

**EFFECTIVE DATE:** 02|19|2013

**POLICY LAST UPDATED:** 04|07|2015

## OVERVIEW

Chromoendoscopy (also known as chromoscopy and chromocolonoscopy) refers to the application of dyes or stains during endoscopy to enhance tissue differentiation or characterization. When used with colonoscopy, the intent is to increase the sensitivity of the procedure by facilitating the identification of mucosal abnormalities.

## MEDICAL CRITERIA

Not applicable

## PRIOR AUTHORIZATION

Prior Authorization review is not required.

## POLICY STATEMENT

### BlueCHiP for Medicare and Commercial

Chromoendoscopy and virtual chromoendoscopy as an adjunct to diagnostic or surveillance colonoscopy is considered incidental to the colonoscopy and therefore is not separately reimbursed.

## COVERAGE

Benefits may vary between groups/contracts. Please refer to the appropriate Evidence of Coverage or Subscriber Agreement for applicable surgery benefit/coverage.

## BACKGROUND

Chromoendoscopy refers to the application of dyes or stains during endoscopy to enhance tissue differentiation or characterization. When used with colonoscopy, the intent is to increase the sensitivity of the procedure by facilitating the identification of mucosal abnormalities. There are two types of chromoendoscopy; one involves actual spraying of dyes or stains through the working channel of an endoscope. The other type, known as virtual chromoendoscopy, uses a computer algorithm to simulate different colors of light that result from dye or stain spraying.

Colonoscopy, a procedure during which colonic and rectal polyps can be identified and removed, is considered the criterion standard test for CRC screening and diagnosis of colorectal disease. However, colonoscopy is an imperfect test.

A recent systematic review pooled findings from tandem (i.e. back-to-back) colonoscopy studies and found that 22% of polyps were missed on the first colonoscopy. Most of the missed polyps, though, were small and, thus, lower risk of becoming cancerous. The pooled miss rate by polyp size was 2% for polyps 10 mm and larger, 13% for polyps 5-10 mm, and 26% for polyps 1-5 mm.

Several adjunct endoscopic techniques, including chromoendoscopy, could potentially enhance the sensitivity of colonoscopy. Chromoendoscopy, also known as chromoscopy and chromocolonoscopy, refers to the application of topical stains or dyes during endoscopy in order to enhance and facilitate the identification of mucosal abnormalities. Chromoendoscopy may be particularly useful for detecting flat or depressed lesions. Standard colonoscopy uses white light to view the colon. In chromoendoscopy, stains are applied resulting in

color highlighting of areas of surface morphology of epithelial tissue. The dyes or stains are applied via a spray catheter that is inserted down the working channel of the endoscope. Chromoendoscopy can be used in the whole colon (pan-colonic chromoendoscopy) on an untargeted basis or can be directed to a specific lesion or lesions (targeted chromoendoscopy). Chromoendoscopy differs from endoscopic tattooing in that the former uses transient stains, whereas tattooing involves the use of a long-lasting pigment for future localization of lesions.

Stains and dyes used in chromoendoscopy can be placed in the following categories:

- Absorptive: These stains are preferentially absorbed by certain types of epithelial cells.
- Contrast: These stains seep through mucosal crevices and highlight surface topography.
- Reactive: These stains undergo chemical reactions when in contact with specific cellular constituents, which results in a color change.

Reactive stains are primarily used to identify gastric abnormalities and are not used with colonoscopy. Indigo carmine, a contrast stain, is the most commonly used stain with colonoscopy to enhance the detection of colorectal neoplasms. Several absorptive stains are also used with colonoscopy. Methylene blue, which stains the normal absorptive epithelium of the small intestine and colon, has been used to detect colonic neoplasia and to aid in the detection of intraepithelial neoplasia in individuals with chronic ulcerative colitis. In addition, crystal violet (also known as gentian violet), stains cell nuclei and has been applied in the colon to enhance visualization of pit patterns (i.e., superficial mucosal detail).

Potential applications of chromoendoscopy as an alternative to standard colonoscopy include:

- Diagnosis of colorectal neoplasia in symptomatic patients at increased risk of colorectal cancer due to family history of colorectal cancer, personal history of adenomas, etc.
- Identification of mucosal abnormalities for targeted biopsy as an alternative to multiple random biopsies in patients with inflammatory bowel disease (IBD)
- Screening the general population for colorectal cancer

The equipment used in regular chromoendoscopy is widely available. Several authors of review articles and technology assessments have stated that, although the techniques are simple, the procedure, e.g., concentration of dye and amount of dye sprayed, is variable and classification of mucosal staining patterns for identifying specific conditions is not standardized.

Virtual chromoendoscopy (also called electronic chromoendoscopy) involves imaging enhancements with endoscopy systems that could potentially be an alternative to dye spraying. One system is the Fujinon® Intelligent Color Enhancement (FICE®) feature (Fujinon Inc.). This technology uses postprocessing computer algorithms to modify the light reflected from the mucosa from conventional white light to various other wavelengths.

