CMS WILL NO LONGER BE PROVIDING PAPER COPIES OF HANDOUTS FOR THE MEETING. ELECTRONIC COPIES OF ALL MEETING MATERIALS WILL BE POSTED ON THE CMS WEBSITE PRIOR TO THE MEETING AT HTTP://WWW.CMS.HHS.GOV/ICD9PROVIDERDIAGNOSTICCODES/03_MEETINGS.ASP

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard
Baltimore, Maryland 21244-1850

Agenda
ICD-9-CM Coordination and Maintenance Committee
Department of Health and Human Services
Centers for Medicare & Medicaid Services
CMS Auditorium
7500 Security Boulevard
Baltimore, MD 21244-1850
ICD-9-CM Volume 3, Procedures
September 15 – September 16, 2010

Pat Brooks – Introductions and Committee overview
Co-Chairperson
September 15, 2010

9:00 AM – 5:00 PM ID-9-CM Volume 3, Procedure presentations and public comments

ICD-10 Topics:

1. Code Freeze — Pat Brooks, CMS
   Page 10

2. General Equivalence Mappings — Pat Brooks, CMS; Donna Pickett, CDC; Rhonda Butler, 3M
   Pages 11-20

Section 10109(c) of the Patient Protection and Affordable Care Act of 2010 (ACA) requires the Secretary of Health and Human Services (HHS) to task the C&M Committee to convene a meeting before January 1, 2011, to receive stakeholder input regarding the crosswalk between the Ninth and Tenth Revisions of the International Classification of Diseases (ICD-9 and ICD-10, respectively), posted to the CMS website at http://www.cms.gov/ICD10, for the purpose of making appropriate revisions to said crosswalk. Section 10109(c) further requires that any revised crosswalk be treated as a code set for which a standard has been adopted by the Secretary, and that revisions to this crosswalk be posted to the CMS website.

The C&M Committee will use the first half of the first day of the September C&M Committee meeting, 9:00 a.m. to 12:30 p.m. Wednesday, September 15, 2010, to fulfill the above-referenced ACA requirements for this meeting to be held prior to January 1, 2011, and receive public input regarding the above-referenced crosswalk revisions. No other meeting will be convened by the C&M Committee for this purpose. Interested parties and other stakeholders should be prepared to submit their written comments and other relevant documentation at the meeting, or no later than November 12, 2010 to the following addresses:

Pat Brooks, RHIA
Senior Technical Advisor
Centers for Medicare and Medicaid Services
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Patricia.brooks2@cms.hhs.gov

Donna Pickett, RHIA, MPH
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National Center for Health Statistics
Office of Planning and Extramural Programs
3311 Toledo Road
Hyattsville, MD 20782
dfp4@cdc.org

3. MS-DRG Impact Analysis
   Pages 21-30
   Pat Brooks, CMS
   Rhonda Butler, 3M
   Ron Mills, 3M
   Liz McCullough, 3M

4. V28.0 ICD-10 MS-DRGs
   Pages 31-32
   Pat Brooks, CMS

5. ICD-10-PCS Updates
   Pages 33-35
   Pat Brooks, CMS
   Rhonda Butler, 3M

6. ICD-10-CM Updates
   Page 36
   Donna Pickett, CDC

ICD-9-CM Topics

7. Implantable Hemodynamic Monitoring System
   Pages 38-40
   Amy L. Gruber
   Jay S. Yadav, MD, FACC
   CardioMEMS

8. Endovascular Embolization with Head or Neck Vessel Reconstruction
   Pages 41-43
   Ann B. Fagan
   Giuseppe Lanzino, MD
   Professor of Neurosurgery

9. Fenestrated AAA Endovascular Graft
   Pages 44-47
   Ann B. Fagan
   Tara Mastracci, MD
   Asst. Professor of Surgery
   Cleveland Clinic Foundation

10. Contrast Dye Removal
    Pages 48-50

    Mady Hue
    Robert Van Tassel, MD, FACC
    Minneapolis Heart Institute

11. Addenda
    Pages 51-52

    Mady Hue

Registering for the meeting:

Information on registering online to attend the meeting can be found at:
http://www.cms.hhs.gov/apps/events/

For questions about the registration process, please contact Mady Hue at 410-786-4510 or marilu.hue@cms.hhs.gov.

Intercall Conference Information- Participant information

September 15, 2010 9:00 AM – 12:30 PM Eastern Time (ET)
Participant Dial In Number (800) 837-1935
Conference ID # **88801009**

September 15, 2010 2:15 PM – 5:30 PM Eastern Time (ET)
Participant Dial In Number (800) 837-1935
Conference ID # **88803327**

September 16, 2010 9:00 AM – 12:30 PM Eastern Time (ET)
Participant Dial In Number (800) 837-1935
Conference ID # **88805029**

September 16, 2010 1:30 PM – 3:15 PM Eastern Time (ET)
Participant Dial In Number (800) 837-1935
Conference ID # **88808234**

Encore Presentation: A digital recording of this conference will be available for replay two hours after the call's completion. The date range that the Encore conference replay will be available is listed below. To access the recording, guests will use the Dial-In Number listed below and the specific Conference ID for the date and time period indicated above.

Encore Dial In #:(800) 642-1687 or (706) 645-9291
Encore Dates: 09/15/2010 12:30 EST - 09/17/2010 23:59 EST

We will post audio and written transcripts of the meeting within several weeks of the meeting at http://www.cms.gov/ICD9ProviderDiagnosticCodes/03_meetings.asp **under the Downloads section of this page.**

ICD-9-CM TIMELINE

A timeline of important dates in the ICD-9-CM process is described below:

September 15 – 16, 2010	ICD-9-CM Coordination and Maintenance Committee meeting. Those who wish to attend the ICD-9-CM Coordination and Maintenance Committee meeting **must have registered for the meeting online by September 10, 2010.** You must bring an official form of picture identification (such as a drivers license) in order to be admitted to the building.
October 2010	Summary report of the Procedure part of the September 15 – 16, 2010 ICD-9-CM Coordination and Maintenance Committee meeting will be posted on CMS homepage as follows: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes Summary report of the Diagnosis part of the September 15– 16, 2010 ICD-9-CM Coordination and Maintenance Committee meeting report will be posted on NCHS homepage as follows: http://www.cdc.gov/nchs/icd9.htm
October 1, 2010	New and revised ICD-9-CM codes go into effect along with DRG changes. Final addendum posted on web pages as follows: Diagnosis addendum - http://www.cdc.gov/nchs/icd9.htm Procedure addendum at - http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes
October 08, 2010	**Deadline for receipt of public comments on proposed code revisions discussed at the September 15-16, 2010 ICD-9-CM Coordination and Maintenance Committee meetings for implementation on April 1, 2011.**
November 2010	Any new ICD-9-CM codes required to capture new technology that will be implemented on the following April 1 will be announced. Information on any new codes to be implemented April 1, 2011 will be posted on the following websites: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes http://www.cdc.gov/nchs/icd9.htm

November 12, 2010	**Deadline for receipt of public comments on revisions to the General Equivalence Maps (GEMs) discussed at the September 15, 2010 ICD-9-CM Coordination and Maintenance Committee.**
November 19, 2010	**Deadline for receipt of public comments on proposed code revisions discussed at the September 15-16, 2010 ICD-9-CM Coordination and Maintenance Committee meetings for implementation on October 1, 2011.**
January 7, 2011	**Deadline for requestors: Those members of the public requesting that topics be discussed at the March 9 – March 10, 2011 ICD-9-CM Coordination and Maintenance Committee meeting must have their requests to CMS for procedures and NCHS for diagnoses by this date.**
February 2011	Draft agenda for the Procedure part of the March 9, 2011 ICD-9-CM Coordination and Maintenance Committee meeting posted on CMS homepage as follows: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes Draft agenda for the Diagnosis part of the March 10, 2011 ICD-9-CM Coordination and Maintenance Committee meeting posted on NCHS homepage as follows: http://www.cdc.gov/nchs/icd9.htm Federal Register notice of March 9 – March 10, 2011 ICD-9-CM Coordination and Maintenance Committee Meeting will be published.
February 11, 2011	**On-line registration opens for the March 9 – 10, 2011 ICD-9-CM Coordination and Maintenance Committee meeting at: http://www.cms.hhs.gov/apps/events**
March 2011	Because of increased security requirements, **those wishing to attend the March 9 – March 10, 2011** ICD-9-CM Coordination and Maintenance Committee meeting must register for the meeting online at: http://www.cms.hhs.gov/apps/events

	Attendees must register online by March 4, 2011 failure to do so may result in lack of access to the meeting.
March 9 – March 10 2011	ICD-9-CM Coordination and Maintenance Committee meeting.
April 1, 2011	Any new ICD-9-CM codes required to capture new technology will be implemented. Information on any new codes implemented on April 1, 2011 previously posted in early November 2010 will be on the following websites: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes http://www.cdc.gov/nchs/icd9.htm http://www.cms.hhs.gov/MLNGenInfo
April 1, 2011	Deadline for receipt of public comments on proposed code revisions discussed at the March 9-10, 2011 ICD-9-CM Coordination and Maintenance Committee meetings for implementation on October 1, 2011.
April 2011	Notice of Proposed Rulemaking to be published in the Federal Register as mandated by Public Law 99-509. This notice will include the final ICD-9-CM diagnosis and procedure codes for the upcoming fiscal year. It will also include proposed revisions to the DRG system on which the public may comment. The proposed rule can be accessed at: http://www.cms.hhs.gov/AcuteInpatientPPS/IPPS/list.asp
April 2011	Summary report of the Procedure part of the March 9, 2011 ICD-9-CM Coordination and Maintenance Committee meeting will be posted on CMS homepage as follows: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes Summary report of the Diagnosis part of the March 10, 2011 ICD-9-CM Coordination and Maintenance Committee meeting report will be posted on NCHS homepage as follows: http://www.cdc.gov/nchs/icd9.htm
June 2011	Final addendum posted on web pages as follows: Diagnosis addendum at - http://www.cdc.gov/nchs/icd9.htm Procedure addendum at – http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes
July 15, 2011	Those members of the public requesting that topics be discussed at the September 14 – 15, 2011 ICD-9-CM Coordination and

	Maintenance Committee meeting must have their requests to CMS for procedures and NCHS for diagnoses.
August 1, 2011	Hospital Inpatient Prospective Payment System final rule to be published in the Federal Register as mandated by Public Law 99-509. This rule will also include all the final codes to be implemented on October 1, 2011. This rule can be accessed at: http://www.cms.hhs.gov/AcuteInpatientPPS/IPPS/list.asp
August 2011	Tentative agenda for the Procedure part of the September 14 – 15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting will be posted on CMS homepage at - http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes Tentative agenda for the Diagnosis part of the September 14 – 15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting will be posted on NCHS homepage at - http://www.cdc.gov/nchs/icd9.htm Federal Register notice for the September 14 –15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting will be published. This will include the tentative agenda.
August 12, 2011	**On-line registration opens for the September 14-15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting at:** **http://www.cms.hhs.gov/apps/events**
September 9, 2011	Because of increased security requirements, those wishing to attend the September 14 - 15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting must register for the meeting online at: http://www.cms.hhs.gov/apps/events **Attendees must register online by September 9, 2011; failure to do so may result in lack of access to the meeting.**
September 14 –15, 2011	ICD-9-CM Coordination and Maintenance Committee meeting. Those who wish to attend the ICD-9-CM Coordination and Maintenance Committee meeting **must have registered for the meeting online by September 9, 2011.** You must bring an official

	form of picture identification (such as a drivers license) in order to be admitted to the building.
October 2011	Summary report of the Procedure part of the September 14 – 15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting will be posted on CMS homepage as follows: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes Summary report of the Diagnosis part of the September 14– 15, 2011 ICD-9-CM Coordination and Maintenance Committee meeting report will be posted on NCHS homepage as follows: http://www.cdc.gov/nchs/icd9.htm
October 1, 2011	New and revised ICD-9-CM codes go into effect along with DRG changes. Final addendum posted on web pages as follows: Diagnosis addendum - http://www.cdc.gov/nchs/icd9.htm Procedure addendum at - http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes
October 07, 2011	**Deadline for receipt of public comments on proposed code revisions discussed at the September 14-15, 2011 ICD-9-CM Coordination and Maintenance Committee meetings for implementation on April 1, 2012.**
November 2011	Any new ICD-9-CM codes required to capture new technology that will be implemented on the following April 1 will be announced. Information on any new codes to be implemented April 1, 2012 will be posted on the following websites: http://www.cms.hhs.gov/ICD9ProviderDiagnosticCodes http://www.cdc.gov/nchs/icd9.htm
November 18, 2011	**Deadline for receipt of public comments on proposed code revisions discussed at the September 14-15, 2011 ICD-9-CM Coordination and Maintenance Committee meetings for implementation on October 1, 2012.**

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DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard
Baltimore, Maryland 21244-1850

ICD-10 Topics

Partial Code Freeze for ICD-9-CM and ICD-10 Finalized

The ICD-9-CM Coordination and Maintenance Committee will implement a partial freeze of the ICD-9-CM and ICD-10 (ICD-10-CM and ICD-10-PCS) codes prior to the implementation of ICD-10 on October 1, 2013. There was considerable support for this partial freeze. The partial freeze will be implemented as follows:

- The last regular, annual updates to both ICD-9-CM and ICD-10 code sets will be made on October 1, 2011.

