# Refining Cost to Charge Ratios for Calculating APC and DRG Relative Payment Weights 

## Interim Report

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# REFINING COST TO CHARGE RATIOS FOR CALCULATING APC AND DRG RELATIVE PAYMENT WEIGHTS 

INTERIM REPORT
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## 1. INTRODUCTION

### 1.1 Purpose of the Project

In August 2006, RTI International was awarded a contract from the Centers for Medicare \& Medicaid Services (CMS) to investigate charge compression and other possible sources of aggregation bias in setting the cost-based relative resource weights under the inpatient prospective payment system (IPPS) using charges from claims data and cost-to-charge ratios (CCRs) from cost report data. Aggregation bias can occur if services with systematically different markup rates are grouped together to compute a single CCR. When that average ratio is used to convert charges to cost, the cost estimates for component services with higher markup rates will be overstated, while the estimates for component services with lower markup rates will be understated. In the 2006 contract, RTI used inpatient claims and cost report data to identify sources of aggregation bias and develop ways to improve the accuracy and precision of the CCR component of the IPPS cost-based weight methodology. "Charge compression" is a particular form of aggregation bias where weights for high-cost cases are systematically understated and weights for low-cost cases are systematically overstated. The best known example of this comes from a hospital industry practice of applying lower markups to expensive medical devices and implantable items, but higher markups for routine medical supplies. RTI found strong evidence of charge compression as well as other forms of aggregation bias in the relative weights for diagnosis-related groups (DRGs) under the inpatient prospective payment system (IPPS), and considered both accounting and statistical methods to reduce this bias. Our findings and recommendations were submitted to CMS in a report to CMS dated January 2007 (downloadable from the CMS website at www.cms.hhs.gov/reports/downloads/Dalton.pdf). Recommendations included the following:

- Reducing the level of aggregation used by CMS in computing cost and charge groups for national aggregate CCRs. For example, where CMS had grouped Emergency Room and Blood and Blood Processing in with an "All Other" services category in computing aggregate national CCRs, we recommended separating them. This recommendation, which was adopted in the FY 2008 IPPS rules, increased the number of service groups used for DRG costing from 13 to 15.
- Where accounting data could not support further disaggregation, using statistical adjustment to estimate separate CCRs. For example, no data are currently available from the cost report that could be used to identify different cost-to-charge ratios for medical devices compared to other medical supplies. To address charge compression for device pricing, therefore, we used regression models to estimate disaggregated ratios based on the hospital-level association between CCRs for Supplies Sold and the relative importance of charges for devices and implants. These model-based approaches were also recommended to adjust CCRs for IV solutions as a category separate from other Drugs Sold; and for CT Scanning and MRI as categories separate from other Radiology.
- Taking a variety of steps to improve the Medicare claims and cost report data. These recommendations fell into three main categories: (1) Creating new cost centers that would create accounting data to support disaggregation (particularly, a subscripted
line for Devices under the main line for Supplies Sold); (2) Using more detailed data on charges by revenue code from the Medicare inpatient claims files; and (3) Encouraging providers to improve the consistency in their reporting of total charges and Medicare program charges from the cost report, compared with covered charges as they appear in the Medicare claims files.

In August 2007, RTI was awarded a second contract to expand the techniques for refining cost ratios to the outpatient prospective payment system (OPPS). Although total Medicare OPPS payments are much less than IPPS payments, aggregation bias is potentially a larger problem for ambulatory services than it is for DRGs when looked at from a per-payment-unit perspective. Weights for ambulatory patient classifications (APCs) are much more sensitive to distortion in cost computations because the payment units are constructed for very limited service groups. DRGs are episode-based and typically reflect a broad array of services, and RTI's modeling found that in many cases, correcting for multiple over-aggregated CCRs in the IPPS cost estimations created offsetting effects that reduced the impact on individual DRG weights. Under OPPS, single procedures are often the main or the only service contributing to the APC cost, and any distortion introduced by over-aggregated cost ratios is transmitted directly to relative weight. A given outpatient visit might generate several APC claims, and it is possible that there are also cost offsetting effects within an outpatient episode, but the payment units would not reflect this. At the provider level, it is possible if not probable that overpayments and underpayments across multiple APCs average themselves out, such that a facility's total OPPS payments might not be seriously distorted. Systematic differences in the profitability of specific product lines, however, are not desirable because they create incentives for providers to change service mix and treatment options. Distortion in payment weights can influence provider behavior and possibly affect beneficiary access.

Under the Scope of Work for this second task order, RTI first undertook a detailed review of the mechanics of the median cost computations that are used to establish payment weights under OPPS. This included an assessment of the original CCRs computed from the Medicare Cost Report (MCR) and the mechanics of mapping revenue codes from the outpatient claims to CCRs from the cost reports, in order to convert line item claims charges to claims costs. We then adapted the statistical techniques developed in the 2006 contract, to assess the effects of charge compression within ancillary cost centers that are important to either the inpatient or outpatient payment systems. We then estimated adjusted ratios and recomputed costs per inpatient and outpatient payment unit, after taking our suggested changes into account.

### 1.2 Technical Background

### 1.2.1 Statistical Model-based Approaches to Adjusting Cost-to-Charge Ratios

Relative resource weights for both APCs and acute care DRGs rely on service-specific CCRs derived from Medicare cost reports, but there are substantial differences between the two payment systems in the way that CCRs are computed and in the mechanics of how they are applied to charges. Where DRG cost-based weights use national average CCRs and compute cost estimates only after aggregating charge data up to the DRG level, APC weights are derived from claims-level costs that are estimated using much more detailed provider-level CCRs.

In the IPPS compression study, RTI computed statistically disaggregated CCRs by estimating the departmental CCR as a function of the provider's overall ancillary cost-to-charge ratio and the ratio of Medicare inpatient claims charges for the particular targeted service relative to Medicare inpatient claims charges for all charges in the group of services associated with that departmental CCR. Targeted services refer to the set of revenue charge codes within a given cost center that are suspected of having systematically different markup rates compared to other services in that cost center. As a matter of expediency, targeted services under the 2006 task order were identified from revenue code data in the inpatient standard analytic files (SAF); for this task order RTI was able to use combined inpatient and outpatient SAF charges.

The Statement of Work for this project requested an approach to adjusted CCRs that is consistent for both the IPPS and the OPPS, stating that "for services important to both the IPPS and the OPPS such as devices, it is appropriate to apply the same or consistent adjustments in both payment systems." As part of this second project RTI has re-estimated compressionadjusted weights for the new Medicare severity (MS) DRGs, using targeted percent variables derived from combined inpatient and outpatient SAF claims. As described in the following section and discussed in Section 5.4 of the Final Report, for some cost centers differences between the national CCR construction used for IPPS costs and the hospital-specific CCRs used for OPPS costs prevent us from using the same model specifications to develop compressionadjusted CCRs for constructing both DRG and APC weights

### 1.2.2 Differences Between Inpatient and Outpatient Prospective Payment System Use of CCRs

DRG cost-based weights are computed using national average rather than hospitalspecific CCRs. For these averages to be valid charge converters, they must be based on a mix of cost centers that are commonly reported by most hospital providers. Under IPPS, the DRG weights are constructed from data in the Medicare Provider Analysis and Review (MedPAR) claims file, where charges have already been aggregated to roughly 30 groups that have an approximate correspondence to the CMS standard "roll up" of cost report line numbers (with some exceptions, and after combining a few standard lines). Although most hospitals provide all of the services associated with standard cost report line numbers, they do not necessarily use all cost report lines to separately identify their costs and charges. MedPAR charge groups are therefore collapsed to broader categories of services thought to be common across all providers, and these broader categories are mapped to groups of lines on the cost reports. National CCRs are computed from these grouped cost centers on the Medicare cost report. The FY 2007 rules used 13 charge groups; the FY 2008 rules expanded this to 15 charge groups based on one of RTI's recommendations (Final Rule 72 FR 47267, August 22, 2007).

In contrast to this approach, APC weights are constructed from hospitals' specific CCRs and detailed revenue code data appearing in the outpatient SAF (Final Rule 72 FR 66599, November 27, 2007). Weights for the majority of procedures, other than separately payable drugs and new technology APCs, are derived from median cost per claim within APC. Costs are first estimated at the individual claim level, using CCRs computed for each hospital, for each cost center where data appear on the hospital filed report. Because the CCRs are hospital specific, OPPS weights can make use of CCRs computed from standard as well as non-standard cost centers that appear on a specific hospital report, provided that the ratio passes edits for data
accuracy and reasonableness. An OPPS charge-mapping hierarchy is published each year (available at www.cms.hhs.gov/HospitalOutpatientPPS) that documents the process used in associating revenue codes on individual bills with possible cost ratios that might be used by a hospital. Revenue codes are matched first to the most detailed (meaning most narrowly defined) cost center that is found within the Hospital Cost Report Information System (HCRIS) national electronic file. The match moves to a secondary cost center if the ratio for the primary cost center is missing for that hospital, and in some cases to a tertiary cost center if ratios for both primary and secondary options are missing. If there are no usable CCRs for a given hospital for any of the cost centers associated with a given revenue code, then charges for that revenue code are converted to cost using that hospital's weighted average ancillary CCR for Medicare OPPS services.

The published OPPS charge-mapping hierarchy is called the "revenue code-to-cost center crosswalk." Throughout the remainder of this report, we refer to it as the "revenue crosswalk."

### 1.2.3 Differences Between Inpatient and Outpatient Prospective Payment System in Sources of Aggregation Bias

In our earlier work on charge compression in the DRG weights, RTI made a distinction between aggregation bias that may be the result of collapsing data from multiple lines on the cost report in order to limit the number of national CCRs (referred to as "cross-department bias"), and bias that is caused by systematically higher or lower markup rates being applied to services normally reported on a single cost center ("within-department bias"). Grouping Therapeutic Radiology with Diagnostic Radiology to compute an overall Radiology CCR for IPPS weights is an example of potential for cross-department bias because separate CCRs are already computed on the cost report. Including the costs and charges of CT scanning with other diagnostic radiology services is an example of within-department aggregation bias, because we know that markup rates are much higher for CT scanning services than for others. However, because there is no standard line on the cost report to separate costs and charges for CT scanning, the IPPS CCR for Radiology is biased downward, causing understatement of other radiology costs and overstatement of CT scanning costs.

Cross-department bias can generally be addressed by altering the mechanics of how CCRs are computed and applied (just as we did with our recommendation to separate the CRs for Emergency Room and Blood). Within-department bias cannot be fixed with the accounting data at hand, and this is why we try to address it in the short term through regression-based simulations of more detailed cost ratios.

In theory, cross-department aggregation bias is not an issue under OPPS because the APC median cost estimates are able to make use of the most detailed level of hospital-specific CCRs that appears on the filed cost report, matching them to line charge information on each claim through the revenue crosswalk. In practice, there is still potential for this type of aggregation bias to the extent that the revenue crosswalk is incompletely coded. Incomplete code mapping occurs if certain types of ancillary charges are converted to cost using the hospital’s overall ancillary cost-to-charge ratio when there is a more appropriate departmental ratio available. With this possibility in mind, RTI performed an extensive review of the revenue crosswalk as part of this task order, and our findings are reported in Section 4 of the Final Report.

Within-department bias can pose the same problem for APC weights as for DRG weights if there are common services with systematically different markup rates that are grouped together in a single cost center. The potential for this type of bias in the APC weights is mitigated, to the extent that hospitals use non-standard lines on the Medicare cost report to split the larger cost centers. As an example, the inpatient compression study found regression-based evidence of significantly higher markup for CT Scanning and MRI than for other diagnostic radiology services. But a substantial number of cost reports have computed separate CCRs for these three services anyway, reporting them on nonstandard lines, and the OPPS cost computations make use of these additional CCRs. The effects of within-department bias are therefore only present in the cost estimates for claims from providers that do not use the non-standard lines for these services. OPPS' use of provider-specific CCRs reduces, but cannot eliminate, within-department aggregation problems in APC weights.

Regression-based adjustments have the potential to address this remaining withindepartment bias in OPPS weights. Further, because no providers use non-standard lines to subscript types of Medical Supplies or Drugs Sold to Patients, regression-based models are the only short-term approach available for addressing charge compression related to pricing for medical devices, prosthetics, or certain types of outpatient administered drugs.

### 1.3 Treatment of Non-standard Cost Centers Within the Medicare Cost Report

Among providers that do make use of non-standard lines, there is a great deal of variation in how these lines are described, how they are defined and where they are placed within the cost report. In order to make CCRs from these lines usable in the revenue crosswalk, cost report software is programmed to ask preparers to assign special cost codes to each of their nonstandard lines. The codes are designed to allow providers flexibility in tracking costs and charges in greater detail while following their own managerial accounting structure. The codes also allow CMS to group services consistently across providers, regardless of where they might have been originally placed on the cost report. Assigned HCRIS cost codes also allow non-standard lines to be rolled up to the appropriate standard line for purposes of computing the IPPS national average cost ratios. For OPPS cost estimates, the revenue crosswalk maps revenue codes to HCRIS cost codes rather than to the line numbers as originally assigned by providers. Thus, the validity of APC cost estimates depends heavily on the accuracy of the code assignments.

In the course of completing this task order, RTI encountered some inconsistencies in hospital use of these cost codes. Researching the inconsistencies led to an extensive review of hospitals' use of non-standard lines and how the HCRIS treats them. Our findings are summarized in Section 3 of the Final Report (a synopsis is included with this extract) with additional search documentation and results tables included as Attachment 1. Because our recommendations to correct non-standard line assignments have a substantive effect on selected cost centers and selected APC payment rates, we produce two estimates of adjusted APC median costs: one to show the impact of the recommended line reassignments and revenue crosswalk changes (referred to as accounting, or non-model-based, changes); and one to show the additional impact of regression (i.e. model-based) changes.

## 2. WORKPLAN

The analysis plan for this project builds on last year's analysis of charge compression in the IPPS cost-based weights. To update this work RTI identified the set of most recent full-year cost reports for all hospitals subject to OPPS, to use as a "hospital finder file" in matching inpatient and outpatient claims. We began by reviewing and correcting the HCRIS cost report line assignments in this file, and re-computing CCRs from the reassigned cost and charge data. We conducted a detailed review of the revenue code matches from the OPPS revenue crosswalk, first on the HCRIS data as received and again on the data after the line reassignments. We adapted the CCR regression models used in the January 2007 report to identify potential aggregation bias in both inpatient and outpatient PPS applications, from which we computed regression-adjusted hospital CCRs and inpatient national aggregate CCRs. We then reconstructed APC median costs and MS-DRG weights to assess the impact of revised and/or regression-adjusted CCRs. Data sources, specific tasks and the organization of the remainder of this report are described in more detail in the following sections.

### 2.1 Data

Data needed to complete this project came from the Hospital Cost Report Information System (HCRIS); the Medicare Provider Analysis and Review (MedPAR) claims files for calendar years 2005 and 2006; inpatient and outpatient SAF for calendar years 2005 and 2006; and the "single bill" outpatient claims file used by CMS for computing the CY 2008 APC weights.

- HCRIS reports were downloaded from an update provided by CMS to RTI in August 2007. A hospital finder file was created that excludes the following: Critical Access Hospitals; providers in Puerto Rico or other territories; providers that did not have a full 12-month reporting period; and providers whose reporting period began before January 1, 2005. A limited number of hospitals were later excluded from the analysis file due to CCR edit criteria.
- All CCR regressions used data from claims with service dates that fell within the reporting period of the provider's cost report. Cost reports for all hospital providers covered under OPPS were included in the outpatient CCR models. Inpatient CCR models were run on samples restricted to IPPS providers.
- CMS created and made available to RTI a file of outpatient SAF charges by hospital and revenue code. Claims used for this file were limited to those matching the providers and service dates in the hospital finder file.
- RTI matched the finder-file-MedPAR claims with detailed inpatient revenue code data from the inpatient SAF. Inpatient and outpatient charges by revenue code by provider were integrated to create a file of all hospital Medicare charges for the model-based adjustments discussed in Chapter 5.
- CMS created a copy of the single-bill claims file and the drug and biological claims file that match what were used in the APC median cost computations for CY 2008. Data elements used from this file included the following: units and charges by
revenue code; CMS-computed cost by revenue code; HCPCS code; APC assignment; status indicator; claims modifier; and provider number.

Record counts for the RTI hospital finder file are shown in Exhibit 2-1. Most but not all providers in this file had matching data in the provider summary of outpatient SAF charges and/or in the OPPS "single bill file". In addition, approximately six percent of claims in the "single bill file" were for services delivered by providers that were not in our hospital finder file. Exhibit 2-2 presents count data on the overlapping set of matched providers and claims. Acute short-stay hospitals accounted for 78 percent of providers in RTI's original hospital finder file, but 83 percent of those with matched OPPS claims. These facilities accounted for 98 percent of procedure-based APC claims and 95 percent of claims for separately payable drug APCs. Cancer hospitals accounted for another 4.5 percent of the drug APCs.

Exhibit 2-1
HCRIS Reports Included in Hospital Finder File
(Before Edits)

|  | Number of Cost Reports |  |  |
| :--- | ---: | ---: | ---: |
|  | Federal | Federal |  |
| Type of Facility | FY 2005 | FY 2006 | Total |
| Acute short-stay | 1,559 | 1,707 | 3,266 |
| Acute, ORD Demo | 1 | 10 | 11 |
| Cancer | 7 | 2 | 9 |
| Children's | 30 | 24 | 54 |
| Long-term Acute | 245 | 116 | 361 |
| Inpatient Psychiatric | 150 | 136 | 286 |
| Inpatient Rehabilitation | 80 | 118 | 198 |
| Religious, non-medical | 6 | 10 | 16 |
| Total | 2,078 | 2,123 | 4,201 |

SOURCE: RTI Analysis of most recent HCRIS Reports with 12+ months in reporting period, from CMS files updated and released as of July 2007.

Exhibit 2-2
Claims Matched to HCRIS Hospital Finder File

| Type of Facility | Number of Facilities | Procedures Files (all) |  | Drugs File |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number | Percent | Number | Percent |
| Acute short-stay | 3,185 | 82,569,428 | 98.0\% | 4,131,606 | 95.2\% |
| Acute, ORD Demo | 11 | 30,731 | 0.0\% | 1,263 | 0.0\% |
| Cancer | 11 | 968,800 | 1.2\% | 196,804 | 4.5\% |
| Children's | 45 | 21,976 | 0.0\% | 2,191 | 0.1\% |
| Long-term Acute | 257 | 158,044 | 0.2\% | 2,936 | 0.1\% |
| Inpatient Psychiatric | 167 | 354,818 | 0.4\% | 354 | 0.0\% |
| Inpatient Rehabilitation | 142 | 136,053 | 0.2\% | 2,778 | 0.1\% |
| Religious, non-medical | 0 |  |  |  |  |
| Total Matched | 3,818 | 84,239,850 | 100.0\% | 4,337,932 | 100.0\% |

SOURCE: RTI Analysis of HCRIS Reports and CMS "single bill files" for CY 2008 OPPS rates.

### 2.2 Task Descriptions

RTI's analysis was completed in the following sequence:

- Construction of Hospital Cost Report Information System (HCRIS) analytic files
- Identified hospital "finder file" covering reporting periods in 2005 or 2006, following CMS exclusion criteria for OPPS
- Constructed cost report files using both standard inpatient roll-up of cost centers (for revised IPPS costs) and detail reported cost centers (for OPPS costs)
- Computed and edited detailed cost center CCRs for all hospitals paid under OPPS, and national aggregate CCRs for all hospitals paid under IPPS
- Summarized providers’ use of non-standard cost centers, as reported
- Revised HCRIS line assignments based on detailed review of provider-input descriptions
- Reconstructed cost report files for standard roll-up and detailed lines based on revised line assignments
- Recomputed all CCRs based on revised line assignments
- Extraction and analysis of inpatient claims data
- Matched inpatient SAF to MedPAR records and extracted charges by revenue code from SAF (all codes), to merge with MedPAR
- Applied MS-DRG grouper logic to all MedPAR claims
- Merged inpatient SAF with outpatient SAF charges at provider level and computed targeted revenue percents for regression modeling
- Review of outpatient program charge matching
- Tested match of total outpatient SAF charges to HCRIS Worksheet D-Part V charges by provider
- Tested CMS published revenue crosswalk using outpatient SAF claims summaries mapped against Worksheet D Part V data on original HCRIS data
- Refined and expanded revenue crosswalk
- Tested charge mapping from revised revenue crosswalk using outpatient SAF claims summaries mapped against Worksheet D Part V data
o Using original HCRIS lines
o Using reassigned HCRIS lines
- Regression modeling for compression adjustments - IPPS
- Expanded list of targeted services for compression diagnostics
- Ran IPPS models for regression-adjusted CCRs using expanded list of targeted services and IPPS hospital sample
- Computed regression-adjusted CCRs where indicated
- Recomputed MS-DRG costs using regression-adjusted CCRs
o Using original HCRIS lines
o Using reassigned HCRIS lines
- MS-DRG impact assessment
- Recomputed weights and provider average weights from revised MS-DRG costs
- Assessed impact of HCRIS line reassignments by MS-DRG
- Assessed impact of compression adjustments by MS-DRG
- Regression modeling for compression adjustments - OPPS adaptations
- Expanded list of targeted services for compression diagnostics
- Modified regression models to account for variation in use of standard and nonstandard lines
- Computed regression-adjusted OPPS CCRs where indicated (in consultation with project officers)
- APC median costs computations
- Replicated construction of CMS’ analysis sample for APC weights
- Replicated CY 2008 APC median cost computations using costs from single-bill file
o from complete file (to verify baseline coding)
o from file restricted to claims matching the hospital "finder file"
- Recomputed procedure-based claims costs, HCPCS medians and APC medians from finder file claims, using
o Original CMS revenue crosswalk + CCRs from HCRIS current line assignments
o Revised revenue crosswalk + CCRs from HCRIS with revised line assignments
o Revised revenue crosswalk + compression-adjusted CCRs from HCRIS with revised line assignments
- Recomputed mean costs for separately payable (higher cost) drug HCPCS, for CMS to use in reviewing impact estimates of the pharmacy overhead component of APC drug payments
- APC impact assessment
- Analyzed percent change in median costs by APC
o Attributable to combination of revenue crosswalk and line changes
o Attributable to compression adjustments
- Reviewed APCs with >10\% change
- Audited component charges and cost ratios for APCs with unexpected changes, for final review
- Computed HCPCS median costs by APC, for CMS review of violations of the "TwoTimes Rule"


### 2.3 Organization of Remaining Report

The changes in APC costs that are associated with changes in HCRIS line assignments and the revenue crosswalk are not based on statistical modeling - they reflect only recommendations from RTI to improve the underlying cost accounting data and the mechanics of the cost computations. However, these appear to have as much or more of an impact on APC weights as changes associated with regression-based charge decompression. In Sections 3 and 4 we discuss RTI's recommendations on HCRIS line reassignments and on an expanded and refined revenue crosswalk. Section 5 reviews the regression models as developed to adjust MSDRG weights and then adapted to accommodate the specifics of APC weight construction. In Section 6 of the Final Report (not included with this document) we analyze the impact of all of RTI's recommendations on APC cost computations, looking separately at accounting (non-model-based) and regression (model-based) changes. For procedure APCs, we compute three sets of median costs and analyze impact as the proportional changes on medians. For separately payable drugs, we compute mean cost per unit by HCPCS code. The final impact of our changes on drug APC payments would depend on a second calculation for pharmacy overhead that is made by CMS, which takes into account the aggregate difference between each separately paid HCPCS mean unit cost and per-unit average sales price (ASP). In Section 7 we review the impact of accounting and regression-based changes on the new severity-adjusted DRG weights, using corrected HCRIS data, original IPPS modeling and expanded modeling. Section 8 of the Final Report (not included with this document) provides a discussion to pull together each of these report results.

## 3. HCRIS LINE REASSIGNMENTS [SYNOPSIS ONLY]

### 3.1 Overview of HCRIS Line Reassignments as they affect IPPS Cost-to-Charge Ratios

In the course of investigating what appeared to be an unusual number of hospitals in the national data with costs and charges on a line that HCRIS identified as "Acupuncture," RTI found numerous discrepancies between non-standard line assignments in the national HCRIS files and line descriptions entered by providers in their cost reports as filed. In consultation with the project officer, we added a task to the project work plan to perform an organized review of this problem and develop a short-term correction, to be completed before continuing with our work for refining cost-to-charge ratios. A detailed interim report was provided to CMS that covered our review and recommendations. A synopsis appears below; further documentation is included within Chapter 3 and also in the tables included as Attachments 1a through 1d, of the complete Final Report for this project.

Hospitals enter their cost and charge data for patient care services using either standard or non-standard lines. There are 47 standard lines offered for patient care services and five nonstandard lines where the word "specify" appears in the line description. Except where the word "specify" appears, standard lines have fixed descriptions and the approved software for cost report data input does not allow preparers to customize those line descriptions. Hospitals are also allowed to enter data on non-standard lines by subscripting the standard line numbers. In order for CMS to be able to group national data from any of the non-standard lines, the software asks hospitals to associate every non-standard line with a 4-digit code that best describes the type of service. HCRIS uses these codes internally, to over-write non-standard line descriptions and reassign line placement. All output produced for the national HCRIS files is based on the data as reassigned by these special HCRIS cost codes. An aggregation table is published each year on the CMS web site that shows how HCRIS cost codes are rolled up to specific non-standard lines, and how these non-standard lines are rolled up to the standard lines as they appear on cost report forms. The rolled up standard lines, in turn, govern how costs and charges are aggregated to compute the national CCRs used for IPPS weights.

Because the special HCRIS codes are used only internally within CMS, there is no feedback to cost report preparers to alert them that a given non-standard line may not be associated with the right cost code. RTI found that the erroneous assignments to Acupuncture and elsewhere were the result of providers' making incorrect assignments of these special cost codes. Such mistakes defeat the purpose of using the codes, create potential for distortion in all CCRs, and threaten the accuracy of the OPPS revenue code mapping. To correct the problem, RTI constructed a string search algorithm to identify probable misclassifications using a field in the HCRIS files that retains the providers' original descriptions and line assignments. We reviewed the most common misclassifications, identified those involving cost centers that were most likely to affect DRG or APC cost estimates, and constructed a hierarchy of corrected entries to move these to the most appropriate HCRIS cost code. Our approach targeted high-volume services with high misclassification rates (such as diagnostic imaging) and also services like oncology and cardiac rehabilitation that are lower in total volume, but still likely to dominate prices for APCs in a given product line.

Reassignments from our string searches affected 11 percent of the total of 106,029 ancillary or outpatient line assignments made across all cost reports in our file. Seventy-three percent of cost reports $(3,040$ out of 4,201 ) had at least one line reassigned. Line reassignments revealed that HCRIS cost codes had considerably understated the prevalence of these services: CT Scanning understated by 25 percent, MRI by 28 percent, Ultrasound by 23 percent, Cardiac Catheterization by 27 percent, Oncology by 66 percent, and Psychological Services by 71 percent.

All of these line reassignments have the potential to alter APC median costs, but DRG weights are less sensitive to this level of correction because the CCRs are national aggregates and because service groups are already highly aggregated. When costs and charges are rolled up to the level of the 15 service groups used for MS-DRG weights, HCRIS line reassignments lower the national CCR for Anesthesia (because this is where the Acupuncture line is aggregated) by about 6 percent, and raise it for Other Services (because this is where many other corrected lines were transferred from) by 14 percent (Exhibit 3-1).

## Exhibit 3-1 <br> National IPPS CCRs Before and After HCRIS Reassignments

| IPPS DRG <br> Service Groups | 15 National CCRs computed from original HCRIS lines | 15 National CCRs computed from reassigned HCRIS lines | Percent difference | 19 National CCRs possible from corrected HCRIS lines |
| :---: | :---: | :---: | :---: | :---: |
| 1_Routine Nursing | 0.530 | 0.530 | 0\% | 0.530 |
| 2_Critical Care Nursing | 0.479 | 0.479 | 0\% | 0.479 |
| 3_Drugs | 0.206 | 0.206 | 0\% | 0.206 |
| 4_Medical Supplies | 0.340 | 0.340 | 0\% | 0.340 |
| 5_Rehab Therapies | 0.422 | 0.423 | 0\% | 0.423 |
| 6_Inhalation (Respiratory) Therapy | 0.195 | 0.197 | 1\% | 0.197 |
| 7_Operating Room | 0.300 | 0.300 | 0\% | 0.300 |
| 8_Labor \& Delivery | 0.571 | 0.563 | -1\% | 0.563 |
| 9_Anesthesia | 0.143 | 0.134 | -6\% | 0.134 |
| 10_Cardiology | 0.193 | 0.192 | -1\% |  |
| _Cardiology excl. Cardiac Cath. |  |  |  | 0.185 |
| _Cardiac Catheterization Lab |  |  |  | 0.200 |
| 11_Laboratories | 0.171 | 0.168 | -2\% |  |
| 12_Radiology | 0.175 | 0.178 | 2\% |  |
| _Dx Radiology only |  |  |  | 0.191 |
| _CT Scanning |  |  |  | 0.066 |
| _MRI |  |  |  | 0.138 |
| _Therapeutic Radiology |  |  |  | 0.277 |
| _Nuclear Medicine |  |  |  | 0.186 |
| 13_ Emergency Room | 0.300 | 0.300 | 0\% | 0.300 |
| 14_Blood Products \& Administration | 0.444 | 0.444 | 0\% | 0.444 |
| 15_Other Services | 0.321 | 0.366 | 14\% | 0.366 |

SOURCE: RTI Analysis of HCRIS files, from subset of hospitals paid under IPPS.

The code reassignments have little or no effect on the national CCRs for the most significant contributors to DRG costs, and as a result have little effect on the DRG weights if computed from 15 service groups. At the same time, our line reassignments identify many additional instances of reported cost centers for CT Scanning, MRI and Cardiac Catheterization, raising the possibility that bias from over-aggregation of radiology and cardiology services could be at least partially corrected by computing additional CCRs from this revised accounting data. This presents an alternative to regression-based adjustments for at least these two service areas. The right-most column in Exhibit 3-1 shows national average CCRs for 19 service groups, based on newly disaggregated cost centers within radiology and Cardiology.
4. REVISIONS TO OPPS REVENUE CROSSWALK [TO BE INLCUDED IN FINAL REPORT]

## 5. REGRESSION-ADJUSTED COST-TO-CHARGE RATIOS

### 5.1 Modeling Approach

RTI tests for potential aggregation bias using a statistical model first described by Christopher Hogan in a June 2006 memo to CMS, and later adapted by RTI in its initial assessment of charge compression within the DRG weights. The model is described at length in the January 2007 Report (available at www.cms.hhs.gov/reports/downloads/Dalton.pdf). The following sections do not repeat that discussion, but offer a brief review of the model in order to provide context for the adaptations that are necessary to accommodate differences in the OPPS cost computations.

