DRG 468: UNRELATED OPERATING ROOM PROCEDURES

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INSPECTOR GENERAL

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Entitled "DRG 468: Unrelated Operating Room Procedures," this inspection was conducted to analyze the characteristics of discharges paid as DRG 468. The report was prepared by BOTEC Analysis of Cambridge, MA under contract HHS-100-88-0019 and the Office of Analysis and Inspections, Health Care Branch. The following people participated in this project.

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EXECUTIVE SUMMARY

BACKGROUND

Diagnosis related group (DRG) 468 pays for discharges in which the patient undergoes an operating room procedure unrelated to the principal diagnosis occasioning the admission. This inspection reabstracts a sample of DRG 468 bills to measure their accuracy.

FINDINGS

- Of discharges paid as DRG 468, 24.8 percent should have been assigned to another DRG. This rate significantly exceeds the 18.6 percent for all DRGs.

- In 83.8 percent of these errors hospitals overpaid themselves, a significantly higher rate than the 59.7 percent for all DRGs. These errors project to an estimated $140.3 million in Fiscal Year 1990.

- Physicians caused 40.4 percent of assignment errors by mis-specifying the patients' principal diagnoses or procedures.

- In 32.3 percent of incorrect bills, the medical records department assigned the wrong ICD-9-CM codes to correctly specified procedures or diagnoses. This rate of coding errors significantly exceeded the 12.2 percent for all DRGs.

- During their second scope of work, the peer review organizations (PROs) identified 1.74 percent of DRG 468 bills as being unnecessary admissions. For a comparable cycle, SuperPRO identified 14.0 percent of DRG 468 bills as unnecessary admissions.

- The third scope of work reduces PRO reviews of DRG 468 bills from 100 percent to 50 percent. The PROs did not actually review 100 percent of DRG 468 bills during their second scope of work.

RECOMMENDATIONS

- The Health Care Financing Administration (HCFA) should determine why PRO oversight of DRG 468 discharges identifies a lower rate of misclassifications than SuperPRO.

- The HCFA should determine why SuperPRO identifies a lower rate of misclassifications than this study.

- The HCFA should continue 100 percent review of DRG 468 bills.

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INTRODUCTION

BACKGROUND

On October 1, 1983, the Health Care Financing Administration (HCFA) began implementing a new system of payment for inpatient hospital services under the Medicare program. The new prospective payment system (PPS) replaced the cost-based reimbursement system. Congress mandated this change because of rapid growth in health care costs, particularly inpatient expenses under Medicare.

Under PPS, hospitals received a pre-established payment for each discharge, based upon the diagnosis related group (DRG) to which the discharge is assigned. PPS classified discharges into clinically coherent groups which used similar amounts of hospital resources, based on variables such as diagnosis; evaluation and treatment procedures; and patient age, sex, and discharge status. Each of the 473 DRGs had an associated relative weight, which represented the average cost for hospital care provided to patients with diagnoses grouping to that DRG as a proportion of the cost of the average patient. The hospital received this payment, independent of the actual length of hospitalization or cost of treatment for the individual patient. The hospital retained any surplus from patients consuming less than the expected amount of resources, and suffered losses on those patients consuming more.

The shift from cost-based, retrospective reimbursement to prospective payment constituted one of the most dramatic changes in health care reimbursement since the creation of Medicare. A fixed payment per discharge induced hospitals to implement economies and reduce unnecessary services. The total payments to the hospitals provided the same financial resources for patient care. In effect, PPS reversed the financial incentives for hospitals. Where the cost-reimbursement system rewarded longer hospital stays and more costly treatments, PPS rewarded earlier discharges and less costly procedures. One of the first consequences of the new payment system was a drop in average length of hospital stay for Medicare patients.

PPS vulnerabilities

The advent of PPS created new opportunities for manipulation or "gaming" to increase hospital revenues from Medicare patients. To protect the integrity of PPS and maintain quality of care Congress established the peer review organizations (PROs) to monitor hospital activities.

The Office of the Inspector General (OIG) conducted the National DRG Validation Study to survey the general accuracy of DRG assignment and quality of care performed by hospitals under PPS. Its examination of 7000 medical records and established that assignment errors resulted in $300 million in overpayments to hospitals and that the majority of overpayments could be traced to assignment errors affecting a small number of DRGs. This report is one in

a series examining assignment accuracy of one of the DRGs identified as having the highest impact on overpayments under PPS and the greatest potential for cost recovery.

The PPS gaming takes two principal forms: optimization and creep. "Optimization" strategies adhere to coding rules, but maximize hospital reimbursements by selecting the most expensive among viable alternative principal diagnoses or adding more secondary diagnoses. The PPS permits optimization, which flows from the basic incentive structure of the PPS system.

"DRG creep" results from coding practices which do not conform to coding rules. Sources of DRG creep include:

- ***Misspecification:*** The attending physician writes an incorrect principal diagnosis (defined by the Uniform Hospital Discharge Data Set (UHDDS) as "that condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care"), secondary diagnoses, or procedures on the attestation sheet.

- ***Miscoding:*** The hospital assigns incorrect numeric codes to diseases or procedures correctly attested to by the attending physician.

- ***Resequencing:*** The hospital substitutes a secondary diagnosis for the correct principal diagnosis.

Auditing and review practices seek to curtail illegal creep by identifying discharges in which coding rules are misapplied or ignored.

