

**Quality ID #470 : Functional Status After Primary Total Knee Replacement**  
– National Quality Strategy Domain: Person and Caregiver-Centered Experience and Outcomes  
– Meaningful Measure Area: Functional Outcomes

**2022 COLLECTION TYPE:**  
**MIPS CLINICAL QUALITY MEASURES (CQMS)**

**MEASURE TYPE:**  
Patient-Reported Outcome-Based Performance Measure – High Priority

**DESCRIPTION:**  
For patients age 18 and older who had a primary total knee replacement procedure, functional status is rated by the patient as greater than or equal to 37 on the Oxford Knee Score (OKS) or a 71 or greater on the KOOS, JR. tool at one year (9 to 15 months) postoperatively.

**INSTRUCTIONS:**  
This measure is to be submitted **each time** a patient undergoes a total knee replacement during the denominator identification 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.

**NOTE:** *This measure is a target-based measure, where the numerator is met by having a one-year postoperative Oxford Knee Score (OKS) greater than or equal to 37 or a KOOS, JR. score greater than or equal to 71. It is expressed as a proportion or rate. Patients having received a primary total knee replacement procedure who are not assessed for functional status postoperatively remain in the denominator and are considered as not meeting the target. The measure intent is that MIPS eligible clinicians will submit all denominator eligible procedures for performance calculation.*

**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:**  
Patients 18 years of age or older as of October 1 of the denominator identification period who had a total knee replacement procedure performed during the denominator identification period

**Definition:**  
**Denominator Identification Period** — The twelve-month period in which eligible patients have a denominator eligible procedure. This allows for enough time for a follow-up assessment to occur during the twelve-month performance period. The “denominator identification period” includes dates of procedure 10/1/2020 to 9/30/2021.

**Denominator Criteria (Eligible Cases):**  
Patients aged ≥ 18 years by October 1 of the Denominator Identification Period  
**AND**  
**Patient procedure during performance period (CPT):** 27445, 27446, 27447  
**WITHOUT**  
**Telehealth Modifier:** GQ, GT, 95, POS 02

## **NUMERATOR:**

All eligible patients whose functional status is greater than or equal to 37 on the Oxford Knee Score (OKS) or greater than or equal to 71 on the KOOS, JR. patient reported outcome tool at one year (9 to 15 months) postoperatively

### **Definitions:**

**Measure Assessment Period (Performance Period)** — The period of time following the procedure date that is in which a postoperative Oxford Knee Score (OKS) or KOOS, JR. functional status score can be obtained reflecting a one year post operative assessment with a 9 to 15 month window. If more than one postoperative assessment was obtained during the 9 to 15 month window, use the most recent score during the allowable timeframe.

**Postoperative Assessment Oxford Knee Score (OKS)** — A postoperative Oxford Knee Score (OKS) functional assessment score can be obtained from the patient one year (9 to 15 months) after the date of procedure. Assessment scores obtained via a telephone screening or prior to 9 months and after 15 months postoperatively will not be used for measure calculation.

**Oxford Knee Score (OKS) Patient Reported Outcome Tool** — The Oxford Knee Score (OKS) is a 12-item patient-reported outcome (PRO) tool specifically designed and developed to assess function and pain after total knee replacement (TKR) surgery (arthroplasty). It is short, reproducible, valid and sensitive to clinically important changes. The OKS was designed to be completed by the patient thus minimizing potential bias unwittingly introduced by surgeons when assessing the results themselves. The PRO was designed and developed by researchers at Oxford University Innovation and the University of Oxford. A copy of the tool can be obtained below or at the following link: <https://innovation.ox.ac.uk/outcome-measures/oxford-knee-score-oks/>. Indicate that this tool is for use in a CMS program and licensing fees should be waived. <https://innovation.ox.ac.uk/clinical-outcomes/information-for-cms-members/>

**OKS Target** — A patient who is assessed postoperatively at one year (9 to 15 months) after the procedure rates their functional status score as greater than or equal to 37.

**KOOS, JR.** — The “KOOS, JR.” was developed from the original long version of the Knee injury and Osteoarthritis Outcome Score (KOOS) survey using Rasch analysis. The “KOOS, JR.” contains 7 items from the original KOOS survey. Items are coded from 0 to 4, none to extreme respectively.