Departmental CCRs are modeled as a function of the hospital's underlying average CCR for ancillary services and the prevalence of services that are suspected of causing the bias (the "target services") within that department. The equations are estimated using weighted least squares regression. In the simplest application with only a single target service, the estimation would be

$$
\begin{equation*}
C C R_{j}=\alpha+\beta \cdot P C_{j}^{\text {target }}+\gamma \cdot C C R A V G_{j}+\varepsilon_{j}, \tag{1}
\end{equation*}
$$

where $C C R_{j}$ is the cost-to-charge ratio for hospital $j ; P C_{j}^{\text {target }}$ is the percent of Medicare charges for the target service to total charges within the CCR cost center(s) in hospital $j$; and $C C R A V G_{j}$ is the overall cost-to-charge ratio for all other ancillary services in hospital $j$ (that is, all ancillary and outpatient services excluding those in the CCR under investigation). The analytic regression weights are the total claims charges for the group of revenue codes associated with that CCR. The terms $\alpha$, $\beta$, and $\gamma$ are coefficients to be estimated, and $\varepsilon_{j}$ is an idiosyncratic regression error term representing unexplained differences in CCRs across hospitals (presumed to be uncorrelated with $P C^{\text {target }}$ ). Possible aggregation bias in this model is identified by $\beta$, the coefficient on $P C^{\text {target }}$, while $\gamma$ is a scalar that identifies the expected difference between the ratio for the particular department under investigation and the ratios for all other ancillary services.

A statistically significant coefficient on $P C^{\text {target }}$ is evidence of a systematic difference in hospital markup for the targeted service, which creates the potential for bias in the weights. Actual bias in the weights depends on the magnitude of the coefficient, on the distribution of the targeted services compared to other services that are included in that CCR, and on how that distribution varies across payment units (MS-DRGs or APCs). Bias can only be assessed by estimating costs using the statistically disaggregated CCRs, using these costs to compute new weights, and comparing the results. APC weights are expected to be more susceptible to bias than DRG weights because APCs are defined by such a narrow range of services, and there is little opportunity for over- and under-stated costs to offset each other within a given payment unit. ${ }^{1}$

[^1]Assuming $\beta$ is statistically significant, disaggregated CCRs can be computed in one of two approaches. These approaches are arithmetically equivalent in the aggregate (that is, if tested against predicted ratios for the sample as a whole), but they produce very different ratios at the hospital level.

The first approach makes use of the intercept and the parameter estimate on the overall ancillary ratio as well as the estimate on the variable for the targeted service. Disaggregated ratios for the targeted services and adjusted ratios for the remaining services are computed as follows:

$$
\begin{gather*}
C C R_{j}^{\text {target }}=\alpha+\beta+\left(\gamma \cdot \text { CCRAVG }_{j}\right)  \tag{2}\\
C C R_{j}^{\text {adjusted }}=\alpha+\left(\gamma \cdot \operatorname{CCRAVG}_{j}\right) \tag{3}
\end{gather*}
$$

The ratio computed by Equation (2) can be interpreted as the predicted value of hospital $j$ 's target service CCR if the target code accounted for 100 percent of charges for that department (in other words, it is a simulation for the target service CCR if the hospital had reported these services in separate cost centers). The ratio predicted by Equation (3) can be interpreted as the predicted value in hospital $j$ of the departmental CCR (that is, the CCR for the cost center that had included charges for the target service) if that target code accounted for zero percent of charges for that department. Equations (2) and (3) were used in RTI's computations in the January 2007 Report to assess bias in the DRG weights.

The second approach makes use of the original departmental CCR and the parameter estimate on the variable for the targeted service(s), but not the rest of the equation. Adjusted and disaggregated ratios are computed as follows:

$$
\begin{gather*}
C C R_{j}^{\text {adjusted }}=C C R_{j}-\left(\beta \cdot P C^{\text {target }}\right)  \tag{4}\\
C C R_{j}^{\text {target }}=C C R_{j}^{\text {adjusted }}+\beta \tag{5}
\end{gather*}
$$

This second approach enforces the condition that the weighted average of the revised CCRs will be equal to the original departmental CCR for each hospital (while the first approach enforces this only for the sample as a whole). Individual predicted ratio values can show extreme variation, and in some cases are even negative, but at the aggregate level corrections from the two approaches will be equivalent. We use Equations (4) and (5) to compute adjusted CCRs in this OPPS study because they have certain advantages of computational simplicity specific to the OPPS adaptations of the model (discussed in Section 5.4.1 of the Final Report). Whichever approach is taken does not alter the findings at the APC or DRG level. It is important to keep in mind that we do not make a claim that regression-adjusted CCRs provide more accurate cost estimates at the individual hospital level; the improvement is only at the level of aggregate adjusted costs relative to charges by DRG or by APC.

### 5.2 Targeted Services

Targeted services are those services thought to have systematically different markup rates from others within their department or cost center. Targeted services were first identified from
the list of services investigated in the January 2007 report. The list was expanded to include additional outpatient services suggested in consultation with CMS staff and/or identified by analyzing revenue code distribution across total inpatient and outpatient Medicare claims charges. The percent-of-charges variables ( $\left.P C^{\text {target }}\right)$ that are the key predictors in each of the CCR equations are computed from the revenue codes in a file that combines summarized data from the inpatient and outpatient SAF. The specific codes and service groups that we use to construct each of the variables in the CCR equations are identified in the next five exhibits. A complete table of inpatient and outpatient charges by revenue code, from the claims matching our hospital finder file, is included with this report as Attachment 3.

Exhibit 5-1 shows codes used for the Drugs CCR equation. The same computed percents are used in both the IPPS and OPPS applications because the Drugs Sold cost center is defined the same (without any subscripting) in both systems. There are two items targeted for separate CCRs within the Drugs Sold cost center: IV Solutions (carried over from last year's model) and "Additional detail coding," which is revenue code 0636. Code 0636 is for Part B administered drugs requiring additional HCPCS codes, and is used primarily for chemotherapy and other outpatient infusions. The code was not included in last year's models because it is rarely used on inpatient claims. It accounts for 74 percent of outpatient claims charges but only 16 percent of total claims charges within the Drugs Sold category. Even though the code is not used for inpatient claims, it is still capable of contributing to charge compression in MS-DRGs, provided the markup rates for these drugs are sufficiently different that they influence the overall drugs ratios.

## Exhibit 5-1 <br> Targeted Services Within Drugs Sold

Codes used as predictor variables in diagnostic and/or final modeling are shown in boldface.

| Revenue code | Description | Outpatient SAF |  | Inpatient SAF |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Charges | Percent | Charges | Percent | Charges | Percent |
| 0250 | Drugs sold - General | 2,388,635,946 | 17\% | 39,180,236,715 | 76\% | 41,568,872,661 | 63\% |
| 0251 | Drugs sold - Generic | 76,479,972 | 1\% | 995,287,335 | 2\% | 1,071,767,307 | 2\% |
| 0252 | Drugs sold - Non-generic | 67,740,062 | 0\% | 1,033,577,089 | 2\% | 1,101,317,152 | 2\% |
| 0253 | Drugs sold - Take-home | 32,438 | 0\% | 2,546,134 | 0\% | 2,578,572 | 0\% |
| 0254 | Drugs sold - Incident to other dx | 28,759,398 | 0\% | 72,538,564 | 0\% | 101,297,962 | 0\% |
| 0255 | Drugs sold - Incident to radiology | 370,984,015 | 3\% | 792,601,790 | 2\% | 1,163,585,805 | 2\% |
| 0256 | Drugs sold - Experimental | 193 | 0\% | 496 | 0\% | 689 | 0\% |
| 0257 | Drugs sold - Non-Rx | 481,962 | 0\% | 16,219,800 | 0\% | 16,701,762 | 0\% |
| 0258 | Drugs sold - IV solutions | 611,753,928 | 4\% | 6,266,730,351 | 12\% | 6,878,484,280 | 10\% |
| 0259 | Drugs sold - Other | 115,402,425 | 1\% | 2,630,988,296 | 5\% | 2,746,390,720 | 4\% |
| 0630 | Drugs Sold - General | 26,020 | 0\% | 351 | 0\% | 26,371 | 0\% |
| 0631 | Drugs Sold - Single source | 8,059 | 0\% | 14,601 | 0\% | 22,659 | 0\% |
| 0634 | Drugs Sold - EPO<10k units | 801,804 | 0\% | 27,749,232 | 0\% | 28,551,036 | 0\% |
| 0635 | Drugs Sold - EPO>=10k units | 1,539,212 | 0\% | 45,312,626 | 0\% | 46,851,838 | 0\% |
| 0636 | Drugs Sold - Add'l detail coding | 10,398,065,727 | 74\% | 236,605,699 | 0\% | 10,634,671,426 | 16\% |
| 0637 | Drugs Sold - Self-administrable | 10,176,034 | 0\% | 162,218,522 | 0\% | 172,394,556 | 0\% |
|  | Total Drugs Sold | 14,070,887,195 | 100\% | 51,462,627,600 | 100\% | 65,533,514,795 | 100\% |

SOURCE: RTI analysis of Inpatient and Outpatient SAF.

Exhibit 5-2 shows codes used for the Supplies CCR equation. As with the Drugs variables, the same computed percents are used in both the IPPS and OPPS applications because the cost center is defined without any subscripting in both systems. Codes for devices and implants have been combined to a single percent-of-charges measure. We investigated a model that treated intraocular lens (IOL) as a separate category, but dropped it because IOLs account for only a small portion of total medical supplies charges for the great majority of facilities in the sample.

## Exhibit 5-2 <br> Targeted Services Within Supplies Sold

Codes used as predictor variables in diagnostic and/or final modeling are shown in boldface.

| Revenue code | Description | Outpatient SAF |  | Inpatient SAF |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Charges | Percent | Charges | Percent | Charges | Percent |
| 0271 | Supplies sold - Non-sterile | 182,415,889 | 2\% | 1,520,945,075 | 3\% | 1,703,360,964 | 3\% |
| 0272 | Supplies sold - Sterile | 3,382,591,874 | 31\% | 9,896,339,463 | 20\% | 13,278,931,337 | 22\% |
| 0273 | Supplies sold - Take-home | 22,702 | 0\% | 1,536,414 | 0\% | 1,559,115 | 0\% |
| 0274 | Supplies sold - Prosthetics/orthotics | 38,595,250 | 0\% | 346,767,275 | 1\% | 385,362,525 | 1\% |
| 0275 | Supplies sold - Pacemaker | 1,372,858,000 | 12\% | 4,604,302,347 | 9\% | 5,977,160,347 | 10\% |
| 0276 | Supplies sold - Intraocular lens | 372,396,833 | 3\% | 3,596,749 | 0\% | 375,993,582 | 1\% |
| 0278 | Supplies sold - Implants/devices | 3,015,281,968 | 27\% | 17,931,467,838 | 36\% | 20,946,749,806 | 35\% |
|  | Subtotal Devices = Targeted Services | 4,799,132,051 | 43\% | 22,886,134,209 | 47\% | 27,685,266,260 | 46\% |
| 0279 | Supplies sold - Other supplies/devices | 131,650,156 | 1\% | 531,942,519 | 1\% | 663,592,675 | 1\% |
| 0621 | Supplies sold - Incident to radiology | 97,324,556 | 1\% | 104,964,084 | 0\% | 202,288,640 | 0\% |
| 0622 | Supplies sold - Incident to other dx | 43,240,664 | 0\% | 117,655,368 | 0\% | 160,896,033 | 0\% |
| 0623 | Supplies sold - Surgical dressing | 3,971,623 | 0\% | 2,880,185 | 0\% | 6,851,808 | 0\% |
| 0624 | Supplies sold - Investigational devices | 1,357,436 | 0\% | 39,361,976 | 0\% | 40,719,413 | 0\% |
|  | Total Supplies Sold | 11,066,751,549 | 100\% | 49,187,049,727 | 100\% | 60,253,801,276 | 100\% |

SOURCE: RTI analysis of Inpatient and Outpatient SAF charges.
Exhibit 5-3 shows the codes used to identify potential aggregation bias within the Radiology services group as it is broadly defined for the national CCRs used for creating MSDRG weights. In last year's modeling for charge compression under IPPS we did not include charges for therapeutic radiology or nuclear medicine as targeted services, as these were less prevalent in the Medicare inpatient claims. They are potentially important components of the Radiology CCR, however, and to the extent that these services have systematically different markup rates, they can introduce aggregation bias to the MS-DRG weights simply by distorting the ratio for other diagnostic radiology services.

Percent-of-charge variables for each of these codes can also be included in the outpatient regressions, but in this case they are applicable only to the subset of providers that has combined costs and charges for any one of these services on line 41 of their cost report. Unfortunately, because there are several $P C^{\text {target }}$ variables within the Radiology CCR equation, there are also several permutations of appropriate estimating samples for the OPPS models. This introduces a complication in the OPPS model specification that we address in Section 5.4 of the Final Report.

## Exhibit 5-3 <br> Targeted Services Within Radiology

Codes used as predictor variables in diagnostic and/or final modeling are shown in boldface.

| Revenue code | Description | Outpatient SAF |  | Inpatient SAF |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Charges | Percent | Charges | Percent | Charges | Percent |
| 0320 | Radiology-Diagnostic - General | 5,056,252,790 | 14\% | 5,125,817,330 | 19\% | 10,182,070,120 | 16\% |
| 0321 | Radiology-Diag. - Angiocardiography | 39,968,520 | 0\% | 45,695,071 | 0\% | 85,663,591 | 0\% |
| 0322 | Radiology-Diagnostic - Arthrography | 6,187,333 | 0\% | 1,307,653 | 0\% | 7,494,985 | 0\% |
| 0323 | Radiology-Diagnostic - Arteriogram | 448,991,678 | 1\% | 492,104,491 | 2\% | 941,096,169 | 2\% |
| 0324 | Radiology-Diagnostic - Chest | 1,120,506,814 | 3\% | 2,409,605,553 | 9\% | 3,530,112,367 | 6\% |
| 0325 | Radiology-Diagnostic - | 117 | 0\% | 0 | 0\% | 117 | 0\% |
| 0329 | Radiology-Diagnostic - Other | 107,469,581 | 0\% | 106,049,661 | 0\% | 213,519,242 | 0\% |
| 0400 | Other Imaging - General | 5,125,818 | 0\% | 12,675,869 | 0\% | 17,801,687 | 0\% |
| 0401 | Other Imaging - Dx mammography | 220,604,763 | 1\% | 2,315,131 | 0\% | 222,919,894 | 0\% |
| 0402 | Other Imaging - Ultrasound | 1,252,971,120 | 4\% | 1,089,368,914 | 4\% | 2,342,340,034 | 4\% |
| 0403 | Other Imaging - Screening mammog. | 608,023,148 | 2\% | 375,011 | 0\% | 608,398,159 | 1\% |
| 0405 | Other Imaging - | 716 | 0\% | 0 | 0\% | 716 | 0\% |
| 0409 | Other Imaging - Other | 3,473,349 | 0\% | 3,329,242 | 0\% | 6,802,591 | 0\% |
| 0350 | CT Scanning - General | 3,700,727,914 | 10\% | 3,362,885,201 | 13\% | 7,063,613,114 | 11\% |
| 0351 | CT Scanning - Head | 2,290,275,632 | 6\% | 2,748,293,424 | 10\% | 5,038,569,056 | 8\% |
| 0352 | CT Scanning - Body | 6,442,076,552 | 18\% | 5,146,258,772 | 19\% | 11,588,335,325 | 19\% |
| 0353 | CT Scanning - | 0 | 0\% | 141 | 0\% | 141 | 0\% |
| 0354 | CT Scanning - | 172 | 0\% | 0 | 0\% | 172 | 0\% |
| 0359 | CT Scanning - Other | 173,883,050 | 0\% | 136,763,897 | 1\% | 310,646,947 | 0\% |
|  | Subtotal CT Scanning | 12,606,963,320 | 35\% | 11,394,201,435 | 43\% | 24,001,164,755 | 38\% |
| 0610 | MRI/MRA - General | 1,868,301,897 | 5\% | 1,299,469,411 | 5\% | 3,167,771,308 | 5\% |
| 0611 | MRI/MRA - Brain | 1,209,090,810 | 3\% | 1,200,569,470 | 4\% | 2,409,660,280 | 4\% |
| 0612 | MRI/MRA - Spinal cord | 1,401,690,384 | 4\% | 512,447,727 | 2\% | 1,914,138,111 | 3\% |
| 0614 | MRI/MRA - MRI/other | 90,329,071 | 0\% | 29,036,666 | 0\% | 119,365,737 | 0\% |
| 0615 | MRI/MRA - MRA/head, neck | 94,163,042 | 0\% | 164,049,657 | 1\% | 258,212,699 | 0\% |
| 0616 | MRI/MRA - MRA/lower extremities | 19,297,442 | 0\% | 9,775,633 | 0\% | 29,073,075 | 0\% |
| 0618 | MRI/MRA - MRA/other | 31,819,523 | 0\% | 24,658,872 | 0\% | 56,478,394 | 0\% |
| 0619 | MRI/MRA - MRA/other | 51,388,934 | 0\% | 34,189,571 | 0\% | 85,578,504 | 0\% |
|  | Subtotal MRI | 4,766,081,103 | 13\% | 3,274,197,005 | 12\% | 8,040,278,108 | 13\% |
| 0330 | Radiology-therapeutic - General | 6,933,827 | 0\% | 8,031,184 | 0\% | 14,965,011 | 0\% |
| 0331 | Radiology-therapeutic - Chemo inj. | 57,117,105 | 0\% | 6,065,973 | 0\% | 63,183,078 | 0\% |
| 0332 | Radiology-therapeutic - Chemo oral | 39,277 | 0\% | 223,084 | 0\% | 262,361 | 0\% |
| 0333 | Radiology-therapeutic - Rad. therapy | 5,251,577,757 | 15\% | 336,266,271 | 1\% | 5,587,844,028 | 9\% |
| 0334 | Radiology-therapeutic - | 0 | 0\% | 16 | 0\% | 16 | 0\% |
| 0335 | Radiology-therapeutic - Chemo-IV | 352,418,781 | 1\% | 16,705,152 | 0\% | 369,123,933 | 1\% |
| 0336 | Radiology-therapeutic - | 6,637 | 0\% | 0 | 0\% | 6,637 | 0\% |
| 0339 | Radiology-therapeutic - Other | 7,679,305 | 0\% | 747,537 | 0\% | 8,426,842 | 0\% |
|  | Subtotal Radiology-therapeutic | 5,675,772,688 | 16\% | 368,039,217 | 1\% | 6,043,811,905 | 10\% |
| 0340 | Nuclear med - General | 545,457,665 | 2\% | 408,861,064 | 2\% | 954,318,729 | 2\% |
| 0341 | Nuclear med - Diagnostic | 2,185,418,852 | 6\% | 1,677,644,729 | 6\% | 3,863,063,581 | 6\% |
| 0342 | Nuclear med - Treatment <br> Nuclear med - dx | 40,880,731 | 0\% | 4,696,072 | 0\% | 45,576,803 | 0\% |
| 0343 | radiopharmaceuticals Nuclear med - rx | 410,024,438 | 1\% | 263,835,126 | 1\% | 673,859,564 | 1\% |
| 0344 | radiopharmaceuticals | 33,171,283 | 0\% | 5,545,187 | 0\% | 38,716,469 | 0\% |
| 0349 | Nuclear med - Other | 16,072,670 | 0\% | 23,939,950 | 0\% | 40,012,620 | 0\% |
| 0404 | Other Imaging - PET scan | 649,183,758 | 2\% | 48,478,662 | 0\% | 697,662,420 | 1\% |
|  | Subtotal Nuclear Medicine | 3,880,209,397 | 11\% | 2,433,000,789 | 9\% | 6,313,210,186 | 10\% |
| Total Radiology \& Imaging Services |  | 35,798,602,255 | 100\% | 26,758,082,371 | 100\% | 62,556,684,626 | 100\% |

SOURCE: RTI analysis of Inpatient and Outpatient SAF charges.

In the January 2007 report, RTI ran several models to investigate differences in markup across Cardiology services, with respect to Cardiac Catheterization and to monitoring charges. We did not recommend any adjustments to the Cardiology CCR for a number of reasons, chief of which was that model results were very sensitive to small changes in the estimation sample. In addition, we had found very poor correlation between cardiology charges as appeared on Medicare claims and cardiology charges as identified by cost reports, making the link between cardiac catheterization as a percent of total billed cardiology charges and the computed cardiology CCR questionable.

Our findings on misclassified HCRIS lines, and our subsequent reassignment of several non-standard cost centers from other parts of the cost report back to a cardiac catheterization cost center, have helped to explain much of the program charge mismatching that we found last year. We re-estimated the CCR models with ratio data from the reassigned lines, to test again for systematic differences in the markup for the targeted service within charges associated with the IPPS Cardiology group (Exhibit 5-4). We also tested this in the OPPS models, using an estimation sample that included only the subset of hospitals with at least $\$ 1,000$ in total charges in code 0481 that did not already report costs and charges on a non-standard line for Cardiac Catheterization.

## Exhibit 5-4 <br> Targeted Services Within Cardiology

Codes used as predictor variables in diagnostic and/or final modeling are shown in boldface.

| Revenue code | Description | Outpatient SAF |  | Inpatient SAF |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Charges | Percent | Charges | Percent | Charges | Percent |
| 0480 | Cardiology - General | 1,988,348,166 | 27\% | 6,553,067,815 | 34\% | 8,541,415,981 | 32\% |
| 0481 | Cardiology - Catheterization lab | 3,313,480,809 | 45\% | 8,188,565,046 | 42\% | 11,502,045,855 | 43\% |
| 0482 | Cardiology - Stress test | 486,420,340 | 7\% | 307,669,907 | 2\% | 794,090,247 | 3\% |
| 0483 | Cardiology - Echo | 260,270,636 | 4\% | 713,259,433 | 4\% | 973,530,069 | 4\% |
| 0489 | Cardiology - Other | 5,626,773 | 0\% | 41,527,085 | 0\% | 47,153,858 | 0\% |
| 0730 | EKG/ECG - General | 1,143,711,236 | 16\% | 2,782,113,827 | 14\% | 3,925,825,063 | 15\% |
| 0731 | EKG/ECG - Holter monitor | 147,934,512 | 2\% | 263,240,524 | 1\% | 411,175,036 | 2\% |
| 0732 | EKG/ECG - Telemetry | 29,088,896 | 0\% | 697,561,742 | 4\% | 726,650,638 | 3\% |
| 0739 | EKG/ECG - Other | 852,199 | 0\% | 7,690,272 | 0\% | 8,542,470 | 0\% |
|  | Total Cardiology | 7,375,733,565 | 100\% | 19,554,695,651 | 100\% | 26,930,429,216 | 100\% |

SOURCE: RTI analysis of Inpatient and Outpatient SAF charges.

For purposes of comparison, the IPPS models were run with all of the PCtarget variables described above and also run using only the $P C^{\text {target }}$ variables that were included in the models for the January 2007 Final Report. Results from both are discussed in the next section.

For the OPPS models we also investigated aggregation issues within the Nuclear Medicine cost center. The target services of interest are radiopharmaceuticals and PET scans (Exhibit 5-5). Although the charge volumes and percentages shown in this exhibit are computed from all sample hospitals, the estimation sample for this CCR includes only the 1,626 hospitals
that offer one or another or both of the target services and report related costs and charges on the standard line 43.

## Exhibit 5-5 <br> Targeted Services Within Nuclear Medicine (OPPS Models Only)

Codes used as predictor variables in diagnostic and/or final modeling are shown in boldface.

| Revenue code | Description | Outpatient SAF |  | Inpatient SAF |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Charges | $\begin{gathered} \text { Perce } \\ \text { nt } \\ \hline \end{gathered}$ | Charges | Percent | Charges | Percent |
| 0340 | Nuclear med - General | 545,457,665 | 14\% | 408,861,064 | 17\% | 954,318,729 | 15\% |
| 0341 | Nuclear med - Diagnostic | 2,185,418,852 | 56\% | 1,677,644,729 | 69\% | 3,863,063,581 | 61\% |
| 0342 | Nuclear med - Treatment | 40,880,731 | 1\% | 4,696,072 | 0\% | 45,576,803 | 1\% |
| 0343 | Nuclear med - dx radiopharmaceuticals | 410,024,438 | 11\% | 263,835,126 | 11\% | 673,859,564 | 11\% |
| 0344 | Nuclear med - rx radiopharmaceuticals | 33,171,283 | $\leq 1 \%$ | 5,545,187 | 0\% | 38,716,469 | $\leq 1 \%$ |
|  | Subtotal Radiopharmaceuticals | 443,195,721 | 11\% | 269,380,312 | 11\% | 712,576,033 | 11\% |
| 0349 | Nuclear med - Other | 16,072,670 | 0\% | 23,939,950 | 1\% | 40,012,620 | 1\% |
| 0404 | Other Imaging - PET scan | 649,183,758 | 17\% | 48,478,662 | 2\% | 697,662,420 | 11\% |
|  | Total Nuclear Medicine | 3,880,209,397 | 100\% | 2,433,000,789 | 100\% | 6,313,210,186 | 100\% |

SOURCE: RTI analysis of Inpatient and Outpatient SAF charges.

### 5.3 IPPS Application

### 5.3.1 Specification and Regression Results

Using cost ratios computed after having reassigned the HCRIS cost centers as described in Chapter 3, RTI first ran a set of regressions to reproduce the final models from the January 2007 report, and then ran our recommended set of expanded regressions. The expanded regressions add tests for systematic differences in the cost ratios for code 0636 drugs within the drugs CCR; for cardiac catheterization within the cardiology CCR; and for radiation therapy and nuclear medicine within the radiology CCR. We were able to add new targeted services to the drugs and radiology models because the combined inpatient and outpatient SAF files gave us better data for computing predictor variables ( $P C^{\text {target }}$ ) for these services. We decided to revisit the models for cardiac catheterization because we felt more confident about matching claims charges for this revenue code to cost report charges for the Cardiology group after making the cost report line reassignments.

Sections 2 and 3 of the January 2007 Final Report included detailed descriptions of the model specifications, data edits, estimation samples and regression diagnostics used to develop this approach for statistically-adjusted CCRs. Discussion in the current report is therefore limited to defining each of the estimation equations and the inclusion criteria for their respective estimation samples. In all of the estimation equations appearing below, the variable $C C R A V G_{j}$ refers to an aggregate average CCR for hospital $j$ that has been recomputed after removing costs and charges contributing to the CCR that is being modeled. All estimations are implemented using weighted least squares regression, where the analytic weight is the sum of the claims charges for codes associated with the services contributing to the CCR. Note that each estimation
sample has excluded observations with extreme values in the dependent variable or in the overall CCR. Adjusted CCRs were still computed for those observations, using the coefficients from the model. The cut-points used to identify extreme values were developed in the prior year's contract work.

## Drugs Sold:

$C C R_{j}^{\text {drugs }}=\alpha+\beta_{l} \cdot P C_{j}^{\mathrm{ivsol}}+\beta_{2} \cdot P C_{j}^{\text {rxdetail }}+\gamma \cdot \operatorname{CCRAVG}{ }_{j}+\varepsilon_{j}$,
The sample is restricted to IPPS hospitals where $0.05<=\mathrm{CCR}_{j}^{\text {drugs }}<=1.5$ and
$0.05<=C C R A V G_{j}<=1.5$. The analytic weight is the sum of charges for codes identified in Exhibit 5-1.

## Supplies Sold:

$C C R_{j}^{\text {supplies }}=\alpha+\beta_{l} \cdot P C_{j}^{\text {devices }}+\gamma \cdot \operatorname{CCRAVG}{ }_{j}+\varepsilon_{j}$,
The sample is restricted to IPPS hospitals where $0.05<=C C R_{j}^{\text {supplies }}<=1.5$ and $0.05<=C C R A V G_{j}$ $<=1.5$. The analytic weight is the sum of charges for codes identified in Exhibit 5-2.

## Cardiology:

CCR $_{j}^{\text {card }}=\alpha+\beta_{l} \cdot$ PC $_{j}^{\text {cardcath }}+\gamma \cdot \operatorname{CCRAVG}_{j}+\varepsilon_{j}$,
The sample is restricted to IPPS hospitals where $P C_{j}^{\text {cardcath }}>0.01,0.05<=C C R_{j}^{\text {cardiology }}<=1.5$, and $0.05<=C C R A V G_{j}<=1.5$. The analytic weight is the sum of charges for codes identified in Exhibit 5-3.

## Radiology:

$C C R_{j}^{\text {radiology }}=$
$\alpha+\beta_{1} \cdot P C_{j}^{\text {ctscan }}+\beta_{2} \cdot P C_{j}^{\text {mri }}+\beta_{3} \cdot P C_{j}^{\text {radther }}+\beta_{4} \cdot P C_{j}^{\text {nucmed }}+\gamma \cdot C C R A V G_{j}+\varepsilon_{j}$,
The sample is restricted to IPPS hospitals where $0.05<=\mathrm{CCR}_{j}^{\text {radiology }}<=1.5$ and
$0.05<=C C R A V G_{j}<=1.5$. The analytic weight is the sum of charges for codes identified in Exhibit 5-4.

Exhibit 5-6 shows regression output for each of these models. Standard errors are shown in square brackets beneath each coefficient. For comparison, the top of the table (5-6A) shows results from equations that duplicate the specifications used in the January 2007 Final Report while the lower half of the table (5-6B) shows results from the expanded IPPS models. All results are from models using use ratios from the reassigned HCRIS data, and using PC ${ }^{\text {target }}$ variables computed from the combined inpatient and outpatient claims data.

