A HOSPITAL PERFORMANCE REPORT
COMMON MEDICAL PROCEDURES AND TREATMENTS

Technical Notes
Western Pennsylvania

For Calendar Year 1999

Includes Methodology for DRGs in the Public Report and on the Council's Web Site

Report Number: 2000-12/05-12W

The Pennsylvania Health Care Cost Containment Council
December 2000

Foreword

The 1999 *Hospital Performance Report* utilizes all the improvements developed and implemented in the 1997 and 1998 versions of the *Hospital Performance Report.* These outcomes of care analyses responded to information requests by purchasers, providers, insurers and individual consumers for a diversity of medical and surgical treatments. The improvements for the past several reporting years included methodological changes and streamlined content and presentation for ease of understanding.

The printed public-release document for the 1999 *Hospital Performance Report* has been expanded to include analyses on several additional DRGs. A risk-adjusted readmission rate has been added as a reported outcome; pediatric cases have been eliminated from any adult analyses, or removed and analyzed separately for five DRGs.

The 1999 *Hospital Performance Report* represents a milestone for the Pennsylvania Health Care Cost Containment Council. In an effort to disperse a wide range of information on clinical conditions, outcomes for 50 additional DRGs (referenced within these notes as *Web site only*) have been analyzed and posted on the Council's Web site.

Individuals seeking further detail should reference the Council's Web site.

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The Council has made decisions in conjunction with its Technical Advisory Group (a standing committee charged with overseeing all technical and methodological aspects of the Council's Research). The Council appreciates the dedicated assistance it received in creating this report.

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Technical Notes
1999 Hospital Performance Report

This document serves as a technical supplement to the 1999 *Hospital Performance Report*. Technical notes describe the methodology of the analyses and outline development of the report format and presentation.

Overview of the 1999 *Hospital Performance Report*

The report presents measures for 21 selected Diagnosis Related Groups (DRGs) using:

- risk-adjusted in-hospital mortality
- risk-adjusted average length of stay
- regionally adjusted average hospital charge
- risk-adjusted readmission rate

In addition, 50 new DRGs are included on the Council Web site. A total of 71 DRGs (21 *public document* and 50 *Web site only*) were published for 1999. Outcomes for the 21 public document DRGs will be published in the traditional "paper format," as well as in an "electronic format," on the Council's Web site. Outcomes for DRGs, which are referred to as *Web site only*, are not published in the traditional "paper format," but can be viewed on the Council's Web site.

In-hospital mortality is identified in the patient discharge record as a discharge status of "20." Length of stay is calculated by subtracting the discharge date from the admit date. Hospital charge is the patient total charge excluding professional fees. A hospital readmission is defined as an acute care rehospitalization, for any reason, which occurs within 30 days of the discharge date of the original hospitalization.

Summaries by DRG are provided by state, region, and individual hospitals for each of the three "wide-area" regional reports.

Note that the three "wide-area" regions allow a broader range of comparison among acute care facilities: These wide-area regions are defined as:

- Western Pennsylvania (comprised of Southwestern Pennsylvania—Region 1, Northwestern Pennsylvania—Region 2, and Southern Allegheny—Region 3)
- Central and Northeastern (comprised of Northcentral Pennsylvania—Region 4, Southcentral Pennsylvania—Region 5, and Northeastern Pennsylvania—Region 6)
- Southeastern Pennsylvania (comprised of Eastcentral Pennsylvania—Region 7, Southeastern Pennsylvania—Region 8, and the city of Philadelphia—Region 9)

What is new for the 1999 *Hospital Performance Report*?

The following table summarizes methodologies developed for the 1997 and 1998 Reports and enhancements developed for the 1999 Report.

	1997/1998 Methodology	1999 Methodology
Measures Reported	✓ In-hospital mortality ✓ Average hospital charge ✓ Average length of stay	Same *with the addition of*: ✓ Readmission rate[1] ✓ Transfer-out rate (Heart Attack DRG only) ✓ Notation of status as provider of advanced cardiac care (Heart Attack DRG only)
Hospitals	Acute care facilities (excluding low-volume specialty hospitals)	Acute care facilities (excluding children's hospitals for adult DRGs)
Definition of Compliance	Acute care facilities that submitted data containing less than 15% missing severity scores for the reported DRGs	Acute care facilities that submitted data containing less than 15% missing severity scores for all DRGs in which severity score is required
DRGs: Public Document	**15** included (includes 3 DRGs collapsed into 1 DRG)	**21** included (excludes 1 DRG previously reported and includes 7 new DRGs)
DRGs: Web site	Not applicable	**71** in total (21 public document and 50 additional)
Comparative Database	Pennsylvania Hospital same year Inpatient Database with all relevant data	Pennsylvania Hospital 1999 Inpatient Database with all relevant data *excluding pediatric cases for adult comparative analyses and excluding adult cases for pediatric comparative analyses*
Risk Adjustment Technique	Indirect standardization	Same
Adjustment Factors *(for in-hospital mortality, length of stay, and readmission for 1999)*	✓ Atlas Severity of Illness ✓ Age categories : ▪ Ages 0 –64, 65 – 79, 80+ ✓ Cancer categories: ▪ None ▪ Malignant neoplasm and in situ ▪ History of cancer	✓ Atlas Severity of Illness (same) ✓ Age categories (DRG[2] dependent): ▪ Ages 18 – 64, 65 – 79, 80+, or ▪ Ages 18 – 39, 40 – 69, 70+, or ▪ Ages 0 – 5, 6 – 12,13 – 17 ✓ Cancer categories (same) ✓ Patient gender (only used for 2 pediatric DRGs)
Statistical Tests *(for in-hospital mortality)*	✓ Exact Binomial Test	Same
Trim Methodology *(for charges and length of stay)*	✓ +/- 3.0 Interquartile Range ✓ Outlier exclusion is considered separately.	Same

[1] Readmission is not analyzed for heart attack, lung cancer, or *Web site only* DRGs.

[2] Age adjustment is dependent on the distribution of age in the cases captured by a particular DRG

What is the difference between the 21 DRGs reported in the *public document* and the 50 DRGs released on the Council's *Web site only*?

The following table summarizes the differences between what is reported in the public report document (the traditional "paper format") and what is reported for the 50 *Web site only* DRGs. Note that descriptive and outcome information regarding the 21 DRGs chosen for the public document are displayed on the Council's Web site; any information that is published for the 21 DRGs in the public document will also be displayed on the Web site.

	DRGs: *Public Document*	**DRGs: *Web site Only***
Measures Reported	✓ In-hospital mortality ✓ Average hospital charge ✓ Average length of stay ✓ Readmission rate ✓ Acute care transfer rate (Heart Attack only) ✓ Notation of status as provider of advanced cardiac care (Heart Attack only)	Same *except for*: ✓ Readmission rate is <u>not reported</u> for the 50 Web site only, but included for the 21 DRGs
Hospitals	Acute care facilities (excluding children's hospitals)	Acute care facilities with 5 or more cases in a DRG
DRGs	**21** included (excludes 1 DRG previously reported and includes 7 new DRGs)	**50** included (47 adult and 5 pediatric—2 DRGs will be split into separate adult and pediatric analyses)
Comparative Database	Pennsylvania Hospital 1999 Inpatient Database with all relevant data *(pediatric cases have been removed)*	**47 Adult DRGs**[1]: same **5 Pediatric DRGs**[2]: Pennsylvania Hospital 1999 Inpatient Database with all relevant pediatric data

[1] Includes 45 adult only and 2 pediatric/adult DRGs

[2] Includes 3 pediatric only and 2 pediatric/adult DRGs

DRG Inclusion for the Public Document

The twenty-one DRGs included in the 1999 public document were selected primarily by patient volume, mortality rate, and mortality rate variability among hospitals.

Since the 1999 Report includes data from acute care facilities regardless of bed size, DRGs are selected that are prevalent at smaller facilities as well as at larger facilities. The twenty-one selected DRGs not only represent a broad range of Major Diagnostic Categories (MDCs), but also represent both medical and surgical DRGs. The different body systems encompassed by the 21 DRGs, include Nervous system (01), Respiratory system (04), Circulatory system (05), Digestive system (06), Musculoskeletal system and connective tissue (08), Endocrine, nutritional and metabolic (10), Kidney and urinary tract (11), Infectious and parasitic diseases (18), and Injury, poisoning and toxic effects of drugs (21).

Assignments to a DRG usually do not capture all cases with a given diagnosis/procedure. Cases assigned to a DRG typically represent a subset of all patients with a specific diagnosis or surgical treatment that are more homogeneous with regard to resource use and clinical complexity.

For previous reports, DRG 110, *Major Vessel Operations (except Heart)* was a DRG that was analyzed in the Hospital Performance Report. Procedures categorized in this DRG vary greatly in clinical complexity, severity of illness and potential for adverse outcomes. For the 1999 HPR, this DRG was removed from the analyses.

Seven additional DRGs are included in this year's release. They are *Pulmonary Embolism* (78), *COPD* (88), *Abnormal Heartbeat, complicated* (138), *Stomach & Small Intestinal Operations, complicated* (154), *Stomach & Intestinal Complications & Disorders* (188), *Kidney & Urinary Infections, complicated* (320), and *Poisoning & Toxic Effects of Drugs, complicated* (449).

Inclusion of *Web site Only* DRGs

Fifty DRGs were selected for inclusion in the Web version of the 1999 *Hospital Performance Report.* The rationale for selection of the DRGs for the Web was similar to that for the public document, except less emphasis was placed on mortality and more emphasis was placed on volume of cases. More specifically,

- The selected DRG had a high volume of cases—these DRGs tend to be diagnoses in which there is high public interest and volume for adequate statistical comparison among hospitals.
- There was variation in mortality for the selected DRG among hospitals.
- The transfer rate (transfer-out rate to another acute care facility) for the selected DRG was low (less than 5 percent). This criterion was utilized so that a complete picture of the care delivered could be obtained by examining a single discharge record.
- The selected DRG was not the focus of another Council "outcome" report.

