

## Minutes

### Quality-Based Reimbursement initiative Evaluation Work Group Meeting September 26, 2008 9:00 AM to 10:30 AM

Health Services Cost Review Commission  
4160 Patterson Avenue  
Baltimore, MD 21215

**EWG Members present:** Don S. Hillier, Former Chairman, HSCRC (Vice Chair); Pam Barclay, MHCC; Robert Brooks, MD, PhD, MBA, Delmarva Foundation for Medical Care, Inc.; Barbara Epke, MPH, MA, LifeBridge Health System; Charles Reuland, ScD, Johns Hopkins Health System; Renee B. Webster, DHMH; Robert Murray, Steve Ports, and Dianne Feeney, HSCRC.

**EWG Members on by conference call:** Cynthia Hancock, Fort Washington Medical Center; Julie Howell, PhD, CMS; Ernest Moy, MD, AHRQ.

**Interested parties present:** Vahe Kazandjian, PhD, Center for Performance Sciences; Ing-Jye Cheng MHA; Theresa Lee, Deme Umo, and Carol Christmyer, MHCC ; Elizabeth McCullough, 3M; Hal Cohen, Hal Cohen, Inc.; Craig Weller, Delmarva Foundation; Donna Ryan, St. Joseph Medical Center.

**Interested parties on by conference call:** Grant Ritter, PhD, Brandeis University; Sam Agumbo, Nikolas Mathes, Frank Pipesh and Karol Wicker, Center for Performance Sciences; Gerry Macks, MedStar Health, Sylvia Daniel, University of Maryland Medical Center.

- **Welcome and introduction of EWG members and other participants-** Dr. Trudy Hall called the meeting to order and invited EWG members and interested parties joining the meeting in person and by conference call to introduce themselves.
- **Review and approval of the September 8, 2008 meeting minutes** –A motion to approve the minutes as drafted was made and seconded with unanimous approval.
- **Hospital Acquired Conditions (HACs) and Payment Policy Changes** – Robert Murray summarized the CMS approach to adjusting payment for HACs that was presented by Lisa Grabert at the previous EWG meeting on 9/8/08. Mr. Murray noted that Maryland, as an exempt state under the waiver, needs to develop and adopt its own policy to keep pace with the developments at the national level with Medicare, and in light of the increasing pressure from various stakeholder groups including payers and consumers. To address this, Mr. Murray noted that HSCRC has convened a Maryland Hospital Acquired Conditions (MHAC) Payment Policy Group comprising hospital industry and payer stakeholders that convened on 9/25/08. Mr. Murray noted that the group reviewed the MHA policy hospitals have

agreed to which includes non-billing for seven serious adverse events that result in death or serious disability. Mr. Murray noted that HSCRC staff made an alternate recommendation to consider adopting a subset of 14 conditions from the 3M PPC list that are completely, or very close to completely, preventable, noting that the CMS criteria for HAC selection calls for “reasonable” preventability. Barbara Epke added that she was a participant at the MHAC Payment Policy Group meeting and that the EWG should keep informed on the progress of that group as the preventable complication focus is preventing negative things from occurring versus the work of the EWG which is focused on improving on positive things, and that a clinical sub-group would be formed to review the details of the PPCs. Ing-Jye Cheng added she thought that there is no better group than the EWG to vet the PPCs that, in her view, are new and untested. Also, Ms. Cheng noted there is not consensus that the subset of the 14 complications are completely preventable, specifically citing the iatrogenic pneumothorax complication which was considered but not ultimately selected by Medicare as an HAC.

- ***Potential new measures queued up for the Maryland Hospital Performance Evaluation Guide (HPEG)*** - Pam Barclay provided an overview of the new measures under consideration for adding to the Performance Guide, including: expanding the antibiotic timing, selection and discontinuance measures to all surgical strata; adding the new CMS surgical care improvement project (SCIP) measures addressing serum glucose control, normothermia, appropriate hair removal and venous thromboembolism prophylaxis; and, adding the pediatric asthma measures. These measures will be posted for informal comment along with a solicitation for comment on other measures that should be considered by the HPEG Committee, the comments will be addressed as needed, and upon adoption of the new measures by the Committee, a notice will be posted in the Maryland Register on the timing of data collection and public reporting. Ms. Barclay noted that there is also a healthcare associated infection (HAI) measures committee that has advised on the HAI measures that have been newly added or are staged for being added to the Guide, and Ms. Feeney noted that data collection had begun July 1, 2008 on the Central Line Associated Blood Stream Infection measure and it should also be considered as a candidate in the nearer term for the QBR Initiative. In addition, Ms. Feeney noted that the perioperative beta blocker use measure was an additional SCIP measure CMS was implementing that may be a good QBR candidate. Ms. Epke supported the EWG consideration of these above named measures that have been nationally vetted, and noted that these measures could be fast tracked for the QBR Initiative.
- ***Summary of Maryland hospital participation in reporting additional CMS/JC AMI measures*** – Dr. Grant Ritter provided an update on Maryland participation in data collection and reporting on AMI 7a, Fibrinolytic agent in 30 minutes, AMI 8a, timing of receipt of PCI. In Maryland, 14 hospitals report on AMI 7a with only 1 hospital having the requisite 10 cases to be included in reporting, and 20 hospitals report 8a with all 20 having 10 or more cases. Various EWG members supported serious consideration of AMI 8a in light of the level of MD hospital participation.

