

PHARMACY / MEDICAL POLICY – 5.01.603

Epidermal Growth Factor Receptor (EGFR) Inhibitors

Effective Date: May 1, 2025
Last Revised: Apr. 21, 2025
Replaces: N/A

RELATED MEDICAL POLICIES:

5.01.517 Use of Vascular Endothelial Growth Factor Receptor (VEGF) Inhibitors and Other Angiogenesis Inhibitors in Oncology Patients
5.01.518 BCR-ABL Kinase Inhibitors
5.01.534 Multiple Receptor Tyrosine Kinase Inhibitors
5.01.544 Prostate Cancer Targeted Therapies
5.01.549 Off-Label Use of Drugs and Biologic Agents

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Introduction

Genes contain instructions for how a cell makes proteins. Proteins drive the functions within a cell. The EGFR gene produces a protein called epidermal growth factor, which instructs the cells to grow and divide. Changes to the EGFR gene, however, can result in too much EGFR protein. Too much EGFR protein causes cells to grow uncontrollably, leading to tumors. An EGFR inhibitor is a type of biological therapy that might stop cancer cells from growing. This policy discusses when EGFR inhibitors may be considered medically necessary.

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.

Policy Coverage Criteria

Small Molecule EGFR Inhibitors

Drug	Medical Necessity
Oral Drugs	
Generic erlotinib Managed under pharmacy benefit	<p>Generic erlotinib may be considered medically necessary for:</p> <ul style="list-style-type: none"> • Treatment of individuals with metastatic non-small cell lung cancer (NSCLC) whose tumors have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 (L858R) substitution mutations receiving first-line, maintenance, or second or greater line treatment after progression following at least one prior chemotherapy regimen. <ul style="list-style-type: none"> ○ Tarceva is not recommended for use in combination with platinum-based chemotherapy • First-line treatment of individuals with locally advanced, unresectable or metastatic pancreatic cancer, in combination with gemcitabine. <p>Note: Safety and efficacy of erlotinib were not established in individuals with NSCLC whose tumors have other EGFR mutations.</p>
Generic gefitinib Managed under pharmacy benefit	<p>Generic gefitinib may be considered medically necessary for:</p> <ul style="list-style-type: none"> • First-line treatment of individuals with metastatic non-small cell lung cancer (NSCLC) whose tumors have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 (L858R) substitution mutations <p>Note: Safety and efficacy of gefitinib were not established in individuals whose tumors have resistant EGFR mutations.</p>
Gilotrif (afatinib) Managed under pharmacy benefit	<p>Gilotrif (afatinib) may be considered medically necessary for:</p> <ul style="list-style-type: none"> • First-line treatment of individuals with metastatic non-small cell lung cancer (NSCLC) whose tumors have non-resistant epidermal growth factor receptor (EGFR) • Treatment of individuals with metastatic, squamous NSCLC progressing after platinum-based (eg, cisplatin, carboplatin, oxaliplatin) chemotherapy <p>Note: Safety and efficacy of Gilotrif were not established in individuals whose tumors have resistant EGFR mutations.</p>



Drug	Medical Necessity
Iressa (gefitinib) Managed under pharmacy benefit	Iressa (gefitinib) may be considered medically necessary for: <ul style="list-style-type: none"> First-line treatment of individuals with metastatic non-small cell lung cancer (NSCLC) whose tumors have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 (L858R) substitution mutations AND <ul style="list-style-type: none"> The individual has tried and failed generic gefitinib <p>Note: Safety and efficacy of Iressa were not established in individuals whose tumors have resistant EGFR mutations.</p>
Lazcluze (lazertinib) Managed under pharmacy benefit	Lazcluze (lazertinib) may be considered medically necessary for the treatment of non-small cell lung cancer (NSCLC) when all the following criteria are met: <ul style="list-style-type: none"> The individual is aged 18 years or older AND <ul style="list-style-type: none"> Has been diagnosed with locally advanced or metastatic NSCLC with epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 L858R substitution mutations AND <ul style="list-style-type: none"> Lazcluze (lazertinib) will be used as first-line treatment in combination with Rybrevant (amivantamab-vmjw) AND <ul style="list-style-type: none"> The dose is limited to 240 mg once daily
Tagrisso (osimertinib) Managed under pharmacy benefit	Tagrisso (osimertinib) may be considered medically necessary for: <ul style="list-style-type: none"> The individual is aged 18 years or older AND <ul style="list-style-type: none"> Meets one of the following: <ul style="list-style-type: none"> Diagnosed with metastatic non-small cell lung cancer (NSCLC) that have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 L858R mutations Requires adjuvant therapy after tumor resection in individuals with NSCLC whose tumors have EGFR exon 19 deletions or exon 21 L858R mutations Diagnosed with locally advanced, unresectable (stage III) NSCLC whose disease has not progressed during or

Drug	Medical Necessity
	<p>following concurrent or sequential platinum-based chemoradiation therapy and whose tumors have EGFR exon 19 deletions or exon 21 L858R mutations</p> <ul style="list-style-type: none"> ○ Diagnosed with metastatic EGFR T790M mutation-positive NSCLC, whose disease has progressed on or after EGFR tyrosine kinase inhibitor (TKI) therapy (e.g., gefitinib) ○ Requires initial treatment with locally advanced or metastatic NSCLC whose tumors have EGFR exon 19 deletions or exon 21 L858R mutations in combination with pemetrexed and platinum-based chemotherapy
<p>Tarceva (erlotinib)</p> <p>Managed under pharmacy benefit</p>	<p>Tarceva (erlotinib) may be considered medically necessary for:</p> <ul style="list-style-type: none"> • Treatment of individuals with metastatic non-small cell lung cancer (NSCLC) whose tumors have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 (L858R) substitution mutations receiving first-line, maintenance, or second or greater line treatment after progression following at least one prior chemotherapy regimen <ul style="list-style-type: none"> ○ Tarceva is not recommended for use in combination with platinum-based chemotherapy <p>OR</p> <ul style="list-style-type: none"> • First-line treatment of individuals with locally advanced, unresectable or metastatic pancreatic cancer, in combination with gemcitabine <p>AND</p> <ul style="list-style-type: none"> • Has tried and failed generic erlotinib <p>Note: Safety and efficacy of Tarceva were not established in individuals with NSCLC whose tumors have other EGFR mutations.</p>
<p>Vizimpro (dacomitinib)</p> <p>Managed under pharmacy benefit</p>	<p>Vizimpro (dacomitinib) may be considered medically necessary for:</p> <ul style="list-style-type: none"> • First-line treatment of individuals with metastatic non-small cell lung cancer (NSCLC) with epidermal growth factor receptor (EGFR) exon 19 deletion or exon 21 L858R substitution mutations.

Drug	Medical Necessity
	Note: Safety and efficacy of Vizimpro were not established in individuals whose tumors have resistant EGFR mutations.

Investigational
<p>The medications listed in this policy are subject to the product's US Food and Drug Administration (FDA) dosage and administration prescribing information.</p> <p>All other uses of generic erlotinib, generic gefitinib, Gilotrif (afatinib), Iressa (gefitinib), Tagrisso (osimertinib), Tarceva (erlotinib), and Vizimpro (dacomitinib) not listed above are considered investigational.</p>

Monoclonal Antibodies to EGFR Receptors

Drug	Medical Necessity
Injectable Drugs	
Erbix (cetuximab) Managed under medical benefit	<p>Erbix (cetuximab) may be considered medically necessary for the treatment of colorectal cancer (CRC) when all the following criteria are met:</p> <ul style="list-style-type: none"> The individual has not had prior Vectibix (panitumumab) therapy <p>AND</p> <ul style="list-style-type: none"> Erbix is used in one of the following: <ul style="list-style-type: none"> As a single agent in first or later line of therapy for documented KRAS and NRAS wild-type metastatic CRC <p>OR</p> <ul style="list-style-type: none"> In combination with the FOLFIRI or FOLFOX regimen in first or later line of therapy for documented KRAS and NRAS wild-type metastatic CRC <p>OR</p> <ul style="list-style-type: none"> In combination with irinotecan in individuals who are refractory to irinotecan-based chemotherapy for documented KRAS and NRAS wild-type metastatic CRC <p>OR</p>