The 21 DRGs included in the 1999 public document and Web site release are:

DRG	Description	Common Names	MDC	Medical/ Surgical
14	Specific Cerebrovascular Disorders Except Transient Ischemic Attack	Stroke (Brain Attack)	01	Medical
78	Pulmonary Embolism	Blood Clot in Lung	04	Medical
79	Respiratory Infections and Inflammations, Age Greater Than 17 with CC‡	Lung Infections, complicated	04	Medical
82	Respiratory Neoplasms	Lung Cancer	04	Medical
88	Chronic Obstructive Pulmonary Disease	Chronic Obstructive Pulmonary Disease (COPD)	04	Medical
89	Simple Pneumonia with Pleurisy, Age Greater Than 17 with CC‡	Pneumonia, complicated	04	Medical
121-123*	Medical Treatment - Acute Myocardial Infarction	Heart Attack - Medical Management	05	Medical
127	Heart Failure and Shock	Heart Failure & Shock	05	Medical
130	Peripheral Vascular Disorders with CC‡	Vascular Disorders except heart, complicated	05	Medical
138	Cardiac Arrhythmia and Conduction Disorders with CC‡	Abnormal Heartbeat, complicated	05	Medical
148	Major Small and Large Bowel Procedures with CC‡	Major Intestinal Procedures, complicated	06	Surgical
154	Stomach, Esophageal and Duodenal Procedures, Age Greater Than 17 with CC‡	Stomach & Small Intestinal Operations, complicated	06	Surgical
174	GI Hemorrhage with CC‡	Stomach & Intestinal Bleeding, complicated	06	Medical
188	Other Digestive System Diagnoses, Age Greater Than 17 with CC‡	Stomach & Intestinal Complications & Disorders	06	Medical
210	Hip and Femur Procedures Except Major Joint Procedures, Age Greater Than 17 with CC‡	Hip Operations except replacement, complicated	08	Surgical
294	Diabetes, Age Greater Than 35	Diabetes	10	Medical
316	Renal Failure	Kidney Failure	11	Medical
320	Kidney and Urinary Tract Infections, Age Greater Than 17 with CC‡	Kidney & Urinary Infections, complicated	11	Medical
416	Septicemia, Age Greater Than 17	Septicemia	18	Medical
449	Poisoning and Toxic Effects of Drugs, Age Greater Than 17 with CC‡	Poisoning & Toxic Effects of Drugs, complicated	21	Medical
478	Other Vascular Procedures with CC‡	Vascular Operations except heart, complicated	05	Surgical

‡ CC – complication or comorbid condition

***** Because medically-treated heart attack patients who die are given a separate DRG (123), DRGs for all medically managed heart attack patients were combined for the mortality analysis. Hospital charges for these combined DRGs were case-mix adjusted to provide equitable comparisons. Not all AMI cases are captured in these DRGs. AMI patients transferred to another acute care facility have been excluded and AMI patients treated with therapeutic intervention (i.e., CABG, PTCA, and/or stent) are not captured. Approximately 25 percent of acute care hospitals have the capability to provide these therapeutic interventions.

The 50 DRGs released on the Council's *Web site only* are:
(Note: Pediatric cases for DRGs 410 and 167 are reported separately.)

DRG	Description	Common Names	MDC	Medical/ Surgical
1	Craniotomy, Age Greater than 17 Except for Trauma	Brain Surgery except for trauma	01	Surgical
5	Extracranial Vascular Procedures	Removal of Head, Neck Vessel Blockage	01	Surgical
12	Degenerative Nervous System Disorders	Degenerative Neurologic Disorders	01	Medical
15	Transient Ischemic Attack and Precerebral Occlusions	Transient Ischemic Attack & Blocked Vessel of Head, Neck	01	Medical
24	Seizure and Headache, Age Greater than 17 with CC‡	Seizure & Headache, complicated	01	Medical
25	Seizure and Headache, Age Greater than 17 without CC‡	Seizure & Headache, uncomplicated	01	Medical
34	Other Disorders of Nervous System with CC‡	Neurologic Symptoms & Disorders, complicated	01	Medical
75	Major Chest Procedures	Major Lung Operations	04	Surgical
76	Other Respiratory System OR Procedures with CC‡	Miscellaneous Lung Procedures, complicated	04	Surgical
87	Pulmonary Edema and Respiratory Failure	Fluid in Lung & Breathing Failure	04	Medical
90	Simple Pneumonia and Pleurisy, Age Greater than 17 without CC‡	Pneumonia, uncomplicated	04	Medical
91	Simple Pneumonia and Pleurisy, Age 0 - 17	Pediatric Pneumonia	04	Medical
96	Bronchitis and Asthma, Age Greater than 17 with CC‡	Bronchitis & Asthma, complicated	04	Medical
97	Bronchitis and Asthma, Age Greater than 17 without CC‡	Bronchitis & Asthma, uncomplicated	04	Medical
98	Bronchitis and Asthma, Age 0 - 17	Pediatric Bronchitis & Asthma	04	Medical
113	Amputation for Circulatory System Disorders Except Upper Limb and Toe	Non-Traumatic Lower Limb Amputation except toe	05	Surgical
120	Other Circulatory System OR Procedures	Miscellaneous Circulatory Operations	05	Surgical
125	Circulatory Disorders Except Acute Myocardial Infarction with Cardiac Catheterization without Complex Diagnosis	Heart Catheterization without heart attack, uncomplicated	05	Medical
131	Peripheral Vascular Disorders without CC‡	Vascular Disorders except heart, uncomplicated	05	Medical
139	Cardiac Arrhythmia and Conduction Disorders without CC‡	Abnormal Heartbeat, uncomplicated	05	Medical
141	Syncope and Collapse with CC‡	Hypotension & Fainting, complicated	05	Medical
143	Chest Pain	Chest Pain	05	Medical
144	Other Circulatory System Diagnoses with CC‡	Extensive Cardiovascular Complications & Disorders	05	Medical
167	Appendectomy without Complicated Principal Diagnosis without CC‡	Removal of Appendix, uncomplicated	06	Surgical
167	Appendectomy without Complicated Principal Diagnosis without CC‡	Pediatric Removal of Appendix, uncomplicated	06	Surgical
172	Digestive Malignancy with CC‡	Stomach & Intestinal Cancer, complicated	06	Medical

‡ CC – complication or comorbid condition

The 50 DRGs released on the Council's *Web site only* are:
(Note: Pediatric cases for DRGs 410 and 167 are reported separately.)

DRG	Description	Common Names	MDC	Medical/ Surgical
180	GI Obstruction with CC‡	Stomach & Intestinal Obstruction, complicated	06	Medical
182	Esophagitis, Gastroenteritis and Miscellaneous Digestive Disorders, Age Greater than 17 with CC‡	Stomach & Intestinal Infections & Disorders, complicated	06	Medical
183	Esophagitis, Gastroenteritis and Miscellaneous Digestive Disorders, Age Greater than 17 without CC‡	Stomach & Intestinal Infections & Disorders, uncomplicated	06	Medical
184	Esophagitis, Gastroenteritis and Miscellaneous Digestive Disorders, Age 0 - 17	Pediatric Stomach & Intestinal Infections & Disorders	06	Medical
202	Cirrhosis and Alcoholic Hepatitis	Cirrhosis & Alcoholic Hepatitis	07	Medical
203	Malignancy of Hepatobiliary System or Pancreas	Liver, Gallbladder or Pancreatic Cancer	07	Medical
204	Disorders of Pancreas Except Malignancy	Noncancerous Pancreatic Disorders	07	Medical
205	Disorders of Liver Except Malignancy, Cirrhosis and Alcoholic Hepatitis with CC‡	Liver Disease except cancer, cirrhosis, alcoholic hepatitis, complicated	07	Medical
217	Wound Debridement and Skin Graft Except Hand for Musculoskeletal and Connective Tissue Disorders	Wound Debridement & Skin Grafts except hand	08	Surgical
239	Pathological Fractures and Musculoskeletal and Connective Tissue Malignancy	Bone Cancer & Non-Traumatic Fractures	08	Medical
277	Cellulitis, Age Greater than 17 with CC‡	Cellulitis, complicated	09	Medical
296	Nutritional and Miscellaneous Metabolic Disorders, Age Greater than 17 with CC‡	Nutritional & Metabolic Deficiencies, complicated	10	Medical
297	Nutritional and Miscellaneous Metabolic Disorders, Age Greater than 17 without CC‡	Nutritional & Metabolic Deficiencies, uncomplicated	10	Medical
310	Transurethral Procedures with CC‡	Transurethral Procedures except prostatectomy, complicated	11	Surgical
315	Other Kidney and Urinary Tract OR Procedures	Vascular Surgery for Dialysis	11	Surgical
323	Urinary Stones with CC‡ and/or ESW Lithotripsy	Urinary Stones including lithotripsy, complicated	11	Medical
331	Other Kidney and Urinary Tract Diagnoses, Age Greater than 17 with CC‡	Kidney & Urinary Disorders except Infection, complicated	11	Medical
395	Red Blood Cell Disorders, Age Greater than 17	Anemia & Transfusion Reaction	16	Medical
398	Reticuloendothelial and Immunity Disorders with CC‡	Lymphatic & Immune Disorders, complicated	16	Medical
403	Lymphoma and Nonacute Leukemia with CC‡	Lymphoma & Non-Acute Leukemia, complicated	17	Medical
410	Chemotherapy without Acute Leukemia as Secondary Diagnosis	Chemotherapy except for acute leukemia	17	Medical
410	Chemotherapy without Acute Leukemia as Secondary Diagnosis	Pediatric Chemotherapy except for acute leukemia	17	Medical
415	OR Procedure for Infectious and Parasitic Diseases	Surgery for Infectious or Parasitic Disease	18	Surgical
418	Postoperative and Posttraumatic Infections	Infection after Surgery or Trauma	18	Medical
493	Laparoscopic Cholecystectomy without Common Duct Exploration with CC‡	Laparoscopic Gallbladder Removal, complicated	07	Surgical
494	Laparoscopic Cholecystectomy without Common Duct Exploration without CC‡	Laparoscopic Gallbladder Removal, uncomplicated	07	Surgical

‡ CC – complication or comorbid condition

DATA COLLECTION AND VERIFICATION

The Pennsylvania Health Care Cost Containment Council is mandated by state law to collect and disseminate health care data using guidelines set forth by the Health Care Financing Administration. These data, obtained from the UB-92 (Uniform Billing Form), are submitted quarterly to the Council by Pennsylvania hospitals via magnetic media as directed under Section 912, Data Submission Requirements, of Act 89. The data include demographic information, hospital charges, and diagnosis and procedure codes using ICD.9.CM *(International Classification of Diseases, Ninth Revision, Clinical Modification).*

In a contractual agreement with Cardinal Health Information Companies-MediQual in Marlborough, Massachusetts, hospitals are required to use CHIC-MediQual's *Atlas*™ Severity of Illness System to abstract patient severity information. The Admission Severity Group (ASG) scores generated by this system are submitted to the Council for a select group of acute care inpatient records covering approximately 75 percent of acute care hospital discharges.