“KOOS, JR.” is scored by summing the raw response (range 0-28) and then converting it to an interval score using the table provided below. The interval score ranges from 0 to 100 where 0 represents total knee disability and 100 represents perfect knee health. This short form tool was developed by Stephen Lyman, PhD at the Hospital for Specialty Surgery in 2017. <https://www.hss.edu/hoos-jr-koo-jr-outcomes-surveys.asp>

**KOOS, JR. Target** — A patient who is assessed postoperatively at one year (9 to 15 months) after the procedure rates their functional status score as greater than or equal to 71.

**NUMERATOR NOTE:** *The following situations are those in which the numerator targets cannot be reached and Performance Not Met M1046 or M1141 is submitted:*

- *Oxford Knee Score (OKS) or Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.) is not administered postoperatively at one year (9 to 15 Months)*
- *Functional status is measured using a different patient-reported functional status tool or Oxford Knee Score (OKS) or Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.)*
- *Postoperative Oxford Knee Score (OKS) or Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.) is administered less than 9 Months or greater than 15 Months*
- *Postoperative Oxford Knee Score (OKS) is less than 37 or Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.) is less than 71*

### **Numerator Options:**

#### **Performance Met:**

Functional status measured by the Oxford Knee Score (OKS) at one year (9 to 15 months) postoperatively was

greater than or equal to 37 or Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.) was greater than or equal to 71 (M1045)

**OR**

**Performance Not Met:**

Functional status was not measured by the Oxford Knee Score (OKS) or the Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.) at one year (9 to 15 months) postoperatively (M1141)

**OR**

**Performance Not Met:**

Functional status measured by the Oxford Knee Score (OKS) at one year (9 to 15 months) postoperatively was less than 37 or the Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.) was less than 71 postoperatively (M1046)

**RATIONALE:**

Annually there are over 500,000 total knee replacement (TKR) procedures performed in the United States. It is projected that by 2030 the volume of this procedure will increase to over 3.48 million per year due to the aging baby-boomers, increased obesity and indications for TKR that extend to both younger as well as older patients (AAOS 2006 Kurtz). From 2000 to 2006, the Medicare TKR rate overall in the United States increased 58%, from 5.5 to 8.7 per 1000 and TKR revisions currently represent 8.2% of all Medicare dollars spent (Ong 2006). It is estimated that annual hospital charges for TKR will approach 40.8 billion dollars annually by 2015 (Kaiser-Permanente 2007).

For the Minnesota Medicare population in 2006, 9,856 patients underwent a primary hip or knee replacement procedure (DRG 544) and 1,174 patients had a hip or knee revision (DRG 545). Nationally, for DRG 544 the average charge per hospitalization was \$38,447 with an average payment of \$11,916 (Value driven health care 2008 CMS).

Target was derived from a study “Patient acceptable symptom states after total hip or knee replacement at mid-term follow-up” [Kuerentjes JC, Van Tol FR Bone Joint Res 2014; 3:7–13]. Receiver operating characteristic (ROC) curves identified a PASS threshold of 42 for the Oxford Hip Score (OHS) after Total Hip Replacement (THR) and 37 for the OKS after TKR. THR patients with an OHS greater than or equal to 42 and TKR patients with an OKS greater than or equal to 37 had a higher NRS for satisfaction and a greater likelihood of being willing to undergo surgery again. The Patient Acceptable Symptom State (PASS), the highest level of symptom beyond which patients consider themselves well. PASS was compared to post-op OKS to determine an equivalent OKS threshold. OKS score greater than or equal to 37 indicates the achievement of an acceptable symptom state and correlates with a higher numeric rating scale for satisfaction [ROC curves PASS threshold of 37 with sensitivity of 76.3% and specificity of 76.5%]

**CLINICAL RECOMMENDATION STATEMENT:**

The American Association of Hip and Knee Surgeons (AAHKS) Total Knee Replacement Performance Measurement Set 2013 indicates a focus on collecting patient risk factors and implementing process measures with a future focus on outcome measures.