- On October 1, 2012, there will be only limited code updates to both the ICD-9-CM and ICD-10 code sets to capture new technologies and diseases as required by section 503(a) of Pub. L. 108-173.

- On October 1, 2013, there will be only limited code updates to ICD-10 code sets to capture new technologies and diagnoses as required by section 503(a) of Pub. L. 108-173. There will be no updates to ICD-9-CM, as it will no longer be used for reporting.

- On October 1, 2014, regular updates to ICD-10 will begin.

The ICD-9-CM Coordination and Maintenance Committee will continue to meet twice a year during the partial freeze. At these meetings, the public will be asked to comment on whether or not requests for new diagnosis or procedure codes should be created based on the criteria of the need to capture a new technology or disease. Any code requests that do not meet the criteria will be evaluated for implementation within ICD-10 on and after October 1, 2014 once the partial freeze has ended.

Codes discussed at the September 15 – 16, 2010 and March 9 – 10, 2011 ICD-9-CM Coordination and Maintenance Committee meeting will be considered for implementation on October 1, 2011, the last regular updates for ICD-9-CM and ICD-10. Code requests discussed at the September 14 – 15, 2011 and additional meetings during the freeze will be evaluated for either the limited updates to capture new technologies and diseases during the freeze period or for implementation to ICD-10 on October 1, 2014. The public will be actively involved in discussing the merits of any such requests during the period of the partial freeze.

ICD-10 GEMs 2010 Version Update

Update Summary

"GEMs documentation for technical users" developed for clinical analysts and IT users

Additional documentation for using the GEMs is posted with the updated GEMs files as part of the September 15-16 ICD-9-CM Coordination and Maintenance Committee Agenda.

- Specifies GEMs entry inclusion criteria and provides examples
- Discusses GEMs flags in detail and provides examples
- Answers other frequently asked technical questions
- Discusses translation rules for obstetrics and angioplasty

Updated 2010 GEMs Posted for Coordination and Maintenance Committee Discussion

The updated 2010 General Equivalence Mappings (GEMs) are posted for public comment. The updated files contain all changes to date in response to

- public comment
- internal review

In addition, a comprehensive review of the ICD-9-CM to ICD-10-CM (diagnosis) and ICD-9-CM to ICD-10-PCS (procedure) GEM files was conducted, and entries streamlined as needed to conform to inclusion criteria as defined in the GEMs documentation for technical users. Examples of updated entries are provided in the following pages.

Public comment:
ICD-9-CM to ICD-10-PCS GEM entry for "control of hemorrhage" codes

2010 entry	Updated 2010 entry	Comment
Example **60.94** Control of (postoperative) hemorrhage of prostate To **0W3R[0,3,4,7,8]ZZ** Control Bleeding in Genitourinary Tract (5 codes)	**Example** **60.94** Control of (postoperative) hemorrhage of prostate To **0VQ0[0,3,4,7,8]ZZ** Repair Prostate (5 codes) **OR** To **0W3R[0,3,4,7,8]ZZ** Control Bleeding in Genitourinary Tract (5 codes)	The ICD-10-PCS root operation Control includes only post-procedural hemorrhage. Certain ICD-9-CM "control of hemorrhage" codes (49.95, 57.93, and 60.94) include both spontaneous hemorrhage and post-procedural hemorrhage. PCS translation alternatives from the root operation Repair have been added as translation alternatives for procedures performed to control spontaneous hemorrhage.

Public comment:
Diagnosis GEM entries (both files) for "cerebral palsy" codes

2010 entry	Updated 2010 entry	Comment
Example ICD-10-CM GEM **G80.0** Spastic quadriplegic cerebral palsy To **343.8** Other specified infantile cerebral palsy **Example ICD-9-CM GEM** **343.2** Congenital quadriplegia To **G80.8** Other cerebral palsy	**Example ICD-10-CM GEM** **G80.0** Spastic quadriplegic cerebral palsy To **343.2** Congenital quadriplegia **Example ICD-9-CM GEM** **343.2** Congenital quadriplegia To **G80.0** Spastic quadriplegic cerebral palsy	This is a case of a simple typographical error, where the two I-10-CM codes for "spastic quadriplegia" and "other specified cerebral palsy" were translated to and from the incorrect ICD-9-CM code. This has been corrected in the update.

Public comment:
ICD-9-CM to ICD-10-PCS GEM entry for "partial shoulder replacement" code

2010 entry	Updated 2010 entry	Comment
Example **81.81** Partial shoulder replacement To **0PR[C,D]0JZ** Replacement of Humeral Head with Synthetic Substitute, Open Approach (2 codes) **OR** To **0RR[E,F]07Z** Replacement of Sternoclavicular Joint, Open Approach (6 codes) **OR** To **0RR[E,F]07Z** Replacement of Acromioclavicular Joint, Open Approach (6 codes)	**Example** **81.81** Partial shoulder replacement To **0PR[C,D]0JZ** Replacement of Humeral Head with Synthetic Substitute, Open Approach (2 codes)	The commenter noted that partial shoulder replacement in ICD-9-CM consists of replacement of only the humeral head and the proximal humeral shaft with a synthetic substitute. The updated entry contains only the two relevant translation alternatives for ICD-9-CM code 81.81. Also as a result of public comment, it was determined that ICD-10-PCS will be updated for 2011 to apply qualifiers to the shoulder joint body part specifying the humeral portion of the joint. These changes will flow through to the 2011 GEMs update and will be the new translation for 81.81. Example of 2011 ICD-10-PCS code: **0RRJ0J6** Replacement of Right Shoulder Joint with Synthetic Substitute, Humeral Surface, Open Approach

Public comment:
ICD-9-CM to ICD-10-CM GEM entry for "ankle sprain NOS" code

2010 entry	Updated 2010 entry	Comment
Example **845.00** Sprain of ankle, unspecified site To **S93.409A** Sprain of unspecified ligament of unspecified ankle, initial encounter	**Example ICD-10-CM GEM** **845.00** Sprain of ankle, unspecified site To **S93.409A** Sprain of unspecified ligament of unspecified ankle, initial encounter **OR** **S96.919A**, Strain of unspecified muscle and tendon at ankle and foot level, unspecified side, initial encounter	The index for ICD-9-CM indicates that both sprains and strains are classified to the codes specifying sprain. The ICD-10-CM code specifying unspecified muscle and tendon strain has been added as a translation option in the update.

Public comment:
ICD-10-CM to ICD-9-CM GEM entry for "hemiplegia following CVA" codes

2010 entry	Updated 2010 entry	Comment
Example 1 **I69[0-3,8]5[0,1]** Hemiplegia and hemiparesis following nontraumatic [type of CVA] affecting dominant side (10 codes) To **438.9** Unspecified late effects of cerebrovascular disease **Example 2** **I69[0-3,8]5[3,4]** Hemiplegia and hemiparesis following nontraumatic [type of CVA] affecting non-dominant side (10 codes) To **438.9** Unspecified late effects of cerebrovascular disease **Example 3** **I69[0-3,8]59** Hemiplegia and hemiparesis following nontraumatic [type of CVA] affecting unspecified side (5 codes) To **438.9** Unspecified late effects of cerebrovascular	**Example 1** **I69[0-3,8]5[0,1]** Hemiplegia and hemiparesis following nontraumatic [type of CVA] affecting dominant side (10 codes) To **438.21** Late effects of cerebrovascular disease, hemiplegia affecting dominant side **Example 2** **I69[0-3,8]5[3,4]** Hemiplegia and hemiparesis following nontraumatic [type of CVA] affecting non-dominant side (10 codes) To **438.22** Late effects of cerebrovascular disease, hemiplegia affecting nondominant side **Example 3** **I69[0-3,8]59** Hemiplegia and hemiparesis following nontraumatic [type of CVA] affecting unspecified side (5 codes) To **438.20** Late effects of cerebrovascular disease,	The ICD-10-CM codes for hemiplegia contain an axis of classification for the specific cerebrovascular disease that preceded the hemiplegia, and ICD-9-CM does not. However, ICD-9-CM provides more detail than the current GEMs translation would suggest. There are ICD-9-CM codes that specify hemiplegia following CVA, and further classify according to whether the affected side is dominant, non-dominant, or unspecified. The 2010 update contains these more accurate translations.

2010 entry	Updated 2010 entry	Comment
disease	hemiplegia affecting unspecified side	

Public comment:
Procedure GEM entries (both files) for "38.93 Other venous catheterization"

2010 entry	Updated 2010 entry	Comment
Example **ICD-9-CM GEM** **38.93** Other venous catheterization To **0[2,5,6]H*[0,3,4]3Z** Insertion of Infusion Device into Vein (167 codes)	**Example** **ICD-9-CM GEM** **38.93** Other venous catheterization To **0[5,6]HY[0,3,4]3Z** Insertion of Infusion Device into [Upper, Lower] Vein (6 codes) **OR** **0JH[6,8,D-P][0,3]XZ** Insertion of Vascular Access Device into Subcutaneous Tissue and Fascia (20 codes)	Two aspects of the GEMs entry for *38.93 Other venous catheterization* were updated in both procedure GEM files. 1) The number of translation alternatives did not meet inclusion criteria 2a: *When the source system is less specific than the target system along an axis of classification, and the target system classification contains both specific and less specific translation alternatives, only the less specific translation alternative is included as an entry.* The entry was updated to include only the less specific translation alternatives. 2) The complete meaning of the ICD-9-CM code includes both tunneled and non-tunneled catheters, according to Coding Clinic advice. In addition to the PCS infusion device codes, the PCS vascular access device codes are both plausible alternative translations of 38.93. The updated GEMs translation includes the insertion of vascular access device PCS codes (20 codes).

Public comment:
ICD-9-CM to ICD-10-PCS GEM entry for "five in one knee repair" code

2010 entry	Updated 2010 entry	Comment
Example Scenario 2 **81.42** Five in one Knee Repair **Choice List 1** To **0SBD[0,3,4]ZZ** Excision of Left Knee Joint (3 codes) **AND** **Choice List 2** To **0MQP[0,3,4]ZZ** Repair Left Knee Bursa and Ligament (3 codes) **AND** **Choice List 3**	**Example Scenario 2** **81.42** Five in one Knee Repair **Choice List 1** To **0SBD[0,3,4]ZZ** Excision of Left Knee Joint (3 codes) **AND** **Choice List 2** To **0MQP[0,3,4]ZZ** Repair Left Knee Bursa and Ligament (3 codes) **AND** **Choice List 3**	The ICD-9-CM code 81.42 specifying "five in one knee repair" is actually five procedures, as the code title suggests. The description of what this composite procedure entails is contained in the following ICD-9-CM instruction: *Medial meniscectomy, medial collateral ligament repair, vastus medialis advancement, semitendinosus advancement, and pes anserinus transfer* The GEMs entry for *81.42 Five in one Knee Repair* requires ICD-10-PCS cluster translations, with two scenarios, (one for the right knee, one for the left knee) and five choice lists containing the available

2010 entry	Updated 2010 entry	Comment
To **0LSR[0,4]ZZ** Reposition Left Knee Tendon (2 codes) **AND** **Choice List 4** To **0LSQ[0,4]ZZ** Reposition Right Knee Tendon (2 codes) **AND** **Choice List 5** To **0KXT[0,4]ZZ** Transfer Left Lower Leg Muscle (2 codes)	To **0LSR[0,4]ZZ** Reposition Left Knee Tendon (2 codes) **AND** **Choice List 4** To **0LSP[0,4]ZZ** Reposition Left Knee Tendon (2 codes) **AND** **Choice List 5** To **0KXT[0,4]ZZ** Transfer Left Lower Leg Muscle (2 codes)	approaches in PCS for each of the five procedures. Scenario 1 contains five sets of choices to capture the five in one procedure translated to PCS. All the choices in the scenario are for the right knee. It is correct. Scenario 2 also contains five sets of choices. All of the choices in the scenario contain codes for the left knee. The alternatives in choice list 4 are incorrectly listed for the right knee tendon and they should be for the left knee. The updated 2010 files contain only the choices for the left knee in Scenario 2.