Drug	Medical Necessity
	<ul style="list-style-type: none"> ○ In combination with Braftovi (encorafenib) for metastatic CRC with a BRAF V600E mutation when used after prior therapy <p>OR</p> <ul style="list-style-type: none"> ○ In combination with Braftovi (encorafenib) and mFOLFOX6 (fluorouracil, leucovorin, and oxaliplatin) for metastatic CRCmCRC with a BRAF V600E mutation <p>OR</p> <ul style="list-style-type: none"> ○ In combination with Krazati (adagrasib) for adults with KRAS G12C-mutated locally advanced or metastatic CRC who have received prior treatment with fluoropyrimidine-, oxaliplatin-, and irinotecan-based chemotherapy <p>Erbix (cetuximab) may be considered medically necessary for the treatment of locally or regionally advanced squamous cell carcinoma of the head and neck (SCCHN) and when used:</p> <ul style="list-style-type: none"> • In combination with radiation therapy <p>OR</p> <ul style="list-style-type: none"> • As a single agent in individuals with prior radiation therapy for SCCHN who have either a local regional recurrence or distant metastases or both <p>OR</p> <ul style="list-style-type: none"> • As a single agent or in combination with a platinum based regimen for recurrent, second primary or metastatic SCCHN <p>Erbix (cetuximab) may be considered medically necessary for the treatment of squamous cell carcinoma of the skin when:</p> <ul style="list-style-type: none"> • Erbix is used as a single agent for recurrent or distant metastases
<p>Vectibix (panitumumab)</p> <p>Managed under medical benefit</p>	<p>Vectibix (panitumumab) may be considered medically necessary for the treatment of metastatic colorectal cancer (mCRC) when all the following criteria are met:</p> <ul style="list-style-type: none"> • The individual has not had prior Erbix (cetuximab) therapy <p>AND</p> <ul style="list-style-type: none"> • Vectibix is used in one of the following:

Drug	Medical Necessity
	<ul style="list-style-type: none"> ○ As a single agent in first or later line of therapy for documented KRAS and NRAS wild-type mCRC <p>OR</p> <ul style="list-style-type: none"> ○ In combination with the FOLFIRI or FOLFOX regimen in first or later line of therapy for documented KRAS and NRAS wild-type mCRC <p>OR</p> <ul style="list-style-type: none"> ○ In combination with Lumakras (sotorasib) for adult individuals with KRAS G12C-mutated mCRC who have received prior treatment with fluoropyrimidine-, oxaliplatin-, and irinotecan-based chemotherapy

Investigational
<p>The medications listed in this policy are subject to the product's US Food and Drug Administration (FDA) dosage and administration prescribing information.</p> <p>Use of Erbitux (cetuximab) and Vectibix (panitumumab) to treat other types of solid tumors and hematological malignancies not listed above is considered investigational.</p>

Analysis	Medical Necessity
KRAS and NRAS mutation analysis	<p>KRAS and NRAS mutation analysis may be considered medically necessary for predicting treatment response.</p> <p>Note: See the Erbitux (cetuximab) and Vectibix (panitumumab) sections above.</p>
BRAF	<p>BRAF mutation analysis may be considered medically necessary to predict nonresponse in the treatment of metastatic colorectal cancer.</p>

Length of Approval	
Approval	Criteria
Initial authorization	<p>Non-formulary exception reviews for all drugs listed in the policy may be approved up to 12 months.</p>

Length of Approval	
Approval	Criteria
	<p>All other reviews for oral drugs listed in policy may be approved up to 3 months.</p> <p>All other reviews for injectable drugs listed in policy may be approved up to 6 months.</p>
Re-authorization criteria	Non-formulary exception reviews and all other reviews for all drugs listed in the policy may be approved up to 12 months as long as the drug-specific coverage criteria are met and chart notes demonstrate that the individual continues to show a positive clinical response to therapy.

Documentation Requirements
<p>The individual's medical records submitted for review for all conditions should document that medical necessity criteria are met. The record should include the following:</p> <ul style="list-style-type: none"> Office visit notes that contain the diagnosis, relevant history, physical evaluation and medication history

Coding

Code	Description
HCPCS	
J9055	Injection, cetuximab (Erbix), 10 mg
J9303	Injection, panitumumab (Vectibix), 10mg

Note: CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). HCPCS codes, descriptions and materials are copyrighted by Centers for Medicare Services (CMS).

Related Information



Benefit Application

Pharmacy Benefit

Generic erlotinib, Gilotrif (afatinib), Iressa (gefitinib), Tagrisso (osimertinib), Tarceva (erlotinib), and Vizimpro (dacomitinib) are managed through the pharmacy benefit.

Medical Benefit

Erbitux (cetuximab) and Vectibix (panitumumab) are managed through the medical benefit.

Evidence Review

Description

Cancer is characterized by the uncontrolled growth and spread of malignant cells. Nearly 1.4 million Americans will be diagnosed with cancer this year, and approximately 570,000 will die of the disease. The good news is survival rates for cancer are on the rise, increasing from 50% to 64% over the last 30 years.

Conventional cytotoxic cancer chemotherapy has been one of the major medical advances realized in the last few decades. Although directed toward certain biologic targets thought to be involved in cellular growth and proliferation, typically they have not discriminated well between rapidly dividing normal cells (eg, bone marrow, gastrointestinal tract) and tumor cells, frequently resulting in toxicities. In addition, tumor responses to traditional cytotoxic cancer chemotherapies can be unpredictable and brief.

"Targeted chemotherapies" (eg, monoclonal antibodies, small molecule tyrosine kinase inhibitors) are the newest therapeutic approach. These agents have been designed to interfere with Epidermal Growth Factor Receptor proteins, which are molecular targets that have a role in tumor growth and progression. These target proteins are typically preferentially expressed in tumor cells, thus these therapies have a higher specificity for these cells than for normal tissues. The promise of these agents is they will provide a broader therapeutic index with less toxicity. They may also be useful in combination with traditional cytotoxic chemotherapies,

immunotherapies or radiation to produce additive or synergistic activity without overlap in toxicity profiles.

The epidermal growth factor receptor (EGFR; ErbB-1; HER1 in humans) is the cell-surface receptor for members of the epidermal growth factor family (EGF-family) of extracellular protein ligands. The epidermal growth factor receptor is a member of the ErbB family of receptors, a subfamily of four closely related receptor tyrosine kinases: EGFR (ErbB-1), HER2/c-neu (ErbB-2), Her 3 (ErbB-3) and Her 4 (ErbB-4). EGFR plays a critical role in the modulation of growth factor signaling. The binding of a ligand such as epidermal growth factor to EGFR induces phosphorylation of several tyrosine residues near the C-terminal end of the EGFR protein and subsequent activation of several tyrosine kinase signal pathways such as the MAPK, Akt and JNK pathways. The induction of these signaling cascades enhances activities such as up regulation of RAS, RAF and mitogen-activated phosphorylation (MAP) which develop cellular growth and invasive capacity. EGFR activation also stimulates vascular endothelial growth factor (VEGF), which is the primary inducer of angiogenesis. As solid tumors cannot grow without the nutritional support provided by a blood supply, angiogenesis plays a key role in progression of these tumors. This feature makes the ErbB family of receptor proteins natural targets for development of novel antitumor compounds.

EGFR overexpression has been identified in a variety of solid tumors (eg, colorectal, lung, breast, kidney, liver). Furthermore, increasing VEGF levels have been correlated with poor prognosis in many of these same pathologies. As a result, EGFR, tyrosine kinase, and VEGF inhibitors have been developed and investigated for the treatment of these conditions. However, much remains to be learned regarding the rational integration of these therapies into cancer treatment regimens and methods to optimize the selection of individuals most likely to benefit.

KRAS/BRAF

The RAS-RAF-MAP kinase pathway is activated in the EGFR cascade. RAS proteins are G-proteins that cycle between active (RAS-GTP) and inactive (RAS-GDP) forms, in response to stimulation from a cell surface receptor such as EGFR, and act as a binary switch between the cell surface EGFR and downstream signaling pathways. The GTPase KRas (KRAS) gene can harbor oncogenic mutations that result in a constitutively activated protein, independent of EGFR ligand binding, rendering antibodies to the upstream EGFR ineffective. KRAS mutations are found in approximately 30–50% of colorectal cancer tumors and are common in other tumor types.

Serine/threonine-protein kinase B-Raf (BRAF) encodes a protein kinase and is involved in intracellular signaling and cell growth and is a principal downstream effector of KRAS. BRAF



mutations occur in less than 10–15% of colorectal cancers and appear to be a marker of poor prognosis.

Recent studies have discovered that EGFR inhibition is not effective in treating tumors that have a mutation in the K-RAS gene. It is thought that the mutant gene is in an activated state and therefore does not require signal initiation from the EGF Receptor, which is located earlier in the signaling pathway.

However, there are still individuals with KRAS wild-type tumors that do not respond to these agents, suggesting that other factors, such as alterations in other EGFR effectors could drive resistance to anti-EGFR therapy, and therefore, BRAF mutations are now increasingly being investigated in metastatic colorectal cancer. KRAS and BRAF mutations are considered to be mutually exclusive.

