

**Quality ID #491 (CBE 3661): Mismatch Repair (MMR) or Microsatellite Instability (MSI) Biomarker Testing Status in Colorectal Carcinoma, Endometrial, Gastroesophageal, or Small Bowel Carcinoma**

**2024 COLLECTION TYPE:**

**MIPS CLINICAL QUALITY MEASURES (CQMS)**

**MEASURE TYPE:**

Process – High Priority

**DESCRIPTION:**

Percentage of surgical pathology reports for primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection, that contain impression or conclusion of or recommendation for testing of mismatch repair (MMR) by immunohistochemistry (biomarkers MLH1, MSH2, MSH6, and PMS2), or microsatellite instability (MSI) by DNA-based testing status, or both.

**INSTRUCTIONS:**

This measure is to be submitted **each time** a primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection surgical pathology examination is performed 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:**

All surgical pathology reports for primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection

**Denominator Criteria (Eligible Cases):**

Patients regardless of age

**AND**

**Diagnosis of primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection (ICD-10-CM):** C15.3, C15.4, C15.5, C15.8, C15.9, C16.0, C16.1, C16.2, C16.3, C16.4, C16.5, C16.6, C16.8, C16.9, C17.0, C17.1, C17.2, C17.3, C17.8, C17.9, C18.0, C18.2, C18.3, C18.4, C18.5, C18.6, C18.7, C18.8, C18.9, C19, C20, C26.0, C54.1, C54.3, C54.8, C54.9, C55

**AND**

**Patient procedure during the performance period (CPT):** 88305, 88307, 88309

**WITHOUT**

**Telehealth Modifier (including but not limited to):** GQ, GT, 95, POS 02, POS 10

**AND NOT**

**DENOMINATOR EXCLUSION:**

**Patients with an existing diagnosis of Lynch Syndrome (ICD-10-CM):** Z15.04, Z15.09, Z80.0

**OR**

**Patients with an existing diagnosis of squamous cell carcinoma of the esophagus:** M1192

**OR**

**Hospice services provided to patient any time during the measurement period: M1191**

**NUMERATOR:**

Surgical pathology reports that contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both

**Numerator Options:**

***Performance Met:***

Surgical pathology reports that contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both **(M1193)**

**OR**

***Denominator Exception:***

Documentation of medical reason(s) surgical pathology reports did not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both tests were not included (e.g., patient will not be treated with checkpoint inhibitor therapy, no residual carcinoma is present in the sample [tissue exhausted or status post neoadjuvant treatment], insufficient tumor for testing) **(M1194)**

**OR**

***Performance Not Met:***

Surgical pathology reports that do not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both, reason not given **(M1195)**

**RATIONALE:**

Detection of defective mismatch repair in colorectal carcinomas is important for detection of Lynch syndrome (hereditary nonpolyposis colorectal cancer syndrome [HNPCC]), which accounts for approximately 2 percent to 4 percent of all colorectal carcinomas and has clinical implications for treatment of the affected patient and family members (Sepulveda et al, 2017; Rubenstein et al, 2015). National Comprehensive Cancer Network (NCCN) recommends that all patients with a personal history of colon or rectal cancer should have MMR or MSI testing (NCCN, 2022). In the 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 American Society of Clinical Oncology it is recommended that mismatch repair status testing in patients with colorectal cancers is necessary for the identification of patients at high risk for Lynch syndrome and/or prognostic stratification (Sepulveda et al, 2017).

One of two different initial tests can be performed on colorectal specimens to identify individuals who might have Lynch Syndrome: 1) immunohistochemistry (IHC) for MMR protein expression, which is often diminished because of mutation; or 2) analysis for microsatellite instability (MSI), which results from MMR deficiency. NCCN guidelines state IHC and MSI on newly diagnosed colorectal and endometrial cancers regardless of family history to determine Lynch Syndrome, is cost effective and has been confirmed for colorectal cancer and endorsed by the Evaluation of Genomic Applications in Practice and Prevention (EGAPP) working group at the CDC, the US Multi-Society Task Force on Colorectal Cancer, and the American Gastroenterological Association (NCCN, 2022; NCCN, 2019).