The data used for this report was submitted to the Pennsylvania Health Care Cost Containment Council by Pennsylvania general acute care and specialty acute care hospitals covering the period of calendar year 1999. Federal hospitals were not required to submit data.

Facilities are required to submit data to the Council on a quarterly basis by 90 days from the last day of each quarter. Upon receipt of the data, media verification is performed to assure data have been submitted in a readable format. The data verification process continues with extensive quality assurance checks and matching of admission severity scores to inpatient records. Error reports are generated and returned to each facility with an opportunity to correct any problems.

STUDY POPULATION

Inclusion Criteria

The study population for the 1999 *Hospital Performance Report* public document includes useable records from all Pennsylvania general acute care and specialty acute care hospital discharges in 1999 for adults only (that is, pediatric cases (age < 18) are excluded from the study). Note that the incidence of pediatric cases for these particular DRGs represents a very small percentage of all the cases for these DRGs (< 0.3%). Adult cases that are included are categorized into one of the twenty-one DRGs included in the public document. Because of the importance of discharge status, especially in the mortality analysis, only records with a valid discharge status are retained. It should be noted, however, that a small number of records (less than 0.1 percent) are removed from the analyses due to invalid discharge status.

The study population for the additional DRGs that are reported on the Council Web site is dichotomized by age; that is, adult cases only are analyzed for 47 of the DRGs, and pediatric cases only are analyzed for 5 of the DRGs. [Adult and pediatric cases for Removal of Appendix, Uncomplicated (DRG 167) and Chemotherapy without Acute Leukemia as Secondary Diagnosis (DRG 410) are reported separately.] Categorization of cases into DRGs and the importance of discharge status for record retention in the comparative database are the same as noted for the public document.

Since all cases have to be categorized by age in order to be classified as pediatric or adult, those cases with invalid age are removed prior to beginning any analysis. The proportion of records with invalid age is very small when compared to all the records that are submitted for calendar year 1999 by acute care facilities (27 invalid age records out of more than 1.75 million records submitted are invalid for age).

Hospital Exclusions from Public Report

In 1999 there were 190 general acute care facilities and seven specialty acute care facilities in Pennsylvania, for a total population of 197 facilities. However, the study population included data from 196 facilities because one general acute care hospital failed to report any data for calendar year 1999.

The number of cases included in any single type of analysis in the 1999 Report varies because of unreported data or incomplete data submitted by the 196 acute care facilities or differing exclusion criteria. **Although data and analyses specific to non-compliant facilities are not included in the public document or Web release editions of the Hospital Performance Report, their valid records have been retained in the statistical analyses for in-hospital mortality, length of stay, charges, and readmission.** Valid records for these hospitals are captured in the Technical Report tables.

Hospitals were excluded in the 1999 public document report and Web release for the following reasons:

- UB-92 data were missing for one or more quarters during 1999 and the hospital was not granted an exception to reporting – three hospitals
- data were submitted with more than 15 percent missing ASG scores for all submitted DRGs that are required to be abstracted (regardless of whether the DRG is one that is reported in either the public document or Web site reports) – twelve hospitals
- UB-92 data were missing for one quarter and more than 15 percent of ASG scores were missing for cases reported in the other three quarters of 1999 – one hospital
- The hospital reported 100% missing/invalid discharge status for one quarter – one hospital

Additional Hospital Exclusions

There were five hospitals that were excluded from the 1999 Report (both public and Web release) for reasons other than non-compliance. Although data and analyses specific to these facilities were not included in the public report, their complete records were retained in the statistical analyses for in-hospital mortality, length of stay, charges, and readmission.

The exclusion categories include:

- two facilities that closed early in 2000.
- three facilities, that as of third quarter 1999, were no longer acute care facilities. (Two of these facilities merged into other acute care facilities.)
- four children's hospitals (one was non-compliant) that were excluded from any display of adult outcomes (both public document and Web site). Because the majority of their patients were under the age of 18, comparisons between these special acute care hospitals and general acute care hospitals were not parallel.

Partial Exclusions

In the public document, analyses for the 21 reported DRGs are appropriately suppressed at the DRG level for those facilities that have an insufficient patient count (between 1 and 4 cases, inclusive, in the mortality analysis) to be included in the analysis for practical reasons. There are 192 DRG/hospital combinations in this group of exclusions. Due to small sample size, no further analysis is displayed on those data. Information found on the Council's Web site pertaining to these 21 DRGs is suppressed under the same guidelines as those developed for the public document.

Outcome analyses for the 50 *Web site only* DRGs are displayed for only those facilities that treating a minimum of 5 cases. For those facilities treating fewer than 5 cases, all outcome information is suppressed.

METHODOLOGY

In-hospital Mortality Analysis

Exclusions to Analysis

The in-hospital mortality analysis includes all inpatient records categorized into one of the 71 selected DRGs (both public document and Web site only) with the following exceptions:

- patients who left against medical advice or discontinued care
- patients who were transferred to another short-term acute care hospital
- patients with an invalid (or missing) ASG score

For the actual number and percent of statewide cases excluded from analyses, refer to Table 2. For the actual number and percent of regional cases excluded from analysis, refer to the Table of Contents for the appropriate table.

DRG Exclusions

For the 1999 *Hospital Performance Report* mortality outcomes are reported for all DRGs, both public document and Web site only, with the exception of Lung Cancer (DRG 82). Lung cancer is removed from the mortality analysis because it is typically a terminal illness.

Construction of Reference Database for Adult Analyses

A Pennsylvania statewide comparative database was computed for the 1999 Pennsylvania acute care hospital inpatient data. The reference database for the measure of in-hospital mortality was indexed for each DRG by Atlas Severity Group (ASG) score, cancer status, and age category. ASG score, cancer status and age category were used as risk adjustment factors in the statistical analysis for in-hospital mortality. Indirect standardization was adopted as the risk-adjustment technique. In order to best support the statistical methods that were utilized, it was decided that the patient count in each of the final ASG/cancer/age categories should be twenty or more. When the number of patients in an ASG/cancer/age category did not meet this minimum threshold, collapsing of categories was warranted. (There was a maximum of 45 different combinations of ASG/cancer/age categories.) Because high volume DRGs were selected for this HPR, it was not typically necessary for the adult analyses to

combine categories in order to achieve a minimum number of 20 patients per combination of ASG/cancer/age category.

The algorithm used to combine categories was determined under the premise that ASG was regarded as the best indicator of patient risk, followed by cancer status, then age category. (Note that age in years, as an independent predictor of mortality, was already evaluated and retained—where statistically significant—in the Atlas severity score developed by CHIC-MediQual).

When an age category had a small patient count, it was combined with an adjacent age category.

Age categories for 41 of the 68 Adult DRGs (both public document and Web site only) were defined as:

- age 18 through age 64
- age 65 through age 79
- age 80 and over

For 17 adult DRGs, the previously defined age categories were not effective with respect to risk-adjustment because a high proportion of patients in those DRGs were in the 18 through 64 years category. In an effort to capture the large number of non-elderly patients in these DRGs the age categories were defined as:

- age 18 through age 39
- age 40 through age 69
- age 70 and over

The 17 adult DRGs that were age-adjusted using the "younger" categories are displayed in the following table. Note that DRG 449 is the only public document DRG contained in this list.

DRG	Common Name	DRG	Common Name
001	Brain Surgery except for trauma	217	Wound Debridement & Skin Grafts except hand
024	Seizure & Headache, complicated	297	Nutritional & Metabolic Deficiencies, uncomplicated
025	Seizure & Headache, uncomplicated	323	Urinary Stones including lithotripsy, complicated
090	Pneumonia, uncomplicated	395	Anemia & Transfusion Reaction
096	Bronchitis & Asthma, complicated	418	Infection after Surgery or Trauma
097	Bronchitis & Asthma, uncomplicated	449*	Poisoning & Toxic Effects of Drugs, complicated
167	Removal of Appendix, uncomplicated *(This DRG is also analyzed for pediatric cases using the pediatric age categories)*	493	Laparoscopic Gallbladder Removal, complicated
183	Stomach & Intestinal Infections & Disorders, uncomplicated	494	Laparoscopic Gallbladder Removal, uncomplicated
204	Noncancerous Pancreatic Disorders		

* Included in the public document.

Patients were next risk-adjusted with respect to cancer status. When small patient counts were encountered, the adjustment algorithm combined patients with a history of cancer with those patients who did not have cancer diagnosis codes present. Cancer categories were combined only when age category collapsing did not improve small patient counts. The three applicable categories were:

- no cancer (that is, no cancer diagnosis codes present)
- malignant neoplasm or cancer in situ (ICD.9.CM diagnosis codes 140.0 – 208.9 inclusive or 230.0 – 234.9 inclusive)
- history of cancer (ICD.9.CM diagnosis codes V10.00 – V10.90 inclusive)

When the patient count for an ASG level was small, and all acceptable collapsing of cancer status categories were performed, collapsing of ASG levels was necessary. When combining severity, counts for scores 0 and 1 may have been combined; and counts for scores 3 and 4 may have been combined. A severity score of 2 was considered an independent category. The following table displays the conversion of probabilities to admission severity categories:

	Admission Severity Group	Probability of Death
0	no risk of clinical instability	0.000 – 0.001
1	minimum risk of clinical instability	0.002 – 0.011
2	moderate risk of clinical instability	0.012 – 0.057
3	severe risk of clinical instability	0.058 – 0.499
4	maximum risk of clinical instability	0.500 – 1.000

Construction of Reference Database for Pediatric Analyses

A Pennsylvania statewide comparative database was computed for the 1999 Pennsylvania acute care hospital inpatient data based on pediatric cases only.

The methods used to construct this comparative database were similar to those employed in constructing the comparative database used for the adult in-hospital mortality analysis. However, there were differences in the five pediatric DRGs with respect to the risk adjustment factors utilized and the hierarchy of implementing cell collapsing within these factors.