- ***Potentially Preventable Complication (PPC) and Potentially Preventable Readmissions (PPR) Presentation of Maryland Data followed by Q&A-*** Norbert Goldfield, MD and Liz McCullough from 3M presented Maryland-specific data on PPCs and PPRs (see Appendix A). Discussion points on the presentation included:
  - Ms. Cheng asked clarification on “by whom” the PPCs are preventable. Dr. Goldfield responded the healthcare team is the responsible party.
  - Ms. Cheng asked if a device failure was due to a defect of the device, would that PPC be the fault of the hospital healthcare team. Dr. Goldfield responded that a high rate of device failures relative to other hospitals would be considered preventable relative to the lower-rate hospitals.
  - Ms. Epke asked for clarification of the purpose for the PPC and PPR presentation. Mr. Murray responded that PPCs and PPRs are being investigated further as they are among the outcome measure options that hold possibility and interest for various stakeholders and staff for the QBR Initiative.
  - Ms. Epke asked about the quality of the POA indicator. Ms. McCullough noted that, when looking at ranges, Maryland’s data was in line relative to California and New York that have been reporting POA for several years.
  - Don Hillier asked if Maryland data on hospital charges doubling or tripling when PPCs occur is consistent with hospital charges in California and Ms. McCullough noted that the California data was consistent.
  - Ms. Cheng asked if the PPC administrative data had been matched with medical record clinical data. Dr. Goldfield responded that, in New York, IPRO is currently conducting a chart validation project on the sepsis and heart failure PPCs, adding that medical record or administrative data tend to get better and more complete if the data are used for public reporting or payment.
  - Ms. Epke asked if PPCs were higher in high volume academic hospitals versus the smaller community or more rural facilities. Ms. McCullough responded that analysis has not been done in that detail as of yet.
  - Dr. Kazandjian asked whether the statistical method used was consistently applied in Maryland and California. Ms. McCullough responded that the same model was used and the comparison is for purposes of evaluating if Maryland is in the “ballpark” compared with other states in terms of the quality of the data. Mr. Murray responded that the statistical model used and expected levels used in Maryland is a policy determination. Hal Cohen provided the example that Maryland’s rate of urinary tract infections is double that of California’s so Maryland may want to set the expected differently than California.
  - Mr. Cohen noted that the last slide containing the dollar amounts represented by PPCs and PPRs points to the magnitude of these issues, adding that incentives can be structured to not necessarily be punitive, increasing payment per admission, for example, when hospitals decrease their readmission rates.
  - Mr. Murray added that good hospital performers on PPCs and PPRs could be recognized that are not currently recognized under the current payment system.

- Mr. Murray asked that comments on PPCs and PPRs be submitted to HSCRC in two weeks time and they will be discussed at the next EWG meeting.
- *Other business*- Ms. Epke noted that the EWG should focus also on the “topped off” measures and investigate other process measures that could replace them, with Mr. Murray noting that these would come up at the next EWG meeting, and that the date and time of the next EWG meeting would be set shortly and HSCRC staff would notify the group.
- *Adjournment*- The meeting was adjourned at 10:40AM.

## Appendix A

### 3M Potentially Preventable Complications and Potentially Preventable Readmissions: Summary of Maryland Analysis

**Linking Preventable Conditions and Pay for Performance**

**Presentation to the HSCRC Quality Evaluation Work Group**

Elizabeth McCullough and Norbert Goldfield  
26 September 2008

3M Innovation 3M Health Information Systems  
From the 3M Health Care family

**Agenda**

- Potentially Preventable Complications
  - MD Data Analysis and Results
- Potentially Preventable Readmissions
  - MD Data Analysis and Results

3M Innovation 2

**IDENTIFYING POTENTIALLY PREVENTABLE COMPLICATIONS (PPCs)**

3M Innovation 3

**Potentially Preventable Complications (PPCs)**

Harmful events (accidental laceration during a procedure) or negative outcomes (hospital acquired pneumonia) that may result from the process of care and treatment rather than from a natural progression of underlying disease