Claims processing

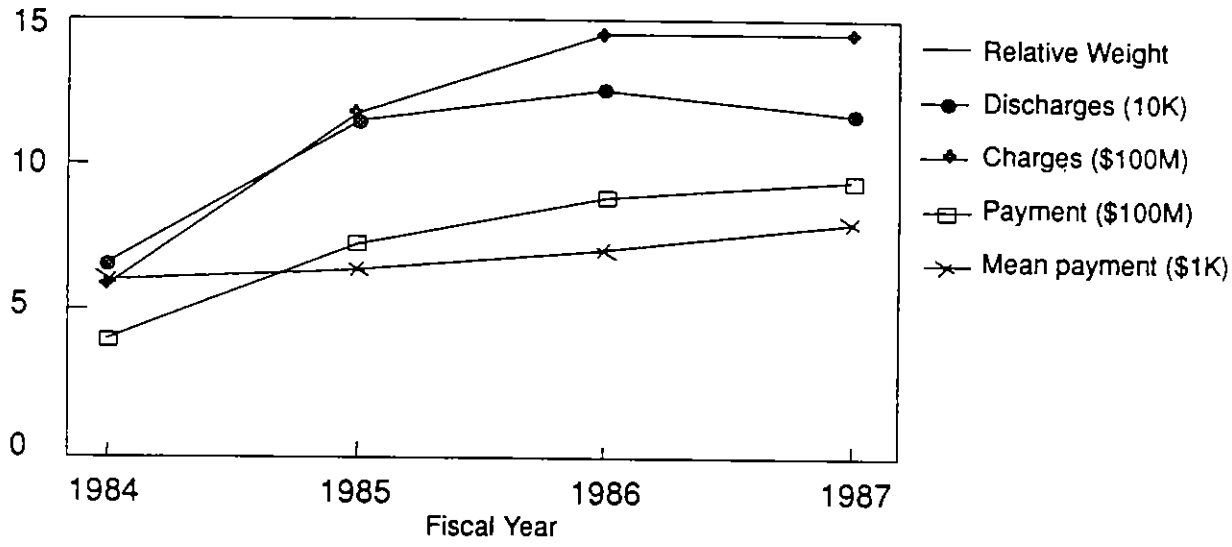
Under PPS, the hospital files a claim for Medicare reimbursement upon discharging the beneficiary. At the time of discharge, the attending physician attests to the principal diagnosis which caused the patient's admission to the hospital, secondary diagnoses, and procedures (diagnostic and therapeutic) provided. The hospital translates the narrative diagnoses of the physician's attestation statement into numeric codes based on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), and prepares a claim. Fiscal intermediary (FI) organizations, working under contract with HCFA, enter the hospital's codes into the GROUPER computer program which assigns the appropriate DRG for reimbursement.

Hospital reimbursement is calculated by multiplying the "relative weight" of each DRG category by a standardized amount, as modified by certain hospital-specific factors. The relative weight of each DRG varies above or below 1.0000 according to the average amount of hospital resources used by patients in that diagnostic group. The higher the relative weight, the greater the reimbursement. Mis-assignment of the ICD-9-CM categories, or erroneous assignment or sequencing of patient diagnoses, can thus have significant financial implications.

DRG 468

This study examines erroneous assignment and gaming in a single DRG: 468, unrelated operating room procedures. According to the ICD-9-CM, "Patients are assigned to patient class 468 when all operating procedures performed are unrelated to the patient's principal diagnosis." For example, if a patient enters the hospital because of pneumonia, falls out of bed, and therefore undergoes orthopedic surgery; the discharge groups to DRG 468, rather than to either DRG 89 (pneumonia) or DRG 218 (lower extremity surgical procedures). Because of its high relative weight, DRG 468 remains susceptible to improper creep.

Figure 1: DRG 468



For this reason, the PROs' second "scope of work" requires them to review ***all*** DRG 468 discharges. In its first 18 months, they report reviewing 120,670 (80.2 percent) of the population of 150,483 discharges. It subsequently increased to 91.9 percent. Nevertheless, the third scope of work decreases PRO review of DRG 468 bills to 50 percent.

Of the first 11,415 DRG 468 bills reviewed, the PROs found 9.5 percent to be erroneous, a higher rate than for other DRGs. By the end of the second scope of work, the error rate reported by the PROs increased to a cumulative 11.1 percent on DRG 468 bills. For an approximately comparable period, SuperPRO checked the PROs' reabstractions and identified 14.0 percent of DRG 468 bills accepted by the PROs as actually grouping to other DRGs. Unfortunately, SuperPRO cycles do not correlate precisely with PRO scope of work periods.

METHODOLOGY

This study examines DRG 468 discharges from the same sampling frame as the National DRG Validation Study. The National DRG Validation Study used a stratified two-stage sampling

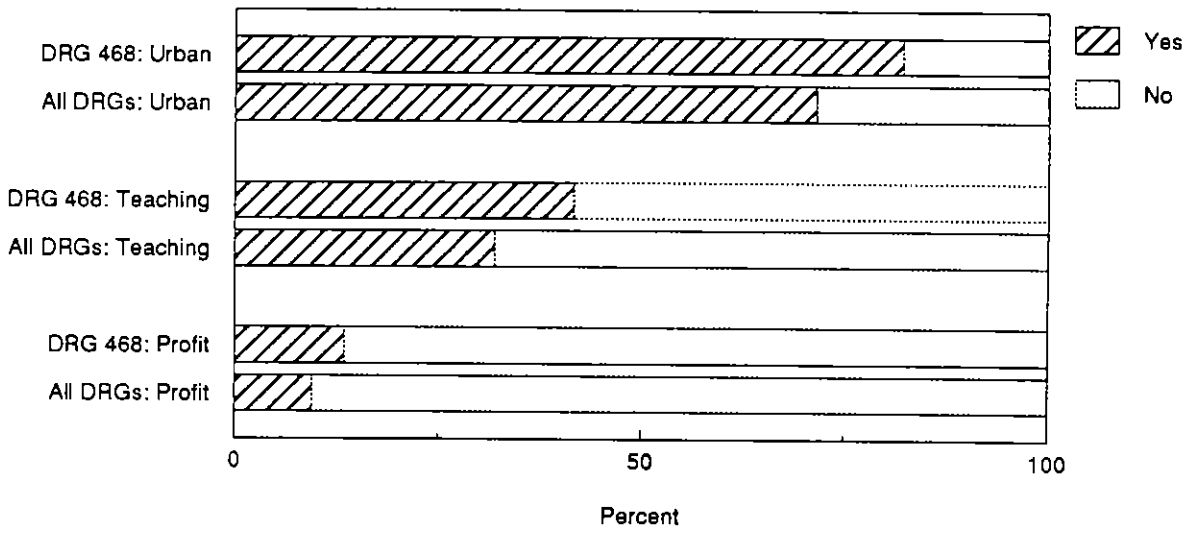
design based on hospitals to select medical records for review. The first stage used simple random sampling without replacement to select 80 hospitals from each of three strata based on bed size: less than 100 beds (small), 100 to 299 beds (medium), and 300 or more beds (large). The second stage of the design employed systematic random sampling to select DRG 468 bills from the 239 stage-one hospitals (one hospital dropped out) for Medicare discharges between October 1, 1984 and March 31, 1985.