For the pediatric analyses of DRG 167, *Pediatric Removal of Appendix, uncomplicated* and DRG 410, *Pediatric Chemotherapy except for acute leukemia*, the following risk factors were used:

- ASG score (regarded as the best indicator of risk; that is, cells were only collapsed with respect to ASG if there was no other way to maintain a statewide reference cell size of at least 20 cases)
- age category

For the pediatric analyses of DRG 91, *Pediatric Pneumonia, uncomplicated* and DRG 98, *Pediatric Bronchitis & Asthma*, the following risk factors were used:

- ASG score (regarded as the best indicator of risk)
- age category
- gender (regarded as the least important indicator of risk)

For the pediatric analyses of DRG 184, *Pediatric Stomach & Intestinal Infections & Disorders*, the following risk factors were used. (Note that both the risk factors and their hierarchy of importance were the same as the risk factors and the collapsing hierarchy used for all the adult analyses):

- ASG score (regarded as the best indicator of risk)
- cancer status
- age category (regarded as the least important indicator of risk)

In the 5 DRGs that were analyzed for pediatric cases, collapsing of cells was necessitated more frequently than in the adult analyses. This occurred, in particular, due to the low cancer incidence among pediatric patients and less variation in risk levels (for example, ASG).

The algorithm used to combine categories for the pediatric statewide comparative database was similar to the techniques that were used in creating the adult statewide comparative database.

Calculation of the Expected Mortality Rate

Using the Pennsylvania comparative database, the statewide mortality rate was calculated for the final ASG/cancer/age category combinations for each of the DRGs. These mortality rates were computed for each ASG/cancer/age category by dividing the total number of deaths in that category by the total number of patients in that ASG/cancer/age category. These mortality rates, computed across all hospitals, provided the basis for a standard comparison for individual hospitals.

Actual In-hospital Mortality Compared With Expected In-hospital Mortality

The number of deaths for each hospital within each DRG during 1999 is the *actual or observed in-hospital mortality*. For adults the number of deaths "expected" for each hospital within each DRG is calculated using the statewide expected mortality rates for each of ASG/cancer/age category combinations for a particular DRG. (Note that for the pediatric analyses of mortality, the indices referencing the respective statewide comparative database are not always ASG, cancer status, and age category. However, the methodology used to calculate the expected mortality rate is the same.)

Note that since there are 5 ASG categories, 3 cancer categories, and 3 age categories, there are potentially 45 different combinations of these categories for every DRG. In the notation presented for the calculation of the **Expected Number of Deaths**, the variable, **i**, can range from 1 to 45. (For a particular DRG, the maximum of the variable, **i,** is given by the number of final combinations of ASG/cancer/age categories.) The **i^{th} combination** is a generic term used to signify each of the final combinations of ASG/cancer/age categories.

The expected number of mortalities for each DRG within each hospital is calculated as follows:

$$\textbf{Expected Number of Deaths} = \Sigma(p_i \times n_i)$$

where, for each of the final combinations of ASG/cancer/age within the DRG

p_i = the statewide mortality rate for the i^{th} combination

n_i = the number of cases for the hospital of the i^{th} combination

The estimated probability of death, **p**, for each DRG within each hospital is calculated as follows:

$$p = (\text{Expected Number of Deaths})/N$$

where, **N** = the total number of cases for a particular DRG within a particular hospital
(Note: $\Sigma n_i = N$)

The following example illustrates the calculation of the expected mortality for DRG 127 (Heart Failure and Shock) at Hospital "A."

DRG 127 (Heart Failure and Shock)					
			Hospital "A"	Statewide Comparative Database	Expected Mortality at Hospital "A"
Admission Severity Group	Cancer Status	Age Category	Number of Patients Treated	Mortality Rate	Product: Number x Mortality Rate
0	No Cancer	Under Age 65	2	0.019608	0.0392
1	No Cancer	Under Age 65	10	0.004388	0.0439
		Age 65-79	5	0.004261	0.0213
		Age 80 & Over	1	0.017094	0.0171
2	No Cancer	Under Age 65	20	0.009498	0.1900
		Age 65-79	80	0.013526	1.0821
		Age 80 & Over	70	0.020612	1.4429
	Malignant Neoplasm or Cancer In Situ	Under Age 65	1	0.055901	0.0559
		Age 65-79	5	0.039179	0.1959
		Age 80 & Above	3	0.030471	0.0914
	History of Cancer	Age 80 & Above	5	0.009050	0.0452
3	No Cancer	Under Age 65	10	0.069703	0.6970
		Age 65-79	50	0.075641	3.7821
		Age 80 & Over	150	0.086699	13.0049
	Malignant Neoplasm or Cancer In Situ	Under Age 65	1	0.135135	0.1351
		Age 65-79	7	0.110887	0.7762
		Age 80 & Above	12	0.090056	1.0807
	History of Cancer	Under Age 65	2	0.000000	0.0000
		Age 65-79	4	0.032338	0.1294
		Age 80 & Above	6	0.064350	0.3861
4	No Cancer	Under Age 65	2	0.266667	0.5333
		Age 65-79	5	0.343096	1.7155
		Age 80 & Over	7	0.406417	2.8449
	History of Cancer	All Age Categories Combined	5	0.250000	1.2500
Total			463		29.5601

Summary

Hospital "A" has a total of 463 patients treated for DRG 127 (Heart Failure and Shock). Of those 463 patients, the expected number of deaths is 29.5601. (Note: For display purposes the calculations for the expected mortality within each combination of ASG/cancer/age category have been rounded to four decimal places.)

Binomial Test

Though a hospital's observed mortality may be comparable to the calculated expected mortality, random variation plays a factor in these comparisons. Statistical evaluation can determine when the difference between the observed and the expected value is *too large* to be attributed solely to chance. Statistical evaluation of in-hospital mortality is performed for each DRG using the binomial test. The binomial test is appropriate for situations where the possible outcome is dichotomous; in this case, death or survival for each patient. The binomial test is based upon the following assumptions:

- the probability of death for each patient within a DRG is the expected mortality rate provided by the reference database. This probability of death is assumed to be a constant number from one patient to the next.
- the death or survival of one patient has no impact on the death or survival of any other patient. In other words, patients are independent entities.

Inferential Error

A type of inferential error that can be made in statistics is called Type I error or false positive. The probability of committing a Type I error is equal to the level of significance established by the researcher. For this analysis, the level of significance has been set to 0.05. In the context of the *Hospital Performance Report*, a Type I error occurs when the difference between the observed in-hospital mortality and the expected in-hospital mortality is declared statistically significant, when in fact, the difference is due to chance. That is, for a particular DRG, the hospital is declared to be statistically higher or lower than expected, when in reality the hospital's level of performance is comparable to what was expected. Since the level of significance has been set to 0.05, there is a 5% (or 1 in 20) chance of committing this type of error.

P-value Calculation

Calculating the p-value for the binomial test is defined by a formula, which sums discrete probabilities based upon the binomial distribution. The binomial formula is written as:

$$\mathbf{P(X=a) = [(N!)/(a!(N-a)!)]\ p^a(1-p)^{N-a}}$$

where,

X is the binomial random variable (X is a discrete random variable and $0 \leq X \leq N$)
a is the actual number of mortalities for a particular hospital's DRG
N is the number of patients for a particular hospital's DRG
p is the estimated probability of patient death for a particular hospital's DRG

For each DRG within each hospital, **p** is calculated using the expected mortality. For further information regarding this computation, refer to the section entitled "Actual In-hospital Mortality Compared With Expected In-hospital Mortality."

Statistical Rating

A statistical rating is assigned to each hospital if the difference between what was observed and what was expected in a particular DRG is statistically significant. The p-value, calculated in terms of a "two-tailed" test is compared to the level of significance.

- If the calculated p-value is greater than 0.05, then the conclusion is made that the difference between what was expected and what was observed is *not* statistically

significant. It *cannot be concluded* that the in-hospital mortality for that particular DRG is different from the expected mortality.

- If the calculated p-value is less than or equal to 0.05, then the conclusion is made that the difference between what was expected and what was observed *is* statistically significant. The ratings are then applied as follows:

  - ✓ If the observed in-hospital mortality is *less than* the statewide in-hospital mortality, the hospital is assigned the symbol labeled "Mortality significantly less than Expected" for a particular DRG.
  - ✓ If the observed in-hospital mortality is *higher than* the statewide in-hospital mortality, the hospital is assigned the symbol labeled "Mortality significantly greater than Expected" for a particular DRG.

Length of Stay Analysis

Exclusions to Analysis

The risk-adjusted length of stay analysis includes all inpatient records categorized into one of the reported DRGs with the following exceptions:

- patients who died in the hospital
- patients who left against medical advice or discontinued care
- patients who were transferred to another short-term acute care hospital
- patients with an invalid (or missing) length of stay
- patients with an invalid (or missing) ASG score

Construction of Reference Database

The reference database for length of stay is indexed for each DRG by ASG score, cancer status, and age category. The methods used to construct this comparative database are similar to those employed in constructing the comparative database used for in-hospital mortality.

Trim Methodology

Trimming methodology is used to remove outlier length of stay values from the study population. Identification of outliers is imperative for the elimination of extreme scores that have a significant and unrepresentative impact on the mean (average). For the 1999 *Hospital Performance Report* the risk-adjusted mean is the measure used for length of stay.

The trimming (that is, deleting) of individual records from the database was performed after all other exclusions were satisfied. If the length of stay on a particular record was less than the lower trim point or in excess of the upper trim point, that record was removed from the database, and thus, from subsequent analyses.

For the Pennsylvania comparative database, upper and lower trim points are calculated using the "+/- 3.0 interquartile range" method. This non-parametric methodology is used because historically the distribution for length of stay data does not follow a "normal, bell-shaped" pattern. The distribution is generally right-skewed, with values gathered closely together at the lower end of the distribution, becoming more widely dispersed at the upper end of the distribution.

Upper and lower trim points for length of stay were calculated for each DRG by each ASG/cancer/age category statewide, providing 45 potential combinations for each DRG.