The EGFR inhibiting agents currently available are as follows:

Table 1. EGFR Inhibiting Agents

Drug Name	Pharmacology	How Given	FDA-Approved Uses
Small Molecules (acting inside the cell)			
Afatinib (Gilotrif)	Kinase inhibitor	Oral (Rx)	*NSCLC
Dacomitinib (Vizimpro)	Kinase inhibitor	Oral (Rx)	NSCLC
Erlotinib (Tarceva)	Kinase inhibitor	Oral (Rx)	NSCLC, pancreatic cancer
Gefitinib (Iressa)	Tyrosine kinase inhibitor	Oral (Rx)	NSCLC
Osimertinib (Tagrisso)	Kinase inhibitor	Oral (Rx)	NSCLC
Monoclonal Antibodies (acting at the cell membrane surface)			
Cetuximab (Erbix)	EGFR antagonist	IV (Clinic)	Metastatic *CRC, Head/Neck
Panitumumab (Vectibix)	EGFR antagonist	IV (Clinic)	Metastatic CRC

*NSCLC – Non-small cell lung cancer

*CRC – Colorectal cancer

Erlotinib (Tarceva) is approved for the treatment of individuals with metastatic NSCLC and metastatic pancreatic cancer. Although its mechanism of action is not fully characterized, it is

believed to selectively and reversibly inhibit the intracellular phosphorylation of EGFR tyrosine kinase. EGFR is expressed in NSCLC, as well as numerous other solid tumors.

Three additional growth factor inhibitors differ mechanistically in that they are monoclonal antibodies to the receptors:

- Erbitux (cetuximab) is a recombinant chimeric monoclonal antibody that binds and inhibits human epidermal growth factor receptor (EGFR, HER1, c-ErbB-1) on normal and tumor cells. This binding prevents the phosphorylation and activation of kinases, resulting in the inhibition of cell growth, induction of apoptosis, and decrease in VEGF production.
- Vectibix (panitumumab) is a recombinant fully human monoclonal antibody that binds and inhibits human epidermal growth factor receptor (EGFR). It is produced in genetically engineered Chinese Hamster ovary cells.

National Comprehensive Cancer Network Compendium

The National Comprehensive Cancer Network (NCCN) Drugs and Biologics Compendium is based directly on the NCCN Clinical Practice Guidelines in Oncology. The compendium lists specific panel recommendations for off-label uses of drugs, and each recommendation is supported by a level of evidence category.

The NCCN Categories of Evidence and Consensus used in the recommendations are:

- **Category 1:** The recommendation is based on high level evidence (eg, randomized controlled trials) and there is uniform NCCN consensus.
- **Category 2A:** The recommendation is based on lower level evidence and there is uniform NCCN consensus.
- **Category 2B:** The recommendation is based on lower level evidence and there is nonuniform NCCN consensus (but no major disagreement).
- **Category 3:** The recommendation is based on any level of evidence but reflects major disagreement.



Lung Cancer

Non-small cell lung cancer (NSCLC) is potentially curable if diagnosed early (Stage I or II). Unfortunately, approximately 75% of cases are not identified until the individual has locally advanced or metastatic disease (i.e., Stage III or IV). Overall, five-year survival is only about 15%.

Two chemotherapy agents (doublet) are recommended by NCCN for first-line therapy of individuals with advanced NSCLC and good performance status (i.e., ECOG performance status 0-2). Individuals with poor performance status (i.e., 3 or 4) generally do not benefit from chemotherapy. Specifically, platinum-based regimens are recommended. Newer agents in combination with platinum agents have generated a plateau in overall response rate (ORR) of $\geq 25\text{-}35\%$, time to progression (TTP) of four to six months, median survival of eight to 10 months, and one-year survival of 30-40%. None of these newer combinations has been shown to be clearly superior.

As understanding of the pathophysiology of NSCLC has improved, and because most individuals with advanced disease continue to progress following first-line chemotherapy and ultimately die within a year, newer therapies have been developed that have demonstrated value in prolonging survival in this setting. Single-agent docetaxel is considered the standard for comparison for second-line therapy of advanced or recurrent metastatic NSCLC. A large randomized head-to-head study showed pemetrexed 500 mg/m² provided similar response and survival rates with less severe adverse events and fewer hospitalizations compared to docetaxel 75 mg/m².

Iressa (gefitinib)

The safety of Iressa (gefitinib) is based on the data from 2462 individuals with NSCLC who received Iressa 250 mg daily monotherapy in three randomized clinical studies (Study 2, Study 3 and Study 4). Individuals with a history of interstitial lung disease, drug-induced interstitial disease, radiation pneumonitis that required steroid treatment or any evidence of clinically active interstitial lung disease were excluded from these studies.

Study 2 was a randomized, multicenter, open-label trial in which 1217 individuals were randomized to receive first-line treatment for metastatic NSCLC; 607 individuals received Iressa 250 mg daily and 589 individuals received carboplatin/paclitaxel. The median duration of treatment with Iressa was 5.9 months. The study population characteristics were: median age 57 years, age less than 65 years (73%), female (79%), Asian (100%), NSCLC adenocarcinoma histology (100%), never smoker (94%), light ex-smoker (6%), ECOG PS 0 or 1 (90%).



Study 3 was a randomized, multicenter, double-blind, placebo-controlled trial in which 1692 individuals were randomized to receive second- or third-line treatment for metastatic NSCLC; of which 1126 individuals received Iressa 250 mg daily and 562 individuals received placebo. The median duration of treatment with Iressa was 2.9 months. The study population characteristics were: median age 62 years, age less than 65 years (60%), female (33%), Caucasian (75%), Asian (21%), NSCLC adenocarcinoma histology (48%), never smoker (22%), ECOG PS 0 or 1 (65%), PS 2 (29%), PS 3 (5%) and two or more prior therapies (51%).

Study 4 was a randomized, multicenter, open-label trial in which 1466 individuals were randomized to receive second-line treatment for metastatic NSCLC; 729 individuals received Iressa 250 mg daily and 715 individuals received docetaxel. The median duration of treatment with Iressa was 2.4 months. The study population characteristics were: median age 61 years, age less than 65 years (61%), female (36%), Caucasian (79%), Asian (21%), NSCLC adenocarcinoma histology (54%), never smoker (20%), ECOG PS 0 or 1 (88%) and two or more prior therapies (16%).

The pooled safety database from the three randomized trials was used to evaluate for serious and uncommon adverse drug reactions. Common adverse reactions were evaluated in Study 3. The most frequent adverse reactions in Study 3 (incidence of >20% and greater than placebo) reported in Iressa-treated individuals were skin reactions (47%) and diarrhea (29%). The most frequent fatal adverse reactions in Iressa-treated individuals were respiratory failure (0.9%), pneumonia (0.8%), and pulmonary embolism (0.5%).

Approximately 5% of Iressa-treated individuals and 2.3% of placebo-treated individuals discontinued treatment due to an adverse event. The most frequent adverse reactions that led to discontinuation in individuals treated with Iressa were nausea (0.5%), vomiting (0.5%) and diarrhea (0.4%).

Tarceva (erlotinib)

Tarceva (erlotinib) has proven survival benefit as a second- or third-line therapy for the treatment of individuals with chemotherapy refractory (typically a platinum-based regimen) advanced or recurrent metastatic NSCLC compared to basic supportive care. It has a unique and milder side effect profile compared with traditional cytotoxics (e.g., docetaxel) recommended for use in this setting. It also offers the convenience and potential advantages of oral versus invasive administration as a second-line therapy.

A retrospective study of individuals treated with first-line chemotherapy with and without erlotinib found that the median overall survival for all individuals with mutations was

significantly better (>20 months, $P<.001$) than overall survival for individuals without mutations (10 months).

Erbix (cetuximab)

Use of Erbitux (cetuximab), a monoclonal antibody targeting the epidermal growth factor receptor (EGFR), has the potential to increase survival in individuals with advanced NSCLC. In a 1125 individual multinational, multicenter, open-label, phase 3 trial, chemotherapy-naïve individuals with advanced EGFR-expressing histologically or cytologically proven Stage IIIb or Stage IV NSCLC were randomly assigned in a 1:1 ratio to chemotherapy plus cetuximab ($n=557$) or just chemotherapy ($n=568$). Individuals given chemotherapy plus cetuximab survived longer than those in the chemotherapy-alone group.

Gilotrif (afatinib)

One single arm phase II study and two phase III open label studies compared Gilotrif (afatinib) with standard chemotherapies as a first line treatment for individuals with advanced or metastatic NSCLC. All individuals were newly diagnosed, treatment naïve, stage IIIb or IV with activating EGFR mutations. The results showed modest efficacy of afatinib compared with standard chemotherapy. There are no comparative efficacy data for afatinib vs. previous TKIs in common mutations (exon 19 deletion/L858R), or in preventing T790M resistance.

