

## Evidence Based Guideline

# Photodynamic Therapy for Treatment of Specific Cancers

**File Name:** photodynamic\_therapy\_for\_treatment\_of\_specific\_cancers  
**Origination:** 5/1992  
**Last CAP Review:** 8/2011  
**Next CAP Review:** 8/2012  
**Last Review:** 8/2011

### Description of Procedure or Service

---

Photodynamic therapy (PDT), also called phototherapy, photoradiation therapy, photosensitizing therapy, or photochemotherapy, is an ablative treatment consisting of administration of a photosensitizing agent and subsequent exposure of tumor cells to a light source of a specific wavelength to induce cellular damage. After administration of the photosensitizing agent, the target tissue is exposed to light using a variety of laser techniques. For example, a laser fiber may be placed through the channel of the endoscope, or a specialized modified diffuser may be placed via fluoroscopic guidance. Tumor selectivity in treatment occurs through a combination of selective retention of photosensitizing agent and selective delivery of light.

Photodynamic therapy has been investigated for use in a wide variety of tumors, including esophageal cancer, cholangiocarcinoma, prostate, bladder, lung, breast, brain (where it is administered intraoperatively), skin, and head and neck cancers. Barrett's esophagus has also been treated with PDT.

#### **Barrett's Esophagus**

The esophagus is normally lined by squamous epithelium. Barrett's esophagus is a condition in which the normal squamous epithelium is replaced by specialized columnar-type epithelium known as intestinal metaplasia, in response to irritation and injury caused by gastroesophageal reflux disease (GERD). Barrett's esophagus occurs in the distal esophagus, may be of any length, focal or circumferential, and can be visualized by the endoscopist as being a different color than the background squamous mucosa. Confirmation of Barrett's esophagus requires biopsy of the columnar epithelium and microscopic identification of intestinal metaplasia.

Intestinal metaplasia is a precursor to esophageal adenocarcinoma, and patients with Barrett's esophagus are at a 40-fold increased risk for developing this disease compared to the general population. Esophageal adenocarcinoma is thought to result from a stepwise accumulation of genetic abnormalities in the specialized epithelium, which results in the phenotypic expression of histologic features of low-grade dysplasia to high-grade dysplasia to carcinoma. Most patients with nondysplastic Barrett's esophagus do not progress past nondysplasia. Nondysplastic Barrett's esophagus progresses to high-grade dysplasia at a rate of 0.9% per patient, per year. Progression of low-grade to high-grade dysplasia has been reported as 6–28%. Once high-grade dysplasia is present, the risk of developing adenocarcinoma is 2–10% per patient, per year, and approximately 40% of patients diagnosed with high-grade dysplasia by biopsy are found to have associated carcinoma in the resection specimen.

Several different photosensitizing agents have been used: porfimer sodium (Photofrin®), administered intravenously 48 hours before light exposure, and 5-aminolevulinic acid (5-ALA), administered orally 4 to 6 hours before the procedure. ALA is metabolized to protoporphyrin IX, which is preferentially taken up by the mucosa. Clearance of porfimer occurs in a variety of normal tissues over 40–72 hours, but tumors retain porfimer for a longer period. Treatment of Barrett's esophagus may be enhanced by the use

# Photodynamic Therapy for Treatment of Specific Cancers

of balloons containing a cylindrical diffusing fiber. The balloon is designed to compress the mucosal folds of the esophagus, thus increasing the likelihood that the entire Barrett's mucosa is exposed to light. All patients who receive porfimer become photosensitive and must avoid exposure of skin and eyes to direct sunlight or bright indoor light for 30 days.

The indications of the U.S. Food and Drug Administration (FDA) label for porfimer sodium are as follows:

- Palliation of patients with completely obstructing esophageal cancer, or of patients with partially obstructing esophageal cancer who, in the opinion of their physician, cannot be satisfactorily treated with Nd:YAG laser therapy
- Reduction of obstruction and palliation of symptoms in patients with completely or partially obstructing endobronchial non-small cell lung cancer (NSCLC)
- Treatment of microinvasive endobronchial NSCLC in patients for whom surgery and radiotherapy are not indicated
- Treatment of high-grade dysplasia in Barrett's esophagus

Oral 5-ALA has not yet received FDA approval for any indication. Topical 5-ALA as used for treatment of actinic keratoses is addressed in a separate policy.

This policy addresses only the non-dermatologic oncology applications of PDT and does not address its use in dermatologic applications such as actinic keratosis and superficial basal cell cancer or age-related macular degeneration. In addition, PDT should not be confused with extracorporeal photopheresis, which involves withdrawing blood from the patient, irradiating it with ultraviolet light, and then returning the blood to the patient. Extracorporeal photopheresis is addressed in a separate policy.

## **Related policies:**

Dermatologic Applications of Photodynamic Therapy  
Endoscopic Radiofrequency Ablation for Barrett's Esophagus  
Photodynamic Therapy, Ocular

**\*\*\*Note: This Evidence Based Guideline is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.**

## **Evidence Based Guideline for Photodynamic Therapy for Treatment of Specific Cancers**

---

One or more courses of photodynamic therapy for the treatment of cancer may be appropriate for the following indications:

- palliative treatment of obstructing esophageal cancer;
- palliative treatment of obstructing endobronchial lesions;
- treatment of early stage non small cell lung cancer in patients who are ineligible for surgery and radiation therapy.
- treatment of high-grade dysplasia in Barrett's esophagus

\*\*\*Note: Palliative radiation is preferable to Photodynamic Therapy if feasible for obstructing esophageal and endobronchial lesions.