Exhibit 5-6
Regression Results from Inpatient Models

| 5-6A: Reproduced models from January 2007 Report |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Dependent Variables |  |  |  |
| Independent Variable | Drugs CCR | Supplies CCR | Cardiology CCR | Radiology CCR |
| IV solutions as \% all Drugs Charges | $\begin{gathered} -0.199 \\ {[0.027]^{* *}} \end{gathered}$ |  |  |  |
| Devices as \% Medical Supplies Charges |  | $\begin{gathered} 0.221 \\ {[0.030]^{* *}} \end{gathered}$ |  |  |
| CT Scanning as \% all Radiology Charges |  |  |  | $\begin{gathered} -0.21 \\ {[0.016]^{* *}} \end{gathered}$ |
| MRI as \% all Radiology Charges |  |  |  | $\begin{gathered} -0.127 \\ {[0.021]^{* *}} \end{gathered}$ |
| Overall ancillary CCR | $\begin{gathered} 0.841 \\ {[0.025]^{* *}} \end{gathered}$ | $\begin{gathered} 0.744 \\ {[0.047]^{* *}} \end{gathered}$ |  | $\begin{gathered} 0.583 \\ {[0.018]^{* *}} \end{gathered}$ |
| Constant term | $\begin{gathered} 0.022 \\ {[0.008]^{* *}} \\ \hline \end{gathered}$ | $\begin{gathered} 0.066 \\ {[0.017]^{* *}} \\ \hline \end{gathered}$ |  | $\begin{gathered} 0.119 \\ {[0.009]^{* *}} \\ \hline \end{gathered}$ |
| Observations | 3138 | 2940 | N/A | 3110 |
| R-squared | 0.52 | 0.17 |  | 0.65 |

5-6B: Expanded Models to Incorporate Additional Targeted Services

| Independent Variable | Dependent Variable |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Drugs CCR | Supplies CCR | Cardiology CCR | Radiology CCR |
| IV solutions as \% all Drugs Charges | $\begin{gathered} -0.169 \\ {[0.027]^{* *}} \end{gathered}$ |  |  |  |
| Detail coded Rx as \% all Drugs Charges | $\begin{gathered} 0.062 \\ {[0.019]^{* *}} \end{gathered}$ |  |  |  |
| Devices as \% Medical Supplies Charges |  | $\begin{gathered} 0.221 \\ {[0.030]^{* *}} \end{gathered}$ |  |  |
| Cardiac Cath. as \% Cardiology Charges |  |  | $\begin{gathered} -0.059 \\ {[0.016]^{* *}} \end{gathered}$ |  |
| CT Scanning as \% all Radiology Charges |  |  |  | $\begin{gathered} -0.251 \\ {[0.024]^{* *}} \end{gathered}$ |
| MRI as \% all Radiology Charges |  |  |  | $\begin{gathered} -0.156 \\ {[0.025]^{* *}} \end{gathered}$ |
| Rad. Therapy as \% all Radiology Charges |  |  |  | $\begin{gathered} -0.046 \\ {[0.019]^{*}} \end{gathered}$ |
| Nuclear Medicine as \% all Radiology Charges |  |  |  | $\begin{gathered} -0.091 \\ {[0.032]^{* *}} \end{gathered}$ |
| Overall ancillary CCR | $\begin{gathered} 0.814 \\ {[0.026]^{* *}} \end{gathered}$ | $\begin{gathered} 0.744 \\ {[0.047]^{* *}} \end{gathered}$ | $\begin{gathered} 0.625 \\ {[0.035]^{* *}} \end{gathered}$ | $\begin{gathered} 0.589 \\ {[0.019]^{* *}} \end{gathered}$ |
| Constant term | $\begin{gathered} 0.017 \\ {[0.008]^{*}} \\ \hline \end{gathered}$ | $\begin{gathered} 0.066 \\ {[0.017]^{* *}} \\ \hline \end{gathered}$ | $\begin{gathered} 0.057 \\ {[0.011]^{* *}} \\ \hline \end{gathered}$ | $\begin{gathered} 0.151 \\ {[0.014]^{* *}} \\ \hline \end{gathered}$ |
| Observations | 3138 | 2940 | 1726 | 3142 |
| R-squared | 0.53 | 0.17 | 0.30 | 0.65 |
| Weighted least squares estimation with robust standard errors in brackets. | * significant at | \%; ** signif | cant at 1\% |  |

Coefficients shown in 5-6A are greater in absolute magnitude than those computed for last year's study, indicating a generally stronger impact (positive or negative) of the $P C^{\text {target }}$ variables on their respective CCRs as compared to the impact found in the original IPPS models. This is particularly true for $P C^{i v s o l}(-0.199$, s.e. $=0.027$, as compared to -0.124$) .{ }^{2}$ Although we might expect to see differences from changes in the sample or changes in markup policies from year to year, it is more likely that stronger effects reflect the more accurate $P C^{\text {target }}$ values computed from the combined inpatient and outpatient SAF.
$R$-squared values are slightly higher in this year's models in the estimations for Drugs ( 0.52 compared to 0.50 ) and Radiology ( 0.65 compared to 0.64 ). This could reflect differences in the sample or differences in the source data for the $P C^{\text {target }}$ variables. $R$-squared for the Supplies CCR estimate is much closer (0.17) and is the same in both years. In this year's models, $R$ squared for the Drugs CCR model increases from 0.52 to 0.53 when the additional variable for $P C^{\text {rxdetail }}$ is added (18B). Somewhat surprisingly, although adding $P C^{\text {radther }}$ and $P C^{\text {nucmed }}$ to the Radiology CCR model alters the coefficients on $P C^{c t}$ and $P C^{m r i}$ as well as the constant term, the $R$-squared is unchanged at 0.65 .

Although the regressions explain substantially less of the variation in $C C R^{\text {supplies }}$ than in other CCRs, the coefficient on $P C^{\text {devices - our explanatory variable of interest-is estimated with }}$ similar and sometimes better precision than are the coefficients on our other $P C^{\text {target }}$ variables. The sample mean value for $P C^{\text {devices }}$ is 0.36 (or 36 percent of supplies charges averaged across all hospitals), but the weighted mean is 0.47 (or 47 percent of all supplies charges in the sample). The coefficient in $5-6 \boldsymbol{B}$ from the weighted regression is 0.221 , and has a $t$-statistic of 7.31 ( $p<0.0001$ ). This compares to a $t$-statistic for the coefficient on $P C^{i v s o l}$ of -6.32 , on $P C^{c t}$ of -0.69 ( $p<0.0001$ ), on $P C^{\text {mri }}$ of -6.21 ( $p<0.0001$ ), on $P C^{\text {radther }}$ of -2.48 ( $p=0.013$ ), and on $P C^{\text {nucmed }}$ of $-2.84(p=0.005)$. (Note: a negative coefficient indicates that the cost ratio for the targeted service(s) is systematically lower than the ratio for the reference group, or non-targeted services within that CCR.) We do not conclude, therefore, that the statistical model for estimating charge compression due to device pricing is any less valid than the models for other targeted services.

In the model for the Cardiology CCR, which was not included in last year's report, the number of observations is only 1,726 because there are so many smaller hospitals that do not perform cardiac catheterization. The dependent variable is our overall ratio for 53_XX (computed from the sum of costs on all cardiology lines divided by charges on all cardiology lines). The $R$-squared for this estimation is 0.30 . The conditional sample mean value for $P C^{\text {cardcath }}$ is 0.40 - indicating that cardiac catheterization charges average 40 percent of combined cardiology and monitoring charges across hospitals - and the weighted mean is 0.47 . The coefficient on $P C^{\text {cardcath }}$ is -0.059 with a $t$-statistic -3.74 ( $p<0.0001$ ). The negative coefficient on cardiac catheterization indicates that cost ratios for these services are significantly lower than ratios for other cardiology services.

[^2]
### 5.3.2 Adjusted National Aggregate CCRs

New national average CCRs for the targeted services within the 5 IPPS service groups are derived from adjusted departmental CCRs according to the formulas described in Section 5.1. Disaggregated or adjusted costs are estimated by applying the adjusted cost ratios to appropriate component charges, the new costs and charges are aggregated to the level of adjusted IPPS service groups by provider, then aggregated across providers to arrive at new national ratios. National aggregate results from these computations are presented as Exhibit 5-7. For reference purposes we have included a column showing the national CCRs derived from last year's CCR modeling, and another showing the CCRs derived from equivalent specifications run on our newer data.

Exhibit 5-7
Regression-Adjusted National Aggregate CCRs from Final IPPS Models

| $\quad$IPPS Service Groups <br> Targeted for Statistical Adjustment <br> (original ratios shown in italics) | Last Year's <br> Ratios | This Year's Ratios <br> Using last <br> year's model | Expanded <br> model |
| :--- | :---: | :---: | :---: |
| Original Drugs Group | 0.21 | 0.21 | 0.206 |
| Adjusted Drugs after excluding targeted services | 0.23 | 0.23 | 0.216 |
| Adjusted IV Solutions only | 0.09 | 0.02 | 0.035 |
| Adjusted Detail Coded Drugs only |  |  | 0.303 |
|  | 0.34 | 0.34 | 0.340 |
| Original Supplies Group | 0.25 | 0.25 | 0.243 |
| Adjusted Supplies after excluding Devices | 0.43 | 0.47 | 0.467 |
| Adjusted Devices and Implants only |  | $n / a$ | 0.192 |
|  | $n / a$ | $n / a$ | 0.217 |
| Original Cardiology Group |  |  | 0.168 |
| Adjusted Cardiology after excluding Cardiac Catheterization |  |  | 0.178 |
| Adjusted Cardiac Catheterization only | 0.19 | 0.18 | 0.28 |
|  | 0.28 | 0.06 | 0.308 |
| Original Radiology Group | 0.11 | 0.15 | 0.157 |
| Adjusted Radiology after excluding targeted services |  |  | 0.276 |
| Adjusted CT Scanning only |  |  | 0.218 |
| Adjusted MRI only |  |  |  |
| Adjusted Radiation Therapy only |  |  |  |
| Adjusted Nuclear Medicine (Radioisotopes) only |  |  |  |

SOURCE: RTI Analysis of HCRIS Reports and SAF charges.

### 5.3.3 Disaggregated National Ratios for Radiology and Cardiology: RegressionAdjusted Results Compared to National CCRs from Reassigned HCRIS Lines

The ratios appearing in the right-most columns of Exhibits 3-1 and 5-7 offer alternatives for disaggregating key imaging and cardiology services. In Chapter 3 we recomputed national average CCRs using the corrected cost center data after reassigning all of the lines that we could locate for cardiac catheterization and several key radiology-related services. The corrected data offer better estimates of the national aggregate ratios for important ancillary services that are likely causes of aggregation bias, and we refer to these as "accounting-based" changes to the
national IPPS CCRs. Accounting-based changes appear to partially correct aggregation bias with the radiology services group, but the effect on cardiology and cardiac catheterization cost conversion is unclear.

Our national CCR for Radiology following CMS’ approach is 0.178. It increases to 0.191 when cost and charge data are removed for CT Scanning, MRI, Therapeutic Radiology and Nuclear Medicine, for the subset of providers that have this data (Exhibit 5-8). But our regression-adjusted ratio for diagnostic radiology is 0.308, which is much higher. This is because the charges for CT Scanning and MRI services form a large part of total diagnostic radiology charges, and they are still not reported on separate lines in a large number of cost reports. If cost ratios for CT and MRI are truly much lower than the ratios for other radiology services, then continuing to group their cost and charge data with other radiology services in a substantial number of hospitals will continue to understate the national radiology CCR.

The national CCR computed from the subset of corrected, separately reported Cardiac Catheterization cost centers is 0.20 . This is higher than the ratio for remaining cardiology and monitoring services (0.185). It is also considerably higher than the ratio estimated from the regression equation ( 0.138 ), but what is more worrisome is that the regression-based adjustment is actually negative, while the differential from the accounting data is positive. One explanation for this could be that the subset of hospitals with separate cardiac catheterization cost centers is not representative of other cardiac catheterization providers. Another could be that the nonstandard cost center includes costs and charges for other diagnostic cardiology services in addition to catheterization. If we knew what these services were we could include the charges as another $P C^{\text {target }}$ variable in the equation, but as yet we do not know services they are. Consequently the cardiology regression model, while better than last year's, may need further review. We do have more confidence in the accounting data for cardiac catheterization and other cardiology services in this year's analysis compared to last year's. National CCRs computed from the corrected non-standard lines may be valid adjustments to the IPPS ratios for cardiology services.

Exhibit 5-8
Disaggregated IPPS CCRs by Type of Adjustment

|  | Diagnostic <br> Radiology |  | Radiology Service Group |  |  | Within Cardiology |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | CT Scanning | MRI | Therapeutic Radiation | Nuclear <br> Medicine | Cardiology | Cardiac Cath. |
| Regression-adjusted CCRs | 0.308 | 0.054 | 0.157 | 0.276 | 0.218 | 0.217 | 0.138 |
| CCRs using better accounting data after reassigning HCRIS lines | 0.191 | 0.066 | 0.138 | 0.277 | 0.186 | 0.185 | 0.200 |
| Difference | 0.117 | -0.012 | 0.019 | -0.001 | 0.032 | 0.032 | -0.062 |
| Percent Difference | 38\% | -22\% | 12\% | 0\% | 15\% | 15\% | -45\% |
| National average CCR without changes | 0.178 |  |  |  |  | 0.185 |  |

SOURCE: RTI analysis of HCRIS reports and SAF charges.

### 5.4 OPPS Application [To be included in Final Report]

6. IMPACT ON APC COSTS [TO BE INCLUDED IN FINAL REPORT]

## 7. IMPACT ON SEVERITY-ADJUSTED DRG RELATIVE WEIGHTS

### 7.1 Overview

In this section we present the results from four sets of reconstructed MS-DRG weights.

- The first set is our "baseline," which replicates CMS weights computed for the FY 2008 payment year. We use national CCRs computed from HCRIS files as originally received and following CMS’ defined service groups, but derived from cost ratios and claims that match the RTI "finder file" for this study.
- The second set is derived from the same sample as the first, but uses our revised national CCRs computed after correcting the HCRIS line assignments. In addition, we include an accounting change discussed at length in the January 2007 report that is simply a reclassification of inpatient charges for intermediate care units from the critical care charge group to the routine care charge group. ${ }^{3}$
- The third set is similar to the second but takes advantage of the more common nonstandard lines that we were able to identify in the corrected HCRIS line assignments. We match inpatient charges to the expanded set of CCRs using additional revenue code data from the inpatient SAF.
- The fourth set of weights is computed using our statistically disaggregated CCRs, as computed from the reassigned HCRIS lines. We use the expanded set of regressions that compute adjusted CCRs for targeted services consistent with those used for the OPPS regressions.

National CCRs used for the first three sets were shown in separate columns of Exhibit 3-1. The regression-adjusted CCRs used for the fourth set are those from the right-most column of Exhibit 5-7.

A complete list of our reconstructed DRG weights is included with this report as Attachment 5. Because the claims sample is slightly different from the sample used by CMS for FY 2008 payments, baseline weights are slightly different from those published in the Federal Register. Therefore the focus of attention for this study should be on the percent change in each weight that is attributable to the accounting and/or the regression-based changes, rather than the actual weights.

When we refer to "accounting-based’ changes in the CCRs and weights, we are referring to the differences between either the second or the third set of weights compared to the first, before introducing any statistical modeling to disaggregate ratios within a cost center. "Regression-based changes" refer to differences in the fourth set only.

[^3]
### 7.2 Accounting Changes Compared to Regression-adjusted CCRs

Percentile distributions of the impact on MS-DRG weights are shown in Exhibit 7-1. Data for the 25 highest volume MS-DRGs are shown in Exhibit 7-2, and data for the DRGs that showed the greatest proportional changes in weights in the third and fourth sets (relative to RTI's baseline set) are shown in Exhibits 7-3 and 7-4.

As expected, HCRIS line reassignments by themselves had almost no effect on the inpatient weights. The only exceptions are for two relatively low-volume DRGs for lithotripsy procedures that increased by 5 percent and 3 percent respectively, and one for Admit for Renal Dialysis that increased by 2 percent. Out of 737 MS-DRGs in the sample, weights for seventeen increased by 1 percent and weights for only nine decreased by 1 percent; these changes appear more likely to reflect the intermediate care charge reclassification than the HCRIS line reassignments.

The expanded reassigned lines added separate ratios for CT Scanning, MRI, Radiation Therapy, Nuclear Medicine and Cardiac Catheterization, based solely on the reported cost and charge data from the reassigned HCRIS lines. Weights for 30 percent of MS-DRGs were unchanged, 33 percent increased and 37 percent decreased. For the great majority of MS-DRGs, however, the impact on weights was very modest. Only fifteen had weights that decreased by 5 percent or more. The larger decreases were concentrated in cases related to head injury and coma, which is a reflection of lower CCRs for CT and MRI. Only ten MS-DRGs had weights that increased by 2 percent or more, and the largest of these were for cancer care, reflecting the improved costing for therapeutic radiology and chemotherapy services. The national CCR from reported cardiac catheterization increased in the expanded reassigned lines, and weights associated with many of the most common interventional cardiology procedures correspondingly increased, by 1 to 2 percent.

## Exhibit 7-1

Distribution of Impact on MS-DRG Weights by Type of Adjustment

|  | Accounting Changes |  |  |
| :--- | :---: | :---: | :---: |
|  | Impact of <br> reassigning HCRIS <br> lines only | Impact of using <br> expanded <br> reassigned lines | Impact of <br> regression- <br> adjusted CCRs |
| $\underline{\text { ratio of revised weight to baseline weight }}$ |  |  |  |

NOTE: For valid comparisons, baseline weights are reconstructed using CMS' ratios, from claims sample corresponding to RTI analysis files.

SOURCE: RTI analysis of HCRIS Reports and SAF charges.

Exhibit 7-2
Reconstructed Weights for the 25 Most Common Severity-Adjusted DRGs


[^4]Exhibit 7-3
Twenty MS-DRGs Most Sensitive to Accounting-based Changes in the CCRs

| DRG Description |  | Case Count | $\begin{gathered} \text { HCRIS } \\ \text { lines, } \\ \text { original } \\ \text { (baseline) } \end{gathered}$ | HCRIS <br> lines <br> reassigned, <br> with <br> original <br> roll-up <br> c2 | Reassignedlines w/modifiedroll-upc3 | Reassigned lines w/ expanded regression based adjustments c4 | Impact of reassigned HCRIS lines only | Additional impact of expanded reassigned lines c3/c2 | Additional impact of regression adjustments <br> c4/c3 | Totalimpact ofregressionadjustmentsoveroriginalc4/c1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | c2/c1 |  |  |  |  |  |  |  |
|  |  |  |  | Reconstructed weights |  |  |  | Ratio of new or adjusted weight to baseline |  |  |  |
| Ten with biggest proportional decrease in relative weight |  |  |  |  |  |  |  |  |  |  |
| 086 | Traumatic stupor \& coma, coma <1 hr w CC | 9,939 | 1.2338 | 1.2345 | 1.1713 | 1.1568 | 1.00 | 0.95 | 0.99 | 0.94 |
| 123 | Neurological eye disorders | 2,533 | 0.7060 | 0.7100 | 0.6719 | 0.6863 | 1.01 | 0.95 | 1.02 | 0.97 |
| 083 | Traumatic stupor \& coma, coma >1 hr w CC | 1,833 | 1.3900 | 1.3941 | 1.3138 | 1.2951 | 1.00 | 0.94 | 0.99 | 0.93 |
| 964 | Other multiple significant trauma w CC | $\begin{aligned} & 2,161 \\ & 17,65 \end{aligned}$ | 1.5572 | 1.5632 | 1.4731 | 1.4516 | 1.00 | 0.94 | 0.99 | 0.93 |
| 694 | Urinary stones w/o esw lithotripsy w/o MCC | 0 10,74 | 0.6537 | 0.6547 | 0.6161 | 0.6013 | 1.00 | 0.94 | 0.98 | 0.92 |
| 087 | Traumatic stupor \& coma, coma <1 hr w/o CC/MCC | 6 | 0.8322 | 0.8335 | 0.7781 | 0.7699 | 1.00 | 0.93 | 0.99 | 0.93 |
| 089 | Concussion w CC | 2,421 | 0.9068 | 0.9117 | 0.8496 | 0.8448 | 1.01 | 0.93 | 0.99 | 0.93 |
| 965 | Other multiple significant trauma w/o CC/MCC | 1,015 | 0.9975 | 1.0011 | 0.9316 | 0.9210 | 1.00 | 0.93 | 0.99 | 0.92 |
| 084 | Traumatic stupor \& coma, coma >1 hr w/o CC/MCC | 2,268 | 0.8754 | 0.8804 | 0.8181 | 0.8042 | 1.01 | 0.93 | 0.98 | 0.92 |
| 090 | Concussion w/o CC/MCC | 2,891 | 0.6597 | 0.6648 | 0.6079 | 0.6060 | 1.01 | 0.91 | 1.00 | 0.92 |
| Ten with biggest proportional increase in relative weight |  |  |  |  |  |  |  |  |  |  |
| 716 | Other male reproductive system O.R. proc for malignancy w/o CC/MCC | 1,323 | 0.9803 | 0.9851 | 1.0831 | 1.0878 | 1.00 | 1.10 | 1.00 | 1.11 |
| 849 | Radiotherapy | 1,210 | 1.2767 | 1.2757 | 1.3704 | 1.3447 | 1.00 | 1.07 | 0.98 | 1.05 |
| 745 | D \& C, conization, laparascopy \& tubal interruption w/o CC/MCC | 1,847 | 0.7277 | 0.7275 | 0.7562 | 0.7401 | 1.00 | 1.04 | 0.98 | 1.02 |
| 042 | Periph/cranial nerve \& other nerv syst proc w/o CC/MCC | 4,713 | 1.7201 | 1.7269 | 1.7753 | 1.9049 | 1.00 | 1.03 | 1.07 | 1.11 |
| 848 | Chemotherapy w/o acute leukemia as secondary diagnosis w/o CC/MCC | 1,164 | 0.8103 | 0.8098 | 0.8287 | 0.8166 | 1.00 | 1.02 | 0.99 | 1.01 |
| 675 | Other kidney \& urinary tract procedures w/o CC/MCC | $\begin{aligned} & 8,362 \\ & 188,8 \end{aligned}$ | 1.2630 | 1.2721 | 1.2943 | 1.3741 | 1.01 | 1.02 | 1.06 | 1.09 |
| 247 | Perc cardiovasc proc w drug-eluting stent w/o MCC | 31 22,52 | 2.0371 | 2.0409 | 2.0753 | 2.1614 | 1.00 | 1.02 | 1.04 | 1.06 |
| 249 | Perc cardiovasc proc w non-drug-eluting stent w/o MCC | 9 49,61 | 1.7269 | 1.7288 | 1.7562 | 1.7465 | 1.00 | 1.02 | 0.99 | 1.01 |
| 254 | Other vascular procedures w/o CC/MCC | 6 | 1.5376 | 1.5433 | 1.5675 | 1.5998 | 1.00 | 1.02 | 1.02 | 1.04 |
| 630 | Other endocrine, nutrit \& metab O.R. proc w/o CC/MCC | 500 | 1.3807 | 1.3807 | 1.4019 | 1.3820 | 1.00 | 1.02 | 0.99 | 1.00 |

[^5]SOURCE: RTI Analysis of HCRIS Reports and SAF charges.

Exhibit 7-4
Twenty MS-DRGs Most Sensitive to Regression-based Changes in the CCRs

|  |  |  | HCRIS <br> lines, original (baseline) | HCRIS <br> lines reassigned, with original roll-up | Reassigne d lines w/ modified roll-up | Reassigned lines w/ expanded regression based adjustments | Impact of reassigned HCRIS lines only | Additional impact of expanded reassigned lines | Additional impact of regression adjustments | Total impact of regression adjustments over original |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DRG | Description | Count | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
|  |  |  | Reconstructed weights |  |  |  | Ratio of new or adjusted weight to baseline |  |  |  |
| Ten with biggest proportional decrease in weight |  |  |  |  |  |  |  |  |  |  |
| 089 | Concussion w CC | 2,421 | 0.9068 | 0.9117 | 0.8496 | 0.8448 | 1.01 | 0.93 | 0.99 | 0.93 |
| 087 | Traumatic stupor \& coma, coma <1 hr w/o CC/MCC | 10,746 | 0.8322 | 0.8335 | 0.7781 | 0.7699 | 1.00 | 0.93 | 0.99 | 0.93 |
| 965 | Other multiple significant trauma w/o CC/MCC | 1,015 | 0.9975 | 1.0011 | 0.9316 | 0.9210 | 1.00 | 0.93 | 0.99 | 0.92 |
| 694 | Urinary stones w/o esw lithotripsy w/o MCC | 17,650 | 0.6537 | 0.6547 | 0.6161 | 0.6013 | 1.00 | 0.94 | 0.98 | 0.92 |
| 339 | Appendectomy w complicated principal diag w CC | 2,980 | 1.8947 | 1.8928 | 1.8475 | 1.7411 | 1.00 | 0.98 | 0.94 | 0.92 |
| 084 | Traumatic stupor \& coma, coma > 1 hr w/o CC/MCC | 2,268 | 0.8754 | 0.8804 | 0.8181 | 0.8042 | 1.01 | 0.93 | 0.98 | 0.92 |
| 090 | Concussion w/o CC/MCC | 2,891 | 0.6597 | 0.6648 | 0.6079 | 0.6060 | 1.01 | 0.91 | 1.00 | 0.92 |
| 342 | Appendectomy w/o complicated principal diag w CC | 2,380 | 1.3381 | 1.3385 | 1.2970 | 1.2153 | 1.00 | 0.97 | 0.94 | 0.91 |
| 340 | Appendectomy w complicated principal diag w/o CC/MCC | 3,240 | 1.2584 | 1.2578 | 1.2193 | 1.1359 | 1.00 | 0.97 | 0.93 | 0.90 |
| 343 | Appendectomy w/o complicated principal diag w/o CC/MCC | 6,043 | 0.9246 | 0.9257 | 0.8868 | 0.8181 | 1.00 | 0.96 | 0.92 | 0.88 |
| 10 with biggest proportional increase in weight |  |  |  |  |  |  |  |  |  |  |
| 227 | Cardiac defibrillator implant w/o cardiac cath w/o MCC | 46,455 | 5.1909 | 5.2118 | 5.2727 | 6.4638 | 1.00 | 1.01 | 1.23 | 1.25 |
| 245 | AICD lead \& generator procedures | 5,831 | 3.2288 | 3.2399 | 3.2768 | 3.8709 | 1.00 | 1.01 | 1.18 | 1.20 |
| 223 | Cardiac defib implant w cardiac cath w AMI/HF/shock w/o MCC | 5,241 | 6.7305 | 6.7505 | 6.8356 | 8.0414 | 1.00 | 1.01 | 1.18 | 1.19 |
| 225 | Cardiac defib implant w cardiac cath w/o AMI/HF/shock w/o MCC | 5,302 | 6.2698 | 6.2889 | 6.3656 | 7.4861 | 1.00 | 1.01 | 1.18 | 1.19 |
| 226 | Cardiac defibrillator implant w/o cardiac cath w MCC | 6,287 | 6.9126 | 6.9342 | 7.0048 | 8.1548 | 1.00 | 1.01 | 1.16 | 1.18 |
| 244 | Permanent cardiac pacemaker implant w/o CC/MCC | 61,965 | 2.0687 | 2.0744 | 2.0955 | 2.4208 | 1.00 | 1.01 | 1.16 | 1.17 |
| 458 | Spinal fusion except cerv w spinal curv/malig/infec or 9+ fus w/o CC/MCC | 1,078 | 4.6256 | 4.6402 | 4.6909 | 5.3774 | 1.00 | 1.01 | 1.15 | 1.16 |
| 259 | Cardiac pacemaker device replacement w/o MCC | 6,879 | 1.6697 | 1.6746 | 1.6920 | 1.9373 | 1.00 | 1.01 | 1.14 | 1.16 |
| 455 | Combined anterior/posterior spinal fusion w/o CC/MCC | 1,482 | 5.0920 | 5.1057 | 5.1626 | 5.8894 | 1.00 | 1.01 | 1.14 | 1.16 |
| 224 | Cardiac defib implant w cardiac cath w/o AMI/HF/shock w MCC | 1,654 | 8.2949 | 8.3169 | 8.4042 | 9.4577 | 1.00 | 1.01 | 1.13 | 1.14 |

NOTE: Rows sorted for ranking are indicated by boldface type.

SOURCE: RTI Analysis of HCRIS Reports and SAF charges.

Consistent with our findings on the former CMS DRGs in the January 2007 report, the most significant changes in MS-DRGs come from regression-based adjustments. Although we did not repeat the testing done in last year's study to identify which set of statistically adjusted ratios contributed to which changes in weights, it is evident from the types of MS-DRGs most affected that disaggregating the CCRs for medical supplies and devices continues to have the most impact on relative weights.

The biggest increase in weight is for MS-DRG 227 (cardiac defibrillator implantation without catheterization or complications) which increased by 25 percent, from 5.1909 to 6.6638. Cardiac implants accounted for nine of the ten MS-DRGs with the biggest increases due to regression-based adjustments, and the remaining one was for a spinal fusion procedure.

As in our previous findings, decreases in weights from regression-adjusted CCRs are spread out over many MS-DRGs. Last year we found that this was due largely to the offsetting reduction to the adjusted medical supplies CCR. Four of the ten MS-DRGs with the greatest proportional reductions in weights relate to appendectomies; this is also similar to findings from last year, where the reduced CCR for IV solutions and the lower ratio for non-device related supplies combined to have a disproportionately large impact on many surgical DRGs. Also consistent with last year’s findings, the largest reductions in relative weights occur for MS-DRGs associated with traumatic head injury and concussion, which are high users of CT scanning or MRI services. This year's findings also include small reductions to several interventional cardiology DRGs, due to the adjusted CCR for cardiac catheterization.

### 7.3 Impact of CCR changes on hospital average weights

To assess the impact of revised cost estimations on hospital payments, we computed the average weight for each hospital for each set of reconstructed MS-DRG weights (equivalent to an estimate of revised hospital case-mix index (CMI) values). The reassignment of HCRIS lines has almost no impact on average weights, and the use of national CCRs from an expanded group of non-standard cost centers affects only a few providers by more than 1 percent in either direction (Exhibit 7-5).

Regression-adjusted CCRs, however, have a more widespread impact and also a somewhat lopsided impact, where a small number of hospitals would have much higher CMIs while most would have slightly lower. The $25^{\text {th }}$ percentile in impact is a reduction of 1.5 percent while the $75^{\text {th }}$ percentile is an increase of only 0.1 percent. Eleven percent of hospitals would have a reduction in CMI of two percent or greater, and these are distributed across small and large facilities, both teaching and non-teaching. Only three hospitals had reductions between 4 and 5 percent (all three were very low-volume surgical hospitals). In contrast, less than five percent of hospitals would have an increased CMI of two percent or greater, and 91 hospitals would see an increase in CMI of 4 percent or greater under the regression-adjusted weights. The vast majority of these are specialty orthopedic and cardiac surgery facilities.

Exhibit 7-6 shows mean, median and maximum changes in average weights across hospitals grouped by Medicare discharge volume. This table also illustrates how the impact of the accounting-based changes is spread relatively evenly across the sample, but the advantages gained by regression-based adjustments, primarily those from the disaggregation of devices from other medical supplies, is concentrated in the smaller hospitals.

Exhibit 7-5
Percentiles of Changes in Average Hospital Weights by Type of Adjustment

|  | Accounting-based changes |  |
| :--- | :---: | :---: | :---: |
| Impact of |  |  |
| reassigning |  |  |
| HCRIS lines only |  |  | \(\left.\begin{array}{c}Impact of using <br>

expanded <br>
reassigned lines\end{array} ~ $$
\begin{array}{c}\text { Impact of } \\
\text { Regression- } \\
\text { adjusted CCRs }\end{array}
$$\right]\)

NOTE: impact on weights is computed relative to a baseline weight as reconstructed from RTI analysis files

SOURCE: RTI analysis of HCRIS Reports and SAF charges.
Exhibit 7-6
Change in Hospital Average Weight, by Hospital DRG Volume

| Medicare discharge volume | Accounting-based changes only |  |  | Maximum |
| :---: | :---: | :---: | :---: | :---: |
|  | Number of hospitals | Mean | Median |  |
| 50 or fewer | 44 | 0.4\% | 0.8\% | 1.2\% |
| 51 to 1,000 | 630 | -0.3\% | -0.5\% | 1.1\% |
| 1,001 to 5,000 | 1,811 | -0.2\% | -0.2\% | 1.2\% |
| 5,001 to 10,000 | 615 | 0.0\% | 0.0\% | 1.0\% |
| more than 10,000 | 155 | 0.1\% | 0.2\% | 0.7\% |
| Total | 3,255 | -0.2\% | -0.2\% | 1.2\% |
| Regression-adjusted CCRs |  |  |  |  |
| Medicare discharge volume | Number of hospitals | Mean | Median | Maximum |
| 50 or fewer | 44 | 0.2\% | -1.3\% | 7.4\% |
| 51 to 1,000 | 630 | -0.8\% | -1.8\% | 11.2\% |
| 1,001 to 5,000 | 1,811 | -0.7\% | -0.9\% | 11.2\% |
| $5,001 \text { to } 10,000$ | 615 | 0.1\% | 0.0\% | 4.3\% |
| more than 10,000 | 155 | 0.5\% | 0.5\% | 3.5\% |
| Total | 3,255 | -0.5\% | -0.8\% | 11.2\% |

NOTES: Accounting changes reflect expanded use of reassigned HCRIS lines. Impact is computed relative to average of baseline weights as reconstructed from RTI analysis files.

