 (25%)</td>
<td>59 (26%)</td>
<td>8 (21%)</td>
<td>102 (25.8%)</td>
</tr>
<tr>
<td>Other major diseases</td>
<td>10 (45.5%)</td>
<td>54 (32.1%)</td>
<td>7 (43.8%)</td>
<td>74 (32.6%)</td>
<td>17 (44.7%)</td>
<td>128 (32.4%)</td>
</tr>
</tbody>
</table>
organ was apparent but not statistically significant (0.56 - 0.0.10). In 410 cases (94.6%) the death certificate indicated that an autopsy had been performed. In 3 cases (0.7%), "no" was written as an answer to the question if an autopsy had been done when in fact it had been performed and in 20 cases (4.6%), the question was left unanswered.

Discussion

The death certificate is a source of important data on the incidence, prevalence and mortality of disease. The allocation of financial resources within the health sector is governed by information largely derived from this single source. Thus, cardiovascular disease and cancer, the most common diseases causing death in modern society, appropriately receive the largest share of funds for medical research.

It is therefore highly desirable that the physician generating such a crucial set of data should have at his/her disposal all pertinent clinical and pathological information related to a person’s illness and death. Equally desirable, having received this information, the physician should use it when drafting the death certificate. Of all the data available to a physician writing the death certificate, the post-mortem diagnosis is the single most important source of information. Despite its limitations, the autopsy remains the standard against which the correctness of premortem diagnoses may best be assessed.

Several investigators, each utilizing approaches somewhat different from the other, have observed discrepancies between diagnoses entered into death certificates and diagnoses generated at autopsy. Kircher and associates (1985) compared death certificates and autopsy reports on 272 patients. In over half (55%), the cause of death as stated on the death certificate differed from that on the autopsy report. In over half of those (29%...


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