In the LUX-Lung 3 study, afatinib significantly prolonged PFS (11.1 months) vs. cisplatin/pemetrexed (6.9 month) (HR: 0.58 [95% CI: 0.43, 0.78]; $P<0.001$), but not overall survival. Median PFS was longer (13.6 months, HR: 0.47 [95% CI: 0.34, 0.65]; $P<0.0001$) with common EGFR mutations (Del19 and L858R). Afatinib significantly delayed the time to deterioration for cough (HR: 0.60 [95% CI 0.41 to 0.87]; $P= 0.007$) and dyspnea (HR: 0.68 [95% CI 0.50 to 0.93]; $P =0.015$), but not pain (HR: 0.83 [95% CI 0.62 to 1.10]; $P =0.19$). However, the study included no maintenance therapy in chemotherapy group, and there was potential investigator bias due to the awareness of new NCCN guidelines and high cross over rates.

The LUX-Lung 6 study compared efficacy and safety of afatinib to gemcitabine/cisplatin as first-line treatment in an Asian population with EGFR positive mutations. The design and results were similar to LUX-Lung 3. Afatinib prolonged PFS as compared to gemcitabine/cisplatin (11 months vs. 5.6 months, HR 0.28 [95% CI 0.20, 0.39]; $P=0.0001$). LUX-Lung 2 is a single arm, phase II study of afatinib as first and second line therapy in individuals from Taiwan and USA. Two doses of afatinib (50 mg and 40 mg) were tested in this study. The results were similar compared to LUX-

Lung 3 and LUX-Lung 6: ORR was 61%, median PFS was 10.1 month and overall survival was 24.8 months for all individuals.

The most common adverse events (AE) with afatinib were diarrhea (95.2%), rash (90%), dryness, and irritation of the skin, mucosa and nails. Although the discontinuation rate was lower in afatinib (8%) versus chemotherapy (12%), almost half of afatinib individuals required dose reduction to less than 40 mg per day and 14% discontinued therapy due to AE. Diarrhea and rash occurred in more than 90% of individuals. Serious AE included several cases of interstitial lung disease and 4 deaths potentially due to treatment related fatal toxicity. This suggests that afatinib may not be well tolerated, and more data are needed to ensure its safe use in a wider population. Afatinib improved PFS and quality of life as a first-line treatment for individuals with metastatic NSCLC whose tumors have activating EGFR mutations. It is not metabolized by CYP450 enzymes as are other EGFR TKIs.

Tagrisso (osimertinib)

The evidence base for the approval of osimertinib consists of 2 single-arm, open-label trials (Study 1, Study 2). The 2 studies were pooled for efficacy and adverse event outcomes because there were no substantial differences in the individual characteristics between studies. A total of 411 individuals with metastatic, EGFR T790M mutation-positive NSCLC who had received prior EGFR TKI therapy were recruited and treated with osimertinib 80 mg until progression or unacceptable toxicity. The primary end points were ORR by RECIST criteria as assessed by central independent review and adverse events. Secondary end points included dose-limiting toxicity, duration of response, and PFS.

In Study 1, no individuals achieved a complete response. Partial response was achieved in 115 individuals, for an ORR of 57% (95% CI, 50% to 64%). Study 2 had 2 complete responses and 126 partial responses, with an ORR of 59% (95% CI, 54% to 64%). Among responders, most individuals (96%) had ongoing responses, ranging from 1.1 to 5.6 months, with a median duration of follow-up of 4.2 months in study 1 and 4 months in study 2. Pooled overall ORR was 59% (95% CI, 54% to 64%).

Colorectal Cancer

Cetuximab has been studied as both a single agent and in combination with irinotecan in the treatment of metastatic colorectal cancer.²⁸



Pancreatic Cancer

In pancreatic cancer symptoms are typically minor until the disease has significantly progressed and following diagnosis the tumor is often resistant to standard anticancer therapies. These factors contribute to a high mortality rate, with only 20% of individuals surviving to one year. In individuals with advanced pancreatic cancer, one-year survival drops to approximately 10%. The current standard of therapy in unresectable, advanced, and metastatic disease is gemcitabine.

A randomized, double-blind, placebo-controlled clinical trial added erlotinib 100 mg/day to gemcitabine in individuals with inoperable advanced pancreatic cancer. The results showed modest survival benefit compared to those receiving gemcitabine alone. There was a significant difference in overall survival [$p=0.025$] that favored the erlotinib plus gemcitabine group with a hazard ratio of 0.81 [95% CI 0.67 - 0.97]. The corresponding one-year survival rates were 24% versus 17%. PFS was also significantly improved in the gemcitabine plus erlotinib treatment group with a hazard ratio of 0.76, $p=0.003$. The RR [CR/PR/SD] were 58% [CR/PR=9%] and 49% [CR/PR=8%] for the erlotinib and placebo groups, respectively. No unexpected adverse events or safety signals were reported.

Hepatocellular Carcinoma

Hepatocellular carcinoma is the third leading cause of cancer deaths worldwide. Surgical resection and liver transplantation are the only cures for hepatocellular carcinoma but benefit only 15% of individuals. Most cases are fatal within one year of diagnosis. Sorafenib is the only pharmacotherapy option available for advanced, inoperable hepatocellular carcinoma (HCC).

One Phase II study (N=137 individuals) looked at the safety and efficacy of four-week cycles of 400 mg twice daily sorafenib given to individuals with inoperable HCC, no prior systemic treatment and Child-Pugh A or B scores. After independent assessment, three individuals (2.2%) had a partial response, eight individuals (5.8%) had minor response, and 46 individuals (33.6%) had stable disease for at least 16 weeks. The median time to progression was 4.2 months and median overall survival was 9.2 months. Adverse events included fatigue, diarrhea, and hand-foot skin reaction.

One Phase III study (N=602) looked at the efficacy and safety of 400 mg sorafenib twice daily compared to placebo in individuals with advanced HCC, no prior systemic treatment, ECOG 0-2 and Child-Pugh A. Primary endpoints were median overall survival (OS) and time to symptomatic progression (TTSP). The hazard ratio for OS was 0.69 for sorafenib versus placebo

which represented 44% improvement in OS. This was the basis for early stopping criteria. The median overall survival advantage was 10.7 months for sorafenib versus 7.9 months for placebo. The hazard ratio for TTSP was 0.58 and median TTP was 5.5 months for sorafenib vs 2.8 months for placebo. Adverse events incidences were similar between the two groups; however, more serious adverse events of diarrhea and hand-foot skin reactions were seen in the sorafenib group.

2008 Update

K-RAS Mutations and Their Impact on the Clinical Effectiveness EGFR Inhibitors

Many retrospective observational studies have been performed to evaluate the contribution of mutations downstream of the epithelial growth factor receptor (EGFR) on the efficacy of the anti-EGFR tyrosine kinase inhibitor oncology therapies such as cetuximab, panitumumab, and gefitinib. Studies differ in design, individual demographics, and therapeutic regimens. The majority of studies evaluating the association of K-RAS mutation with treatment resistance conclude that wild type status is associated with a more favorable response to treatment. Higher efficacy is often seen among tumors with wild-type K-RAS, including a higher percent and degree of response, overall survival, and time-to-progression. However, no single outcome is consistently statistically significant among all studies. Currently available evidence suggests that K-RAS mutation is associated with poor response to TKI therapy, with the most evidence being for cetuximab. At this time, K-RAS mutation status neither predicts resistance to therapy, nor does the presence of wild-type allele predict good efficacy.

A statistically significant difference in overall response was seen in 10 of 13 studies in which response was an outcome. Response rates among K-RAS mutants ranged from 0% to 33%. Only 5 of 13 studies that measured response reported any response to TKI treatment, ranging from 9.5% to 33%. No studies assessing response to panitumumab reported any response to therapy in the K-RAS mutant group. In general, the presence of K-RAS mutation is associated with decreased response to TKI treatment. However, studies presenting response rates of approximately 10-30% suggest that the existence of K-RAS mutation is not the sole determinant of treatment response. In addition, the percent of K-RAS wild-type subjects with partial or complete response is still relatively low, ranging from 26-68%. This suggests that while K-RAS likely contributes the TKI resistance, other factors are involved.

