SECTION 1: KEY DATASOURCES AND TERMS

Overview

In this section, we present key terms and concepts that are used in this report: trauma care, catastrophic care, bad debt, charity care, hospital costs, and cost-shifting. We also present a discussion of the sources of data on which we relied to complete our analyses and the limitations of their use.

Discussion of Key Terms

Trauma Care

Our analysis uses the Trauma Care Program's definition of trauma, which is:[1]

Patients with at least one injury diagnosis code (International Classification of Diseases, 9th Edition/Revision, or ICD-9 code[2]) between 800.0 through 959.9, and 994.7 (traumatic asphyxiation and strangulation), *plus* one or more of the following:

- Hospitalization for one calendar day
- Admission to the intensive care unit or monitored bed unit
- Trauma arrests on route to the hospital or emergency room
- Dead on arrival (within the facility)
- Patients transferred in
- Patients transferred out
- Admission directly from the emergency room to the operating room
- Trauma team activation
- Meets prehospital triage criteria

The Wyoming Trauma Care Program's definition specifically excludes:[3]

- ICD-9 codes of 905-909 (Late effects of injury, poisonings, toxic effects and other external causes)
- ICD-9 codes of 910-919 (Superficial injury)
- ICD-9 codes of 920-924 (Contusion with intact skin surface)
- ICD-9 codes of 930-939 (Effects of foreign body entering through orifices
- Hip fracture from falls of the same height (without other significant injuries) in patients 55 years of age or older
- Transfers with previous trauma, but are being admitted now for medical reasons

[1] Wyoming Trauma Program, *Trauma Register Policy Manual*, 2-1 and 2-2.
[2] American Medical Association, *Physician ICD-9-CM 2004, Volumes 1 and 2* (Ingenix, Inc., 2003) 249-266, 269-274.
[3] Wyoming Trauma Program, *Trauma Register Policy Manual*, 2-1 and 2-2.

Definition of Catastrophic Care

The term "catastrophic care" can have many meanings. It can relate to care provided for procedures such as transplants, neonates or severe burns, for example. Some payors refer to catastrophic care costs as costs for a patient that exceed a certain amount, for example, $10,000.

For purposes of this study, we define catastrophic care as unusually high cost inpatient hospital discharges, i.e., discharges with costs that are greater than the hospital-specific average cost per discharge plus three standard deviations.[4]

Definitions of Bad Debt and Charity Care

Bad debt is accounts receivable that are delinquent and have been written off as uncollectible. The Centers for Medicare and Medicaid Services (CMS) defines bad debt as the unpaid dollar amount of the accounts receivable, excluding Medicare bad debt, for which the provider was expecting payment.[5]

Charity care is generally defined as the charges for hospital services provided to patients who are unable to pay, especially those who are low-income, uninsured and underinsured; CMS measures charity care on the basis of revenue forgone, at full rates.[6] Hospitals identify charity care patients generally before providing care, and determine bad debt after providing care and attempting to collect.[7] While the amount of a hospital's bad debt and charity care may be related to a hospital's provision of trauma care and catastrophic care, it may also be related to the following:

- Hospital-specific collection practices
- Payor mix, specifically the proportion of care provided to the uninsured or underinsured
- Charity care policies and obligations (for example, non-profit hospitals may provide charity care to fulfill their community obligations and community county-funded hospitals may provide care to all of the uninsured in the county)

Hospitals report amounts of bad debt on their Medicare cost reports and provide bad debt and charity care charge data to the American Hospital Association via an annual survey. Starting

[4] As part of this process, we developed three alternative approaches to defining high costs cases, and reviewed these approaches with the Uncompensated Catastrophic and Trauma Care Subcommittee.
[5] Provider Reimbursement Manual, Part II, Chapter 36, Instructions for Form CMS-2552-96 (Medicare Cost Report).
[6] Ibid.
[7] Mauiro, Lisa S., Schneider, H., Bellows, N., "Endangered Species? Not-for-Profit Hospitals Face Tax-Exemption Challenge," *Healthcare Financial Management (*Healthcare Financial Management Association, September 2004) 78.

with cost reporting periods ending on or after April 30, 2003, CMS requires hospitals to report the uncompensated costs for providing inpatient and outpatient hospital services to the uninsured on hospital Medicare cost reports.

