On December 6, 1999, under Public Law 106-129, the Agency for Health Care Policy and Research (AHCPR) was reauthorized and renamed the Agency for Healthcare Research and Quality (AHRQ). The law authorizes AHRQ to continue its research on the cost, quality, and outcomes of health care, and expands its role to improve patient safety and address medical errors.

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Evidence Report/Technology Assessment
Number 58

The Autopsy as an Outcome and Performance Measure

Prepared for:
Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
2101 East Jefferson Street
Rockville, MD 20852
http://www.ahrq.gov

Contract No. 290-97-0013

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AHRQ Publication No. 03-E002
October 2002

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Suggested Citation:
Shojania K, Burton E, McDonald K, et al. The Autopsy as an Outcome and Performance Measure. Evidence Report/Technology Assessment No. 58 (Prepared by the University of California at San Francisco-Stanford Evidence-based Practice Center under Contract No. 290-97-0013). AHRQ Publication No. 03-E002. Rockville, MD: Agency for Healthcare Research and Quality. October 2002.

Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-Based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions and new health care technologies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

To bring the broadest range of experts into the development of evidence reports and health technology assessments, AHRQ encourages the EPCs to form partnerships and enter into collaborations with other medical and research organizations. The EPCs work with these partner organizations to ensure that the evidence reports and technology assessments they produce will become building blocks for health care quality improvement projects throughout the Nation. The reports undergo peer review prior to their release.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the health care system as a whole by providing important information to help improve health care quality.

We welcome written comments on this evidence report. They may be sent to: Acting Director, Center for Practice and Technology Assessment, Agency for Healthcare Research and Quality, 6010 Executive Blvd., Suite 300, Rockville, MD 20852.

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The authors of this report are responsible for its content. Statements in the report should not be construed as endorsement by the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services of a particular drug, device, test, treatment, or other clinical service.

Structured Abstract

Context. Despite an extensive literature documenting multiple benefits of the autopsy, only approximately 5% of deaths nationally undergo autopsy. Many of the autopsy's benefits—relating to medical education, characterization of new diseases, and advancing the understanding of disease pathogenesis—are difficult to quantify and thus less likely to change the attitudes, reimbursement mechanisms, and other factors that have produced this dramatic decline in autopsy performance. This report, therefore, focuses on more quantifiable benefits—to individual clinicians, institutions, and the healthcare system as a whole. Specifically, the report reviews the literature addressing the extent to which the autopsy reveals important errors in clinical diagnosis and the roles these data have in measuring and improving clinical performance.

Methods. We conducted an extensive search of the MEDLINE® database, supplemented by hand searches of article bibliographies and consultation with experts in the field. Included studies were required to have well-defined patient samples, clinical diagnoses derived from autopsy request forms or chart review (rather than death certificates), and identification of diagnostic errors using well-defined classification schemes.

Main Results. Multiple regression analysis incorporating study period, autopsy rate, country (U.S. vs. non-U.S.) and case mix as predictors showed that diagnostic errors that may have affected patient outcome ("Class I errors") are detected in 10.2% (95% CI: 6.7-15.3%) of autopsies performed in the base time (1980) and country (U.S.), and with the reference case mix (general autopsies) and mean autopsy rate. The prevalence of other "major errors" related to the principal diagnosis or underlying cause of death was 25.2% (95% CI: 20.8-31.2%). When changes in autopsy rates are taken into account, these error rates showed modest decreases with time. Specifically, Class I errors exhibited a relative decrease of 26.2% per decade ($p=0.10$), and major errors decreased at a rate of 28.0% per decade ($p=0.006$). Nonetheless, Class I errors still occur in 3.8-7.9% of cases and major errors in 8.0-22.8%, with these ranges reflecting the impact of variations in autopsy rates. Studies specifically addressing the issue of clinical selection indicate that clinicians cannot reliably predict which autopsies will be of high diagnostic yield. No intervention study has directly addressed the impact of autopsy findings on clinical practice or performance improvement. However, the existing evidence strongly suggests substantial inaccuracies in death certificates and hospital discharge data, both of which play important roles in epidemiologic research and healthcare policy decisions.

Conclusions. At the level of the individual clinician, the chance that autopsy will reveal important unsuspected diagnoses in a given case remains significant. Moreover, clinicians do not seem able to predict the cases in which such findings are likely to occur. There is no evidence to determine whether findings from autopsy improve subsequent clinical performance. The existing literature does demonstrate that clinical diagnoses, whether obtained from death certificates or hospital discharge data, contain major inaccuracies compared with autopsy diagnoses. The health care system as a whole can thus benefit enormously from autopsy data, by substantially enhancing the accuracy of vital statistics, which play important roles in research, funding, and other policy decisions. Future research opportunities include characterizing the factors leading to

errors in clinical diagnosis, establishing optimal means of using autopsy data in performance improvement strategies, and exploring different mechanisms for encouraging autopsies.

