

# Protocol

## PathFinderTG® Molecular Testing

(20452)

Medical Benefit	Effective Date: 10/01/14	Next Review Date: 07/15
Preauthorization	No	Review Dates: 09/09, 09/10, 07/11, 07/12, 07/13, 07/14

*The following Protocol contains medical necessity criteria that apply for this service. It is applicable to Medicare Advantage products unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. **Preauthorization is not required but is recommended if, despite this Protocol position, you feel the service is medically necessary.** Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.*

### Description

The patented PathFinderTG® test is a molecular test intended to be used adjunctively when a definitive pathologic diagnosis cannot be made, because of inadequate specimen or equivocal histologic or cytologic findings. RedPath Integrated Pathology (Pittsburgh, PA), the test provider, states that PathFinderTG® produces mutational profiles to help physicians resolve complex diagnostic dilemmas in patients who are at risk of cancer.

### Background

Topographic genotyping (TG), also called molecular anatomic pathology, integrates microscopic analysis (anatomic pathology) with molecular tissue analysis. Under microscopic examination of tissue and other specimens, areas of interest may be identified and microdissected to increase tumor cell yield for subsequent molecular analysis. TG may permit pathologic diagnosis when first-line analyses are inconclusive. (1)

RedPath Integrated Pathology has patented a proprietary platform, called PathFinderTG®, to provide mutational analyses of patient specimens. The patented technology permits analysis of tissue specimens of any size, "including minute needle biopsy specimens," and any age, "including those stored in paraffin for over 30 years." (2) RedPath currently offers five PathFinderTG® tests (listed and briefly described in Table 1). As stated on the company website, PathFinderTG® integrates molecular analyses with first-line results (when these are inconclusive) and pathologist interpretation to provide "clinically valid and useful diagnostic and prognostic information." (3) Although the website states that "PathFinderTG® is clinically validated as reported in over 200 peer-reviewed articles," test performance information is not provided.

Table 1. PathFinderTG® Tests (4)

Test	Description	Specimen Type(s)
PathFinderTG® Pancreas	Uses loss of heterozygosity markers, oncogene mutations, and DNA content abnormalities to stratify patients according to their risk of progression to cancer	Pancreatobiliary fluid/ERCP brush, pancreatic masses, or pancreatic tissue
PathFinderTG® Barrett	Measures the presence and extent of genomic instability and integrates those results with histology	Esophageal tissue
PathFinderTG® Biliary	Uses oncogene mutations and loss of heterozygosity markers to identify whether patients with biliary strictures have a malignant neoplasm or benign reactive disease	Biliary brush/supernatants

Test	Description	Specimen Type(s)
PathFinderTG® Metastases versus Primary Tumors (MvP)	Uses molecular markers and mutations to determine whether concurrent tumors are synchronous primaries or metastatic disease	Slides
PathFinderTG® Glioma	Intended to help differentiate between gliosis and glioma, grade of glioma, and type of malignancy	Not reported

ERCP: endoscopic retrograde cholangiopancreatography.

#### FDA Status

These patented diagnostic tests are available only through RedPath Integrated Pathology (Pittsburgh, PA). The PathFinderTG® Molecular Test is not subject to review by the U.S. Food and Drug Administration (FDA) because it is a laboratory-developed test (LDT) conducted only at RedPath Integrated Pathology's licensed laboratory. Laboratories performing LDTs must be licensed for high-complexity testing under the Clinical Laboratory Improvement Amendments of 1988 (CLIA). RedPath is licensed under CLIA.

#### Policy (Formerly Corporate Medical Guideline)

Molecular testing using the PathFinderTG® system is considered **investigational** for all indications including the evaluation of pancreatic cyst fluid, of suspected or known gliomas, and Barrett esophagus.

#### Medicare Advantage

PathFinderTG® may have potential for coverage by original fee-for-service Medicare for members with pancreatic cysts or masses when the service is provided in a clinical trial. This would be billed to original Medicare not Medicare Advantage. All other indications will be considered **investigational**.