## **Medical Evidence regarding Photodynamic Therapy for Treatment of Specific Cancers indicates it is not recommended in the following situations**

---

Photodynamic therapy for the treatment of cancer is not recommended when it does not meet the

# Photodynamic Therapy for Treatment of Specific Cancers

indications listed above.

Photodynamic therapy is not recommended for treatment of other types of malignancies including but not limited to prostate, bladder, lung, breast, brain, skin, head, neck cancers and Barrett's esophagus without associated high-grade dysplasia and other GI tumors.

## Benefits Application

---

This evidence based guideline relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this guideline.

## Billing/Coding/Physician Documentation Information

---

This guideline may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at [www.bcbsnc.com](http://www.bcbsnc.com). They are listed in the Category Search on the Medical Policy search page.

*Applicable codes: 96570, 96571, J9600*

## Scientific Background and Reference Sources

---

### **For policy entitled Photodynamic Therapy**

BCBSA Medical Policy Manual - 12/95

Medical Policy Reference Manual 11/1/98

Medical Policy Advisory Group Review - 3/99

Specialty Matched Consultant Advisory Panel 11/1999

Medical Policy Advisory Group 12/2/1999

### **Policies combined for new policy entitled: Photodynamic Therapy**

BCBSA Medical Policy Reference Manual, 8/18/2000; 8.01.06

BCBSA TEC Evaluation, 12/2000; Volume 15, No. 18

BCBSA Medical Policy Reference Manual, 12/15/2000; 9.03.08

Specialty Matched Consultant Advisory Panel 11/2001

BCBSA Medical Policy Reference Manual, 11/20/2001, 8.01.36 and 9.03.08

# Photodynamic Therapy for Treatment of Specific Cancers

## **Policies separated, name changed to: Photodynamic Therapy for Treatment of Specific Cancers**

BCBSA Medical Policy Reference Manual, 10/8/2002; 8.01.06

Specialty Matched Consultant Advisory Panel - 10/2003

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.06, 3/15/2005.

Specialty Matched Consultant Advisory Panel - 9-2005

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.06, 3/7/2006.

Specialty Matched Consultant Advisory Panel -8/2007

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.06, 11/13/2008.

Specialty Matched Consultant Advisory Panel -8/2009

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.06, 4/14/2011

Specialty Matched Consultant Advisory Panel -8/2011

## **Policy Implementation/Update Information**

---

### **For policy entitled: Photodynamic Therapy**

- 3/85 Evaluated: Experimental/Investigative
- 8/88 Reviewed: Investigational
- 5/92 Revised: Clarified that this policy does not address extracorporeal photopheresis
- 7/96 Reaffirmed: National Association reviewed 12/95. No changes.
- 3/99 Revised. Changed investigational status. Added FDA- approved labeled indications.
- 6/99 Reformatted, Medical Term Definitions added.
- 12/99 Reaffirmed, Medical Policy Advisory Group

### **Policies combined for new policy entitled: Photodynamic Therapy**

- 8/00 New combined policy issued. System coding changes.
- 3/01 Revised. New section IV added to include criteria for photodynamic therapy for treatment of age-related macular degeneration. Added statement under when extracorporeal photopheresis is not covered.
- 5/01 Revised. Added eligible criteria for palliative treatment of obstructing endobronchial lesions to Section III.
- 10/01 Coding format changes.
- 11/01 Specialty Matched Consultant Advisory Panel. No changes.
- 3/02 Policy statements revised in both covered and non-covered sections of the, "Photodynamic Therapy for Treatment of Age-related Macular Degeneration" and "Extracorporeal Photopheresis".

### **Policies separated, name changed to: Photodynamic Therapy for Treatment of Specific Cancers**

# Photodynamic Therapy for Treatment of Specific Cancers

- 11/03 Photodynamic Therapy policies separated. Name changed from Photodynamic Therapy to Photodynamic Therapy for Treatment of Specific Cancers. Removed sections on PUVA (Psoralens with Ultraviolet A) Therapy and Photodynamic Therapy for Treatment of Age-Related Macular Degeneration (AMD). Archived policy entitled Extracorporeal Photopheresis. Specialty Matched Consultant Advisory Panel review. Revised "when it is not covered" section to add, "Photodynamic Therapy is considered investigational for other types of malignancies and Barrett's esophagus with or without associated dysplasia". Code J9600 added to Billing/Coding section. Format changes.
- 10/8/05 Specialty Matched Consultant Advisory Panel review 9/19/2005. Added additional indication for the "treatment of high-grade dysplasia in Barrett's Esophagus" in the "When covered" section. Specific investigational indications added to the "When not covered" section. Key words added. Added "Debridement", "Dysplasia", "Endoscopic", and "Palliative" to "Medical Term Definitions". References added.
- 9/18/06 Medical Policy changed to Evidence Based Guideline.
- 9/24/07 Specialty Matched Consultant Advisory Panel review 8/23/2007. No changes to guideline. References added. (btw)
- 10/12/09 Specialty Matched Consultant Advisory Panel review 8/28/09. "Description" section revised. Added information to the "Evidence Based Guideline" section to indicate; "\*\*\*\*Note: Palliative radiation is preferable to Photodynamic Therapy if feasible for obstructing esophageal and endobronchial lesions." Removed "Debridement" and "Endoscopic" from "Definition" section. References added. (btw)
- 6/22/10 Policy Guideline Number(s) removed (amw)
- 1/10/12 "Description" revised. Specialty Matched Consultant Advisory Panel review August 2011. No change to guideline intent. References added. (btw)

---

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.