3M Innovation 4

### 8 Groups of 64 PPCs

- Extreme Complications**
  - Extreme CNS Complications
  - Acute Pulmonary Edema & Respiratory Failure w/ Ventilation
  - Shock
  - Ventricular Fibrillation, Cardiac Arrest
  - Renal Failure with Dialysis
  - Post-Operative Respiratory Failure with Tracheostomy
- Cardiovascular-Respiratory Complications**
  - Stroke & Intracranial Hemorrhage
  - Pneumonia, Lung Infection
  - Aspiration Pneumonia
  - Pulmonary Embolism
  - Congestive Heart Failure
  - Acute Myocardial Infarct
  - Peripheral Vascular Complications Except Venous Thrombosis
  - Venous Thrombosis
  - Acute Pulmonary Edema and Respiratory Failure without Ventilation
  - Other Pulmonary Complications
  - Cardiac Arrhythmias & Conduction Disturbances
  - Other Cardiac Complications
- Gastrointestinal Complications**
  - Major GI Complications w/ Transfusion or Significant Bleeding
  - Major Liver Complications
  - Major Gastrointestinal Complications without Transfusion or Significant Bleeding
  - Other Gastrointestinal Complications without Transfusion or Significant Bleeding
- Perioperative Complications**
  - Post-Op Wound Infection & Deep Wound Disruption w/ Procedure
  - Re-opening of Surgical Site
  - Post-Op Hemorrhage & Hematoma w/ Hemorrhage Control Proc or I&D Proc
  - Accidental Puncture/Laceration During Invasive Proc
  - Post-Op Foreign Body
  - Post-Operative Hemorrhage & Hematoma without Hemorrhage Control Procedure or I&D Procedure
  - Post-Operative Infection & Deep Wound Disruption Without Procedure
  - Post-Operative Substance Reaction & Non-O-R Procedure for Foreign Body
- Infectious Complications**
  - Clostridium Difficile Colitis
  - Urinary Tract Infection
  - Septicemia & Severe Infection
  - Cellulitis
  - Moderate Infectious

\* Selected 35 "Major" PPCs

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### 8 Groups of 64 PPCs (continued)

- Malfunctions, Reactions Etc.**
  - Introgenic Pneumothrax
  - Mechanical Complication of Device, Implant & Graft
  - Inflammation, & Other Complications of Devices, Implants or Grafts Except Vascular Infection
  - Infections due to Central Venous Catheters
  - Infection, Inflammation and Clotting complications of Peripheral Vascular Catheters and Infusions
  - Poisonings Except from Anesthesia
  - Poisonings due to Anesthesia
  - Transfusion Incompatibility Reaction
  - Gastrointestinal Ostomy Complications
- Obstetrical Complications (continued)**
  - Other Complications of Obstetrical Surgical & Perineal Wounds
  - Delivery with Placental Complications
  - Other Medical and Surgical Complications
    - Post-Hemorrhagic & Other Acute Anemia w/ Transfusion
    - Decubitus Ulcer
    - Encephalopathy
    - Renal Failure without Dialysis
    - GU Complications Except UTI
    - Diabetic Ketoacidosis & Coma
    - In-Hospital Trauma and Fractures
    - Acute Mental Health Changes
    - Accidental Cut or Hemorrhage During Other Medical Care
    - Other Complications of Medical Care
    - Other Surgical Complication – Moderate
    - Other In-Hospital Adverse Events
- Obstetrical Complications**
  - Obstetrical Hemorrhage w/ Transfusion
  - Obstetrical Laceration & Other Trauma without Instrumentation
  - Obstetrical Laceration & Other Trauma with Instrumentation
  - Major Puerperal Infection and Other Major Obstetrical Complications
  - Obstetrical Hemorrhage without Transfusion
  - Medical & Anesthesia Obstetrical Complications

\* Selected 35 "Major" PPCs

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### Maryland Data PPC Analysis

- 9 months of data – July 2007 – March 2008
- 50 hospitals
  - 2 rehab hospitals excluded
  - 6 hospitals excluded do to poor data reporting of POA indicator
- 42 hospitals used in PPC analysis data set with 500,771 discharges
- 91,284 (18%) excluded due to PPC global exclusion logic
  - 409,487 discharges
  - 0.98% died
  - 1.04 Case Mix Index
  - \$10,423 average charge

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### Maryland POA Data Quality Analysis

- July 2007 – March 2008
  - 6 Hospitals with poor data reporting of POA indicator
- % Not POA for secondary diagnosis on the Pre-Existing List – This criterion identifies hospitals with a high not POA rate for pre-existing secondary diagnosis codes
  - 1 hospital over 7.5% excluded
- % Uncertain POA – This criterion identifies hospitals with a high uncertain present on admission rate for secondary diagnosis codes (excluding exempt and pre-existing codes)
  - 1 hospital over 10% excluded
- % Exempt POA – This criterion identifies hospitals with a high exempt present on admission rate for secondary diagnosis codes
  - 3 hospitals over 40% excluded
- High % POA – This criterion identifies hospitals with an extremely high percent present on admission rate for secondary diagnosis codes (excluding exempt, pre-existing, and OB 7600x-7799x codes).
  - 1 hospital over 97% excluded

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## Maryland POA Data Quality Analysis (cont)