Trim points were determined as follows:

Q1 = the first quartile (25^{th} percentile length of stay value) of all patient records from the comparative database in a particular category

Q3 = the third quartile (75^{th} percentile length of stay value) of all patient records from the comparative database in a particular category

IQR = Q3 – Q1

Lower Trim Point = Q1 – (3.0 x IQR)
Upper Trim Point = Q3 + (3.0 x IQR)

Risk Adjustment Computations

Trimmed and risk-adjusted length of stay averages are reported for each DRG by each hospital. Length of stay values may vary within a DRG category due to variance in ASG, cancer status, and age data. Therefore, in order to report a comparable risk-adjusted average length of stay for each of the reported DRGs across each hospital, a risk-adjustment technique was employed. The following steps were implemented:

First, statewide relative weights for each ASG/cancer/age category combination within each DRG were determined using the reference database for length of stay. After all exclusions were satisfied and outlier trimming was performed, the relative weight for each ASG/cancer/age category within each DRG was calculated using the formula:

$$\textbf{Relative Weight} = \frac{\textbf{Average Length of Stay for an ASG/cancer/age combination}}{\textbf{Average Length of Stay for the DRG}}$$

Next, each hospital's risk index for each DRG was calculated. Each hospital had a different risk index associated with length of stay for each DRG analyzed for the 1999 HPR.

$$\textbf{A Hospital's Risk Index for a particular DRG} = \frac{\sum(n_i \times RW_i)}{\sum n_i}$$

where, for each of the ASG/cancer/age combinations within the DRG

RW_i = the statewide relative weight for the i^{th} combination

n_i = the number of cases for the hospital of the i^{th} combination

and $\sum n_i$ = the total number of cases for the hospital for the DRG

Finally, for each hospital the trimmed and risk-adjusted average length of stay is calculated for each analyzed DRG:

$$\textbf{Trimmed and Risk-Adjusted Avg Length of Stay} = \frac{\textbf{Avg Length of Stay for a DRG}}{\textbf{Risk Index for a DRG}}$$

Note that for pediatric analyses the combination of risk factors may be different, but the techniques involved in indirect standardization remain the same.

Charge Analysis

Exclusions to Analysis

The charge analysis includes all inpatient records for the reported DRGs with the following exceptions:

- patients who left against medical advice or discontinued care
- patients who were transferred to another short-term acute care hospital
- patients with an invalid (negative or zero dollars) or missing charge
- patients with an invalid (or missing) ASG score
- patients without reference data (this occurred for pediatric analyses only, because of too few cases within a region for adequate cell counts)

Construction of Reference Database

The reference database for the charge analysis is indexed by DRG and region. The methods used to construct this comparative database are similar to those employed in constructing the comparative database for in-hospital mortality.

Trim Methodology

Trimming methodology, similar to that performed for length of stay, is used to remove outlier charge values from the study population. Identification of outliers is imperative for the elimination of extreme scores that have a significant and unrepresentative impact on the mean (average). For the 1999 *Hospital Performance Report* the mean is the primary descriptive measure for charge. As described in the "Trim Methodology" section under "Length of Stay Analysis", outlier charges are trimmed after all other exclusions were satisfied; the "+/- 3.0 interquartile range" methodology is again utilized.

Since charges vary dramatically among regions for the same DRG, upper and lower trim points are calculated at the regional level. There are nine regions, therefore, nine different sets of upper and lower trim points are used for each DRG. Hospitals are consolidated into three "wide-area" regions after the trimming of outlier charges is performed.

Case-Mix Adjustment of Average Charge for Heart Attack – Medical Management

For the 1999 *Hospital Performance Report*, average charges are reported for each of the DRGs. Using case-mix adjustment, a composite average charge is developed for the combined DRGs representing medical heart attack. The charges associated with DRGs 121, 122, and 123 are adjusted according to the number of patients and the relative cost associated with treating patients in each of these three DRGs.

First, regional relative weights for each of the three DRGs (121, 122, and 123) were determined using the reference database for charge. After all exclusions were satisfied and outlier trimming was performed, the relative weight for each of the three DRGs within each of the nine regions was calculated using the formula:

$$\textbf{Relative Weight} = \frac{\textbf{Average Charge for each DRG (either 121, 122, or 123)}}{\textbf{Average Charge for DRGs 121, 122, 123 (combined)}}$$

Next, each hospital's case-mix index for medical heart attack was calculated.

$$\textbf{A Hospital's Case-mix Index} = \frac{\sum(n_i \times RW_i)}{\sum n_i}$$

where, for a hospital located in a particular region

RW_i = the regional relative weights (corresponding to DRGs 121, 122, 123)

n_i = the number of cases (corresponding to DRGs 121, 122, 123)

and $\sum n_i$ = the total number of cases for the hospital for medical heart attack

Finally, for each hospital the trimmed and case-mix adjusted (based on nine regional standards) average charge for medical heart attack (DRGs 121, 122, and 123) was calculated.

$$\textbf{Trimmed and Adjusted Charge} = \frac{\textbf{Avg Charge for DRGs 121, 122, 123 (combined)}}{\textbf{Case-Mix Index}}$$

Readmission Analysis

Overview

A readmission is defined as an acute care hospitalization in which the admit date of this subsequent hospitalization is within 30 days of the discharge date of the original hospitalization. Under this definition, same day readmissions are acceptable if the original hospitalization resulted in a discharge to "home". ("Home" discharges include those patients who were discharged to home or self care [routine discharge], those patients who were discharged to home under the care of an organized home health service organization, and those patients who were discharged to home under the care of a Home IV provider.) Note that the subsequent acute care hospitalization has to be one in which the patient is admitted to a general acute care or specialty general acute care facility for an acute care condition (not related to behavioral health, physical rehabilitation, mental health, or skilled nursing).

Exclusions to Analysis

The risk-adjusted readmission rate analysis includes all inpatient records categorized into one of the public document DRGs with the following exceptions:

- patients excluded from the length of stay analysis:
  patients who died in the hospital
  patients who left against medical advice or discontinued care
  patients who were transferred to another short-term acute care hospital
  patients with an invalid (or missing) length of stay
  patients with an invalid (or missing) ASG score
- patients with identifier/date issues

In calculating the readmission rate, it is necessary to link or match patient records across multiple hospitalizations; that is, it is necessary to create a patient history for the study period. The last exclusion criteria, *patients with identifier/date issues*, encompasses all the records that were problematic when trying to link multiple patient hospitalizations. Ideally, complete patient histories should be identified using the key matching variables of social security number, sex and date of birth. Unfortunately, data obtained from the UB-92 (Uniform Billing

Form) and submitted quarterly to the Council by Pennsylvania hospitals are neither flawless nor complete. In some instances inconsistencies are encountered in one or more records associated with a valid social security number. Encountering a problem in even one hospitalization record of a patient's history, may result in either removing that hospitalization from the readmission analysis or completely removing that patient from the readmission analysis.

DRG Exclusions

Risk-adjusted readmission outcomes were not displayed for two DRGs, Lung Cancer (082) and Heart Attack—Medical Management (121, 122, 123). For both of these DRGs, defining readmission was problematic since planned readmissions are frequently necessary as part of the process of care.

Hospital Exclusions

Necessary to calculating a readmission rate is the hospital's subsequent quarter's data. Two facilities, which passed the minimum requirements for inclusion in the 1999 *Hospital Performance Report* by providing data for calendar year 1999, failed to provide UB-92 data for all or a substantial portion of the first quarter of 2000. While all useable records from these two facilities are utilized in the reference database for readmission analysis, the readmission rate for these two facilities is suppressed, and the facilities are identified in the public document as non-compliant with respect to the reporting of the readmission rate outcome.

Construction of Reference Database

The reference database for readmission is indexed for each DRG by ASG score, cancer status and age category. The methods used to construct this comparative database are similar to those employed in constructing the comparative database used for in-hospital mortality. Note that while records from the first quarter 2000 are necessary to determining whether a record in the fourth quarter 1999 did, in fact, have a readmission, *only useable records from 1999 are contained in the comparative database.* Records are flagged in this database as to whether or not there was a subsequent 30-day readmission. Using indirect standardization, a risk-adjusted readmission rate is computed for each compliant facility.

Calculation of the Expected and Actual Readmission Rates

Using the Pennsylvania comparative database for readmission, the statewide readmission rate is calculated for the final ASG/cancer/age category combinations for each of the DRGs in which readmission is reported. The calculations for these expected readmission rates are the same as the calculations that are performed to determine the expected in-hospital mortality rates. Actual readmission rate for each DRG within each hospital is the observed number of readmissions for that DRG divided by the number of hospitalizations that potentially could have had a readmission. The statewide DRG-specific readmission rate is the actual (observed) readmission rate for each DRG (across all hospitals), which is calculated from the reference database after all exclusions have been removed. Refer to the sections outlining the methodology used for in-hospital mortality for further information regarding these calculations.

Calculation of Risk-Adjusted Readmission Rate

The calculation of the risk-adjusted readmission rate for each DRG within each hospital involves the observed (or actual) readmission rate, the expected readmission rate, and the statewide DRG-specific readmission rate. For each hospital and DRG combination the reported risk-adjusted readmission rate is given by:

$$\frac{\text{Actual Readmission Rate}}{\text{Expected Readmission Rate}} \times \text{Statewide DRG-specific readmission rate}$$

Reported Measures Specific to Heart Attack—Medical Management

Acute Care Transfer-out Rate

Transfer to an acute care facility is defined as the presence of "02" in the discharge status of an inpatient hospital record. By definition these patients are discharged to another general acute care or specialty general acute care facility for continuation of treatment.

The continuum of care for heart attack involves both medical and surgical care. Only a select number of acute care hospitals statewide offer the full array of services. Because patients admitted to a facility without advanced cardiac care may be transferred for further diagnosis and treatment, the acute care transfer-out rate is provided. Hospitals with advanced cardiac capabilities may also transfer patients to another acute care facility, but this is usually done to return a patient to their originating hospital.

Status as Provider of Advanced Cardiac Care Services

In the printed public-release report, a footnote is provided for the *Heart Attack-Medical Management* table that identifies facilities as providers of advanced cardiac care services to aid readers in understanding the *acute care transfer-out %* column.

