



**A HOSPITAL PERFORMANCE REPORT
COMMON MEDICAL PROCEDURES AND TREATMENTS**

**Technical Notes
Western Pennsylvania**

For Calendar Year 2000

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

**The Pennsylvania Health Care
Cost Containment Council
December 2001**

Foreword

The 2000 *Hospital Performance Report* utilizes all the improvements developed and implemented in the 1997, 1998 and 1999 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.

New to the 2000 report is the inclusion of the “Heart Attack with PTCA/Stent” DRG. The Web version of the 2000 *Hospital Performance Report* has also been expanded to include a risk-adjusted readmission rate analysis for all appropriate DRGs. In addition, a new DRG, Medical Back Problems, has been added to the Web-site DRG listing.

The 2000 *Hospital Performance Report* continues to be a “flagship” report in which the Pennsylvania Health Care Cost Containment Council is able to disperse a wide range of information on various clinical conditions and outcomes.

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

2000 Hospital Performance Report

This document serves as a technical supplement to the 2000 *Hospital Performance Report*. Technical notes describe the methodology of the analyses and outline development of the report format and presentation. Detailed information relating to methodology is not duplicated herein but is referenced where appropriate. Copies of earlier technical reports can be obtained from PHC4 or from the PHC4 website (www.phc4.org).

Overview of the 2000 Hospital Performance Report

The printed report presents measures for 22 selected Diagnosis Related Groups (DRGs):

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

It should be noted that not all outcome measures are reported for all DRGs. In-hospital mortality is identified in the patient discharge record as a discharge status of “20.” Length of stay is calculated by subtracting the admit date from the discharge 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.

New to the 2000 report is the inclusion of the “Heart Attack with PTCA/Stent” DRG. The addition of these heart attack cases (which are treated with interventional techniques) complements the already-reported Heart Attack – Medical Management cases (which are, by definition, treated medically). This addition will allow for a broader analysis of heart attack cases across Pennsylvania hospitals. The outcomes reported for this “DRG” include a risk-adjusted mortality rating, risk-adjusted average length of stay, and average charge.

This new clinical group is a composite of cases in DRGs 112 and 116 that had a principal diagnosis of AMI (ICD.9.CM code 410.x1, x=0-9) and PTCA/stent procedure performed (ICD.9.CM codes 36.01, 36.02, 36.05, 36.06). Unlike the other DRGs (which include cases that are treated at the majority of Pennsylvania hospitals), Heart Attack with PTCA/Stent is comprised of cases that are treated only at hospitals that provide advanced cardiac care services in Pennsylvania. For this reason, only facilities that provide these services are reported for this DRG.

In addition, 51 DRGs (1 new DRG: 243 – Medical Back Problems) are included on the Council’s Web site. A total of 73 DRGs (22 *public document* and 51 *Web site only*) are published for 2000. Outcomes for the 22 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 that 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.

Summaries by DRG are provided by state, region, and individual hospitals for each of the three “wide-area” regional reports. 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, Northwest 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 Lehigh Valley/Reading—Region 7, Suburban Philadelphia—Region 8, and the City of Philadelphia—Region 9)

What is new for the 2000 Hospital Performance Report?

The following table summarizes methodologies developed for the 1999 Report and enhancements developed for the 2000 Report.

	1999 Methodology	2000 Methodology
Measures Reported	<ul style="list-style-type: none"> ✓ In-hospital mortality ✓ Average hospital charge ✓ Average length of stay ✓ Readmission rate¹ ✓ Transfer-out to acute care % (Heart Attack – Medical Management DRG only) ✓ Notation of status as provider of advanced cardiac care (Heart Attack – Medical Management DRG only) 	<p>Same <i>with the following modifications:</i></p> <p>Readmission rates now reported for all appropriate Web DRGs. Readmission rates not reported for lung cancer, heart attack – medical management, heart attack with PTCA/stent, or DRGs (public and web) that:</p> <ul style="list-style-type: none"> ▪ Are pediatric ▪ Have “Misc.” or “Other” in name ▪ Contain a high volume (≥ 10%) of cancer-related cases
Hospitals	Acute care facilities (excluding children’s hospitals for adult DRGs)	Same
Definition of Compliance	Acute care facilities that submitted data containing less than 15% missing severity scores for all DRGs in which severity score is required	Same
DRGs: Public Document	21 included	22 in total
DRGs: Web site	71 in total (21 public document and 50 additional)	73 in total (22 public document and 51 additional)
Comparative Database	Pennsylvania Hospital 1999 Inpatient Database with all relevant data <i>excluding pediatric cases for adult comparative analyses and excluding adult cases for pediatric comparative analyses</i>	Pennsylvania Hospital 2000 Inpatient Database with all relevant data <i>excluding pediatric cases for adult comparative analyses and excluding adult cases for pediatric comparative analyses</i>
Risk Adjustment Technique	Indirect standardization	Same
Adjustment Factors <i>(for in-hospital mortality, length of stay, and readmission)</i>	<ul style="list-style-type: none"> ✓ Atlas Outcomes® Severity of Illness ✓ Age categories : (DRG² dependent): <ul style="list-style-type: none"> ▪ Ages 18 – 64, 65 – 79, 80+, or ▪ Ages 18 – 39, 40 – 69, 70+, or ▪ Ages 0 – 5, 6 – 12, 13 – 17 ✓ Cancer categories: <ul style="list-style-type: none"> ▪ None³ ▪ Malignant neoplasm & in situ⁴ ▪ History of cancer⁵ ✓ Patient gender (only used for 2 pediatric DRGs) 	<ul style="list-style-type: none"> ✓ Atlas Outcomes® Severity of Illness (same) ✓ Age categories (same) ✓ Cancer categories (same) ✓ Patient gender (only used for 2 pediatric DRGs - same)
Statistical Tests <i>(for in-hospital mortality)</i>	✓ Exact Binomial Test	Same
Trim Methodology <i>(for charges and length of stay)</i>	<ul style="list-style-type: none"> ✓ +/- 3.0 Interquartile Range ✓ Outlier exclusion is considered separately. 	Same

¹ Readmission was not analyzed for heart attack-medical management, 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

³ No cancer diagnosis codes present

⁴ ICD.9.CM diagnosis codes 140.0 – 208.9 inclusive or 230.0– 234.9 inclusive

⁵ ICD.9.CM diagnosis codes V10.00 – V10.90 inclusive

What is the difference between the 22 DRGs reported in the *public document* and the 51 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 51 *Web site only* DRGs. Note that descriptive and outcome information regarding the 22 DRGs chosen for the public document are displayed on the Council’s Web site; any information that is published for the 22 DRGs in the public document will also be displayed on the Web site.