- **Low % POA** – This criterion identifies hospitals with a low percent present on admission rate for secondary diagnosis codes (excluding exempt, pre-existing, and OB 7600x-7799x codes).
- **% POA for secondary diagnosis on the List 1 for elective surgical cases** – This criterion identifies hospitals with a high present on admission percentage rate for these secondary diagnosis codes on elective surgical DRG cases.
- **For PPC Evaluation**
  - Diagnosis with POA indicator coded as "exempt" that are not on the exempt list were reclassified as "Y"es POA if on the pre-existing list, otherwise, assumed "N"ot POA
  - Exempt POA diagnosis with POA indicator other than "Exempt" were reclassified as "Exempt" POA
  - Diagnosis with POA indicator coded as "U" were reclassified as "Y"es POA if on the pre-existing list, "Exempt" POA if on the exempt list, otherwise, assumed "N"ot POA

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## Impact of Major PPC Categories on Average Charges for GI Surgery

SOI Level	No.	Major GI Surgery			Other GI Surgery		
		Major PPC	Non-Major PPC	No PPC	Major PPC	Non-Major PPC	No PPC
SOI Level 1	No.	90	58	503	68	51	2,738
	Avg. Chrg	\$26,011	\$19,724	\$14,885	\$18,214	\$13,843	\$7,660
SOI Level 2	No.	244	135	1,234	154	97	2,859
	Avg. Chrg	\$34,813	\$24,875	\$17,538	\$27,024	\$19,551	\$10,173
SOI Level 3	No.	434	140	856	137	64	825
	Avg. Chrg	\$56,760	\$35,046	\$26,797	\$41,802	\$26,750	\$16,302
SOI Level 4	No.	115	12	103	27	5	54
	Avg. Chrg	\$107,780	\$187,658	\$49,804	\$97,700	\$45,121	\$26,727

Maryland data July 2007-Mar 2008

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## Impact of PPC Categories

Total At Risk for One or More PPCs	409,487		0.96	\$10,423	1.04	\$10,022
	Discharges	PPC Rate	% Died	Avg Chrg	CMI	Adjusted Avg Chrg
Zero PPCs	388,948	0.00	0.55	\$9,729	0.97	\$10,052
One or More PPCs without Major PPCs	12,725	3.11	1.71	\$18,852	1.68	\$11,239
One Selected "Major" PPCs	15,175	3.71	5.48	\$23,841	1.95	\$12,243
Two Selected "Major" PPCs	2,692	0.66	16.05	\$45,575	3.22	\$14,172
Three or More Selected "Major" PPCs	1,672	0.41	32.83	\$83,348	4.92	\$16,943
One or More Selected "Major" PPCs	19,539	4.77	9.17	\$37,928	2.38	\$13,435

Maryland data July 2007-Mar 2008

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## Maryland 2007-2008 Data PPC Rate

For Discharge in the Year Beginning July 1, 2007 and Ending March 31, 2008

PPC Description	PPC Categories			
	All Risk for PPC	PPC Cases	MC PPC Rate/100	CA PPC Rate/100
01 Stroke & Intracranial Hemorrhage	312,485	4,116	0.14	0.14
02 Refractive Ocular Complications	348,468	161	0.05	0.04
03 Acute Pulmonary Edema and Respiratory Failure without Ventilation	388,531	7,381	0.02	0.19
04 Acute Pulmonary Edema and Respiratory Failure with Ventilation	388,531	11,162	0.29	0.13
05 Pneumonia & Other Lung Infections	388,531	1,101	0.28	0.35
06 Aspiration Pneumonia	388,531	411	0.11	0.20
07 Pulmonary Embolism	388,531	114	0.03	0.30
08 Other Pulmonary Complications	388,531	1,101	0.28	0.35
09 Shock	388,531	424	0.11	0.33
10 Congestive Heart Failure	388,531	1,101	0.28	0.35
11 Acute Myocardial Infarction	388,531	1,101	0.28	0.35
12 Cardiac Arrhythmias & Conduction Disturbances	388,531	1,101	0.28	0.35
13 Other Cardiac Complications	388,531	1,101	0.28	0.35
14 Ventricular Fibrillation/Cardiac Arrest	388,531	1,101	0.28	0.35
15 Peripheral Vascular Complications Except Venous Thrombosis	388,531	1,101	0.28	0.35
16 Venous Thrombosis	388,531	1,101	0.28	0.35
17 Major Gastrointestinal Complications without Transfusion or Significant Bleeding	388,531	1,101	0.28	0.35
18 Major Gastrointestinal Complications with Transfusion or Significant Bleeding	388,531	1,101	0.28	0.35
19 Major Liver Complications	388,531	1,101	0.28	0.35
20 Other Gastrointestinal Complications without Transfusion or Significant Bleeding	388,531	1,101	0.28	0.35
21 Gastrointestinal Colitis	388,531	1,101	0.28	0.35
22 Urinary Tract Infection	388,531	1,101	0.28	0.35
23 GU Complications Except UTI	388,531	1,101	0.28	0.35
24 Renal Failure without Dialysis	388,531	1,101	0.28	0.35
25 Renal Failure with Dialysis	388,531	1,101	0.28	0.35
26 Diabetic Ketoacidosis & Coma	388,531	1,101	0.28	0.35
27 Post-Hemorrhagic & Other Acute Anemia with Transfusion	388,531	1,101	0.28	0.35
28 #-Hemorrhagic Trauma and Fractures	388,531	1,101	0.28	0.35
29 #-Hemorrhagic Trauma without Anesthesia	388,531	1,101	0.28	0.35
30 Poisonings (Except from Anesthesia)	388,531	1,101	0.28	0.35
31 Decubitus Ulcer	388,531	1,101	0.28	0.35
32 Transfusion Incompatibility Reaction	388,531	1,101	0.28	0.35

