

Warranty for Coronary Artery Bypass Surgery

In developing this warranty for lumbar fusion the Accountable Payment Model (APM) subgroup of the Dr. Robert Bree Collaborative relied most heavily on two similar initiatives creating a warranty for total knee replacement (TKR) and total hip replacement (THR) and lumbar fusion. It is our opinion that coronary artery bypass surgery, lumbar fusion, and total joint replacement shared sufficient similarities with respect to readmission to the hospital for avoidable complications that the model is transferrable.

The warranty for TKR and THR was based on a study of complications of these surgeries commissioned by the Centers for Medicare and Medicaid Services (CMS) and subsequently adopted by the High Value Healthcare Collaborative (HVHC), a group of 18 major medical systems from across the country founded by the Dartmouth Institute.

To see these reports, please visit: www.breecollaborative.org/topic-areas/apm/

The primary intent of the warranty is to set a high priority on patient safety. It is also intended to balance financial gain for providers and institutions performing coronary artery bypass surgery with financial accountability for complications attributable to these procedures. In this warranty the intent is to distribute financial risk across professional and facility components in proportion to the revenue generated by the procedure.

Definitions related to a warranty for Coronary Artery Bypass Surgery

- Diagnostic codes exclude urgent and emergent surgery
- Age limits.
- Definition of complications excluded from additional reimbursement.
- Definition of warranty period.

Diagnostic codes

Diagnostic codes for Coronary Artery Bypass Graft Surgery include:

- **414.01** Coronary atherosclerosis of native coronary artery

Coronary Artery Bypass Graft Surgical Warranty

Procedure Codes

Procedure codes for Coronary Artery Bypass Graft Surgery (listed in order of prevalence) include:

- **33508** Endoscopy, surgical, including video-assisted harvest of vein(s) for coronary artery bypass procedure.
- **33533** Coronary artery bypass, using arterial graft(s); single arterial graft.
- **33518** Coronary artery bypass, using venous graft(s) and arterial graft(s); 2 venous grafts.
- **33519** Coronary artery bypass, using venous graft(s) and arterial graft(s); 3 venous grafts.

Discharge DRG:

- **234** Coronary Bypass with Cardiac Cath without MCC
- **236** Coronary Bypass without Cardiac Cath without MCC

Age limits

>=18 years old (no upper limit)

Complications

Complications for warranty are intended to meet the following criteria:

- Represent significant complications attributable to the coronary artery bypass graft procedure
 - Are identifiable in administrative claims data
 - Are fair to hospitals and physicians
 - Are meaningful to patient outcomes
1. Surgical complications:
 - a. Mechanical complications related to non-healing of sternal wound
 - b. Wound infection:
 - Incision and drainage
 - Revision
 - c. Surgical site bleeding requiring readmission for incision and drainage
 - d. Pulmonary embolism
 2. Medical complications:
 - a. Acute myocardial infarction
 - b. Pneumonia
 - c. Sepsis/septicemia

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Warranty period and other terms

1. Warranty period is complication-specific:

7 days	30 days	90 days
<ul style="list-style-type: none">• Acute myocardial infarction• Pneumonia• Sepsis/septicemia	<ul style="list-style-type: none">• Pulmonary embolism• Surgical site bleeding• Wound infection	<ul style="list-style-type: none">• Mechanical complications related to non-healing of sternal wound

2. The warranty is valid only at the hospital performing the surgery. Therefore, patients experiencing complications are strongly encouraged to seek treatment at that hospital.

COMPLICATION CODES

ACUTE MYOCARDIAL INFARCTION (AMI)

<i>Complication ICD-9 Code</i>	<i>Description</i>
410	Acute myocardial infarction
410.0	Acute myocardial infarction of anterolateral wall
410.00	Acute myocardial infarction of anterolateral wall episode of care unspecified
410.01	Acute myocardial infarction of anterolateral wall initial episode of care
410.1	Acute myocardial infarction of other anterior wall
410.10	Acute myocardial infarction of other anterior wall episode of care unspecified
410.11	Acute myocardial infarction of other anterior wall initial episode of care
410.2	Acute myocardial infarction of inferolateral wall
410.20	Acute myocardial infarction of inferolateral wall episode of care unspecified
410.21	Acute myocardial infarction of inferolateral wall initial episode of care
410.3	Acute myocardial infarction of inferoposterior wall
410.30	Acute myocardial infarction of inferoposterior wall episode of care unspecified
410.31	Acute myocardial infarction of inferoposterior wall initial episode of care
410.4	Acute myocardial infarction of other inferior wall
410.40	Acute myocardial infarction of other inferior wall episode of care unspecified
410.41	Acute myocardial infarction of other inferior wall initial episode of care
410.5	Acute myocardial infarction of other lateral wall
410.50	Acute myocardial infarction of other lateral wall episode of care unspecified
410.51	Acute myocardial infarction of other lateral wall initial episode of care
410.6	True posterior wall infarction
410.60	True posterior wall infarction episode of care unspecified
410.61	True posterior wall infarction initial episode of care
410.7	Subendocardial infarction
410.70	Subendocardial infarction episode of care unspecified
410.71	Subendocardial infarction initial episode of care
410.8	Acute myocardial infarction of other specified sites
410.80	Acute myocardial infarction of other specified sites episode of care unspecified
410.81	Acute myocardial infarction of other specified sites initial episode of care
410.9	Acute myocardial infarction of unspecified site
410.90	Acute myocardial infarction of unspecified site episode of care unspecified
410.91	Acute myocardial infarction of unspecified site initial episode of care