**References**

Sepulveda AR, et al. 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 American Society of Clinical Oncology. Arch Pathol Lab Med. 2017 May;141(5):625-657.

Rubenstein, JH et al Diagnosis and management of Lynch syndrome. Gastroenterology. 2015 Sept: 149 (3):777-782. (Update to guideline in progress)

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Colon Cancer. Version 2.2022. [https://www.nccn.org/professionals/physician\\_gls/pdf/colon.pdf](https://www.nccn.org/professionals/physician_gls/pdf/colon.pdf)

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Uterine Neoplasms. Version 1.2023. [https://www.nccn.org/professionals/physician\\_gls/pdf/uterine.pdf](https://www.nccn.org/professionals/physician_gls/pdf/uterine.pdf)

### **CLINICAL RECOMMENDATION STATEMENTS:**

This measure is based on recommendations in an upcoming guideline regarding use of MMR/MSI testing in patients being considered for checkpoint inhibitor therapy (June 2021; see [MMR/MSI Guideline](#) for more information). Although recommendations have existed for screening colorectal cancer (see [Biomarkers in CRC](#) for more information) and endometrial cancer (see [NCCN Guidelines](#) for more information), universal testing remains elusive. Data collected for these two cancer types in the Pathologists Quality Registry shows significant gap (performance rates of 71.05 percent with a standard deviation of 22.37 points and 76.63 percent with a standard deviation of 15.08 points respectively from 2020). Furthermore, only 42 percent of US-based practices gastroenterologists recommend universal MMR/MSI testing for colorectal cancer patients (Jain et al., 2019), and 50 percent of clinicians for endometrial cancer patients (Pan et al., 2018). Due to the recent nature of the recommendation for testing of gastric and small bowel cancer patients, rates of testing are difficult to ascertain, but a 2017 study showed that MMR/MSI testing was performed in only 51 percent of cases (Mathiak et al., 2017). A 2018 survey of clinicians found that 0 percent of respondents recommend universal testing of small bowel cancer cases (Pan et al., 2018).

Testing for MMR/MSI will benefit patients and the health care system by making care more targeted. A better understanding of the genetic makeup of an individual's cancer allows oncologists to design a personalized care plan, meaning patients get the right care faster. This will improve patients' health faster and save the health care system wasted costs.

### **References**

Jain A, Shafer L, Rothenmund H, Kim CA, Samadder J, Gupta S, Singh H. Suboptimal Adherence in Clinical Practice to Guidelines Recommendation to Screen for Lynch Syndrome. Dig Dis Sci. 2019 Dec;64(12):3489-3501. doi: 10.1007/s10620-019-05692-6.

Pan, J. Y., Haile, R. W., Templeton, A., Macrae, F., Qin, F., Sundaram, V., & Ladabaum, U. (2018). Worldwide Practice Patterns in Lynch Syndrome Diagnosis and Management, Based on Data From the International Mismatch Repair Consortium. Clin Gastroenterol Hepatol, 16(12), 1901-1910 e1911. doi:10.1016/j.cgh.2018.04.025

Mathiak M, Warneke VS, Behrens H-M, Haag J, Boger C, Kruger S and Rocken C (2017) Clinicopathologic Characteristics of Microsatellite Instable Gastric Carcinomas Revisited: Urgent Need for Standardization. Appl Immunohistochem Mol Morphol; 25(1):12-24.