Figure 2: Sampling frame

The OIG contracted with the Health Data Institute (HDI) of Lexington, Massachusetts to reabstract the entire sample of records. Upon receipt, the contractor "blinded" the ICD-9-CM codes by covering them, and assigned an identification number to each record. An accredited record technician or registered record administrator proficient in ICD-9-CM coding reviewed the entire record to substantiate the principal diagnosis, other diagnoses, and procedures indicated by the attending physician in the narrative attestation form. Any records which did not support the assigned DRG classification were referred to physician reviewers. The physician reviewers designated the correct UHDDS principal diagnosis, additional diagnoses, and procedures substantiated by the patient records. The GROUPER computer program processed the reabstracted ICD-9-CM codes to determine correct DRGs. A full discussion of the methodology and findings of the contractor record review is available in the final report of the National DRG Validation Study (available from OIG Public Affairs).

The DRG 468 was chosen for this inspection because of its high relative weight (2.0818) and a high ratio of overpayments. The OIG contracted with BOTEC Analysis of Cambridge, MA to examine data for DRG 468 in greater detail, to identify sources of coding errors, and to make recommendations for recovery of overpayments.

Figure 3: Hospital demography



FINDINGS

Sample characteristics

In FY 1985, 114,526 of the 8.3 million prospective payment discharges (1.4 percent) grouped to DRG 468. The National DRG Validation Study estimates that they came principally from large and medium sized hospitals. In the first half of FY 1985, the 239 hospitals in the sampling frame billed for 222,396 discharges of which 2,765 came from DRG 468. The first stage of the sample design reflects the population's distribution by hospital size, while the second stage intentionally oversamples small hospitals to increase statistical efficiency. The high sampling fraction in small hospitals (20.3 percent) reflects the scarcity of DRG 468 discharges in that strata. [Appendix A-1]

Additionally, the two-stage sample design permits calculation of separate results for Medicare beneficiaries (the probability of something happening to a person) and hospitals (the odds of an event at a particular hospital). The appendices, tables, and charts therefore report individual totals weighted by both discharges and hospitals.

Approximately equal numbers of DRG 468 discharges in this sample came from small, medium, and large hospitals. Unless strata weighted by discharges, the proportion of cases from small hospitals over-represents its PPS population, while medium sized and large hospitals under-represent theirs. This difference in the composition of discharges attained statistical significance (Chi-square 7.38, df 1, $P<0.01$). [Appendix A-2]

Table I: Patient demography

	DRG 468	National DRG Validation Study	Medicare
Age (years)	68.3	73.6	not available
Sex (% male)	60.8	46.2	42.2
LOS (days)	5816	3150	2985 urban 2381 rural
Mortality (%)	7.3	6.3	not available

Like all discharges under PPS, the majority of DRG 468 discharges came from urban, nonteaching, and nonprofit hospitals. [Appendix A-3] While the general pattern of discharges was similar, the DRG 468 sample (discharge-weighted) differed from estimates for all PPS discharges in having a significantly greater proportion of discharges from urban (Mantel-

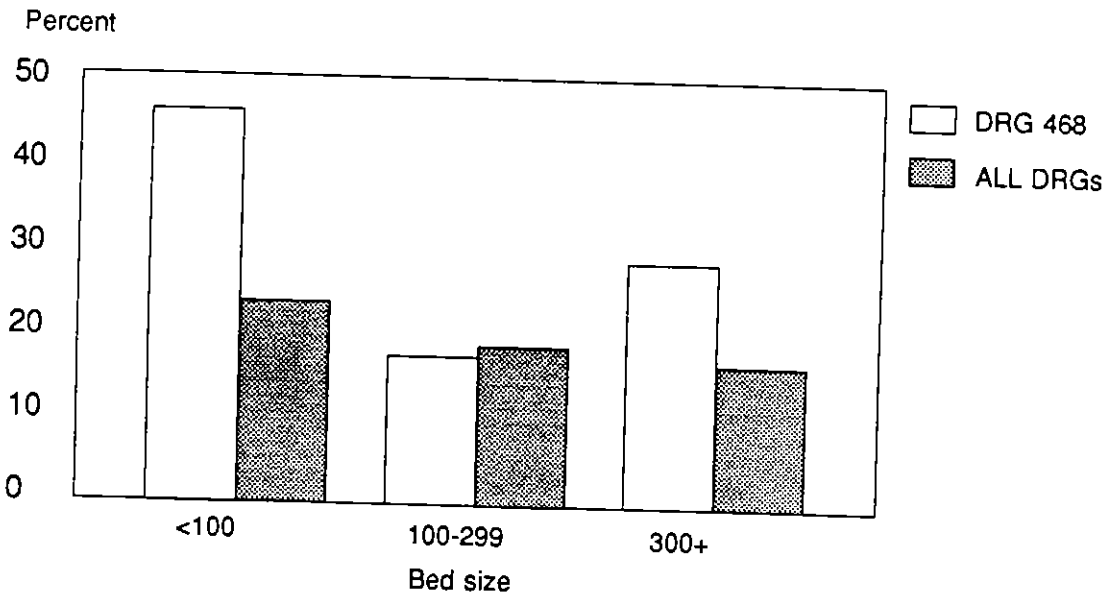
Haenszel Chi-square 5.68, df 1, P<0.025), teaching (Mantel-Haenszel Chi-square 8.40, df 1, P<0.005), and for-profit hospitals (Mantel-Haenszel Chi-square 13.22, df 1, P<0.005). [Appendix A-4]

Discharges paid as DRG 468 were, on average, younger patients and more frequently male than all PPS discharges. [Appendix A-5] Their average length of hospital stay (LOS) was almost 5 days longer than that found in the National DRG Validation Study, and they died at a slightly higher rate. The average reimbursement for discharges assigned to DRG 468 was substantially higher than in the National DRG Validation Study and for all PPS discharges, a difference which proved to be statistically significant (Students-t 23.94, df 80, P<0.001). [Appendix A-6]

Assignment errors

Reviewers determined that 24 of the 81 discharges in this sample should have been assigned to another DRG. This represents an error rate of 24.8 percent when weighted by discharge to approximate the underlying population. In contrast, the National DRG Validation Study found an average error rate of 18.6 percent among all DRGs.

