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Perceived value of trauma autopsy among trauma medical directors and coroners

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Summary

Introduction: Although autopsy is acknowledged as essential for improving quality of medical care of trauma patients and accuracy of injury surveillance systems, the autopsy rate has remained well below 100% for certain categories of trauma. We obtained recent documentation of the frequency of autopsy among trauma-related deaths in Ohio, and surveyed coroners and trauma program medical directors (TMDs) about the perceived benefits and challenges of performing autopsy.
Materials and methods: Copies of death certificates were obtained for the years 1996—2001. Death and autopsy rates were calculated and examined for trends over time. Surveys covering the topics of mechanisms of injury prompting autopsy, uses and users of autopsy data, and barriers to performing autopsy were sent to Ohio's coroners, coroners from nearby states, and Ohio TMDs. The χ^2-test for trend analysed autopsy rates over time, while responses among groups were compared using the χ^2-test.
Results: The autopsy rate for injury related deaths increased from 50% in 1996 to 66.5% in 2001 ($p = .0018$). During the study period the volume of autopsies rose by 18%, from 2990 to 3546. There was no review by the coroner in almost 10% of trauma deaths. TMDs

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more often indicated that autopsies advance medical knowledge than did Ohio and non-Ohio coroners (62.9% versus 33.4% and 47.6%, respectively, $p = .016$). TMDs more frequently reported themselves as users of autopsy information than did Ohio and non-Ohio coroners (91.4% versus 14.6% and 20%, respectively, $p < .0001$). All groups reported inadequate funds and personnel as the two most common barriers to performing autopsies, although TMDs were more likely to identify these as barriers than coroners ($p < .0001$). Almost 27% of Ohio coroners agreed with the statement, "I do not feel that trauma-related autopsies are necessary".

Conclusion: Significant barriers exist to improving autopsy rates among trauma patients who die. These include not only more well-recognised impediments such as inadequate funds and personnel, but less commonly reported issues concerning differing points of view on the role of trauma-related autopsy among coroners and TMDs. To improve trauma-related autopsy rates, each of these issues requires attention and cooperation among all parties.

Introduction

Autopsy has long been an essential tool for quality control of medical care and for enhancing the quality of cause-of-death information reported. In particular, many studies have demonstrated the role of autopsy in identifying missed injuries among trauma patients who have died.[1–4,9,10,15,16] An estimated 2.5–13% of these missed injuries are clinically significant and have implications for improving quality of care, accuracy of death certificate information and injury surveillance systems, and appropriate resolution of medico-legal scenarios.[5,6,15]

Other studies have documented a decrease in the rate of autopsies in the United States overall.[12,14] The literature suggests that the autopsy rate for trauma deaths averages 60%, with a range of 10–95% by state.[12,14] Generally, trauma deaths due to intentional injuries are almost uniformly autopsied (~97%), while those from unintentional injuries are less so (~58%).[14]

Given the demonstrated utility of the autopsy for trauma deaths, and suboptimal autopsy rates, further investigations should uncover the specific reasons for this discrepancy. Although some studies have suggested that resource limitations represent the fundamental problem,[4,5] we could find no studies which directly queried county coroners or trauma program directors about their priorities for or the barriers they face in performing autopsies.

The purpose of this study was to obtain recent documentation of the volume and rates of autopsy among trauma deaths in Ohio, and to survey county coroners and trauma program medical directors about the benefits and challenges of performing trauma-related autopsies, as well as proposed mechanisms for eliminating barriers to obtaining quality information on trauma deaths.

Materials and methods

The Ohio (USA) Bureau of Vital Statistics supplied a copy of all death certificates from the years 1996–2001. Records included cause of death, whether the coroner reviewed the case, and whether there was an autopsy. Rates of death were computed using the 2000 US Census Summary File 1 (SF1).[17] A death was injury-related if the death certificate included one of the following ICD-10 codes as an immediate or underlying cause of death: (1) unintentional injuries (V01–X59, Y85–Y86); (2) intentional self-harm (U03, X60–X84, Y87.0); or (3) assault (U01–U02, X85–Y09, Y87.1), following the U.S. National Center for Health Statistics instruction manual for tabulating causes of death (Table B).[11]

In Ohio, coroners are elected or appointed as determined by each county; terms are for 4 years. A coroner must be a physician who has been licensed to practice medicine for $\geq$2 years before assuming office. Surveys were sent via the United States Postal Service to the 86 coroners and 1 medical examiner in Ohio, to 177 coroners from neighbouring states (67 to Pennsylvania, 81 to Indiana, 9 to West Virginia, 10 to Kentucky, and 5 each to Michigan and New York), and to the 59 emergency services and trauma medical program directors in Ohio.

The following issues were surveyed: mechanisms of injury which should prompt an autopsy; common reasons trauma-related autopsies are performed; uses for autopsies and who is most likely to use autopsy information; barriers to performing autopsies; and current and proposed methods for transmitting autopsy information. Responses to questions were formatted according to a graded scale (from "strongly agree" to "strongly disagree" or "always" to "never"). There was also a blank section asking for any general comments.