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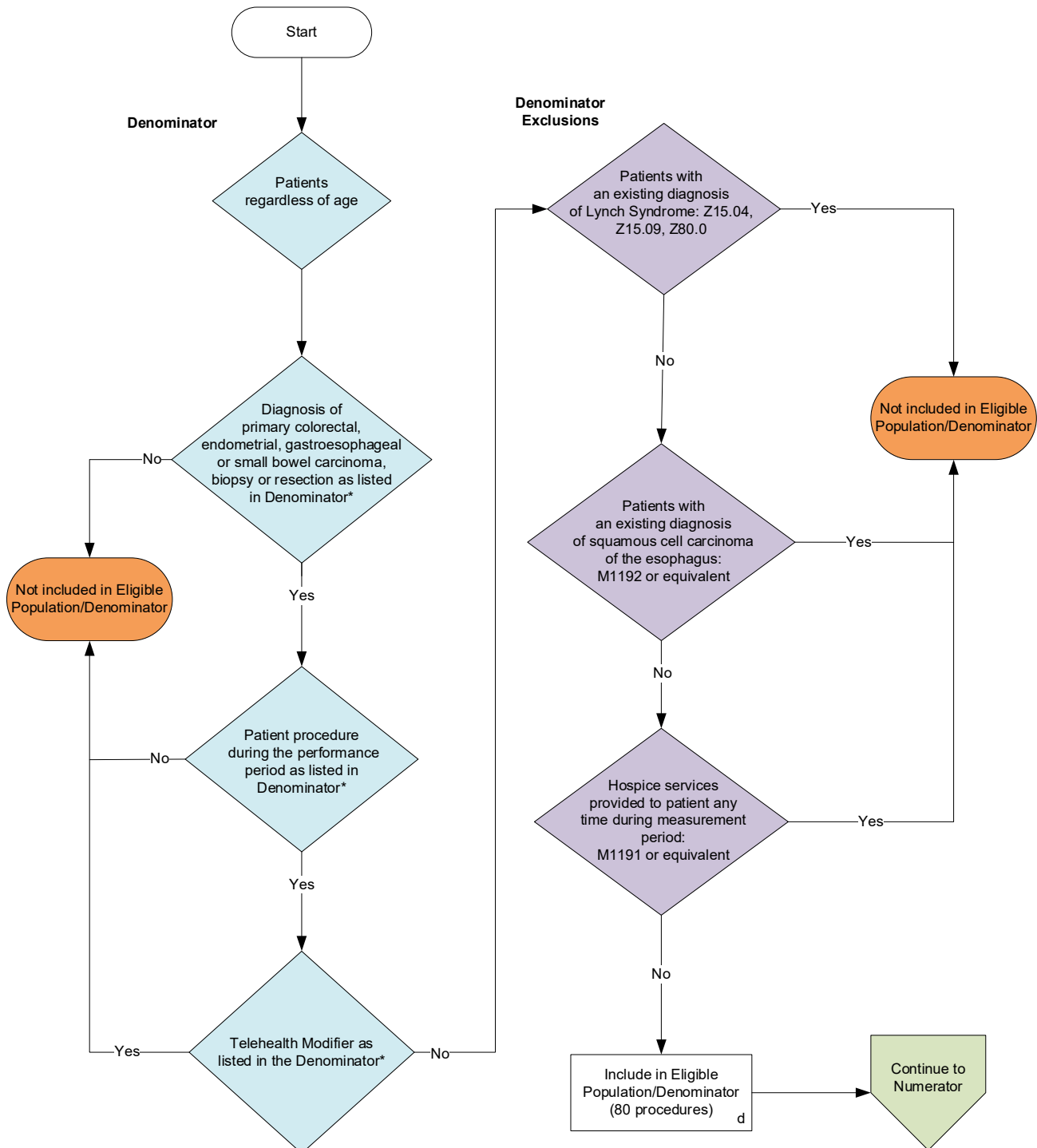
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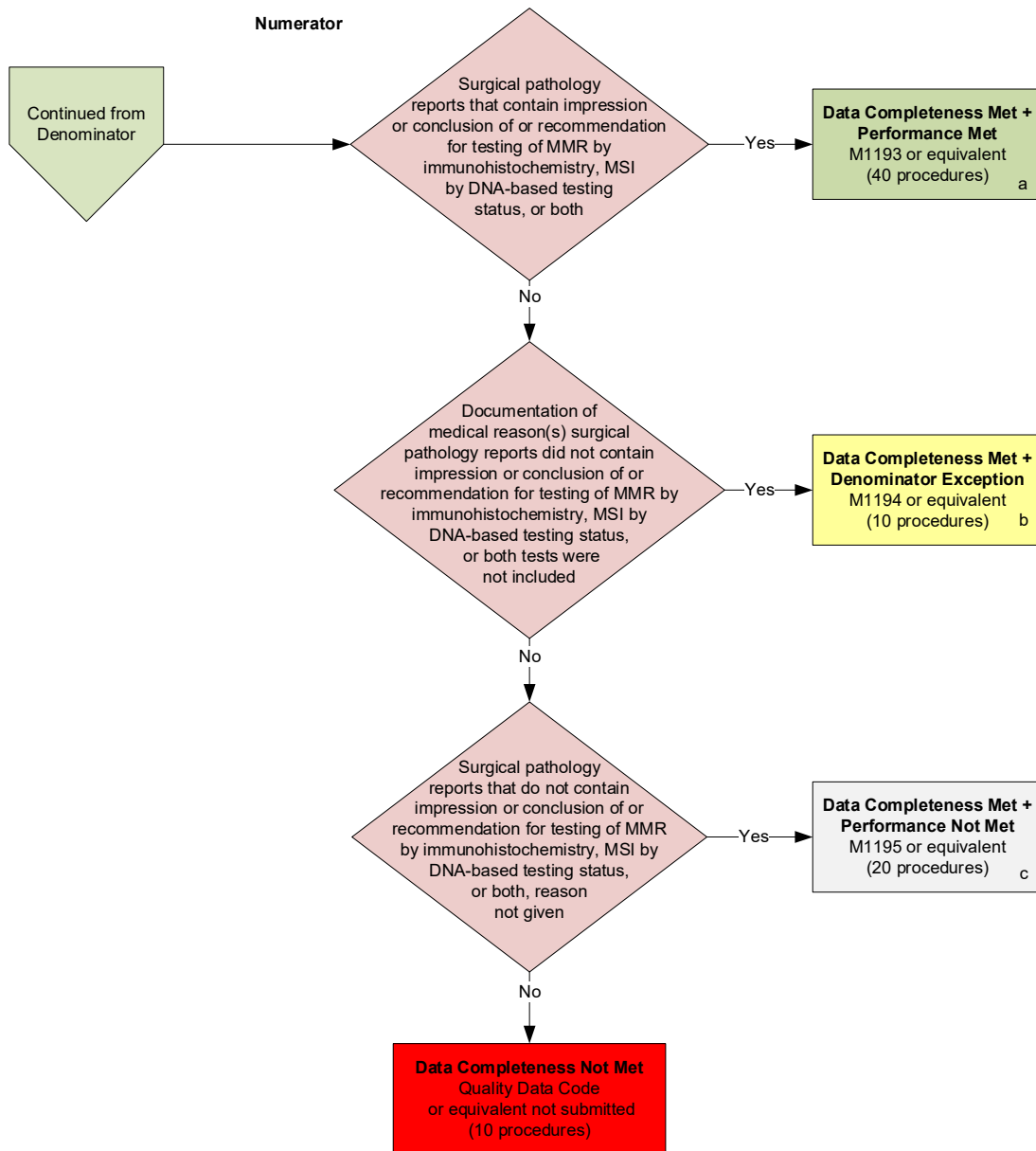
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**2024 Clinical Quality Measure Flow for Quality ID #491 (CBE 3661):  
Mismatch Repair (MMR) or Microsatellite Instability (MSI) Biomarker Testing Status in Colorectal  
Carcinoma, Endometrial, Gastroesophageal, or Small Bowel Carcinoma**