Table 1A
Rank of Public Report DRGs by Volume, Mortality, Variability among Hospitals with Respect to Mortality Rate

DRGs listed in order as presented in Public Report

DRG Description	DRG	% Hospitals with Cases[1]	Volume Cases[2]	Rank by Volume[3]	Rank by Mortality[4]	Rank by Mortality Variability[5]	Cancer Rate [6]
Heart Attack – Medical Management	121-123[7]	95.9	28,274	7	26	137	3.4
Heart Failure & Shock	127	97.5	60,032	1	76	176	3.9
Abnormal Heartbeat, complicated	138	97.5	19,400	12	104	230	5.6
Vascular Disorders except heart, complicated	130	97.0	8,975	33	84	172	15.8
Vascular Operations except heart, complicated	478	88.8	10,426	26	98	108	6.4
Stroke (Brain Attack)	014	97.5	27,614	8	33	145	4.0
Blood Clot in Lung	078	94.9	3,759	75	83	72	13.5
Lung Infections, complicated	079	97.0	12,917	21	19	111	9.2
Pneumonia, complicated	089	98.0	38,853	2	67	211	9.6
COPD	088	95.9	35,271	3	146	257	4.6
Lung Cancer	082	95.9	6,731	51	13	53	99.0
Diabetes	294	95.9	9,266	32	151	208	4.4
Kidney & Urinary Infections, complicated	320	98.0	14,385	20	117	220	7.2
Kidney Failure	316	97.5	8,469	39	29	106	8.8
Stomach & Intestinal Bleeding, complicated	174	97.5	19,791	11	93	228	6.1
Stomach & Intestinal Complications & Disorders	188	96.4	7,629	45	70	151	10.5
Stomach & Small Intestine Operations, complicated	154	92.9	3,507	81	37	67	34.4
Major Intestinal Procedures, complicated	148	97.0	14,997	17	59	112	46.5
Hip Operations except replacements, complicated	210	93.9	9,561	31	100	192	6.2
Septicemia	416	97.0	17,104	14	15	97	15.6
Poisoning & Toxic Effects of Drugs, complicated	449	95.9	6,240	53	150	214	1.7

[1] General Acute Care and Specialty Acute Care Hospitals
[2] Only patients age 18 and over were included in this analysis
[3] The DRG with the largest number of cases is ranked first out of 373 total DRGs.
[4] The DRG ranked first has the highest mortality rate.
[5] The DRG ranked first in mortality variability has the highest degree of variation in crude mortality across facilities.
[6] This percentage indicates the proportion of cases within this DRG with malignant neoplasms or cancer in situ diagnosis codes in the record.
[7] These 3 DRGs are treated as a single diagnostic group.

Table 1B
Rank of Web-Only DRGs by Volume, Mortality, Variability among Hospitals with Respect to Mortality Rate
DRGs presented in numerical order

DRG Description	DRG	% Hospitals with Cases[1]	Volume Cases[2]	Rank by Volume[3]	Rank by Mortality[4]	Rank by Mortality Variability[5]	Cancer Rate[6]
Brain Surgery except for trauma	001	52.3	5,720	57	56	50	24.2
Removal of Head, Neck Vessel Blockage	005	80.7	8,608	37	228	266	1.8
Degenerative Neurological Disorders	012	95.4	5,177	64	175	221	3.1
Transient Ischemic Attack & Blocked Vessel of Head, Neck	015	97.0	14,618	19	252	274	2.7
Seizure & Headache, complicated	024	97.5	6,951	49	143	189	6.1
Seizure & Headache, uncomplicated	025	96.4	5,670	58	282	277	0.5
Neurologic Symptoms & Disorders, complicated	034	92.4	2,992	98	64	41	7.5
Major Lung Operations	075	79.7	5,253	63	69	95	62.0
Miscellaneous Lung Procedures, complicated	076	89.8	4,255	69	35	93	46.8
Fluid in Lung & Breathing Failure	087	95.4	4,679	68	10	26	9.5
Pneumonia, uncomplicated	090	97.0	5,451	61	211	251	1.3
Bronchitis & Asthma, complicated	096	98.0	7,943	43	249	249	4.6
Bronchitis & Asthma, uncomplicated	097	97.0	7,680	44	285	284	0.4
Non-Traumatic Lower Limb Amputation except toe	113	89.8	3,417	84	55	56	2.7
Miscellaneous Circulatory Operations	120	89.3	2,957	100	79	124	6.3
Heart Catheterization without heart attack, uncomplicated	125	53.8	12,543	22	283	288	1.5
Vascular Disorders except heart, uncomplicated	131	96.4	3,678	77	180	231	3.3
Abnormal Heartbeat, uncomplicated	139	95.4	9,792	27	259	276	0.9

[1] General Acute Care and Specialty Acute Care Hospitals
[2] Only patients age 18 and over were included in this analysis
[3] The DRG with the largest number of cases is ranked first out of 373 total DRGs.
[4] The DRG ranked first has the highest mortality rate.
[5] The DRG ranked first in mortality variability has the highest degree of variation in crude mortality across facilities.
[6] This percentage indicates the proportion of cases within this DRG with malignant neoplasms or cancer in situ diagnosis codes in the record.

Table 1B

Rank of Web-Only DRGs by Volume, Mortality, Variability among Hospitals with Respect to Mortality Rate

DRGs presented in numerical order

DRG Description	DRG	% Hospitals with Cases[1]	Volume Cases[2]	Rank by Volume[3]	Rank by Mortality[4]	Rank by Mortality Variability[5]	Cancer Rate[6]
Hypotension & Fainting, complicated	141	95.4	9,760	28	217	255	5.6
Chest Pain	143	96.4	32,169	6	288	287	1.8
Extensive Cardiovascular Complications & Disorders	144	96.4	8,098	42	75	159	11.3
Removal of Appendix, uncomplicated	167	95.9	4,173	70	332	331	0.1
Stomach & Intestinal Cancer, complicated	172	93.9	3,302	87	27	83	96.9
Stomach & Intestinal Obstruction, complicated	180	97.0	7,614	46	87	193	16.1
Stomach & Intestinal Infections & Disorders, complicated	182	98.0	24,719	9	186	256	7.9
Stomach & Intestinal Infections & Disorders, uncomplicated	183	99.0	14,826	18	281	280	0.7
Cirrhosis & Alcoholic Hepatitis	202	92.4	3,780	74	31	99	3.5
Liver, Gallbladder or Pancreatic Cancer	203	92.9	3,220	88	14	45	99.6
Noncancerous Pancreatic Disorders	204	97.0	8,493	38	149	232	2.3
Liver Disease except cancer, cirrhosis, alcoholic hepatitis, complicated	205	93.9	2,935	101	43	76	6.4
Wound Debridement & Skin Grafts except hand	217	88.8	3,056	97	129	128	4.4
Bone Cancer & Non-Traumatic Fractures	239	95.4	4,885	66	71	104	46.0
Cellulitis, complicated	277	98.5	9,589	29	183	225	5.5
Nutritional & Metabolic Deficiencies, complicated	296	99.0	20,380	10	81	209	19.9
Nutritional & Metabolic Deficiencies, uncomplicated	297	98.0	3,873	72	241	254	4.9
Transurethral Procedures except prostatectomy	310	88.8	3,167	93	190	161	42.7
Vascular Surgery for Dialysis	315	81.7	2,575	111	115	89	4.9
Urinary Stones including lithotripsy, complicated	323	95.9	3,701	76	256	173	3.4

Table 1B

Rank of Web-Only DRGs by Volume, Mortality, Variability among Hospitals with Respect to Mortality Rate

DRGs presented in numerical order

DRG Description	DRG	% Hospitals with Cases[1]	Volume Cases[2]	Rank by Volume[3]	Rank by Mortality[4]	Rank by Mortality Variability[5]	Cancer Rate[6]
Kidney & Urinary Disorders except infection, complicated	331	93.9	3,870	73	141	190	8.4
Anemia & Transfusion Reaction	395	98.0	8,201	41	157	164	15.9
Lymphatic & Immune Disorders, complicated	398	89.3	2,624	110	91	126	70.2
Lymphoma & Non-Acute Leukemia, complicated	403	92.4	3,218	89	17	33	84.0
Chemotherapy except for acute leukemia	410	71.1	8,899	34	233	109	99.0
Surgery for Infectious or Parasitic Disease	415	94.4	5,069	65	50	116	8.5
Infection after Surgery or Trauma	418	95.4	3,601	79	196	240	8.2
Laparoscopic Gallbladder Removal, complicated	493	94.9	6,318	52	207	224	3.4
Laparoscopic Gallbladder Removal, uncomplicated	494	94.4	8,748	36	289	289	0.3

[1] General Acute Care and Specialty Acute Care Hospitals
[2] Only patients age 18 and over were included in this analysis
[3] The DRG with the largest number of cases is ranked first out of 373 total DRGs.
[4] The DRG ranked first has the highest mortality rate.
[5] The DRG ranked first in mortality variability has the highest degree of variation in crude mortality across facilities.
[6] This percentage indicates the proportion of cases within this DRG with malignant neoplasms or cancer in situ diagnosis codes in the record.

Table 2A

Statewide Exclusions from Hospital Performance Analysis (includes 21 DRGs in Public Report)

Exclusions from in-hospital mortality analysis	**Cases**	
	N	*%*
Total cases *before* exclusions	363,201	100%
Exclusions:		
patients who left against medical advice	2,229	0.6
patients transferred out to general acute care facilities	15,362	4.2
invalid ASG	10,395	2.9
no reference data	3	< 0.1
Total Exclusions	27,989	7.7
Total cases in analysis	**335,212**	**92.3**

Exclusions from length of stay analysis	**Cases**	
	N	*%*
Total cases *before* exclusions	363,201	100%
Exclusions:		
patients who died	22,100	6.1
patients who left against medical advice	2,229	0.6
patients transferred out to general acute care facilities	15,362	4.2
invalid ASG*	9,640	2.7
invalid LOS	21	< 0.1
no reference data	3	< 0.1
LOS outlier	4,325	1.2
Total Exclusions	53,680	14.8
Total cases in analysis	**309,521**	**85.2**

Exclusions from charge analysis	**Cases**	
	N	*%*
Total cases *before* charges	363,201	100%
Exclusions:		
patients who left against medical advice	2,229	0.6
patients transferred out to general acute care facilities	15,362	4.2
invalid charges	2,681	0.7
invalid ASG	9,979	2.7
charge outliers	7,894	2.2
Total Exclusions	38,145	10.5
Total cases in analysis	**325,056**	**89.5**

Exclusions from readmission analysis	**Cases**	
	N	*%*
Total cases *before* charges	363,201	100%
Exclusions:		
patients who died	22,100	6.1
patients who left against medical advice	2,229	0.6
patients transferred out to general acute care facilities	15,362	4.2
invalid ASG*	9,640	2.7
invalid LOS	21	< 0.0
no reference data	3	< 0.1
LOS outlier	4,325	1.2
patient identifier/date issues	10,219	2.8
Total Exclusions	63,899	17.6
Total cases in analysis	**299,302**	**82.4**

** Number of ASG missing for patients who have died not included*

Table 2B

Statewide Exclusions from Hospital Performance Analysis (includes 47 adult DRGs on Web)

Exclusions from in-hospital mortality analysis	**Cases**	
	N	*%*
Total cases *before* exclusions	705,448	100%
Exclusions:		
patients who left against medical advice	5,232	0.7
patients transferred out to general acute care facilities	21,578	3.1
invalid ASG	22,155	3.1
no reference data	42	< 0.1
Total Exclusions	49,007	6.9
Total cases in analysis	**656,441**	**93.1**