SOURCE: RTI analysis of HCRIS Reports and SAF charges.

## 8. DISCUSSION

[TO BE INCLUDED IN FINAL REPORT]

Attachment 3
Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0250 | Drugs sold - General | 2,388,635,946 | 2.1\% | 1.9\% | 39,180,236,715 | 15.1\% | 5.7\% |
| 0251 | Drugs sold - Generic | 76,479,972 | 0.1\% | 0.1\% | 995,287,335 | 0.4\% | 7.1\% |
| 0252 | Drugs sold - Non-generic | 67,740,062 | 0.1\% | 0.1\% | 1,033,577,089 | 0.4\% | 6.2\% |
| 0253 | Drugs sold - Take-home | 32,438 | 0.0\% | 0.0\% | 2,546,134 | 0.0\% | 1.3\% |
| 0254 | Drugs sold - Incident to other dx | 28,759,398 | 0.0\% | 0.0\% | 72,538,564 | 0.0\% | 28.4\% |
| 0255 | Drugs sold - Incident to radiology | 370,984,015 | 0.3\% | 0.3\% | 792,601,790 | 0.3\% | 31.9\% |
| 0256 | Drugs sold - Experimental | 193 | 0.0\% | 0.0\% | 496 | 0.0\% | 28.0\% |
| 0257 | Drugs sold - Non-Rx | 481,962 | 0.0\% | 0.0\% | 16,219,800 | 0.0\% | 2.9\% |
| 0258 | Drugs sold - IV solutions | 611,753,928 | 0.5\% | 0.5\% | 6,266,730,351 | 2.4\% | 8.9\% |
| 0259 | Drugs sold - Other | 115,402,425 | 0.1\% | 0.1\% | 2,630,988,296 | 1.0\% | 4.2\% |
| 0260 | IV therapy - General | 850,381,534 | 0.8\% | 0.7\% | 763,258,502 | 0.3\% | 52.7\% |
| 0261 | IV therapy - Infusion pump | 3,406,845 | 0.0\% | 0.0\% | 11,785,574 | 0.0\% | 22.4\% |
| 0262 | IV therapy - Pharm services | 3,402,151 | 0.0\% | 0.0\% | 4,454,300 | 0.0\% | 43.3\% |
| 0263 | IV therapy - Drug/supply deliv | 1,423,157 | 0.0\% | 0.0\% | 355,862 | 0.0\% | 80.0\% |
| 0264 | IV therapy - Supplies | 2,876,742 | 0.0\% | 0.0\% | 11,550,085 | 0.0\% | 19.9\% |
| 0269 | IV therapy - Other | 10,264,293 | 0.0\% | 0.0\% | 14,740,132 | 0.0\% | 41.0\% |
| 0270 | Supplies sold - General | 2,425,044,597 | 2.2\% | 1.9\% | 14,085,290,433 | 5.4\% | 14.7\% |
| 0271 | Supplies sold - Non-sterile | 182,415,889 | 0.2\% | 0.1\% | 1,520,945,075 | 0.6\% | 10.7\% |
| 0272 | Supplies sold - Sterile | 3,382,591,874 | 3.0\% | 2.6\% | 9,896,339,463 | 3.8\% | 25.5\% |
| 0273 | Supplies sold - Take-home | 22,702 | 0.0\% | 0.0\% | 1,536,414 | 0.0\% | 1.5\% |
| 0274 | Supplies sold - Prosthetics/orthot | 38,595,250 | 0.0\% | 0.0\% | 346,767,275 | 0.1\% | 10.0\% |
| 0275 | Supplies sold - Pacemaker | 1,372,858,000 | 1.2\% | 1.1\% | 4,604,302,347 | 1.8\% | 23.0\% |
| 0276 | Supplies sold - Intraocular lens | 372,396,833 | 0.3\% | 0.3\% | 3,596,749 | 0.0\% | 99.0\% |
| 0278 | Supplies sold - Implants/devices | 3,015,281,968 | 2.7\% | 2.3\% | 17,931,467,838 | 6.9\% | 14.4\% |
| 0279 | Supplies sold - Oth supplies/devices | 131,650,156 | 0.1\% | 0.1\% | 531,942,519 | 0.2\% | 19.8\% |
| 0280 | Oncology - General | 36,988,108 | 0.0\% | 0.0\% | 2,912,479 | 0.0\% | 92.7\% |
| 0289 | Oncology - Other | 907,055 | 0.0\% | 0.0\% | 70,089 | 0.0\% | 92.8\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF <br> Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0300 | Lab-clinical *-General | 5,714,102,987 | 5.1\% | 4.4\% | 13,692,355,313 | 5.3\% | 29.4\% |
| 0301 | Lab-clinical * Chemistry | 6,852,123,785 | 6.1\% | 5.3\% | 15,022,758,869 | 5.8\% | 31.3\% |
| 0302 | Lab-clinical *- Immunology | 426,112,330 | 0.4\% | 0.3\% | 1,020,375,640 | 0.4\% | 29.5\% |
| 0303 | Lab-clinical *-Renal (home) | 26,634 | 0.0\% | 0.0\% | 967 | 0.0\% | 96.5\% |
| 0304 | Lab-clinical *- Nonroutine dialysis | 186,937 | 0.0\% | 0.0\% | 840,065 | 0.0\% | 18.2\% |
| 0305 | Lab - clinical * Hematology | 1,907,092,113 | 1.7\% | 1.5\% | 4,709,390,508 | 1.8\% | 28.8\% |
| 0306 | Lab - clinical *- Bact/microbio | 764,294,066 | 0.7\% | 0.6\% | 2,341,994,834 | 0.9\% | 24.6\% |
| 0307 | Lab - clinical * Urology | 215,132,299 | 0.2\% | 0.2\% | 312,626,657 | 0.1\% | 40.8\% |
| 0308 | Lab-clinical * | 212 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0309 | Lab-clinical *- Other | 111,592,230 | 0.1\% | 0.1\% | 245,884,865 | 0.1\% | 31.2\% |
| 0310 | Lab - path - General | 739,069,950 | 0.7\% | 0.6\% | 568,872,201 | 0.2\% | 56.5\% |
| 0311 | Lab - path - Cytology | 168,488,197 | 0.1\% | 0.1\% | 88,077,173 | 0.0\% | 65.7\% |
| 0312 | Lab - path - Histology | 505,325,882 | 0.4\% | 0.4\% | 359,764,272 | 0.1\% | 58.4\% |
| 0314 | Lab - path - Biopsy | 20,594,406 | 0.0\% | 0.0\% | 8,848,804 | 0.0\% | 69.9\% |
| 0315 | Lab - path - | 1,425 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0319 | Lab - path - Other | 9,974,461 | 0.0\% | 0.0\% | 6,750,596 | 0.0\% | 59.6\% |
| 0320 | Radiology-Diagnostic - General Radiology-Diagnostic - | 5,056,252,790 | 4.5\% | 3.9\% | 5,125,817,330 | 2.0\% | 49.7\% |
| 0321 | Angiocardiography | 39,968,520 | 0.0\% | 0.0\% | 45,695,071 | 0.0\% | 46.7\% |
| 0322 | Radiology-Diagnostic - Arthrography | 6,187,333 | 0.0\% | 0.0\% | 1,307,653 | 0.0\% | 82.6\% |
| 0323 | Radiology-Diagnostic - Arteriogram | 448,991,678 | 0.4\% | 0.3\% | 492,104,491 | 0.2\% | 47.7\% |
| 0324 | Radiology-Diagnostic - Chest | 1,120,506,814 | 1.0\% | 0.9\% | 2,409,605,553 | 0.9\% | 31.7\% |
| 0325 | Radiology-Diagnostic - | 117 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0329 | Radiology-Diagnostic - Other | 107,469,581 | 0.1\% | 0.1\% | 106,049,661 | 0.0\% | 50.3\% |
| 0330 | Radiology-therapeutic - General | 6,933,827 | 0.0\% | 0.0\% | 8,031,184 | 0.0\% | 46.3\% |
| 0331 | Radiology-therapeutic - Chemo injected | 57,117,105 | 0.1\% | 0.0\% | 6,065,973 | 0.0\% | 90.4\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF <br> Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0332 | Radiology-therapeutic - Chemo oral | 39,277 | 0.0\% | 0.0\% | 223,084 | 0.0\% | 15.0\% |
| 0333 | Radiology-therapeutic - Radiation therapy | 5,251,577,757 | 4.7\% | 4.1\% | 336,266,271 | 0.1\% | 94.0\% |
| 0334 | Radiology-therapeutic - | 0 | 0.0\% | 0.0\% | 16 | 0.0\% | 0.0\% |
| 0335 | Radiology-therapeutic - Chemo-IV | 352,418,781 | 0.3\% | 0.3\% | 16,705,152 | 0.0\% | 95.5\% |
| 0336 | Radiology-therapeutic - | 6,637 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0339 | Radiology-therapeutic - Other | 7,679,305 | 0.0\% | 0.0\% | 747,537 | 0.0\% | 91.1\% |
| 0340 | Nuclear med - General | 545,457,665 | 0.5\% | 0.4\% | 408,861,064 | 0.2\% | 57.2\% |
| 0341 | Nuclear med - Diagnostic | 2,185,418,852 | 1.9\% | 1.7\% | 1,677,644,729 | 0.6\% | 56.6\% |
| 0342 | Nuclear med - Treatment | 40,880,731 | 0.0\% | 0.0\% | 4,696,072 | 0.0\% | 89.7\% |
| 0343 | Nuclear med - | 410,024,438 | 0.4\% | 0.3\% | 263,835,126 | 0.1\% | 60.8\% |
| 0344 | Nuclear med - | 33,171,283 | 0.0\% | 0.0\% | 5,545,187 | 0.0\% | 85.7\% |
| 0349 | Nuclear med - Other | 16,072,670 | 0.0\% | 0.0\% | 23,939,950 | 0.0\% | 40.2\% |
| 0350 | CT Scanning - General | 3,700,727,914 | 3.3\% | 2.9\% | 3,362,885,201 | 1.3\% | 52.4\% |
| 0351 | CT Scanning - Head | 2,290,275,632 | 2.0\% | 1.8\% | 2,748,293,424 | 1.1\% | 45.5\% |
| 0352 | CT Scanning - Body | 6,442,076,552 | 5.7\% | 5.0\% | 5,146,258,772 | 2.0\% | 55.6\% |
| 0353 | CT Scanning - | 0 | 0.0\% | 0.0\% | 141 | 0.0\% | 0.0\% |
| 0354 | CT Scanning - | 172 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0359 | CT Scanning - Other | 173,883,050 | 0.2\% | 0.1\% | 136,763,897 | 0.1\% | 56.0\% |
| 0360 | Oper Room - General | 11,253,894,383 | 10.0\% | 8.8\% | 22,738,620,703 | 8.8\% | 33.1\% |
| 0361 | Oper Room - Minor | 1,913,577,829 | 1.7\% | 1.5\% | 2,036,641,166 | 0.8\% | 48.4\% |
| 0362 | Oper Room - Other organ transplant | 917,771 | 0.0\% | 0.0\% | 3,701,308 | 0.0\% | 19.9\% |
| 0363 | Oper Room - | 60 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0364 | Oper Room - | 0 | 0.0\% | 0.0\% | 259 | 0.0\% | 0.0\% |
| 0367 | Oper Room - Kidney transplant | 484 | 0.0\% | 0.0\% | 7,029,507 | 0.0\% | 0.0\% |
| 0369 | Oper Room - Other | 115,298,957 | 0.1\% | 0.1\% | 344,625,019 | 0.1\% | 25.1\% |
| 0370 | Anesthesia - General | 2,017,776,234 | 1.8\% | 1.6\% | 4,139,506,528 | 1.6\% | 32.8\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF <br> Covered Charges | Percent <br> of outpatient <br> total <br> excluding <br> Dx Lab | Percent of total outpatient | Inpatient SAF Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0371 | Anesthesia - Incident to radiology | 13,565,756 | 0.0\% | 0.0\% | 12,101,560 | 0.0\% | 52.9\% |
| 0372 | Anesthesia - Incid to other dx | 17,145,075 | 0.0\% | 0.0\% | 16,715,290 | 0.0\% | 50.6\% |
| 0374 | Anesthesia - Acupuncture | 0 | 0.0\% | 0.0\% | 180 | 0.0\% | 0.0\% |
| 0379 | Anesthesia - Other | 62,548,259 | 0.1\% | 0.0\% | 52,068,918 | 0.0\% | 54.6\% |
| 0380 | Blood - General | 988,630 | 0.0\% | 0.0\% | 6,505,619 | 0.0\% | 13.2\% |
| 0381 | Blood - Packed red cells | 2,595,795 | 0.0\% | 0.0\% | 20,692,808 | 0.0\% | 11.1\% |
| 0382 | Blood - Whole blood | 51,622 | 0.0\% | 0.0\% | 774,408 | 0.0\% | 6.2\% |
| 0383 | Blood - Plasma | 269,552 | 0.0\% | 0.0\% | 7,302,879 | 0.0\% | 3.6\% |
| 0384 | Blood - Platelets | 1,337,363 | 0.0\% | 0.0\% | 11,553,514 | 0.0\% | 10.4\% |
| 0385 | Blood - Leucocytes | 2,310,857 | 0.0\% | 0.0\% | 12,969,043 | 0.0\% | 15.1\% |
| 0386 | Blood - Other components | 1,938,220 | 0.0\% | 0.0\% | 28,430,384 | 0.0\% | 6.4\% |
| 0387 | Blood - Other derivatives | 65,916 | 0.0\% | 0.0\% | 3,938,628 | 0.0\% | 1.6\% |
| 0389 | Blood - Other | 737,153 | 0.0\% | 0.0\% | 6,748,687 | 0.0\% | 9.8\% |
| 0390 | Blood process - General | 451,850,607 | 0.4\% | 0.4\% | 2,847,953,591 | 1.1\% | 13.7\% |
| 0391 | Blood process - Blood admin | 299,096,361 | 0.3\% | 0.2\% | 641,306,763 | 0.2\% | 31.8\% |
| 0399 | Blood process - Other storage/process | 5,756,401 | 0.0\% | 0.0\% | 32,032,160 | 0.0\% | 15.2\% |
| 0400 | Other Imaging - General | 5,125,818 | 0.0\% | 0.0\% | 12,675,869 | 0.0\% | 28.8\% |
| 0401 | Other Imaging - Dx mammography | 220,604,763 | 0.2\% | 0.2\% | 2,315,131 | 0.0\% | 99.0\% |
| 0402 | Other Imaging - Ultrasound | 1,252,971,120 | 1.1\% | 1.0\% | 1,089,368,914 | 0.4\% | 53.5\% |
| 0403 | Other Imaging - Screening mammography | 608,023,148 | 0.5\% | 0.5\% | 375,011 | 0.0\% | 99.9\% |
| 0404 | Other Imaging - PET scan | 649,183,758 | 0.6\% | 0.5\% | 48,478,662 | 0.0\% | 93.1\% |
| 0405 | Other Imaging - | 716 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0409 | Other Imaging - Other | 3,473,349 | 0.0\% | 0.0\% | 3,329,242 | 0.0\% | 51.1\% |
| 0410 | Resp Therapy - General | 190,520,419 | 0.2\% | 0.1\% | 9,846,163,466 | 3.8\% | 1.9\% |
| 0412 | Resp Therapy - Inhalation services | 18,440,521 | 0.0\% | 0.0\% | 1,100,779,066 | 0.4\% | 1.6\% |
| 0413 | Resp Therapy - Hyperbaric O2 | 461,862,409 | 0.4\% | 0.4\% | 57,843,074 | 0.0\% | 88.9\% |

Attachment 3 (cont'd)
Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF <br> Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0419 | Resp Therapy - Other | 20,207,082 | 0.0\% | 0.0\% | 314,383,282 | 0.1\% | 6.0\% |
| 0420 | Physical Therapy - General | 2,032,094,635 | 1.8\% | 1.6\% | 3,565,362,910 | 1.4\% | 36.3\% |
| 0421 | Physical Therapy - Visit charge | 218,082,862 | 0.2\% | 0.2\% | 251,811,650 | 0.1\% | 46.4\% |
| 0422 | Physical Therapy - Hourly charge | 6,104,021 | 0.0\% | 0.0\% | 7,036,552 | 0.0\% | 46.5\% |
| 0423 | Physical Therapy - Group rate | 7,294,078 | 0.0\% | 0.0\% | 22,080,418 | 0.0\% | 24.8\% |
| 0424 | Physical Therapy - Evaluation/re-eval | 183,638,994 | 0.2\% | 0.1\% | 675,043,794 | 0.3\% | 21.4\% |
| 0429 | Physical Therapy - Other | 17,528,736 | 0.0\% | 0.0\% | 29,099,101 | 0.0\% | 37.6\% |
| 0430 | Occup Therapy - General | 352,796,204 | 0.3\% | 0.3\% | 1,936,358,210 | 0.7\% | 15.4\% |
| 0431 | Occup Therapy - Visit charge | 35,046,529 | 0.0\% | 0.0\% | 122,100,295 | 0.0\% | 22.3\% |
| 0432 | Occup Therapy - Hourly charge | 427,017 | 0.0\% | 0.0\% | 3,979,083 | 0.0\% | 9.7\% |
| 0433 | Occup Therapy - Group rate | 1,728,091 | 0.0\% | 0.0\% | 24,888,460 | 0.0\% | 6.5\% |
| 0434 | Occup Therapy - Evaluation/re-eval | 35,459,362 | 0.0\% | 0.0\% | 324,733,054 | 0.1\% | 9.8\% |
| 0439 | Occup Therapy - Other | 3,370,056 | 0.0\% | 0.0\% | 7,202,313 | 0.0\% | 31.9\% |
| 0440 | Speech Therapy - General | 132,430,397 | 0.1\% | 0.1\% | 650,237,809 | 0.3\% | 16.9\% |
| 0441 | Speech Therapy - Visit charge | 13,334,230 | 0.0\% | 0.0\% | 31,318,797 | 0.0\% | 29.9\% |
| 0442 | Speech Therapy - Hourly charge | 707,050 | 0.0\% | 0.0\% | 2,908,668 | 0.0\% | 19.6\% |
| 0443 | Speech Therapy - Group rate | 943,031 | 0.0\% | 0.0\% | 2,614,321 | 0.0\% | 26.5\% |
| 0444 | Speech Therapy - Evaluation/re-eval | 25,131,050 | 0.0\% | 0.0\% | 161,521,119 | 0.1\% | 13.5\% |
| 0449 | Speech Therapy - Other | 988,996 | 0.0\% | 0.0\% | 3,987,434 | 0.0\% | 19.9\% |
| 0450 | Emerg Room - General | 6,802,263,921 | 6.0\% | 5.3\% | 7,619,170,535 | 2.9\% | 47.2\% |
| 0451 | Emerg Room - EMTALA screening | 26,589,859 | 0.0\% | 0.0\% | 20,295,700 | 0.0\% | 56.7\% |
| 0452 | Emerg Room - ER beyond EMTALA | 41,029,250 | 0.0\% | 0.0\% | 54,240,107 | 0.0\% | 43.1\% |
| 0456 | Emerg Room - Urgent care | 24,239,095 | 0.0\% | 0.0\% | 7,148,171 | 0.0\% | 77.2\% |
| 0459 | Emerg Room - Other | 15,501,020 | 0.0\% | 0.0\% | 21,378,114 | 0.0\% | 42.0\% |
| 0460 | Pulm Function - General | 514,520,770 | 0.5\% | 0.4\% | 2,064,965,872 | 0.8\% | 19.9\% |
| 0462 | Pulm Function - | 0 | 0.0\% | 0.0\% | 276 | 0.0\% | 0.0\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent <br> of outpatient <br> total <br> excluding <br> Dx Lab | Percent of total outpatient | Inpatient <br> SAF <br> Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0469 | Pulm Function - Other | 6,694,735 | 0.0\% | 0.0\% | 19,658,719 | 0.0\% | 25.4\% |
| 0470 | Audiology - General | 2,342,899 | 0.0\% | 0.0\% | 1,123,240 | 0.0\% | 67.6\% |
| 0471 | Audiology - Diagnostic | 35,775,887 | 0.0\% | 0.0\% | 5,843,864 | 0.0\% | 86.0\% |
| 0472 | Audiology - Treatment | 95,119 | 0.0\% | 0.0\% | 536,841 | 0.0\% | 15.1\% |
| 0479 | Audiology - Other | 188,482 | 0.0\% | 0.0\% | 24,910 | 0.0\% | 88.3\% |
| 0480 | Cardiology - General | 1,988,348,166 | 1.8\% | 1.5\% | 6,553,067,815 | 2.5\% | 23.3\% |
| 0481 | Cardiology - Catheterization lab | 3,313,480,809 | 2.9\% | 2.6\% | 8,188,565,046 | 3.2\% | 28.8\% |
| 0482 | Cardiology - Stress test | 486,420,340 | 0.4\% | 0.4\% | 307,669,907 | 0.1\% | 61.3\% |
| 0483 | Cardiology - Echo | 260,270,636 | 0.2\% | 0.2\% | 713,259,433 | 0.3\% | 26.7\% |
| 0489 | Cardiology - Other | 5,626,773 | 0.0\% | 0.0\% | 41,527,085 | 0.0\% | 11.9\% |
| 0490 | Ambul Surg - General | 761,515,555 | 0.7\% | 0.6\% | 225,053,733 | 0.1\% | 77.2\% |
| 0499 | Ambul Surg - Other | 84,937,918 | 0.1\% | 0.1\% | 6,207,685 | 0.0\% | 93.2\% |
| 0500 | Outpatient Services - General | 653 | 0.0\% | 0.0\% | 41,823,341 | 0.0\% | 0.0\% |
| 0510 | Hospital clinics - General | 1,640,716,633 | 1.5\% | 1.3\% | 44,329,143 | 0.0\% | 97.4\% |
| 0511 | Hospital clinics - Chronic pain | 59,082,363 | 0.1\% | 0.0\% | 551,050 | 0.0\% | 99.1\% |
| 0512 | Hospital clinics - Dental | 99,303 | 0.0\% | 0.0\% | 107,987 | 0.0\% | 47.9\% |
| 0513 | Hospital clinics - Psychiatric | 25,217,639 | 0.0\% | 0.0\% | 214,145 | 0.0\% | 99.2\% |
| 0514 | Hospital clinics - Ob-gyn | 2,560,978 | 0.0\% | 0.0\% | 46,701 | 0.0\% | 98.2\% |
| 0515 | Hospital clinics - Pediatrics | 340,776 | 0.0\% | 0.0\% | 2,715 | 0.0\% | 99.2\% |
| 0516 | Hospital clinics - Urgent care | 10,138,045 | 0.0\% | 0.0\% | 675,082 | 0.0\% | 93.8\% |
| 0517 | Hospital clinics - Family practice | 5,816,229 | 0.0\% | 0.0\% | 9,244 | 0.0\% | 99.8\% |
| 0519 | Hospital clinics - Other | 79,757,932 | 0.1\% | 0.1\% | 1,778,025 | 0.0\% | 97.8\% |
| 0520 | Freestanding clinics - General | 132,923 | 0.0\% | 0.0\% | 2,400 | 0.0\% | 98.2\% |
| 0521 | Freestanding clinics - RHC | 468,566 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0522 | Freestanding clinics - RHC-home visit | 2,495 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0523 | Freestanding clinics - Family clinic | 8,595 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF Charges $\qquad$ | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0525 | Freestanding clinics - | 42 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0526 | Freestanding clinics - Urgent care | 366 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0530 | Osteopathic services - General | 177,973 | 0.0\% | 0.0\% | 463 | 0.0\% | 99.7\% |
| 0531 | Osteopathic services - Therapy | 26,921 | 0.0\% | 0.0\% | 5,632 | 0.0\% | 82.7\% |
| 0539 | Osteopathic services - Other | 660 | 0.0\% | 0.0\% | 4,902 | 0.0\% | 11.9\% |
| 0610 | MRI/MRA - General | 1,868,301,897 | 1.7\% | 1.5\% | 1,299,469,411 | 0.5\% | 59.0\% |
| 0611 | MRI/MRA - Brain | 1,209,090,810 | 1.1\% | 0.9\% | 1,200,569,470 | 0.5\% | 50.2\% |
| 0612 | MRI/MRA - Spinal cord | 1,401,690,384 | 1.2\% | 1.1\% | 512,447,727 | 0.2\% | 73.2\% |
| 0614 | MRI/MRA - MRI/other | 90,329,071 | 0.1\% | 0.1\% | 29,036,666 | 0.0\% | 75.7\% |
| 0615 | MRI/MRA - MRA/head, neck | 94,163,042 | 0.1\% | 0.1\% | 164,049,657 | 0.1\% | 36.5\% |
| 0616 | MRI/MRA - MRA/lower extremities | 19,297,442 | 0.0\% | 0.0\% | 9,775,633 | 0.0\% | 66.4\% |
| 0618 | MRI/MRA - MRA/other | 31,819,523 | 0.0\% | 0.0\% | 24,658,872 | 0.0\% | 56.3\% |
| 0619 | MRI/MRA - MRA/other | 51,388,934 | 0.0\% | 0.0\% | 34,189,571 | 0.0\% | 60.0\% |
| 0621 | Supplies sold - Incident to radiology | 97,324,556 | 0.1\% | 0.1\% | 104,964,084 | 0.0\% | 48.1\% |
| 0622 | Supplies sold - Incident to other dx | 43,240,664 | 0.0\% | 0.0\% | 117,655,368 | 0.0\% | 26.9\% |
| 0623 | Supplies sold - Surgical dressing | 3,971,623 | 0.0\% | 0.0\% | 2,880,185 | 0.0\% | 58.0\% |
| 0624 | Supplies sold - Investigational devices | 1,357,436 | 0.0\% | 0.0\% | 39,361,976 | 0.0\% | 3.3\% |
| 0630 | Drugs Sold - General | 26,020 | 0.0\% | 0.0\% | 351 | 0.0\% | 98.7\% |
| 0631 | Drugs Sold - Single source | 8,059 | 0.0\% | 0.0\% | 14,601 | 0.0\% | 35.6\% |
| 0634 | Drugs Sold - EPO<10k units | 801,804 | 0.0\% | 0.0\% | 27,749,232 | 0.0\% | 2.8\% |
| 0635 | Drugs Sold - EPO $>=10 \mathrm{k}$ units | 1,539,212 | 0.0\% | 0.0\% | 45,312,626 | 0.0\% | 3.3\% |
| 0636 | Drugs Sold - Addl detail coding | 10,398,065,727 | 9.2\% | 8.1\% | 236,605,699 | 0.1\% | 97.8\% |
| 0637 | Drugs Sold - Self-administrable | 10,176,034 | 0.0\% | 0.0\% | 162,218,522 | 0.1\% | 5.9\% |
| 0681 | Trauma response - Level 1 | 7,084,088 | 0.0\% | 0.0\% | 35,091,601 | 0.0\% | 16.8\% |
| 0682 | Trauma response - Level 2 | 6,884,555 | 0.0\% | 0.0\% | 24,850,293 | 0.0\% | 21.7\% |
| 0683 | Trauma response - Level 3 | 1,879,472 | 0.0\% | 0.0\% | 4,388,948 | 0.0\% | 30.0\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF Charges $\qquad$ | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0684 | Trauma response - Level 4 | 172,586 | 0.0\% | 0.0\% | 298,698 | 0.0\% | 36.6\% |
| 0689 | Trauma response - Other | 30,804 | 0.0\% | 0.0\% | 181,876 | 0.0\% | 14.5\% |
| 0700 | Cast Room - General | 3,764,334 | 0.0\% | 0.0\% | 1,404,384 | 0.0\% | 72.8\% |
| 0709 | Cast Room - Other | 65,518 | 0.0\% | 0.0\% | 122,438 | 0.0\% | 34.9\% |
| 0710 | Recovery Rm - General | 2,489,570,867 | 2.2\% | 1.9\% | 3,068,113,760 | 1.2\% | 44.8\% |
| 0719 | Recovery Rm - Other | 92,656,800 | 0.1\% | 0.1\% | 46,567,662 | 0.0\% | 66.6\% |
| 0720 | Labor \& Del - General | 1,199,138 | 0.0\% | 0.0\% | 15,481,792 | 0.0\% | 7.2\% |
| 0721 | Labor \& Del - Labor | 796,717 | 0.0\% | 0.0\% | 4,108,596 | 0.0\% | 16.2\% |
| 0722 | Labor \& Del - Delivery | 32,111 | 0.0\% | 0.0\% | 7,072,630 | 0.0\% | 0.5\% |
| 0723 | Labor \& Del - Circumcision | 0 | 0.0\% | 0.0\% | 3,718 | 0.0\% | 0.0\% |
| 0724 | Labor \& Del - Birthing room | 9,265 | 0.0\% | 0.0\% | 271,123 | 0.0\% | 3.3\% |
| 0729 | Labor \& Del - Other | 182,666 | 0.0\% | 0.0\% | 797,972 | 0.0\% | 18.6\% |
| 0730 | EKG/ECG - General | 1,143,711,236 | 1.0\% | 0.9\% | 2,782,113,827 | 1.1\% | 29.1\% |
| 0731 | EKG/ECG - Holter monitor | 147,934,512 | 0.1\% | 0.1\% | 263,240,524 | 0.1\% | 36.0\% |
| 0732 | EKG/ECG - Telemetry | 29,088,896 | 0.0\% | 0.0\% | 697,561,742 | 0.3\% | 4.0\% |
| 0739 | EKG/ECG - Other | 852,199 | 0.0\% | 0.0\% | 7,690,272 | 0.0\% | 10.0\% |
| 0740 | EEG - General | 564,333,424 | 0.5\% | 0.4\% | 388,601,341 | 0.1\% | 59.2\% |
| 0749 | EEG - Other | 26,996,852 | 0.0\% | 0.0\% | 8,142,124 | 0.0\% | 76.8\% |
| 0750 | GI Services - General | 2,484,212,883 | 2.2\% | 1.9\% | 1,348,990,372 | 0.5\% | 64.8\% |
| 0759 | GI Services - Other | 29,199,221 | 0.0\% | 0.0\% | 21,752,413 | 0.0\% | 57.3\% |
| 0760 | Observation - General | 28,186,361 | 0.0\% | 0.0\% | 20,218,179 | 0.0\% | 58.2\% |
| 0761 | Observation - Treatment room | 778,923,823 | 0.7\% | 0.6\% | 388,895,022 | 0.1\% | 66.7\% |
| 0762 | Observation - Observ room | 1,202,317,892 | 1.1\% | 0.9\% | 303,238,239 | 0.1\% | 79.9\% |
| 0764 | Observation - | 1,625 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0765 | Observation - | 196 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0769 | Observation - Other | 2,761,748 | 0.0\% | 0.0\% | 1,270,306 | 0.0\% | 68.5\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF Charges $\qquad$ | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0770 | Preventive Care - General | 1,808,748 | 0.0\% | 0.0\% | 43,343 | 0.0\% | 97.7\% |
| 0771 | Preventive Care - Vaccine admin | 24,773,684 | 0.0\% | 0.0\% | 592,427 | 0.0\% | 97.7\% |
| 0780 | Telemedicine - General | 0 | 0.0\% | 0.0\% | 1,014 | 0.0\% | 0.0\% |
| 0782 | Telemedicine - | 0 | 0.0\% | 0.0\% | 126 | 0.0\% | 0.0\% |
| 0790 | Lithotripsy - General | 278,071,705 | 0.2\% | 0.2\% | 18,974,221 | 0.0\% | 93.6\% |
| 0791 | Lithotripsy - | 0 | 0.0\% | 0.0\% | 3,023 | 0.0\% | 0.0\% |
| 0794 | Lithotripsy - | 0 | 0.0\% | 0.0\% | 93 | 0.0\% | 0.0\% |
| 0797 | Lithotripsy - | 0 | 0.0\% | 0.0\% | 373 | 0.0\% | 0.0\% |
| 0798 | Lithotripsy - | 0 | 0.0\% | 0.0\% | 2,957 | 0.0\% | 0.0\% |
| 0799 | Lithotripsy - Other | 2,758,554 | 0.0\% | 0.0\% | 63,467 | 0.0\% | 97.8\% |
| 0800 | I/P Dialysis - General | 1,200,875 | 0.0\% | 0.0\% | 226,962,005 | 0.1\% | 0.5\% |
| 0801 | I/P Dialysis - Hemo | 24,403,651 | 0.0\% | 0.0\% | 2,065,120,796 | 0.8\% | 1.2\% |
| 0802 | I/P Dialysis - Peritoneal | 207,471 | 0.0\% | 0.0\% | 30,144,770 | 0.0\% | 0.7\% |
| 0803 | I/P Dialysis - CAPD | 26,873 | 0.0\% | 0.0\% | 14,938,969 | 0.0\% | 0.2\% |
| 0804 | I/P Dialysis - CCPD | 19,309 | 0.0\% | 0.0\% | 16,070,181 | 0.0\% | 0.1\% |
| 0809 | I/P Dialysis - Other | 9,300 | 0.0\% | 0.0\% | 18,913,916 | 0.0\% | 0.0\% |
| 0820 | Hemo--O/P or Home - General | 5,026,883 | 0.0\% | 0.0\% | 9,442 | 0.0\% | 99.8\% |
| 0821 | Hemo--O/P or Home - Composite rate | 14,671,202 | 0.0\% | 0.0\% | 1,940,589 | 0.0\% | 88.3\% |
| 0822 | Hemo--O/P or Home - Supplies | 16,497 | 0.0\% | 0.0\% | 8,669 | 0.0\% | 65.6\% |
| 0824 | Hemo--O/P or Home - Maintenance | 15 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0825 | Hemo--O/P or Home - Support | 3,281 | 0.0\% | 0.0\% | 494 | 0.0\% | 86.9\% |
| 0829 | Hemo--O/P or Home - Other | 7,602,811 | 0.0\% | 0.0\% | 1,013,112 | 0.0\% | 88.2\% |
| 0830 | Perit Dialysis--O/P - General | 3,895 | 0.0\% | 0.0\% | 610 | 0.0\% | 86.5\% |
| 0839 | Perit Dialysis--O/P - Other | 1,092 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0840 | CAPD--O/P or Home - General | 7,793 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0842 | CAPD--O/P or Home - Home supplies | 100 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF <br> Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0845 | CAPD--O/P or Home - Support services | 5,169 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0849 | CAPD--O/P or Home - Other | 1,393 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0850 | CCPD--O/P or Home - General | 13,866 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0859 | CCPD--O/P or Home - Other | 1,795 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0880 | Miscellaneous Dialysis - General | 1,875,444 | 0.0\% | 0.0\% | 5,438,575 | 0.0\% | 25.6\% |
| 0881 | Miscellaneous Dialysis - Ultrafiltration | 298,826 | 0.0\% | 0.0\% | 6,596,187 | 0.0\% | 4.3\% |
| 0888 | Miscellaneous Dialysis - | 0 | 0.0\% | 0.0\% | 1,105 | 0.0\% | 0.0\% |
| 0889 | Miscellaneous Dialysis - Other | 1,954,327 | 0.0\% | 0.0\% | 3,447,228 | 0.0\% | 36.2\% |
| 0900 | Psych treatment - General | 34,578,544 | 0.0\% | 0.0\% | 55,136,863 | 0.0\% | 38.5\% |
| 0901 | Psych treatment - Electro convulsive tx | 52,808,712 | 0.0\% | 0.0\% | 42,376,891 | 0.0\% | 55.5\% |
| 0902 | Psych treatment - Milieu therapy | 3,755 | 0.0\% | 0.0\% | 3,917,742 | 0.0\% | 0.1\% |
| 0903 | Psych treatment - Play therapy | 3,627 | 0.0\% | 0.0\% | 79,645 | 0.0\% | 4.4\% |
| 0904 | Psych treatment - Activity therapy | 22,615,509 | 0.0\% | 0.0\% | 3,990,109 | 0.0\% | 85.0\% |
| 0905 | Psych treatment - Intensive O/P-psych | 3,470 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0906 | Psych treatment - Intensive O/P-chem dep | 25,639 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0907 | Psych treatment - Community behav hlth | 907 | 0.0\% | 0.0\% | 0 | 0.0\% | 100.0\% |
| 0909 | Psych treatment - Other | 18,351 | 0.0\% | 0.0\% | 913,177 | 0.0\% | 2.0\% |
| 0910 | Psychol services - General | 0 | 0.0\% | 0.0\% | 3,149 | 0.0\% | 0.0\% |
| 0911 | Psychol services - Rehab | 1,049,607 | 0.0\% | 0.0\% | 2,907,256 | 0.0\% | 26.5\% |
| 0912 | Psychol services - Partial hosp/routine | 1,207,135 | 0.0\% | 0.0\% | 44,227 | 0.0\% | 96.5\% |
| 0913 | Psychol services - Partial hosp/intensive | 188,073 | 0.0\% | 0.0\% | 13,269 | 0.0\% | 93.4\% |
| 0914 | Psychol services - Indiv therapy | 133,256,202 | 0.1\% | 0.1\% | 25,646,641 | 0.0\% | 83.9\% |
| 0915 | Psychol services - Group therapy | 616,874,434 | 0.5\% | 0.5\% | 117,439,412 | 0.0\% | 84.0\% |
| 0916 | Psychol services - Family therapy | 3,133,928 | 0.0\% | 0.0\% | 2,870,303 | 0.0\% | 52.2\% |
| 0917 | Psychol services - Bio feedback | 1,046,477 | 0.0\% | 0.0\% | 126,606 | 0.0\% | 89.2\% |
| 0918 | Psychol services - Testing | 9,216,379 | 0.0\% | 0.0\% | 7,367,130 | 0.0\% | 55.6\% |