Maryland July 07 – Mar 08  
PPC 1-32

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Maryland 2007-2008 Data PPC Rate  
For Discharge in the Year Beginning July 1, 2007 and Ending March 31, 2008

PPC Description	Discharges			
	All Pkgs Discharge	Total Cases	Med PPC Rate/100	CA PPC Rate/100
32. Genital	153,813	153	0.10	0.10
34. Moderate Infectious	252,824	20	0.01	0.01
36. Bacterial & Fungal Infections	252,824	11	0.00	0.00
38. Acute Mental Health Changes	252,824	0	0.00	0.00
37. Post-Operative Infection & Deep Wound Disruption Without Procedure	107,777	11	0.01	0.01
39. Post-Operative Wound Infection & Deep Wound Disruption with Procedure	107,777	11	0.01	0.01
35. Resecting Surgical Site	107,777	11	0.01	0.01
40. Post-Operative Hemorrhage & Hematomas without Hemorrhage Control Procedure or ICD Procedure	107,777	11	0.01	0.01
41. Post-Operative Hemorrhage & Hematomas with Hemorrhage Control Procedure or ICD Procedure	107,777	11	0.01	0.01
42. Accidental Cut or Hemorrhage During Other Medical Care	107,777	11	0.01	0.01
43. Other Surgical Complication - Med	107,777	11	0.01	0.01
44. Post-Operative Foreign Bodies	107,777	11	0.01	0.01
45. Post-Operative Substance Reaction & Non-O.R. Procedure for Foreign Body	107,777	11	0.01	0.01
47. Rhinoplasty	107,777	11	0.01	0.01
46. Other Complications of Medical Care	107,777	11	0.01	0.01
48. Inotropic Pharmacology	107,777	11	0.01	0.01
49. Mechanical Complication of Device, Implant & Graft	107,777	11	0.01	0.01
51. Gastrointestinal System Complications	107,777	11	0.01	0.01
52. Infection & Other Complications of Devices, Implants or Grafts Except Vascular Infection	107,777	11	0.01	0.01
53. Infection, Irritation and Colitis Complications of Prosthetic Vascular Catheters and Infusions	107,777	11	0.01	0.01
54. Infections due to Central Venous Catheters	107,777	11	0.01	0.01
55. Central Venous Catheter Complications	107,777	11	0.01	0.01
56. Infections due to Central Venous Catheters	107,777	11	0.01	0.01
57. Obstetric Hemorrhage without Transfusion	107,777	11	0.01	0.01
58. Obstetric Hemorrhage with Transfusion	107,777	11	0.01	0.01
59. Obstetric Lacerations & Other Trauma without Instrumentation	107,777	11	0.01	0.01
60. Obstetric Lacerations & Other Trauma with Instrumentation	107,777	11	0.01	0.01
61. Major Postoperative Infection and Other Major Outcomes Complications	107,777	11	0.01	0.01
62. Other Complications of Obstetric Surgery & Perineal Surgery	107,777	11	0.01	0.01
63. Delivery with Perineal Complications	107,777	11	0.01	0.01
64. Post-Operative Respiratory Failure with Technology	107,777	11	0.01	0.01
65. Other Intractable Acute Events	107,777	11	0.01	0.01

Maryland July 07 - Mar 08  
PPC 33-64

### Maryland Hospitals with Higher and Lower Than Expected PPC Rate

Category	Number of Hospitals with Higher Than Expected PPC Rate	Number of Hospitals with Lower Than Expected PPC Rate	Number of Hospitals with As Expected PPC Rate	Statewide PPC Rate	Best Practice PPC Rate
Overall	15 (35.7%)	19 (45.2%)	8 (19.0%)	4.77	3.57
Medical	13 (31.0%)	20 (47.6%)	9 (21.4%)	3.56	2.59
Surgical	13 (31.0%)	11 (26.2%)	18 (42.9%)	8.46	7.05
Obstetrical	5 (11.9%)	7 (16.7%)	30 (71.4%)	4.23	3.41