---

Services that are the subject of a clinical trial do not meet our Technology Assessment Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this Protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

#### References

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

1. Trikalinos T, Terasawa T, Raman G. A systematic review of loss-of-heterozygosity based topographic genotyping with PathfinderTG®. AHRQ Technology Assessment Program 2010. Available online at: <http://www.cms.gov/determinationprocess/downloads/id68ta.pdf>. Last accessed April 2014.
2. RedPath Integrated Pathology. Overview. ©2013. Available online at: <http://redpathip.com/physicians/overview>. Last accessed April 2014.

3. RedPath Integrated Pathology. Services. ©2013. Available online at: <http://redpathip.com/services/pathfindertg-pancreas>. April 2014.
4. Lapkus O, Gologan O, Liu Y et al. Determination of sequential mutation accumulation in pancreas and bile duct brushing cytology. *Mod Pathol* 2006; 19(7):907-13.
5. Khalid A, Pal R, Sasatomi E et al. Use of microsatellite marker loss of heterozygosity in accurate diagnosis of pancreaticobiliary malignancy from brush cytology samples. *Gut* 2004; 53(12-Jan):1860-5.
6. Khalid A, McGrath K, Zahid M et al. The role of pancreatic cyst fluid molecular analysis in predicting cyst pathology. *Clin Gastroenterol Hepatol* 2005; 3(10):967-73.
7. Furukawa T, Sunamura M, Horii A. Molecular mechanisms of pancreatic carcinogenesis. *Cancer Sci* 2006; 97(1):1-7.
8. Koorstra JB, Hustinx SR, Offerhaus GJ et al. Pancreatic carcinogenesis. *Pancreatology* 2008; 8(2):110-25.
9. Khalid A, Nodit L, Zahid M et al. Endoscopic ultrasound fine needle aspirate DNA analysis to differentiate malignant and benign pancreatic masses. *Am J Gastroenterol* 2006; 101(11):2493-500.
10. Muller P, Ostwald C, Puschel K et al. Low frequency of p53 and ras mutations in bile of patients with hepatobiliary disease: a prospective study in more than 100 patients. *Eur J Clin Invest* 2001; 31(3):240-7.
11. Popovic HM, Korolija M, Jakic RJ et al. K-ras and Dpc4 mutations in chronic pancreatitis: case series. *Croat Med J* 2007; 48(2):218-24.
12. Uehara H, Nakaizumi A, Tatsuta M et al. Diagnosis of pancreatic cancer by detecting telomerase activity in pancreatic juice: comparison with k-ras mutations. *Am J Gastroenterol* 1999; 94(9):2513-18.
13. Singh M, Maitra A. Precursor lesions of pancreatic cancer: molecular pathology and clinical implications. *Pancreatology* 2007; 7(1):9-19.
14. Tanaka M, Chari S, Adsay V et al. International consensus guidelines for management of intraductal papillary mucinous neoplasms and mucinous cystic neoplasms of the pancreas. *Pancreatology* 2006; 6(2-Jan):17-32.
15. Khalid A, Brugge W. ACG practice guidelines for the diagnosis and management of neoplastic pancreatic cysts. *Am J Gastroenterol* 2007; 102(10):2339-49.
16. Oh HC, Kim MH, Hwang CY et al. Cystic lesions of the pancreas: challenging issues in clinical practice. *Am J Gastroenterol* 2008; 103(1):229-39.
17. Khalid A, Zahid M, Finkelstein SD et al. Pancreatic cyst fluid DNA analysis in evaluating pancreatic cysts: a report of the PANDA study. *Gastrointest Endosc* 2009; 69(6):1095-102.
18. Siddiqui AA, Kowalski TE, Kedika R et al. EUS-guided pancreatic fluid aspiration for DNA analysis of KRAS and GNAS mutations for the evaluation of pancreatic cystic neoplasia: a pilot study. *Gastrointest Endosc* 2013; 77(4):669-70.
19. Redpath Integrated Pathology. National Pancreatic Cyst Registry. Available online at: <http://www.npcnregistry.com/>. Last accessed April 2014.
20. Business Wire®. RedPath announces results of national pancreatic cyst registry at 2013 ACG annual meeting. October 22, 2013. Available online at: <http://www.businesswire.com/news/home/20131022006241/en/RedPath-Announces-Results-National-Pancreatic-Cyst-Registry>. Last accessed April 2014.
21. Deftereos G, Finkelstein SD, Jackson SA et al. The value of mutational profiling of the cytocentrifugation supernatant fluid from fine-needle aspiration of pancreatic solid mass lesions. *Mod Pathol* 2014; 27(4):594-601.