## Attachment 3 (cont'd)

Inpatient and Outpatient Ancillary Charges by UB-92 Revenue Code

| UB 92 revenue code | Description | Outpatient SAF Covered Charges | Percent of outpatient total excluding Dx Lab | Percent of total outpatient | Inpatient SAF <br> Charges | Percent of total ancillary inpatient | Outpatient charges as percent of total ancillary charges |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0919 | Psychol services - Other | 3,820,433 | 0.0\% | 0.0\% | 7,531,389 | 0.0\% | 33.7\% |
| 0920 | Other Diagnostic - General | 351,661,021 | 0.3\% | 0.3\% | 90,498,470 | 0.0\% | 79.5\% |
| 0921 | Other Diagnostic - Peripheral vasc lab | 1,443,302,230 | 1.3\% | 1.1\% | 1,626,800,690 | 0.6\% | 47.0\% |
| 0922 | Other Diagnostic - EMG | 129,119,957 | 0.1\% | 0.1\% | 59,583,655 | 0.0\% | 68.4\% |
| 0923 | Other Diagnostic - Pap smear | 1,565,988 | 0.0\% | 0.0\% | 28,441 | 0.0\% | 98.2\% |
| 0924 | Other Diagnostic - Allergy testing | 4,306,187 | 0.0\% | 0.0\% | 232,423 | 0.0\% | 94.9\% |
| 0925 | Other Diagnostic - Pregnancy test | 4,905 | 0.0\% | 0.0\% | 12,457 | 0.0\% | 28.3\% |
| 0929 | Other Diagnostic - Other | 3,950,742 | 0.0\% | 0.0\% | 4,302,958 | 0.0\% | 47.9\% |
| 0940 | Other Therapeutic - General | 353,739,029 | 0.3\% | 0.3\% | 384,998,225 | 0.1\% | 47.9\% |
| 0941 | Other Therapeutic - Recreation therapy | 15,894 | 0.0\% | 0.0\% | 16,569,272 | 0.0\% | 0.1\% |
| 0942 | Other Therapeutic - Education/ training | 128,989,218 | 0.1\% | 0.1\% | 49,655,623 | 0.0\% | 72.2\% |
| 0943 | Other Therapeutic - Cardiac rehab | 329,954,149 | 0.3\% | 0.3\% | 49,532,057 | 0.0\% | 86.9\% |
| 0944 | Other Therapeutic - Drug rehab | 3,798,345 | 0.0\% | 0.0\% | 2,958,816 | 0.0\% | 56.2\% |
| 0945 | Other Therapeutic - Alcohol rehab Other Therapeutic - Complex med eqt- | 7,399,180 | 0.0\% | 0.0\% | 1,537,129 | 0.0\% | 82.8\% |
| 0946 | rout <br> Other Therapeutic - Complex med eqt- | 19,888 | 0.0\% | 0.0\% | 107,336,330 | 0.0\% | 0.0\% |
| 0947 |  | 2,554 | 0.0\% | 0.0\% | 85,935,134 | 0.0\% | 0.0\% |
| 0948 | Other Therapeutic - | 0 | 0.0\% | 0.0\% | 6,123 | 0.0\% | 0.0\% |
| 0949 | Other Therapeutic - Other | 16,090,070 | 0.0\% | 0.0\% | 17,970,507 | 0.0\% | 47.2\% |
| 0950 | Other Therapeutic - Reserved | 0 | 0.0\% | 0.0\% | 2,982 | 0.0\% | 0.0\% |
| Total |  | 128,455,643,064 | 114.2\% | 100.0\% | 259,266,469,808 | 100.0\% | 33.1\% |
| * Total e | cluding Clinical Lab from OPSAF | 112,464,979,472 | 100.0\% | 87.6\% |  |  |  |

SOURCE: RTI Analysis of Outpatient and Inpatient Standard Analytic Files, for claims matched to the CCR project hospital finder file.

Attachment 5
Reconstructed MS-DRG Weights by Model


Attachment 5 (cont'd)
Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$ <br> HCRIS <br> lines <br> reassigned <br> with <br> adjusted <br> CCRs | Impact: <br> accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | $\begin{gathered} \text { HCRIS } \\ \text { lines } \\ \text { reassigned } \\ \hline \end{gathered}$ | $\begin{aligned} & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { and } \\ & \text { expanded } \\ & \hline \end{aligned}$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 035 | Carotid artery stent procedure w CC | 2,174 | 1.00 | 1.9861 | 1.9971 | 2.0175 | 2.0541 | 0.6\% | 1.0\% | 1.8\% | 3.4\% |
| 036 | Carotid artery stent procedure w/o CC/MCC | 6,073 | 1.00 | 1.6059 | 1.6154 | 1.6394 | 1.6678 | 0.6\% | 1.5\% | 1.7\% | 3.9\% |
| 037 | Extracranial procedures w MCC | 4,158 | 1.00 | 3.1237 | 3.1303 | 3.1333 | 3.0971 | 0.2\% | 0.1\% | -1.2\% | -0.9\% |
| 038 | Extracranial procedures w CC | 15,218 | 1.00 | 1.5230 | 1.5239 | 1.5303 | 1.5037 | 0.1\% | 0.4\% | -1.7\% | -1.3\% |
| 039 | Extracranial procedures w/o CC/MCC | 50,214 | 1.00 | 1.0022 | 1.0024 | 1.0117 | 0.9795 | 0.0\% | 0.9\% | -3.2\% | -2.3\% |
| 040 | Periph/cranial nerve \& other nerv syst proc w MCC | 3,985 | 0.96 | 3.9443 | 3.9515 | 3.9399 | 3.9646 | 0.2\% | -0.3\% | 0.6\% | 0.5\% |
| 041 | Periph/cranial nerve \& other nerv syst proc w CC or periph neurostim | 7,424 | 0.98 | 2.2105 | 2.2141 | 2.2216 | 2.2935 | 0.2\% | 0.3\% | 3.2\% | 3.8\% |
| 042 | Periph/cranial nerve \& other nerv syst proc w/o CC/MCC | 4,713 | 1.00 | 1.7201 | 1.7269 | 1.7753 | 1.9049 | 0.4\% | 2.8\% | 7.3\% | 10.7\% |
| 052 | Spinal disorders \& injuries w CC/MCC | 1,111 | 0.98 | 1.6895 | 1.6917 | 1.6461 | 1.6294 | 0.1\% | -2.7\% | -1.0\% | -3.6\% |
| 053 | Spinal disorders \& injuries w/o CC/MCC | 519 | 0.99 | 1.0139 | 1.0163 | 0.9676 | 0.9681 | 0.2\% | -4.8\% | 0.1\% | -4.5\% |
| 054 | Nervous system neoplasms w MCC | 4,102 | 0.96 | 1.6331 | 1.6325 | 1.6075 | 1.5793 | 0.0\% | -1.5\% | -1.8\% | -3.3\% |
| 055 | Nervous system neoplasms w/o MCC | 15,643 | 0.98 | 1.0885 | 1.0885 | 1.0617 | 1.0472 | 0.0\% | -2.5\% | -1.4\% | -3.8\% |
| 056 | Degenerative nervous system disorders w MCC | 9,391 | 0.94 | 1.6656 | 1.6618 | 1.6516 | 1.6271 | -0.2\% | -0.6\% | -1.5\% | -2.3\% |
| 057 | Degenerative nervous system disorders w/o MCC | 71,365 | 0.98 | 1.0959 | 1.0914 | 1.0830 | 1.0718 | -0.4\% | -0.8\% | -1.0\% | -2.2\% |
| 058 | Multiple sclerosis \& cerebellar ataxia w MCC | 652 | 0.99 | 1.6699 | 1.6700 | 1.6575 | 1.6330 | 0.0\% | -0.7\% | -1.5\% | -2.2\% |
| 059 | Multiple sclerosis \& cerebellar ataxia w CC | 2,313 | 1.00 | 0.9659 | 0.9655 | 0.9493 | 0.9423 | 0.0\% | -1.7\% | -0.7\% | -2.4\% |
| 060 | Multiple sclerosis \& cerebellar ataxia w/o CC/MCC | 3,645 | 1.00 | 0.7311 | 0.7307 | 0.7171 | 0.7144 | 0.0\% | -1.9\% | -0.4\% | -2.3\% |
| 061 | Acute ischemic stroke w use of thrombolytic agent w MCC | 1,146 | 0.99 | 2.8988 | 2.9025 | 2.8491 | 2.8296 | 0.1\% | -1.8\% | -0.7\% | -2.4\% |
| 062 | Acute ischemic stroke w use of thrombolytic agent w CC | 1,944 | 1.00 | 2.0171 | 2.0200 | 1.9662 | 1.9628 | 0.1\% | -2.7\% | -0.2\% | -2.7\% |
| 063 | Acute ischemic stroke w use of thrombolytic agent w/o CC/MCC | 957 | 1.00 | 1.5783 | 1.5817 | 1.5297 | 1.5322 | 0.2\% | -3.3\% | 0.2\% | -2.9\% |
| 064 | Intracranial hemorrhage or cerebral infarction w MCC | 50,416 | 0.96 | 1.8989 | 1.9009 | 1.8645 | 1.8390 | 0.1\% | -1.9\% | -1.4\% | -3.2\% |
| 065 | Intracranial hemorrhage or cerebral infarction w CC | 107,351 | 0.97 | 1.1906 | 1.1929 | 1.1546 | 1.1535 | 0.2\% | -3.2\% | -0.1\% | -3.1\% |
| 066 | Intracranial hemorrhage or cerebral infarction w/o CC/MCC | 85,426 | 0.99 | 0.8581 | 0.8613 | 0.8238 | 0.8303 | 0.4\% | -4.3\% | 0.8\% | -3.2\% |
| 067 | Nonspecific cva \& precerebral occlusion w/o infarct w MCC | 1,283 | 0.99 | 1.5695 | 1.5725 | 1.5451 | 1.5605 | 0.2\% | -1.7\% | 1.0\% | -0.6\% |
| 068 | Nonspecific cva \& precerebral occlusion w/o infarct w/o MCC | 11,873 | 1.00 | 0.8836 | 0.8877 | 0.8616 | 0.8876 | 0.5\% | -2.9\% | 3.0\% | 0.5\% |
| 069 | Transient ischemia | 96,221 | 1.00 | 0.7147 | 0.7187 | 0.6852 | 0.6951 | 0.6\% | -4.7\% | 1.4\% | -2.7\% |
| 070 | Nonspecific cerebrovascular disorders w MCC | 6,159 | 0.95 | 1.8772 | 1.8806 | 1.8530 | 1.8265 | 0.2\% | -1.5\% | -1.4\% | -2.7\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| MS- <br> DRG | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$HCRISlinesreassignedwithadjustedCCRs | Impact: <br> accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{aligned} & \text { HCRIS } \\ & \text { lines, } \\ & \text { original } \end{aligned}$ | HCRIS <br> lines reassigned | $\begin{aligned} & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { and } \\ & \text { expanded } \\ & \hline \end{aligned}$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 182 | Respiratory neoplasms w/o CC/MCC | 7,322 | 1.00 | 1.1474 | 1.1460 | 1.1339 | 1.0991 | -0.1\% | -1.1\% | -3.1\% | -4.2\% |
| 183 | Major chest trauma w MCC | 1,416 | 1.00 | 1.5433 | 1.5438 | 1.5036 | 1.4856 | 0.0\% | -2.6\% | -1.2\% | -3.7\% |
| 184 | Major chest trauma w CC | 3,680 | 1.00 | 0.9089 | 0.9101 | 0.8705 | 0.8651 | 0.1\% | -4.4\% | -0.6\% | -4.8\% |
| 185 | Major chest trauma w/o CC/MCC | 2,303 | 1.00 | 0.6392 | 0.6396 | 0.6107 | 0.6101 | 0.1\% | -4.5\% | -0.1\% | -4.6\% |
| 186 | Pleural effusion w MCC | 7,298 | 0.97 | 1.6267 | 1.6290 | 1.6118 | 1.5983 | 0.1\% | -1.1\% | -0.8\% | -1.7\% |
| 187 | Pleural effusion w CC | 9,577 | 0.98 | 1.1446 | 1.1437 | 1.1264 | 1.1247 | -0.1\% | -1.5\% | -0.2\% | -1.7\% |
| 188 | Pleural effusion w/o CC/MCC | 4,728 | 0.99 | 0.8506 | 0.8491 | 0.8342 | 0.8354 | -0.2\% | -1.8\% | 0.1\% | -1.8\% |
| 189 | Pulmonary edema \& respiratory failure | 96,007 | 1.00 | 1.3522 | 1.3509 | 1.3539 | 1.3299 | -0.1\% | 0.2\% | -1.8\% | -1.7\% |
| 190 | Chronic obstructive pulmonary disease w MCC | 51,430 | 0.98 | 1.3572 | 1.3550 | 1.3560 | 1.3350 | -0.2\% | 0.1\% | -1.5\% | -1.6\% |
| 191 | Chronic obstructive pulmonary disease w CC | 117,334 | 0.98 | 1.0022 | 1.0001 | 0.9986 | 0.9828 | -0.2\% | -0.2\% | -1.6\% | -1.9\% |
| 192 | Chronic obstructive pulmonary disease w/o CC/MCC | 182,602 | 0.99 | 0.7449 | 0.7433 | 0.7435 | 0.7303 | -0.2\% | 0.0\% | -1.8\% | -2.0\% |
| 193 | Simple pneumonia \& pleurisy w MCC | 77,122 | 0.97 | 1.4989 | 1.4981 | 1.4954 | 1.4673 | 0.0\% | -0.2\% | -1.9\% | -2.1\% |
| 194 | Simple pneumonia \& pleurisy w CC | 260,833 | 0.98 | 1.0317 | 1.0295 | 1.0251 | 1.0039 | -0.2\% | -0.4\% | -2.1\% | -2.7\% |
| 195 | Simple pneumonia \& pleurisy w/o CC/MCC | 138,018 | 0.99 | 0.7506 | 0.7486 | 0.7450 | 0.7293 | -0.3\% | -0.5\% | -2.1\% | -2.8\% |
| 196 | Interstitial lung disease w MCC | 4,640 | 0.97 | 1.5893 | 1.5866 | 1.5778 | 1.5549 | -0.2\% | -0.6\% | -1.5\% | -2.2\% |
| 197 | Interstitial lung disease w CC | 6,660 | 0.98 | 1.1325 | 1.1304 | 1.1181 | 1.1048 | -0.2\% | -1.1\% | -1.2\% | -2.4\% |
| 198 | Interstitial lung disease w/o CC/MCC | 4,575 | 0.99 | 0.8587 | 0.8572 | 0.8458 | 0.8349 | -0.2\% | -1.3\% | -1.3\% | -2.8\% |
| 199 | Pneumothorax w MCC | 2,839 | 0.99 | 1.7496 | 1.7487 | 1.7304 | 1.7081 | 0.0\% | -1.0\% | -1.3\% | -2.4\% |
| 200 | Pneumothorax w CC | 7,573 | 1.00 | 1.0308 | 1.0309 | 1.0091 | 1.0063 | 0.0\% | -2.1\% | -0.3\% | -2.4\% |
| 201 | Pneumothorax w/o CC/MCC | 3,176 | 1.00 | 0.7220 | 0.7214 | 0.7124 | 0.7150 | -0.1\% | -1.2\% | 0.4\% | -1.0\% |
| 202 | Bronchitis \& asthma w CC/MCC | 28,596 | 1.00 | 0.8273 | 0.8262 | 0.8242 | 0.8123 | -0.1\% | -0.2\% | -1.4\% | -1.8\% |
| 203 | Bronchitis \& asthma w/o CC/MCC | 36,899 | 1.00 | 0.6090 | 0.6075 | 0.6070 | 0.5980 | -0.2\% | -0.1\% | -1.5\% | -1.8\% |
| 204 | Respiratory signs \& symptoms | 23,977 | 1.00 | 0.6527 | 0.6533 | 0.6414 | 0.6440 | 0.1\% | -1.8\% | 0.4\% | -1.3\% |
| 205 | Other respiratory system diagnoses w MCC | 4,883 | 0.97 | 1.2041 | 1.2054 | 1.1925 | 1.1788 | 0.1\% | -1.1\% | -1.1\% | -2.1\% |
| 206 | Other respiratory system diagnoses w/o MCC | 20,034 | 0.99 | 0.7349 | 0.7349 | 0.7191 | 0.7173 | 0.0\% | -2.2\% | -0.2\% | -2.4\% |
| 207 | Respiratory system diagnosis w ventilator support 96+ hours | 41,771 | 0.96 | 5.1375 | 5.1337 | 5.1618 | 5.0317 | -0.1\% | 0.5\% | -2.5\% | -2.1\% |
| 208 | Respiratory system diagnosis w ventilator support <96 hours | 71,927 | 0.99 | 2.2463 | 2.2456 | 2.2497 | 2.1989 | 0.0\% | 0.2\% | -2.3\% | -2.1\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| MS- <br> DRG | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\begin{aligned} & \frac{\text { Regression }}{\text { Adjusted }} \\ & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { with } \\ & \text { adjusted } \\ & \text { CCRs } \\ & \hline \end{aligned}$ | $\frac{\text { Impact: }}{\text { accounting-based changes }}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS <br> lines reassigned | $\begin{aligned} & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { and } \\ & \text { expanded } \\ & \hline \end{aligned}$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 215 | Other heart assist system implant | 133 | 0.98 | 11.3884 | 11.4332 | 11.5604 | 11.5038 | 0.4\% | 1.1\% | -0.5\% | 1.0\% |
| 216 | Cardiac valve \& oth maj cardiothoracic proc w card cath w MCC | 7,646 | 0.94 | 10.4013 | 10.4172 | 10.5250 | 10.4250 | 0.2\% | 1.0\% | -0.9\% | 0.2\% |
| 217 | Cardiac valve \& oth maj cardiothoracic proc w card cath w CC | 7,297 | 0.95 | 6.9823 | 6.9861 | 7.0681 | 7.0298 | 0.1\% | 1.2\% | -0.5\% | 0.7\% |
| 218 | Cardiac valve \& oth maj cardiothoracic proc w card cath w/o CC/MCC | 2,760 | 0.97 | 5.5353 | 5.5371 | 5.6070 | 5.5481 | 0.0\% | 1.3\% | -1.1\% | 0.2\% |
| 219 | Cardiac valve \& oth maj cardiothoracic proc w/o card cath w MCC | 8,801 | 0.97 | 8.3110 | 8.3220 | 8.4043 | 8.3514 | 0.1\% | 1.0\% | -0.6\% | 0.5\% |
| 220 | Cardiac valve \& oth maj cardiothoracic proc w/o card cath w CC | 12,818 | 0.98 | 5.3477 | 5.3520 | 5.4115 | 5.4122 | 0.1\% | 1.1\% | 0.0\% | 1.2\% |
| 221 | Cardiac valve \& oth maj cardiothoracic proc w/o card cath w/o CC/MCC | 7,098 | 0.99 | 4.4196 | 4.4234 | 4.4747 | 4.4527 | 0.1\% | 1.2\% | -0.5\% | 0.7\% |
| 222 | Cardiac defib implant w cardiac cath w AMI/HF/shock w MCC | 2,504 | 1.00 | 8.9034 | 8.9243 | 9.0248 | 10.1441 | 0.2\% | 1.1\% | 12.4\% | 13.9\% |
| 223 | Cardiac defib implant w cardiac cath w AMI/HF/shock w/o MCC | 5,241 | 1.00 | 6.7305 | 6.7505 | 6.8356 | 8.0414 | 0.3\% | 1.3\% | 17.6\% | 19.5\% |
| 224 | Cardiac defib implant w cardiac cath w/o AMI/HF/shock w MCC | 1,654 | 1.00 | 8.2949 | 8.3169 | 8.4042 | 9.4577 | 0.3\% | 1.0\% | 12.5\% | 14.0\% |
| 225 | Cardiac defib implant w cardiac cath w/o AMI/HF/shock w/o MCC | 5,302 | 1.00 | 6.2698 | 6.2889 | 6.3656 | 7.4861 | 0.3\% | 1.2\% | 17.6\% | 19.4\% |
| 226 | Cardiac defibrillator implant w/o cardiac cath w MCC | 6,287 | 1.00 | 6.9126 | 6.9342 | 7.0048 | 8.1548 | 0.3\% | 1.0\% | 16.4\% | 18.0\% |
| 227 | Cardiac defibrillator implant w/o cardiac cath w/o MCC | 46,455 | 1.00 | 5.1909 | 5.2118 | 5.2727 | 6.4638 | 0.4\% | 1.2\% | 22.6\% | 24.5\% |
| 228 | Other cardiothoracic procedures w MCC | 2,687 | 0.95 | 7.8948 | 7.9040 | 7.9788 | 7.6304 | 0.1\% | 0.9\% | -4.4\% | -3.3\% |
| 229 | Other cardiothoracic procedures w CC | 3,819 | 0.97 | 4.9632 | 4.9667 | 5.0242 | 4.7350 | 0.1\% | 1.2\% | -5.8\% | -4.6\% |
| 230 | Other cardiothoracic procedures w/o CC/MCC | 1,602 | 0.98 | 3.9853 | 3.9887 | 4.0359 | 3.7674 | 0.1\% | 1.2\% | -6.7\% | -5.5\% |
| 231 | Coronary bypass w PTCA w MCC | 1,062 | 1.00 | 7.9592 | 7.9722 | 8.0650 | 7.7354 | 0.2\% | 1.2\% | -4.1\% | -2.8\% |
| 232 | Coronary bypass w PTCA w/o MCC | 1,286 | 1.00 | 5.6342 | 5.6417 | 5.7165 | 5.4451 | 0.1\% | 1.3\% | -4.7\% | -3.4\% |
| 233 | Coronary bypass w cardiac cath w MCC | 15,137 | 0.94 | 7.1083 | 7.1185 | 7.1947 | 6.8591 | 0.1\% | 1.1\% | -4.7\% | -3.5\% |
| 234 | Coronary bypass w cardiac cath w/o MCC | 36,265 | 0.97 | 4.6426 | 4.6467 | 4.7062 | 4.4299 | 0.1\% | 1.3\% | -5.9\% | -4.6\% |
| 235 | Coronary bypass w/o cardiac cath w MCC | 8,538 | 0.94 | 5.8566 | 5.8625 | 5.9204 | 5.6524 | 0.1\% | 1.0\% | -4.5\% | -3.5\% |
| 236 | Coronary bypass w/o cardiac cath w/o MCC | 30,174 | 0.98 | 3.6101 | 3.6123 | 3.6540 | 3.4381 | 0.1\% | 1.2\% | -5.9\% | -4.8\% |
| 237 | Major cardiovasc procedures w MCC or thoracic aortic anuerysm repair | 19,969 | 0.99 | 5.2269 | 5.2340 | 5.2705 | 5.2221 | 0.1\% | 0.7\% | -0.9\% | -0.1\% |
| 238 | Major cardiovasc procedures w/o MCC | 40,081 | 1.00 | 2.8948 | 2.8994 | 2.9283 | 3.0466 | 0.2\% | 1.0\% | 4.0\% | 5.2\% |
| 239 | Amputation for circ sys disorders exc upper limb \& toe w MCC | 11,744 | 0.88 | 4.5380 | 4.5554 | 4.5963 | 4.4887 | 0.4\% | 0.9\% | -2.3\% | -1.1\% |
| 240 | Amputation for circ sys disorders exc upper limb \& toe w CC | 13,361 | 0.89 | 2.6983 | 2.6984 | 2.7262 | 2.6583 | 0.0\% | 1.0\% | -2.5\% | -1.5\% |
| 241 | Amputation for circ sys disorders exc upper limb \& toe w/o CC/MCC | 2,767 | 0.91 | 1.5582 | 1.5559 | 1.5735 | 1.5252 | -0.2\% | 1.1\% | -3.1\% | -2.1\% |