Figure 4: Assignment errors



Within the DRG 468 sample, errors were sharply higher among discharges from small hospitals. Hospitals with less than 100 beds made assignment errors much more frequently than other hospitals in the DRG 468 sample, and nearly twice as often as small hospitals in the full National DRG Validation Study. Large hospitals also made assignment errors more frequently

on DRG 468 discharges than on all DRGs included in the National DRG Validation Study. [Appendix B-1]

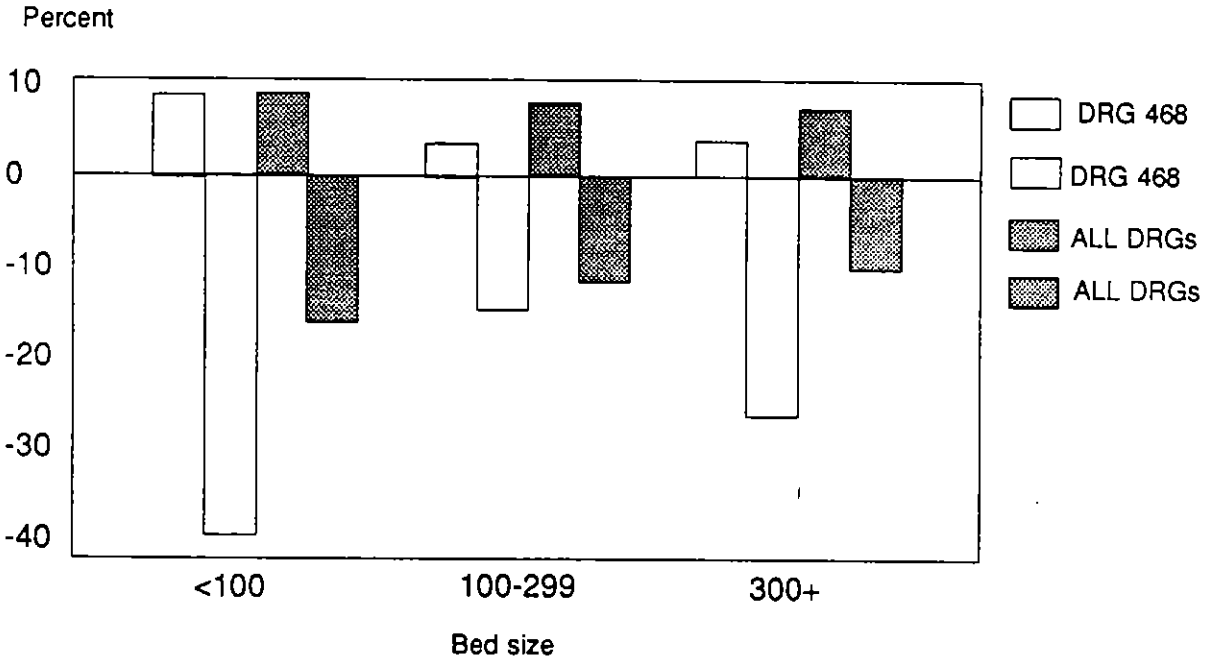
Examined by demographic characteristics, rural hospitals had a higher rate of assignment errors than urban hospitals. Teaching hospitals exceeded non-teaching facilities in mis-assignments. For-profit hospitals were responsible for the highest rate of assignment errors, assigning 8 out of 17 discharges (47.1 percent) incorrectly to DRG 468. [Appendix B-2]

Patient demographics differed between discharges assigned correctly and incorrectly by the hospitals. Discharges incorrectly charged to DRG 468 were on average slightly younger, had a lower proportion of males, and died over three times as frequently. Incorrectly assigned discharges had approximately the same length of hospital stay, but reimbursed at a higher rate than those which were correctly paid as DRG 468. [Appendix B-3]

Direction of errors

Twenty of the 24 discharges incorrectly assigned to DRG 468 resulted in overpayments to the hospitals (83.8 percent discharge-weighted). Hospitals should have coded and billed these discharges to DRGs with lower relative weights than DRG 468. Within each hospital demographic category, the rate of overpayment was similarly high for hospitals in each strata. The 83.8 percent overpayment rate multiplied by the 24.8 percent error rate produces an effective overpayment rate of 20.8 percent. This DRG 468 overpayment rate is almost twice the effective overpayment rate for the National DRG Validation Study (11.1 percent). [Appendix C-1]

Figure 5: Direction of errors



The proportion of overpayments differed among hospitals types. Urban and teaching hospitals overpaid themselves much more frequently than rural and nonteaching hospitals — urban hospitals overpaid themselves on 91.3 percent and teaching hospitals on 100.0 percent of discharges which were incorrectly assigned. Rural hospitals, in contrast, overpaid themselves on 29.4 percent and nonteaching hospitals on about one-third (66.7 percent) of incorrect submissions. The proportion of overpayments was similar among nonprofit and for-profit hospitals (28.7 percent and 91.0 percent). [Appendix C-2]

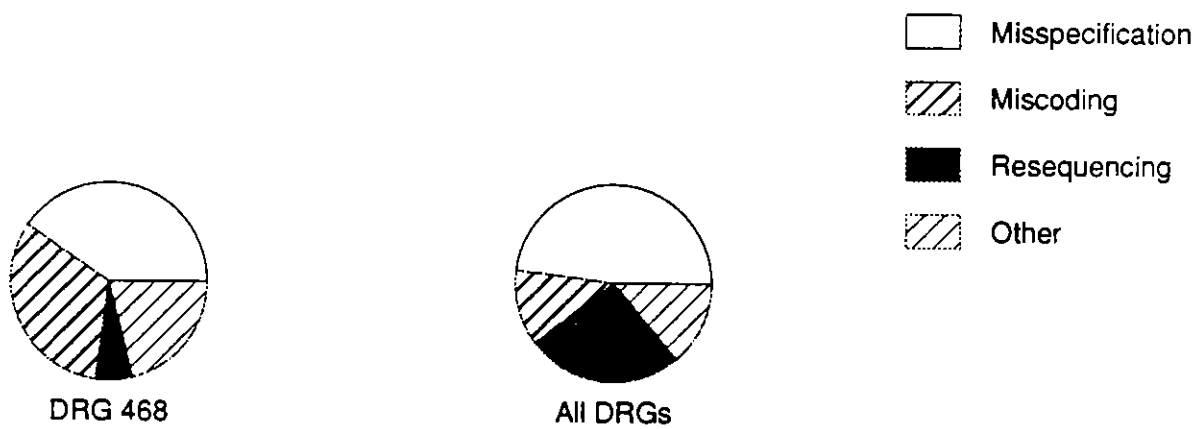
Turning to patient demographic characteristics, discharges which were overpaid had slightly older patients and fewer male patients. The length of hospitals stay was similar between the two groups, but the reimbursement to hospitals was almost $1,000 higher on discharges which resulted in hospitals overpayments. [Appendix C-3]