**MEASURE CALCULATION EXAMPLE 1:**

Patient	Post-op OKS	Met Numerator Target?
Patient A	39	Yes
Patient B	42	Yes
Patient C	35	No
Patient D	46	Yes
Patient E	Not assessed	No
Patient F	38	Yes
Patient G	Not assessed	No
Patient H	36	No

Patient I	43	Yes
Patient J	44	Yes
Rate		60%

**MEASURE CALCULATION EXAMPLE 2:**

Patient	Post-op KOOS, JR.	Met Numerator Target?
Patient A	74	Yes
Patient B	76	Yes
Patient C	68	No
Patient D	80	Yes
Patient E	Not assessed	No
Patient F	78	Yes
Patient G	Not assessed	No
Patient H	65	No
Patient I	75	Yes
Patient J	82	Yes
Rate		60%

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**MEASURE TOOL:**

**Oxford Knee Score (OKS) Patient Reported Outcome Tool:**

**PROBLEMS WITH YOUR KNEE**

Check (✓) one box for every question.

**1. During the past 4 weeks...**

How would you describe the pain you usually have from your knee?

None	Very mild	Mild	Moderate	Severe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2. During the past 4 weeks...**

Have you had any trouble with washing and drying yourself (all over) because of your knee?

No trouble at all	Very little trouble	Moderate trouble	Extreme difficulty	Impossible to do
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**3. During the past 4 weeks...**

Have you had any trouble getting in and out of a car or using public transportation because of your knee? (whichever you would tend to use)

No trouble at all	Very little trouble	Moderate trouble	Extreme difficulty	Impossible to do
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4. During the past 4 weeks...**

For how long have you been able to walk before pain from your knee becomes **severe**? (with or without a cane)

No pain/more than 30 minutes	16 to 30 minutes	5 to 15 minutes	Around the house only	Not at all/severe pain when walking
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**5. During the past 4 weeks...**

After a meal (sitting at a table), how painful has it been for you to stand up from a chair because of your knee?

Not at all painful	Slightly painful	Moderately painful	Very painful	Unbearable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**6. During the past 4 weeks...**

Have you been limping when walking because of your knee?

Rarely/never	Sometimes, or just at first	Often, not just at first	Most of the time	All of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**7. During the past 4 weeks...**

**Could** you kneel down and get up again afterwards?

Yes, easily	With little difficulty	With moderate difficulty	With extreme difficulty	No, impossible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**8. During the past 4 weeks...**

Have you been troubled by pain from your knee in bed at night?

No nights	Only 1 or 2 nights	Some nights	Most nights	Every night
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**9. During the past 4 weeks...**

How much has pain from your knee interfered with your usual work (including housework)?

Not at all	A little bit	Moderately	Greatly	Totally
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**10. During the past 4 weeks...**

Have you felt that your knee might suddenly "give out" or let you down?

Rarely/ never	Sometimes, or just at first	Often, not just at first	Most of the time	All of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**11. During the past 4 weeks...**

**Could** you do the grocery shopping on your own?

Yes, easily	With little difficulty	With moderate difficulty	With extreme difficulty	No, impossible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**12. During the past 4 weeks...**

**Could** you walk down one flight of stairs?

Yes, easily	With little difficulty	With moderate difficulty	With extreme difficulty	No, impossible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**Finally, please check that you have answered each question.**

**Thank you very much.**

## MEASURE TOOL:

### Knee injury and Osteoarthritis Outcome Score Joint Replacement (KOOS, JR.)

Knee Injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS, JR.), English version 1.0

## KOOS, JR. KNEE SURVEY

**INSTRUCTIONS:** This survey asks for your view about your knee. This information will help us keep track of how you feel about your knee and how well you are able to do your usual activities.

Answer every question by ticking the appropriate box, only one box for each question. If you are unsure about how to answer a question, please give the best answer you can.

### Stiffness

The following question concerns the amount of joint stiffness you have experienced during the **last week** in your knee. Stiffness is a sensation of restriction or slowness in the ease with which you move your knee joint.

1. How severe is your knee stiffness after first wakening in the morning?

None      Mild      Moderate      Severe      Extreme  
                       

### Pain

What amount of knee pain have you experienced the **last week** during the following activities?

2. Twisting/pivoting on your knee

None      Mild      Moderate      Severe      Extreme  
                       

3. Straightening knee fully

None      Mild      Moderate      Severe      Extreme  
                       

4. Going up or down stairs

None      Mild      Moderate      Severe      Extreme  
                       

5. Standing upright

None      Mild      Moderate      Severe      Extreme  
                       

### Function, daily living

The following questions concern your physical function. By this we mean your ability to move around and to look after yourself. For each of the following activities please indicate the degree of difficulty you have experienced in the **last week** due to your knee.