Definition of Hospital Inpatient and Outpatient Costs

Hospitals bill patients (or insurance companies or other payors) for services they provided based on their "charges." These charges are standard amounts that each hospital typically bills for all patients receiving care. The payment that a hospital receives for each service is specific to each payor. For example, private payors (e.g., Blue Cross Blue Shield) generally negotiate per diems, or per discharge amounts or some percentage of charges; and Medicare and Medicaid pay for services using per discharge or fee schedule amounts.

It is relatively straightforward to determine hospital charges and payments. Determining hospital costs, however, is a more complex process. When implemented in 1966, the Medicare Program relied on "costs" to determine reimbursement levels. Medicare promulgated rules related to cost reporting and allowable cost principles.[8] Although Medicare has moved away from cost-based reimbursement, the program continues to conduct analyses of payments and cost using its cost reporting principles. Wyoming Medicaid and other Medicaid programs throughout the country rely on Medicare cost principles, as well as, in our experience, other payors.

The calculation of Medicare allowable costs relies on data that hospitals report on cost reports. Hospitals' Chief Financial Officers attest and certify that the information they provide on cost reports is accurate and Medicare cost reports continue to be subject to review and audit.

The purpose of the Medicare cost report is to determine, using Medicare cost principles, the cost of providing care to Medicare patients. This is necessary because generally hospitals do not record information on patient costs by payor category, i.e., their internal systems do not record costs for a Medicare patient versus a Medicaid patient or a Blue Cross Blue Shield patient. The Medicare cost report is useful to others, however, because in the process of allocating the costs to Medicare patients, the cost report also shows Medicare allowable costs for all patients.[9]

After overhead costs are allocated across departments and summed with the costs directly assigned to the departments, costs can then be compared to charges, yielding "cost-to-charge" ratios. This cost-to-charge ratio (Medicare-specific, Medicaid-specific, overall for all patients) can be compared to charges reported by hospital on the Uniform Billing form[10] and it is then

---

[8] Robert Cunningham, et al., *The Blues: A History of the BlueCross and BlueShield System (*DeKalb, Illinois: Northern Illinois University Press, 1997) 150-151.

[9] For Medicaid patients, some states have developed additional cost report schedules that allocate costs to Medicaid patients.

[10] Referred to commonly as the UB-92.

possible to estimate costs for each patient. Because the cost-to-charge ratios used in this approach represent Medicare allowable costs, they may not include all of the costs that hospitals will list in their general ledger. For example, advertising costs would not be included in Medicare allowable costs as these costs are not necessary for patient care. A review of Wyoming hospitals' 2003 Medicare cost reports indicates that Medicare did not include 10 percent of total hospital costs in its cost allocation process.[11]

For purposes of this study, we define hospital costs as Medicare-allowable costs for inpatient and outpatient facility services billed to payors on the UB-92. These costs are operational and capital costs and include hospital-based ambulance services as reported on inpatient hospital claims using a revenue code in the range of 540 to 549 (ambulance services). These allowable costs include provider-based physician compensation (including fringe benefits) if the compensation is for services that benefit the entire patient population. For example, the administrative cost of Wyoming Medical Center's Trauma Medical Director is allocated across departments and reflected in the department-specific cost-to-charge ratios used for estimating costs. Additionally, we have attempted to identify selected Medicare non-allowable physician costs for Regional Trauma Centers and Area Trauma Hospitals that are related to trauma care (e.g., a physician stipend to be on-call for trauma care patients).[12]

The Wyoming Hospital Discharge database, maintained by Solucient[13], contains estimated costs for each discharge. Solucient estimates these costs by applying hospital and department-specific cost-to-charge ratios as described earlier.[14] This approach is considered an industry standard and is generally accepted by policy makers, hospitals, and other health care providers and payors as a methodology for estimating costs.[15]

We provide a description of how Wyoming hospital costs are estimated below, in the "Data Sources" part of this Section.

---

[11] *Medicare Cost Report*, CMS Form 2552-96, Worksheet A, Column 6, Row 101.

[12] Medicare-allowable costs do not include physician compensation costs (including fringe benefits) that are linked to a particular service and billable as such using a claim form that is different from the one used for hospital services (CMS-1500 as opposed to the UB-92). Including these costs but not the payments for the physician services would overstate the estimated cost per discharge for trauma care. Identifying the fees for these service would require asking hospitals to submit all physician claims data for trauma and catastrophic care and could be prohibitively time-consuming.

[13] Solucient, Inc. is the contractor that collects discharge data for the Wyoming Hospital Discharge Database, maintains the data and reports estimated costs.

[14] See Appendix A for Solucient, Inc.'s description of their costing methodology.

