Quality ID #451 (CBE 1859): RAS (KRAS and NRAS) Gene Mutation Testing Performed for Patients with Metastatic Colorectal Cancer who Receive Anti-epidermal Growth Factor Receptor (EGFR) Monoclonal Antibody Therapy

2025 COLLECTION TYPE:
MIPS CLINICAL QUALITY MEASURES (CQMS)

MEASURE TYPE:
Process

DESCRIPTION:
Percentage of adult patients (aged 18 or over) with metastatic colorectal cancer who receive anti-epidermal growth factor receptor monoclonal antibody therapy for whom RAS (KRAS and NRAS) gene mutation testing was performed.

INSTRUCTIONS:
This measure is to be submitted once per performance period for patients with colorectal cancer seen during the performance period. This measure may be submitted by Merit-based Incentive Payment System (MIPS) eligible clinicians who perform the quality actions described in the measure based on the services provided and the measure-specific denominator coding.

Measure Submission Type:
Measure data may be submitted by individual MIPS eligible clinicians, groups, or third-party intermediaries. The listed denominator criteria are used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions as allowed by the measure. The quality data codes listed do not need to be submitted by MIPS eligible clinicians, groups, or third-party intermediaries that utilize this modality for submissions; however, these codes may be submitted for those third-party intermediaries that utilize Medicare Part B claims data. For more information regarding Application Programming Interface (API), please refer to the Quality Payment Program (QPP) website.

DENOMINATOR:
Adult patients with metastatic colorectal cancer who receive anti-EGFR monoclonal antibody therapy

Denominator Instructions:
The denominator of this measure is intended to capture newly-diagnosed stage IV patients or patients who have distant metastases at the time of colon cancer diagnosis. For the purposes of this measure, the patient's initial diagnosis may occur between December 1 of the prior year through November 30 of the performance period, and anti-EGFR monoclonal antibody therapy may occur between December 1 of the prior year through December 31 of the performance period.

Denominator Criteria (Eligible Cases):
Patients aged ≥ 18 years on date of encounter
AND
Diagnosis of initial colon or rectal cancer (ICD-10 CM): C18.0, C18.2, C18.3, C18.4, C18.5, C18.6, C18.7, C18.8, C18.9, C19, C20
AND
At least two patient encounters during the performance period (CPT): 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215
WITHOUT
Telehealth Modifier (including but not limited to): GQ, GT, POS 02, POS 10
AND
Patient has metastatic disease at diagnosis: G9838

AND
Anti-EGFR monoclonal antibody therapy: G9839

NUMERATOR:
RAS (KRAS and NRAS) gene mutation testing performed before initiation of anti-EGFR MoAb

Definition:
RAS mutation testing - RAS testing for this measure refers to assays that detect mutations in codons 12 and 13 of exon 2, codons 59 and 61 of exon 3 and codons 117 and 146 in exon 4 in KRAS or NRAS. Do not include results from mutations at other codons or assays for other alterations (e.g., BRAF, PI3K, PTEN genes). The College of American Pathologists (CAP) Perspectives on Emerging Technology (POET) Report on RAS mutation testing provides additional guidance on testing.

If multiple RAS mutation tests have been performed, refer to the most recent test results.

Anti-EGFR monoclonal antibody includes cetuximab or panitumumab.

Numerator Instructions:
In the absence of any documentation regarding testing for the RAS (KRAS and NRAS) gene mutation, submit G9841: RAS (KRAS and NRAS) gene mutation testing not performed before initiation of anti-EGFR MoAb. Report G9840: RAS (KRAS and NRAS) gene mutation testing performed before initiation of anti- EGFR MoAb, if the report indicates a mutation within codons 12 and 13 of exon 2, codons 59 and 61 of exon 3 and codons 117 and 146 in exon 4 in KRAS or NRAS, where KRAS or NRAS gene was detected in the DNA extracted from the colon tumor specimen.