Internal review:
ICD-10-CM to ICD-9-CM GEM entry for "major depressive disorder, unspecified"

2010 entry	Updated 2010 entry	Comment
Example **F32.9** Major depressive disorder, single episode, unspecified To **296.20** Major depressive affective disorder, single episode, unspecified	**Example** **F32.9** Major depressive disorder, single episode, unspecified To **296.20** Major depressive affective disorder, single episode, unspecified **OR** To **311** Depressive disorder, not elsewhere classified	ICD-9-CM code 311 classifies depressive disorder NEC as a separate code. ICD-10-CM does not classify "depressive disorder NEC" as a separate code. Instead, the includes notes for *F32.9 Major depressive disorder, single episode, unspecified* include "Depression NOS" and "Depressive disorder NOS." Therefore, ICD-9-CM code 311 is a plausible translation alternative of F32.9, based on the complete meaning of the code.

Internal review:
ICD-9-CM to ICD-10-CM GEM entries for "uncontrolled diabetes" codes

2010 entry	Updated 2010 entry	Comment
Example 1 **250.02** Diabetes mellitus without mention of complication, type II or unspecified type, uncontrolled To **E11.9** Type 2 diabetes mellitus without complications **Example 2** **250.43** Diabetes with renal	**Example 1** **250.02** Diabetes mellitus without mention of complication, type II or unspecified type, uncontrolled To **E11.65** Type 2 diabetes mellitus with hyperglycemia **Example 2** **250.43** Diabetes with renal	The ICD-10-CM index gives the following instruction under the main term and the three sub-terms below: ***Diabetes*** *- inadequately controlled - code to Diabetes, by type, with hyperglycemia*

2010 entry	Updated 2010 entry	Comment
manifestations, type I [juvenile type], uncontrolled To **E10.21** Type 1 diabetes mellitus with diabetic nephropathy	manifestations, type I [juvenile type], uncontrolled To **E10.21** Type 1 diabetes mellitus with diabetic nephropathy **AND** **E10.65** Type 1 diabetes mellitus with hyperglycemia	*- out of control - code to Diabetes, by type, with hyperglycemia* *- poorly controlled - code to Diabetes, by type, with hyperglycemia*

Internal review:
ICD-9-CM to ICD-10-PCS GEM entries for "endovascular graft in aorta" code

2010 entry	Updated 2010 entry	Comment
Example 1 **39.71** Endovascular implantation of graft in abdominal aorta To **04V0[0,3,4]DZ** Restriction of Abdominal Aorta with Intraluminal Device (3 codes) **Example 2** **39.73** Endovascular implantation of graft in thoracic aorta To **02RW[0,4][7,8,J,K]Z** Replacement of Thoracic Aorta (8 codes) **OR** To **02UW[3,4]JZ** Supplement Thoracic Aorta with Synthetic Substitute (3 codes) **OR** To **02VW[0,3,4]DZ** Restriction of Thoracic Aorta with Intraluminal Device, (3 codes)	**Example 1** **39.71** Endovascular implantation of graft in abdominal aorta To **04U0[3,4]JZ** Supplement Abdominal Aorta with Synthetic Substitute (2 codes) **OR** To **04V0[3,4]DZ** Restriction of Abdominal Aorta with Intraluminal Device (2 codes) **Example 2** **39.73** Endovascular implantation of graft in thoracic aorta To **02UW[3,4]JZ** Supplement Thoracic Aorta with Synthetic Substitute (2 codes) **OR** To **02VW[3,4]DZ** Restriction of Thoracic Aorta with Intraluminal Device, (2 codes)	Two aspects of the GEMs entry for ICD-9-CM codes 39.71 and 39.73 were updated in the ICD-9-CM GEM entries. 1) These codes specify implantation of graft material in the abdominal or thoracic aorta respectively. While the tabular instruction is not explicit whether "endovascular" refers to either the location of the device or the approach used to place the device, one of the index entries explicitly uses the phrase "endovascular approach." Therefore, a complete translation of codes 39.71 and 39.73 includes only the "percutaneous" approaches in PCS. 2) The most accurate translation alternatives for these ICD-9-CM codes are the root operations Supplement and Restriction in ICD-10-PCS. The translation alternatives for 39.71 did not include the root operation Supplement and for 39.73 incorrectly included the root operation Replacement. Both entries have been updated to consistently include the most accurate translation alternatives.

Internal review:
ICD-9-CM to ICD-10-PCS GEM entry for "intracardiac echocardiography" codes

2010 entry	Updated 2010 entry	Comment
Example **37.28** Intracardiac echocardiography To **B24[0,4-6,B,C,D]YZZ** (16 codes) Ultrasonography of Heart	**Example** **37.28** Intracardiac echocardiography To **B24[4-6,B,D]YZZ** (8 codes) Ultrasonography of Heart	The coronary artery and pericardium body parts were included as translation alternatives due to typographical error. They have been removed in the updated entry.

Internal review:
ICD-10-CM to ICD-9-CM GEM entry for "other genitourinary symptom" code

2010 entry	Updated 2010 entry	Comment
Example **R39.89** Other symptoms and signs involving the genitourinary system To **625.9** Unspecified symptom associated with female genital organs **OR** To **788.99** Other symptoms involving urinary system	**Example** **R39.89** Other symptoms and signs involving the genitourinary system To **788.99** Other symptoms involving urinary system	ICD-9-CM code 625.9 was included as a translation alternative due to typographical error. It has been removed in the updated entry.

Internal review:
ICD-10-CM to ICD-9-CM GEM entry for "other problems with newborn" code

2010 entry	Updated 2010 entry	Comment
Example **P84** Other problems with newborn **To 768.9** Unspecified birth asphyxia in liveborn infant **OR** To **770.88** Hypoxemia of newborn	**Example** **P84** Other problems with newborn To **768.9** Unspecified birth asphyxia in liveborn infant **OR** To **770.88** Hypoxemia of newborn **OR** To **775.81** Other acidosis of newborn	ICD-10-CM code P84 tabular and index instruction include acidosis of newborn. Therefore, ICD-9-CM code 775.81 was added as a translation alternative in the updated entry.

Internal review:
ICD-10-CM to ICD-9-CM GEM entry for "cutaneous abscess of hand" codes

2010 entry	Updated 2010 entry	Comment
Example **L02.51[1,2,9]** Cutaneous abscess of hand (3 codes) To **681.00** Cellulitis and abscess of finger, unspecified **OR** To **682.4** Cellulitis and abscess of hand, except fingers and thumb **OR** To **681.10** Cellulitis and abscess of toe, unspecified	**Example** **L02.51[1,2,9]** Cutaneous abscess of hand (3 codes) To **681.00** Cellulitis and abscess of finger, unspecified **OR** To **682.4** Cellulitis and abscess of hand, except fingers and thumb	ICD-9-CM code 681.10 was included as a translation alternative due to typographical error. It has been removed in the updated entry.

Inclusion criteria:
ICD-9-CM to ICD-10-PCS GEM entries for "incision of body part" codes

2010 entry	Updated 2010 entry	Comment
Example **55.01** Nephrotomy To **0T9[0,1][0,7,8]ZZ** Drainage of Kidney (6 codes) **OR** To **0TC[0,1][0,3,4,7,8]ZZ** Extirpation of Matter from Kidney (10 codes) **OR** To **0TH5[0,3,4,7,8]2Z** Insertion of Monitoring Device into Kidney (5 codes) **OR** To **0TJ50ZZ** Inspection of Kidney, Open Approach **OR** To **0TP5[0,3,4,7,8]*** Removal of Device from Kidney (40 codes) **OR** To **0TW5[0,3,4,7,8]*** Revision of Device in Kidney (40 codes)	**Example** **55.01** Nephrotomy To **0T9[0,1][0,7,8]ZZ** Drainage of Kidney (6 codes) **OR** To **0TC[0,1][0,3,4,7,8]ZZ** Extirpation of Matter from Right Kidney (10 codes) **OR** To **0TJ50ZZ** Inspection of Kidney, Open Approach	According to the ICD-9-CM index, the complete meaning of code 55.01 includes drainage, removal of foreign body, and exploration of the body part. Translated to ICD-10-PCS, they correspond to the root operations, Drainage, Extirpation and Inspection, respectively. The PCS codes for removal and revision of various devices are more specific than 55.01, and therefore do not meet the inclusion criteria for the ICD-9-CM to ICD-10-PCS entry.

Inclusion criteria:
ICD-9-CM to ICD-10-PCS GEM entries for "other operation on body part" codes

2010 entry	Updated 2010 entry	Comment
Example **05.89** Other operations on sympathetic nerves or ganglia To **019[K-P][0,3,4][0,Z]Z** Drainage of Sympathetic Nerve (30 codes) **OR** To **01C[K-P][0,3,4]ZZ** Extirpation of Matter from Sympathetic Nerve (15 codes) **OR** To **01PY[0,3,4][0,2]Z** Removal of Device from Peripheral Nerve (6 codes) **OR** To **01Q[K-P][0,3,4]ZZ** Repair Sympathetic Nerve (15 codes) **OR** To **01WY[0,3,4][0,2,M]Z** Revision of Device in Peripheral Nerve (9 codes)	**Example** **05.89** Other operations on sympathetic nerves or ganglia To **01Q[K-P][0,3,4]ZZ** Repair Sympathetic Nerve (15 codes)	Most ICD-9-CM categories include an "other operation" code for each body part or system represented in the category. Often these codes do not contain specific coding instructions in the tabular or index, as in this example, where the only index entries referring to 05.89 are non-specific: *Operation > ganglia NEC > sympathetic* *Operation > nerve (cranial) (peripheral) NEC > sympathetic NEC* *Operation > sympathetic nerve NEC* In such cases the ICD-9-CM GEMs entries have been streamlined to meet inclusion criteria. They include only PCS root operation Repair codes, which function as the "operation NEC"

2010 entry	Updated 2010 entry	Comment
		option in ICD-10-PCS.

Impact of the Transition to ICD-10 on Medicare Inpatient Hospital Payments

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Abstract: On October 1, 2013 the reporting of diagnoses and procedures in the U.S. will transition from the clinical modification of the ninth revision of the International Classification of Diseases (ICD-9-CM) to the tenth revision (ICD-10). The impact of conversion to ICD-10 on Medicare MS-DRG payments to hospitals was estimated using 2009 Medicare data. A minimal hospital payment increase of 0.05 percent was found using the ICD-10 version of MS-DRGs. In contrast, a modest hospital payment decrease of 0.38 percent was found when ICD-10 data was mapped backed to ICD-9-CM and the ICD-9-CM version of MS-DRGs was used. **Key words:** *ICD-10, Mapping, Payment Impact, MS-DRGs*

Since 1979 the U.S. has used the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to report diagnosis data across all sites of service and procedure data for inpatient care. On October 1, 2013, ICD-9-CM will be replaced by the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) to report diagnosis data across all sites of service and the International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) to report inpatient procedure data. ICD-10-CM/PCS substantially increases the level of clinical detail that can be captured and reported. In the FY 2009 update of ICD-9-CM there were 14,025 diagnosis codes and 3,824 procedure codes. In the FY 2010 update of ICD-10-CM there were 69,101 diagnosis codes and in ICD-10-PCS there were 71,957 procedure codes. For brevity ICD-10-CM/PCS will be referred to as ICD-10.

Since diagnosis and procedure based patient classification systems such as the Diagnosis Related Groups (DRGs) are used in payment methodologies, payers must adapt their payment systems to ICD-10. Payers can either directly convert their payment systems to be based on ICD-10 codes or use a mapping system such as the Reimbursement Map from CMS to convert reported ICD-10 codes to ICD-9-CM and then process the converted ICD-9-CM codes using ICD-9-CM based applications. Under a mapping approach, as providers submit claims with ICD-10 codes, the payer would map each ICD-10 code to an equivalent ICD-9-CM code (or codes) so existing ICD-9-CM based payment applications could continue to be used by the payer. In many areas, ICD-10 classifies clinical conditions and procedures differently than ICD-9-CM does. As a result the conversion of complex payment methodologies from ICD-9-CM to ICD-10 or the use of

maps from ICD-10 to ICD-9-CM could have an unintended impact on aggregate payments to providers or the distribution of payments across providers.

