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## Second opinion in pathology: Still Not Automated. Evidence Pro and Evidence Against

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The objective of our study is to: 1. distinguish between error and opinion; contrast accuracy and precision in pathology in respect to second review process. 2. Critically appraise and grade (Oxford system) core recent examples of published evidence in support and against second reviews in pathology. 3. Contrast second opinion which is actively sought and “reflex” second reviews (i.e. “node negative breast cancer etc.). 3. Apply AGREE tool for critical appraisal of guidelines to determine the strength of the recommendations for second reviews in pathology. 4. Determine the efficient strategy to reduce diagnostic discrepancies resulted after second reviews in pathology. We have conducted two comprehensive searches PUBMED using the keywords: “2<sup>nd</sup> opinion, pathology”: 4214 references and “2<sup>nd</sup> opinion, pathology, outcomes: 727”. Of them, we further extracted 41 studies which contained numeric information on agreement, major and minor disagreement and whether pathology second opinion change outcomes and/or patient management. The following were observed: 1. we identified several trends in the extracted evidence: 2. lower discrepancy if one institution reviews itself; cases include full spectrum daily pathology; cases when pathologists actively seek 2nd opinion excluded (i.e. I am uncertain and asking for help, so I refer the case, having no firm diagnosis in the first place). 3. higher discrepancy if single institution reviews external cases; referred rather than population based (referral bias due to higher complexity); additional tests performed/ new information given to 2nd pathologist (not available to 1st pathologist); cases when 1st pathologist was uncertain (and thus referred) included with the others. Despite the relatively common disagreement between the pathologist, the information whether such disagreements affect patient outcomes is lacking. We present out data in an organized fashion as for the whole spectrum pathology, as by pathology subspecialty areas.

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