Chapter 4. Conclusions

Overall, this review confirmed data from innumerable reports and the impression of many advocates of the autopsy, that the autopsy continues to detect important errors in clinical diagnosis. Errors that might have affected prognosis (i.e., "Class I" errors) have remained relatively stable over time, occurring in an average of 10.2% (95% CI: 6.7-15.3%) autopsies. Some selection does occur, so that cases for which clinicians had persistent diagnostic uncertainty are more likely to undergo autopsy. However, this selection does not explain away the persistently observed Class I error rates. The regression model derived from the data reviewed indicates that Class I error rates at US institutions in the year 2000 range from 3.8% to 7.9%, depending on the autopsy rate.

Despite the relative robustness of the above findings, the conclusions that follow from them differ depending on the level of analysis—individual clinicians, hospitals, or the healthcare system as a whole.

Benefit of the autopsy for individual clinicians

We take as a given that many (ideally all) clinicians will have an intrinsic interest in the autopsy given the possibility of learning of important misdiagnoses in roughly 25% of cases, with roughly one third of these potentially having affected patient outcome. Importantly, though, as with the physical examination, quantitatively justifying this interest is difficult. (Interestingly, the quantifiable benefit of the physical examination is similar to the autopsy, with roughly 10% of diagnoses directly suggested by findings from patient examination.[44-46]) While the autopsy has interest for individual clinicians (not to mention students and trainees) beyond what can easily be measured, the most quantifiable benefit for the autopsy at the individual practitioner's level is the potential impact on subsequent diagnostic performance.

Because physicians often fail to recognize diagnostic errors in the first place and thus miss the opportunity to change practice, the autopsy represents a potentially invaluable quality improvement tool, and demonstrating this value constitutes a crucial area of future research. Such research will face several important obstacles, though, including the need for substantially increasing autopsy rates in the first place, the relatively small number of cases (and even smaller number of errors) individual clinicians encounter, and substantial evidence that physicians tend not to change or improve their practice in response to interventions that consist only of the provision of new information.[282-289] On the other hand, by implementing strategies other than traditional conferences, pathologists and clinicians may achieve demonstrable effects on performance improvement, as observed with other more interactive ways of stimulating change, as educational outreach programs[290] and involvement of local opinion leaders.[291]

Benefit of the autopsy at the institutional level

The extensive literature search retrieved no reports of evaluations of interventions to improve clinical diagnostic performance based on autopsy-detected errors. Even assuming that such a benefit from autopsy findings is possible, increasing autopsy rates will not necessarily achieve this benefit without an established and effective mechanism for feeding back autopsy findings to clinicians and stimulating performance improvement.

Using institutional error rates for performance measurement is possible in principle, but meaningful comparisons are unlikely to occur even with modest increases in autopsy rates. For most hospitals, the error rates will have confidence intervals too wide to detect significant deviations from benchmark values in all but extreme cases.

Benefit of the autopsy at the level of the healthcare system

The existing literature provides two compelling reasons to pursue autopsies in order to benefit the healthcare system as a whole. First, results for the 5 conditions examined in this report suggest that clinical diagnosis in routine practice may not perform as well as is generally believed by clinicians or as suggested by the literature assessing specific aspects of clinical diagnosis (e.g., new tests) in research settings. Better characterizations of the performance of clinical diagnosis for common conditions would clearly benefit the entire health system and identify important targets for quality improvement that could be pursued in a concerted manner.

The second benefit to the entire health care system relates to vital statistics and other epidemiologic data. Vital statistics impact important decisions about allocation of funding for research and other aspects of healthcare policy. The existing literature demonstrates that clinical diagnoses, whether obtained from death certificates or hospital discharge data, contain major inaccuracies compared with diagnoses generated from postmortem findings. Because the accuracy of vital statistics is independent of consideration of impacts on prognosis, the error rate of interest is that found for major errors. Consequently, the existing evidence strongly suggests that substantial inaccuracies in 8-23% of diagnoses listed as causing or contributing to death. Given the importance of vital statistics and other epidemiologic data in conducting outcomes research, allocating research funding, and making other important policy decisions, using autopsy data to rectify this problem has the potential to have multiple benefits for the health care system as a whole.