	DRGs: <i>Public Document</i>	DRGs: <i>Web site Only</i>
Measures Reported	<ul style="list-style-type: none"> ✓ In-hospital mortality ✓ Average hospital charge ✓ Average length of stay ✓ Readmission rate (for appropriate DRGs) ✓ Transfer to acute care % (Heart Attack – Medical Management only) ✓ Notation of status as provider of advanced cardiac care (Heart Attack – Medical Management only) 	Same
Hospitals	All acute care facilities (excluding children’s hospitals)	Acute care facilities with 5 or more cases in a DRG
DRGs	22 included	51 included (48 adult and 5 pediatric—2 DRGs will be split into separate adult and pediatric analyses)
Comparative Database	Pennsylvania Hospital 2000 Inpatient Database with all relevant data <i>(pediatric cases have been removed)</i>	48 Adult DRGs ¹ : same 5 Pediatric DRGs ² : Pennsylvania Hospital 2000 Inpatient Database with all relevant <i>pediatric</i> data

¹ Includes 46 adult only and 2 pediatric/adult DRGs

² Includes 3 pediatric only and 2 pediatric/adult DRGs

The 22 DRGs included in the 2000 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
112, 116 ^{1,3}	PTCA/Stent for Acute Myocardial Infarction	Heart Attack with PTCA/stent	05	Surgical
121- 123 ^{2,3}	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

¹ Includes only those cases that had a principal diagnosis of AMI and had a PTCA with or without stent procedure performed.

² 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.

³ Hospital charges for this combined group of DRGs (i.e., 121, 122 and 123 were combined; appropriate cases in 112 and 116 were combined) 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 from analysis for the transferring hospital. The transferred cases are analyzed at the 2nd (receiving) hospital. If a PTCA/stent was performed for the AMI patient, the cases are captured in DRGs 112, 116. AMI patients treated with other therapeutic interventions (e.g., CABG) are not captured. Approximately 25 percent of acute care hospitals have the capability to provide the therapeutic intervention of PTCA/stent.

The 51 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
180	GI Obstruction with CC [‡]	Stomach & Intestinal Obstruction, complicated	06	Medical

[‡] CC – complication or comorbid condition

The 51 DRGs released on the Council's Web site only are: (continued)

(Note: Pediatric cases for DRGs 410 and 167 are reported separately.)

DRG	Description	Common Names	MDC	Medical/ Surgical
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
243	Medical Back Problems	Medical Back Problems	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 Outcomes*® 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 (GAC) and specialty acute care hospitals covering the period of calendar year 2000. 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 2000 *Hospital Performance Report public document* (i.e., the printed report) includes useable records from all Pennsylvania GAC and specialty acute care hospital discharges in 2000 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%) in the public document. Adult cases that are included are categorized into one of the twenty-two 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. Only records with the following types of discharge status were included:

- Discharged to home or self care (routine discharge)
- Discharged/transferred to another short term general hospital for inpatient care
- Discharged/transferred to skilled nursing facility (SNF)
- Discharged/transferred to an intermediate care facility (ICF)
- Discharged/transferred to another type of institution for inpatient care or referred for outpatient services to another institution
- Discharged/transferred to home under care of organized home health service organization
- Left against medical advice or discontinued care
- Discharged/transferred to home under care of a Home IV provider
- Expired

It should be noted, however, that a small number of records (less than 0.1 percent) are removed from the analyses if they do not meet the above criteria.

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 48 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 2000 by acute care facilities (39 invalid age records out of more than 1.79 million records submitted are invalid for age).

Hospital Exclusions

In 2000 there were 187 general acute care facilities and seven specialty acute care facilities in Pennsylvania, for a total population of 194 facilities.

The number of cases included in any single type of analysis in the 2000 report varies because of unreported data or incomplete data submitted by the 194 acute care facilities or differing exclusion criteria. Table 9 on page 29 lists the hospitals that were excluded in the 2000 public document report and Web release, for reasons related to non-compliance or closures. **Although data and analyses specific to these 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.

Additional Hospital Exclusions

Four children's hospitals 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 22 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 181 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 22 DRGs is suppressed under the same guidelines as those developed for the public document.

Outcome analyses for the 51 *Web site only* DRGs are displayed only for those facilities treating a minimum of 5 cases. For those facilities treating fewer than 5 cases, all outcome information is suppressed.

METHODOLOGY

In-hospital Mortality Analysis

DRG Exclusions

For the 2000 *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 2000 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 53 of the 70 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	204	Noncancerous Pancreatic Disorders
024	Seizure & Headache, complicated	217	Wound Debridement & Skin Grafts except Hand
025	Seizure & Headache, uncomplicated	297	Nutritional & Metabolic Deficiencies, uncomplicated
090	Pneumonia, uncomplicated	323	Urinary Stones including Lithotripsy, complicated
096	Bronchitis & Asthma, complicated	395	Anemia & Transfusion Reaction
097	Bronchitis & Asthma, uncomplicated	418	Infection after Surgery or Trauma
167	Removal of Appendix, uncomplicated <i>(This DRG is also analyzed for pediatric cases using the pediatric age categories)</i>	449*	Poisoning & Toxic Effects of Drugs, complicated
183	Stomach & Intestinal Infections & Disorders, uncomplicated	493	Laparoscopic Gallbladder Removal, complicated
		494	Laparoscopic Gallbladder Removal, uncomplicated

* 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.