Note: PPC rate based on having one or more of the 35 select "Major" PPCs

### Maryland Hospitals Expected PPC Rates

PPC Description	PPC Total Cases	Number of Hospitals with Higher Than Expected PPC Rate	Number of Hospitals with Lower Than Expected PPC Rate
32. GENITAL TRACT INFECTION	153	8	13
34. MODERATE PNEUMONIA AND RESPIRATORY FAILURE WITHOUT MECHANICAL VENTILATION	253	10	13
36. BACTERIAL AND FUNGAL INFECTIONS WITHOUT TRANSFUSION	253	8	13
38. ACUTE MENTAL HEALTH CHANGES	253	8	13
37. POST-OPERATIVE INFECTION AND DEEP WOUND DISRUPTION WITHOUT PROC	108	7	9
39. POST-OPERATIVE WOUND INFECTION AND DEEP WOUND DISRUPTION WITH PROC	108	7	9
35. RESECTING SURGICAL SITE	108	7	9
40. POST-OPERATIVE HEMORRHAGE AND HEMATOMAS WITHOUT HEMORRHAGE CONTROL PROC	108	12	13
41. POST-OPERATIVE HEMORRHAGE AND HEMATOMAS WITH HEMORRHAGE CONTROL PROC	108	12	13
42. ACCIDENTAL CUT OR HEMORRHAGE DURING OTHER MEDICAL CARE	108	6	4
43. OTHER SURGICAL COMPLICATIONS - MEDICAL	108	6	4
44. POST-OPERATIVE FOREIGN BODIES	108	6	4
45. POST-OPERATIVE SUBSTANCE REACTION AND NON-OPERATIVE PROC FOR FOREIGN BODY	108	6	4
47. RHINOPLASTY	108	6	4
46. OTHER COMPLICATIONS OF MEDICAL CARE	108	6	4
48. INOTROPIC PHARMACOLOGY	108	6	4
49. MECHANICAL COMPLICATIONS OF DEVICES, IMPLANTS OR GRAFTS EXCEPT VASCULAR INFECTION	108	6	4
51. GASTROINTESTINAL SYSTEM COMPLICATIONS	108	6	4
52. INFECTION AND OTHER COMPLICATIONS OF DEVICES, IMPLANTS OR GRAFTS EXCEPT VASCULAR INFECTION	108	6	4
53. INFECTION, IRRITATION AND COLITIS COMPLICATIONS OF PROSTHETIC VASCULAR CATHETERS AND INFUSIONS	108	6	4
54. INFECTIONS DUE TO CENTRAL VENOUS CATHETERS	108	6	4
55. CENTRAL VENOUS CATHETER COMPLICATIONS	108	6	4
56. INFECTIONS DUE TO CENTRAL VENOUS CATHETERS	108	6	4
57. OBSTETRIC HEMORRHAGE WITHOUT TRANSFUSION	108	6	4
58. OBSTETRIC HEMORRHAGE WITH TRANSFUSION	108	6	4
59. OBSTETRICAL LACERATIONS AND OTHER TRAUMA WITHOUT INSTRUMENTATION	108	6	4
60. OBSTETRICAL LACERATIONS AND OTHER TRAUMA WITH INSTRUMENTATION	108	6	4
61. MAJOR POST-OPERATIVE INFECTION AND OTHER MAJOR OUTCOME COMPLICATIONS	108	6	4
62. OTHER COMPLICATIONS OF OBSTETRIC SURGERY AND PERINEAL SURGERY	108	6	4
63. DELIVERY WITH PERINEAL COMPLICATIONS	108	6	4
64. POST-OPERATIVE RESPIRATORY FAILURE WITH TECHNOLOGY	108	6	4
65. OTHER INTRACTABLE ACUTE EVENTS	108	6	4

### Range of PPC Rates Across Maryland Hospitals

Category	Statewide PPC Rate	Lowest Hospital Hosp Act to Exp * State PPC Rate	Highest Hospital PPC Rate
Overall	4.77	1.86	10.17
Medical	3.56	1.11	9.51
Surgical	8.46	4.56	16.05
Obstetrical	4.23	1.55	9.27

Note: PPC rate based on having one or more of the 35 select "Major" PPCs



## Potentially Preventable Readmissions (PPRs)

Return hospitalizations that may result from deficiencies in the process of care and treatment (readmission for a surgical wound infection) or lack of post discharge follow-up (prescription not filled) rather than unrelated events that occur post discharge (broken leg due to trauma).

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## Maryland Data PPR Analysis

- 27 months of data : Jan 2006 – March 2008
- Total admissions : 1,078,667
  - 2006 : 751,300
  - 2007 : 758,695
  - 2008 : 194,382
- 320 (0.02%) admissions excluded due to invalid or missing date of birth
- 50 hospitals

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## Unique Patient ID

- Probabilistic matching was performed to assign each admission a unique patient ID.
- Patient date of birth, gender, zip code, and hospital medical record ID were used to assign the final unique patient ID
  - Step 1: Uniquely ID each patient based on DOB + Gender + Zip code
  - Step 2: Patients with the same Unique ID from step 1 that have more than one Medical Record ID from the same hospital, are reassigned a unique ID by the Unique ID from Step 1 + hospital ID + Medical Record Number.
  - Step 3: If more than one Unique ID from step 2 have the same Medical Record ID from the same hospital, then these patients are reassigned a unique ID based on the Unique ID in Step 2 + Hospital ID + Medical Record Number.