Medicare uses the Medicare Severity - Diagnosis Related Groups (MS-DRGs) as the basis of payment in the Medicare inpatient prospective payment system (IPPS). The Center for Medicare and Medicaid Services (CMS) has posted an ICD-10 version of MS-DRGs on its website (CMS, 2010, A). The availability of both an ICD-9-CM and ICD-10 version of MS-DRGs can provide the basis for quantifying the impact on aggregate payments to hospitals and the distribution of payments across hospitals arising from the conversion of MS-DRGs to ICD-10. In addition, CMS has posted an ICD-10 to ICD-9-CM Reimbursement Map on its website (CMS, 2010, B). The Reimbursement Map selects a single ICD-9-CM coding alternative that represents the most reasonable match for each ICD-10 code for the purpose of MS-DRG assignment. The availability of the ICD-10 to ICD-9-CM reimbursement map can provide the basis for quantifying the impact on aggregate payments to hospitals and the distribution of payments across hospitals resulting from the use of the ICD-9-CM version of the MS-DRGs with mapped ICD-10 data.

This paper uses the ICD-9-CM MS-DRG v27 (FY 2010), the converted ICD-10 MS-DRG v27 and the ICD-10 to ICD-9-CM Reimbursement Map for fiscal year 2010 to estimate the impact on aggregate payments to hospitals and the distribution of payments across hospitals. Payments based on the MS-DRGs assigned using ICD-9-CM coded data with the ICD-9-CM version of the MS-DRGs were compared to:

1. Payments based on the MS-DRGs assigned using ICD-10 coded data with the ICD-10 version of the MS-DRGs.
2. Payments based on the MS-DRGs assigned using ICD-10 coded data converted back to ICD-9-CM using the Reimbursement Map with the ICD-9-CM version of the MS-DRGs.

Methods

Creating an ICD-10 Database

Since there is no large scale database available that contains diagnosis and procedure data coded in ICD-10, it was necessary to create a simulated ICD-10 database by using the General Equivalence Mappings (GEMs). The GEMs are a comprehensive, translation dictionary between ICD-9-CM and ICD-10. Taking the complete meaning of a code as a single unit, the GEMs identify the most appropriate translation(s) to the other code set. There is an ICD-9-CM to ICD-10 GEM and an ICD-10 to ICD-9-CM GEM for both diagnoses and procedures. CMS has posted the GEMs on its website (CMS, 2010, C).

The database used to create the simulated ICD-10 data was the FY 2009 Medicare Provider Analysis and Review (MedPAR) data. The FY 2009 MedPAR database contained all Medicare inpatient claims from acute care hospitals with a discharge date in from 10/1/2008 through 9/30/2009. There were 10,984,798 inpatient claims coded in ICD-9-CM in the FY 2009 MedPAR database.

For each MedPAR record in the 2009 database, a plausible ICD-10 record was created using the GEMs. Given the information available in the ICD-9-CM codes on the record, the objective of the translation of the record from ICD-9-CM to ICD-10 was to create a *correctly coded* ICD-10 version of the same record. Due to the increased specificity of ICD-10, a single ICD-9-CM code often translates to multiple ICD-10 codes in the GEMs. The translation process required selecting a single ICD-10 code from among the alternative possible ICD-10 translations in the GEMs. A set of context specific translation rules was developed to automate the selection of the best possible ICD-10 translation alternative. The ICD-9-CM codes on a record were *not* translated one by one, but instead the entire contents of the record were taken into account in creating an ICD-10 coded version of the record. By evaluating the entire record as coded in ICD-9-CM, the selection of the ICD-10 codes that best represented how the record could be coded in ICD-10 was done in the context of the complete ICD-9-CM based description of the patient, thereby improving the accuracy of the ICD-10 replication of the record.

The context specific translation rules employed to create an ICD-10 coded version of the MedPAR database were as follows:

1. If an ICD-9-CM code is translated to only a single ICD-10 code in the GEMs, the ICD-9-CM code is translated to the corresponding ICD-10 code.
2. For single ICD-9-CM codes that translate to multiple ICD-10 alternatives, the ICD-10 to ICD-9-CM GEM is used in a reverse lookup to determine if any of the ICD-10 alternative codes also translated back to the ICD-9-CM code being translated. If such ICD-10 to ICD-9-CM translations were present, the possible ICD-10 code translations are limited to those alternatives. For example, in the GEMs ICD-9-CM code 250.40 (Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled) translates to ICD-10 codes E11.21 (Type 2 diabetes mellitus with diabetic nephropathy), E11.22 (Type 2 diabetes mellitus with diabetic chronic kidney disease) and E11.29 (Type 2 diabetes mellitus with other diabetic kidney complication). Thus, there are three separate ICD-10 codes for type II diabetes with renal manifestations. In the ICD-10 to ICD-9-CM GEMs, only ICD-10 code E11.29 translates back to ICD-9-CM code 250.40 because E11.21 and E11.22 would require two ICD-9-CM codes to be coded in order to express their full meaning (i.e., additional codes for nephropathy or chronic kidney disease). Therefore, from the ICD-10 perspective, only E11.29 translates to code 250.40 in the GEMs and represents the best ICD-10 translation alternative for ICD-9-CM code 250.40.
3. Some ICD-9-CM procedure codes do not contain a specification of the anatomic site of the procedure. As a result such ICD-9-CM procedure codes translate to many anatomically specific ICD-10 procedure codes in the GEMs. In order to select among the anatomically specific ICD-10 alternative codes, the body system of the ICD-9-CM code reported as the principal diagnosis is used to select the best possible ICD-10 translation alternative. For example, ICD-9-CM code 92.27 (Implantation or insertion of radioactive element) has 263 possible anatomic site alternatives in ICD-10. If the principal diagnosis

were a prostate diagnosis, the anatomic site for the ICD-10 radioactive element implant code translation would be the prostate.

4. Some diagnoses or procedures that can be coded as a single code in ICD-10 require multiple ICD-9-CM codes (a "cluster") to be present on the record to express the same meaning. For example, ICD-10 diagnosis code L89.40 (Pressure ulcer of contiguous site of back, buttock and hip, unspecified stage) requires that four separate ICD-9-CM codes specifying the three ulcer sites and the stage be coded in order to replicate the full meaning of the ICD-10 code. When all the codes in an ICD-9-CM cluster were present on an ICD-9-CM coded record, the multiple ICD-9-CM codes in the cluster were translated to a single ICD-10 code.
5. Some ICD-9-CM codes contain a specification of multiple diseases or procedures. ICD-9-CM "combination" codes require multiple ICD-10 codes to be reported in order to replicate the ICD-9-CM codes on the record. When a combination code is present on an ICD-9-CM coded record, the translation process translated the code to multiple ICD-10 codes corresponding to the individual diseases or procedures contained in the ICD-9-CM combination code. For example, ICD-9-CM code 48.52 (Open abdominoperineal resection of the rectum), which includes both resection of the rectum and colostomy creation, translates to two ICD-10 codes, one corresponding to the resection of the rectum and the other corresponding to the creation of the colostomy.
6. Some diagnoses are gender-specific in ICD-10 but not in ICD-9-CM. When translating a non-gender-specific ICD-9-CM code whose corresponding ICD-10 codes are gender-specific, the gender of the patient reported on the claim is used to select the appropriate ICD-10 alternative.
7. Adjunct codes in ICD-9-CM are sometimes needed to fully specify a procedure (e.g., for a PTCA adjunct codes are used to specify the number of sites, number of vessels, whether a drug-eluting stent was used and whether the site was a bifurcation). Adjunct codes are not needed in ICD-10-PCS since a single ICD-10 codes contain all the information needed to describe all aspects of a procedure. Adjunct codes along with the ICD-9-CM underlying procedure code were translated to a single ICD-10 code.

Once all of the context specific translation rules were applied, there still could remain some ICD-9-CM codes on a record that had more than one possible ICD-10 translation. In most instances, this was due to ICD-10 having axes of classification (e.g. laterality – left or right) or more detailed anatomic specificity than could be deduced from any of the ICD-9-CM codes on the record. Because the objective was to create an ICD-10 coded version of each record in the MedPAR data, it was necessary to select from among the remaining ICD-10 translations. However, which alternative translation was selected would not have an impact on MS-DRG assignment because the choices were among patient attributes that were not codeable in ICD-9-CM and therefore were not used to assign patients to different MS-DRGs. Since the native ICD-10 MS-DRGs were constructed to replicate the native ICD-9-CM MS-DRGs, ICD-10 codes that differentiated patients based on attributes not contained in ICD-9-CM were all assigned to the same MS-DRG. For example, the operative approach used to reach the site of a procedure (e.g., open, percutaneous, etc.) is always specified in ICD-10 but rarely specified in ICD-9-CM. For an

ICD-9-CM procedure code that lacked any specification of the operative approach, all the different ICD-10 operative approach codes for the corresponding ICD-10 procedure were assigned to the same ICD-10 MS-DRG. Thus, which operative approach is selected for the ICD-10 translation of the procedure code does not affect MS-DRG assignment. Since under these circumstances the selection from among ICD-10 alternative translations would have no impact on MS-DRG assignment, the final translation for the ICD-9-CM code was selected randomly from among the remaining possible ICD-10 translations using a uniform probability distribution. Approximately 19 percent of the ICD-9-CM code translations to ICD-10 required a random selection from among residual possible ICD-10 translations.

Simulating Payments

Version 27 of the MS-DRGs was independently assigned to the FY 2009 MedPAR data three times as follows:

1. The ICD-9-CM MS-DRG grouper was used to assign the MS-DRGs to the source ICD-9-CM MedPAR data.
2. The ICD-10 MS-DRG grouper was used to assign the MS-DRG to the ICD-10 version of the MedPAR data.
3. The ICD-10 version of the MedPAR data was then mapped back to ICD-9-CM codes using the ICD-10 to ICD-9-CM Reimbursement Map. The ICD-9-CM MS-DRG grouper was then used to assign the MS-DRGs to this mapped ICD-9-CM version of the MedPAR data.

For brevity, the three different MS-DRG groupings of the FY 2009 MedPAR data will be referred to as native ICD-9-CM, native ICD-10 and mapped ICD-9-CM, respectively. Figure 1 summarizes the process of obtaining the three different MS-DRG assignments.

Inlier and outlier payments were calculated for each claim in the MedPAR data using FY 2010 Medicare payment rules for operating and capital payment including wage index, disproportionate share hospital (DSH) and indirect medical education (IME) adjustments. A fixed loss threshold of $20,185 from the FY 2009 final rule was used to calculation additional outlier payments.

The payment calculation was applied to acute care hospitals falling under the Medicare IPPS including hospitals in Puerto Rico. Non-IPPS hospitals were removed from the database, including skilled nursing facilities, long-term care hospitals, rehabilitation hospitals, psychiatric hospitals, critical access hospitals, children's hospitals, and oncology hospitals. Further, hospitals that had insufficient or inaccurate cost report information or with missing IME or DSH adjustment factors were also excluded from the database. Cases from IPPS hospitals in stand-alone units were also excluded. The final analysis database contained 3,383 short-term acute hospitals representing 10,934,386 Medicare discharges.

Results

The results of the payment impact analysis are contained in Table 1. Relative to the native ICD-9-CM MS-DRGs the native ICD-10 MS-DRGs assigned 1.23 percent of the patients to a different MS-DRG. The change in MS-DRG assignment was relatively consistent across hospital types with rural hospitals having the smallest change in MS-DRG assignment (1.14 percent) and the 10 percent of hospitals with the biggest indirect medical education adjustment having the largest change in MS-DRG assignment (1.57 percent). Mapping the ICD-10 data back to ICD-9-CM and using the native ICD-9-CM MS-DRGs significantly increased the percent of patients assigned to a different MS-DRG to 3.23 percent. The change in MS-DRG assignment due to the mapping of ICD-10 data back to ICD-9-CM was relatively consistent across hospital types with rural hospitals having the smallest change in MS-DRG assignment (2.51 percent) and the top 10 percent of hospitals by bed size having the largest change in MS-DRG assignment (3.54 percent).