6. Rising from sitting

None      Mild      Moderate      Severe      Extreme  
                       

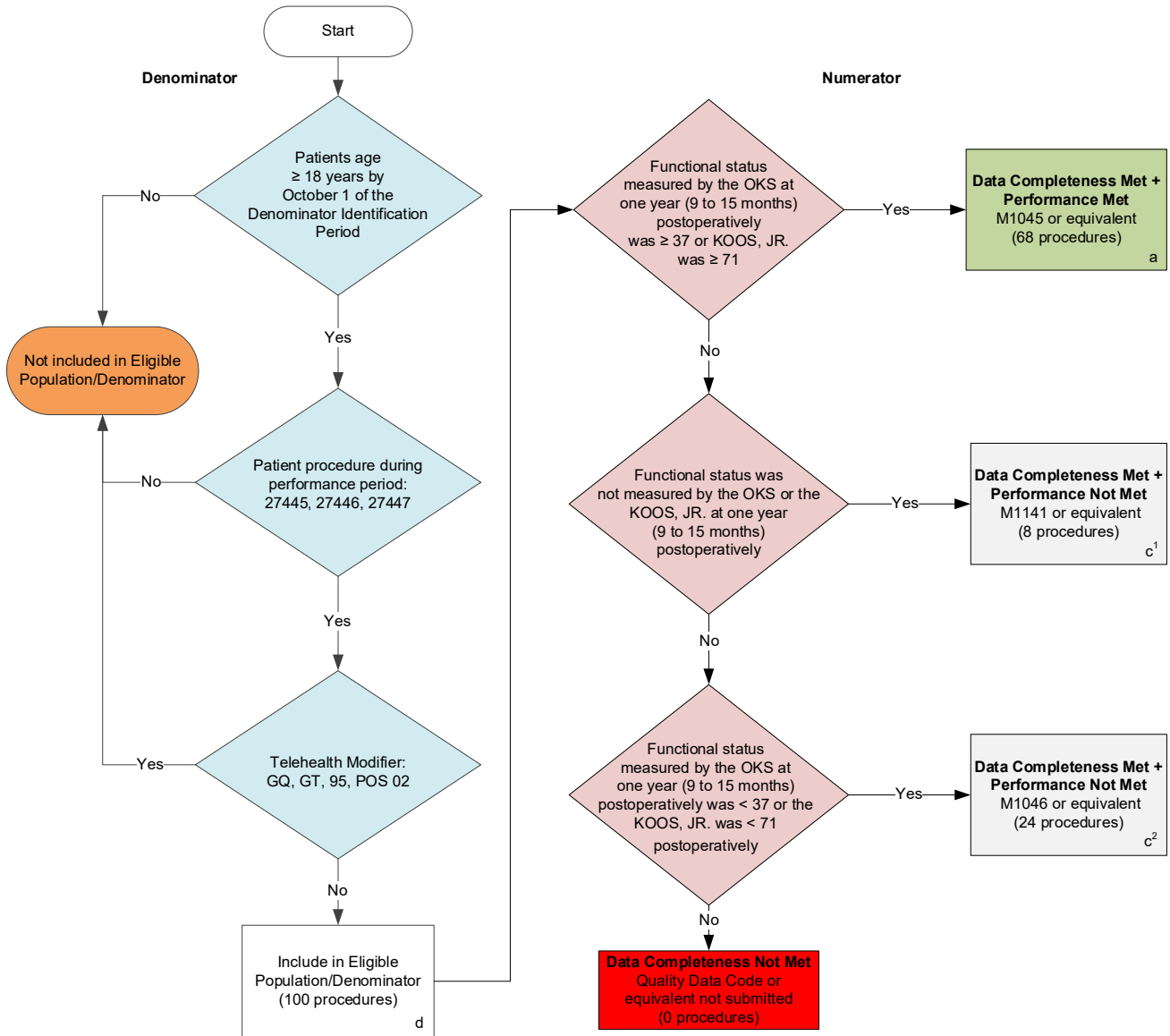
7. Bending to floor/pick up an object

None      Mild      Moderate      Severe      Extreme  
                       

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## 2022 Clinical Quality Measure Flow for Quality ID #470: Functional Status After Primary Total Knee Replacement