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





**SAMPLE CALCULATIONS**

**Data Completeness=**  

$$\frac{\text{Performance Met (a=40) + Denominator Exception (b=10) + Performance Not Met (c=20)}{\text{Eligible Population / Denominator (d=80)}} = \frac{70 \text{ procedures}}{80 \text{ procedures}} = 87.50\%$$

**Performance Rate=**  

$$\frac{\text{Performance Met (a=40)}}{\text{Data Completeness Numerator (70) - Denominator Exception (b=10)}} = \frac{40 \text{ procedures}}{60 \text{ procedures}} = 66.67\%$$

\*See the posted measure specification for specific coding and instructions to submit this measure  
 NOTE: Submission Frequency: Procedure

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 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. v8

**2024 Clinical Quality Measure Flow Narrative for Quality ID #491 (CBE 3661):  
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1. Start with Denominator
2. Check *Patients* regardless of age
3. Check *Diagnosis of primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection as listed in Denominator\**:
  - a. If *Diagnosis of primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection as listed in Denominator\** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Diagnosis of primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection as listed in Denominator\** equals Yes, proceed to check *Patient procedure during the performance period as listed in Denominator\**.
4. Check *Patient procedure during the performance period as listed in Denominator\**:
  - a. If *Patient procedure during the performance period as listed in Denominator\** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Patient procedure 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 *Patients with an existing diagnosis of Lynch Syndrome*.
6. Check *Patients with an existing diagnosis of Lynch Syndrome*:
  - a. If *Patients with an existing diagnosis of Lynch Syndrome* equals Yes, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Patients with an existing diagnosis of Lynch Syndrome* equals No, proceed to check *Patients with an existing diagnosis of squamous cell carcinoma of the esophagus*.
7. Check *Patients with an existing diagnosis of squamous cell carcinoma of the esophagus*:
  - a. If *Patients with an existing diagnosis of squamous cell carcinoma of the esophagus* equals Yes, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Patients with an existing diagnosis of squamous cell carcinoma of the esophagus* equals No, proceed to check *Hospice services provided to patient any time during measurement period*.
8. Check *Hospice services provided to patient any time during measurement period*:
  - a. If *Hospice services provided to patient any time during measurement period* equals Yes, do not include in *Eligible Population/Denominator*. Stop processing.

- b. If *Hospice services provided to patient any time during measurement period* equals No, include in *Eligible Population/Denominator*.
9. 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 procedures in the Sample Calculation.
10. Start Numerator
11. Check *Surgical pathology reports that contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both*:
  - a. If *Surgical pathology reports that contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both* equals Yes, include in *Data Completeness Met and Performance Met*.
    - *Data Completeness Met and Performance Met* letter is represented as Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a equals 40 procedures in the Sample Calculation.
  - b. If *Surgical pathology reports that contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both* equals No, proceed to check *Documentation of medical reason(s) surgical pathology reports did not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both tests were not included*.
12. Check *Documentation of medical reason(s) surgical pathology reports did not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both tests were not included*:
  - a. If *Documentation of medical reason(s) surgical pathology reports did not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both tests were not included* equals Yes, include in *Data Completeness Met and Denominator Exception*.
    - *Data Completeness Met and Denominator Exception* letter is represented as Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter b equals 10 procedures in the Sample Calculation.
  - b. If *Documentation of medical reason(s) surgical pathology reports did not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both tests were not included* equals No, proceed to check *Surgical pathology reports that do not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both, reason not given*.
13. Check *Surgical pathology reports that do not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both, reason not given*:
  - a. If *Surgical pathology reports that do not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both, reason not given* equals Yes, include in *Data Completeness Met and Performance Not Met*.



- *Data Completeness Met and Performance Not Met* letter is represented as Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 20 procedures in the Sample Calculation.
- b. If *Surgical pathology reports that do not contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both, reason not given* equals No, proceed to check *Data Completeness Not Met*

14. Check *Data Completeness Not Met*:

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

**Sample Calculations**

Data Completeness equals Performance Met (a equals 40 procedures) plus Denominator Exception (b equals 10 procedures) plus Performance Not Met (c equals 20 procedures) divided by Eligible Population / Denominator (d equals 80 procedures). All equals 70 procedures divided by 80 procedures. All equals 87.50 percent.

Performance Rate equals Performance Met (a equals 40 procedures) divided by Data Completeness Numerator (70 procedures) minus Denominator Exception (b equals 10 procedures). All equals 40 procedures divided by 60 procedures. All equals 66.67 percent.

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

NOTE: Submission Frequency: Procedure

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.