Contents

Summary 1

EVIDENCE REPORT

Chapter 1. Introduction 11
Background 11
Selection of Patients for Autopsy 12
Objectives 13

Chapter 2. Methods 15
Search Strategy 15
Study Selection 16
Inclusion Criteria 16
Exclusion Criteria 17
Data Collection and Analysis 18
Peer Review 18

Chapter 3. Results 19
The Autopsy as a Diagnostic Test 19
Quality of the Autopsy Procedure 19
Accuracy of the Autopsy 20
Precision of the Autopsy 21
Reproducibility of Judgments of Autopsy-detected Errors in Clinical Diagnosis 22
Autopsy Detection of Clinically Unsuspected Diagnoses 23
Quantitative Analysis of Diagnostic Error Rates 23
Mean Diagnostic Error Rates and Relationships to Time and Autopsy Rate 24
Publication Bias 26
Clinical Selection of Cases for Autopsy 27
Changes in Diagnostic Errors Over Time 31
Impact of the Autopsy in Detecting of Unsuspected Complications of Care 32
The Autopsy and Malpractice 32
The Autopsy as a Performance Measure for Clinical Diagnosis 33
Overall Performance of Clinical Diagnosis 34
Sensitivity of Clinical Diagnosis for Five Target Conditions 36
Impact of the Autopsy on Clinical Performance Improvement 43
Use of the Autopsy as an Institutional Performance Measure 44
Autopsy Detected Diagnostic Errors at the Health System Level 44
Accuracy of Vital Statistics 45
Use of the Autopsy as a Surveillance Tool 46

Chapter 4. Conclusions 51
Chapter 5. Future Research 53

References.....55

Appendixes

Appendix A. Additional Tables and Figures 73
Table 1. Studies Reporting Rates of Persistent Diagnostic Uncertainty After Autopsy 73
Table 2. Studies Reporting "Class I" or "Class I Equivalent" Error Rates 75
Table 3. Autopsy Studies Reporting Major Error Rates 79
Table 4. Studies Reporting Autopsy-detected Diagnostic Errors in Terms of Discrepant Major ICD Disease Categories.....83
Table 5. Studies Addressing the Issue of Clinical Selection Bias in Referral for Autopsy 84
Table 6. Unsuspected Complications of Care Detected at Autopsy 85
Table 7. Sensitivity of Clinical Diagnosis for Patients with Five Target Conditions....86

Figure 1. Autopsy Rates Over Time Based on Autopsy Studies of Diagnostic Errors .88
Figure 2. Trends in U.S. Autopsy Rates 89
Figure 3. Class I Error Rates with 95% Confidence Intervals.....91
Figure 4. Major Error Rates with 95% Confidence Intervals 97
Figure 5. Class I Error Rates Over Time 102
Figure 6. Major Error Rates Over Time.....103
Figure 7. Class I Error as a Function of Autopsy Rate for 4 Different Time Periods .104
Figure 8. Major Error Rates as a Function of Autopsy Rate for 4 Different Time Periods 105
Figure 9a. Assessment of Publication Bias: Funnel Plot of All Studies Reporting Class I Errors.....106
Figure 9b. Assessment of Publication Bias: Funnel Plot Restricted to Studies Reporting Class I Errors Among General Inpatients 107
Figure 10a. Assessment of Publication Bias: Funnel Plot for all Autopsy Studies Reporting "Major Errors" 108
Figure 10b. Assessment of Publication Bias: Funnel Plot Restricted to Studies of Major Errors Among General Inpatients 109

Appendix B. Statistical Analysis 111

Appendix C. Index of Study Topics 123

Appendix D. Article Abstraction Form for Autopsy Studies 129

Appendix E. Material Provided by Advisory Panel.....143

Appendix F. Bibliography 153

Appendix G. Acknowledgments.....209

Tables

Table 1. Sensitivity of Clinical Diagnosis Comparing Theoretic True Diagnosis With Autopsy Results as the Diagnostic Standard 46
Table 2. Inter-rater Agreement for Pathologists Assessing the Presence or Absence of Pneumonia at Autopsy.....47
Table 3. Mean Error Rates and Correlations with Time, Autopsy Rates 47
Table 4. Class I Error Rates Computed for Varying Autopsy Rates in 4 Different Years.....47
Table 5. Major Error Rates Computed for Varying Autopsy Rates in 4 Different Years.....48
Table 6. Autopsy Rate Stratified by Formally Assessed Levels of Diagnostic Certainty for Deaths in a Neonatal Intensive Care Unit 48
Table 7. Autopsy Rate and Diagnostic Disagreements Stratified by Clinical Confidence 48
Table 8. Number of Autopsies and Percent Diagnostic Errors Stratified by Clinical Confidence and Patient Age.....48
Table 9. Autopsy Rates and Diagnostic Confirmation Rates Stratified by Clinical Confidence 49
Table 10. Diagnostic Confirmation Rates Stratified by Clinical Confidence Before And After Intervention to Increase Autopsy Rate 49
Table 11. Clinicians Assessment of Necessity in Cases Sent for Autopsy and Stratified by Clinical Confidence 49
Table 12. Diagnostic Errors Detected by Autopsy in the Single Study Including Discharge Diagnosis for Patients who did not Die 50

Figures

Figure 1. Selection of Patients for Autopsy 14