Numerator Options:

Performance Met:	RAS (KRAS and NRAS) gene mutation testing performed before initiation of anti-EGFR MoAb (G9840)

OR

Performance Not Met:	RAS (KRAS and NRAS) gene mutation testing not performed before initiation of anti-EGFR MoAb (G9841)

RATIONALE:
The American Society of Clinical Oncology (ASCO) envisions that use of this measure will improve concordance with recommendations for RAS (KRAS and NRAS) testing for patients with metastatic colorectal cancer. We recognize the importance of ensuring that the appropriate patient population receives guideline concordant treatment as studies demonstrate that the administration of EGFR-targeted therapies, specifically cetuximab or panitumumab, offer no clinical benefit to patients diagnosed with KRAS-mutated or NRAS-mutated tumors. Clinical trial data strongly suggest that patients with RAS mutations are better served with other targeted therapies, especially considering the harms and costs of anti-EGFR treatment. Therefore, the measure focus is on halting use of anti-EGFR MoAb therapies in patients who will not derive any benefit.

CLINICAL RECOMMENDATION STATEMENTS:
This measure is based on ASCO and National Comprehensive Cancer Network (NCCN) Guidelines:

"Anti-EGFR therapy is not recommended for patients with RAS-mutant mCRC" (Morris et al., 2023).

"Colorectal carcinoma patients being considered for anti-EGFR therapy must receive RAS mutational testing. Mutational analysis should include KRAS and NRAS codons 12, 13 of exon 2; 59, 61 of exon 3; and 117 and 146 of exon 4 ("expanded" or "extended" RAS)" (

"All patients with metastatic colorectal cancer should have tumor genotyped for *RAS* (*KRAS* and *NRAS*) and *BRAF* mutations individually or as part of an NGS panel. Patients with any known *KRAS* mutation (exon 2, 3, 4) or *NRAS* mutation (exon 2, 3, 4) should not be treated with either cetuximab or panitumumab, unless given as part of a regimen targeting a KRAS G12C mutation. *BRAF* V600E mutation makes response to panitumumab or cetuximab highly unlikely unless given with a *BRAF* inhibitor" (NCCN 2023).

"A sizeable body of literature has shown that tumors with a mutation in exons 2, 3, or 4 of either the *KRAS* or *NRAS* genes are essentially insensitive to cetuximab or panitumumab therapy. The panel therefore strongly recommends *RAS (KRAS/NRAS)* genotyping of tumor (either primary tumor or metastasis) in all patients with mCRC. Patients with known *KRAS*- or *NRAS*-mutant tumors should not be treated with either cetuximab or panitumumab, either alone or in combination with other anticancer agents, because they have virtually no chance of benefit and the exposure to toxicity and expense cannot be justified (NCCN 2023).

ASCO released a Provisional Clinical Opinion Update on extended *RAS* testing in patients with mCRC that is consistent with the NCCN Panel's recommendations. A guideline on molecular biomarkers for CRC developed by the ASCP, CAP, AMP and ASCO also recommends *RAS* testing consistent with the NCCN recommendations" (NCCN 2023).

References:

