Chapter 5. Future Research

1. Various aspects of the performance of the autopsy as a diagnostic test (e.g., the reproducibility of findings between pathologists) remain undefined and represent areas for further research. More specifically relevant to the present review is the inter-rater reliability for error classifications in specific cases – i.e., establishing the extent to which pathologists, clinicians or other peer reviewers agree that a particular case does or does not involve a clinically important diagnostic error.

2. The causes of important diagnostic discrepancies remain uncharacterized. This represents a very important area of investigation. Discrepancies between efficacy and effectiveness (i.e., differences between the performance of a diagnostic or therapeutic procedure in routine practice compared to the result in the research literature) have diverse causes. Broadly speaking, though, factors consist of quality problems, related to *underuse*, *overuse* and *misuse* of diagnostic or therapeutic procedures, and patient factors, including atypical presentations and complex interactions between comorbid conditions and patient demographic factors. Neither of these categories are captured in the "efficacy literature" (i.e., clinical trials), as the nature of research settings make underuse, overuse or misuse unlikely, and stringent patient selection reduces the complexities of comorbid conditions and multiple competing diagnostic considerations.

Autopsy data provide a window into discrepancies between efficacy and effectiveness both for therapeutics (by detecting clinically unsuspected complications of care) and diagnostics (by detecting the diagnostic discrepancies discussed in this report). In both cases, but perhaps especially the latter, the autopsy can play a pivotal role in spearheading investigations into the causes of these discrepancies. Where they prove to present quality problems, the institution benefits and, where they reflect differences between the types of patients receiving care in routine practice and clinical trials, the whole health system may benefit from awareness of these findings.

3. Future research is needed to establish strategies for optimizing the utility of the autopsy at the institutional level. No study has ever directly assessed the impact of detecting errors in clinical diagnosis on subsequent clinical performance. Thus, future research is needed to determine optimal methods of involving clinicians in the autopsy process (or communicating its results to them) and effective ways of stimulating change based on autopsy findings. Until such research is performed it is not clear to what extent autopsy rates need to be increased as opposed to achieving improvements in communication and utilization of information generated from autopsies performed at current rates.

4. Another opportunity for future research would be to establish the optimal means of using autopsy data to provide more accurate vital statistics and other important epidemiologic data. The first step might be to validate the findings suggested in this review, namely that current vital statistics contain substantial inaccuracies. Such an undertaking might involve funding a small number of demographically diverse institutions to achieve high autopsy rates, with prospectively determined protocols for autopsy performance and error classification. Such a program would *not* replace autopsies as routinely performed elsewhere (i.e., this suggested research program in

no way represents a system of regional autopsy centers). Rather these centers would act as surveillance centers for basic causes of death and detection of quality problems, as well as numerous opportunities for basic research into the pathogenesis of acute and chronic illnesses. Even one year's worth of data from such a project would likely document substantial inaccuracies in vital statistics. If continued it could provide ongoing epidemiologic data, as well as more meaningful error rates that could be used to fuel quality improvement efforts throughout the health system.