22. Finkelstein SD, Bibbo M, Kowalski TE et al. Mutational analysis of cytocentrifugation supernatant fluid from pancreatic solid mass lesions. *Diagn Cytopathol* 2013.
23. Aldape K, Burger PC, Perry A. Clinicopathologic aspects of 1p/19q loss and the diagnosis of oligodendroglioma. *Arch Pathol Lab Med* 2007; 131(2):242-51.
24. Coons SW, Johnson PC, Scheithauer BW et al. Improving diagnostic accuracy and interobserver concordance in the classification and grading of primary gliomas. *Cancer* 1997; 79(7):1381-93.
25. Mohan D, Finkelstein SD, Swalsky PA et al. Microdissection genotyping of gliomas: therapeutic and prognostic considerations. *Mod Pathol* 2004; 17(11):1346-58.
26. Finkelstein SD, Mohan D, Hamilton RL et al. Microdissection-based genotyping assists discrimination of reactive gliosis from glioma. *Am J Clin Pathol* 2004; 121(5):671-8.
27. Lassman AB, Holland EC. Incorporating molecular tools into clinical trials and treatment for gliomas? *Curr Opin Neurol* 2007; 20(6):708-11.
28. Thiessen B, Maguire JA, McNeil K et al. Loss of heterozygosity for loci on chromosome arms 1p and 10q in oligodendroglial tumors: relationship to outcome and chemosensitivity. *J Neuro-Oncol* 2003; 64(3):271-8.
29. Spechler SJ, Sharma P, Souza RF et al. American Gastroenterological Association medical position statement on the management of Barrett's esophagus. *Gastroenterology* 2011; 140(3):1084-91.
30. Yantiss RK. Diagnostic challenges in the pathologic evaluation of Barrett esophagus. *Arch Pathol Lab Med* 2010; 134(11):1589-600.
31. Khara HS, Jackson SA, Nair S et al. Assessment of Mutational Load in Biopsy Tissue Provides Additional Information About Genomic Instability to Histological Classifications of Barrett's Esophagus. *J Gastrointest Cancer* 2014.
32. Spechler SJ, Sharma P, Souza RF et al. American Gastroenterological Association technical review on the management of Barrett's esophagus. *Gastroenterology* 2011; 140(3):e18-52; quiz e13.
33. National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology: pancreatic adenocarcinoma, version 1.2014 (discussion update in progress). Available online at: [http://www.nccn.org/professionals/physician\\_gls/pdf/pancreatic.pdf](http://www.nccn.org/professionals/physician_gls/pdf/pancreatic.pdf). Last accessed April 2014.
34. National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology: central nervous system cancers, version 1.2014. Available online at: [http://www.nccn.org/professionals/physician\\_gls/pdf/cns.pdf](http://www.nccn.org/professionals/physician_gls/pdf/cns.pdf). Last accessed April 2014.
35. National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology: esophageal and esophagogastric junction cancers (excluding the proximal 5 cm of the stomach), version 2.2013. Available online at: [http://www.nccn.org/professionals/physician\\_gls/pdf/esophageal.pdf](http://www.nccn.org/professionals/physician_gls/pdf/esophageal.pdf). Last accessed April 2014.
36. National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology: hepatobiliary cancers, version 2.2014. Available online at: [http://www.nccn.org/professionals/physician\\_gls/pdf/hepatobiliary.pdf](http://www.nccn.org/professionals/physician_gls/pdf/hepatobiliary.pdf). Last accessed April 2014.
37. Novitas Solutions, Inc. (Primary Geographic Jurisdiction - Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania) Local Coverage Determination (LCD): Loss-of-Heterozygosity Based Topographic Genotyping with PathFinderTG® (L31144), Revision Effective Date for services performed on or after 08/01/2013.
38. U.S. Patent #7,014,999. Finkelstein et al. March 21, 2006. Topographic genotyping. Available online at: <http://patft.uspto.gov/netacgi/nph->

Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-adv.htm&r=16&f=G&l=50&d=PTXT&S1=(redpath+AND+specimen)&OS=redpath+AND+specimen&RS=(redpath+AND+specimen). Last accessed April 2014.