Overall the native ICD-10 MS-DRGs relative to the native ICD-9-CM MS-DRGs increased hospital payments by 0.05 percent. Thus, payment increases and decreases due to a change in DRG assignment essentially netted out. The change in payment was relatively consistent across hospital types with rural hospitals having a 0.01 percent decrease in payment and the 10 percent of hospital with the biggest indirect medical education adjustment having a 0.19 percent payment increase. Mapping the ICD-10 data back to ICD-9-CM and using the native ICD-9-CM MS-DRGs resulted in an overall payment decrease of 0.38 percent. Thus, mapping ICD-10 data back to ICD-9-CM on average caused patients to be assigned to lower paying MS-DRGs. The decrease in payment due to the mapping of ICD-10 data back to ICD-9-CM was relatively consistent across hospital types with the top 10 percent of hospitals with the highest indirect medical education adjustment having the smallest payment decrease (0.18 percent) and the 20 percent of hospitals with the lowest disproportionate share adjustment having the largest payment decrease (0.51 percent).

Discussion

The results of the payment impact analysis show that the conversion to a native ICD-10 version of MS-DRGs will have a minimal impact on aggregate payments to hospitals and the distribution of payments across hospitals. The objective of the ICD-10 MS-DRG conversion project was to produce an ICD-10 version of MS-DRGs that replicated the ICD-9-CM version. Thus, for data coded in ICD-10, the ICD-10 MS-DRGs would assign “the same MS-DRG had the same case been coded using ICD-9-CM codes” (CMS, 2010, D). The development of a complete native ICD-10 version of the MS-DRGs allowed ICD-10 codes to be evaluated on an individual basis to determine the most appropriate MS-DRG assignment. As a result, there is a high degree of consistency between the ICD-9-CM and ICD-10 version of the MS-DRGs.

Mapping ICD-10 data back to ICD-9-CM and using the ICD-9-CM version of MS-DRGs produced a greater impact on aggregate payments to hospitals and the distribution of payments

across hospitals. Any mapping will inherently produce less consistent results because a single choice between mapping alternatives is uniformly applied across all DRGs, whereas in a native conversion context specific judgment can be used to independently assign translation alternatives on a DRG by DRG basis. The Reimbursement Map used in this analysis was biased for inpatient care. The ICD-10 to ICD-9-CM code maps were selected based on inpatient code frequency data in the five percent of mappings where there were multiple ICD-9-CM map alternatives, and were not necessarily the closest map in terms of meaning. Thus, the use of the Reimbursement Map could be problematic if applied to convert ICD-10 data to ICD-9-CM for use with other types of ICD-9-CM based applications such as outpatient systems.

The ICD-10 MS-DRGs replicate the ICD-9-CM MS-DRGs. As such they do not take advantage of the increased specificity of ICD-10. If the ICD-10 MS-DRGs had been optimized for ICD-10, there could have been a substantial shift of patients across MS-DRGs making them inconsistent with the existing MS-DRG payment weights. Since there is no substantial database available coded in ICD-10, there would be no way of recalibrating the MS-DRG payment weights to correspond to ICD-10 optimized MS-DRGs. The converted ICD-10 database developed for this project created an ICD-10 database with records coded in ICD-10 but at a level of specificity corresponding to ICD-9-CM. In other words, the records were coded in ICD-10 based on only the information that is available within ICD-9-CM.When additional information was required to complete the ICD-10 coding, the additional information was inferred by randomly selecting from among the alternative possibilities. Such an approach is sufficient for the purpose of comparing the impact of replicated versions of MS-DRGs, because the additional information needed for ICD-10 coding *would not be* expected to impact the MS-DRG assignment of the replicated ICD-10 MS-DRGs. However, such an approach could not be used as the basis for establishing payment weights of optimized ICD-10 MS-DRGs, because the additional information *would be* expected to impact the MS-DRG assignment of the ICD-10 optimized MS-DRGs. It can be anticipated that CMS will begin to optimize MS-DRGs for ICD-10 once ICD-10 coded data becomes available allowing the MS-DRG payment weights to be simultaneously recalibrated.

There have been many misconceptions regarding the use of the GEMs. As a translation dictionary, the GEMs provide a starting point for the conversion of ICD-9-CM based applications to a native ICD-10 version of the application. This is how the GEMs were used to create the ICD-10 MS-DRGs. Any attempt to use the GEMs to map ICD-9-CM data to ICD-10 data as opposed to convert an application to a native ICD-10 version of the application is extremely problematic. The use of the GEMs to convert ICD-9-CM coded patient records to ICD-10 for this project was possible only because of two special circumstances: First, the use of the converted data was strictly limited to the testing of a *replicated* ICD-10 application in which the additional specificity of ICD-10 was *not* utilized. Second, only the aggregate financial impact results were evaluated. Because a large sample size of nearly 11 million records was used in the analysis, a reliable aggregate estimate of financial impact could be obtained even though a random selection from among equally plausible ICD-10 alternatives was sometimes necessary in order to convert an individual record to ICD-10. Except in these very narrow circumstances, it is not possible to reliably convert an ICD-9-CM database to an ICD-10 database that corresponds

to the full specificity of ICD-10 because the necessary information is simply not available in ICD-9-CM.

Another misconception is that the GEMs can be used to create a single universal mapping from ICD-10 to ICD-9-CM that can be used to map input ICD-10 data to ICD-9-CM allowing existing ICD-9-CM applications to continue to be used. As evidenced by the Reimbursement Map, the GEMs can be used to create an ICD-10 to ICD-9-CM map. However, the Reimbursement Map was developed largely using inpatient MedPAR data. For other applications the mapping choices could have differed (e.g., mapping choices can be quite different for an inpatient versus outpatient application). Thus, a universal map is not feasible without a potential loss of accuracy for some applications. The results obtained in this study for MS-DRGs using the Reimbursement Map are best case results. If a specific ICD-10 to ICD-9-CM map developed for another purpose had been used it is highly likely that the impact on aggregate payments to hospitals and the distribution of payments across hospitals would have been substantially greater.

To illustrate the problem with using a map, the All Patient Refined DRGs (APR DRGs) were assigned to the ICD-9-CM data and then reassigned using the converted ICD-10 data mapped back to ICD-9-CM using the Reimbursement Map. APR DRGs contain a detailed four level definition of severity of illness and are widely used in comparative public reports and in Medicaid and commercial payer payment systems (Averill, 2002). Mapping ICD-10 data back to ICD-9-CM and reassigning the APR DRG resulted in 4.47 percent of the patients being assigned to a different APR DRG. The increased number of patients with a different APR DRG assignment is likely the result of the use of a map that was not tailored to APR DRGs. If the mapping had been developed specifically for APR DRGs the number of patients assigned to a different APR DRG would likely have been lower. However, as with MS-DRGs the primary reason a mapping produces less consistent results is because a single choice among mapping alternatives is uniformly applied across all DRGs instead of being evaluated on a DRG by DRG basis.

If payers do not convert their core payment and claims adjudication systems to native ICD-10 versions and instead use an ICD-10 to ICD-9-CM mapping in order to continue to use their existing ICD-9-CM based systems, there are potential biases and unintended results of such an approach. This is especially true if a payer attempts to use a single uniform mapping across all systems. Fortunately, as evidenced by the development of the native ICD-10 version of the MS-DRGs, CMS appears to be moving toward creating native ICD-10 versions of its systems instead of mapping ICD-10 data to ICD-9-CM and continuing to use ICD-9-CM based systems.

Conclusions

The transition from the ICD-9-CM version of the MS-DRGs to the ICD-10 version of the MS-DRGs will have a minimal impact on aggregate payments to hospitals (+0.05 percent) and on the distribution of payments across hospital types (-0.01 to +0.19 percent). Mapping ICD-10 data back to ICD-9-CM and using the ICD-9-CM version of MS-DRGs would have a modest impact on aggregate payments to hospitals (-0.38 percent) and the distribution of payments across hospital types (-0.18 to -0.51 percent). Although the transition from the ICD-9-CM version of the

MS-DRGs to the ICD-10 version of the MS-DRGs resulted in 1.23 percent of the patients being assigned to different MS-DRGs, payment increases and decreases due to a change in DRG assignment essentially netted out. Since the GEMs were used as the basis for creating the ICD-10 version of the MS-DRGs, the consistency achieved between the ICD-9-CM and ICD-10 versions of the MS-DRGs demonstrates that the GEMs can provide an effective basis for converting ICD-9-CM based applications to ICD-10.

Mapping ICD-10 data back to ICD-9-CM and using the ICD-9-CM version of MS-DRGs resulted in 3.23 percent of the patients being assigned to different MS-DRGs with a bias toward lower paying MS-DRGs as evidenced by an overall 0.38 percent payment decrease. The bias was present even though the Reimbursement Map was developed relying on Medicare inpatient patient data. Applying the Reimbursement Map to the APR DRGs resulted in 4.47 percent of patients changing APR DRGs, demonstrating that the use of a map that is not tailored to the specific application will produce less consistent results. As demonstrated by MS-DRGs, a native ICD-10 version of an application can produce consistent results with the ICD-9-CM version of the application. However, the use of mappings between ICD-10 and ICD-9-CM will produce less consistent results especially if the mapping is not tailored to the specific application.

A: Centers for Medicare and Medicaid Services (CMS). "ICD-10-CM/PCS MS-DRGv26 Definitions Manual Table of Contents."
http://www.cms.gov/ICD10/17_ICD10_MS_DRG_Conversion_Project.asp

B: Centers for Medicare and Medicaid Services (CMS). "2010 Mapping."
http://www.cms.gov/ICD10/13_2010_ICD10PCS.asp

C: Centers for Medicare and Medicaid Services (CMS). "2010 ICD-10-CM and GEMs. 2010 ICD-10-PCS and GEMs." http://www.cms.gov/ICD10/01_Overview.asp

D: Centers for Medicare and Medicaid Services (CMS). "Converting MS-DRGs 26.0 to ICD-10-CM and ICD-10-PCS."
www.cms.hhs.gov/ICD10/09_ICD10_MS_DRG_Conversion_Project.asp

Averill, Richard F., Goldfield, Norbert I., Muldoon, John, Steinbeck, Barbara A., Grant, Thelma M.: A Closer Look at All-Patient Refined DRGs. *Journal of AHIMA* 73(1): 46-50, January 2002.

				Native ICD-10 vs Native ICD-9-CM		Mapped ICD-10 vs Native ICD-9-CM	
Hospital Type	Count Hospitals	Count Discharges	Tot Pay ($000,000)	% Diff MS-DRG	% Diff Payment	% Diff MS-DRG	% Diff Payment
All	3,383	10,934,388	113,775	1.23	0.05	3.23	-0.38
IME							
Top 10%	102	618,480	10,705	1.57	0.19	3.46	-0.18
All others	3,281	10,315,908	103,070	1.21	0.03	3.21	-0.41
DSH							
Top 20%	676	2,585,781	33,802	1.36	0.07	3.38	-0.29
Middle 60%	2,031	6,306,919	61,308	1.21	0.04	3.14	-0.40
Bottom 20%	676	2,041,688	18,665	1.15	0.05	3.29	-0.51
Location							
Large Urban	1,336	5,268,504	60,227	1.26	0.07	3.33	-0.35
Other Urban	1,093	4,150,778	42,477	1.24	0.04	3.36	-0.43
Rural	954	1,515,106	11,071	1.14	-0.01	2.51	-0.38
Size							
Top 10%	338	3,538,540	41,862	1.26	0.08	3.54	-0.38
All other	3,045	7,395,848	71,913	1.22	0.03	3.08	-0.39

Table 1: Payment Impact Redistribution
IME = Indirect Medical Education
DSH = Disproportionate Share Hospital

Version 28.0 ICD-10 MS-DRGs Update

Overview
In 2008 and 2009, CMS began converting the ICD-9-CM based Medicare Severity – Diagnosis Related Groups (MS-DRGs), version 26.0, to ICD-10-CM and ICD-10-PCS (ICD-10-CM/PCS) codes. The project was an exercise to evaluate the effectiveness of the General Equivalence Mappings (GEMs) and to learn how best to use them in converting applications that use ICD-9-CM.