Source of errors

On 16 of the 24 discharges which were incorrectly paid as DRG 468, the medical records department incorrectly coded the record as DRG 468 and the hospital charged accordingly. In eight discharges, the medical records department correctly coded the discharge to another DRG but the hospital billed the discharge as 468 anyway. Billing errors by the hospitals administration were concentrated in discharges from small hospitals (45.5 percent of errors) and large hospitals (37.5 percent). None of the discharges from mid-sized hospitals were incorrectly paid as DRG 468 due to billing errors alone. [Appendix D-1]

The proportion of coding and billing errors also varied among hospitals by location and type. Among discharges from urban, teaching, and nonprofit hospitals the majority of errors occurred when records incorrectly coded as DRG 468 were billed accordingly. In contrast, 50.0 percent of the errors in discharges from rural hospitals, 33.3 percent of those from nonteaching hospitals, occurred when the hospital incorrectly billed a correctly coded record. Among

Figure 6: Reasons for coding errors



discharges from for-profit hospitals, billing errors were also more frequent (50.0 percent). [Appendix D-2]

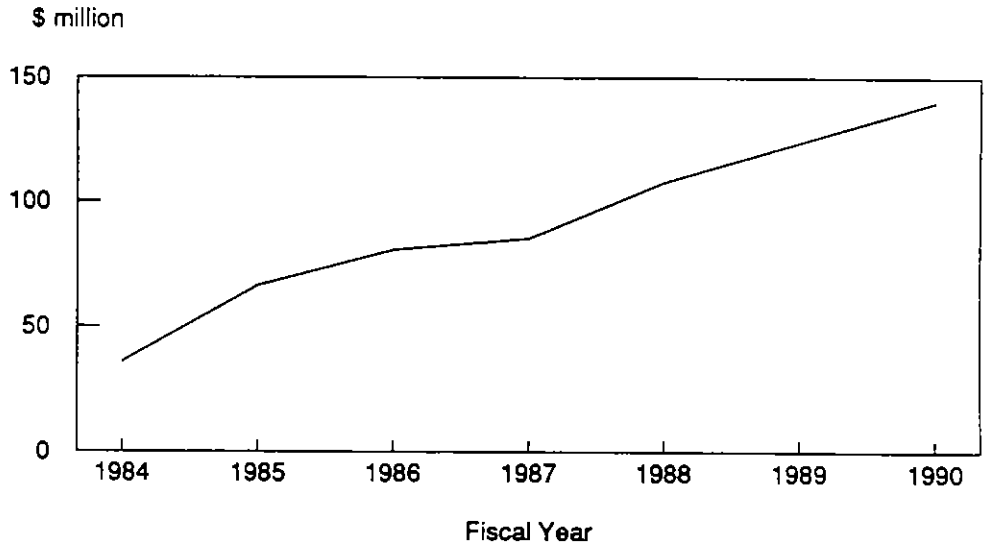
Patient characteristics did not vary substantially between discharges either coded or billed incorrectly. Patient age, proportion of males, and rate of mortality were similar. Discharges on which the hospital administration changed the medical coding at the time of billing had average hospital stays 4 days longer than discharges which were incorrectly coded by medical records, and were reimbursed at a slightly higher rate. [Appendix D-3]

Reasons for assignment errors

Errors in coding discharges to DRG 468 were caused in about equal proportion by physician mis-specifications, hospital miscoding, and a variety of "other" errors. In comparison to the results from the National DRG Validation Study, this represents a particularly high rate of miscoding errors, a low rate of errors due to resequencing, and a high rate of "other" errors. [Appendix E-1]

Physicians caused 8 of the 24 errors on DRG 468 discharges by mis-specifying narrative diagnoses or procedures on the patients' Attestation Sheets. These mis-specifications concerned the principal diagnosis in 5 discharges, the secondary diagnosis in 1 and procedures in 3. Another 8 of the 24 errors resulted when hospitals selected the wrong code for a correct narrative diagnosis or procedure. Hospitals most frequently miscoded procedures (6 discharges). Seven of the discharges were incorrectly billed and paid due to "other" reasons. Only one error resulted from hospital resequencing of the narrative diagnosis to substitute a secondary diagnosis for the correct principal diagnosis.

Figure 7: Overpayment projection

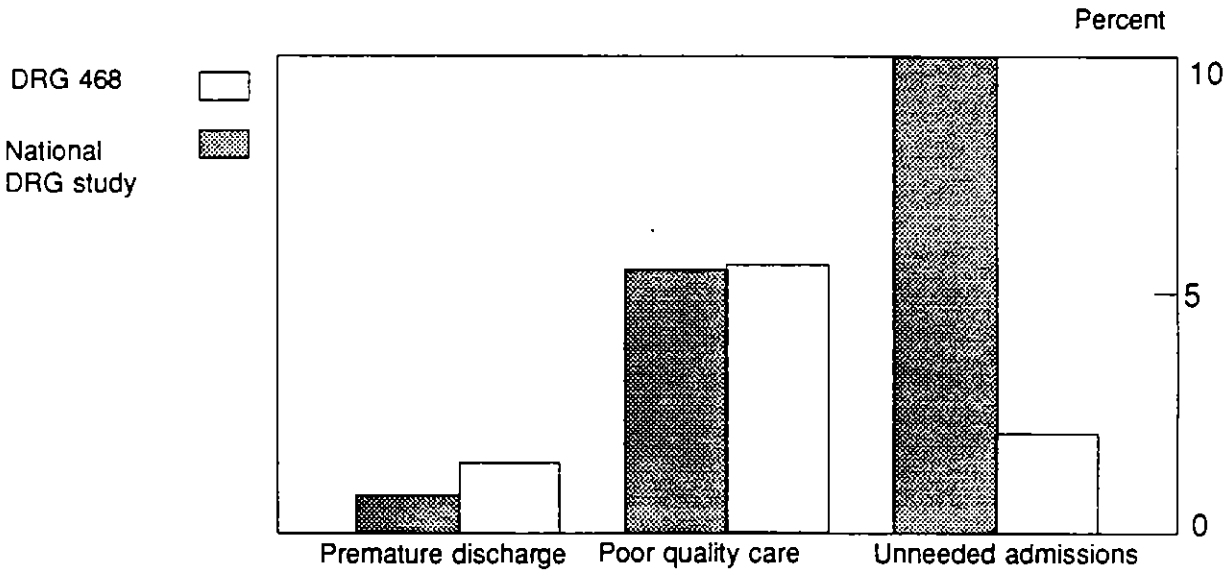


Reasons for assignment errors differed little by hospital size, location, teaching or profit status. [Appendix E-2] Mis-specifications by the attending physician were particularly frequent, however, in discharges from mid-sized hospitals. Among patient demographics, age and gender were similar across all categories. However, the length of hospital stay, reimbursement, and rate of mortality were particularly high in discharges on which physicians made mis-specifications. [Appendix E-4]