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PNEUMONIA

<i>Complication ICD-9 Code</i>	<i>Description</i>
480	Viral pneumonia
480.0	Pneumonia due to adenovirus
480.1	Pneumonia due to respiratory syncytial virus
480.2	Pneumonia due to parainfluenza virus
480.3	Pneumonia due to sars-associated coronavirus
480.8	Pneumonia due to other virus not elsewhere classified
480.9	Viral pneumonia unspecifie
481	Pneumococcal pneumonia
482	Other Bacterial Pneumonia
482.0	Pneumonia due to klebsiella pneumoniae
482.1	Pneumonia due to pseudomonas
482.2	Pneumonia due to hemophilus influenzae (h. influenzae)
482.3	Pneumonia due to streptococcus
482.30	Pneumonia due to streptococcus unspecified
482.31	Pneumonia due to streptococcus group a
482.32	Pneumonia due to streptococcus group b
482.39	Pneumonia due to other streptococcus
482.4	Pneumonia due to staphylococcus
482.40	Pneumonia due to staphylococcus unspecified
482.41	Methicillin susceptible pneumonia due to staphylococcus aureus
482.42	Methicillin resistant pneumonia due to staphylococcus aureus
482.49	Other staphylococcus pneumonia
482.81	Pneumonia due to anaerobes
482.82	Pneumonia due to escherichia coli [e.coli]
482.83	Pneumonia due to other gram-negative bacteria
482.84	Pneumonia due to legionnaires' disease
482.89	Pneumonia due to other specified bacteria
482.9	Bacterial pneumonia unspecified
483	Pneumonia due to other specified organism
483.0	Pneumonia due to mycoplasma pneumoniae
483.1	Pneumonia due to chlamydia
483.8	Pneumonia due to other specified organism
485	Bronchopneumonia organism unspecified
486	Pneumonia organism unspecified
487.0	Influenza with pneumonia
507.0	Pneumonitis due to inhalation of food or vomitus

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SEPSIS/SEPTICEMIA

<i>Complications ICD-9 Code</i>	<i>Description</i>
03827	Septicemia
038.028,29	Streptococcal septicemia
038.12,3	Staphylococcal septicemia
038.102,3	Staphylococcal septicemia unspecified
038.112,3	Methicillin susceptible staphylococcus aureus septicemia
038.122,3	Methicillin resistant staphylococcus aureus septicemia
038.192,3	Other staphylococcal septicemia
038.22,3	Pneumococcal septicemia
038.32,3	Septicemia due to anerobes
038.42,3	Septicemia due to other gram-negative organisms
038.402,3	Septicemia due to gram negative organisms unspecified
038.412,3	Septicemia due to h. influenzae
038.422,3	Septicemia due to e. coli
038.432,3	Septicemia due to pseudomonas
038.442,3	Septicemia due to serratia
038.492,3	Other septicemia due to gram-negative organisms
038.82,3	Other specified septicemias
038.92,3	Unspecified septicemia
785.522,3	Septic shock
785.592,3	Other shock without trauma
790.7	Bacteremia
995.912,3	Systemic inflammatory response syndrome due to infectious process w/out organ dysfunction
995.922,3	Systemic inflammatory response syndrome due to infectious process with organ dysfunction
998.02,3	Postoperative shock not elsewhere classified
998.59	Post procedural sepsis

PULMONARY EMBOLISM (PE)

<i>Complication ICD-9 Code</i>	<i>Description</i>
415.1	Pulmonary embolism and infarction
415.11	Iatrogenic pulmonary embolism and infarction
415.19	Other pulmonary embolism and infarction

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SURGICAL SITE BLEEDING

<i>Complication ICD-9 Code</i>	<i>Description</i>
998.1	Hemorrhage or hematoma complicating a procedure not elsewhere classified
998.11	Hemorrhage complicating a procedure
998.12	Hematoma complicating a procedure
998.13	Seroma complicating a procedure
286.5	Hemorrhagic disorder due to intrinsic circulating anticoagulants

WOUND INFECTION

<i>Complication ICD-9 Code</i>	<i>Description</i>
998.6	Persistent postoperative fistula not elsewhere classified
998.83	Non-healing surgical wound
998.32	Disruption of external operation (surgical) wound
998.33	Disruption of traumatic wound repair
998.5	Postoperative infection not elsewhere classified
998.51	Infected postoperative seroma
998.59	Other postoperative infection
996.67	Infection and inflammatory reaction due to other internal orthopedic device implant and graft

MECHANICAL COMPLICATIONS

<i>Complication ICD-9 Code</i>	<i>Description</i>
996.72	Other complications of internal (biological) (synthetic) prosthetic device, implant, and graft
998.3	Disruption of wound
998.30	Disruption of wound, unspecified
998.31	Deep disruption or dehiscence of operation wound NOS