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:

	<u>Admission Severity Group</u>	<u>Probability of Death</u>
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 2000 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

Refer to 1999 HPR Technical Notes for a detailed explanation.

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

Refer to 1999 HPR Technical Notes for a detailed explanation.

Length of Stay Analysis

Construction of Reference Database

The reference database for length of stay (LOS) 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 & Risk Adjustment Computations

Refer to 1999 HPR Technical Notes for a detailed explanation.

Charge Analysis

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

Refer to 1999 HPR Technical Notes for a detailed explanation.

Case-Mix Adjustment of Average Charge for Heart Attack – Medical Management and Heart Attack with PTCA/stent

For the 2000 *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. Charges associated with DRGs 112 & 116 (a subset of cases – Heart Attack with PTCA/stent) are adjusted similarly.

Additional information about the case-mix adjustment can be found in the 1999 HPR Technical Notes.

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 only 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 GAC or specialty general acute care facility for an acute care condition (not related to behavioral health, physical rehabilitation, mental health, or skilled nursing).

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. Records that were problematic when trying to link multiple patient hospitalizations were excluded from analysis (see tables 2A & 2B). 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 the following DRGs that frequently involve planned readmissions (which are often necessary as part of the process of care):

- Lung Cancer (082)
- Heart Attack—Medical Management (121, 122, 123)
- DRGs with a high volume of cancer-related cases (i.e., $\geq 10\%$)

In addition, since readmission rate was not reported for Heart Attack—Medical Management, it is also not reported for Heart Attack with PTCA/stent to maintain consistency. Lastly, readmission rates were not reported for those DRGs that contained the terms “miscellaneous” or “other” in the name since defining appropriate readmissions for this mix of cases was problematic. (See Appendix for a list of the DRGs excluded from readmission rate).

Hospital Exclusions

In order to calculate a readmission rate for a hospital, the hospital's subsequent quarter of data must be available and complete. One facility (statewide), which passed the minimum requirements for inclusion in the 2000 *Hospital Performance Report* by providing data for calendar year 2000, failed to provide UB-92 data for the first quarter of 2001. While all useable records from this facility are utilized in the reference database for readmission analysis, the readmission rate is suppressed, and the facility is 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 2001 are necessary to determine whether a record in the fourth quarter 2000 did, in fact, have a readmission, *only useable records from 2000 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

Refer to 1999 HPR Technical Notes for a detailed explanation.

Calculation of Risk-Adjusted Readmission Rate

Refer to 1999 HPR Technical Notes for a detailed explanation.

Reported Measures Specific to Heart Attack—Medical Management

Transfer-out to Acute Care %

Transfer to an acute care facility is represented as "02" for the discharge status of an inpatient hospital record. By definition these patients are discharged to another GAC 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 *transfer-out to acute care %* 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	96.4	29,134	6	27	146	3.6
Heart Attack with PTCA/stent	112, 116 ⁸	29.4	10,531	28	150	262	1.6
Heart Failure & Shock	127	98.5	62,249	1	78	202	3.8
Abnormal Heartbeat, complicated	138	99.5	20,250	12	109	231	5.6
Vascular Disorders except heart, complicated	130	98.5	8,839	37	84	181	15.5
Vascular Operations except heart, complicated....	478	87.6	10,420	29	99	143	7.1
Stroke (Brain Attack)	014	97.9	27,570	8	34	151	3.8
Blood Clot in Lung	078	95.4	4,237	71	92	137	15.4
Lung Infections, complicated	079	96.9	12,762	23	20	99	9.0
Pneumonia, complicated	089	99.0	39,535	2	63	215	9.6
COPD	088	97.4	34,972	4	128	257	4.5
Lung Cancer	082	93.8	6,942	49	13	58	98.9
Diabetes	294	96.4	9,631	32	145	240	4.1
Kidney & Urinary Infections, complicated	320	99.0	15,095	18	116	225	6.7
Kidney Failure.....	316	96.9	9,829	31	33	84	8.5
Stomach & Intestinal Bleeding, complicated	174	97.4	21,103	10	96	182	6.3
Stomach & Intestinal Complications & Disorders ..	188	97.4	7,999	43	61	144	11.0
Stomach & Small Intestine Operations, complicated.....	154	91.8	3,491	84	36	59	31.3
Major Intestinal Procedures, complicated	148	96.9	14,979	20	56	171	45.1
Hip Operations except replacements, complicated..	210	93.8	9,520	33	100	179	6.8
Septicemia.....	416	99.0	16,592	15	11	97	15.6
Poisoning & Toxic Effects of Drugs, complicated.....	449	95.9	6,595	51	142	170	1.5

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 371 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.

⁸ Cases in DRGs 112 and 116 that had a principal diagnosis of AMI and had a PTCA/stent procedure performed.

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	46.9	5,518	64	46	118	25.8
Removal of Head, Neck Vessel Blockage	005	79.4	8,270	41	204	224	1.6
Degenerative Neurological Disorders.....	012	93.8	5,584	62	156	195	2.8
Transient Ischemic Attack & Blocked Vessel of Head, Neck	015	97.4	15,411	17	227	265	2.6
Seizure & Headache, complicated.....	024	98.5	7,066	47	139	210	5.7
Seizure & Headache, uncomplicated.....	025	97.4	5,965	59	279	285	0.5
Neurologic Symptoms & Disorders, complicated	034	94.8	3,155	94	67	110	6.3
Major Lung Operations	075	79.4	5,518	64	80	154	60.0
Miscellaneous Lung Procedures, complicated.....	076	91.2	4,167	74	41	72	46.2
Fluid in Lung & Breathing Failure.....	087	93.8	4,582	70	9	36	8.2
Pneumonia, uncomplicated.....	090	96.9	5,721	61	221	233	1.3
Bronchitis & Asthma, complicated.....	096	98.5	7,289	46	233	251	4.8
Bronchitis & Asthma, uncomplicated.....	097	99.0	7,460	44	290	282	0.4
Non-Traumatic Lower Limb Amputation except toe.....	113	91.2	3,223	91	54	86	2.7
Miscellaneous Circulatory Operations	120	89.2	2,878	104	73	136	5.4
Heart Catheterization without heart attack, uncomplicated.....	125	56.7	13,815	21	273	289	1.4
Vascular Disorders except heart, uncomplicated	131	97.4	3,581	81	183	228	2.8
Abnormal Heartbeat, uncomplicated.....	139	97.4	10,788	25	261	278	0.9
Hypotension & Fainting, complicated	141	96.4	10,536	27	223	264	5.0
Chest Pain	143	97.4	37,239	3	282	287	1.8
Extensive Cardiovascular Complications & Disorders.....	144	96.4	8,556	40	69	152	11.3