## Attachment 5 (cont'd) <br> Reconstructed MS-DRG Weights by Model

| DR | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$ <br> HCRIS <br> lines <br> reassigned <br> with <br> adjusted <br> CCRs | $\frac{\text { Impact: }}{\text { accounting-based changes }}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS lines reassigned | HCRIS <br> lines reassigned and expanded |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 242 | Permanent cardiac pacemaker implant w MCC | 15,043 | 0.97 | 3.8070 | 3.8130 | 3.8392 | 4.1661 | 0.2\% | 0.7\% | 8.5\% | 9.4\% |
| 243 | Permanent cardiac pacemaker implant w CC | 37,118 | 0.99 | 2.6880 | 2.6930 | 2.7159 | 3.0531 | 0.2\% | 0.8\% | 12.4\% | 13.6\% |
| 244 | Permanent cardiac pacemaker implant w/o CC/MCC | 61,965 | 1.00 | 2.0687 | 2.0744 | 2.0955 | 2.4208 | 0.3\% | 1.0\% | 15.5\% | 17.0\% |
| 245 | AICD lead \& generator procedures | 5,831 | 1.00 | 3.2288 | 3.2399 | 3.2768 | 3.8709 | 0.3\% | 1.1\% | 18.1\% | 19.9\% |
| 246 | Perc cardiovasc proc w drug-eluting stent w MCC or 4+ vessels/stents | 28,552 | 1.00 | 3.3304 | 3.3380 | 3.3799 | 3.5251 | 0.2\% | 1.3\% | 4.3\% | 5.8\% |
| 247 | Perc cardiovasc proc w drug-eluting stent w/o MCC | 188,831 | 1.00 | 2.0371 | 2.0409 | 2.0753 | 2.1614 | 0.2\% | 1.7\% | 4.2\% | 6.1\% |
| 248 | Perc cardiovasc proc w non-drug-eluting stent w MCC or 4+ ves/stents | 4,219 | 1.00 | 2.8759 | 2.8811 | 2.9131 | 2.9094 | 0.2\% | 1.1\% | -0.1\% | 1.2\% |
| 249 | Perc cardiovasc proc w non-drug-eluting stent w/o MCC | 22,529 | 1.00 | 1.7269 | 1.7288 | 1.7562 | 1.7465 | 0.1\% | 1.6\% | -0.6\% | 1.1\% |
| 250 | Perc cardiovasc proc w/o coronary artery stent or AMI w MCC | 4,519 | 1.00 | 2.8926 | 2.8966 | 2.9157 | 2.8456 | 0.1\% | 0.7\% | -2.4\% | -1.6\% |
| 251 | Perc cardiovasc proc w/o coronary artery stent or AMI w/o MCC | 32,790 | 1.00 | 1.6353 | 1.6358 | 1.6491 | 1.5807 | 0.0\% | 0.8\% | -4.1\% | -3.3\% |
| 252 | Other vascular procedures w MCC | 36,135 | 1.00 | 3.0230 | 3.0407 | 3.0647 | 3.0640 | 0.6\% | 0.8\% | 0.0\% | 1.4\% |
| 253 | Other vascular procedures w CC | 50,674 | 1.00 | 2.2262 | 2.2333 | 2.2592 | 2.2784 | 0.3\% | 1.2\% | 0.8\% | 2.3\% |
| 254 | Other vascular procedures w/o CC/MCC | 49,616 | 1.00 | 1.5376 | 1.5433 | 1.5675 | 1.5998 | 0.4\% | 1.6\% | 2.1\% | 4.0\% |
| 255 | Upper limb \& toe amputation for circ system disorders w MCC | 2,015 | 0.93 | 2.5974 | 2.6145 | 2.6364 | 2.5845 | 0.7\% | 0.8\% | -2.0\% | -0.5\% |
| 256 | Upper limb \& toe amputation for circ system disorders w CC | 3,823 | 0.94 | 1.6272 | 1.6270 | 1.6427 | 1.6026 | 0.0\% | 1.0\% | -2.4\% | -1.5\% |
| 257 | Upper limb \& toe amputation for circ system disorders w/o CC/MCC | 655 | 0.95 | 0.9766 | 0.9760 | 0.9865 | 0.9592 | -0.1\% | 1.1\% | -2.8\% | -1.8\% |
| 258 | Cardiac pacemaker device replacement w MCC | 529 | 1.00 | 2.9298 | 2.9337 | 2.9559 | 3.2009 | 0.1\% | 0.8\% | 8.3\% | 9.3\% |
| 259 | Cardiac pacemaker device replacement w/o MCC | 6,879 | 1.00 | 1.6697 | 1.6746 | 1.6920 | 1.9373 | 0.3\% | 1.0\% | 14.5\% | 16.0\% |
| 260 | Cardiac pacemaker revision except device replacement w MCC | 780 | 0.99 | 3.2510 | 3.2565 | 3.2718 | 3.2655 | 0.2\% | 0.5\% | -0.2\% | 0.4\% |
| 261 | Cardiac pacemaker revision except device replacement w CC | 2,535 | 1.00 | 1.3701 | 1.3707 | 1.3827 | 1.4266 | 0.0\% | 0.9\% | 3.2\% | 4.1\% |
| 262 | Cardiac pacemaker revision except device replacement w/o CC/MCC | 2,895 | 1.00 | 0.9195 | 0.9211 | 0.9297 | 0.9642 | 0.2\% | 0.9\% | 3.7\% | 4.9\% |
| 263 | Vein ligation \& stripping | 718 | 1.00 | 1.5843 | 1.5860 | 1.5984 | 1.5547 | 0.1\% | 0.8\% | -2.7\% | -1.9\% |
| 264 | Other circulatory system O.R. procedures | 27,332 | 0.97 | 2.4494 | 2.4625 | 2.4779 | 2.4372 | 0.5\% | 0.6\% | -1.6\% | -0.5\% |
| 280 | Acute myocardial infarction, discharged alive w MCC | 57,459 | 0.95 | 2.0874 | 2.0850 | 2.0923 | 2.0773 | -0.1\% | 0.4\% | -0.7\% | -0.5\% |
| 281 | Acute myocardial infarction, discharged alive w CC | 62,089 | 0.96 | 1.4016 | 1.3988 | 1.4072 | 1.4054 | -0.2\% | 0.6\% | -0.1\% | 0.3\% |
| 282 | Acute myocardia infarction, discharged alive w/o CC/MCC | 58,651 | 0.97 | 1.1089 | 1.1069 | 1.1176 | 1.1203 | -0.2\% | 1.0\% | 0.2\% | 1.0\% |
| 283 | Acute myocardial infarction, expired w MCC | 14,874 | 1.00 | 1.7584 | 1.7581 | 1.7599 | 1.7245 | 0.0\% | 0.1\% | -2.0\% | -1.9\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \\ & \hline \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$HCRISlinesreassignedwithadjustedCCRs | $\begin{aligned} & \underline{\text { Impact: }} \\ & \text { accounting-based changes } \end{aligned}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS <br> lines reassigned | $\begin{gathered} \text { HCRIS } \\ \text { lines } \\ \text { reassigned } \\ \text { and } \\ \text { expanded } \\ \hline \end{gathered}$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 311 | Angina pectoris | 21,161 | 1.00 | 0.5174 | 0.5166 | 0.5171 | 0.5277 | -0.1\% | 0.1\% | 2.0\% | 2.0\% |
| 312 | Syncope \& collapse | 156,245 | 1.00 | 0.7150 | 0.7164 | 0.6949 | 0.7077 | 0.2\% | -3.0\% | 1.8\% | -1.0\% |
| 313 | Chest pain | 202,329 | 1.00 | 0.5331 | 0.5335 | 0.5299 | 0.5458 | 0.1\% | -0.7\% | 3.0\% | 2.4\% |
| 314 | Other circulatory system diagnoses w MCC | 49,166 | 0.97 | 1.7795 | 1.7911 | 1.7931 | 1.7671 | 0.6\% | 0.1\% | -1.4\% | -0.7\% |
| 315 | Other circulatory system diagnoses w CC | 32,991 | 0.98 | 1.0055 | 1.0068 | 1.0020 | 0.9988 | 0.1\% | -0.5\% | -0.3\% | -0.7\% |
| 316 | Other circulatory system diagnoses w/o CC/MCC | 17,194 | 0.99 | 0.6573 | 0.6569 | 0.6488 | 0.6538 | -0.1\% | -1.2\% | 0.8\% | -0.5\% |
| 326 | Stomach, esophageal \& duodenal proc w MCC | 10,255 | 0.95 | 5.8777 | 5.8742 | 5.8831 | 5.6217 | -0.1\% | 0.2\% | -4.4\% | -4.4\% |
| 327 | Stomach, esophageal \& duodenal proc w CC | 10,214 | 0.98 | 2.9219 | 2.9167 | 2.9286 | 2.7831 | -0.2\% | 0.4\% | -5.0\% | -4.7\% |
| 328 | Stomach, esophageal \& duodenal proc w/o CC/MCC | 8,080 | 1.00 | 1.4502 | 1.4484 | 1.4606 | 1.3647 | -0.1\% | 0.8\% | -6.6\% | -5.9\% |
| 329 | Major small \& large bowel procedures w MCC | 43,217 | 0.95 | 5.1938 | 5.1905 | 5.1802 | 4.9302 | -0.1\% | -0.2\% | -4.8\% | -5.1\% |
| 330 | Major small \& large bowel procedures w CC | 63,162 | 0.98 | 2.5957 | 2.5909 | 2.5922 | 2.4449 | -0.2\% | 0.1\% | -5.7\% | -5.8\% |
| 331 | Major small \& large bowel procedures w/o CC/MCC | 27,177 | 0.99 | 1.6611 | 1.6579 | 1.6674 | 1.5509 | -0.2\% | 0.6\% | -7.0\% | -6.6\% |
| 332 | Rectal resection w MCC | 1,711 | 0.95 | 4.8387 | 4.8338 | 4.8427 | 4.6118 | -0.1\% | 0.2\% | -4.8\% | -4.7\% |
| 333 | Rectal resection w CC | 6,030 | 0.98 | 2.4550 | 2.4495 | 2.4648 | 2.3173 | -0.2\% | 0.6\% | -6.0\% | -5.6\% |
| 334 | Rectal resection w/o CC/MCC | 3,455 | 0.99 | 1.6530 | 1.6493 | 1.6654 | 1.5506 | -0.2\% | 1.0\% | -6.9\% | -6.2\% |
| 335 | Peritoneal adhesiolysis w MCC | 6,487 | 0.96 | 4.1904 | 4.1879 | 4.1713 | 4.0030 | -0.1\% | -0.4\% | -4.0\% | -4.5\% |
| 336 | Peritoneal adhesiolysis w CC | 11,356 | 0.98 | 2.2950 | 2.2913 | 2.2780 | 2.1784 | -0.2\% | -0.6\% | -4.4\% | -5.1\% |
| 337 | Peritoneal adhesiolysis w/o CC/MCC | 7,921 | 0.99 | 1.4971 | 1.4951 | 1.4864 | 1.4199 | -0.1\% | -0.6\% | -4.5\% | -5.2\% |
| 338 | Appendectomy w complicated principal diag w MCC | 1,356 | 1.00 | 3.2219 | 3.2220 | 3.1758 | 3.0375 | 0.0\% | -1.4\% | -4.4\% | -5.7\% |
| 339 | Appendectomy w complicated principal diag w CC | 2,980 | 1.00 | 1.8947 | 1.8928 | 1.8475 | 1.7411 | -0.1\% | -2.4\% | -5.8\% | -8.1\% |
| 340 | Appendectomy w complicated principal diag w/o CC/MCC | 3,240 | 1.00 | 1.2584 | 1.2578 | 1.2193 | 1.1359 | 0.0\% | -3.1\% | -6.8\% | -9.7\% |
| 341 | Appendectomy w/o complicated principal diag w MCC | 718 | 1.00 | 2.3201 | 2.3203 | 2.2736 | 2.1698 | 0.0\% | -2.0\% | -4.6\% | -6.5\% |
| 342 | Appendectomy w/o complicated principal diag w CC | 2,380 | 1.00 | 1.3381 | 1.3385 | 1.2970 | 1.2153 | 0.0\% | -3.1\% | -6.3\% | -9.2\% |
| 343 | Appendectomy w/o complicated principal diag w/o CC/MCC | 6,043 | 1.00 | 0.9246 | 0.9257 | 0.8868 | 0.8181 | 0.1\% | -4.2\% | -7.8\% | -11.5\% |
| 344 | Minor small \& large bowel procedures w MCC | 746 | 1.00 | 3.3405 | 3.3383 | 3.3406 | 3.2067 | -0.1\% | 0.1\% | -4.0\% | -4.0\% |
| 345 | Minor small \& large bowel procedures w CC | 2,773 | 1.00 | 1.6585 | 1.6547 | 1.6640 | 1.5752 | -0.2\% | 0.6\% | -5.3\% | -5.0\% |
| 346 | Minor small \& large bowel procedures w/o CC/MCC | 2,524 | 1.00 | 1.2028 | 1.1998 | 1.2106 | 1.1422 | -0.2\% | 0.9\% | -5.7\% | -5.0\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \\ & \hline \end{aligned}$ | Description | Raw <br> Case <br> Count |  | HCRIS lines, original | ccounting cha <br> HCRIS <br> lines reassigned | s: <br> HCRIS <br> lines reassigned and expanded | $\frac{\text { Regression }}{\text { Adjusted }}$ $\frac{\text { HCRIS }}{}$ lines reassigned with adjusted CCRs | Reassigned HCRIS lines over original | ased changes <br> Expanded reassigned HCRIS lines | $\begin{gathered} \text { Impact: } \\ \text { based } \\ \text { Adjusted } \\ \text { CCRs } \end{gathered}$ | $\begin{aligned} & \frac{\text { gression- }}{\text { langes }} \\ & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 383 | Uncomplicated peptic ulcer w MCC | 1,060 | 1.00 | 1.1674 | 1.1704 | 1.1510 | 1.1286 | 0.3\% | -1.7\% | -1.9\% | -3.3\% |
| 384 | Uncomplicated peptic ulcer w/o MCC | 8,146 | 1.00 | 0.8026 | 0.8017 | 0.7789 | 0.7665 | -0.1\% | -2.9\% | -1.6\% | -4.5\% |
| 385 | Inflammatory bowel disease w MCC | 1,773 | 1.00 | 1.9012 | 1.8977 | 1.8734 | 1.8281 | -0.2\% | -1.3\% | -2.4\% | -3.8\% |
| 386 | Inflammatory bowel disease w CC | 6,751 | 1.00 | 1.0459 | 1.0433 | 1.0194 | 0.9930 | -0.2\% | -2.3\% | -2.6\% | -5.1\% |
| 387 | Inflammatory bowel disease w/o CC/MCC | 4,578 | 1.00 | 0.8151 | 0.8128 | 0.7875 | 0.7662 | -0.3\% | -3.1\% | -2.7\% | -6.0\% |
| 388 | G.I. obstruction w MCC | 16,201 | 0.97 | 1.5622 | 1.5611 | 1.5314 | 1.4937 | -0.1\% | -1.9\% | -2.5\% | -4.4\% |
| 389 | G.I. obstruction w CC | 44,150 | 0.99 | 0.9282 | 0.9266 | 0.8972 | 0.8782 | -0.2\% | -3.2\% | -2.1\% | -5.4\% |
| 390 | G.I. obstruction w/o CC/MCC | 44,004 | 1.00 | 0.6439 | 0.6430 | 0.6124 | 0.6015 | -0.1\% | -4.8\% | -1.8\% | -6.6\% |
| 391 | Esophagitis, gastroent \& misc digest disorders w MCC | 37,143 | 1.00 | 1.0958 | 1.0975 | 1.0749 | 1.0546 | 0.2\% | -2.1\% | -1.9\% | -3.8\% |
| 392 | Esophagitis, gastroent \& misc digest disorders w/o MCC | 276,462 | 1.00 | 0.6812 | 0.6806 | 0.6544 | 0.6432 | -0.1\% | -3.9\% | -1.7\% | -5.6\% |
| 393 | Other digestive system diagnoses w MCC | 20,958 | 1.00 | 1.5262 | 1.5254 | 1.5077 | 1.4672 | -0.1\% | -1.2\% | -2.7\% | -3.9\% |
| 394 | Other digestive system diagnoses w CC | 44,147 | 1.00 | 0.9718 | 0.9699 | 0.9500 | 0.9258 | -0.2\% | -2.0\% | -2.5\% | -4.7\% |
| 395 | Other digestive system diagnoses w/o CC/MCC | 22,903 | 1.00 | 0.6909 | 0.6893 | 0.6691 | 0.6538 | -0.2\% | -2.9\% | -2.3\% | -5.4\% |
| 405 | Pancreas, liver \& shunt procedures w MCC | 3,430 | 0.96 | 5.8100 | 5.8104 | 5.8080 | 5.5998 | 0.0\% | 0.0\% | -3.6\% | -3.6\% |
| 406 | Pancreas, liver \& shunt procedures w CC | 4,613 | 0.99 | 2.8954 | 2.8910 | 2.9017 | 2.7759 | -0.2\% | 0.4\% | -4.3\% | -4.1\% |
| 407 | Pancreas, liver \& shunt procedures w/o CC/MCC | 2,063 | 0.99 | 1.7850 | 1.7822 | 1.7930 | 1.7060 | -0.2\% | 0.6\% | -4.9\% | -4.4\% |
| 408 | Biliary tract proc except only cholecyst w or w/o c.d.e. w MCC | 1,424 | 0.99 | 4.3935 | 4.3883 | 4.3858 | 4.2227 | -0.1\% | -0.1\% | -3.7\% | -3.9\% |
| 409 | Biliary tract proc except only cholecyst w or w/o c.d.e. w CC | 1,587 | 1.00 | 2.5538 | 2.5488 | 2.5516 | 2.4461 | -0.2\% | 0.1\% | -4.1\% | -4.2\% |
| 410 | Biliary tract proc except only cholecyst w or w/o c.d.e. w/o CC/MCC | 627 | 1.00 | 1.7694 | 1.7658 | 1.7711 | 1.6973 | -0.2\% | 0.3\% | -4.2\% | -4.1\% |
| 411 | Cholecystectomy w c.d.e. w MCC | 904 | 0.99 | 3.8373 | 3.8325 | 3.8322 | 3.6808 | -0.1\% | 0.0\% | -4.0\% | -4.1\% |
| 412 | Cholecystectomy w c.d.e. w CC | 1,038 | 1.00 | 2.4517 | 2.4479 | 2.4490 | 2.3476 | -0.2\% | 0.0\% | -4.1\% | -4.2\% |
| 413 | Cholecystectomy w c.d.e. w/o CC/MCC | 781 | 1.00 | 1.7343 | 1.7323 | 1.7394 | 1.6537 | -0.1\% | 0.4\% | -4.9\% | -4.6\% |
| 414 | Cholecystectomy except by laparoscope w/o c.d.e. w MCC | 4,952 | 0.97 | 3.6535 | 3.6513 | 3.6417 | 3.4982 | -0.1\% | -0.3\% | -3.9\% | -4.3\% |
| 415 | Cholecystectomy except by laparoscope w/o c.d.e. w CC | 6,468 | 0.99 | 2.0814 | 2.0786 | 2.0746 | 1.9811 | -0.1\% | -0.2\% | -4.5\% | -4.8\% |
| 416 | Cholecystectomy except by laparoscope w/o c.d.e. w/o CC/MCC | 5,434 | 1.00 | 1.3634 | 1.3617 | 1.3627 | 1.2912 | -0.1\% | 0.1\% | -5.2\% | -5.3\% |
| 417 | Laparoscopic cholecystectomy w/o c.d.e. w MCC | 14,874 | 1.00 | 2.4568 | 2.4572 | 2.4450 | 2.3433 | 0.0\% | -0.5\% | -4.2\% | -4.6\% |
| 418 | Laparoscopic cholecystectomy w/o c.d.e. w CC | 26,378 | 1.00 | 1.6618 | 1.6611 | 1.6508 | 1.5716 | 0.0\% | -0.6\% | -4.8\% | -5.4\% |