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## Linked Patient ID Data for PPR Assignment

- 1,078,667 patients identified.
- The number of admissions per patient in MD is 1.58.
- In Florida and in another all payer state where the patient ID was based on the SSN, the ratio was 1.75, and in another all payer state where the patient ID was based on a set of encrypted data elements, the ratio was 1.36.
- Patients with inconsistent or overlapping admissions based on admit and discharge dates were excluded from the PPR analysis.
  - 34,561 (2.03%) admissions rejected from the PPR logic.
- Patients classified as a global exclusion were not included in the PPR analysis. This includes major or metastatic malignancy, trauma and burn, neonatal, obstetrical, other specific APR-DRGs, and admissions with discharge status of LAMA. Patients that are transferred or have died are not at risk for starting a chain of readmissions.
  - 517,973 (30.4%) of the admissions are excluded or died and therefore, not a candidate admission for starting a chain of PPRs or classified as a PPR.

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### Maryland Rates of PPRs

		PPR Rate
15 Day Readmission Time Interval Across Hospital Readmissions	2006	6.74
	2007	6.74
30 Day Readmission Time Interval Across Hospital Readmissions	2006	9.89
	2007	9.81

- PPR rates consistent between two years
- 45% increase in PPR rate between a 15 day and 30 day readmission time interval

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### Maryland PPR Impact in 2007 for a 15 Day Readmission Time Interval

- 472,380 admissions were candidates for having a subsequent potentially preventable readmission
- 31,873 admissions were followed by one or more PPRs
- PPR rate is the percent of candidate admissions that were followed by one or more PPRs
  - PPR Rate 6.75 = 31,873 / 472,380
- 38,840 admissions were identified as PPRs
- PPRs account for \$430.4 million in charges and 199,582 hospital bed days

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### Maryland PPR Impact in 2007 for a 30 Day Readmission Time Interval

- 452,863 admissions were candidates for having a subsequent potentially preventable readmission
- 44,417 admissions were followed by one or more PPRs
- PPR rate is the percent of candidate admissions that were followed by one or more PPRs
  - PPR Rate 9.81 = 44,417 / 452,863
- 59,599 admissions were identified as PPRs
- PPRs account for \$656.9 million in charges and 303,865 hospital bed days

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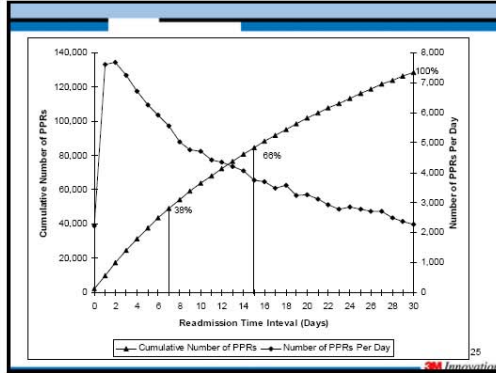
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### Length of Stay and Charges for Initial Admissions Followed by a PPR within a 30 Day Readmission Time Interval - 2007

	Number of Admissions	CMI	Average Length of Stay	Average Charge	
At Risk Not Followed by PPRs (Other Admission)	408,446	1.0481	3.75	\$10,834	
			3.58	\$10,337	CMI Adjusted
At Risk Followed by PPRs (Initial Admission)	44,417	1.3133	5.47	\$14,930	
			4.16	\$11,368	CMI Adjusted

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### Top 15 Initial Admissions followed by one or more PPR - 2007

APR DRG	Initial Admissions Followed by PPRs	Percent of Initial Admissions	PPR Rate	Initial Admissions Followed by PPRs	Percent of Initial Admissions	PPR Rate
194 HEART FAILURE	1,178	3.70%	10.33%	3,318	9.70%	15.30%
140 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	1,178	3.70%	10.33%	1,833	3.81%	15.67%
720 SEPTICEMIA & DISSEMINATED INFECTIONS	1,004	3.21%	10.42%	1,137	2.87%	16.31%
133 OTHER PNEUMONIA	763	2.42%	6.55%	1,078	2.43%	8.61%
178 PERICARDIAL CARDIOVASCULAR PROCEDURES W/O AMI	771	2.31%	3.26%	1,028	2.89%	11.87%
773 BIPOLAR DISORDERS	614	1.91%	7.63%	818	2.07%	11.65%
400 RENAL FAILURE	603	1.84%	4.88%	808	2.22%	14.74%
131 INFECTION & UNIDENTIFIED ORGANISM	600	1.80%	6.26%	707	1.91%	11.14%
200 DYSRHYTHMIA & CONDUCTION DISORDERS	600	1.80%	4.31%	707	1.91%	11.64%
400 RENAL FAILURE	599	1.79%	5.97%	707	1.91%	11.64%
133 PULMONARY EDEMA & RESPIRATORY FAILURE	544	1.65%	4.31%	707	1.91%	11.64%
133 PULMONARY EDEMA & RESPIRATORY FAILURE	544	1.65%	4.31%	707	1.91%	11.64%
720 SEPTICEMIA & DISSEMINATED INFECTIONS	519	1.55%	4.76%	707	1.91%	11.64%
133 PULMONARY EDEMA & RESPIRATORY FAILURE	508	1.53%	4.71%	707	1.91%	11.64%
400 RENAL FAILURE	498	1.49%	3.36%	707	1.91%	11.64%
720 SEPTICEMIA	406	1.23%	3.18%	707	1.91%	11.64%