Seven of 15 studies assessed overall survival as an outcome. Three of these found no statistically significant difference, and one found a difference in overall survival only among individuals

taking combination therapy of cetuximab with irinotecan, while no difference in overall survival was seen in the same individuals taking cetuximab monotherapy. The remaining three found statistically significant differences in overall survival between K-RAS mutants and K-RAS wild-type. All three assessed response to cetuximab. Comparison of the overall survival of mutants versus wild-type found an overall median response rate of 6.9 months and 16.3 months, respectively ($p < 0.001$), 27.3 weeks versus 44.7 weeks, respectively ($p = 0.003$), and 10.1 months versus 14.3 months, respectively ($p = 0.026$). Overall, half of the studies that measured overall survival as an outcome reported a difference between K-RAS mutants and K-RAS wild type. The largest study performed with overall survival as an outcome, consisting of 427 individuals, found that there was no difference in overall survival between K-RAS mutants and K-RAS wild type after treatment with panitumumab.

Eleven of 15 studies assessed progression-free-survival (PFS) or time-to-progression (TTP). Three of these directly compared TTP or PFS between K-RAS mutants and K-RAS wild type after treatment with cetuximab found no statistically significant difference. However, six studies directly comparing them confirmed that there was a difference. After treatment with cetuximab, TTP for K-RAS mutants and K-RAS wild type were 10.1 weeks [95% CI, 8 to 16 weeks] and 31.4 weeks [95% CI, 19.4 to 36 weeks], respectively. PFS was 6.9 months versus 16.3 months for mutants and wild-type, respectively ($p = 0.016$). One study found a statistically significant difference in progression-free survival only with cetuximab combined with irinotecan (12 weeks versus 34 weeks, $p = 0.016$), but not for cetuximab monotherapy. When randomized to best supportive care or best supportive care and panitumumab, subjects with K-RAS mutations showed no difference in PFS between the two treatment arms. In K-RAS wild-type individuals, a statistically significant difference in PFS was seen (HR 0.45, 95%CI -0.34-0.59). One study with individuals taking either cetuximab or panitumumab reported difference in PFS of 8.6 weeks in K-RAS mutants versus 32 weeks in K-RAS wild type ($p < 0.001$). Two abstracts presented at the American Society of Clinical Oncology (ASCO) 2008 Annual Meeting evaluated the benefit of cetuximab as adjunct therapy to the standard regimen for metastatic colorectal cancer, FOLFIRI. Both studies found that the addition of cetuximab to standard therapy only resulted in increased median PFS in K-RAS wild-type individuals. K-RAS mutants showed no improvement in PFS. Overall, the evidence shows that K-RAS mutation is associated with shorter TTP and PFS after treatment with TKI than K-RAS wild type. However, K-RAS mutation has been independently associated with disease progression and this may contribute to differences in disease progression regardless of therapy.

Karapetis et al. published a study that used tissue samples from the CO.17 trial of cetuximab versus supportive care in treating refractory advanced stage metastatic colorectal cancer individuals. Five hundred seventy-two individuals were enrolled in the original clinical trial, of which tissue samples were examined for 394 individuals (69%). The remainder was unavailable

for logistic reasons, or due to lack of consent. The authors observed a five-month improvement in median overall survival (9.5 months in the cetuximab group versus 4.8 months with supportive care) for individuals with wild type K-RAS. There was no difference in survival between cetuximab and supportive care groups for individuals with K-RAS mutations.

2009 Update

The National Comprehensive Cancer Network Drug Compendium

The Company recognizes indications and uses of drugs listed in the NCCN Drugs and Biologics Compendium with Categories of Evidence and consensus of 1 and 2A as proven and Categories of Evidence and Consensus of 2B and 3 as unproven. However, Category 2B uses may be considered for coverage if they are substantiated by provider submission of significant peer-reviewed phase 2 or phase 3 studies demonstrating treatment effectiveness.

Schneider et al. studied the effect of various polymorphisms involving the EGFR signaling pathway in 311 individuals receiving erlotinib in NSCLC. None of 17 individuals with a KRAS mutation had a tumor response, but the impact of KRAS mutation status on survival outcomes was of borderline statistical significance. Similarly, Miller et al. studied a series of 101 individuals with bronchioalveolar carcinoma, of which no individual (zero of 18; 95% CI, 0% to 19%) whose tumor harbored a KRAS mutation responded to erlotinib.

2010 Update

This policy is updated in agreement with March 2010 NCCN Drugs and Biologics Compendium recommendations of 1 and 2A.

2011 Update – KRAS/BRAF

Technology Assessments, Guidelines and Position Statements

The National Comprehensive Cancer Network (NCCN) guidelines (1.2011) on the treatment of colon cancer recommend that tumor KRAS gene status testing be performed for all individuals with metastatic colon cancer. This testing would be done on archived specimens of primary tumor or a metastasis, at the time of diagnosis of metastatic disease. The guidelines indicate



that cetuximab and panitumumab are only indicated for individuals with tumors that express the wild-type KRAS gene (category 2A recommendation). The guidelines state that there is the option of BRAF genotyping of tumor tissue at the diagnosis of KRAS wild-type stage IV disease, but that data regarding BRAF as a predictor of response (or lack of) to anti-EGFR therapy remain inconclusive.

Summary

Clinical trial data show that individuals with KRAS-mutated metastatic colorectal cancer do not benefit from cetuximab or panitumumab, either as monotherapy or in combination with other treatment regimens. These data support the use of KRAS mutation analysis of tumor DNA before considering use of cetuximab or panitumumab in a treatment regimen. Identifying individuals whose tumors express mutated KRAS will avoid exposing individuals to ineffective drugs and unnecessary drug toxicities and expedite the use of alternative therapies. Thus, KRAS mutation analysis may be considered medically necessary to predict nonresponse to anti-EGFR monoclonal antibodies cetuximab and panitumumab in the treatment of metastatic colorectal cancer.

The data for individuals with metastatic colorectal cancer and a BRAF mutation have shown consistently that a BRAF mutation is a poor prognostic marker, as it is associated with shorter PFS and OS regardless of treatment. The data for a BRAF mutation predicting response to anti-EGFR therapy are limited by small numbers of individuals and conflicting results among studies. However, recent data (currently unpublished) from the CRYSTAL trial suggest that individuals with KRAS wild-type/BRAF mutant tumors may respond to anti-EGFR therapy. Therefore, it may be considered an option in the diagnosis of KRAS wild-type Stage IV disease. Non-concurrent subgroup analyses of BRAF mutations in individuals previously randomized in the large trials in which KRAS mutations predicted non responsiveness to anti-EGFR therapy will be helpful to confirm the current data available for BRAF mutations.

2013 Update

This policy is updated in agreement with November 2013 NCCN Drugs and Biologics Compendium recommendations of 1 and 2A. Criteria for afatinib, a new oral EGFR inhibitor, were added. A literature search from January 1, 2013, did not identify further required changes.



2014 Update

This policy is updated with a literature search from 7/1/13 to 10/31/14. No further required changes.

2015 Update

This policy is updated with a literature search from 7/1/14 to 10/31/15. No further required changes. Revision is planned for first quarter 2016. Reviewed by the Pharmacy and Therapeutics committee November 19, 2015.

2016 Update

This policy was updated to include a new kinase inhibitor, Tagrisso (osimertinib) used for the treatment of NSCLC. A revised indication for Tarceva (erlotinib) used for the treatment of NSCLC was added.

2020 Update

Reviewed prescribing information for all drugs. No new evidence was identified that required changes to coverage criteria.

2021 Update

Reviewed prescribing information for all drugs in policy. No new evidence was identified that required changes to coverage criteria. Added a new drug to policy called Rybrevant (amivantamab-vmjw) for the treatment of locally advanced or metastatic NSCLC with EGFR exon 20 insertion mutations.

2022 Update

Reviewed prescribing information for all drugs in policy. No new evidence was identified that required changes to coverage criteria.



2023 Update

Reviewed prescribing information for all drugs in policy. No new evidence was identified that required changes to coverage criteria.

2024 Update

Reviewed prescribing information for all drugs in policy. Added coverage criteria for generic gefitinib. Updated coverage criteria for Iressa (gefitinib) to require trial and failure with generic gefitinib. Updated coverage criteria for Tarceva (erlotinib) to require trial and failure with generic erlotinib. Updated coverage criteria for Tagrisso (osimertinib) to include treatment of certain adult individuals with locally advanced or metastatic non-small cell lung cancer. Updated Rybrevant (amivantamab-vmjw) coverage criteria to include first-line treatment of certain individuals with non-small cell lung cancer in combination with chemotherapy. Updated Rybrevant (amivantamab-vmjw) coverage criteria to include a quantity limit. Updated Rybrevant (amivantamab-vmjw) coverage criteria to include first-line treatment of certain individuals with non-small cell lung cancer in combination with Lazcluze (lazertinib). Added coverage criteria for Lazcluze (lazertinib).