The public was informed about this undertaking through the ICD-9-CM Coordination and Maintenance Committee meetings. Lessons learned were shared with the health care industry so that similar conversion exercises would be less challenging. CMS initiated a three stage approach. The first stage involved developing a process for converting the MS-DRGs to ICD-10-CM/PCS, and using this process to convert the digestive system section of the MS-DRGs. Information from this first stage was shared with the public at the September 24-25, 2008 ICD-9-CM Coordination & Maintenance Committee.

Refinements were made to this approach based on lessons learned in the first stage. Stage two used the modified approach and automation of specific steps to convert the remaining parts of the MS-DRGs. Information about the completed project was shared with the public at the September 16-17, 2009 ICD-9-CM Coordination & Maintenance Committee. A draft ICD-10 MS-DRG version 26.0 definitions manual is posted on the HHS website at http://www.cms.gov/icd10manual/fullcode_cms/p0001.html.

A full report of the test conversion of version 26.0 ICD-10 MS-DRGs can be found at http://www.cms.gov/ICD10/Downloads/MsdrgConversion.pdf.

Stage three of the test conversion involves two major initiatives:

- Developing ICD-10 MS-DRG grouping software
- Updating the ICD-10 MS-DRGs to version 28.0

Developing ICD-10 MS-DRG grouping software
The initial test conversion of MS-DRGs included all of the MS-DRG definitions and appendices in the definitions manual except appendix C containing the CC exclusion list. In order to develop a working grouper, conversion of the CC exclusion logic was necessary. This was completed in early 2010, in addition to an interim update of the test conversion to version 27.0 MS-DRGs.

Based on internal review and public comment, several changes were implemented while developing the preliminary ICD-10 MS-DRG grouper software. Some logic changes were necessary to enable completion of an ICD-10 MS-DRG grouper that met CMS' stated goal, of developing an ICD-10 MS-DRG grouper that produces the same results as the ICD-9-CM MS-DRG grouper. Logic changes include:

- Two new lists, “Principal Diagnosis is its own MCC” and “Principal Diagnosis is its own CC” were added to the grouper to handle ICD-10-CM codes that translate to two or more separate codes in ICD-9-CM. The grouper logic was modified so that when one of the codes on the list is the principal diagnosis, the patient will be considered to have an MCC or CC based solely on the principal diagnosis.

- Some ICD-9-CM codes require multiple ICD-10-PCS to describe the procedure. Procedure logic in surgical MS-DRGs was developed to take into account the need for ICD-10-PCS code clusters to produce the same grouper results.
    - Heart Assist System
    - Kidney/Pancreas Transplant
    - Major brain device implant
    - Neurostimulators
    - Cardiac Defibrillators
    - Resection of Abdominal Aorta and Other Thoracic Vessels with Replacement
    - Implant/replace subcutaneous cardiac device
    - Lead-device pairs creating an O.R. procedure
    - Permanent Cardiac Pacemaker Implant

- An ICD-10-PCS delivery code list was developed to enable correct assignment of obstetrics records indicating vaginal delivery to MS-DRGs 774 and 775 Vaginal Delivery

A report on preliminary grouper testing and results is available at ****

Updating the ICD-10 MS-DRGs to version 28.0
The same process used for the interim update of ICD-10 MS-DRGs from version 26.0 to version 27.0 will be followed in updating ICD-10 MS-DRGs to version 28.0. The update process is as follows:

- The 2011 version GEMs are used to translate the approximately 500 ICD-9-CM code lists comprising the MS-DRGs to comparable lists of ICD-10-CM/PCS codes
- Initial tests ensure that all ICD-10-CM codes are assigned to an MDC and all ICD-10-PCS codes are represented in the logic
- The draft converted lists are analyzed for issues, (e.g., list assignment conflicts, necessary ICD-10-PCS clusters) and all issues are resolved
- The converted lists receive additional clinical review as needed

Version 28.0 ICD-10 MS-DRG Update Timeline

Date	Event
August 2010	Version 28.0 ICD-9-CM MS-DRGs published in FY 2011 final rule
October 2010	2011 update of ICD-10-PCS posted
January 2011	2011 update of ICD-10-CM and diagnosis and procedure GEMs posted
February 2011	Version 28.0 ICD-10 MS-DRGs definitions manual posted
March 2011	V28.0 ICD-10 grouper release

ICD-10-PCS 2011 Version

2011 Update Summary

Change Summary Table

2010 Total	New Codes	Revised Codes	Deleted Codes	2011 Total
71,957	494	105	320	**72,131**

ICD-10-PCS Code 2011 Totals, By Section

Medical and Surgical	62,072
Obstetrics	300
Placement	864
Administration	1,438
Measurement and Monitoring	327
Extracorporeal Assistance and Performance	41
Extracorporeal Therapies	42
Osteopathic	100
Other Procedures	60
Chiropractic	90
Imaging	2,934
Nuclear Medicine	463
Radiation Oncology	1,929
Rehabilitation and Diagnostic Audiology	1,382
Mental Health	30
Substance Abuse Treatment	59
Total	**72,131**

ICD-10-PCS Code Changes

- Codes added in parallel with new ICD-9-CM codes valid October 1, 2010
- Codes deleted in parallel with ICD-9-CM changes, and to enhance internal consistency in ICD-10-PCS
- Individual codes added, revised or deleted
    - In response to public input, including
        - Add new qualifier Humeral Surface to shoulder joint body part to specify partial shoulder replacement
        - Streamline device values for interbody spinal fusion devices
    - Based on internal review for clarity and ease of use, including
        - Add body part Hemorrhoidal Plexus to root operation tables 065 Destruction and 06B Excision

- Change transplant compatibility qualifier values in table 0UY to match all other transplant compatibility qualifier values in the Medical and Surgical section

ICD-10-PCS Draft Guidelines Revised, Updated and Posted as a Separate Document

- Comprehensive review, revision and updates by the Cooperating Parties based on industry feedback
- Posted as a stand alone document in June of 2010, also included in the ICD-10-PCS Reference Manual, Appendix B

New/Updated Files

New—**GEMs technical FAQs**

- Downloadable PDF format
- Comprehensive definitions of GEMs inclusion criteria with examples of each for diagnosis and procedure codes
- Other frequently asked questions based on public input

Updated—**ICD-10-PCS long descriptions**

- Text file format
- 2011 version of ICD-10-PCS
- Accompanying readme file in PDF format

Updated—**ICD-10-PCS table descriptions**

- Machine readable text file for developers
- 2011 version of ICD-10-PCS
- Accompanying readme file in PDF format

Updated —**ICD-10-PCS 2011 Final Addenda**

- New code titles for 2011 in ICD-10-PCS standard tables (PDF format)
    - Accompanying list of revised 2010 code titles for comparison
- Invalid (deleted) 2010 code titles in ICD-10-PCS standard tables (PDF format)
    - List of original 2010 code titles revised, for comparison with 2011 list
- Comprehensive file of new, revised and invalid code titles in machine readable text format for developers
    - Accompanying readme file in PDF format

Updated—**ICD-10-PCS Reference Manual**

- Downloadable PDF format
- 2011 version of ICD-10-PCS
- New coding practice examples added in response to public input
- Appendix A—

    - PCS explanation and body part key entries revised
      --In response to public input
      --Based on internal review for clarity and completeness
- Appendix B— Comprehensive review, revision and updates by the Cooperating Parties based on industry feedback

Updated—**ICD-10-PCS slide presentation**

- Reference slides available in PDF format

Updated—**ICD-10-PCS and ICD-9-CM General Equivalence Mappings** (GEMs)

- Text file format
- Individual GEM entries added, revised or deleted based on
    - Adherence to ICD-10-PCS official coding guidelines
    - Public input from GEM users
    - Comprehensive review of ICD-9-CM GEMs to ensure they meet inclusion criteria as defined in GEMs Technical FAQs
- 2011 version of ICD-10-PCS and ICD-9-CM
    - ICD-10-PCS to ICD-9-CM GEM
    - ICD-9-CM to ICD-10-PCS GEM
- Procedure Code Set GEM Documentation and User's Guide (PDF format)
    - Examples updated based on public input
    - Glossary and file format information updated

Updated —**ICD-10 Reimbursement Mappings**

- **Note**: The ICD-10 Reimbursement Mappings cannot be posted until the 2011 version of ICD-10-CM is available. They will be posted in a timely fashion, once the 2011 update of ICD-10-CM is completed.
- Text file format
- ICD-10-PCS to ICD-9-CM, 2011 version
    - Applied procedure mapping for reimbursement purposes
    - Derived based on inpatient hospital data
- ICD-10-CM to ICD-9-CM, 2011 version
    - Applied diagnosis mapping for reimbursement purposes
    - Derived based on inpatient hospital data
- Updated documentation and user's guide in PDF format
    - Rule set posted in response to public input

ICD-10-CM 2011
Summary of Revisions

ICD-10-CM Revisions

- Consistent with October 1, 2010 changes
- WHO ICD-10 Modifications
    - Code number changes consistent with WHO modifications
- Other changes
    - Revisions to descriptors and instructional notes for consistency
    - Standardization of code titles (laterality, and at .8 "Other")
    - Industry feedback

Updated files to be posted:

- Tabular list
- Index to Diseases and Injuries
- Tables
    - Neoplasms
    - Table of Drugs and Chemicals
- External Cause of Injury Index
- Guidelines
    - October 1, 2010 ICD-9-CM guidelines changes
    - Industry feedback
- Addenda files
- General Equivalence Maps (ICD-10-CM to ICD-9-CM and ICD-9-CM to ICD-10CM)
    - Updated to include input from public suggestions

CMS WILL NO LONGER BE PROVIDING PAPER COPIES OF HANDOUTS FOR THE MEETING. ELECTRONIC COPIES OF ALL MEETING MATERIALS WILL BE POSTED ON THE CMS WEBSITE PRIOR TO THE MEETING AT HTTP://WWW.CMS.HHS.GOV/ICD9PROVIDERDIAGNOSTICCODES/03_MEETINGS.ASP

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
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ICD-9-CM Topics

1. Implantable Hemodynamic Monitoring System Pages 38-40	Amy L. Gruber Jay S. Yadav, MD, FACC CardioMEMS
2. Endovascular Embolization with Head or Neck Vessel Reconstruction Pages 41-43	Ann B. Fagan Giuseppe Lanzino, MD Professor of Neurosurgery
3. Fenestrated AAA Endovascular Graft Pages 44-47	Ann B. Fagan Tara Mastracci, MD Asst. Professor of Surgery Cleveland Clinic Foundation
4. Contrast Dye Removal Pages 48-50	Mady Hue Robert Van Tassel, MD, FACC Minneapolis Heart Institute
5. Addenda Pages 51-52	Mady Hue

Implantable Hemodynamic Monitoring System

Issue:
Effective October 1, 2006, two new procedure codes were created to identify the intracardiac hemodynamic monitoring system: 00.56, Insertion or replacement of implantable pressure sensor (lead) for intracardiac or great vessel hemodynamic monitoring and 00.57, Implantation or replacement of subcutaneous device for intracardiac or great vessel hemodynamic monitoring. These codes identify the two components of the system that are implantable: the insertion of the sensor and the implantation of the monitor subcutaneously. Effective October 1, 2009, the terms "or great vessel" was added to the code titles to include other sites where the sensor may be inserted. Newer systems are being developed where one component of the system is implantable; only the sensor is implanted in a great vessel. An external monitor is used to communicate wirelessly with the sensor. Should new codes be created to distinguish between these monitoring systems?

New Technology Application?
Yes. The requestor will be submitting a new technology application for consideration for FY 2012. The requestor is requesting an October 1, 2011 implementation date, if approved.

Food & Drug Administration (FDA) Approval:
Champion HF System, manufactured by CardioMEMS, has submitted to the FDA the pre-market approval (PMA) in August 2010. PMA approval is expected first half of 2011.

Background:
Heart Failure:
Heart failure is a common, costly, disabling and deadly condition. An estimated 6.0 million Americans are living with heart failure, 670,000 new cases are diagnosed each year and annual healthcare costs are more than $39 billion in the United States. A major driver of morbidity and cost is the large number of heart failure hospitalizations: over 1 million per year at a cost of over $20 billion. Heart failure is associated with significantly reduced physical and mental health, resulting in a markedly decreased quality of life. Chronic heart failure usually worsens with time and has an overall annual mortality rate of 10 percent. Careful management of this condition is necessary.