The evidence has established that chromoendoscopy improves the polyp detection rate in patients at increased risk of colorectal cancer, but it is unclear whether the additional polyps detected are clinically important, and therefore whether the improved polyp detection rate will translate to improved health outcomes. Moreover, there is insufficient evidence on chromoendoscopy in an average-risk screening population. For patients with inflammatory bowel disease, chromoendoscopy increases the detection rate for dysplasia, but the impact on health outcomes has not been demonstrated. As a result of these limitations in the evidence for high-risk individuals, average-risk individuals, and patients with IBD, as well as a lack of consistent support from clinical reviewers, chromoendoscopy is considered incidental as an adjunct to colonoscopy for these populations. There is also insufficient evidence that virtual chromoendoscopy improves the detection of clinically significant adenomas or improves health outcomes compared with

standard colonoscopy or standard chromoendoscopy. Thus, virtual chromoendoscopy is considered incidental to the colonoscopy.

## **CODING**

### **BlueCHIP for Medicare and Commercial**

There is no specific CPT coding for chromoendoscopy.

If the chromoendoscopy is reported, use the unlisted CPT code 44799, unlisted procedure, intestine.

## **RELATED POLICIES**

None

## **PUBLISHED**

Provider Update, June 2015

Provider Update, Aug 2014

Provider Update, May 2013

## **REFERENCES:**

1. Van Rijn J. C, Reitsma JB, Stoker J, et al. Polyp miss rate determined by tandem colonoscopy: a systematic review. *Am J Gastroenterol.* 2006;101(2):343-350.
2. Brown SR, Baraza W. Chromoscopy versus conventional endoscopy for the detection of polyps in the colon and rectum. *Cochrane Database Syst Rev* 2010; (10):CD006439.
3. Pohl J, Schneider A, Vogell H et al. Pancolonic chromoendoscopy with indigo carmine versus standard colonoscopy for detection of neoplastic lesions: a randomized two-centre trial. *Gut* 2011; 60(4):485-90.
4. LeRhun M, Coron E, Parlier D, et al. High resolution colonoscopy with chromoscopy versus standard colonoscopy for the detection of colonic neoplasia: a randomized study. *Clin Gastroenterol Hepatol.*2006;4(3):349-354
5. Subramanian V, Mannath J, Raganath K et al. Meta-analysis: the diagnostic yield of chromoendoscopy for detecting dysplasia in patients with colonic inflammatory bowel disease. *Aliment Pharmacol Ther* 2011; 33(3):304-12.
6. Freire P, Figueiredo P, Cardoso R, et al. Surveillance in ulcerative colitis: is chromoendoscopy-guided endomicroscopy always better than conventional colonoscopy? A randomized trial. *Inflamm Bowel Dis.* Nov 2014; 20(11):2038-2045. PMID 25185683
7. American Society for Gastrointestinal Endoscopy (ASGE). ASGE guideline: endoscopy in the diagnosis and treatment of inflammatory bowel disease. [www.guideline.gov](http://www.guideline.gov). Accessed December 23, 2014.
8. Neumann H, Vieth M, Gunther C et al. Virtual chromoendoscopy for prediction of severity and disease extent in patients with inflammatory bowel disease: a randomized controlled study. *Inflamm Bowel Dis* 2013; 19(9):1935-42.
9. Freire P, Figueiredo P, Cardoso R, et al. Surveillance in ulcerative colitis: is chromoendoscopy-guided endomicroscopy always better than conventional colonoscopy? A randomized trial. *Inflamm Bowel Dis.* Nov 2014; 20(11):2038-2045. PMID 25185683
10. Omata F, Ohde S, Deshpande GA, et al. Image-enhanced, chromo, and cap-assisted colonoscopy for improving adenoma/neoplasia detection rate: a systematic review and meta-analysis. *Scand J Gastroenterol.* Feb 2014; 49(2):222-237. PMID 24328858

[CLICK THE ENVELOPE ICON BELOW TO SUBMIT COMMENTS](#)

This medical policy is made available to you for informational purposes only. It is not a guarantee of payment or a substitute for your medical judgment in the treatment of your patients. Benefits and eligibility are determined by the member's subscriber agreement or member certificate and/or the employer agreement, and those documents will supersede the provisions of this medical policy. For information on member-specific benefits, call the provider call center. If you provide services to a member which are determined to not be medically necessary (or in some cases medically necessary services which are non-covered benefits), you may not charge the member for the services unless you have informed the member and they have agreed in writing in advance to continue with the treatment at their own expense. Please refer to your participation agreement(s) for the applicable provisions. This policy is current at the time of publication; however, medical practices, technology, and knowledge are constantly changing. BCBSRI reserves the right to review and revise this policy for any reason and at any time, with or without notice. Blue Cross & Blue Shield of Rhode Island is an independent licensee of the Blue Cross and Blue Shield Association.