Top 15 represents 35% of all initial admissions followed by PPRs

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### Top 15 Reasons for PPRs - 2007

APR DRG	Number of Admissions Identified as a PPR	Total Charges for PPRs	Number of Admissions Identified as a PPR	Total Charges for PPRs
133 PULMONARY EDEMA & RESPIRATORY FAILURE	1,248	\$36,576,300	3,661	\$97,264,000
194 HEART FAILURE	2,209	\$65,811,634	4,712	\$45,485,189
140 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	1,333	\$11,698,237	2,317	\$16,745,461
130 RESPIRATORY SYSTEM DIAG W VENTILATOR SUPPORT 96+ HOURS	241	\$1,131,776	352	\$19,531,963
400 RENAL FAILURE	393	\$10,929,140	1,058	\$17,468,207
133 PULMONARY EDEMA & RESPIRATORY FAILURE	735	\$11,477,804	1,148	\$17,438,733
721 POST-OPERATIVE, POST-TRAUMATIC, OTHER DEVICE INFECTIONS	264	\$9,834,736	1,241	\$13,552,523
130 OTHER PNEUMONIA	679	\$5,258,919	1,376	\$12,535,409
131 INFECTION, POST-TRAUMA, OTHER DEVICE INFECTIONS W/O: DRUG	260	\$8,459,400	211	\$11,489,747
133 PULMONARY EDEMA & RESPIRATORY FAILURE	709	\$7,455,464	658	\$11,276,903
720 SEPTICEMIA & DISSEMINATED INFECTIONS	283	\$7,253,004	1,263	\$10,253,810
720 SEPTICEMIA	179	\$6,637,837	1,024	\$10,259,131
49 HYA & PIRCERPERAL OCCLUSION W/INFARCT	192	\$5,446,500	390	\$5,979,270
140 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	192	\$5,373,859	609	\$5,544,844
400 RENAL FAILURE	231	\$5,333,223	370	\$5,251,333

Top 15 PPRs represents 42% of charges on PPRs for a 30 day readmission time window

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### Top Five PPR Reasons for an Initial Admission of Heart Failure - 2007

APR DRG	Number of Admissions Identified as a PPR	Total Charges for PPRs	Number of Admissions Identified as a PPR	Total Charges for PPRs
194 HEART FAILURE	962	\$9,109,200	1,957	\$14,239,684
400 RENAL FAILURE	104	\$1,335,968	100	\$1,969,728
720 SEPTICEMIA & DISSEMINATED INFECTIONS	97	\$1,627,948	136	\$2,535,465
140 RESPIRATORY SYSTEM DIAG W VENTILATOR SUPPORT 96+ HOURS	66	\$691,330	134	\$1,164,333
133 PULMONARY EDEMA & RESPIRATORY FAILURE	80	\$1,044,021	111	\$1,523,102
All Other PPRs	1,000	\$14,813,001	2,220	\$24,058,802
Total PPRs for Initial Admission of Heart Failure	2,909	\$28,621,636	4,712	\$45,485,189

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### Maryland Hospital Rates of PPRs – 2007 with 15 day window

PPR Rate	No. Hospitals
< 4	3
4-5.9	8
6 - 6.9	20
7 - 7.9	14
8+	4

- Overall Statewide PPR rate of 6.74
- 27 hospitals have lower actual to expected PPR rate
- 22 hospitals have higher actual to expected PPR rate with a percent difference between actual and expected PPR rate ranging from 4.8% to 29.3%
- Top 16 best practice hospitals have a 13% lower actual to expected PPR rate (BP: hospitals with the lowest actual PPR rate – expected PPR rate representing 25% of case volume)

### Age and Mental Health Adjustment: Ratio of Actual to Expected PPR Rate

Condition	0-17	18-84	Age >= 85
Major Mental Health Excluding MDC 19	0.6970	1.1210	1.2050
All Other	0.6860	0.9821	1.1160

### Impact on Maryland Rate Setting

- Key is to put in place incentives that lead to the reduction of cost associated with PPCs and PPRs.
  - PPR (15 day) estimated associated charges in 2007: \$430.4 million (5.3%)
  - PPR (30 day) estimated associated charges in 2007 : \$656.9 million (8.0%)
  - PPC (selected PPCs) estimated associated charges in FY 2008: \$116.9 to \$193.4 million (1.4-2.3%)
- For PPRs (15 day), an estimated impact on CMI around 2 - 4%
- For PPCs, an estimated impact on CMI around 1 – 2%
- Total estimated impact on CMI around 3 – 6%