Procedure:
Clinical Vignette of a Typical Patient Who Would Benefit from a Wireless Pulmonary Artery Sensor/Monitor Implant
A 67 year-old male with New York Heart Association Class III heart failure on medical therapy who has been hospitalized in the past year for acute decompensated heart failure. In order to prevent further heart failure hospitalizations, implantation of a pulmonary artery (PA) hemodynamic sensor/monitor is ordered so the physician can regularly monitor the patient's pulmonary artery pressure and make appropriate adjustments to the patient's medical therapy.

Clinical significance

Pulmonary artery pressure (PAP) allows precise management of heart failure and is the gold standard for heart failure management but until now has required an invasive right heart catheterization and is therefore typically utilized reactively once the patient is already hospitalized for decompensated heart failure. Wireless PAP measurements from the patient's home allow proactive medical management and have been shown to significantly reduce heart failure decompensation and hospitalization. Medications and other treatments are adjusted based on changes in PAP (as compared to changes in weight, blood pressure and pulse which have not been shown to reduce hospitalizations), which identify the onset of worsening heart failure earlier than the presentation of symptoms. This earlier detection and treatment prevents deterioration of the patient's condition and hospitalization for heart failure.

Procedure

The patient is prepared for a CardioMEMS Sensor implant similarly as for a right heart catheterization. A standard hemodynamic study is performed while the balloon catheter is introduced through a femoral venous sheath and advanced through the right side of the heart. Pressure measurements and waveforms are obtained through the catheter in the right atrium, right ventricle, and the pulmonary artery. Cardiac output measurements are recorded once the catheter tip is in the pulmonary artery.

Once the hemodynamic study is complete, a selective pulmonary angiogram is performed through the SG balloon catheter to identify the ideal location for the CardioMEMS implant. A guidewire is advanced through the SG balloon catheter into a pulmonary artery branch; the SG balloon catheter is then removed and an 11 French sheath is placed in the femoral vein. The CardioMEMS delivery system is inserted over the guidewire and advanced to the selected pulmonary artery branch. The sensor / monitor is implanted and the delivery catheter is withdrawn, leaving the guidewire in place. The SG balloon catheter is reinserted over the guidewire into the pulmonary artery and the guidewire is removed. Readings are taken simultaneously via the SG balloon catheter and the CardioMEMS implant for calibration. Once the CardioMEMS sensor / monitor is calibrated, the SG balloon catheter is removed and the 11 French sheath is then removed. Further readings are taken with CardioMEMS device during the patient's overnight hospital stay.

Patient Management

An external patient console transmits the PA pressure information and cardiac output from the patient's home to the treating physician. These data allow the physician to detect and manage the patient's condition and prevent deterioration resulting in hospitalization.

Coding Options:

Option 1. Do not create a new code. Continue to assign procedure codes 00.56 and 00.57 for the implantable hemodynamic monitoring system.

Option 2. Create a new procedure code under category 38.2, Diagnostic procedures on blood vessels, for the insertion of the implantable wireless pressure sensor.

New code 38.26 Insertion of implantable wireless pressure sensor for intracardiac or great vessel hemodynamic monitoring

Combination wireless pressure sensor and internal monitor
Great vessel (or branch thereof) hemodynamic monitoring
Without batteries or leads

Excludes:
circulatory monitoring (blood gas, arterial or venous pressure, cardiac output and coronary blood flow (89.60-89.69)
hemodynamic monitoring system with separate sensor and internal monitor (00.56 – 00.57)
insertion or replacement of implantable pressure sensor (lead) for intracardiac or great vessel hemodynamic monitoring (00.56)

CMS's Recommendation:

Option 2. As described above.

Interim Coding:

Continue to assign procedure codes 00.56, Insertion or replacement of implantable pressure sensor (lead) for intracardiac or great vessel hemodynamic monitoring and 00.57, Implantation or replacement of subcutaneous device for intracardiac or great vessel hemodynamic monitoring, for the implantable hemodynamic monitoring system.

Endovascular Embolization with Head or Neck Vessel Reconstruction

Issue:
The ICD-9-CM coding system does not contain a code that will specifically identify embolization of an intracranial artery aneurysm via endovascular insertion of a stent-like device.

New Technology Application?
Yes.

Food & Drug Administration (FDA) Approval:
A pre-market approval (PMA) application for the Pipeline™ Embolization Device was filed with the FDA on May 18, 2010 with approval expected in 2011.

Background:
Aneurysms result when weakness in the wall of an artery causes ballooning or out-pouching of the blood vessel. Untreated, intracranial aneurysms may rupture leading to hemorrhagic stroke with potentially devastating neurologic consequences including death. A recent study estimated the incidence of unruptured intracranial aneurysms at about 23,000 per year in the United States.

At one time, open surgical clipping of aneurysms was the only available treatment. Endovascular embolization with coils became available in the 1990s and quickly became a standard procedure. Coils were initially bare metal but in the late 2000s, bioactive coils were introduced to achieve a more durable occlusion of the aneurysm sac. Due to issues with gaps forming between coils and prolapse of coils out of the aneurysm sac, particularly for large and wide-necked aneurysms, specialized stents were introduced in the early 2000s. These stents are used as an adjunctive measure to coiling as a means of retaining the coils within the aneurysm sac.

Coiling and its adjuncts work by occluding the aneurysm sac. This technique is quite effective for occluding certain types of aneurysms. However, results over time have indicated that the occlusion achieved is often incomplete and may lack durability, with the possibility of some degree of recanalization taking place. This puts patients at higher risk for continued disease progression and possible aneurysm rupture, and necessitates long-term periodic follow-up.

To address durability, the focus of treatment has recently begun to shift from basic occlusion of the aneurysm to techniques that actually restructure the diseased vessel from which the aneurysm arose. This can be done entirely without the use of coils.

In these procedures, a cylindrical mesh stent-like device is implanted within the artery across the aneurysm neck. The mesh is engineered to provide a high percent of metal surface area when

deployed. The manufacturer believes that the result of the procedure is not only exclusion of the aneurysm, but also reconstruction of the diseased vessel from which the aneurysm arose.

The degree of metal surface area over the aneurysm neck directs the flow of blood away from the aneurysm. This diminishes the "hammering" effect of pulsating blood within the sac, as seen with coiling, and reduces the stress on the aneurysm wall. The metal surface also serves as scaffolding, triggering regular and even growth of endothelial cells across the neck of the aneurysm. A thick membrane eventually forms, completely remodeling and covering the aneurysm neck. This newly reconstructed vessel wall seals the aneurysm and excludes it from circulation.

Depending on the length of the vessel, multiple devices may be deployed in an overlapping technique, one within the other. In time, the devices become incorporated into the vessel wall and are covered by an endothelial lining. This recreates the full circumference of the diseased vessel, while allowing blood flow into branch vessels that may also be covered.

Because the devices do not enter the aneurysm sac but rather reline the vessel in which the aneurysm occurs, they can be used to treat a variety of challenging types of aneurysms including small aneurysms, shallow aneurysms, wide-necked aneurysms and large aneurysms.

Aneurysm devices are sometimes referred to as stents or stent-like devices. However, the manufacturer has noted that there are technical distinctions. Conventional dilation stents serve to re-open vessels that are narrowed or blocked, such as by atherosclerosis. Specialized stents can serve as adjuncts to coil embolization by retaining the coils within the aneurysm sac. In contrast to both of these types of stents, vessel reconstruction devices such as the Pipeline™ Embolization Device are stand-alone devices that treat the aneurysm by rebuilding the vessel from within. It should be mentioned that though this is a stent-like device, the devices are catheter deployed, and angioplasty is not involved in the procedure.

Current Coding:
CMS understands that according to feedback from the industry, some facilities are using procedure code 00.65, Percutaneous insertion of intracranial vascular stent(s), while some facilities are using code 39.72, Endovascular embolization or occlusion of head and neck vessels to describe insertion of the Pipeline™ device. CMS' interim advice is to use procedure code 39.72, Endovascular embolization or occlusion of head and neck vessels

Coding Options:
Option 1: Do not create a new ICD-9-CM procedure code. Instead, make changes to the Index that would guide coders to the use of 39.72, Endovascular embolization or occlusion of head and neck vessels for the Pipeline™ device. Add inclusion notes to code 39.72 describing stent-like devices or vessel reconstruction devices.

Option 2: Create a new ICD-9-CM procedure code describing embolization of an intracranial artery aneurysm via endovascular insertion of a stent-like device. In order to make the 39.7 subcategory as clear as possible for coders, modifications would also have to be made to other codes.

39.7 Endovascular procedures on vessel(s)

39.72 Endovascular embolization or occlusion of head and neck vessels

Add exclusion term — Excludes: endovascular embolization with head or neck vessel reconstruction (39.77)

39.75 Endovascular embolization or occlusion of vessel(s) of head or neck using bare coils

39.76 Endovascular embolization or occlusion of vessel(s) of head or neck using bioactive coils

New code — 39.77 Endovascular embolization with head or neck vessel vascular remodeling support
Embolization stent
Stent-like device
That for repair of aneurysm

Additional Tabular changes:

00.6 Procedures on blood vessels

00.63 Percutaneous insertion of carotid artery stent(s)

Add exclusion term — Excludes: endovascular embolization with head or neck vessel reconstruction (39.77)

00.64 Percutaneous insertion of other precerebral (extracranial) artery stent(s)

Add exclusion term — Excludes: endovascular embolization with head or neck vessel reconstruction (39.77)

00.65 Percutaneous insertion of intracranial vascular stent(s)

Add exclusion term — Excludes: endovascular embolization with head or neck vessel reconstruction (39.77)

CMS Recommendation:
We would be interested in hearing from the audience regarding this proposal.

Interim Coding:
Continue to use procedure code 39.72, Endovascular embolization or occlusion of head and neck vessels, to describe this procedure.

Fenestrated Endograft Repair of Abdominal Aortic Aneurysms

Issue:
Code 39.71, Endovascular implantation of graft in abdominal aorta, currently exists to describe the endovascular repair of abdominal aortic aneurysms (AAA). This procedure code is adequate to describe a "standard" endovascular AAA repair. However, a new technology is being developed to offer an endovascular repair option to a subset of patients who are not anatomical candidates for using the "standard" endovascular devices currently on the market. This new technology, a "fenestrated" stent-graft, is significantly more complicated than standard devices currently in use, and leads to a procedure that is significantly more complicated than a standard endovascular AAA repair. The procedure, described below, is different enough that it justifies consideration of a unique ICD-9 procedure code.

New Technology Application?
Yes

Food & Drug Administration (FDA) Approval:
FDA approval is anticipated in early 2012.

Background:
Abdominal aortic aneurysms affect 1.5 million people in the United States. Approximately 200,000 new cases are diagnosed each year with 15,000 deaths annually, making it the 13th leading cause of death and the 10th leading cause of death in males over the age of 65. Current treatment options for patients with AAAs include open surgical repair, endovascular repair using stent-grafts, or medical management.

Aneurysmal disease that extends proximally to the level of the renal arteries is usually indicative of more extensive aortic disease and co-morbidities, and as a result, many of these patients are at a higher overall risk when undergoing open surgical repair. Additionally, these patients are often not suitable for endovascular treatment with currently available endografts because the length of healthy aorta is insufficient to provide an adequate seal at the proximal end. The indications for use for many of the standard endografts call for an aortic neck length greater than or equal to 15 mm.

Published reports estimate that 8-30% of patients with AAAs that need repair have aortic necks of less than 15mm in length. One institution has reported that over half of its AAA patients were considered ineligible for endovascular repair (EVAR) due to an inadequate length of non-diseased aorta. These patients were also predominantly unfit for open repair. Most notable, however, is that the number of high risk patients rejected at this institution was more than four times that of standard risk patients.

For now, the only treatment option available to a large number of these high risk patients is medical management. Open surgical repair is too challenging as it requires supraceliac clamping of the aorta and may result in renal ischemia, mesenteric ischemia and atheroembolization of the

visceral vessels of the aorta. EVAR with a standard endograft is not a viable option either since the shortened neck precludes an adequate proximal end seal, which can lead to type I endoleaks (leaking of blood around the device into the aneurysm resulting in continued pressurization of the aneurysm). Medical management alone leaves these patients at high risk for AAA-related morbidity and mortality. These sub-optimal choices led to the creation of fenestrated endografts that can seal above the renal arteries while maintaining access and uninterrupted blood flow to branch vessels of the aorta. Such a device is commercially available in Europe and Australia, and is currently being evaluated as an investigational device in the U.S. To date approximately 1000 patients throughout the world have undergone this procedure, with several hundred of those patients treated in the U.S. as enrollees in clinical studies of the investigational device.