## Attachment 5 (cont'd) <br> Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$HCRISlinesreassignedwithadjustedCCRs | $\frac{\text { Impact: }}{\text { accounting-based changes }}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS lines reassigned | HCRIS <br> lines reassigned and expanded |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 419 | Laparoscopic cholecystectomy w/o c.d.e. w/o CC/MCC | 34,613 | 1.00 | 1.1326 | 1.1327 | 1.1300 | 1.0628 | 0.0\% | -0.2\% | -6.0\% | -6.2\% |
| 420 | Hepatobiliary diagnostic procedures w MCC | 623 | 0.99 | 3.9886 | 3.9845 | 3.9717 | 3.8354 | -0.1\% | -0.3\% | -3.4\% | -3.8\% |
| 421 | Hepatobiliary diagnostic procedures w CC | 950 | 1.00 | 1.8266 | 1.8240 | 1.8157 | 1.7430 | -0.1\% | -0.5\% | -4.0\% | -4.6\% |
| 422 | Hepatobiliary diagnostic procedures w/o CC/MCC | 368 | 1.00 | 1.2367 | 1.2349 | 1.2345 | 1.1698 | -0.1\% | 0.0\% | -5.2\% | -5.4\% |
| 423 | Other hepatobiliary or pancreas O.R. procedures w MCC | 1,282 | 0.99 | 4.2011 | 4.2107 | 4.1909 | 4.1159 | 0.2\% | -0.5\% | -1.8\% | -2.0\% |
| 424 | Other hepatobiliary or pancreas O.R. procedures w CC | 887 | 1.00 | 2.6116 | 2.6112 | 2.5956 | 2.5442 | 0.0\% | -0.6\% | -2.0\% | -2.6\% |
| 425 | Other hepatobiliary or pancreas O.R. procedures w/o CC/MCC | 141 | 1.00 | 1.7490 | 1.7487 | 1.7460 | 1.7267 | 0.0\% | -0.2\% | -1.1\% | -1.3\% |
| 432 | Cirrhosis \& alcoholic hepatitis w MCC | 13,493 | 0.99 | 1.6371 | 1.6352 | 1.6308 | 1.6015 | -0.1\% | -0.3\% | -1.8\% | -2.2\% |
| 433 | Cirrhosis \& alcoholic hepatitis w CC | 7,427 | 1.00 | 0.9879 | 0.9862 | 0.9700 | 0.9627 | -0.2\% | -1.6\% | -0.8\% | -2.6\% |
| 434 | Cirrhosis \& alcoholic hepatitis w/o CC/MCC | 2,725 | 1.00 | 0.7063 | 0.7050 | 0.6900 | 0.6867 | -0.2\% | -2.1\% | -0.5\% | -2.8\% |
| 435 | Malignancy of hepatobiliary system or pancreas w MCC | 10,590 | 0.99 | 1.7339 | 1.7320 | 1.7022 | 1.6746 | -0.1\% | -1.7\% | -1.6\% | -3.4\% |
| 436 | Malignancy of hepatobiliary system or pancreas w CC | 12,862 | 1.00 | 1.2140 | 1.2125 | 1.1749 | 1.1544 | -0.1\% | -3.1\% | -1.7\% | -4.9\% |
| 437 | Malignancy of hepatobiliary system or pancreas w/o CC/MCC | 4,352 | 1.00 | 0.9531 | 0.9525 | 0.9204 | 0.9150 | -0.1\% | -3.4\% | -0.6\% | -4.0\% |
| 438 | Disorders of pancreas except malignancy w MCC | 11,978 | 0.99 | 1.7641 | 1.7656 | 1.7314 | 1.6841 | 0.1\% | -1.9\% | -2.7\% | -4.5\% |
| 439 | Disorders of pancreas except malignancy w CC | 23,817 | 0.99 | 1.0372 | 1.0360 | 1.0014 | 0.9776 | -0.1\% | -3.3\% | -2.4\% | -5.8\% |
| 440 | Disorders of pancreas except malignancy w/o CC/MCC | 24,318 | 1.00 | 0.7160 | 0.7149 | 0.6834 | 0.6685 | -0.2\% | -4.4\% | -2.2\% | -6.6\% |
| 441 | Disorders of liver except malig,cirr,alc hepa w MCC | 10,781 | 0.97 | 1.6543 | 1.6538 | 1.6403 | 1.6125 | 0.0\% | -0.8\% | -1.7\% | -2.5\% |
| 442 | Disorders of liver except malig,cirr,alc hepa w CC | 11,815 | 0.98 | 1.0140 | 1.0122 | 0.9918 | 0.9787 | -0.2\% | -2.0\% | -1.3\% | -3.5\% |
| 443 | Disorders of liver except malig,cirr,alc hepa w/o CC/MCC | 7,338 | 0.99 | 0.7293 | 0.7276 | 0.7069 | 0.7002 | -0.2\% | -2.9\% | -1.0\% | -4.0\% |
| 444 | Disorders of the biliary tract w MCC | 11,005 | 0.98 | 1.5522 | 1.5513 | 1.5271 | 1.4992 | -0.1\% | -1.6\% | -1.8\% | -3.4\% |
| 445 | Disorders of the biliary tract w CC | 15,818 | 0.99 | 1.0385 | 1.0376 | 1.0129 | 0.9985 | -0.1\% | -2.4\% | -1.4\% | -3.9\% |
| 446 | Disorders of the biliary tract w/o CC/MCC | 15,405 | 0.99 | 0.7500 | 0.7495 | 0.7284 | 0.7208 | -0.1\% | -2.8\% | -1.1\% | -3.9\% |
| 453 | Combined anterior/posterior spinal fusion w MCC | 739 | 1.00 | 10.5249 | 10.5462 | 10.6171 | 11.5712 | 0.2\% | 0.7\% | 9.0\% | 9.9\% |
| 454 | Combined anterior/posterior spinal fusion w CC | 1,434 | 1.00 | 6.9362 | 6.9514 | 7.0146 | 7.8259 | 0.2\% | 0.9\% | 11.6\% | 12.8\% |
| 455 | Combined anterior/posterior spinal fusion w/o CC/MCC | 1,482 | 1.00 | 5.0920 | 5.1057 | 5.1626 | 5.8894 | 0.3\% | 1.1\% | 14.1\% | 15.7\% |
| 456 | Spinal fus exc cerv w spinal curv/malig/infec or 9+ fus w MCC | 647 | 1.00 | 8.5932 | 8.6116 | 8.6593 | 9.3671 | 0.2\% | 0.6\% | 8.2\% | 9.0\% |
| 457 | Spinal fus exc cerv w spinal curv/malig/infec or 9+ fus w CC | 1,774 | 1.00 | 5.7523 | 5.7675 | 5.8148 | 6.5432 | 0.3\% | 0.8\% | 12.5\% | 13.7\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \\ & \hline \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\begin{gathered} \frac{\text { Regression }}{\text { Adjusted }} \\ \hline \text { HCRIS } \\ \text { lines } \\ \text { reassigned } \\ \text { with } \\ \text { adjusted } \\ \text { CCRs } \\ \hline \end{gathered}$ | $\begin{aligned} & \underline{\text { Impact: }} \\ & \text { accounting-based changes } \end{aligned}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS <br> lines reassigned | $\begin{aligned} & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { and } \\ & \text { expanded } \end{aligned}$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 458 | Spinal fus exc cerv w spinal curv/malig/infec or 9+ fus w/o CC/MCC | 1,078 | 1.00 | 4.6256 | 4.6402 | 4.6909 | 5.3774 | 0.3\% | 1.1\% | 14.6\% | 16.3\% |
| 459 | Spinal fusion except cervical w MCC | 2,812 | 0.94 | 5.9206 | 5.9335 | 5.9687 | 6.4729 | 0.2\% | 0.6\% | 8.4\% | 9.3\% |
| 460 | Spinal fusion except cervical w/o MCC | 44,933 | 0.99 | 3.5387 | 3.5480 | 3.5868 | 4.0161 | 0.3\% | 1.1\% | 12.0\% | 13.5\% |
| 461 | Bilateral or multiple major joint procs of lower extremity w MCC | 975 | 0.99 | 4.3880 | 4.3947 | 4.4271 | 4.6989 | 0.2\% | 0.7\% | 6.1\% | 7.1\% |
| 462 | Bilateral or multiple major joint procs of lower extremity w/o MCC | 12,902 | 1.00 | 3.1453 | 3.1512 | 3.1880 | 3.4767 | 0.2\% | 1.2\% | 9.1\% | 10.5\% |
| 463 | Wnd debrid \& skn grft exc hand, for musculo-conn tiss dis w MCC | 4,557 | 0.87 | 4.7987 | 4.8023 | 4.8348 | 4.7148 | 0.1\% | 0.7\% | -2.5\% | -1.7\% |
| 464 | Wnd debrid \& skn grft exc hand, for musculo-conn tiss dis w CC | 6,024 | 0.92 | 2.6626 | 2.6605 | 2.6813 | 2.6228 | -0.1\% | 0.8\% | -2.2\% | -1.5\% |
| 465 | Wnd debrid \& skn grft exc hand, for musculo-conn tiss dis w/o CC/MCC | 2,430 | 0.97 | 1.5651 | 1.5631 | 1.5757 | 1.5403 | -0.1\% | 0.8\% | -2.2\% | -1.6\% |
| 466 | Revision of hip or knee replacement w MCC | 3,119 | 0.90 | 4.5672 | 4.5730 | 4.6161 | 4.8569 | 0.1\% | 0.9\% | 5.2\% | 6.3\% |
| 467 | Revision of hip or knee replacement w CC | 11,239 | 0.96 | 3.0477 | 3.0515 | 3.0861 | 3.3180 | 0.1\% | 1.1\% | 7.5\% | 8.9\% |
| 468 | Revision of hip or knee replacement w/o CC/MCC | 16,731 | 0.99 | 2.4460 | 2.4495 | 2.4792 | 2.6757 | 0.1\% | 1.2\% | 7.9\% | 9.4\% |
| 469 | Major joint replacement or reattachment of lower extremity w MCC | 26,506 | 0.92 | 3.2995 | 3.3026 | 3.3227 | 3.4181 | 0.1\% | 0.6\% | 2.9\% | 3.6\% |
| 470 | Major joint replacement or reattachment of lower extremity w/o MCC | 378,430 | 0.99 | 2.0145 | 2.0171 | 2.0398 | 2.1635 | 0.1\% | 1.1\% | 6.1\% | 7.4\% |
| 471 | Cervical spinal fusion w MCC | 1,873 | 1.00 | 4.3751 | 4.3838 | 4.3968 | 4.5935 | 0.2\% | 0.3\% | 4.5\% | 5.0\% |
| 472 | Cervical spinal fusion w CC | 5,627 | 1.00 | 2.5996 | 2.6063 | 2.6228 | 2.8286 | 0.3\% | 0.6\% | 7.8\% | 8.8\% |
| 473 | Cervical spinal fusion w/o CC/MCC | 19,672 | 1.00 | 1.8857 | 1.8913 | 1.9119 | 2.0950 | 0.3\% | 1.1\% | 9.6\% | 11.1\% |
| 474 | Amputation for musculoskeletal sys \& conn tissue dis w MCC | 2,353 | 0.89 | 3.5600 | 3.5752 | 3.6045 | 3.4993 | 0.4\% | 0.8\% | -2.9\% | -1.7\% |
| 475 | Amputation for musculoskeletal sys \& conn tissue dis w CC | 3,525 | 0.92 | 1.9835 | 1.9821 | 2.0014 | 1.9357 | -0.1\% | 1.0\% | -3.3\% | -2.4\% |
| 476 | Amputation for musculoskeletal sys \& conn tissue dis w/o CC/MCC | 1,442 | 0.97 | 1.1213 | 1.1187 | 1.1304 | 1.0862 | -0.2\% | 1.0\% | -3.9\% | -3.1\% |
| 477 | Biopsies of musculoskeletal system \& connective tissue w MCC | 1,961 | 0.96 | 3.3707 | 3.3791 | 3.3571 | 3.2669 | 0.3\% | -0.7\% | -2.7\% | -3.1\% |
| 478 | Biopsies of musculoskeletal system \& connective tissue w CC | 6,869 | 0.98 | 2.1280 | 2.1304 | 2.1160 | 2.0364 | 0.1\% | -0.7\% | -3.8\% | -4.3\% |
| 479 | Biopsies of musculoskeletal system \& connective tissue w/o CC/MCC | 9,895 | 1.00 | 1.4737 | 1.4770 | 1.4816 | 1.3808 | 0.2\% | 0.3\% | -6.8\% | -6.3\% |
| 480 | Hip \& femur procedures except major joint w MCC | 22,958 | 0.96 | 2.8778 | 2.8789 | 2.8933 | 2.8949 | 0.0\% | 0.5\% | 0.1\% | 0.6\% |
| 481 | Hip \& femur procedures except major joint w CC | 68,942 | 0.98 | 1.7992 | 1.7987 | 1.8118 | 1.8296 | 0.0\% | 0.7\% | 1.0\% | 1.7\% |
| 482 | Hip \& femur procedures except major joint w/o CC/MCC | 46,825 | 0.99 | 1.4874 | 1.4866 | 1.4991 | 1.5157 | -0.1\% | 0.8\% | 1.1\% | 1.9\% |
| 483 | Major joint \& limb reattachment proc of upper extremity w CC/MCC | 5,758 | 0.99 | 2.2221 | 2.2251 | 2.2434 | 2.3907 | 0.1\% | 0.8\% | 6.6\% | 7.6\% |
| 484 | Major joint \& limb reattachment proc of upper extremity w/o CC/MCC | 16,147 | 1.00 | 1.7317 | 1.7347 | 1.7545 | 1.8997 | 0.2\% | 1.1\% | 8.3\% | 9.7\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| MS-DRG | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\begin{gathered} \frac{\text { Regression }}{\text { Adjusted }} \\ \hline \text { HCRIS } \\ \text { lines } \\ \text { reassigned } \\ \text { with } \\ \text { adjusted } \\ \text { CCRs } \\ \hline \end{gathered}$ | $\underline{\text { Impact: }}$accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \text { HCRIS } \\ \text { lines, } \\ \text { original } \end{gathered}$ | HCRIS <br> lines reassigned | $\qquad$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 485 | Knee procedures w pdx of infection w MCC | 934 | 1.00 | 3.2375 | 3.2418 | 3.2627 | 3.1897 | 0.1\% | 0.6\% | -2.2\% | -1.5\% |
| 486 | Knee procedures w pdx of infection w CC | 1,822 | 1.00 | 2.1508 | 2.1493 | 2.1688 | 2.1239 | -0.1\% | 0.9\% | -2.1\% | -1.2\% |
| 487 | Knee procedures w pdx of infection w/o CC/MCC | 1,191 | 1.00 | 1.5538 | 1.5525 | 1.5689 | 1.5231 | -0.1\% | 1.1\% | -2.9\% | -2.0\% |
| 488 | Knee procedures w/o pdx of infection w CC/MCC | 2,154 | 0.97 | 1.6896 | 1.6902 | 1.7022 | 1.6936 | 0.0\% | 0.7\% | -0.5\% | 0.2\% |
| 489 | Knee procedures w/o pdx of infection w/o CC/MCC | 5,218 | 0.99 | 1.1820 | 1.1824 | 1.1952 | 1.1879 | 0.0\% | 1.1\% | -0.6\% | 0.5\% |
| 490 | Back \& neck proc exc spinal fusion w CC/MCC or disc device/neurostim | 18,120 | 1.00 | 1.6414 | 1.6419 | 1.6501 | 1.6200 | 0.0\% | 0.5\% | -1.8\% | -1.3\% |
| 491 | Back \& neck proc exc spinal fusion w/o CC/MCC | 52,535 | 1.00 | 0.9519 | 0.9518 | 0.9620 | 0.9274 | 0.0\% | 1.1\% | -3.6\% | -2.6\% |
| 492 | Lower extrem \& humer proc except hip,foot,femur w MCC | 4,016 | 0.96 | 2.6862 | 2.6912 | 2.6977 | 2.7060 | 0.2\% | 0.2\% | 0.3\% | 0.7\% |
| 493 | Lower extrem \& humer proc except hip,foot,femur w CC | 15,004 | 0.98 | 1.7456 | 1.7463 | 1.7533 | 1.7777 | 0.0\% | 0.4\% | 1.4\% | 1.8\% |
| 494 | Lower extrem \& humer proc except hip,foot,femur w/o CC/MCC | 26,688 | 0.99 | 1.2139 | 1.2143 | 1.2252 | 1.2411 | 0.0\% | 0.9\% | 1.3\% | 2.2\% |
| 495 | Local excision \& removal int fix devices exc hip \& femur w MCC | 1,581 | 0.92 | 3.1593 | 3.1606 | 3.1797 | 3.1062 | 0.0\% | 0.6\% | -2.3\% | -1.7\% |
| 496 | Local excision \& removal int fix devices exc hip \& femur w CC | 4,855 | 0.97 | 1.7710 | 1.7697 | 1.7866 | 1.7528 | -0.1\% | 1.0\% | -1.9\% | -1.0\% |
| 497 | Local excision \& removal int fix devices exc hip \& femur w/o CC/MCC | 6,334 | 1.00 | 1.1424 | 1.1421 | 1.1547 | 1.1295 | 0.0\% | 1.1\% | -2.2\% | -1.1\% |
| 498 | Local excision \& removal int fix devices of hip \& femur w CC/MCC | 1,052 | 1.00 | 1.9814 | 1.9797 | 1.9941 | 1.9376 | -0.1\% | 0.7\% | -2.8\% | -2.2\% |
| 499 | Local excision \& removal int fix devices of hip \& femur w/o CC/MCC | 1,065 | 1.00 | 0.9052 | 0.9045 | 0.9150 | 0.8881 | -0.1\% | 1.2\% | -2.9\% | -1.9\% |
| 500 | Soft tissue procedures w MCC | 1,148 | 0.96 | 3.0676 | 3.0721 | 3.0721 | 3.0045 | 0.1\% | 0.0\% | -2.2\% | -2.1\% |
| 501 | Soft tissue procedures w CC | 3,574 | 0.98 | 1.4804 | 1.4793 | 1.4806 | 1.4428 | -0.1\% | 0.1\% | -2.6\% | -2.5\% |
| 502 | Soft tissue procedures w/o CC/MCC | 5,975 | 1.00 | 0.9533 | 0.9530 | 0.9605 | 0.9360 | 0.0\% | 0.8\% | -2.5\% | -1.8\% |
| 503 | Foot procedures w MCC | 563 | 1.00 | 2.2816 | 2.2863 | 2.3011 | 2.2560 | 0.2\% | 0.6\% | -2.0\% | -1.1\% |
| 504 | Foot procedures w CC | 2,054 | 1.00 | 1.5458 | 1.5448 | 1.5548 | 1.5263 | -0.1\% | 0.7\% | -1.8\% | -1.3\% |
| 505 | Foot procedures w/o CC/MCC | 2,833 | 1.00 | 1.0062 | 1.0060 | 1.0160 | 1.0046 | 0.0\% | 1.0\% | -1.1\% | -0.2\% |
| 506 | Major thumb or joint procedures | 741 | 1.00 | 1.0254 | 1.0250 | 1.0343 | 1.0324 | 0.0\% | 0.9\% | -0.2\% | 0.7\% |
| 507 | Major shoulder or elbow joint procedures w CC/MCC | 754 | 1.00 | 1.5924 | 1.5939 | 1.6045 | 1.6042 | 0.1\% | 0.7\% | 0.0\% | 0.7\% |
| 508 | Major shoulder or elbow joint procedures w/o CC/MCC | 2,577 | 1.00 | 1.0578 | 1.0588 | 1.0707 | 1.0749 | 0.1\% | 1.1\% | 0.4\% | 1.6\% |
| 509 | Arthroscopy | 637 | 1.00 | 1.0330 | 1.0335 | 1.0435 | 1.0026 | 0.1\% | 1.0\% | -3.9\% | -2.9\% |
| 510 | Shoulder,elbow or forearm proc,exc major joint proc w MCC | 804 | 0.96 | 2.0058 | 2.0085 | 2.0012 | 1.9970 | 0.1\% | -0.4\% | -0.2\% | -0.4\% |
| 511 | Shoulder,elbow or forearm proc,exc major joint proc w CC | 3,679 | 0.99 | 1.3192 | 1.3202 | 1.3189 | 1.3245 | 0.1\% | -0.1\% | 0.4\% | 0.4\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \\ & \hline \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$$\frac{\text { HCRIS }}{}$linesreassignedwithadjustedCCRs | $\begin{aligned} & \underline{\text { Impact: }} \\ & \text { accounting-based changes } \end{aligned}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \text { HCRIS } \\ \text { lines, } \\ \text { original } \end{gathered}$ | HCRIS <br> lines reassigned | $\qquad$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 512 | Shoulder, elbow or forearm proc,exc major joint proc w/o CC/MCC | 11,227 | 1.00 | 0.9363 | 0.9369 | 0.9451 | 0.9420 | 0.1\% | 0.9\% | -0.3\% | 0.6\% |
| 513 | Hand or wrist proc, except major thumb or joint proc w CC/MCC | 998 | 1.00 | 1.2247 | 1.2267 | 1.2286 | 1.1968 | 0.2\% | 0.2\% | -2.6\% | -2.3\% |
| 514 | Hand or wrist proc, except major thumb or joint proc w/o CC/MCC | 1,015 | 1.00 | 0.7737 | 0.7736 | 0.7798 | 0.7620 | 0.0\% | 0.8\% | -2.3\% | -1.5\% |
| 515 | Other musculoskelet sys \& conn tiss O.R. proc w MCC | 3,072 | 0.97 | 3.1011 | 3.1083 | 3.0943 | 3.0514 | 0.2\% | -0.5\% | -1.4\% | -1.6\% |
| 516 | Other musculoskelet sys \& conn tiss O.R. proc w CC | 10,273 | 0.99 | 1.8555 | 1.8598 | 1.8475 | 1.8144 | 0.2\% | -0.7\% | -1.8\% | -2.2\% |
| 517 | Other musculoskelet sys \& conn tiss O.R. proc w/o CC/MCC | 16,167 | 1.00 | 1.3506 | 1.3545 | 1.3566 | 1.3218 | 0.3\% | 0.2\% | -2.6\% | -2.1\% |
| 533 | Fractures of femur w MCC | 738 | 0.94 | 1.4398 | 1.4403 | 1.4413 | 1.4235 | 0.0\% | 0.1\% | -1.2\% | -1.1\% |
| 534 | Fractures of femur w/o MCC | 3,382 | 0.96 | 0.7216 | 0.7203 | 0.7182 | 0.7129 | -0.2\% | -0.3\% | -0.8\% | -1.2\% |
| 535 | Fractures of hip \& pelvis w MCC | 6,321 | 0.95 | 1.4111 | 1.4114 | 1.3961 | 1.3775 | 0.0\% | -1.1\% | -1.3\% | -2.4\% |
| 536 | Fractures of hip \& pelvis w/o MCC | 33,341 | 0.97 | 0.7436 | 0.7422 | 0.7292 | 0.7249 | -0.2\% | -1.8\% | -0.6\% | -2.5\% |
| 537 | Sprains, strains, \& dislocations of hip, pelvis \& thigh w CC/MCC | 635 | 1.00 | 0.8524 | 0.8532 | 0.8357 | 0.8340 | 0.1\% | -2.1\% | -0.2\% | -2.2\% |
| 538 | Sprains, strains, \& dislocations of hip, pelvis \& thigh w/o CC/MCC | 1,041 | 1.00 | 0.5720 | 0.5721 | 0.5593 | 0.5622 | 0.0\% | -2.2\% | 0.5\% | -1.7\% |
| 539 | Osteomyelitis w MCC | 2,836 | 0.91 | 2.0068 | 2.0076 | 2.0039 | 1.9646 | 0.0\% | -0.2\% | -2.0\% | -2.1\% |
| 540 | Osteomyelitis w CC | 3,978 | 0.94 | 1.3519 | 1.3510 | 1.3509 | 1.3300 | -0.1\% | 0.0\% | -1.6\% | -1.6\% |
| 541 | Osteomyelitis w/o CC/MCC | 1,659 | 0.96 | 0.9613 | 0.9599 | 0.9600 | 0.9470 | -0.2\% | 0.0\% | -1.3\% | -1.5\% |
| 542 | Pathological fractures \& musculoskelet \& conn tiss malig w MCC | 5,202 | 0.95 | 1.9174 | 1.9177 | 1.9052 | 1.8765 | 0.0\% | -0.7\% | -1.5\% | -2.1\% |
| 543 | Pathological fractures \& musculoskelet \& conn tiss malig w CC | 17,734 | 0.96 | 1.1410 | 1.1403 | 1.1255 | 1.1151 | -0.1\% | -1.3\% | -0.9\% | -2.3\% |
| 544 | Pathological fractures \& musculoskelet \& conn tiss malig w/o CC/MCC | 11,721 | 0.98 | 0.7840 | 0.7831 | 0.7667 | 0.7645 | -0.1\% | -2.1\% | -0.3\% | -2.5\% |
| 545 | Connective tissue disorders w MCC | 3,019 | 0.96 | 2.2627 | 2.2740 | 2.2662 | 2.2330 | 0.5\% | -0.3\% | -1.5\% | -1.3\% |
| 546 | Connective tissue disorders w CC | 5,429 | 0.98 | 1.0562 | 1.0557 | 1.0428 | 1.0360 | 0.0\% | -1.2\% | -0.7\% | -1.9\% |
| 547 | Connective tissue disorders w/o CC/MCC | 4,499 | 0.99 | 0.7472 | 0.7465 | 0.7369 | 0.7351 | -0.1\% | -1.3\% | -0.3\% | -1.6\% |
| 548 | Septic arthritis w MCC | 482 | 0.97 | 1.8502 | 1.8518 | 1.8506 | 1.8180 | 0.1\% | -0.1\% | -1.8\% | -1.7\% |
| 549 | Septic arthritis w CC | 1,047 | 0.98 | 1.1549 | 1.1531 | 1.1534 | 1.1346 | -0.2\% | 0.0\% | -1.6\% | -1.8\% |
| 550 | Septic arthritis w/o CC/MCC | 812 | 0.99 | 0.7573 | 0.7552 | 0.7574 | 0.7444 | -0.3\% | 0.3\% | -1.7\% | -1.7\% |
| 551 | Medical back problems w MCC | 8,316 | 0.95 | 1.5535 | 1.5571 | 1.5224 | 1.5094 | 0.2\% | -2.2\% | -0.9\% | -2.8\% |
| 552 | Medical back problems w/o MCC | 83,117 | 0.99 | 0.7767 | 0.7774 | 0.7515 | 0.7545 | 0.1\% | -3.3\% | 0.4\% | -2.9\% |
| 553 | Bone diseases \& arthropathies w MCC | 2,579 | 1.00 | 1.1784 | 1.1788 | 1.1768 | 1.1693 | 0.0\% | -0.2\% | -0.6\% | -0.8\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\begin{aligned} & \frac{\text { Regression }}{\text { Adjusted }} \\ & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { with } \\ & \text { adjusted } \\ & \text { CCRs } \\ & \hline \end{aligned}$ | $\underline{\text { Impact: }}$accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS <br> lines reassigned | $\begin{aligned} & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { and } \\ & \text { expanded } \\ & \hline \end{aligned}$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 554 | Bone diseases \& arthropathies w/o MCC | 21,121 | 1.00 | 0.7020 | 0.7011 | 0.6988 | 0.6966 | -0.1\% | -0.3\% | -0.3\% | -0.8\% |
| 555 | Signs \& symptoms of musculoskeletal system \& conn tissue w MCC | 1,559 | 1.00 | 0.9269 | 0.9313 | 0.9135 | 0.9093 | 0.5\% | -1.9\% | -0.5\% | -1.9\% |
| 556 | Signs \& symptoms of musculoskeletal system \& conn tissue w/o MCC | 17,744 | 1.00 | 0.5875 | 0.5887 | 0.5736 | 0.5766 | 0.2\% | -2.6\% | 0.5\% | -1.9\% |
| 557 | Tendonitis, myositis \& bursitis w MCC | 2,785 | 0.95 | 1.5274 | 1.5273 | 1.5085 | 1.4941 | 0.0\% | -1.2\% | -1.0\% | -2.2\% |
| 558 | Tendonitis, myositis \& bursitis w/o MCC | 13,212 | 0.99 | 0.8167 | 0.8157 | 0.8008 | 0.7986 | -0.1\% | -1.8\% | -0.3\% | -2.2\% |
| 559 | Aftercare, musculoskeletal system \& connective tissue w MCC | 1,485 | 0.94 | 1.7729 | 1.7734 | 1.7774 | 1.7437 | 0.0\% | 0.2\% | -1.9\% | -1.6\% |
| 560 | Aftercare, musculoskeletal system \& connective tissue w CC | 4,027 | 0.97 | 1.0285 | 1.0265 | 1.0321 | 1.0164 | -0.2\% | 0.5\% | -1.5\% | -1.2\% |
| 561 | Aftercare, musculoskeletal system \& connective tissue w/o CC/MCC | 6,224 | 1.00 | 0.6242 | 0.6232 | 0.6278 | 0.6226 | -0.2\% | 0.7\% | -0.8\% | -0.3\% |
| 562 | Fx, sprn, strn \& disl except femur, hip, pelvis \& thigh w MCC | 4,211 | 0.94 | 1.4326 | 1.4346 | 1.4207 | 1.4096 | 0.1\% | -1.0\% | -0.8\% | -1.6\% |
| 563 | Fx, sprn, strn \& disl except femur, hip, pelvis \& thigh w/o MCC | 33,212 | 0.98 | 0.6793 | 0.6788 | 0.6680 | 0.6689 | -0.1\% | -1.6\% | 0.1\% | -1.5\% |
| 564 | Other musculoskeletal sys \& connective tissue diagnoses w MCC | 1,287 | 0.99 | 1.4580 | 1.4640 | 1.4607 | 1.4301 | 0.4\% | -0.2\% | -2.1\% | -1.9\% |
| 565 | Other musculoskeletal sys \& connective tissue diagnoses w CC | 3,022 | 1.00 | 0.9081 | 0.9074 | 0.8982 | 0.8850 | -0.1\% | -1.0\% | -1.5\% | -2.5\% |
| 566 | Other musculoskeletal sys \& connective tissue diagnoses w/o CC/MCC | 2,512 | 1.00 | 0.6686 | 0.6683 | 0.6570 | 0.6516 | 0.0\% | -1.7\% | -0.8\% | -2.5\% |
| 573 | Skin graft \& /or debrid for skn ulcer or cellulitis w MCC | 4,822 | 0.89 | 3.3067 | 3.3091 | 3.3333 | 3.2163 | 0.1\% | 0.7\% | -3.5\% | -2.7\% |
| 574 | Skin graft \& /or debrid for skn ulcer or cellulitis w CC | 11,258 | 0.92 | 1.9634 | 1.9596 | 1.9751 | 1.9040 | -0.2\% | 0.8\% | -3.6\% | -3.0\% |
| 575 | Skin graft \& /or debrid for skn ulcer or cellulitis w/o CC/MCC | 5,481 | 0.95 | 1.1577 | 1.1547 | 1.1632 | 1.1170 | -0.3\% | 0.7\% | -4.0\% | -3.5\% |
| 576 | Skin graft \& /or debrid exc for skin ulcer or cellulitis w MCC | 444 | 1.00 | 3.2560 | 3.2574 | 3.2766 | 3.1921 | 0.0\% | 0.6\% | -2.6\% | -2.0\% |
| 577 | Skin graft \& /or debrid exc for skin ulcer or cellulitis w CC | 2,127 | 1.00 | 1.5459 | 1.5436 | 1.5522 | 1.4988 | -0.1\% | 0.6\% | -3.4\% | -3.0\% |
| 578 | Skin graft \& /or debrid exc for skin ulcer or cellulitis w/o CC/MCC | 2,861 | 1.00 | 0.9749 | 0.9728 | 0.9812 | 0.9441 | -0.2\% | 0.9\% | -3.8\% | -3.2\% |
| 579 | Other skin, subcut tiss \& breast proc w MCC | 2,703 | 0.93 | 2.8251 | 2.8312 | 2.8432 | 2.7657 | 0.2\% | 0.4\% | -2.7\% | -2.1\% |
| 580 | Other skin, subcut tiss \& breast proc w CC | 10,005 | 0.97 | 1.3584 | 1.3573 | 1.3632 | 1.3202 | -0.1\% | 0.4\% | -3.2\% | -2.8\% |
| 581 | Other skin, subcut tiss \& breast proc w/o CC/MCC | 11,102 | 1.00 | 0.8341 | 0.8335 | 0.8405 | 0.8087 | -0.1\% | 0.8\% | -3.8\% | -3.0\% |
| 582 | Mastectomy for malignancy w CC/MCC | 5,371 | 1.00 | 0.9425 | 0.9416 | 0.9477 | 0.9065 | -0.1\% | 0.7\% | -4.3\% | -3.8\% |
| 583 | Mastectomy for malignancy w/o CC/MCC | 8,860 | 1.00 | 0.7194 | 0.7188 | 0.7259 | 0.6897 | -0.1\% | 1.0\% | -5.0\% | -4.1\% |
| 584 | Breast biopsy, local excision \& other breast procedures w CC/MCC | 677 | 1.00 | 1.4575 | 1.4577 | 1.4523 | 1.4175 | 0.0\% | -0.4\% | -2.4\% | -2.7\% |
| 585 | Breast biopsy, local excision \& other breast procedures w/o CC/MCC | 1,585 | 1.00 | 0.8391 | 0.8383 | 0.8465 | 0.8164 | -0.1\% | 1.0\% | -3.6\% | -2.7\% |
| 592 | Skin ulcers w MCC | 3,434 | 0.93 | 1.7896 | 1.7912 | 1.7995 | 1.7497 | 0.1\% | 0.5\% | -2.8\% | -2.2\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| MS-DRG | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\begin{gathered} \frac{\text { Regression }}{\text { Adjusted }} \\ \hline \text { HCRIS } \\ \text { lines } \\ \text { reassigned } \\ \text { with } \\ \text { adjusted } \\ \text { CCRs } \\ \hline \end{gathered}$ | $\underline{\text { Impact: }}$accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \text { HCRIS } \\ \text { lines, } \\ \text { original } \end{gathered}$ | HCRIS lines reassigned | $\qquad$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 626 | Thyroid, parathyroid \& thyroglossal procedures w CC | 2,441 | 1.00 | 1.1319 | 1.1311 | 1.1404 | 1.0958 | -0.1\% | 0.8\% | -3.9\% | -3.2\% |
| 627 | Thyroid, parathyroid \& thyroglossal procedures w/o CC/MCC | 12,839 | 1.00 | 0.7376 | 0.7368 | 0.7451 | 0.7050 | -0.1\% | 1.1\% | -5.4\% | -4.4\% |
| 628 | Other endocrine, nutrit \& metab O.R. proc w MCC | 2,597 | 0.96 | 3.3340 | 3.3491 | 3.3623 | 3.3283 | 0.5\% | 0.4\% | -1.0\% | -0.2\% |
| 629 | Other endocrine, nutrit \& metab O.R. proc w CC | 3,787 | 0.95 | 2.2627 | 2.2685 | 2.2829 | 2.2578 | 0.3\% | 0.6\% | -1.1\% | -0.2\% |
| 630 | Other endocrine, nutrit \& metab O.R. proc w/o CC/MCC | 500 | 0.99 | 1.3807 | 1.3807 | 1.4019 | 1.3820 | 0.0\% | 1.5\% | -1.4\% | 0.1\% |
| 637 | Diabetes w MCC | 13,871 | 0.97 | 1.3847 | 1.3839 | 1.3817 | 1.3576 | -0.1\% | -0.2\% | -1.7\% | -2.0\% |
| 638 | Diabetes w CC | 41,793 | 0.98 | 0.8163 | 0.8157 | 0.8123 | 0.8026 | -0.1\% | -0.4\% | -1.2\% | -1.7\% |
| 639 | Diabetes w/o CC/MCC | 34,205 | 0.99 | 0.5614 | 0.5598 | 0.5547 | 0.5489 | -0.3\% | -0.9\% | -1.0\% | -2.2\% |
| 640 | Nutritional \& misc metabolic disorders w MCC | 43,733 | 0.98 | 1.1340 | 1.1349 | 1.1285 | 1.1085 | 0.1\% | -0.6\% | -1.8\% | -2.2\% |
| 641 | Nutritional \& misc metabolic disorders w/o MCC | 162,836 | 0.99 | 0.6882 | 0.6868 | 0.6770 | 0.6670 | -0.2\% | -1.4\% | -1.5\% | -3.1\% |
| 642 | Inborn errors of metabolism | 1,377 | 1.00 | 1.0185 | 1.0187 | 1.0130 | 0.9979 | 0.0\% | -0.6\% | -1.5\% | -2.0\% |
| 643 | Endocrine disorders w MCC | 3,736 | 0.96 | 1.7142 | 1.7113 | 1.6919 | 1.6695 | -0.2\% | -1.1\% | -1.3\% | -2.6\% |
| 644 | Endocrine disorders w CC | 9,716 | 0.98 | 1.0796 | 1.0768 | 1.0587 | 1.0524 | -0.3\% | -1.7\% | -0.6\% | -2.5\% |
| 645 | Endocrine disorders w/o CC/MCC | 7,256 | 0.99 | 0.7561 | 0.7543 | 0.7394 | 0.7402 | -0.2\% | -2.0\% | 0.1\% | -2.1\% |
| 652 | Kidney transplant | 7,781 | 1.00 | 2.9897 | 2.9922 | 3.0256 | 2.9614 | 0.1\% | 1.1\% | -2.1\% | -0.9\% |
| 653 | Major bladder procedures w MCC | 1,378 | 0.93 | 5.7381 | 5.7332 | 5.7562 | 5.5185 | -0.1\% | 0.4\% | -4.1\% | -3.8\% |
| 654 | Major bladder procedures w CC | 3,064 | 0.96 | 3.0176 | 3.0121 | 3.0359 | 2.8748 | -0.2\% | 0.8\% | -5.3\% | -4.7\% |
| 655 | Major bladder procedures w/o CC/MCC | 1,310 | 0.98 | 2.1164 | 2.1118 | 2.1342 | 2.0083 | -0.2\% | 1.1\% | -5.9\% | -5.1\% |
| 656 | Kidney \& ureter procedures for neoplasm w MCC | 3,309 | 1.00 | 3.3793 | 3.3808 | 3.3930 | 3.2669 | 0.0\% | 0.4\% | -3.7\% | -3.3\% |
| 657 | Kidney \& ureter procedures for neoplasm w CC | 7,174 | 1.00 | 1.8876 | 1.8855 | 1.8976 | 1.7945 | -0.1\% | 0.6\% | -5.4\% | -4.9\% |
| 658 | Kidney \& ureter procedures for neoplasm w/o CC/MCC | 7,214 | 1.00 | 1.3986 | 1.3969 | 1.4107 | 1.3083 | -0.1\% | 1.0\% | -7.3\% | -6.5\% |
| 659 | Kidney \& ureter procedures for non-neoplasm w MCC | 3,612 | 0.96 | 3.3382 | 3.3455 | 3.3474 | 3.2869 | 0.2\% | 0.1\% | -1.8\% | -1.5\% |
| 660 | Kidney \& ureter procedures for non-neoplasm w CC | 7,179 | 0.98 | 1.9125 | 1.9156 | 1.9181 | 1.8691 | 0.2\% | 0.1\% | -2.6\% | -2.3\% |
| 661 | Kidney \& ureter procedures for non-neoplasm w/o CC/MCC | 3,758 | 1.00 | 1.2517 | 1.2533 | 1.2613 | 1.1993 | 0.1\% | 0.6\% | -4.9\% | -4.2\% |
| 662 | Minor bladder procedures w MCC | 910 | 1.00 | 2.7406 | 2.7370 | 2.7380 | 2.6581 | -0.1\% | 0.0\% | -2.9\% | -3.0\% |
| 663 | Minor bladder procedures w CC | 2,074 | 1.00 | 1.3928 | 1.3907 | 1.3950 | 1.3601 | -0.1\% | 0.3\% | -2.5\% | -2.3\% |
| 664 | Minor bladder procedures w/o CC/MCC | 4,138 | 1.00 | 0.9740 | 0.9743 | 0.9831 | 0.9999 | 0.0\% | 0.9\% | 1.7\% | 2.7\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$ <br> HCRIS <br> lines <br> reassigned <br> with <br> adjusted <br> CCRs | Impact: <br> accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, origina | HCRIS <br> lines reassigned | HCRIS <br> lines reassigned and expanded |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 665 | Prostatectomy w MCC | 602 | 0.99 | 2.8332 | 2.8276 | 2.8311 | 2.7531 | -0.2\% | 0.1\% | -2.8\% | -2.8\% |
| 666 | Prostatectomy w CC | 2,272 | 1.00 | 1.5294 | 1.5266 | 1.5283 | 1.4752 | -0.2\% | 0.1\% | -3.5\% | -3.5\% |
| 667 | Prostatectomy w/o CC/MCC | 3,499 | 1.00 | 0.7873 | 0.7861 | 0.7901 | 0.7432 | -0.2\% | 0.5\% | -5.9\% | -5.6\% |
| 668 | Transurethral procedures w MCC | 3,303 | 1.00 | 2.1963 | 2.1955 | 2.1801 | 2.1228 | 0.0\% | -0.7\% | -2.6\% | -3.3\% |
| 669 | Transurethral procedures w CC | 12,099 | 1.00 | 1.1922 | 1.1923 | 1.1721 | 1.1287 | 0.0\% | -1.7\% | -3.7\% | -5.3\% |
| 670 | Transurethral procedures w/o CC/MCC | 11,930 | 1.00 | 0.7575 | 0.7573 | 0.7516 | 0.7156 | 0.0\% | -0.8\% | -4.8\% | -5.5\% |
| 671 | Urethral procedures w CC/MCC | 824 | 1.00 | 1.3799 | 1.3779 | 1.3768 | 1.3343 | -0.1\% | -0.1\% | -3.1\% | -3.3\% |
| 672 | Urethral procedures w/o CC/MCC | 887 | 1.00 | 0.7608 | 0.7593 | 0.7649 | 0.7379 | -0.2\% | 0.7\% | -3.5\% | -3.0\% |
| 673 | Other kidney \& urinary tract procedures w MCC | 10,156 | 1.00 | 2.8828 | 2.9006 | 2.9162 | 2.8883 | 0.6\% | 0.5\% | -1.0\% | 0.2\% |
| 674 | Other kidney \& urinary tract procedures w CC | 12,645 | 1.00 | 2.0399 | 2.0549 | 2.0724 | 2.0892 | 0.7\% | 0.9\% | 0.8\% | 2.4\% |
| 675 | Other kidney \& urinary tract procedures w/o CC/MCC | 8,362 | 1.00 | 1.2630 | 1.2721 | 1.2943 | 1.3741 | 0.7\% | 1.7\% | 6.2\% | 8.8\% |
| 682 | Renal failure w MCC | 63,765 | 0.98 | 1.6981 | 1.7028 | 1.7008 | 1.6777 | 0.3\% | -0.1\% | -1.4\% | -1.2\% |
| 683 | Renal failure w CC | 116,266 | 0.98 | 1.1470 | 1.1467 | 1.1438 | 1.1358 | 0.0\% | -0.3\% | -0.7\% | -1.0\% |
| 684 | Renal failure w/o CC/MCC | 28,867 | 0.99 | 0.7412 | 0.7414 | 0.7374 | 0.7355 | 0.0\% | -0.5\% | -0.3\% | -0.8\% |
| 685 | Admit for renal dialysis | 2,277 | 1.00 | 0.8059 | 0.8229 | 0.8297 | 0.8194 | 2.1\% | 0.8\% | -1.2\% | 1.7\% |
| 686 | Kidney \& urinary tract neoplasms w MCC | 1,386 | 0.99 | 1.7873 | 1.7867 | 1.7612 | 1.7291 | 0.0\% | -1.4\% | -1.8\% | -3.3\% |
| 687 | Kidney \& urinary tract neoplasms w CC | 3,168 | 0.99 | 1.0562 | 1.0556 | 1.0245 | 1.0036 | -0.1\% | -2.9\% | -2.0\% | -5.0\% |
| 688 | Kidney \& urinary tract neoplasms w/o CC/MCC | 1,059 | 1.00 | 0.7020 | 0.7012 | 0.6781 | 0.6651 | -0.1\% | -3.3\% | -1.9\% | -5.3\% |
| 689 | Kidney \& urinary tract infections w MCC | 49,462 | 0.96 | 1.2445 | 1.2417 | 1.2331 | 1.2056 | -0.2\% | -0.7\% | -2.2\% | -3.1\% |
| 690 | Kidney \& urinary tract infections w/o MCC | 188,398 | 0.98 | 0.7651 | 0.7631 | 0.7509 | 0.7360 | -0.3\% | -1.6\% | -2.0\% | -3.8\% |
| 691 | Urinary stones w esw lithotripsy w CC/MCC | 834 | 1.00 | 1.3680 | 1.4117 | 1.3907 | 1.3519 | 3.2\% | -1.5\% | -2.8\% | -1.2\% |
| 692 | Urinary stones w esw lithotripsy w/o CC/MCC | 588 | 1.00 | 0.9922 | 1.0417 | 1.0323 | 1.0042 | 5.0\% | -0.9\% | -2.7\% | 1.2\% |
| 693 | Urinary stones w/o esw lithotripsy w MCC | 1,891 | 0.99 | 1.2960 | 1.2961 | 1.2586 | 1.2336 | 0.0\% | -2.9\% | -2.0\% | -4.8\% |
| 694 | Urinary stones w/o esw lithotripsy w/o MCC | 17,650 | 1.00 | 0.6537 | 0.6547 | 0.6161 | 0.6013 | 0.2\% | -5.9\% | -2.4\% | -8.0\% |
| 695 | Kidney \& urinary tract signs \& symptoms w MCC | 829 | 1.00 | 1.2060 | 1.2027 | 1.1911 | 1.1692 | -0.3\% | -1.0\% | -1.8\% | -3.1\% |
| 696 | Kidney \& urinary tract signs \& symptoms w/o MCC | 9,856 | 1.00 | 0.6263 | 0.6249 | 0.6097 | 0.5968 | -0.2\% | -2.4\% | -2.1\% | -4.7\% |
| 697 | Urethral stricture | 547 | 1.00 | 0.7362 | 0.7349 | 0.7314 | 0.7116 | -0.2\% | -0.5\% | -2.7\% | -3.3\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \end{aligned}$ | Description | Raw <br> Case <br> Count |  | HCRIS lines, original | ccounting ch <br> HCRIS <br> lines reassigned | HCRIS <br> lines reassigned and expanded | $\begin{aligned} & \text { Regression } \\ & \hline \text { Adjusted } \\ & \text { HCRIS } \\ & \text { lines } \\ & \text { reassigned } \\ & \text { with } \\ & \text { adjusted } \\ & \text { CCRs } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { Im } \\ & \text { accounting- } \end{aligned}$ <br> Reassigned HCRIS lines over original | sed changes <br> Expanded reassigned HCRIS lines | Impact: based Adjusted CCRs | ression- <br> anges <br> Adjusted <br> CCRs <br> over <br> original |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 737 | Uterine \& adnexa proc for ovarian or adnexal malignancy w CC | 3,188 | 1.00 | 2.0541 | 2.0492 | 2.0610 | 1.9662 | -0.2\% | 0.6\% | -4.6\% | -4.3\% |
| 738 | Uterine \& adnexa proc for ovarian or adnexal malignancy w/o CC/MCC | 905 | 1.00 | 1.1984 | 1.1952 | 1.2048 | 1.1424 | -0.3\% | 0.8\% | -5.2\% | -4.7\% |
| 739 | Uterine,adnexa proc for non-ovarian/adnexal malig w MCC | 877 | 1.00 | 2.8765 | 2.8726 | 2.8803 | 2.7944 | -0.1\% | 0.3\% | -3.0\% | -2.9\% |
| 740 | Uterine,adnexa proc for non-ovarian/adnexal malig w CC | 4,290 | 1.00 | 1.4197 | 1.4160 | 1.4258 | 1.3651 | -0.3\% | 0.7\% | -4.3\% | -3.8\% |
| 741 | Uterine,adnexa proc for non-ovarian/adnexal malig w/o CC/MCC | 5,913 | 1.00 | 0.9879 | 0.9855 | 0.9952 | 0.9408 | -0.2\% | 1.0\% | -5.5\% | -4.8\% |
| 742 | Uterine \& adnexa proc for non-malignancy w CC/MCC | 9,829 | 1.00 | 1.2933 | 1.2919 | 1.2971 | 1.2401 | -0.1\% | 0.4\% | -4.4\% | -4.1\% |
| 743 | Uterine \& adnexa proc for non-malignancy w/o CC/MCC | 29,809 | 1.00 | 0.8538 | 0.8528 | 0.8619 | 0.8184 | -0.1\% | 1.1\% | -5.0\% | -4.1\% |
| 744 | D \& C, conization, laparascopy \& tubal interruption w CC/MCC | 1,478 | 1.00 | 1.4362 | 1.4348 | 1.4492 | 1.4234 | -0.1\% | 1.0\% | -1.8\% | -0.9\% |
| 745 | D \& C, conization, laparascopy \& tubal interruption w/o CC/MCC | 1,847 | 1.00 | 0.7277 | 0.7275 | 0.7562 | 0.7401 | 0.0\% | 4.0\% | -2.1\% | 1.7\% |
| 746 | Vagina, cervix \& vulva procedures w CC/MCC | 2,304 | 1.00 | 1.2039 | 1.2030 | 1.2079 | 1.1796 | -0.1\% | 0.4\% | -2.3\% | -2.0\% |
| 747 | Vagina, cervix \& vulva procedures w/o CC/MCC | 9,681 | 1.00 | 0.8305 | 0.8301 | 0.8391 | 0.8279 | 0.0\% | 1.1\% | -1.3\% | -0.3\% |
| 748 | Female reproductive system reconstructive procedures | 19,087 | 1.00 | 0.7914 | 0.7913 | 0.8000 | 0.7897 | 0.0\% | 1.1\% | -1.3\% | -0.2\% |
| 749 | Other female reproductive system O.R. procedures w CC/MCC | 1,093 | 1.00 | 2.5002 | 2.4980 | 2.4971 | 2.4024 | -0.1\% | 0.0\% | -3.8\% | -3.9\% |
| 750 | Other female reproductive system O.R. procedures w/o CC/MCC | 606 | 1.00 | 0.9509 | 0.9492 | 0.9551 | 0.9035 | -0.2\% | 0.6\% | -5.4\% | -5.0\% |
| 754 | Malignancy, female reproductive system w MCC | 953 | 0.99 | 1.9253 | 1.9219 | 1.9022 | 1.8599 | -0.2\% | -1.0\% | -2.2\% | -3.4\% |
| 755 | Malignancy, female reproductive system w CC | 2,772 | 0.99 | 1.1274 | 1.1260 | 1.1021 | 1.0791 | -0.1\% | -2.1\% | -2.1\% | -4.3\% |
| 756 | Malignancy, female reproductive system w/o CC/MCC | 983 | 1.00 | 0.6863 | 0.6856 | 0.6735 | 0.6607 | -0.1\% | -1.8\% | -1.9\% | -3.7\% |
| 757 | Infections, female reproductive system w MCC | 1,087 | 1.00 | 1.6152 | 1.6141 | 1.6034 | 1.5636 | -0.1\% | -0.7\% | -2.5\% | -3.2\% |
| 758 | Infections, female reproductive system w CC | 1,535 | 1.00 | 1.0601 | 1.0579 | 1.0386 | 1.0131 | -0.2\% | -1.8\% | -2.5\% | -4.4\% |
| 759 | Infections, female reproductive system w/o CC/MCC | 992 | 1.00 | 0.7639 | 0.7621 | 0.7425 | 0.7232 | -0.2\% | -2.6\% | -2.6\% | -5.3\% |
| 760 | Menstrual \& other female reproductive system disorders w CC/MCC | 1,813 | 1.00 | 0.7971 | 0.7971 | 0.7814 | 0.7701 | 0.0\% | -2.0\% | -1.5\% | -3.4\% |
| 761 | Menstrual \& other female reproductive system disorders w/o CC/MCC | 2,422 | 1.00 | 0.5822 | 0.5819 | 0.5715 | 0.5559 | -0.1\% | -1.8\% | -2.7\% | -4.5\% |
| 765 | Cesarean section w CC/MCC | 2,183 | 1.00 | 1.0534 | 1.0474 | 1.0588 | 1.0231 | -0.6\% | 1.1\% | -3.4\% | -2.9\% |
| 766 | Cesarean section w/o CC/MCC | 2,288 | 1.00 | 0.8337 | 0.8278 | 0.8376 | 0.8023 | -0.7\% | 1.2\% | -4.2\% | -3.8\% |
| 767 | Vaginal delivery w sterilization \& /or D \& C | 98 | 1.00 | 0.8625 | 0.8571 | 0.8670 | 0.8338 | -0.6\% | 1.2\% | -3.8\% | -3.3\% |
| 768 | Vaginal delivery w O.R. proc except steril \& /or D \& C | 9 | 1.00 | 1.4406 | 1.4329 | 1.4352 | 1.3684 | -0.5\% | 0.2\% | -4.7\% | -5.0\% |
| 769 | Postpartum \& post abortion diagnoses w O.R. procedure | 83 | 1.00 | 1.7675 | 1.7614 | 1.7650 | 1.8028 | -0.3\% | 0.2\% | 2.1\% | 2.0\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| MS- <br> DRG | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$HCRISlinesreassignedwithadjustedCCRs | $\begin{aligned} & \text { Impact: } \\ & \text { accounting-based changes } \end{aligned}$ |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS lines reassigned | HCRIS <br> lines reassigned and expanded |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 822 | Lymphoma \& leukemia w major O.R. procedure w/o CC/MCC | 1,903 | 1.00 | 1.2439 | 1.2420 | 1.2440 | 1.1888 | -0.2\% | 0.2\% | -4.4\% | -4.4\% |
| 823 | Lymphoma \& non-acute leukemia w other O.R. proc w MCC | 1,904 | 0.99 | 4.1986 | 4.1988 | 4.1745 | 4.1168 | 0.0\% | -0.6\% | -1.4\% | -1.9\% |
| 824 | Lymphoma \& non-acute leukemia w other O.R. proc w CC | 2,923 | 1.00 | 2.1915 | 2.1906 | 2.1575 | 2.1274 | 0.0\% | -1.5\% | -1.4\% | -2.9\% |
| 825 | Lymphoma \& non-acute leukemia w other O.R. proc w/o CC/MCC | 1,837 | 1.00 | 1.3357 | 1.3343 | 1.3096 | 1.2787 | -0.1\% | -1.9\% | -2.4\% | -4.3\% |
| 826 | Myeloprolif disord or poorly diff neopl w maj O.R. proc w MCC | 471 | 0.99 | 5.0650 | 5.0587 | 5.0680 | 4.9077 | -0.1\% | 0.2\% | -3.2\% | -3.1\% |
| 827 | Myeloprolif disord or poorly diff neopl w maj O.R. proc w CC | 1,196 | 1.00 | 2.1738 | 2.1697 | 2.1773 | 2.0916 | -0.2\% | 0.4\% | -3.9\% | -3.8\% |
| 828 | Myeloprolif disord or poorly diff neopl w maj O.R. proc w/o CC/MCC | 758 | 1.00 | 1.2768 | 1.2742 | 1.2845 | 1.2284 | -0.2\% | 0.8\% | -4.4\% | -3.8\% |
| 829 | Myeloprolif disord or poorly diff neopl w other O.R. proc w CC/MCC | 1,171 | 1.00 | 2.6048 | 2.6041 | 2.5987 | 2.5536 | 0.0\% | -0.2\% | -1.7\% | -2.0\% |
| 830 | Myeloprolif disord or poorly diff neopl w other O.R. proc w/o CC/MCC | 504 | 1.00 | 1.0977 | 1.0974 | 1.1065 | 1.0775 | 0.0\% | 0.8\% | -2.6\% | -1.8\% |
| 834 | Acute leukemia w/o major O.R. procedure w MCC | 3,387 | 0.98 | 4.5251 | 4.5210 | 4.5395 | 4.4277 | -0.1\% | 0.4\% | -2.5\% | -2.2\% |
| 835 | Acute leukemia w/o major O.R. procedure w CC | 2,165 | 0.98 | 2.7211 | 2.7160 | 2.7250 | 2.6587 | -0.2\% | 0.3\% | -2.4\% | -2.3\% |
| 836 | Acute leukemia w/o major O.R. procedure w/o CC/MCC | 2,065 | 0.98 | 1.4475 | 1.4436 | 1.4478 | 1.4178 | -0.3\% | 0.3\% | -2.1\% | -2.1\% |
| 837 | Chemo w acute leukemia as sdx or whigh dose chemo agent w MCC | 571 | 1.00 | 7.1514 | 7.1442 | 7.2028 | 7.0293 | -0.1\% | 0.8\% | -2.4\% | -1.7\% |
| 838 | Chemo w acute leukemia as sdx w CC or high dose chemo agent | 887 | 1.00 | 3.4301 | 3.4279 | 3.4675 | 3.3982 | -0.1\% | 1.2\% | -2.0\% | -0.9\% |
| 839 | Chemo w acute leukemia as sdx w/o CC/MCC | 1,045 | 1.00 | 1.6927 | 1.6891 | 1.7137 | 1.6786 | -0.2\% | 1.5\% | -2.0\% | -0.8\% |
| 840 | Lymphoma \& non-acute leukemia w MCC | 8,075 | 0.98 | 2.6874 | 2.6874 | 2.6786 | 2.6290 | 0.0\% | -0.3\% | -1.9\% | -2.2\% |
| 841 | Lymphoma \& non-acute leukemia w CC | 9,447 | 0.98 | 1.5849 | 1.5836 | 1.5662 | 1.5420 | -0.1\% | -1.1\% | -1.5\% | -2.7\% |
| 842 | Lymphoma \& non-acute leukemia w/o CC/MCC | 5,692 | 0.99 | 1.0879 | 1.0872 | 1.0730 | 1.0560 | -0.1\% | -1.3\% | -1.6\% | -2.9\% |
| 843 | Other myeloprolif dis or poorly diff neopl diag w MCC | 1,306 | 0.99 | 1.8567 | 1.8542 | 1.8337 | 1.7888 | -0.1\% | -1.1\% | -2.4\% | -3.7\% |
| 844 | Other myeloprolif dis or poorly diff neopl diag w CC | 2,726 | 0.99 | 1.1784 | 1.1772 | 1.1534 | 1.1279 | -0.1\% | -2.0\% | -2.2\% | -4.3\% |
| 845 | Other myeloprolif dis or poorly diff neopl diag w/o CC/MCC | 983 | 1.00 | 0.8274 | 0.8267 | 0.8010 | 0.7856 | -0.1\% | -3.1\% | -1.9\% | -5.1\% |
| 846 | Chemotherapy w/o acute leukemia as secondary diagnosis w MCC | 1,216 | 1.00 | 2.3158 | 2.3170 | 2.3397 | 2.2909 | 0.1\% | 1.0\% | -2.1\% | -1.1\% |
| 847 | Chemotherapy w/o acute leukemia as secondary diagnosis w CC | 16,706 | 1.00 | 0.9942 | 0.9940 | 1.0087 | 1.0015 | 0.0\% | 1.5\% | -0.7\% | 0.7\% |
| 848 | Chemotherapy w/o acute leukemia as secondary diagnosis w/o CC/MCC | 1,164 | 1.00 | 0.8103 | 0.8098 | 0.8287 | 0.8166 | -0.1\% | 2.3\% | -1.5\% | 0.8\% |
| 849 | Radiotherapy | 1,210 | 1.00 | 1.2767 | 1.2757 | 1.3704 | 1.3447 | -0.1\% | 7.4\% | -1.9\% | 5.3\% |
| 853 | Infectious \& parasitic diseases w O.R. procedure w MCC | 27,565 | 0.93 | 5.3706 | 5.3767 | 5.3843 | 5.2288 | 0.1\% | 0.1\% | -2.9\% | -2.6\% |
| 854 | Infectious \& parasitic diseases w O.R. procedure w CC | 6,728 | 0.95 | 2.9147 | 2.9145 | 2.9073 | 2.8350 | 0.0\% | -0.2\% | -2.5\% | -2.7\% |