Financial effects

After reabstraction, the relative weight for discharges in this sample dropped from an average of 2.0818 to 1.8991, a discharge weighted decrease of 9.1 percent. The mean reimbursement change ranged from $1126 for small hospitals, through $625 for large hospitals, to $351 for medium sized hospitals. Weighted by discharges, this 81 case sample found $54,709 in overpayments from 24 coding errors. Extrapolation to the entire Medicare population projects $66 million in errors during the study year. The overpayments rise continuously to $107.8 million in FY 1988 and $140.3 million in FY 1990. [Appendix F-3]

Figure 8: Clinical Incidents



Correct DRG assignments

No pattern distinguished the correct DRG assignments for the miscoded DRG 468 discharges. [Appendix G-2] Reviewers assigned the 24 discharges incorrectly paid as DRG 468 to 23 alternative DRGs after reabstraction. The correct DRG assignments distributed among 15 different Major Diagnostic Categories (MDCs). [Appendix G-1]

Clinical review results

Only three of the discharges in this sample were judged by reviewers to be inappropriate admissions ("an admission in which the care received by the patient was either not needed or did not require the use of the inpatient setting.") This rate, 2.7 percent when weighted by discharge, was substantially lower than the rate in the National DRG Validation Study. Reviewers identified only one premature discharge in the DRG 468 sample. [Appendix H-1]

Reviewers identified quality of care "not meeting professionally recognized standards" in 5 of the 81 discharges paid as DRG 468, a rate of 5.7 percent when weighted by discharge. This is approximately the same rate found across all DRGs in the National DRG Validation Study. Quality of care problems were somewhat higher among DRG 468 discharges from small hospitals (8.3 percent) and particularly low in discharges from large facilities (1.2 percent). [Appendix H-2]

RECOMMENDATIONS

- The HCFA should determine why the peer review organization oversight of DRG 468 discharges identifies a lower rate of misclassifications than SuperPRO.

- The HCFA should determine why SuperPRO identifies a lower rate of misclassifications than this study.

- The HCFA should continue 100 percent review of DRG 468 bills.

The HCFA reviewed a draft of this inspection report and disagrees with these recommendations. [Appendix I] The Office of Inspector General continues to believe that implementation of these recommendations would save $140.3 million annually.

Appendix A-1: DRG 468 discharges from all PPS hospitals

Fiscal Year	1984	1985	1986	1987
Relative weight	2.1037	2.0818	2.2248	2.4516
Number of discharges	66,145	114,526	125,811	117,377
Total charges ($ million)	579.3	1,175.3	1,447.9	1,447.9
Total reimbursement ($ million)	396.2	729.4	887.3	938.8
Average reimbursement ($)	5,990	6,368	7,053	7,998

Appendix A-2: DRG 468 sampling frame

Number	Bed size			
	<100	100-299	300+	Total
Medicare population (FY 85)	7,944	49,915	56,667	114,526
Sample hospitals	118	741	1906	2,765
Sampled	24	29	28	81
Sampling fraction [%]	[20.3]	[3.9]	[1.5]	[2.9]

Appendix A-3: DRG 468 hospital demography

Number [Percent]	Bed size				Weighted percentage		
	<100	100-299	300+	Total	Sample	Discharge	Hospital
Urban	11 [45.8]	22 [75.9]	26 [92.9]	59	[72.8]	[82.2]	[63.1]
Rural	13 [54.2]	7 [24.1]	2 [7.1]	22	[27.2]	[17.8]	[36.9]
Teaching	8 [33.3]	5 [17.2]	18 [64.3]	31	[38.3]	[41.6]	[33.0]
Nonteaching	16 [66.6]	24 [82.8]	10 [35.7]	50	[61.7]	[58.4]	[67.0]
Profit	10 [41.7]	7 [24.1]	0 [0.0]	17	[21.0]	[13.4]	[29.4]
Nonprofit	14 [58.3]	22 [75.9]	28 [100]	64	[79.0]	[86.6]	[70.6]
Total	24 [100]	29 [100]	28 [100]	81	[100]	[100]	[100]

Appendix A-4: DRG 468 hospital demography comparison

Percent		Bed size			Weighted percentage		
		<100	100-299	300+	Sample	Discharge	Hospital
Urban	DRG 468	45.8	75.9	92.9	72.8	82.2	63.1
	NDRGVS	19.9	70.2	94.0	62.0	71.5	48.0
Rural	DRG 468	54.2	24.1	7.1	27.2	17.8	36.9
	NDRGVS	80.1	29.8	6.0	38.0	28.5	52.0
Teaching	DRG 468	33.3	17.2	64.3	38.3	41.6	33.0
	NDRGVS	2.6	18.8	55.2	25.9	31.9	16.2
Non-teaching	DRG 468	66.7	82.8	35.7	61.7	58.4	67.0
	NDRGVS	97.4	81.2	44.8	74.1	68.2	83.8
Profit	DRG 468	41.7	24.1	0.0	21.0	13.4	29.4
	NDRGVS	9.2	17.5	2.5	9.8	9.4	10.9
Nonprofit	DRG 468	58.3	75.9	100.0	79.0	86.6	70.6
	NDRGVS	90.8	82.5	97.5	90.2	90.6	89.2

Appendix A-5: DRG 468 patient demography

	Bed size			Weighted average		
	<100	100-299	300+	Sample	Discharge	Hospital
Age (years)	68.2	69.5	67.4	68.4	68.4	68.5
Sex (% male)	54.2	51.7	71.4	59.3	61.6	56.1
LOS (days)	10.2	10.1	14.8	11.7	12.4	10.9
Payment ($)	4959	5530	6416	5667	5929	5375
Mortality (%)	0.0	6.9	10.7	6.2	8.3	3.9

