

## **CT Colonography Reporting and Data System Version 2023: Updated, Robust, and Relevant**

CT colonography (CTC) is implemented as an alternative to colonoscopy in detecting colorectal neoplasia both in patients with symptoms (1) and as part of colorectal cancer screening (2). The CTC reporting and data system (C-RADS) (3) was introduced in 2005 to standardize reporting of colonic and extracolonic findings and the associated recommendations for subsequent patient management. In this issue of *Radiology*, Yee et al (4) review the evidence behind the recommendations underlying C-RADS and present an updated classification of mass-like diverticular strictures and unimportant extracolonic findings.

Radiology reporting and data systems are widely used in medical imaging and fulfil several functions. Whereas they may differ in emphasis, in general, reporting and data systems standardize how radiologists report and categorize medical imaging findings so we are all “speaking the same language.” This promotes effective communication between radiologists, and between radiologists and referrers. It also provides the opportunity to provide uniform recommendations for patients, such as discharge and/or no further investigation, additional imaging, or more invasive investigations including biopsy. Reporting and data systems also often allow for expression of the reporter’s confidence in their diagnosis and, by uniformly classifying imaging findings, create a powerful resource for audit and research.

C-RADS fulfilled these functions during the 18 years since its introduction. It facilitates extraction of detailed metrics from large CTC data sets, something that would be challenging were only free text reports available. We know, for example, the expected prevalence of polyps in a CTC screening service (2) and the incidence and significance of extra colonic findings reported as indeterminate but likely unimportant (5). A modified version of C-RADS is used in the United Kingdom to benchmark CTC services based on the expected polyp detection rate, similar to the adenoma detection rates reported by colonoscopists. Such data can be scrutinized at a service level or the level of individual radiologists as part of quality assurance. In the context of research, C-RADS recommendations include the option of CTC surveillance for 6–9-mm polyps, allowing for insights into their natural history and the importance of growth at follow-up examinations (6).

In creating the updated C-RADS version 2023, Yee et al (4) performed a detailed literature review. This was followed by a consensus process with expert members of the American College of Radiology C-RADS committee and international CTC experts to agree on the updated recommendations. Detailed guidance is given regarding practical issues such as reading technique, interpretation pitfalls, classification of polyp morphologic structure, polyp size measurement, and descriptors to be included in the CTC report. This guidance is supported by literature published since the 2005 guidelines (3). Although the updated C-RADS classifications and recommendations feature few changes from the original, the additional supportive evidence increases confidence in these recommendations. For example, when classifying colonic findings, it is still recommended not to report polyps that are 5 mm or smaller. These small polyps are classified into the C1 category, which means that the patient is to undergo routine screening intervals at 5–10 years. This recommendation is supported by evidence reporting the low incidence of advanced neoplasia or malignancy in polyps 5 mm or smaller (7), and the low prevalence of advanced neoplasia at this 5-year follow-up interval (8). It is still recommended that the presence of polyps 6–9 mm should be reported (category C2a). However, in selected patients, 3-year CTC follow-up instead of polypectomy is an option. This a recommendation supported by data regarding the natural history of such polyps (6).

The 2023 updated C-RADS features several changes. For colonic findings, the C2 category has been split into C2a (polyps 6-9 mm, fewer than three findings) and C2b. C2b categorizes soft-tissue mass or mass-like area, likely benign, such as moderate to severe diverticular myochosis coli, muscular hypertrophy, or stricture where malignancy cannot be entirely excluded. Feedback from radiologists indicated that a classification of this common finding was an unmet need in the C-RADS system, and C-RADS was therefore updated. The success of reporting and data systems is their ability to periodically evolve and remain fit for purpose once disseminated. The premise of the C2b category is that the reporter has a high confidence that lesion is benign. The C2b-category lesion has features that should be observed such as maintained haustral fold integrity, intact colonic mucosa at three-dimensional evaluation, presence of diverticulosis, and lack of any shouldering to the lesion. The recommendation for patient treatment is based on the reporter's confidence in benignity. High confidence allows routine follow-up, a reduction in certainty leads to shorter

interval CTC follow up depending on clinical factors, and any concern for malignancy moves the lesion into the C4 category with the need for endoscopic evaluation.

The second update is in the classification of extracolonic findings. Extracolonic findings at CTC are mostly of no clinical significance and additional follow-up or investigation detract from the clinical and cost-effectiveness of the procedure. As CTC has become established, the practice of radiologists has matured, and data suggests relatively low rates of follow-up for extracolonic findings (9). To simplify the reporting of extracolonic findings, the previous categories E1 (no findings) and E2 (unimportant findings) are now in a single E1/2 category with the explicit recommendation that these findings require no specific follow-up.

Overall, the updated C-RADS are useful and will improve utility in day-to-day clinical practice. It will be interesting how the C2b category will be used, and how comfortable radiologists will be in recommending follow-up for lesions for which their level of confidence of benignity is less than high. Whereas short interval follow-up (eg, months) may be reasonable, to wait up to 3 years may risk missing a cancer. In clinical practice, radiologists may have a low bar in classifying mass-like lesions, which are not clearly benign as either needing short-interval follow-up or as C4, requiring endoscopy. It will be important to perform an ongoing audit of the use of the C2b category and patient outcomes regarding clinically important colonic pathology. It is also important to acknowledge that C-RADS has primary utility when CTC is used as a screening tool. Worldwide, CTC is more often used for the investigation of patients with symptoms. The treatment of patients who may be older and frailer than the screening population frequently diverges from the follow-up recommendations in C-RADS and is reliant on clinical considerations.

The updated C-RADS classification of colonic and extracolonic findings will be useful in all patient populations. One area of CTC reporting not yet addressed by C-RADS is extracolonic screening, particularly bone density, sarcopenia, and cardiometabolic predictors such as aortic calcification and liver steatosis. It is possible that these findings have greater importance for patient longevity than do colonic observations, but further research is required into the clinical and cost-effectiveness of routine reporting, together with the role artificial intelligence will have in detection and quantification (10). It is likely that this will be addressed in the next iteration of C-RADS.

References

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### Author biography

Dr Stuart Taylor is a professor of medical imaging in the Center for Medical Imaging, University College London. His research interests focus on cross-sectional imaging of the bowel, particularly in inflammatory bowel disease and colorectal cancer. Dr Taylor is a fellow of the Academy of Medical Sciences, NIHR senior investigator, and immediate past president of BSGAR. He sits on the executive committee of ESGAR.

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