[15] Shwartz, Michael, Young, David W., Siegrist, Richard, "The Ratio of Costs to Charges: How Good a Basis for Estimating Costs," *Inquiry* (Blue Cross and Blue Shield Association and Blue Cross and Blue Shield of the Rochester Area, Winter 1995/96) 32: 476-481.

Definition of Cost Shifting

Cost shifting, generally speaking, is "the allocation of unpaid costs of care delivered to one patient population through above-cost revenue collected from other patient populations."[16] In practice, this might mean that a hospital would increase its charges to all payors to obtain higher payments.

Research to determine if cost shifting exists has produced varying results. For example, a May 2004 paper prepared for the 2004 Policy History Conference indicated that: [17]

- Researchers writing in the mid-1990s could not find evidence that cost-shifting occurred from Medicare to private payors.
- Researchers that reviewed data from the 1980s and 1990s, however, found that lower Medicare prices were associated with statistically significant increases in private pay prices for all hospital types during all time periods.

The potential for cost-shifting is of concern to consumers, payors, employers and other stakeholders. Increases in charges to some payors (that presumably result in higher payments) could potentially increase health care costs and, for employers and individuals, health insurance premiums. Hospitals also face difficulties as their abilities to cost-shift are reduced as private payors restrict payments through cost management techniques.

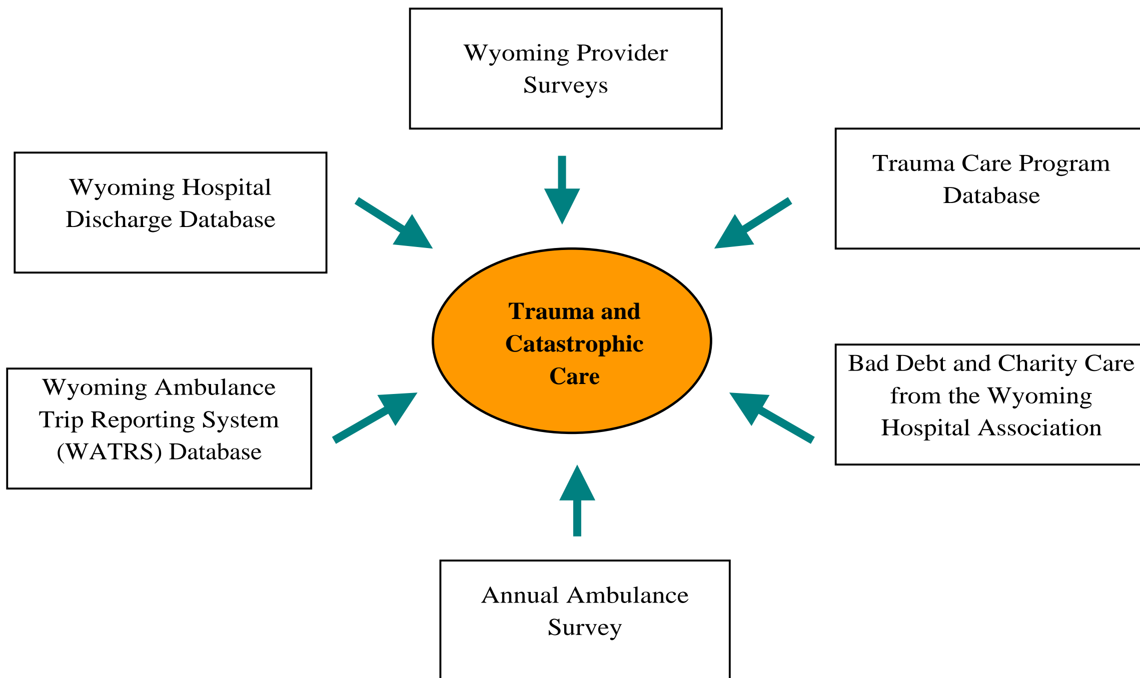
Data Sources

To conduct our analysis of unreimbursed catastrophic and trauma care, we analyzed data from various Wyoming-specific databases that provide information relative to this study, as illustrated on the following page.

---

[16] Hall, Douglass E., "Cost-Shifting in New Hampshire Hospitals" (New Hampshire Center for Public Policy Studies, October 2003) 2.

[17] Mayes, Ph.D., Rick, Lees, Ph.D., Jason, S., "Catch Me if You Can: Hospitals, Cost Shifting, and the Game of Medicare Payment Policy, (Paper Prepared for the 2004 Policy History Conference, St. Louis Missouri, May 17, 2004).