2025 Update

Reviewed prescribing information for all drugs in policy. Clarified that the medications listed in this policy are subject to the product's FDA dosage and administration prescribing information. Clarified that non-formulary exception review authorizations for all drugs listed in this policy may be approved up to 12 months. Updated Tagrisso (osimertinib) coverage criteria to include treatment of certain adults with stage III non-small cell lung cancer. Updated Erbitux (cetuximab) coverage criteria to include treatment of certain individuals with colorectal cancer in combination with Braftovi (encorafenib). Updated Erbitux (cetuximab) coverage criteria to include treatment of certain individuals with colorectal cancer in combination with Krazati (adagrasib). Updated Vectibix (panitumumab) coverage criteria to include treatment of certain adults with colorectal cancer in combination with Lumakras (sotorasib). Moved Rybrevant (amivantamab-vmjw) from policy 5.01.603 Epidermal Growth Factor Receptor (EGFR) Inhibitors to policy 5.01.650 Bispecific Antibodies.



References

1. Rusch V, Klimstra D, Venkatraman E et al. Overexpression of the epidermal growth factor receptor and its ligand transforming growth factor alpha is frequent in resectable non-small cell lung cancer but does not predict tumor progression. *Clin Cancer Res* 1997; 3:515-522.
2. Arteaga C. The epidermal growth factor receptor: from mutant oncogene in nonhuman cancers to therapeutic target in human neoplasia: *J Clin Onc*. 2001; 19:32s-40s,
3. Miller V, Johnson H, Krug LM et al. Pilot trial of the epidermal growth factor receptor tyrosine kinase inhibitor gefitinib plus carboplatin and paclitaxel in patients with stage IIIB or IV non-small cell lung cancer. *J. Clin. Oncol.* 2003; 21:2094-2100.
4. Herbst RS, Prager D, Hermann R et al. TRIBUTE-A: Phase III trial of erlotinib HCl (OSI-774) combined with carboplatin and paclitaxel (CP) chemotherapy in advanced non-small cell lung cancer. *Proc Am Soc Clin Oncol.* 2004; 23: ASCO Abstract #7011.
5. Gatzemeier U, Pluzanska A, Szczesna A et al. Results of a phase 3 trial of erlotinib (OSI-774) combined with cisplatin and gemcitabine (GC) chemotherapy in advanced non-small cell lung cancer. *Proc Am Soc Clin Oncol.* 2004; 23:ASCO Abstract #7010.
6. Shepherd FA, Pereira J, Ciuleanu TE et al. A randomized placebo-controlled trial of erlotinib in patients with advanced non-small cell lung cancer (NSCLC) following failure of 1st or 2nd line chemotherapy. Presented at the 40th Annual Meeting of the American Society of Clinical Oncology (ASCO); New Orleans, LA; June 5-8, 2004. ASCO Abstract #7022.
7. Perez-Soler, R, Chachoua A, Hammond LA et al. Determinants of tumor response and survival with erlotinib in patients with non-small-cell lung cancer. *J Clin Oncol.* 2004; 22:3238-3247.
8. Perez-Soler R. The role of erlotinib (Tarceva, OSI 774) in the treatment of non-small cell lung cancer. *Clin Cancer Res.* 2004; 10 (Suppl):4238s-4240s.
9. Fukoka M, Yano S, Giaccone G et al. Final results from a phase II trial of ZD 1839 (Iressa) for patients with advanced non-small lung cell cancer (IDEAL1). *J Clin Oncol.* 2003; 21:2237-2246.
10. Kris MG, Natale RB, Herbst RS et al. A phase II trial of ZD1839 (Iressa) in advanced non-small cell lung cancer (NSCLC) patients who had failed platinum and docetaxel-based regimens (IDEAL 2). *Pro Soc Clin Oncol* 2002; 21:292a
11. Johnson DH. Gefitinib (Iressa) trials in non-small cell lung cancer. *Lung Cancer* 2003;41:s23-s28.
12. Cella D, Bonomi A, Lloyd S et al. Reliability and validity of the Functional Assessment of Cancer Therapy – Lung (FACT-L) quality of life instrument. *Lung Cancer* 1995; 12: 199-220.
13. Cella DF, Eton DT, Fairclough DL et al. What is clinical meaningful change on the functional Assessment of Cancer Therapy_ lung Fact-L questionnaire? Result from Eastern Cooperative Oncology group (ECOG) study 5592. *J. Clin Epidemiol* 2002; 55:285-295
14. Giaccone G, Herbst RS, Manegold C et al. Gefitinib in combination with gemcitabine and cisplatin in advanced non-small cell lung cancer: a phase III trial—INTACT-1. *J Clin Oncol* 2004; 22(5):777-84.
15. Herbst RS, Giaccone G, Schiller JH et al. Gefitinib in combination with Pacitaxel and carboplatin in advanced non-small-cell lung cancer: a phase III trial—INTACT-2. *J Clin Oncol* 2004; 22(5):785-94.
16. Cappuzzo f, Gregroc V, Rossi E et al; Gefitinib in pretreated Non-small cell lung cancer (NSCLC) Analysis of efficacy and correlation with HER2 and epidermal growth factor receptor expression in locally advanced or metastatic NSCLC. *J. Clin Oncol.* 2003; 21:2658-2663
17. Hainsworth JD, Mainwaring MG, Thomas M et al. Gefitinib in the treatment of advanced, refractory non-small cell lung cancer: Results 124 patients. *Clin. Lung cancer* 2003; 4:347-355
18. Moore MJ, Goldstein D, Ham J et al. Erlotinib plus gemcitabine compared to gemcitabine alone in patients with advanced pancreatic cancer: a phase III trial of the National Cancer Institute of Canada Clinical Trials Group. Presented at 2005



Gastrointestinal Cancers Symposium, January 27-29, 2005; Hollywood, FL. Abstract 77. Available at: <http://www.asco.org/> Accessed February 4, 2025.

19. Herbst RS, Bajorin DF, Bleiberg H et al. Clinical cancer advances 2005: Major research advances in cancer treatment, prevention, and screening—A report from the American Society of Clinical Oncology. *J Clin Oncology*. Published ahead of print on 12/02/05.
20. Motzer RJ, Murphy BA, Bacik J et al. Phase III trial of interferon alfa-2a with or without 13-cis-reinoic acid for patients with advanced RCC. *J Clin Oncol*. 2000;18:2972-2980.
21. National Comprehensive Cancer Network (NCCN). <https://www.nccn.org/> Accessed February 4, 2025.
22. Capuzzo F, Varella-Garcia M, Finocchiarro G et al. Primary resistance to cetuximab therapy in EGFR FISH-positive colorectal cancer patients. *Br J Cancer*. 2008;99(1): 83 – 89.
23. Goncalves A, Estyries S, Taylor-Smedra B et al. A polymorphism of EGFR extracellular domain is associated with progression free-survival in metastatic colorectal cancer patients receiving cetuximab-based treatment. *BMC Cancer*. 2008;8:129.
24. Lievre A, Bachet JB, Boige V et al. KRAS mutations as an independent prognostic factor in patients with advanced colorectal cancer treated with cetuximab. *J Clin Oncol*. 2008;26:374-379
25. Khambata-Ford S, Garrett CR, Meropol NJ. Expression of Epiregulin and Amphiregulin and K-RAS mutation status predict disease control in metastatic colorectal cancer patients treated with cetuximab. *J Clin Oncol*. 2007;25:3230-3237.
26. Di Fiore F, Blanchards F, Charbonnier F et al. Clinical relevance of KRAS mutation detection in metastatic colorectal cancer treated by Cetuximab plus chemotherapy. *Br J Cancer*. 2007;96(8):1166-1169.
27. De Roock W Piessevaux H, De Schutter J. KRAS wild-type state predicts survival and is associated to early radiological response in metastatic colorectal cancer treated with cetuximab. *Ann Oncol*. 2008; 19: 508–515.
28. Lievre A, Bachet JB, Corre DL. KRAS mutation status is predictive of response to cetuximab therapy in colorectal cancer. *Cancer Res*. 2006; 66(8): 3992-5
29. Amado RG, Wolf A, Peeters M. Wild-type KRAS is required for panitumumab efficacy in patients with metastatic colorectal cancer. *J Clin Oncol*. 2008;26(10):1626-34.
30. Frattini M, Saletti P, Romagnani E. PTEN loss of expression predicts cetuximab efficacy in metastatic colorectal cancer patients. *Br J Cancer*. 2007;97:1139-45.
31. Darwish S, Ludovini V, Pistola L et al. EGFR, KRAS, PIK3CA mutations and response to tyrosine kinase inhibitors (TKIs) in advanced NSCLC patients. Chicago, IL: ASCO Annual Meeting; 2008. *J Clin Oncol* 26: 2008 (May 20 suppl; abstr 2003).
32. Merlin JL, Perkins G, Lievre A et al. Additional value of EGFR downstream signaling phosphoprotein expression to KRAS mutation for response prediction to cetuximab in colorectal cancer (CRC). Chicago, IL: ASCO Annual Meeting; 2008. *J Clin Oncol* 26: 2008 (May 20 suppl; abstr 4126).
33. Van Cutsem E, Lang I, D'haens G et al. KRAS status and efficacy in the first-line treatment of patients with metastatic colorectal cancer (mCRC) treated with FOLFIRI with or without cetuximab: The CRYSTAL experience. Chicago, IL: ASCO Annual Meeting; 2008. *J Clin Oncol* 26: 2008 (May 20 suppl; abstr 2).
34. Bokemeyer C, Bondarenko I, Hartmann JT et al. KRAS status and efficacy of first-line treatment of patients with metastatic colorectal cancer (mCRC) with FOLFOX with or without cetuximab: The OPUS experience. Chicago, IL: ASCO Annual Meeting; 2008. *J Clin Oncol* 26: 2008 (May 20 suppl; abstr 4000).
35. Karapetic CS, Khambata-Ford S, Jonker DJ et al. K-RAS mutations and benefit from cetuximab in advanced colorectal cancer. *N Engl J Med* 2008; 359(17):1757-1765.
36. Pirker R et al. Cetuximab plus chemotherapy in patients with advanced non-small-cell lung cancer (FLEX): an open-label randomized phase III trial. *Lancet* (May 2) 2009;373(9674):1525-31.