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 Cases¹	Volume Cases²	Rank by Volume³	Rank by Mortality⁴	Rank by Mortality Variability⁵	Cancer Rate⁶
Removal of Appendix, uncomplicated.....	167	97.4	4,678	69	331	331	0.2
Stomach & Intestinal Cancer, complicated	172	94.8	3,303	86	25	44	96.5
Stomach & Intestinal Obstruction, complicated.....	180	97.4	8,039	42	91	180	15.1
Stomach & Intestinal Infections & Disorders, complicated.....	182	99.5	25,852	9	166	250	7.8
Stomach & Intestinal Infections & Disorders, uncomplicated.....	183	99.5	16,007	16	286	286	0.8
Cirrhosis & Alcoholic Hepatitis	202	94.8	4,053	75	31	102	3.4
Liver, Gallbladder or Pancreatic Cancer	203	90.2	3,236	90	14	32	99.7
Noncancerous Pancreatic Disorders.....	204	97.9	9,029	36	132	218	2.4
Liver Disease except cancer, cirrhosis, alcoholic hepatitis, complicated.....	205	94.3	3,264	89	39	56	6.7
Wound Debridement & Skin Grafts except hand....	217	88.1	2,921	102	120	174	4.8
Bone Cancer & Non-Traumatic Fractures.....	239	95.4	4,698	68	72	79	47.0
Medical Back Problems	243	97.9	10,736	26	219	266	3.1
Cellulitis, complicated	277	97.9	10,250	30	185	245	5.7
Nutritional & Metabolic Deficiencies, complicated.....	296	98.5	20,714	11	75	193	19.3
Nutritional & Metabolic Deficiencies, uncomplicated.....	297	99.0	3,949	78	226	207	3.3
Transurethral Procedures except prostatectomy, complicated.....	310	88.1	3,108	98	194	194	42.1
Vascular Surgery for Dialysis.....	315	82.0	2,571	113	118	92	5.4
Urinary Stones including lithotripsy, complicated.....	323	97.4	3,735	80	258	256	3.5
Kidney & Urinary Disorders except infection, complicated	331	96.9	4,205	73	123	184	8.3
Anemia & Transfusion Reaction.....	395	97.9	8,745	38	144	227	16.1

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
Lymphatic & Immune Disorders, complicated	398	89.2	2,477	114	89	87	69.2
Lymphoma & Non-Acute Leukemia, complicated	403	87.6	3,136	96	21	42	84.0
Chemotherapy except for acute leukemia.....	410	69.6	7,404	45	218	232	98.6
Surgery for Infectious or Parasitic Disease	415	92.8	5,137	67	47	85	7.7
Infection after Surgery or Trauma.....	418	93.8	3,796	79	188	206	9.0
Laparoscopic Gallbladder Removal, complicated.....	493	95.9	6,418	54	214	212	3.2
Laparoscopic Gallbladder Removal, uncomplicated.....	494	96.4	8,574	39	331	331	0.4

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 371 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 22 DRGs in Public Report)**

Exclusions from in-hospital mortality analysis	Cases	
	N (22 DRGs) = 382,275	
	<i>N</i>	<i>%</i>
Total cases <i>before</i> exclusions, not including lung cancer DRG	375,333	100%
<i>Exclusions:</i>		
patients who left against medical advice	2,373	0.6
patients transferred out to general acute care facilities	15,802	4.2
invalid ASG	7,500	2.0
no reference data	0	0.0
Total Exclusions	25,675	6.8
Total cases in analysis	349,658	93.2
Exclusions from length of stay analysis	Cases	
	<i>N</i>	<i>%</i>
Total cases <i>before</i> exclusions	382,275	100%
<i>Exclusions:</i>		
patients who died	22,242	5.8
patients who left against medical advice	2,388	0.6
patients transferred out to general acute care facilities	15,960	4.2
invalid ASG*	7,020	1.8
invalid LOS	20	<0.1
no reference data	6	<0.1
LOS outlier	4,670	1.2
Total Exclusions	52,306	13.7
Total cases in analysis	329,969	86.3
Exclusions from charge analysis	Cases	
	<i>N</i>	<i>%</i>
Total cases <i>before</i> exclusions	382,275	100%
<i>Exclusions:</i>		
patients who left against medical advice	2,388	0.6
patients transferred out to general acute care facilities	15,960	4.2
invalid charges	706	0.2
invalid ASG	7,567	2.0
charge outliers	8,465	2.2
Total Exclusions	35,086	9.2
Total cases in analysis	347,189	90.8
Exclusions from readmission analysis	Cases	
	N (22 DRGs) = 382,275	
	<i>N</i>	<i>%</i>
Total cases <i>before</i> exclusions for the DRGs in readmission analysis	269,111	100%
<i>Exclusions:</i>		
patients who died	12,471	4.6
patients who left against medical advice	1,942	0.7
patients transferred out to general acute care facilities	6,428	2.4
invalid ASG*	5,338	2.0
invalid LOS	17	<0.1
no reference data	0	0.0
LOS outlier	3,355	1.2
patient identifier/date issues	5,006	1.9
Total Exclusions	34,557	12.8
Total cases in analysis	234,554	87.2

*Does not include cases with invalid ASG that died.