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



### SAMPLE CALCULATIONS

**Data Completeness=**  

$$\frac{\text{Performance Met (a=68 procedures)} + \text{Performance Not Met (c}^1\text{+c}^2\text{=32 procedures)}}{\text{Eligible Population / Denominator (d=100 procedures)}} = \frac{100 \text{ procedures}}{100 \text{ procedures}} = 100.00\%$$

**Performance Rate=**  

$$\frac{\text{Performance Met (a=68 procedures)}}{\text{Data Completeness Numerator (100 procedures)}} = \frac{68 \text{ procedures}}{100 \text{ procedures}} = 68.00\%$$

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

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## 2022 Clinical Quality Measure Flow Narrative for Quality ID #470: Functional Status After Primary Total Knee Replacement

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

1. Start with Denominator
2. Check *Patients age greater than or equal to 18 years by October 1 of the Denominator Identification Period*:
  - a. If *Patients age greater than or equal to 18 years by October 1 of the Denominator Identification Period* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Patients age greater than or equal to 18 years by October 1 of the Denominator Identification Period* equals Yes, proceed to check *Patient procedure during performance period*.
3. Check *Patient procedure during performance period*:
  - a. If *Patient procedure during performance period* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Patient procedure during performance period* equals Yes, proceed to check *Telehealth Modifier*.
4. Check *Telehealth Modifier*:
  - a. If *Telehealth Modifier* equals Yes, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Telehealth Modifier* equals Yes, include in *Eligible Population/Denominator*.
5. Denominator Population:
  - a. Denominator Population is all Eligible Procedures in the Denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 100 procedures in the Sample Calculation.
6. Start Numerator
7. Check *Functional status measured by the OKS at one year (9 to 15 months) postoperatively was greater than or equal to 37 or KOOS, JR. was greater than or equal to 71*:
  - a. If *Functional status measured by the OKS at one year (9 to 15 months) postoperatively was greater than or equal to 37 or KOOS, JR. was greater than or equal to 71* equals Yes, include in *Data Completeness and Performance Met*.
    - *Data Completeness Met and Performance Met* letter is represented in the Data Completeness in the Sample Calculation listed at the end of this document. Letter a equals 68 procedures in the Sample Calculation.
  - b. If *Functional status measured by the OKS at one year (9 to 15 months) postoperatively was greater than or equal to 37 or KOOS, JR. was greater than or equal to 71* equals No, proceed to check *Functional status was not measured by the OKS or the KOOS, JR. at one year (9 to 15 months) postoperatively*.
8. Check *Functional status was not measured by the OKS or the KOOS, JR. at one year (9 to 15 months) postoperatively*:
  - a. If *Functional status was not measured by the OKS or the KOOS, JR. at one year (9 to 15 months) postoperatively* 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 and Performance Rate Not Met in the Sample Calculation listed at the end of this document. Letter c<sup>1</sup> equals 8 procedures in the Sample Calculation.
- b. *If Functional status was not measured by the OKS or the KOOS, JR. at one year (9 to 15 months) postoperatively equals No, proceed to check Functional status measured by the OKS at one year (9 to 15 months) postoperatively was less than 37 or the KOOS, JR. was less than 71 postoperatively.*
9. *Check Functional status measured by the OKS at one year (9 to 15 months) postoperatively was less than 37 or the KOOS, JR. was less than 71 postoperatively:*
    - a. *If Functional status measured by the OKS at one year (9 to 15 months) postoperatively was less than 37 or the KOOS, JR. was less than 71 postoperatively 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 and Performance Rate Not Met in the Sample Calculation listed at the end of this document. Letter c<sup>2</sup> equals 24 procedures in the Sample Calculation.
    - b. *If Functional status measured by the OKS at one year (9 to 15 months) postoperatively was less than 37 or the KOOS, JR. was less than 71 postoperatively equals No, proceed to check Data Completeness Not Met.*
  10. *Check Data Completeness Not Met:*
    - *If Data Completeness Not Met, the Quality Data Code or equivalent was not submitted.*

### **Sample Calculations**

Data Completeness equals Performance Met (a equals 68 procedures) plus Performance Not Met (c<sup>1</sup> plus c<sup>2</sup> equals 32 procedures) divided by Eligible Population/Denominator (d equals 100 procedures). All equals 100 procedures divided by 100 procedures. All equals 100 percent.

Performance Rate equals Performance Met (a equals 68 procedures) divided by Data Completeness Numerator (100 procedures). All equals 68 procedures divided by 100 procedures. All equals 68 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.