Anatomical complications: Many of the patients that could benefit from a fenestrated procedure have anatomic anomalies related to the diameter, shape, angulation or length of the aorta. For example, patients in a U.S.-based clinical study had a mean proximal neck length of 8 mm and patients in a yet-to-be-published study conducted in France had proximal neck lengths of 10 mm or less, both well below the recommended minimum length of 15 mm for a standard AAA endograft. An inadequate seal at the aortic neck increases the risk of proximal type I endoleaks, which may result in aortic rupture and patient death. A recent review article found that the incidence of proximal endoleak is highly correlated with proximal aortic neck length (P=.0001).

Endograft components: The fenestrated endograft is a modular or component system. The main body of the graft consists of two parts, the proximal tubular graft, with precisely located holes (fenestrations) and/or cut outs from the proximal margin (scallops) of the graft material along with a bare proximal stent with barbs to provide fixation, and a distal bifurcated graft body. An iliac leg component, which couples with the main bifurcated body, completes the basic fenestrated endograft.

The fenestrations and scallops of the proximal tubular graft allow the proximal margin of the device to sit higher than the standard AAA endograft while still allowing uninterrupted blood flow to branch vessels of the aorta such as the renal and superior mesenteric arteries. The loaded proximal graft is reduced in diameter by an independent wire tied to diameter reducing ties. These ties allow the graft to be manipulated within the aorta to position it so that the fenestrations line up with the targeted arteries. To aid in fluoroscopic visualization of the stent graft, gold radiopaque markers are positioned at the lateral aspect of the most distal stent and in a circumferential orientation within 1 mm of the most superior aspect of the graft material. Gold radiopaque markers are also positioned at the edges of each fenestration. Additionally, each fenestration is reinforced by a nitinol ring. This protects the margins of the fenestration from fraying, and the ring provides a buttress to secure placement of a balloon-expandable stent. The ring also allows a covered stent to seal at the fenestrations as well as within the target vessel.

The distal bifurcated graft has one long limb with an iliac cuff and one short limb on the contra-lateral side. To aid in fluoroscopic visualization of the stent graft, there is a radiopaque marker at the graft bifurcation and a checkmark-shaped set of markers at the distal end of the contra-lateral limb. The iliac leg is a tubular graft which is used to extend the device into the iliac artery. An

iliac leg must be placed into the short limb from the contralateral side. Available ancillary components include a main body extension, mid body extension, converters, iliac plugs and leg extensions.

Stents are customized: The success of the fenestrated endograft is dependent on planning and sophisticated imaging techniques. In addition to conventional endovascular device sizing requirements, fenestrated device design requires accurate distance calculations to be made between the visceral vessels as well as the correct location of the visceral vessel ostia from the aortic circumference. Required are 1 mm slices from proximal celiac down to the lowest renal artery and multi-planar reconstructions at all levels. Assessments of target vessel position, number, size, as well as luminal diameter, neck thrombus and angulation are necessary to calculate the position and size of the fenestration or scallop, as well as the type of stent(s).

In a standard EVAR procedure, it is rarely necessary to stent a branch vessel. When required, it is typically a renal artery requiring stenting due to the endovascular device being placed too high and impinging on the renal artery ostium. In a fenestrated EVAR procedure, most often both renal arteries require stenting and sometimes mesenteric vessels, as well. In these procedures, the fenestrated portion of the endovascular graft is first partially deployed in the aorta, with the physician making sure to carefully align the fenestrations of the stent-graft body with the origins of the arterial ostia. Guidewires are then passed through the fenestrations in the stent-graft body into the relevant arteries. This allows for catheterization of the arteries and subsequent stenting to assure the stent-graft fenestrations remain aligned with the visceral arteries over time.

The technical challenge of a fenestrated endovascular graft vs. deployment of a standard endograft is that the fenestrated graft requires alignment of the fenestrations with adjacent branch vessels, and subsequent catheterization and stenting of the branch vessels through fenestrations of the proximal main body. There may be complicating anatomic factors which add to the time required to successfully implant the graft. When implanting a standard endograft, an error in location, although undesirable, can be remedied with the use of extension grafts. The implanting of a fenestrated device, however, must be longitudinally accurate to within a few millimeters, and the rotational orientation must be precise to allow access to the targeted visceral vessels, most often the renal arteries.

Current Coding:
Code 39.71, Endovascular implantation of graft in abdominal aorta, is used to describe endoluminal repair by implantation of a graft in the abdominal aorta.

Coding Options:
Option 1: Do not create a new code. Continue to use procedure code 39.71, Endovascular implantation of graft in abdominal aorta.

Option 2:
Create a new code as follows:

39.7 Endovascular procedures on vessel(s)

Revise code title	39.71	Endovascular implantation of <u>other</u> graft in abdominal aorta
Add inclusion term		Non-fenestrated graft
Add exclusion term	Excludes: endovascular implantation of fenestrated graft in abdominal aorta (39.78)	
New code	39.78	Endovascular implantation of fenestrated graft(s) in abdominal aorta Infrarenal (IR) repair Juxtarenal (JR) repair

CMS Recommendation:
Option 2; create a new code to identify this procedure and revise existing code 39.71.

Interim Coding:
Use existing code 39.71, Endovascular implantation of graft in abdominal aorta, to describe this procedure.

Removal of Contrast Dye

Issue: Currently there is not a distinct ICD-9-CM procedure code to report for the removal of contrast dye.

New Technology? To be determined at a future date.

FDA Approval: Osprey Medical, Inc. received FDA approval on June 24, 2010 for an IDE clinical trial to study the outcomes of contrast media removal and its impact on contrast induced nephropathy (CIN).

Background: Iodinated radio-contrast media are among the most commonly prescribed medications used today and are the standard of care for imaging in coronary angiograms and percutaneous coronary intervention (PCI) procedures. However, it has been reported that contrast media are toxic to the kidneys. Clinical literature indicates that the mechanism of this toxicity is most likely due to reduced renal blood flow and renal cell death. In patients with pre-existing moderate to severe (stage 3-5) chronic kidney disease, exposure to contrast media can result in a further reduction in kidney function, or contrast induced nephropathy.

Contrast induced nephropathy (CIN) is an acquired renal impairment condition caused by iodinated radio-contrast media, sometimes referred to as contrast dye. These agents are used for X-ray based imaging in diagnostic coronary angiogram or PCI procedures. Patients with existing moderate to severe (stage 3-5) chronic kidney disease are at high risk for CIN. Today, the most common CIN preventive strategy in these high risk patients is hydration. This is administered before and after the procedure to reduce the amount of time that the kidneys are exposed to contrast media. Although this strategy is generally considered to be beneficial in reducing some of the risk of CIN, the problem still remains. Many patients at the highest risk for CIN may forgo coronary diagnostic procedures because the risk of further kidney injury may outweigh the treatment benefits of a potential interventional procedure.

Technology/Procedure: New technology is being developed to assist the physician in the removal of contrast media during a coronary angiogram or PCI procedure. The first of these technologies is the CINCOR™ Contrast Removal System. This system utilizes a catheter in the venous drainage area of the heart (coronary sinus) to remove contrast media before it is exposed to the kidneys. This is accomplished by positioning a contrast removal catheter in the coronary sinus just prior to or at the same time as insertion of the coronary arterial catheter(s) used for the PCI. The contrast removal catheter can be guided and positioned in the coronary sinus using standard guide wires or introducer sheaths. As the contrast removal catheter is being inserted into the coronary sinus, the tubing set and collection canister can be assembled and connected to the interface unit by the cath lab technician.

The coronary support device is then inserted though the lumen of the removal catheter and positioned in the coronary sinus. The contrast removal catheter is next connected to the tubing set and collection canister. A negative pressure is maintained in the collection canister to facilitate withdrawal of contrast and blood during activation. Once the catheter and support

device are in position and the system is primed, the balloon on the removal catheter is inflated to partially occlude the coronary sinus. Partial occlusion is evident from the pressure readings on the interface unit. The system is then considered in the "inactive" position, during which time the removal catheter allows the normal flow of blood past the catheter balloon, through the coronary sinus, and into the right atrium.

During the interventional procedure and four seconds after the injection of the contrast media into the coronary arteries, the footswitch is depressed activating the system for five to six seconds. Depressing the footswitch opens the pinch valve creating a negative pressure in the tubing set, recovery catheter and coronary sinus. The walls of the coronary sinus collapse around the partially inflated balloon. During this time, the blood flow is diverted down the lumen of the removal catheter. The blood containing contrast media is captured in the collection canister preventing the contrast media from reaching the kidneys. The footswitch is then released, the system returns to the inactive state, the walls of the coronary sinus relax and blood flow resumes around the balloon and into the right atrium. The system is operated in this fashion for each major injection of contrast media. At the conclusion of the coronary procedure, the removal catheter and support device are withdrawn from the patient and the contrast-laden blood in the collection canister is discarded.

Summary: A new preventive strategy is being developed to reduce the risk of CIN by removing the contrast media from the heart before exposure to the kidneys. In the case of cardiovascular imaging, this can be accomplished by catheter based withdrawal of contrast media downstream of the site of introduction, and upstream from the kidneys. According to the requestor, a new ICD-9-CM procedure code will allow reporting and tracking of this new technology procedure in randomized controlled trials scheduled to occur during 2011.

Coding options:

1. Do not create a new code. The removal of contrast media should not be coded separately. The alphabetic index and/or tabular section could be updated to instruct coders not to code the removal of contrast dye for the specified procedure(s).

2. Add an inclusion term to identify the removal of cardiovascular contrast media at code 37.29, Other diagnostic procedures on heart and pericardium. While the removal is not "diagnostic" in nature, it would be placed within the cardiovascular chapter of ICD-9-CM and allow tracking of this procedure.

37.29 Other diagnostic procedures on heart and pericardium

Add inclusion term Includes: catheter-based removal of cardiovascular contrast media

3. Create a new code in subcategory 17.7, Other diagnostic and therapeutic procedures. This option would not restrict the removal of contrast media to cardiovascular procedures only.

New code 17.72 Catheter-based removal of contrast media

CMS Recommendation: At this time, CMS recommends option 1; do not create a new code. In the interim, assignment of diagnosis code V70.7, Examination of participant in clinical trial, along with a procedure code for the cardiovascular procedure performed and a database of the facilities actually performing the procedure would be sufficient to track patients for clinical trial purposes. No code should be assigned for the contrast removal.

Addenda

Tabular

	33.24 Closed [endoscopic] biopsy of bronchus
Add inclusion term	Mini-bronchoalveolar lavage [mini-BAL]
Delete exclusion term	Excludes: ~~mini-bronchoalveolar lavage [mini-BAL] (33.29)~~
	33.29 Other diagnostic procedures on lung and bronchus
Delete exclusion term	Excludes: ~~bronchoalveolar lavage [BAL] (33.24)~~
	68.4 Total abdominal hysterectomy
Delete exclusion term	Excludes: ~~laparoscopic total abdominal hysterectomy (68.41)~~
	68.49 Other and unspecified total abdominal hysterectomy
Add exclusion term	Excludes: laparoscopic total abdominal hysterectomy (68.41)
	99.09 Transfusion of other substance
Revise exclusion term	Excludes: transplantation [transfusion] of bone marrow (41.00-41.09)

Index

Revise term	Hysterectomy, NOS 68.9
Revise subterm	abdominal ~~68.49~~
Revise subterm	laparoscopic (total) ~~[TLH]~~ (TLH) 68.41
Add subterm	other (total) 68.49
Add subterm	laparoscopic
Add subterm	abdominal
Add subterm	radical (total) (TLRH) 68.61
Add subterm	total (TLH) 68.41
Add subterm	supracervical (LASH) (LSH) 68.31
Add subterm	total (TLH) 68.41
Add subterm	vaginal, assisted (LAVH) 68.51
Add subterm	radical (LRVH) 68.71
Add subterm	radical
Add subterm	abdominal
Add subterm	laparoscopic 68.61
Add subterm	other (modified) (Wertheim's) 68.69
Add subterm	vaginal
Add subterm	laparoscopic (LRVH) 68.71
Add subterm	other 68.79

	Lavage bronchus NEC 96.56
Revise subterm	diagnostic (endoscopic) <u>bronchoalveolar lavage (BAL) (Mini-BAL) 33.24</u>
Delete subterm	~~bronchoalveolar lavage (BAL) 33.24~~
Delete subterm	~~mini-bronchoalveolar lavage (mini-BAL) 33.29~~