Table 2B

**Statewide Exclusions from Hospital Performance Analysis
(includes 48 adult DRGs on Web)**

Exclusions from in-hospital mortality analysis	Cases	
	<i>N</i>	%
Total cases <i>before</i> exclusions	366,357	100%
<i>Exclusions:</i>		
patients who left against medical advice	3,396	0.9
patients transferred out to general acute care facilities	6,790	1.9
invalid ASG	8,132	2.2
no reference data	67	<0.1
Total Exclusions	18,385	5.0
Total cases in analysis	347,972	95.0
Exclusions from length of stay analysis	Cases	
	<i>N</i>	%
Total cases <i>before</i> exclusions	366,357	100%
<i>Exclusions:</i>		
patients who died	8,081	2.2
patients who left against medical advice	3,396	0.9
patients transferred out to general acute care facilities	6,790	1.9
invalid ASG*	7,872	2.1
invalid LOS	27	<0.1
no reference data	66	<0.1
LOS outlier	5,311	1.4
Total Exclusions	31,543	8.6
Total cases in analysis	334,814	91.4
Exclusions from charge analysis	Cases	
	<i>N</i>	%
Total cases <i>before</i> exclusions	366,357	100%
<i>Exclusions:</i>		
patients who left against medical advice	3,396	0.9
patients transferred out to general acute care facilities	6,790	1.9
invalid charges	619	0.2
invalid ASG	8,055	2.2
charge outliers	7,454	2.0
Total Exclusions	26,314	7.2
Total cases in analysis	340,043	92.8
Exclusions from readmission analysis	Cases	
	N (48 DRGs) = 366,357	
Total cases <i>before</i> exclusions for the DRGs in readmission analysis	219,121	100%
<i>Exclusions:</i>		
patients who died	3,016	1.4
patients who left against medical advice	2,360	1.1
patients transferred out to general acute care facilities	4,512	2.1
invalid ASG*	4,866	2.2
invalid LOS	14	<0.1
no reference data	48	<0.1
LOS outlier	3,150	1.4
patient identifier/date issues	4,241	1.9
Total Exclusions	22,207	10.1
Total cases in analysis	196,914	89.9

*Does not include cases with invalid ASG that died.

Table 2C

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

Exclusions from in-hospital mortality analysis	Cases	
	N	%
Total cases <i>before</i> exclusions	27,480	100%
<i>Exclusions:</i>		
patients who left against medical advice	32	0.1
patients transferred out to general acute care facilities	365	1.3
invalid gender	6	<0.1
invalid ASG	321	1.2
no reference data	23	0.1
Total Exclusions	747	2.7
Total cases in analysis	26,733	97.3

Exclusions from length of stay analysis	Cases	
	N	%
Total cases <i>before</i> exclusions	27,480	100%
<i>Exclusions:</i>		
patients who died	6	<0.1
patients who left against medical advice	32	0.1
patients transferred out to general acute care facilities	365	1.3
invalid gender	6	<0.1
invalid ASG*	318	1.2
invalid LOS	44	0.2
no reference data	23	0.1
LOS outlier	471	1.7
Total Exclusions	1,265	4.6
Total cases in analysis	26,215	95.4

Exclusions from charge analysis	Cases	
	N	%
Total cases <i>before</i> exclusions	27,480	100%
<i>Exclusions:</i>		
patients who left against medical advice	32	0.1
patients transferred out to general acute care facilities	365	1.3
invalid charges	69	0.3
invalid ASG	309	1.1
no reference data	12	<0.1
charge outliers	682	2.5
Total Exclusions	1,469	5.3
Total cases in analysis	26,011	94.7

*Does not include cases with invalid ASG that died.

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	\$18,780	\$59,469
Heart Attack w/o CC – Medical Management....	122	\$12,856	\$42,989
Heart Attack Expired – Medical Management ...	123	\$18,104	\$65,015
Heart Attack with PTCA.....	112*	\$30,243	\$89,674
Heart Attack with PTCA and Stent.....	116*	\$33,249	\$94,436
Heart Failure & Shock.....	127	\$11,265	\$35,605
Abnormal Heartbeat, complicated	138	\$9,906	\$30,162
Vascular Disorders except heart, complicated ...	130	\$10,792	\$34,962
Vascular Operations except heart, complicated.....	478	\$28,974	\$102,599
Stroke (Brain Attack).....	014	\$15,631	\$47,235
Blood Clot in Lung.....	078	\$14,870	\$45,504
Lung Infections, complicated	079	\$16,423	\$56,515
Pneumonia, complicated.....	089	\$10,845	\$35,058
COPD.....	088	\$9,089	\$29,255
Lung Cancer.....	082	\$16,605	\$62,136
Diabetes.....	294	\$8,110	\$27,057
Kidney & Urinary Infections, complicated	320	\$8,664	\$27,246
Kidney Failure	316	\$15,922	\$55,529
Stomach & Intestinal Bleeding, complicated.....	174	\$11,478	\$35,792
Stomach & Intestinal Complications & Disorders.....	188	\$12,902	\$44,045
Stomach & Small Intestine Operations, complicated.....	154	\$54,777	\$174,726
Major Intestinal Procedures, complicated.....	148	\$38,306	\$116,272
Hip Operations except replacements, complicated.....	210	\$21,369	\$58,540
Septicemia	416	\$17,987	\$54,748
Poisoning & Toxic Effects of Drugs, complicated.....	449	\$8,741	\$27,026

*Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

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	\$13,442	\$45,765
Heart Attack w/o CC – Medical Management...	122	\$11,037	\$37,742
Heart Attack Expired – Medical Management ...	123	\$11,246	\$44,505
Heart Attack with PTCA.....	112*	\$30,116	\$64,194
Heart Attack with PTCA and stent	116*	\$35,651	\$77,498
Heart Failure & Shock.....	127	\$7,846	\$25,024
Abnormal Heartbeat, complicated	138	\$7,157	\$24,133
Vascular Disorders except heart, complicated.....	130	\$6,727	\$19,548
Vascular Operations except heart, complicated.....	478	\$21,703	\$72,210
Stroke (Brain Attack).....	014	\$9,765	\$30,099
Blood Clot in Lung.....	078	\$10,458	\$33,935
Lung Infections, complicated	079	\$11,484	\$37,483
Pneumonia, complicated.....	089	\$7,797	\$25,046
COPD.....	088	\$6,587	\$20,337
Lung Cancer.....	082	\$10,717	\$39,572
Diabetes.....	294	\$5,328	\$18,173
Kidney & Urinary Infections, complicated	320	\$5,951	\$18,090
Kidney Failure	316	\$12,056	\$43,160
Stomach & Intestinal Bleeding, complicated.....	174	\$8,166	\$25,811
Stomach & Intestinal Complications & Disorders.....	188	\$9,098	\$31,729
Stomach & Small Intestine Operations, complicated.....	154	\$33,377	\$111,371
Major Intestinal Procedures, complicated.....	148	\$27,650	\$79,397
Hip Operations except replacements, complicated.....	210	\$14,662	\$39,215
Septicemia	416	\$10,050	\$32,683
Poisoning & Toxic Effects of Drugs, complicated.....	449	\$5,680	\$16,632

*Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

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	\$14,714	\$45,258
Heart Attack w/o CC – Medical Management...	122	\$10,398	\$28,582
Heart Attack Expired – Medical Management ...	123	\$14,003	\$52,392
Heart Attack with PTCA	112*	\$23,911	\$59,656
Heart Attack with PTCA and stent	116*	\$30,444	\$83,767
Heart Failure & Shock	127	\$9,130	\$30,434
Abnormal Heartbeat, complicated	138	\$7,529	\$23,600
Vascular Disorders except heart, complicated ...	130	\$8,017	\$26,342
Vascular Operations except heart, complicated	478	\$23,333	\$71,570
Stroke (Brain Attack)	014	\$10,907	\$33,239
Blood Clot in Lung	078	\$12,917	\$38,338
Lung Infections, complicated	079	\$13,031	\$46,386
Pneumonia, complicated	089	\$9,277	\$29,336
COPD	088	\$8,156	\$25,137
Lung Cancer	082	\$12,024	\$47,638
Diabetes	294	\$6,053	\$20,417
Kidney & Urinary Infections, complicated	320	\$7,825	\$25,385
Kidney Failure	316	\$13,776	\$45,438
Stomach & Intestinal Bleeding, complicated	174	\$8,756	\$26,573
Stomach & Intestinal Complications & Disorders	188	\$7,706	\$24,560
Stomach & Small Intestine Operations, complicated	154	\$32,676	\$103,186
Major Intestinal Procedures, complicated	148	\$28,525	\$84,321
Hip Operations except replacements, complicated	210	\$19,508	\$43,050
Septicemia	416	\$12,416	\$41,810
Poisoning & Toxic Effects of Drugs, complicated	449	\$6,422	\$17,880

*Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

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	6.1	5.9	61	0.7
Heart Attack with PTCA/stent.....	112, 116 ^{1,2}	4.1	3.9	36	0.9
Heart Failure & Shock	127	5.2	5.0	261	1.2
Abnormal Heartbeat, complicated.....	138	3.9	3.7	75	1.0
Vascular Disorders except heart, complicated ..	130	5.2	5.0	19	0.6
Vascular Operations except heart, complicated	478	6.6	6.4	19	0.6
Stroke (Brain Attack)	014	5.7	5.4	69	0.8
Blood Clot in Lung	078	6.3	6.1	15	1.0
Lung Infections, complicated	079	7.9	7.7	31	0.7
Pneumonia, complicated.....	089	5.6	5.4	99	0.7
COPD	088	4.9	4.7	137	1.0
Lung Cancer.....	082	6.4	6.3	7	0.3
Diabetes	294	4.0	3.8	25	0.8
Kidney & Urinary Infections, complicated	320	4.6	4.4	49	0.9
Kidney Failure	316	6.7	6.5	26	0.8
Stomach & Intestinal Bleeding, complicated.....	174	4.6	4.4	103	1.3
Stomach & Intestinal Complications & Disorders	188	4.8	4.6	30	1.1
Stomach & Small Intestine Operations, complicated	154	10.6	9.6	27	2.0
Major Intestinal Procedures, complicated	148	10.8	10.2	70	1.4
Hip Operations except replacements, complicated	210	6.2	5.9	47	1.3
Septicemia.....	416	6.8	6.6	51	0.9
Poisoning & Toxic Effects of Drugs, complicated	449	2.4	2.3	21	1.1

¹These DRGs are treated as a single diagnostic group.

² Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

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	10,562	3,135	51	166	3,352	31.7%
Heart Attack with PTCA/stent.....	112, 116 ^{1,2}	4,139	32	9	47	88	2.1%
Heart Failure & Shock	127	23,414	917	79	519	1,515	6.5%
Abnormal Heartbeat, complicated.....	138	7,672	454	38	155	647	8.4%
Vascular Disorders except heart, complicated	130	3,342	143	14	96	253	7.6%
Vascular Operations except heart, complicated	478	3,496	65	6	53	124	3.5%
Stroke (Brain Attack).....	014	9,692	319	19	267	605	6.2%
Blood Clot in Lung.....	078	1,543	39	7	26	72	4.7%
Lung Infections, complicated.....	079	5,111	93	5	92	190	3.7%
Pneumonia, complicated.....	089	14,857	214	57	277	548	3.7%
COPD	088	14,340	127	101	336	564	3.9%
Diabetes	294	3,301	56	36	76	168	5.1%
Kidney & Urinary Infections, complicated	320	5,519	50	9	104	163	3.0%
Kidney Failure	316	3,684	133	29	89	251	6.8%
Stomach & Intestinal Bleeding, complicated	174	8,122	200	39	138	377	4.6%
Stomach & Intestinal Complications & Disorders	188	2,810	70	10	50	130	4.6%
Stomach & Small Intestine Operations, complicated	154	1,448	30	2	25	57	3.9%
Major Intestinal Procedures, complicated	148	5,368	76	0	115	191	3.6%
Hip Operations except replacements, complicated	210	3,606	41	1	74	116	3.2%
Septicemia.....	416	6,970	247	28	137	412	5.9%
Poisoning & Toxic Effects of Drugs, complicated	449	1,855	88	75	57	220	11.9%

¹ These DRGs are treated as a single diagnostic group.

² Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

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	10,562	1,250	3,135	51	128	61	4,625	43.8%
Heart Attack with PTCA/stent.....	112, 116 ^{1,2}	4,139	58	32	9	47	36	182	4.4%
Heart Failure & Shock	127	23,414	965	917	79	483	261	2,705	11.6%
Abnormal Heartbeat, complicated	138	7,672	182	454	38	150	75	899	11.7%
Vascular Disorders except heart, complicated	130	3,342	123	143	14	93	19	392	11.7%
Vascular Operations except heart, complicated	478	3,496	99	65	6	49	19	238	6.8%
Stroke (Brain Attack)	014	9,692	953	319	19	235	69	1,595	16.5%
Blood Clot in Lung	078	1,543	53	39	7	24	15	138	8.9%
Lung Infections, complicated.....	079	5,111	657	93	5	68	31	854	16.7%
Pneumonia, complicated	089	14,857	650	214	57	254	99	1,274	8.6%
COPD	088	14,340	231	127	101	322	137	918	6.4%
Lung Cancer	082	2,610	392	70	4	36	7	513	19.7%
Diabetes	294	3,301	35	56	36	76	25	228	6.9%
Kidney & Urinary Infections, complicated	320	5,519	109	50	9	100	49	317	5.7%
Kidney Failure.....	316	3,684	383	133	29	74	26	645	17.5%
Stomach & Intestinal Bleeding, complicated	174	8,122	258	200	39	133	103	733	9.0%
Stomach & Intestinal Complications & Disorders	188	2,810	144	70	10	47	30	301	10.7%
Stomach & Small Intestine Operations, complicated.....	154	1,448	108	30	2	23	27	190	13.1%
Major Intestinal Procedures, complicated	148	5,368	320	76	0	106	70	572	10.7%
Hip Operations except replacements, complicated.....	210	3,606	86	41	1	70	47	245	6.8%
Septicemia.....	416	6,970	1,074	247	28	101	51	1,501	21.5%
Poisoning & Toxic Effects of Drugs, complicated.....	449	1,855	27	88	75	57	21	268	14.4%

Note: In addition to the above, 6 cases statewide were excluded because they had no reference data.

¹ These DRGs are treated as a single diagnostic group.

² Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

Table 7
Exclusions from Charge Analysis by DRG
Western Pennsylvania

DRG Description	DRG	Total Cases	Transfer to other GAC	# LAMA	# Invalid charge	# Invalid ASG	# Outliers	Total Excluded	
								N	%
Heart Attack – Medical Management.....	121-123 ¹	10,562	3,135	51	13	166	152	3,517	33.3%
Heart Attack with PTCA/stent.....	112, 116 ^{1,2}	4,139	32	9	2	47	45	135	3.3%
Heart Failure & Shock	127	23,414	917	79	25	518	578	2,117	9.0%
Abnormal Heartbeat, complicated	138	7,672	454	38	11	154	165	822	10.7%
Vascular Disorders except heart, complicated	130	3,342	143	14	4	95	101	357	10.7%
Vascular Operations except heart, complicated	478	3,496	65	6	4	53	63	191	5.5%
Stroke (Brain Attack)	014	9,692	319	19	32	266	324	960	9.9%
Blood Clot in Lung	078	1,543	39	7	2	26	30	104	6.7%
Lung Infections, complicated.....	079	5,111	93	5	14	91	111	314	6.1%
Pneumonia, complicated.....	089	14,857	214	57	34	276	292	873	5.9%
COPD	088	14,340	127	101	11	335	255	829	5.8%
Lung Cancer	082	2,610	70	4	5	60	30	169	6.5%
Diabetes	294	3,301	56	36	9	76	65	242	7.3%
Kidney & Urinary Infections, complicated	320	5,519	50	9	32	104	115	310	5.6%
Kidney Failure.....	316	3,684	133	29	14	86	115	377	10.2%
Stomach & Intestinal Bleeding, complicated	174	8,122	200	39	22	137	219	617	7.6%
Stomach & Intestinal Complications & Disorders.....	188	2,810	70	10	1	50	79	210	7.5%
Stomach & Small Intestine Operations, complicated.....	154	1,448	30	2	5	25	59	121	8.4%
Major Intestinal Procedures, complicated	148	5,368	76	0	30	113	191	410	7.6%
Hip Operations except replacements, complicated.....	210	3,606	41	1	29	74	123	268	7.4%
Septicemia.....	416	6,970	247	28	29	133	268	705	10.1%
Poisoning & Toxic Effects of Drugs, complicated.....	449	1,855	88	75	3	54	74	294	15.8%

¹ These DRGs are treated as a single diagnostic group.

² Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed.

Table 8

Exclusions from Readmission Rate 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 Failure & Shock.....	127	23,414	965	917	79	483	257	261	2,962	12.7%
Abnormal Heartbeat, complicated	138	7,672	182	454	38	150	75	75	974	12.7%
Stroke (Brain Attack).....	014	9,692	953	319	19	235	146	69	1,741	18.0%
Lung Infections, complicated	079	5,111	657	93	5	68	59	31	913	17.9%
Pneumonia, complicated.....	089	14,857	650	214	57	254	187	99	1,461	9.8%
COPD.....	088	14,340	231	127	101	322	111	137	1,029	7.2%
Diabetes	294	3,301	35	56	36	76	49	25	277	8.4%
Kidney & Urinary Infections, complicated	320	5,519	109	50	9	100	112	49	429	7.8%
Kidney Failure	316	3,684	383	133	29	74	53	26	698	18.9%
Stomach & Intestinal Bleeding, complicated	174	8,122	258	200	39	133	102	103	835	10.3%
Hip Operations except replacements, complicated	210	3,606	86	41	1	70	81	47	326	9.0%
Poisoning & Toxic Effects of Drugs, complicated	449	1,855	27	88	75	57	48	21	316	17.0%