Appendix A-6: DRG 468 comparison of patient demography

		Bed size			Weighted average		
		<100	100-299	300+	Sample	Discharge	Hospital
Age (years)	DRG 468	68.2	69.5	67.4	68.4	68.4	68.5
	NDRGVS	76.2	74.0	72.2	74.1	73.6	74.9
Sex (% male)	DRG 468	54.2	51.7	71.4	59.3	61.6	56.1
	NDRGVS	43.3	45.4	48.1	45.7	46.2	44.8
LOS (days)	DRG 468	10.2	10.1	14.8	11.7	12.4	10.9
	NDRGVS	5.9	7.4	8.3	7.2	7.5	6.8
Payment ($)	DRG 468	4959	5530	6416	5667	5928	5375
	NDRGVS	1849	2923	3807	2860	3074	2508
Mortality (%)	DRG 468	0.0	6.9	10.7	6.2	8.3	3.9
	NDRGVS	5.6	6.2	7.0	6.3	6.4	6.0

Appendix B-1: DRG 468 assignment accuracy

Number [Percent]	Bed size				Weighted percentage		
	<100	100-299	300+	Total	Sample	Discharge	Hospital
Urban	5 [45.5]	5 [22.7]	6 [23.1]	16	[27.1]	[24.5]	[34.5]
Rural	6 [46.2]	0 [0.0]	2 [100.0]	8	[36.4]	[52.7]	[39.6]
Teaching	5 [62.5]	2 [40.0]	5 [27.8]	12	[38.7]	[35.5]	[49.7]
Nonteaching	6 [37.5]	3 [12.5]	3 [30.0]	12	[24.0]	[22.9]	[28.2]
Profit	6 [60.0]	2 [28.6]	0 [0.0]	8	[47.1]	[16.6]	[40.3]
Nonprofit	5 [35.7]	3 [13.6]	8 [28.6]	16	[25.0]	[22.6]	[27.4]
Total	11 [45.8]	5 [17.2]	8 [28.6]	24	[29.6]	[24.8]	[33.8]

Appendix B-2: DRG 468 assignment accuracy comparison

Percent		Bed size			Weighted percentage		
		<100	100-299	300+	Sample	Discharge	Hospital
Urban	DRG 468	45.5	22.7	23.1	27.1	24.5	34.5
	NDRGVS	22.5	19.3	16.2	18.0	17.6	20.4
Rural	DRG 468	46.2	0.0	100.0	36.4	52.7	39.6
	NDRGVS	23.9	16.6	22.5	21.9	20.9	21.3
Teaching	DRG 468	62.5	40.0	27.8	38.7	35.5	49.7
	NDRGVS	20.0	20.9	15.8	17.4	17.2	19.6
Non-teaching	DRG 468	37.5	12.5	30.0	24.0	22.9	28.2
	NDRGVS	23.7	17.9	17.6	20.2	19.2	20.2
Profit	DRG 468	60.0	28.6	0.0	47.1	16.6	40.3
	NDRGVS	23.8	18.9	18.3	20.3	19.7	21.3
Nonprofit	DRG 468	35.7	13.6	28.6	25.0	22.6	27.4
	NDRGVS	23.6	18.4	16.5	19.4	18.5	20.8
Total	DRG 468	45.8	17.2	28.6	29.6	24.8	33.8
	NDRGVS	23.6	18.5	16.6	19.5	18.6	20.8

Appendix B-3: DRG 468 assignment accuracy by patient demography

		Bed size			Weighted average		
		<100	100-299	300+	Sample	Discharge	Hospital
Age (years)	Correct	76.5	69.4	64.9	69.4	67.7	72.4
	Incorrect	58.4	70.2	73.9	66.0	71.2	64.7
Sex (% male)	Correct	53.9	58.3	80.0	64.9	68.7	59.5
	Incorrect	54.5	20.0	50.0	45.8	37.2	42.5
LOS (days)	Correct	7.4	10.3	16.5	11.8	13.2	9.8
	Incorrect	13.5	9.2	10.5	11.6	10.1	11.6
Payment ($)	Correct	4873	5487	6717	5779	6053	5365
	Incorrect	5061	5738	5664	5403	5654	5377
Mortality (%)	Correct	0.0	4.2	5.0	3.5	4.3	2.2
	Incorrect	0.0	20.0	25.0	12.5	21.1	10.5

Appendix C-1: DRG 468 direction of errors by hospital demography

Number of overpayments [Percent]	Bed size <100	100-299	300+	Total	Weighted percentage Sample	Discharge	Hospital
Urban	5 [100.0]	4 [80.0]	6 [100.0]	15	[93.8]	[91.3]	[93.5]
Rural	4 [66.7]	0 [0.0]	1 [50.0]	5	[62.5]	[29.4]	[42.3]
Teaching	5 [100.0]	2 [100.0]	5 [100.0]	12	[100.0]	[100.0]	[100.0]
Nonteaching	4 [66.7]	2 [66.7]	2 [66.7]	8	[66.7]	[66.7]	[66.7]
Profit	6 [100.0]	1 [50.0]	0 [0.0]	7	[87.5]	[28.7]	[67.9]
Nonprofit	3 [60.0]	3 [100.0]	7 [87.5]	13	[81.3]	[91.0]	[77.4]
Total	9 [81.8]	4 [80.0]	7 [87.5]	20	[83.3]	[83.8]	[82.1]

Appendix C-2: DRG 468 direction of errors comparison

Percent overpayments		Bed size <100	100-299	300+	Weighted percentage Sample	Discharge	Hospital
Urban	DRG 468	100.0	80.0	100.0	93.8	91.3	93.5
	NDRGVS	53.9	60.4	57.0	58.0	57.6	56.5
Rural	DRG 468	66.7	0.0	50.0	62.5	29.4	42.3
	NDRGVS	66.5	57.6	65.6	64.7	62.9	63.4
Teaching	DRG 468	100.0	100.0	100.0	100.0	100.0	100.0
	NDRGVS	66.6	59.6	56.6	57.9	59.8	62.8
Non-teaching	DRG 468	66.7	66.7	66.7	66.7	66.7	66.7
	NDRGVS	64.1	59.7	59.0	61.7	60.3	61.9
Profit	DRG 468	100.0	50.0	0.0	87.5	28.7	67.9
	NDRGVS	68.0	55.7	63.6	60.7	61.7	63.3
Nonprofit	DRG 468	60.0	100.0	87.5	81.3	91.0	77.4
	NDRGVS	63.7	60.5	57.6	60.9	59.9	61.6
Total	DRG 468	81.8	80.0	87.5	83.3	83.8	82.1
	NDRGVS	64.1	59.6	57.7	60.8	59.7	61.6