37. Eberhard DA, Johnson BE, Amler LC et al. Mutations in the epidermal growth factor receptor and in K-RAS are predictive and prognostic indicators in patients with non-small-cell lung cancer treated with chemotherapy alone and in combination with Erlotinib. *J Clin Oncol* 2005;23 (25):423-429.
38. Schneider CP, Heigener D, Schott-von-Römer K et al. Epidermal growth factor receptor-related tumor markers and clinical outcomes with erlotinib in non-small cell lung cancer: an analysis of patients from German centers in the TRUST study. *J Thorac Oncol*. 2008 Dec;3(12):1446-53.
39. Miller VA, Riely GJ, Zakowski MF. Molecular characteristics of bronchioloalveolar carcinoma and adenocarcinoma, bronchioloalveolar carcinoma subtype, predict response to erlotinib. *J Clin Oncol*. 2008 Mar 20;26(9):1472-8.
40. Khambata-Ford S, Harbison CT, Hart LL et al. Analysis of Potential Predictive Markers of Cetuximab Benefit in BMS099, a Phase III Study of Cetuximab and First-Line Taxane/Carboplatin in Advanced Non-Small-Cell Lung Cancer *J Clin Oncol*. 2010;28(6):918-27.
41. Van Cutsem E, Kohne CH, Hitre E et al. Cetuximab and chemotherapy as initial treatment for metastatic colorectal cancer. *N Engl J Med* 2009; 360(14):1408-17.
42. Mao C, Liao RY, Qiu LX et al. BRAF V600E mutation and resistance to anti-EGFR monoclonal antibodies in patients with metastatic colorectal cancer: a meta-analysis. *Mol Biol Rep* 2010 [Epub ahead of print]
43. Di Nicolantonio F, Martini M, Molinari F et al. Wild-type BRAF is required for response to panitumumab or cetuximab in metastatic colorectal cancer. *J Clin Oncol* 2008; 26(35):5705–12.
44. Tol J, Nagtegaal ID, Punt CJ. BRAF mutation in metastatic colorectal cancer. *N* 2009; 361(1):98–9.
45. Phillips B, Kalady M, Kim R. BRAF testing in advanced colorectal cancer: is it ready for prime time? *Clin Adv Hematol Oncol* 2010; 8(6):437-44.
46. Van Cutsem E, Lang I, Folprecht G et al. Cetuximab plus FOLFIRI in the treatment of metastatic colorectal cancer (mCRC): the influence of KRAS and BRAF biomarkers on outcome: updated data from the CRYSTAL trial. Paper presented at: American Society of Clinical Oncology 2010 Gastrointestinal Cancers Symposium (GCS); January 22-24, 2010; Orlando, FL.
47. De Roock W, Claes B, Bernasconi D et al. Effects of KRAS, BRAF, NRAS and PIK3CA mutations on the efficacy of cetuximab plus chemotherapy in chemotherapy-refractory metastatic colorectal cancer: a retrospective consortium analysis. *Lancet Oncol* 2010; 11(8):753-62.
48. LUX-Lung 3: Yang JC, Hirsh V, Schuler M, et al. Symptom control and quality of life in LUX-Lung 3: a phase III study of afatinib or cisplatin/pemetrexed in patients with advanced lung adenocarcinoma with EGFR mutations. *J Clin Oncol*. 2013;Jul 1. [Epub ahead of print].
49. LUX-Lung 2: Yang JC-H, Shih J-Y, Su W-C, et al. Afatinib for patients with lung adenocarcinoma and epidermal growth factor receptor mutations (LUX-Lung 2): a phase 2 trial. *Lancet Oncology*. 2012a;13(5):539-548.
50. LUX-Lung 6: Wu YL, Zhou C, Hu CP, et al. A randomized, open-label, phase III study of afatinib versus gemcitabine/cisplatin as first-line treatment for Asian patients with EGFR mutation-positive advanced adenocarcinoma of the lung. Poster presented at: 49th Annual Meeting of the American Society of Clinical Oncology (ASCO); May 31-June 4, 2013; Chicago, IL, USA. Abstract published in: *J Clin Oncol*. 2013(Suppl). Abstract 8016.
51. Zhou C, Wu YL, Chen G, et al. Erlotinib versus chemotherapy as first-line treatment for patients with advanced EGFR mutation-positive non-small-cell lung cancer (OPTIMAL, CTONG-0802): a multicentre, open-label, randomised, phase 3 study. *Lancet Oncol* 2011; 12: 735–42.
52. Rosell R, Carcereny E, Gervais R, et al. Erlotinib versus standard chemotherapy as first-line treatment for European patients with advanced EGFR mutation-positive non-small-cell lung cancer (EORTAC): a multicentre, open-label, randomised phase 3 trial. *Lancet Oncol* 2012; 13: 239–46.
53. Herbst RS, Redman MW, Kim ES, et al. Cetuximab plus carboplatin and paclitaxel with or without bevacizumab versus carboplatin and paclitaxel with or without bevacizumab in advanced NSCLC (SWOG S0819): a randomised, phase 3 study. *Lancet Oncol*. 2018 Jan;19(1):101-114. doi: 10.1016/S1470-2045(17)30694-0. Epub 2017 Nov 20.



54. Erbitux (cetuximab) [package insert]. Branchburg, NJ: Eli Lilly and Company; Revised September 2021.
55. Gilotrif (afatinib) [package insert]. Ridgefield, CT: Boehringer Ingelheim Pharmaceuticals, Inc.; Revised April 2022.
56. Iressa (gefitinib) [package insert]. Cheshire, England: AstraZeneca; Revised February 2023.
57. Tagrisso (osimertinib) [package insert]. Wilmington, DE: AstraZeneca Pharmaceuticals LP; Revised September 2024.
58. Tarceva (erlotinib) [package insert]. South San Francisco, CA: Genentech USA, Inc.; Revised October 2016.
59. Vectibix (panitumumab) [package insert]. Thousand Oaks, CA: Amgen Inc.; Revised January 2025.
60. Vizimpro (dacomitinib) [package insert]. New York, NY: Pfizer Inc.; Revised December 2020.
61. Lazcluze (lazertinib) [package insert]. Horsham, PA: Janssen Biotech, Inc.; Revised August 2024.

History

Date	Comments
03/08/05	Add to Prescription Drug Section - New Policy. Hold for notification, publish June 1, 2005
10/01/05	Replace Policy - Medco issue resolved, approved text being added back into Policy Statement and Policy Guidelines. No review needed by MPC.
02/14/06	Replace Policy - Policy reviewed and revised per Pharmacy and Therapeutics Committee on 1/31/06. Title changed from Epidermal Growth Factor Receptor Inhibitors
06/16/06	Update Scope and Disclaimer - No other changes.
06/21/06	Update codes only. - No other changes.
08/08/06	Replace Policy - Policy reviewed by Pharmacy and Therapeutics Committee on 7/25/06; no changes in policy statement; policy guidelines updated.
03/13/07	Replace Policy - Policy updated with literature review; references updated. Indications for Sprycel, Nexavar, Sutent and Vectibix added to policy statement; indications for Avastin in the treatment of ovarian cancer added as an investigational policy statement, and medically necessary in the treatment of diabetic retinopathy. Policy Guidelines and Rationale updated.
04/10/07	Replace Policy - Policy reviewed by P&T March 27, 2007. Policy statement updated to clarify the indications and criteria for medically necessary treatment with Gleevec and Sprycel. Policy Guidelines updated.
12/11/07	Replace Policy - Policy updated with literature review; policy statement updated to include bullet point "treatment of patients with advanced hepatocellular carcinoma (HCC)" as medically necessary under Sorafenib (Nexavar). Rationale and references updated to support change in statement.