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					
Facilities that submitted incomplete data [†]					
Western Pennsylvania					
<i>Suburban Gen/Pittsburgh</i>	3,323	1,075	32.4		Missing severity = 32.4%
<i>Metro Health Center</i>	1,701	414	24.3		Missing severity = 24.3%
<i>Monsour</i>	1,297	740	57.1		Missing severity = 57.1%
Central and Northeastern Pennsylvania					
<i>Berwick</i>	2,141	19	0.9		Inadequate UB submission for Q1-2000
<i>Bloomsburg Hospital</i>	2,285	468	20.5		Missing severity = 20.5%
<i>Lock Haven Hospital</i>	1,154	682	59.1		Missing severity = 59.1%
<i>Montrose General</i>	538	10	1.9		Missing one quarter (Q1- 2000) of UB data
<i>Mercy Hospital/Scranton</i>	10,098	2,335	23.1		Missing severity = 23.1%
Facilities that closed in 2000					
Southeastern Pennsylvania					
<i>City Avenue Hospital</i>	853	853	100		Closed facility- effective 4/3/00
<i>JFK Memorial Hospital</i>	24	24	100		Discontinued inpatient admissions in February 2000. Closed Ambulatory Surgery Services effective 6/20/00.
Western Pennsylvania					
<i>Saint Francis Central</i>	1,766	638	36.1		Closed facility- effective 9/7/00
<i>Citizens General</i>	3,226	1,157	35.9		Closed facility- effective 11/3/00

* Includes cases only from DRGs for which severity scores are required.

[†] Noncompliant hospitals with ≥ 15% missing ASGs (for all DRGs for which Atlas Outcomes® severity scores are required to be reported) or facilities with inadequate UB data submission.

Appendix

Glossary of Abbreviated Terms

AMI	Acute Myocardial Infarction
ASG	Admission Severity Group
CABG	Coronary Artery Bypass Graft
CC	Complication or Comorbid Condition
COPD	Chronic Obstructive Pulmonary Disease
DRG	Diagnosis Related Group
GAC	General Acute Care Hospital
HPR	Hospital Performance Report
ICD.9.CM	International Classification of Diseases, Ninth Revision, Clinical Modification
IQR	Interquartile Range
LAMA	Left Against Medical Advice
LOS	Length Of Stay
MDC	Major Diagnostic Category
PTCA	Percutaneous Transluminal Coronary Angioplasty
Q	Quarter
UB-92	Uniform Billing Form

DRGs Excluded from Readmission Rate

A 30-day readmission rate is reported for 12 out of the 22 Public Report DRGs. Readmission rates are *not* reported for the following *public report* DRGs:

Public Report DRGs Excluded from Readmission Rate Reporting

DRG	Common Name	Reason for Exclusion
78	Blood Clot in Lung	Cancer-related cases \geq 10%
82	Lung Cancer	Excluded in 1999 HPR
112, 116*	Heart Attack with PTCA/Stent	Consistency with DRG 121-123
121-123	Heart Attack-Medical Management	Excluded in 1999 HPR
130	Vascular Disorders except Heart, complicated	Cancer-related cases \geq 10%
148	Major Intestinal Procedures, complicated	Cancer-related cases \geq 10%
154	Stomach & Small Intestinal Operations, complicated	Cancer-related cases \geq 10%
188	Stomach & Intestinal Complications & Disorders	"Miscellaneous" or "Other" in DRG name
416	Septicemia	Cancer-related cases \geq 10%
478	Vascular Operations except heart, complicated	"Miscellaneous" or "Other" in DRG name

* Includes only those cases with a principal diagnosis of AMI that had a PTCA/stent procedure performed

Readmission rate is reported for 26 out of the 51 Web DRGs using the same exclusion logic as the Public Report DRGs. Readmission rates are *not* reported for the following *Web site only* DRGs:

Web DRGs Excluded from Readmission Rate Reporting

DRG	Common Name	Reasons for Exclusion
1	Brain Surgery except for Trauma	Cancer-related cases ≥ 10%
34	Neurologic Symptoms & Disorders, complicated	“Miscellaneous” or “Other” in DRG name
75	Major Lung Operations	Cancer-related cases ≥ 10%
76	Miscellaneous Lung Procedures, complicated	“Miscellaneous” or “Other” in DRG name
91	Pediatric Pneumonia	Pediatric DRG
98	Pediatric Bronchitis	Pediatric DRG
120	Miscellaneous Circulatory Operations	“Miscellaneous” or “Other” in DRG name
144	Extensive Cardiovascular Complications & Disorders	“Miscellaneous” or “Other” in DRG name
167	Pediatric Removal of Appendix, uncomplicated	Pediatric DRG
172	Stomach & Intestinal Cancer, complicated	Cancer-related cases ≥ 10%
180	Stomach & Intestinal Obstruction, complicated	Cancer-related cases ≥ 10%
182	Stomach & Intestinal Infections & Disorders, complicated	“Miscellaneous” or “Other” in DRG name
183	Stomach & Intestinal Infections & Disorders, uncomplicated	“Miscellaneous” or “Other” in DRG name
184	Pediatric Stomach & Intestinal Infections and Disorders	Pediatric DRG
203	Liver, Gallbladder or Pancreatic Cancer	Cancer-related cases ≥ 10%
239	Bone Cancer & Non-traumatic Fractures	Cancer-related cases ≥ 10%
296	Nutritional & Metabolic Deficiencies, complicated	“Miscellaneous” or “Other” in DRG name
297	Nutritional & Metabolic Deficiencies, uncomplicated	“Miscellaneous” or “Other” in DRG name
310	Transurethral Procedures except Prostatectomy, complicated	Cancer-related cases ≥ 10%
315	Vascular Surgery for Dialysis	“Miscellaneous” or “Other” in DRG name
331	Kidney & Urinary Disorders except Infection, complicated	“Miscellaneous” or “Other” in DRG name
395	Anemia & Transfusion Reaction	Cancer-related cases ≥ 10%
398	Lymphatic & Immune Disorders, complicated	Cancer-related cases ≥ 10%
403	Lymphoma & Non-Acute Leukemia, complicated	Cancer-related cases ≥ 10%
410	Chemotherapy except for Acute Leukemia	Cancer-related cases ≥ 10% (Adult & Pediatric Cases)