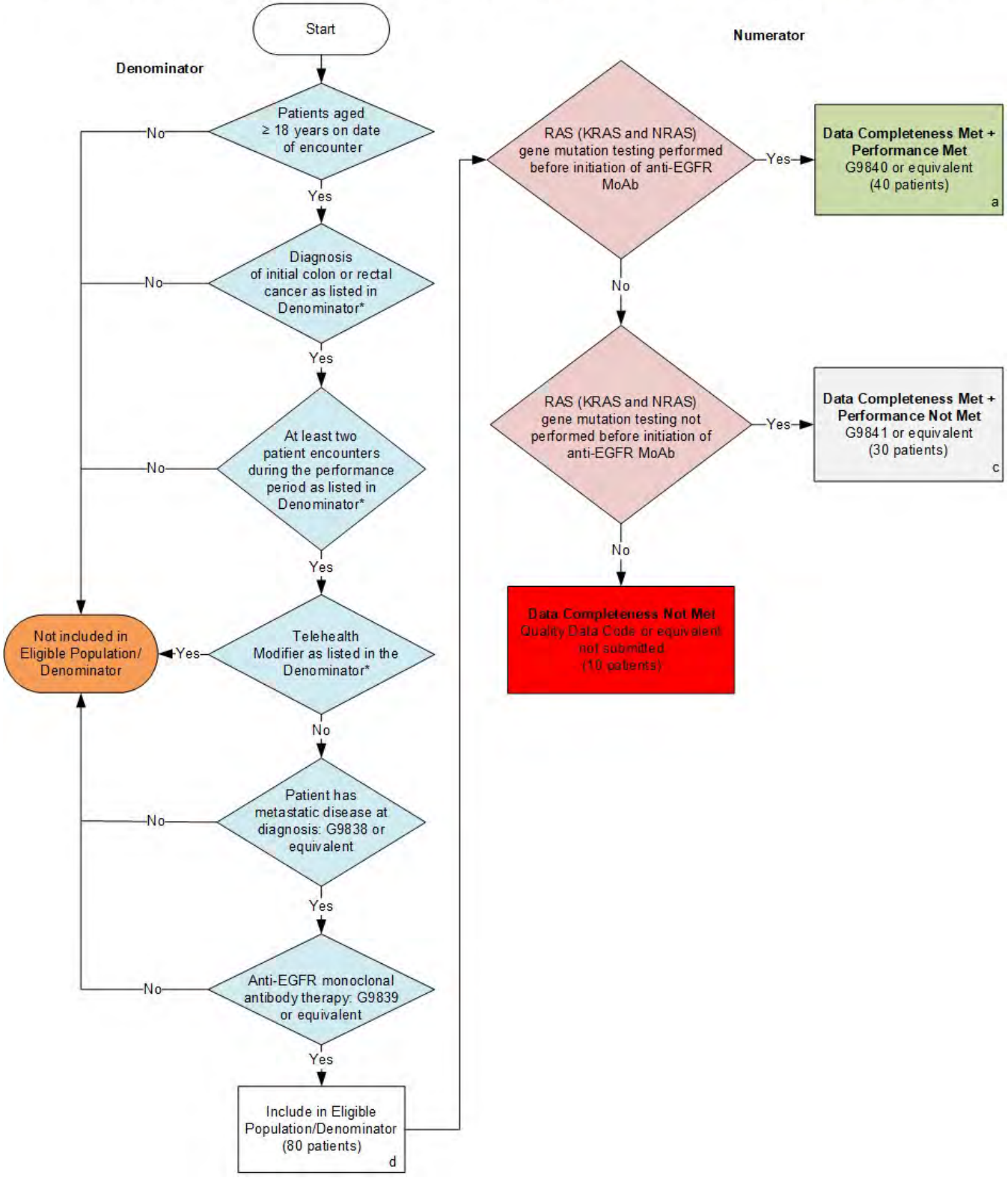
Morris, V. K., Kennedy, E. B., Baxter, N. N., Benson, A. B., Cercek, A., Cho, M., Ciombor, K. K., Cremolini, C., Davis, A., Deming, D. A., Fakih, M. G., Gholami, S., Hong, T. S., Jaiyesimi, I., Klute, K., Lieu, C., Sanoff, H., Strickler, J. H., White, S., … Eng, C.. (2023). Treatment of Metastatic Colorectal Cancer: ASCO Guideline. Journal of Clinical Oncology, 41(3), 678–700. https://doi.org/10.1200/jco.22.01690

NCCN Clinical Practice Guidelines in Oncology™. Colon Cancer, V.4.2023
https://www.nccn.org/professionals/physician_gls/pdf/colon.pdf

Sepulveda, A. R., Hamilton, S. R., Allegra, C. J., Grody, W., Cushman-Vokoun, A. M., Funkhouser, W. K., Kopetz, S. E., Lieu, C., Lindor, N. M., Minsky, B. D., Monzon, F. A., Sargent, D. J., Singh, V. M., Willis, J., Clark, J., Colasacco, C., Rumble, R. B., Temple-Smolkin, R., Ventura, C. B., & Nowak, J. A. (2017). Molecular Biomarkers for the Evaluation of Colorectal Cancer: Guideline From the American Society for Clinical Pathology, College of American Pathologists, Association for Molecular Pathology, and the American Society of Clinical Oncology. Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology, 35(13), 1453–1486. https://doi.org/10.1200/JCO.2016.71.9807

2025 Clinical Quality Measure Flow for Quality ID #451 (CBE 1859): RAS (KRAS and NRAS) Gene Mutation Testing Performed for Patients with Metastatic Colorectal Cancer who Receive Anti-epidermal Growth Factor Receptor (EGFR) Monoclonal Antibody Therapy

Disclaimer: *Refer to the measure specification for specific coding and instructions to submit this measure.*



SAMPLE CALCULATIONS

Data Completeness=

Performance Met (a=40 patients) + Performance Not Met (c=30 patients) = 70 patients = **87.50%**

Eligible Population / Denominator (d=80 patients) = 80 patients

Performance Rate=

Performance Met (a=40 patients) = 40 patients = **57.14%**

Data Completeness Numerator (70 patients) = 70 patients

*See the posted measure specification for specific coding and instructions to submit this measure.