Date	Comments
08/12/08	Replace Policy - Policy updated with literature search. Policy statement revised to indicate that Erbitux may be considered medically necessary for head and neck cancer. Comment on testing for K-RAS mutations added to Policy Guidelines. Rationale section updated, references added. Reviewed by P&T July 24, 2008
11/11/08	Update Description Section - No other changes.
07/14/09	Replace Policy - Policy updated with literature search. Policy statements extensively revised. References added.
09/15/09	Minor updates, code updates - 3rd bullet added under Tarceva's policy statement "documentation of susceptibility to EGFR mutation or gene amplification". No other changes. Code S3713 added.
10/13/09	Replace Policy - Policy updated with literature search. Two bullets added under the Nexavar medically necessary statement regarding gastrointestinal stromal tumors and soft-tissue sarcoma. References added.
01/12/10	Replace Policy - Policy updated with literature search; no change to the policy statement. Policy guidelines updated.
05/11/10	Replace Policy - Policy updated with literature search. Policy statement updated to include medical necessity statement for Erbitux. Reference added. Reviewed by OAP on February 18, 2010. Reviewed by P&T committee in March 2010.
9/14/10	Replace Policy - Policy statement for Erbitux updated with removal of IIIB pleural effusion/IV. Policy guidelines for Erbitux updated with removal of guidelines under NSCLC in accordance with NCCN guidelines. Reviewed by OAP on 8/19/10.
03/08/11	Replace Policy - Policy updated with literature search. BRAF, previously not addressed, may now be considered medically necessary in colon cancer. Reviewed by OAP 02/17/11.
05/10/11	Replace Policy - Policy updated with the abstraction of soratenib (Nexavar) and sinitinib (Sutent) which are now addressed in 5.01.534; reference to these drugs and their ability to treat renal cell and thyroid cancers have been removed, along with associated references.
06/26/12	Replace policy. Literature review; no change in policy statements.
06/29/12	Coding update: CPT codes, 81275, 81403 and 88363 added to the policy.
12/19/12	Update Related Policy to add 5.01.01 and 9.03.504.
12/09/13	Replace policy. Policy updated in agreement with November 2013 NCCN Drugs and Biologics Compendium recommendations of 1 and 2A. Criteria for afatinib, a new oral EGFR inhibitor, were added. References 50 – 55 added. CPT codes 81275 and 88363 removed; they are not specific to this policy. Deleted code S3713 removed.
12/17/14	Annual review. Policy updated with literature review; no change in policy statements.



Date	Comments
12/08/15	Annual Review. Policy updated with literature review; no change in policy statements. Reviewed by P & T November 2015.
04/01/16	Interim update, approved March 8, 2016. Addition of a new kinase inhibitor, osimertinib and its criteria to the policy.
05/01/16	Annual Review, approved April 12, 2016. Addition of recently revised indication for EGFR inhibitor, gefitinib and its criteria to the policy.
10/01/16	Interim Update, approved September 13, 2016. Inclusion of a new indication for Gilotrif. Potential update of criteria for Erbitux and Vectibix.
12/01/16	Minor update, approved November 8, 2016. A notation was added that this policy applies only to those 18 and older because data does not support efficacy and safety in those under 18.
06/01/17	Annual review, approved May 23, 2017. A statement outlining the length of therapy for initial approval has been added to the policy.
02/01/18	Interim Review, approved January 30, 2018. Inclusion of a new indication for Gilotrif.
07/01/18	Annual Review, approved June 12, 2018. Tagrisso and Gilotrif criteria were updated with new literature. Erbitux and Vectibix criteria were re-written for clarity and use of Erbitux for NSCLC was removed due to a large trial (S0819) of previously untreated advanced NSCLC patients randomized to paclitaxel plus carboplatin vs. paclitaxel plus carboplatin plus bevacizumab, with or without cetuximab failed to show overall or disease free survival advantage in the cetuximab arms. Removed HCPCS codes J8565 and J8999.
11/01/18	Interim Review, approved October 9, 2018. Added dacomitinib. Updated indications for all drugs based on labels. Remove code 81403, added code J9999.
04/01/19	Interim Review, approved March 19, 2019. Updated criteria for Tagrisso and Tarceva.
07/01/19	Annual Review, approved June 20, 2019. Update criteria for Erbitux and Vectibix. Added generic erlotinib to policy with identical criteria as Tarceva. Removed HCPCS code J9999.
11/01/20	Annual Review, approved October 22, 2020. No changes to policy statements.
03/01/21	Interim Review, approved February 9, 2021. Added a new indication to Tagrisso (osimertinib) for adjuvant therapy after tumor resection in patients with NSCLC.
08/01/21	Annual Review, approved July 13, 2021. Added criteria for Rybrevant (amivantamab-vmjw) for the treatment of locally advanced or metastatic NSCLC with EGFR 20 insertion mutations. Added HCPCS code J3590.
10/01/21	Coding update, Added HCPCS code C9083.
01/01/22	Interim Review, approved December 21, 2021. Added HCPCS code J9061 and removed HCPCS code J3590. Added a new indication to Erbitux (cetuximab) for use in



Date	Comments
	combination with Braftovi (encorafenib) for mCRC with a BRAF V600E mutation when used after prior therapy.
02/01/22	Interim Review, approved January 11, 2022. Added criteria for Exkivity (mobocertinib) for the treatment of adult patients with locally advanced or metastatic NSCLC with EGFR exon 20 insertion mutations, whose disease has progressed on or after platinum-based chemotherapy.
01/01/23	Annual Review, approved December 23, 2022. No changes to policy statements. Changed the wording from "patient" to "individual" throughout the policy for standardization. Removed termed HCPC code C9083 and new code details for HCPC code J9061.
10/01/23	Annual Review, approved September 11, 2023. No changes to the policy statements.
12/01/23	Interim Review, approved November 20, 2023. Removed criteria for Exkivity (mobocertinib) as it has been withdrawn from the market.
04/01/24	Annual Review, approved March 12, 2024. Added coverage criteria for generic gefitinib. Updated coverage criteria for Iressa (gefitinib) to require trial and failure with generic gefitinib. Updated coverage criteria for Tarceva (erlotinib) to require trial and failure with generic erlotinib. Updated coverage criteria for Tagrisso (osimertinib) to include treatment of certain adult individuals with locally advanced or metastatic non-small cell lung cancer.
06/01/24	Interim Review, approved May 14, 2024. Updated Rybrevant (amivantamab-vmjw) coverage criteria to include first-line treatment of certain individuals with non-small cell lung cancer in combination with chemotherapy. Updated Rybrevant (amivantamab-vmjw) coverage criteria to include a quantity limit.
12/01/24	Interim Review, approved November 12, 2024. Updated Rybrevant (amivantamab-vmjw) coverage criteria to include first-line treatment of certain individuals with non-small cell lung cancer in combination with Lazcluze (lazertinib). Added coverage criteria for Lazcluze (lazertinib).
03/01/25	Annual Review, approved February 11, 2025. Clarified that the medications listed in this policy are subject to the product's FDA dosage and administration prescribing information. Clarified that non-formulary exception review authorizations for all drugs listed in this policy may be approved up to 12 months. Updated Tagrisso (osimertinib) coverage criteria to include treatment of certain adults with stage III non-small cell lung cancer. Updated Erbitux (cetuximab) coverage criteria to include treatment of certain individuals with colorectal cancer in combination with Braftovi (encorafenib). Updated Erbitux (cetuximab) coverage criteria to include treatment of certain individuals with colorectal cancer in combination with Krazati (adagrasib). Updated Vectibix (panitumumab) coverage criteria to include treatment of certain adults with colorectal cancer in combination with Lumakras (sotorasib).



Date	Comments
05/01/25	Interim Review, approved April 21, 2025. Moved Rybrevant (amivantamab-vmjw) from policy 5.01.603 Epidermal Growth Factor Receptor (EGFR) Inhibitors to policy 5.01.650 Bispecific Antibodies. Removed HCPCS J9061.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2025 Premera All Rights Reserved.

Scope: Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.