## Attachment 5 (cont'd) <br> Reconstructed MS-DRG Weights by Model

| $\begin{aligned} & \text { MS- } \\ & \text { DRG } \\ & \hline \end{aligned}$ | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$HCRISlinesreassignedwithadjustedCCRs | Impact: <br> accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS lines reassigned | HCRIS <br> lines reassigned and expanded |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | Adjusted CCRs over original |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 855 | Infectious \& parasitic diseases w O.R. procedure w/o CC/MCC | 423 | 0.99 | 1.8754 | 1.8723 | 1.8551 | 1.8354 | -0.2\% | -0.9\% | -1.1\% | -2.1\% |
| 856 | Postoperative or post-traumatic infections w O.R. proc w MCC | 5,003 | 0.90 | 5.0649 | 5.0690 | 5.0771 | 4.9219 | 0.1\% | 0.2\% | -3.1\% | -2.8\% |
| 857 | Postoperative or post-traumatic infections w O.R. proc w CC | 9,209 | 0.93 | 2.1498 | 2.1462 | 2.1563 | 2.0889 | -0.2\% | 0.5\% | -3.1\% | -2.8\% |
| 858 | Postoperative or post-traumatic infections w O.R. proc w/o CC/MCC | 3,016 | 0.96 | 1.3506 | 1.3476 | 1.3565 | 1.3057 | -0.2\% | 0.7\% | -3.7\% | -3.3\% |
| 862 | Postoperative \& post-traumatic infections w MCC | 6,075 | 0.95 | 1.9053 | 1.9061 | 1.8755 | 1.8272 | 0.0\% | -1.6\% | -2.6\% | -4.1\% |
| 863 | Postoperative \& post-traumatic infections w/o MCC | 20,346 | 0.97 | 0.9519 | 0.9500 | 0.9422 | 0.9157 | -0.2\% | -0.8\% | -2.8\% | -3.8\% |
| 864 | Fever of unknown origin | 18,093 | 1.00 | 0.8093 | 0.8095 | 0.7924 | 0.7810 | 0.0\% | -2.1\% | -1.4\% | -3.5\% |
| 865 | Viral illness w MCC | 1,477 | 1.00 | 1.6290 | 1.6291 | 1.6176 | 1.5855 | 0.0\% | -0.7\% | -2.0\% | -2.7\% |
| 866 | Viral illness w/o MCC | 8,956 | 1.00 | 0.6575 | 0.6565 | 0.6426 | 0.6345 | -0.2\% | -2.1\% | -1.3\% | -3.5\% |
| 867 | Other infectious \& parasitic diseases diagnoses w MCC | 3,361 | 0.97 | 2.9553 | 2.9550 | 2.9473 | 2.8790 | 0.0\% | -0.3\% | -2.3\% | -2.6\% |
| 868 | Other infectious \& parasitic diseases diagnoses w CC | 1,880 | 0.98 | 1.2933 | 1.2909 | 1.2783 | 1.2530 | -0.2\% | -1.0\% | -2.0\% | -3.1\% |
| 869 | Other infectious \& parasitic diseases diagnoses w/o CC/MCC | 1,111 | 0.99 | 0.8367 | 0.8342 | 0.8208 | 0.8070 | -0.3\% | -1.6\% | -1.7\% | -3.5\% |
| 870 | Septicemia w MV 96+ hours | 12,312 | 0.95 | 5.7697 | 5.7707 | 5.7953 | 5.6251 | 0.0\% | 0.4\% | -2.9\% | -2.5\% |
| 871 | Septicemia w/o MV 96+ hours w MCC | 181,259 | 0.98 | 1.8586 | 1.8569 | 1.8521 | 1.8030 | -0.1\% | -0.3\% | -2.6\% | -3.0\% |
| 872 | Septicemia w/o MV 96+ hours w/o MCC | 89,249 | 0.98 | 1.1481 | 1.1455 | 1.1354 | 1.1096 | -0.2\% | -0.9\% | -2.3\% | -3.3\% |
| 876 | O.R. procedure w principal diagnoses of mental illness | 1,679 | 0.99 | 2.4993 | 2.4959 | 2.5038 | 2.5117 | -0.1\% | 0.3\% | 0.3\% | 0.5\% |
| 880 | Acute adjustment reaction \& psychosocial dysfunction | 12,480 | 1.00 | 0.6758 | 0.6750 | 0.6642 | 0.6604 | -0.1\% | -1.6\% | -0.6\% | -2.3\% |
| 881 | Depressive neuroses | 15,080 | 1.00 | 0.7510 | 0.7474 | 0.7510 | 0.7405 | -0.5\% | 0.5\% | -1.4\% | -1.4\% |
| 882 | Neuroses except depressive | 5,023 | 1.00 | 0.6751 | 0.6720 | 0.6752 | 0.6661 | -0.5\% | 0.5\% | -1.4\% | -1.3\% |
| 883 | Disorders of personality \& impulse control | 2,263 | 1.00 | 1.0033 | 0.9996 | 1.0077 | 0.9927 | -0.4\% | 0.8\% | -1.5\% | -1.1\% |
| 884 | Organic disturbances \& mental retardation | 42,920 | 0.98 | 1.1834 | 1.1778 | 1.1735 | 1.1581 | -0.5\% | -0.4\% | -1.3\% | -2.1\% |
| 885 | Psychoses | 301,318 | 0.99 | 1.2086 | 1.2019 | 1.2120 | 1.1943 | -0.6\% | 0.8\% | -1.5\% | -1.2\% |
| 886 | Behavioral \& developmental disorders | 1,489 | 1.00 | 1.1901 | 1.1819 | 1.1917 | 1.1740 | -0.7\% | 0.8\% | -1.5\% | -1.4\% |
| 887 | Other mental disorder diagnoses | 457 | 1.00 | 0.8712 | 0.8680 | 0.8597 | 0.8518 | -0.4\% | -1.0\% | -0.9\% | -2.2\% |
| 894 | Alcohol/drug abuse or dependence, left ama | 4,970 | 1.00 | 0.3684 | 0.3664 | 0.3665 | 0.3618 | -0.5\% | 0.0\% | -1.3\% | -1.8\% |
| 895 | Alcohol/drug abuse or dependence w rehabilitation therapy | 11,260 | 1.00 | 0.7728 | 0.7698 | 0.7782 | 0.7664 | -0.4\% | 1.1\% | -1.5\% | -0.8\% |
| 896 | Alcohol/drug abuse or dependence w/o rehabilitation therapy w MCC | 5,050 | 0.97 | 1.2825 | 1.2807 | 1.2688 | 1.2473 | -0.1\% | -0.9\% | -1.7\% | -2.7\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model

| MS-DRG | Description | Raw <br> Case <br> Count |  | Accounting changes: |  |  | $\frac{\text { Regression }}{\text { Adjusted }}$ <br> HCRIS <br> lines <br> reassigned <br> with <br> adjusted <br> CCRs | $\underline{\text { Impact: }}$accounting-based changes |  | $\frac{\text { Impact: regression- }}{\text { based changes }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | HCRIS lines, original | HCRIS <br> lines reassigned | $\qquad$ |  | Reassigned HCRIS lines over original | Expanded reassigned HCRIS lines | Adjusted CCRs | $\begin{aligned} & \text { Adjusted } \\ & \text { CCRs } \\ & \text { over } \\ & \text { original } \\ & \hline \end{aligned}$ |
|  |  |  |  | c1 | c2 | c3 | c4 | c2/c1 | c3/c2 | c4/c3 | c4/c1 |
| 897 | Alcohol/drug abuse or dependence w/o rehabilitation therapy w/o MCC | 43,420 | 0.99 | 0.6119 | 0.6095 | 0.6054 | 0.5978 | -0.4\% | -0.7\% | -1.3\% | -2.3\% |
| 901 | Wound debridements for injuries w MCC | 766 | 1.00 | 3.9464 | 3.9526 | 3.9737 | 3.8308 | 0.2\% | 0.5\% | -3.6\% | -2.9\% |
| 902 | Wound debridements for injuries w CC | 2,043 | 1.00 | 1.7161 | 1.7137 | 1.7257 | 1.6640 | -0.1\% | 0.7\% | -3.6\% | -3.0\% |
| 903 | Wound debridements for injuries w/o CC/MCC | 1,526 | 1.00 | 1.0342 | 1.0319 | 1.0406 | 1.0000 | -0.2\% | 0.8\% | -3.9\% | -3.3\% |
| 904 | Skin grafts for injuries w CC/MCC | 821 | 1.00 | 2.5803 | 2.5774 | 2.5986 | 2.5202 | -0.1\% | 0.8\% | -3.0\% | -2.3\% |
| 905 | Skin grafts for injuries w/o CC/MCC | 670 | 1.00 | 1.1476 | 1.1453 | 1.1575 | 1.1161 | -0.2\% | 1.1\% | -3.6\% | -2.8\% |
| 906 | Hand procedures for injuries | 630 | 1.00 | 0.9360 | 0.9355 | 0.9435 | 0.9117 | -0.1\% | 0.9\% | -3.4\% | -2.6\% |
| 907 | Other O.R. procedures for injuries w MCC | 6,607 | 0.96 | 3.6881 | 3.7011 | 3.7043 | 3.5927 | 0.4\% | 0.1\% | -3.0\% | -2.6\% |
| 908 | Other O.R. procedures for injuries w CC | 8,175 | 0.97 | 1.8916 | 1.8922 | 1.8990 | 1.8504 | 0.0\% | 0.4\% | -2.6\% | -2.2\% |
| 909 | Other O.R. procedures for injuries w/o CC/MCC | 4,957 | 0.99 | 1.1146 | 1.1144 | 1.1215 | 1.0961 | 0.0\% | 0.6\% | -2.3\% | -1.7\% |
| 913 | Traumatic injury w MCC | 708 | 0.99 | 1.2383 | 1.2417 | 1.2141 | 1.1987 | 0.3\% | -2.2\% | -1.3\% | -3.2\% |
| 914 | Traumatic injury w/o MCC | 6,359 | 1.00 | 0.6547 | 0.6554 | 0.6292 | 0.6252 | 0.1\% | -4.0\% | -0.6\% | -4.5\% |
| 915 | Allergic reactions w MCC | 817 | 1.00 | 1.2288 | 1.2301 | 1.2331 | 1.2117 | 0.1\% | 0.2\% | -1.7\% | -1.4\% |
| 916 | Allergic reactions w/o MCC | 4,916 | 1.00 | 0.4484 | 0.4475 | 0.4473 | 0.4427 | -0.2\% | 0.0\% | -1.0\% | -1.3\% |
| 917 | Poisoning \& toxic effects of drugs w MCC | 12,423 | 0.97 | 1.4535 | 1.4527 | 1.4451 | 1.4154 | -0.1\% | -0.5\% | -2.1\% | -2.6\% |
| 918 | Poisoning \& toxic effects of drugs w/o MCC | 30,329 | 0.99 | 0.5912 | 0.5899 | 0.5830 | 0.5755 | -0.2\% | -1.2\% | -1.3\% | -2.7\% |
| 919 | Complications of treatment w MCC | 8,556 | 0.99 | 1.5129 | 1.5181 | 1.5085 | 1.4751 | 0.3\% | -0.6\% | -2.2\% | -2.5\% |
| 920 | Complications of treatment w CC | 13,536 | 1.00 | 0.9237 | 0.9234 | 0.9150 | 0.8927 | 0.0\% | -0.9\% | -2.4\% | -3.3\% |
| 921 | Complications of treatment w/o CC/MCC | 8,929 | 1.00 | 0.5992 | 0.5986 | 0.5919 | 0.5758 | -0.1\% | -1.1\% | -2.7\% | -3.9\% |
| 922 | Other injury, poisoning \& toxic effect diag w MCC | 894 | 1.00 | 1.4724 | 1.4719 | 1.4580 | 1.4338 | 0.0\% | -0.9\% | -1.7\% | -2.6\% |
| 923 | Other injury, poisoning \& toxic effect diag w/o MCC | 3,808 | 1.00 | 0.6258 | 0.6261 | 0.6093 | 0.6039 | 0.0\% | -2.7\% | -0.9\% | -3.5\% |
| 927 | Extensive burns or full thickness burns w MV 96+ hrs w skin graft | 156 | 1.00 | 12.1572 | 12.1486 | 12.2770 | 11.7774 | -0.1\% | 1.1\% | -4.1\% | -3.1\% |
| 928 | Full thickness burn w skin graft or inhal inj w CC/MCC | 707 | 1.00 | 4.9183 | 4.9103 | 4.9600 | 4.8033 | -0.2\% | 1.0\% | -3.2\% | -2.3\% |
| 929 | Full thickness burn w skin graft or inhal inj w/o CC/MCC | 388 | 1.00 | 1.9496 | 1.9477 | 1.9700 | 1.8937 | -0.1\% | 1.1\% | -3.9\% | -2.9\% |
| 933 | Extensive burns or full thickness burns w MV 96+ hrs w/o skin graft | 146 | 1.00 | 1.9311 | 1.9345 | 1.9490 | 1.8779 | 0.2\% | 0.7\% | -3.7\% | -2.8\% |
| 934 | Full thickness burn w/o skin grft or inhal inj | 606 | 0.98 | 1.2910 | 1.2874 | 1.2978 | 1.2622 | -0.3\% | 0.8\% | -2.7\% | -2.2\% |
| 935 | Non-extensive burns | 1,940 | 1.00 | 1.0504 | 1.0480 | 1.0563 | 1.0226 | -0.2\% | 0.8\% | -3.2\% | -2.6\% |

Attachment 5 (cont'd)

## Reconstructed MS-DRG Weights by Model



Attachment 5 (cont'd)
Reconstructed MS-DRG Weights by Model



[^0]:    RTI International is a trade name of Research Triangle Institute.

[^1]:    1 Such offsets might occur within a care episode. For example, outpatient services received on a single day's visit could result in an APC being billed for a clinic visit, another for an EKG and another for an x-ray.

[^2]:    2 Refer to Exhibit 28 on report page 67 in the January 2007 Final Report.

[^3]:    3 This change corrects a mismatch between the classification of program charges and the classification of provider total costs and charges. Intermediate care units are grouped with routine care units on line 25 of the cost report, but intermediate care charges are grouped with critical care charges within the MedPAR files.

[^4]:    SOURCE: RTI Analysis of HCRIS Reports and SAF claims charges.

[^5]:    NOTE: Rows sorted for ranking indicated by boldface type.