NOTE: Submission Frequency: Patient-Intermediate

v9

2025 Clinical Quality Measure Flow Narrative for Quality ID #451 (CBE 1859): RAS (KRAS and NRAS) Gene Mutation Testing Performed for Patients with Metastatic Colorectal Cancer who Receive Anti-epidermal Growth Factor Receptor (EGFR) Monoclonal Antibody Therapy

***Disclaimer:** Refer to the measure specification for specific coding and instructions to submit this measure.*

1. Start with Denominator
2. Check *Patients aged greater than or equal to 18 years on date of encounter*:
    a. If *Patients aged greater than or equal to 18 years on date of encounter* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Patients aged greater than or equal to 18 years on date of encounter* equals Yes, proceed to check *Diagnosis of initial colon or rectal cancer as listed in Denominator**.
3. Check *Diagnosis of initial colon or rectal cancer as listed in Denominator**:
    a. If *Diagnosis of initial colon or rectal cancer as listed in Denominator** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Diagnosis of initial colon or rectal cancer as listed in Denominator** equals Yes, proceed to check *At least two patient encounters during the performance period as listed in Denominator*.*
4. Check *At least two patient encounters during the performance period as listed in Denominator**:
    a. If *At least two patient encounters during the performance period as listed in Denominator** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *At least two patient encounters during the performance period as listed in Denominator** equals Yes, proceed to check *Telehealth Modifier as listed in the Denominator*.*
5. Check *Telehealth Modifier as listed in the Denominator**:
    a. If *Telehealth Modifier as listed in the Denominator** equals Yes, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Telehealth Modifier as listed in the Denominator** equals No, proceed to check *Patient has metastatic disease at diagnosis*.
6. Check *Patient has metastatic disease at diagnosis*:
    a. If *Patient has metastatic disease at diagnosis* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Patient has metastatic disease at diagnosis* equals Yes, proceed to check *Anti-EGFR monoclonal antibody therapy.*
7. Check *Anti-EGFR monoclonal antibody therapy*:
    a. If *Anti-EGFR monoclonal antibody therapy* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Anti-EGFR monoclonal antibody therapy* equals Yes, include in *Eligible Population/Denominator.*

8. Denominator Population:

    - Denominator Population is all Eligible Patients in the Denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 80 patients in the Sample Calculation.

9. Start Numerator

10. Check *RAS (KRAS and NRAS) gene mutation testing performed before initiation of anti-EGFR MoAb*:

    a. If *RAS (KRAS and NRAS) gene mutation testing performed before initiation of anti-EGFR MoAb* equals Yes, include in *Data Completeness Met and Performance Met.*

        - *Data Completeness Met and Performance Met* letter is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a equals 40 patients in Sample Calculation.

    b. If *RAS (KRAS and NRAS) gene mutation testing performed before initiation of anti-EGFR MoAb* equals No, proceed to check *RAS (KRAS and NRAS) gene mutation testing not performed before initiation of anti-EGFR MoAb*.

11. Check *RAS (KRAS and NRAS) gene mutation testing not performed before initiation of anti-EGFR MoAb*:

    a. If *RAS (KRAS and NRAS) gene mutation testing not performed before initiation of anti-EGFR MoAb* equals Yes, include in *Data Completeness Met and Performance Not Met*.

        - *Data Completeness Met and Performance Not Met* letter is represented in the Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 30 patients in the Sample Calculation.

    b. If *RAS (KRAS and NRAS) gene mutation testing not performed before initiation of anti-EGFR MoAb* equals No, proceed to check *Data Completeness Not Met*.

12. Check *Data Completeness Not Met*:

    - If *Data Completeness Not Met*, the Quality Data Code or equivalent was not submitted. 10 patients have been subtracted from the Data Completeness Numerator in the Sample Calculation.

Sample Calculations:

Data Completeness equals Performance Met (a equals 40 patients) plus Performance Not Met (c equals 30 patients) divided by Eligible Population/Denominator (d equals 80 patients). All equals 70 patients divided by 80 patients. All equals 87.50 percent.

Performance Rate equals Performance Met (a equals 40 patients) divided by Data Completeness Numerator (70 patients). All equals 40 patients divided by 70 patients. All equals 57.14 percent.

*See the posted measure specification for specific coding and instructions to submit this measure.

NOTE: Submission Frequency: Patient-Intermediate

The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.