We describe below these data sources and other national data sources we used for this study.

In addition to these data sources, we also researched other states' trauma and catastrophic care reimbursement policies through internet research and phone interviews. We present information on other states' program in Section 4.

Bad Debt and Charity Care

We analyzed three years of hospital-specific bad debt and charity care data provided by the Wyoming Hospital Association (2001 through 2003), as reported by hospitals for the American Hospital Association's annual survey.

Wyoming Hospital Discharge Database

We analyzed inpatient hospital discharge data for State Fiscal Years (SFYs) 2002 and 2003 from the Wyoming Hospital Discharge database, as maintained by Solucient, the contractor that is responsible for collecting and maintaining the database as well as estimating costs for services reported in that database. This database contains patient diagnosis codes, procedures, reported charges and estimated costs; while the database contains the primary payor identified on each claim, it does not contain payment information. This database contained information for all Wyoming hospitals with the exception of three hospitals that do not participate in the data submission program or were not submitting data at that time. In addition, three other hospitals submitted partial datasets for one of the SFYs analyzed.

We also excluded discharges totaling $2,913,874 in costs from our analyses. The table below lists the discharges we excluded from the Wyoming Hospital Discharge Database, and the reason for exclusion.

Table 1: Excluded Discharges

Reason for Exclusion	Total Discharges
Claim did not contain sufficient information to estimate costs	1,775
Charges were less than 10 percent of the hospital-specific average charge, and did not appear to represent a complete inpatient hospital stay	4,716

Through our agreement with the Wyoming Hospital Association, we are not able to provide hospital-specific results. To protect the confidentiality of hospital information, we provide information in the aggregate.

Hospital Survey Data

The Wyoming Hospital Discharge database does not include information on outpatient hospital services in Wyoming. Because we are trying to develop a picture of all Wyoming trauma care services, we believe it is important to include any outpatient hospital services related to trauma care. Similarly, we were interested in outpatient hospital services related to catastrophic care. Therefore, to obtain the outpatient hospital claims data, as well as payment information related to discharges in the Wyoming Hospital discharge database, we developed a hospital survey. Working with the Uncompensated Catastrophic and Trauma Care Subcommittee, we determined that the hospital survey should target a subset of discharges because requesting hospitals to report data on all discharges would have been prohibitively burdensome. In our survey[18] we requested information on payments and charges for inpatient catastrophic care cases, a portion of which included trauma care cases. As discussed above, catastrophic care cases are those discharges that exceed three standard deviations of each hospital's mean inpatient average cost per discharge. We summarize the characteristics of our sample in the following table.

[18] Appendix B provides a copy.

Table 2: Total Costs and Discharges Above Hospital-Specific Catastrophic Care Thresholds, SFY 2002 to 2003

State Fiscal Year	Total Costs	Total Discharges	Threshold Average Cost Per Discharge Plus 3 Standard Deviations
2002	$262,674,657	45,810	• 743 discharges • 12 percent of total statewide inpatient estimated costs • Four percent of total trauma discharges statewide • 22 hospitals
2003	$274,701,735	47,565	• 800 discharges • 12 percent of total statewide inpatient estimated costs • Four percent of total trauma discharges statewide • 22 hospitals

Source: Wyoming Hospital Discharge Database, SFYs 2002 and 2003

For each discharge, we requested information regarding:

- Payments by payor category for each inpatient hospital discharge
- Charges for each discharge

We also asked hospitals to provide information on:

- Outpatient hospital services for six months of 2003 inpatient hospital discharges (only those outpatient hospital services occurring 30 days before or after the inpatient discharge)
- Charges and payments for any readmissions associated with the inpatient hospital discharges

Twenty hospitals responded to our request for inpatient hospital data, 16 hospitals responded to our request for outpatient data and 10 submitted readmissions data. In some cases, hospitals reported charges that were greater than charges posted in the Wyoming Hospital Discharge Dataset (representing a total difference of two percent in inpatient hospital charges, the majority of which hospitals reported in SFY 2002). We discussed these discrepancies with hospital representatives who indicated that these charges were generally due to the inclusion of fees

charged for physician-specific services ("professional fees") and late fees charged to the patient.[19] As a result, the survey results incorrectly reflect some professional fees.