Exclusions from length of stay analysis	**Cases**	
	N	*%*
Total cases *before* exclusions	705,448	100%
Exclusions:		
patients who died	29,965	4.2
patients who left against medical advice	5,232	0.7
patients transferred out to general acute care facilities	21,578	3.1
invalid ASG*	21,019	3.0
invalid LOS	47	< 0.1
no reference data	42	< 0.1
LOS outlier	9,026	1.3
Total Exclusions	86,909	12.3
Total cases in analysis	**618,539**	**87.7**

** Number of ASG missing for patients who have died not included*

Exclusions from charge analysis	**Cases**	
	N	*%*
Total cases *before* charges	705,448	100%
Exclusions:		
patients who left against medical advice	5,232	0.7
patients transferred out to general acute care facilities	21,578	3.1
invalid charges	4,756	0.7
invalid ASG	21,423	3.0
charge outliers	14,611	2.1
Total Exclusions	67,600	9.6
Total cases in analysis	**637,848**	**90.4**

Table 2C

Statewide Exclusions from Hospital Performance Analysis (includes 5 Pediatric DRGs on Web)

Exclusions from in-hospital mortality analysis	**Cases**	
	N	*%*
Total cases *before* exclusions	29,494	100%
Exclusions:		
patients who left against medical advice	30	0.1
patients transferred out to general acute care facilities	353	1.2
invalid gender	5	< 0.1
invalid ASG	1,567	5.3
no reference data	16	0.1
Total Exclusions	1,971	6.7
Total cases in analysis	**27,523**	**93.3**

Exclusions from length of stay analysis	**Cases**	
	N	*%*
Total cases *before* exclusions	29,494	100%
Exclusions:		
patients who died	5	< 0.1
patients who left against medical advice	30	0.1
patients transferred out to general acute care facilities	353	1.2
invalid gender	5	< 0.1
invalid ASG*	1,566	5.3
invalid LOS	41	0.1
no reference data	16	0.1
LOS outlier	288	1.0
Total Exclusions	2,304	7.8
Total cases in analysis	**27,190**	**92.2**

** Number of ASG missing for patients who have died not included*

Exclusions from charge analysis	**Cases**	
	N	*%*
Total cases *before* charges	29,494	100%
Exclusions:		
patients who left against medical advice	30	0.1
patients transferred out to general acute care facilities	353	1.2
invalid charges	90	0.3
invalid ASG	1,547	5.2
no reference data	16	0.1
charge outliers	756	2.6
Total Exclusions	2,792	9.5
Total cases in analysis	**26,702**	**90.5**

Table 3a

Regional Charge Upper Trim Point by DRG

Western Pennsylvania

Region 1

DRG Description	DRG	Average Charge (Before Trimming)	Upper Trim Point
Heart Attack with CC – Medical Management	121	$17,949	$55,327
Heart Attack w/o CC – Medical Management	122	$13,237	$44,518
Heart Attack Expired – Medical Management	123	$17,598	$65,484
Heart Failure & Shock	127	$10,874	$35,273
Abnormal Heartbeat, complicated	138	$8,949	$28,948
Vascular Disorders except heart, complicated	130	$10,547	$33,460
Vascular Operations except heart, complicated	478	$26,934	$99,440
Stroke (Brain Attack)	014	$14,933	$46,366
Blood Clot in Lung	078	$14,351	$46,257
Lung Infections, complicated	079	$16,434	$54,195
Pneumonia, complicated	089	$10,557	$34,266
COPD	088	$8,850	$27,803
Lung Cancer	082	$15,989	$62,657
Diabetes	294	$7,798	$25,545
Kidney & Urinary Infections, complicated	320	$8,353	$26,086
Kidney Failure	316	$15,493	$54,641
Stomach & Intestinal Bleeding, complicated	174	$11,080	$33,919
Stomach & Intestinal Complications & Disorders	188	$11,960	$40,779
Stomach & Small Intestine Operations, complicated	154	$46,995	$168,835
Major Intestinal Procedures, complicated	148	$33,424	$104,871
Hip Operations except replacements, complicated	210	$20,594	$56,227
Septicemia	416	$16,367	$54,133
Poisoning & Toxic Effects of Drugs, complicated	449	$8,310	$28,275

Table 3b

Regional Charge Upper Trim Point by DRG

Western Pennsylvania

Region 2

DRG Description	DRG	Average Charge (Before Trimming)	Upper Trim Point
Heart Attack with CC – Medical Management ..	121	$13,151	$42,714
Heart Attack w/o CC – Medical Management ...	122	$9,895	$33,631
Heart Attack Expired – Medical Management...	123	$12,718	$46,450
Heart Failure & Shock	127	$7,790	$25,382
Abnormal Heartbeat, complicated.....	138	$6,840	$22,159
Vascular Disorders except heart, complicated	130	$6,749	$20,284
Vascular Operations except heart, complicated	478	$21,486	$72,010
Stroke (Brain Attack)	014	$9,243	$27,244
Blood Clot in Lung	078	$10,171	$31,433
Lung Infections, complicated	079	$10,366	$36,904
Pneumonia, complicated	089	$7,473	$23,603
COPD.....	088	$6,316	$19,534
Lung Cancer.....	082	$9,395	$35,431
Diabetes	294	$5,221	$17,060
Kidney & Urinary Infections, complicated.....	320	$5,702	$18,121
Kidney Failure	316	$10,826	$37,288
Stomach & Intestinal Bleeding, complicated.....	174	$7,556	$24,622
Stomach & Intestinal Complications & Disorders.....	188	$9,872	$30,644
Stomach & Small Intestine Operations, complicated	154	$26,112	$91,765
Major Intestinal Procedures, complicated	148	$25,626	$75,620
Hip Operations except replacements, complicated	210	$13,981	$36,690
Septicemia.....	416	$9,662	$32,967
Poisoning & Toxic Effects of Drugs, complicated	449	$5,283	$16,547

Table 3c

Regional Charge Upper Trim Point by DRG

Western Pennsylvania

Region 3

DRG Description	DRG	Average Charge (Before Trimming)	Upper Trim Point
Heart Attack with CC – Medical Management ..	121	$15,375	$45,859
Heart Attack w/o CC – Medical Management ...	122	$10,782	$31,001
Heart Attack Expired – Medical Management...	123	$15,241	$56,017
Heart Failure & Shock	127	$9,100	$28,483
Abnormal Heartbeat, complicated.....	138	$7,412	$24,654
Vascular Disorders except heart, complicated	130	$7,858	$22,818
Vascular Operations except heart, complicated	478	$23,953	$81,039
Stroke (Brain Attack)	014	$11,406	$35,071
Blood Clot in Lung	078	$12,031	$37,725
Lung Infections, complicated	079	$12,446	$41,010
Pneumonia, complicated	089	$9,196	$30,416
COPD.....	088	$7,846	$24,746
Lung Cancer.....	082	$12,744	$51,109
Diabetes	294	$6,525	$19,636
Kidney & Urinary Infections, complicated.....	320	$7,409	$23,948
Kidney Failure	316	$13,165	$49,764
Stomach & Intestinal Bleeding, complicated.....	174	$9,537	$28,770
Stomach & Intestinal Complications & Disorders.....	188	$9,356	$32,390
Stomach & Small Intestine Operations, complicated	154	$32,582	$108,211
Major Intestinal Procedures, complicated	148	$28,177	$84,578
Hip Operations except replacements, complicated	210	$18,486	$49,330
Septicemia.....	416	$12,589	$42,917
Poisoning & Toxic Effects of Drugs, complicated	449	$6,190	$22,303

Table 4

Regional Average LOS Before and After Trimming by DRG

Western Pennsylvania

DRG Description	DRG	Mean LOS *Before* Trimming	Mean LOS *After* Trimming	Outliers	
				N	%
Heart Attack – Medical Management	121-123[1]	6.3	6.1	70	0.8
Heart Failure & Shock	127	5.4	5.2	254	1.2
Abnormal Heartbeat, complicated	138	4.0	3.8	54	0.7
Vascular Disorders except heart, complicated	130	5.6	5.3	29	0.9
Vascular Operations except heart, complicated	478	6.8	6.5	27	0.8
Stroke (Brain Attack)	014	6.1	5.6	101	1.1
Blood Clot in Lung	078	6.5	6.3	13	1.0
Lung Infections, complicated	079	8.2	8.0	32	0.7
Pneumonia, complicated	089	5.8	5.7	113	0.8
COPD	088	5.0	4.8	161	1.1
Lung Cancer	082	6.5	6.4	8	0.4
Diabetes	294	4.2	4.0	30	0.9
Kidney & Urinary Infections, complicated	320	4.9	4.8	34	0.6
Kidney Failure	316	6.7	6.5	24	0.9
Stomach & Intestinal Bleeding, complicated	174	4.7	4.5	84	1.1
Stomach & Intestinal Complications & Disorders	188	5.3	4.7	41	1.6
Stomach & Small Intestine Operations, complicated	154	10.0	9.3	22	1.6
Major Intestinal Procedures, complicated	148	10.7	10.3	55	1.1
Hip Operations except replacements, complicated	210	6.6	6.2	73	2.1
Septicemia	416	7.1	6.8	79	1.4
Poisoning & Toxic Effects of Drugs, complicated	449	2.4	2.2	24	1.4

[1] These 3 DRGs are treated as a single diagnostic group.

Table 5

Exclusions from Mortality Analysis by DRG

Western Pennsylvania

DRG Description	DRG	Total Cases	Transfers to other GAC	LAMA	Invalid ASG	Total Excluded	
						N	%
Heart Attack – Medical Management	121-123[1]	10,326	3,123	48	95	3,266	31.6%
Heart Failure & Shock	127	22,626	869	62	236	1,167	5.2%
Abnormal Heartbeat, complicated	138	7,514	401	44	90	535	7.1%
Vascular Disorders except heart, complicated	130	3,487	123	16	78	217	6.2%
Vascular Operations except heart, complicated	478	3,522	57	4	36	97	2.8%
Stroke (Brain Attack)	014	9,879	332	24	207	563	5.7%
Blood Clot in Lung	078	1,309	34	7	14	55	4.2%
Lung Infections, complicated	079	5,033	79	7	89	175	3.5%
Pneumonia, complicated	089	14,726	176	60	174	410	2.8%
COPD	088	14,360	116	79	166	361	2.5%
Lung Cancer	082	2,669	84	9	45	139	5.2%
Diabetes	294	3,257	46	29	39	114	3.5%
Kidney & Urinary Infections, complicated	320	5,609	40	14	80	134	2.4%
Kidney Failure	316	3,149	81	39	35	155	4.9%
Stomach & Intestinal Bleeding, complicated	174	7,569	167	50	90	307	4.1%
Stomach & Intestinal Complications & Disorders	188	2,716	77	6	48	131	4.8%
Stomach & Small Intestine Operations, complicated	154	1,471	21	1	17	39	2.7%
Major Intestinal Procedures, complicated	148	5,245	53	2	73	128	2.4%
Hip Operations except replacements, complicated	210	3,515	39	1	46	86	2.4%
Septicemia	416	6,813	199	21	103	323	4.7%
Poisoning & Toxic Effects of Drugs, complicated	449	1,694	87	80	27	194	11.5%

Note: In addition to the above, 3 cases statewide were excluded because they had no reference data.

