Electronic Clinical Decision Tools for Improving Adherence to Colon Cancer Surveillance Guidelines: Can the Chips Finally Fall Into Place?

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Colorectal cancer (CRC) remains the fourth most frequently diagnosed cancer and second leading cause of cancer death in the United States.\(^1\) Screening of average-risk individuals reduces mortality through early detection and removal of polyps.\(^2\) Surveillance differs from screening, and refers to the interval use of colonoscopy in patients with previously detected precancerous lesions. Surveillance accounts for 20% of the colonoscopy volume in the United States. Current, well-recognized guidelines on CRC screening, such as those from NCCN,\(^3\) the US Preventive Services Task Force (USPTF),\(^4\) and the US Multi-Society Task Force (MSTF) on CRC,\(^5\) provide a standard protocol with risk stratification to determine the optimal interval between colonoscopies.

Adherence to these recommendations forms the bedrock of patient evaluation and prudent healthcare economics. Importantly, each 1% increase in adenoma detection is associated with a 3% reduction in the subsequent detection of CRC.\(^6\) However, despite best clinical practices and given the expanding burden of an increasing number of colonoscopies, there is an often an “over” and “under” use of these services for interval surveillance.\(^7\) Although overuse (shorter-than-recommended intervals) promotes unnecessary cost, underuse (longer intervals) can result in unforeseen missed interval cancers.

Several factors contribute to the variations regarding acceptable timing and use among current recommendations for surveillance colonoscopies. A recent analysis from the Veterans Affairs Healthcare System reported noncompliance to guidelines in individuals with high-risk adenomas but not those with low-risk adenomas.\(^8\) In general, the screening uptake rate is 63% among the adult population, but lower for those of minority race or ethnicity and in uninsured groups.\(^1\) However, another study showed that shorter intervals of CRC surveillance were recommended to individuals with a family history of CRC, African Americans, and Asian/Pacific Islanders.\(^9\) Adherence to surveillance guidelines in the busy practice setting is difficult; results of one survey showed that 63.6% of gastrointestinal physicians were cognizant of the recommended surveillance interval, but a substantial proportion (28.8%) deferred from following the recommendations due to their own perception and practice preferences.\(^10\) Interestingly, one study showed that nongastroenterologists were more likely than gastroenterologists to recommend 3-year surveillance intervals to individuals with low-risk adenomas, and physicians undergoing training were 2.5 times more likely to adhere to practice guidelines.\(^9\)

Standardizing indications and appropriate guidelines are critical for best quality-of-care outcomes. Clinical decision tools (CDTs) that are integrated into the electronic health records (EHRs) are valuable technologies that empower providers to comply with the guidelines. Such tools take into account the quality of the index colonoscopy, including adequacy of bowel preparation, withdrawal time, cecal intubation documentation, size and number of lesions removed, and histology. An electronic record of these parameters enables providers to risk stratify and determine the interval for subsequent examinations based on current recommendations.

One CDT is the EHR-based Colonoscopy Pathology Reporting and Clinical Decision Support System (CoRS) described by Magrath et al elsewhere in this issue. They analyzed the usefulness of this integrated digital system to determine adherence to the MSTF screening guidelines, and observed a significantly higher adherence after its implementation (84.6% vs 77.4%; \(P<.001\)), with fewer instances of overuse and underuse of surveillance recommendations. They also found that recommendations were more likely to be
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guideline-adherent among patients with adenomas and less likely among those with only fair bowel preparations and/or a family history of CRC. A mentioned strength of CoRS was its user-friendly technology incorporating colonoscopy and pathology reporting into a uniform CDT. The study had some limitations, however, including its retrospective single-center design, the variation in bowel preparation quality, its small size, and the confounding factor of surveillance guidelines having been updated since implementation.

This study makes several important points. First, the benefit of surveillance must be balanced with the growing clinical burden, considering the impact on resources and the need to provide adequate patient care. Implementation of the tools described in the report should consider physician responsibilities and prioritize interval screening based on appropriate clinical information and pathology. Second, standardization of practice patterns using CDTs may reduce physician perception of issues impacting daily practice, such as fear of missed cancer, medicolegal concerns, or reimbursement. Third, these programs should evolve with "continuous improvement"; the so-called Kaizen approach. They should be extrapolated to consider differences in existing guidelines, adequacy of bowel preparation, family history, and quality of clinical and endoscopic data.

Questions remain as to whether these tools also take into account varying histologic types, such as serrated lesions, adequate polyp removal, proper examination of the right colon, and individual adenoma detection rates. These are challenging parameters that can vary based on operator, and the input generated for these clinical tools can make clinical judgment difficult. Finally, the natural history or biology of lesion progression after a polyp is removed and during surveillance is still unclear and may impact practice patterns. What the "ideal" intervals are is still a matter of debate, and this can weigh on differing perceptions. Larger studies currently underway will address these issues, eventually leading to precision-based surveillance. These studies will help standardize each category, allowing them to be evenly reproduced using a probability score predicting low to high risk.

Quality-of-care metrics are evolving to include clinical performance and adherence to evidence-based guidelines. The cost of healthcare is an important driver, and therefore optimizing efficiency will be essential while adapting to newer technology. Some goals of CDTs adoption proposed by the Office of the National Coordinator for Health Information Technology have been to establish technical standards, disseminate best practices, publish performance evaluations, and create a legal framework for application. Potential determinants to accelerate sustained adoption of electronic CDTs will rely on adequate workflow integration, user-friendly interfaces, improved physician communication between specialists and primary care clinicians, and enabling more effective scheduling and follow-up. Performance indices, such as age to stop screening, may be accountable actions at some point.

Embracing digital technology such as integrated EHRs can be unfavorable for providers by contributing to increased clerical burden and inefficiency in work–life integration. Thus, the development of robust electronic systems that both improve guideline adherence and save provider time will be paramount for widespread adoption. Although targeted telephone calls and mail-directed reminders are helpful, newer digital tools incorporating advanced analytic solutions (deep learning, artificial intelligence, and app-based reminder designs) can add to existing patient navigation clinical services. Further studies will confirm their usefulness at all levels of interaction, allowing providers to reach national goals for ideal CRC screening and surveillance.

In this exciting "chip" era, the words of Benjamin Franklin resonate: "Tell me and I forget, teach me and I may remember, involve me and I learn."

References