We excluded the following outpatient hospital data from our analysis:

- Fifty-seven outpatient claims where the hospitals did not report sufficient data to estimate costs (nine percent of all submitted outpatient hospital claims)

- Sixty-six outpatient claims where the hospital listed a diagnosis code that appeared unrelated to the inpatient discharge (11 percent of all submitted outpatient hospital claims). We made this determination by comparing each primary diagnosis from the inpatient hospital claim to the primary diagnosis on the corresponding outpatient hospital claim. For example, we excluded an outpatient hospital claim with a primary diagnosis of local skin infection that was reported for an inpatient hospital claim with a primary diagnosis of a heart failure. A medical record review would be necessary to more precisely determine which outpatient claims were related to inpatient care.

We have included the readmissions data in our analysis of inpatient discharges for the 10 hospitals that submitted this information. Of the 236 readmissions that hospitals reported, almost 70 percent were submitted by one hospital. We excluded 30 readmissions because hospitals did not report payments or charges. We estimated costs for these services by multiplying hospital-specific cost-to-charge ratios[20] by total charges; total charges and estimated costs equal $3,421,509 and $1,859,820, respectively.

Trauma Register Database

We analyzed data from SFY 2004 from the Trauma Register, a database of trauma patients, trauma care, patient outcomes and injury prevention needs maintained by the State of Wyoming's Office of Emergency Medical Services since 2001.

The Office of Emergency Medical Services reported to us that hospitals have not reported data consistently since the program's inception. In addition, data reporting is not standard. For example, the Trauma Registry data we reviewed contained 1,185 patients in SFY 2004. The Wyoming Hospital Discharge Database, on the other hand, contained 4,341 trauma care discharges for SFY 2003, understating the number of trauma care cases by as much as 73 percent.

---

[19] Lorenzen, C., Wyoming Medical Center, Telephone interviews (September and October, 2004).
Cussins, J., United Medical Center, Telephone interviews (September and October, 2004).

[20] Total costs for all inpatient hospital discharges divided by total charges for these services (performed on a SFY basis using the Wyoming Hospital Discharge Databases).

Transportation Databases

While the costs per discharge in the Wyoming Hospital Database include the costs of ambulance service, if billed, these costs do not represent all ambulance services provided for trauma care cases because only 17 percent of all ambulance agencies are hospital-based.[21] Additionally, estimates of ambulance costs in the Wyoming Hospital Discharge database may be understated because Solucient estimates these costs using a cost-to-charge ratio for ancillary services[22] as opposed to using an ambulance-specific cost-to-charge ratio.[23]

To provide a more detailed analysis of transportation services, we used data from the Office of Emergency Services' 2003 Ambulance Survey and the 2003 Wyoming Ambulance Trip Reporting System (WATRS) Database. The State currently uses the Ambulance Survey and the WATRS Database to collect data on emergency medical services through a collaborative effort between the Office of Emergency Medical Services and Ambulance Services.

We used these databases to identify, for each ambulance agency, the type of organization, the total number of trips and the total number of miles for each trip. In addition, we also reviewed ambulance agencies' operating budgets, percentage of bad debt, percentage of charges reimbursed, and percentage of trauma care. Not all providers reported data for these variables, however.

Hospital Accounts Receivable Analysis

The Hospital Accounts Receivable Analysis, or HARA[24], is a quarterly report that benchmarks patient accounts statistics. It has been used since the mid-1980s to provide a comprehensive review of hospital financial trends and includes graphic analyses of hospital indicators, as well as data interpretation. The report analyzes hospitals by region, bed size and gross days revenue outstanding. We use this report to compare Wyoming's bad debt and charity care with national and regional data.

National Trauma Databank 2004 Report

The National Trauma Databank 2004 Report, or NTDB, was developed by the American College of Surgeons and represents the largest aggregation of trauma registry data. The analyses presented in this report are based on over 600,000 records from the years 1999-2003. NTDB data

---

[21] 2003 Wyoming Annual Ambulance Survey.

[22] Ancillary services are additional or supporting services provided by a hospital to a patient during his or her hospital stay and include a range of services, for example, ambulance, osteopathic services and gastrointestinal services.

[23] Based on a limited review of ambulance costs as compared to ancillary costs, the ambulance-specific cost-to-charge ratios appear higher than the ancillary cost-to-charge ratios.

[24] *The Hospital Accounts Receivable Analysis*, Volume XVIII, Number 1 (Fourth quarter of 2003).

includes information on gender, age, length of stay, and trauma events. We used this report to compare nationwide percentages to Wyoming's trauma care percentages.

Additional Data Sources

In addition to the data sources described above, we have also conducted interviews with individuals working on issues related to this study; Appendix C provides a listing of these individuals.