[1] These 3 DRGs are treated as a single diagnostic group.

Table 6

Exclusions from Length of Stay Analysis by DRG

Western Pennsylvania

DRG Description	DRG	Total Cases	Total Died	Transfers to other GAC	LAMA	Invalid ASG, LOS	Outliers	Total Excluded	
								N	%
Heart Attack – Medical Management	121-123[1]	10,326	1,263	3,123	48	78	70	4,582	44.4%
Heart Failure & Shock	127	22,626	1,043	869	62	230	254	2,458	10.9%
Abnormal Heartbeat, complicated	138	7,514	188	401	44	82	54	769	10.2%
Vascular Disorders except heart, complicated	130	3,487	134	123	16	72	29	374	10.7%
Vascular Operations except heart, complicated	478	3,522	118	57	4	33	27	239	6.8%
Stroke (Brain Attack)	014	9,879	1,020	332	24	181	101	1,658	16.8%
Blood Clot in Lung	078	1,309	47	34	7	13	13	114	8.7%
Lung Infections, complicated	079	5,033	736	79	7	70	32	924	18.4%
Pneumonia, complicated	089	14,726	794	176	60	156	113	1,299	8.8%
COPD	088	14,360	212	116	79	161	161	729	5.1%
Lung Cancer	082	2,669	451	84	9	26	8	579	21.7%
Diabetes	294	3,257	46	46	29	38	30	189	5.8%
Kidney & Urinary Infections, complicated	320	5,609	100	40	14	78	34	266	4.7%
Kidney Failure	316	3,149	365	81	39	28	24	537	17.1%
Stomach & Intestinal Bleeding, complicated	174	7,569	259	167	50	85	84	645	8.5%
Stomach & Intestinal Complications & Disorders	188	2,716	120	77	6	46	41	290	10.7%
Stomach & Small Intestine Operations, complicated	154	1,471	99	21	1	14	22	157	10.7%
Major Intestinal Procedures, complicated	148	5,245	312	53	2	70	55	492	9.4%
Hip Operations except replacements, complicated	210	3,515	98	39	1	43	73	254	7.2%
Septicemia	416	6,813	1,007	199	21	80	79	1,386	20.3%
Poisoning & Toxic Effects of Drugs, complicated	449	1,694	16	87	80	28	24	235	13.9%

Note: In addition to the above, 3 cases statewide were excluded because they had no reference data.

[1] These 3 DRGs are treated as a single diagnostic group.

Table 7

Exclusions from Charge Analysis by DRG

Western Pennsylvania

DRG Description	DRG	Total # of Cases	# Transfer to other GAC	# LAMA	# Invalid Charge	# Invalid ASG	# Outliers	Total Excluded	
								N	%
Heart Attack – Medical Management	121-123[1]	10,326	3,123	48	70	88	174	3,503	33.9%
Heart Failure & Shock	127	22,626	869	62	126	231	486	1,774	7.8%
Abnormal Heartbeat, complicated	138	7,514	401	44	35	88	137	705	9.4%
Vascular Disorders except heart, complicated	130	3,487	123	16	19	74	114	346	9.9%
Vascular Operations except heart, complicated	478	3,522	57	4	17	36	51	165	4.7%
Stroke (Brain Attack)	014	9,879	332	24	40	206	344	946	9.6%
Blood Clot in Lung	078	1,309	34	7	9	13	17	80	6.1%
Lung Infections, complicated	079	5,033	79	7	22	87	102	297	5.9%
Pneumonia, complicated	089	14,726	176	60	91	169	272	768	5.2%
COPD	088	14,360	116	79	78	164	278	715	5.0%
Lung Cancer	082	2,669	84	9	20	39	39	191	7.2%
Diabetes	294	3,257	46	29	13	38	92	218	6.7%
Kidney & Urinary Infections, complicated	320	5,609	40	14	21	79	115	269	4.8%
Kidney Failure	316	3,149	81	39	14	35	77	246	7.8%
Stomach & Intestinal Bleeding, complicated	174	7,569	167	50	42	88	214	561	7.4%
Stomach & Intestinal Complications & Disorders	188	2,716	77	6	17	44	66	210	7.7%
Stomach & Small Intestine Operations, complicated	154	1,471	21	1	12	17	33	84	5.7%
Major Intestinal Procedures, complicated	148	5,245	53	2	22	72	147	296	5.6%
Hip Operations except replacements, complicated	210	3,515	39	1	13	46	111	210	6.0%
Septicemia	416	6,813	199	21	31	102	233	586	8.6%
Poisoning & Toxic Effects of Drugs, complicated	449	1,694	87	80	11	27	55	260	15.3%

[1] These 3 DRGs are treated as a single diagnostic group.

Table 8

Exclusions from Readmissions Analysis by DRG

Western Pennsylvania

DRG Description	DRG	Total Cases	Total Died	Transfers to other GAC	LAMA	Invalid ASG, LOS	Patient ID, Date Issues	Outliers	Total Excluded	
									N	%
Heart Attack – Medical Management	121-123[1]	10,326	1,263	3,123	48	78	170	70	4,752	46.0%
Heart Failure & Shock	127	22,626	1,043	869	62	230	361	254	2,819	12.5%
Abnormal Heartbeat, complicated	138	7,514	188	401	44	82	100	54	869	11.6%
Vascular Disorders except heart, complicated	130	3,487	134	123	16	72	65	29	439	12.6%
Vascular Operations except heart, complicated	478	3,522	118	57	4	33	63	27	302	8.6%
Stroke (Brain Attack)	014	9,879	1,020	332	24	181	177	101	1,835	18.6%
Blood Clot in Lung	078	1,309	47	34	7	13	20	13	134	10.2%
Lung Infections, complicated	079	5,033	736	79	7	70	83	32	1,007	20.0%
Pneumonia, complicated	089	14,726	794	176	60	156	235	113	1,534	10.4%
COPD	088	14,360	212	116	79	161	208	161	937	6.5%
Lung Cancer	082	2,669	451	84	9	26	37	8	616	23.1%
Diabetes	294	3,257	46	46	29	38	48	30	237	7.3%
Kidney & Urinary Infections, complicated	320	5,609	100	40	14	78	100	34	366	6.5%
Kidney Failure	316	3,149	365	81	39	28	43	24	580	18.4%
Stomach & Intestinal Bleeding, complicated	174	7,569	259	167	50	85	132	84	777	10.3%
Stomach & Intestinal Complications & Disorders	188	2,716	120	77	6	46	44	41	334	12.3%
Stomach & Small Intestine Operations, complicated	154	1,471	99	21	1	14	33	22	190	12.9%
Major Intestinal Procedures, complicated	148	5,245	312	53	2	70	67	55	559	10.7%
Hip Operations except replacements, complicated	210	3,515	98	39	1	43	64	73	318	9.0%
Septicemia	416	6,813	1,007	199	21	80	107	79	1,493	21.9%
Poisoning & Toxic Effects of Drugs, complicated	449	1,694	16	87	80	28	51	24	286	16.9%

Note: In addition to the above, 3 cases statewide were excluded because they had no reference data.

[1] These 3 DRGs are treated as a single diagnostic group.

Table 9

Summary of Hospitals Totally Excluded from the HPR and Web Site Release

Hospital Name	Cases	Missing ASG		Reason for Exclusion
	#	#	%	
Facilities that are currently in operation: All facilities listed were non-compliant with data reporting.				
Western Pennsylvania				
Charles Cole Memorial Hospital	1,023	3	0.3	Missing one quarter of UB data
Miners Hospital of N. Cambria	1,456	335	23.0	Missing severity - 23.0%
Monsour Medical Center	1,434	494	34.4	Missing severity - 34.4%
Tyrone Hospital	0	……Compliant…..		Missing four quarters of UB data
Warren General Hospital	2,557	1,120	43.8	Missing severity - 43.8%
Central and Northeastern				
Bloomsburg Hospital	2,096	660	31.5	Missing severity - 31.5%
Lock Haven Hospital	1,521	979	64.4	Missing severity - 64.4%; missing one quarter of UB data
Mercy Hospital/Scranton	9,640	6,797	70.5	Missing severity - 70.5%
Shamokin Area Comm. Hosp.	1,116	59	5.3	Q3-1999: 100% missing discharge status
Southeastern Pennsylvania				
Ashland Regional Med. Ctr.	1,991	97	4.9	Missing one quarter of UB data
Episcopal Hospital	3,110	474	15.2	Missing severity - 15.2%
Mercy Suburban Hospital	2,986	555	18.6	Missing severity - 18.6%
Parkview Hospital	3,328	600	18.0	Missing severity - 18.0%
PA Hosp. Univ. PA Hlth System	13,382	7,012	52.4	Missing severity - 52.4%
St. Christopher's Children	6,936	2,447	35.3	Missing severity - 35.3%
Southern Chester Cty. Med. Ctr.	2,292	532	23.2	Missing severity - 23.2%
Temple University Hospital	16,670	3,648	21.9	Missing severity - 21.9%
Facilities that closed or changed facility type in 1999/2000: Includes compliant and non-compliant facilities				
Southeastern Pennsylvania				
City Avenue Hospital	4,265	827	19.4	Closed facility in Q1-2000; missing severity – 19.4%
Germantown Hospital & Community Health Serv.	1,673	318	19.0	Merged & changed facility type in Q3-1999
JFK Memorial Hospital	998	148	14.8	Closed facility in 2000; 100% missing severity in Q4-1999
Temple East – Neumann Div.	356	16	4.5	Changed facility type in Q3-1999
Western Pennsylvania				
Elk County Regional Med. Ctr	7	7	100	Merged & changed facility type in Q3-1999