Appendix C-3: DRG 468 direction of errors by patient demography

		Bed size			Weighted average		
		<100	100-299	300+	Sample	Discharge	Hospital
Age (years)	Overpaid	65.1	66.5	74.9	68.8	70.6	67.1
	Underpaid	28.0	85.0	67.0	52.0	72.1	52.7
Sex (% male)	Overpaid	44.4	25.0	42.9	40.0	35.2	37.8
	Underpaid	100.0	0.0	100.0	75.0	56.4	67.4
LOS (days)	Overpaid	16.2	5.5	9.4	11.7	8.2	11.6
	Underpaid	11.0	24.0	18.0	11.0	19.4	11.2
Payment ($)	Overpaid	5231	5825	5788	5545	5766	5513
	Underpaid	4295	5389	4798	4694	5021	4731
Mortality (%)	Overpaid	0.0	100.0	100.0	70.4	93.1	48.4
	Underpaid	0.0	0.0	14.3	4.9	7.1	2.3

Appendix D-1: DRG 468 hospital department making errors

Number of errors by the coding department	Bed size <100 [Percent]	100-299	300+	Total	Weighted percentage Sample	Discharge	Hospital
Urban	2 [40.0]	5 [100.0]	5 [83.3]	12	[75.0]	[87.6]	[66.4]
Rural	4 [66.7]	0 [0.0]	0 [0.0]	4	[50.0]	[4.6]	[34.4]
Teaching	2 [40.0]	2 [100.0]	4 [80.0]	8	[66.7]	[85.9]	[65.9]
Nonteaching	4 [66.7]	3 [100.0]	1 [33.3]	8	[66.7]	[64.7]	[72.3]
Profit	2 [33.3]	2 [100.0]	0 [0.0]	4	[50.0]	[45.9]	[49.8]
Nonprofit	4 [80.0]	3 [100.0]	5 [62.5]	12	[75.0]	[80.1]	[83.8]
Total	6 [54.5]	5 [100.0]	5 [62.5]	16	[66.7]	[78.3]	[70.6]

Appendix D-2: DRG 468 hospital department making errors comparison

Percent of errors by the coding department		Bed size <100	100-299	300+	Weighted percentage Sample	Discharge	Hospital
Urban	DRG 468	40.0	100.0	83.3	75.0	87.6	66.4
	NDRGVS	89.2	88.8	90.6	89.7	89.7	89.3
Rural	DRG 468	66.7	0.0	0.0	50.0	4.6	34.4
	NDRGVS	94.5	95.8	90.6	94.5	93.3	94.3
Teaching	DRG 468	40.0	100.0	80.0	66.7	85.9	65.9
	NDRGVS	91.7	92.6	89.2	90.3	91.0	91.6
Non-teaching	DRG 468	66.7	100.0	33.3	66.7	64.7	72.3
	NDRGVS	93.5	90.2	92.3	92.2	91.8	92.2
Profit	DRG 468	33.3	100.0	0.0	50.0	45.9	49.8
	NDRGVS	86.0	92.4	81.8	89.3	86.5	87.4
Nonprofit	DRG 468	80.0	100.0	62.5	75.0	80.1	83.8
	NDRGVS	94.3	90.3	90.9	92.1	91.4	92.5
Total	DRG 468	54.5	100.0	62.5	66.7	78.3	70.6
	NDRGVS	93.5	90.7	90.6	91.7	91.2	92.1

Appendix D-3: DRG 468 hospital department making errors by patient demography

		Bed size <100	100-299	300+	Weighted average Sample	Discharge	Hospital
Age (years)	Billing	64.5	0.0	67.3	66.1	37.8	43.9
	Coding	52.5	70.2	77.8	65.9	72.7	62.3
Sex (% male)	Billing	60.0	0.0	33.3	50.0	20.6	36.2
	Coding	50.0	20.0	60.0	43.8	41.9	41.8
LOS (days)	Billing	16.0	0.0	11.7	14.4	6.9	10.1
	Coding	11.3	9.2	9.8	10.2	9.6	10.4
Payment ($)	Billing	5444	0	5424	5437	3061	3666
	Coding	4741	5737	5808	5386	5703	5234
Mortality (%)	Billing	0.0	0.0	33.3	12.5	16.5	5.3
	Coding	0.0	20.0	20.0	12.5	18.6	9.7

Appendix E-1: DRG 468 reasons for errors

	Bed size				
	<100	100-299	300+	Total	[Percent]
Mis-specification					
Principal diagnosis	1	3	1	5	[20.0]
Secondary diagnosis	1	0	0	1	[4.0]
Procedure	2	0	1	3	[12.0]
Miscoding					
Principal diagnosis	1	1	0	2	[8.0]
Procedure	3	1	2	6	[24.0]
Resequencing					
Incorrect sequence	0	0	1	1	[4.0]
Other					
No hospital codes	0	0	1	1	[4.0]
Other	4	0	2	6	[24.0]
Total	12	5	8	25	[100.0]

Appendix E-2: DRG 468 reasons for errors by hospital demography

Number [Percent]	Narrative		Miscoding		Resequencing		Other	
<100 beds	3	[27.3]	4	[36.4]	0	[0.0]	4	[36.4]
100-299 beds	3	[60.0]	2	[40.0]	0	[0.0]	0	[0.0]
300+ beds	2	[25.0]	2	[25.0]	1	[12.3]	3	[37.5]
Urban	6	[37.5]	6	[37.5]	1	[6.2]	3	[18.8]
Rural	2	[25.0]	2	[25.0]	0	[0.0]	4	[50.0]
Teaching	4	[33.3]	4	[33.3]	1	[8.3]	3	[25.0]
Nonteaching	4	[33.3]	4	[33.3]	0	[0.0]	4	[33.3]
Profit	2	[25.0]	3	[37.5]	0	[0.0]	3	[37.5]
Nonprofit	6	[37.5]	5	[31.3]	1	[6.3]	4	[25.0]
Total	8	[33.3]	8	[33.3]	1	[4.2]	7	[29.2]

Appendix E-3: DRG 468 reasons for errors comparison

Percent		Bed size			Weighted percentage		
		<100	100-299	300+	Sample	Discharge	Hospital
Mis-specification	DRG 468	27.3	60.0	25.0	33.3	40.4	37.6
	NDRGVS	49.8	44.9	49.4	48.1	47.9	48.1
Miscoding	DRG 468	36.4	40.0	25.0	33.3	32.3	35.8
	NDRGVS	10.4	14.3	11.4	11.9	12.2	11.8
Resequencing	DRG 468	0.0	0.0	12.3	4.2	6.1	1.9
	NDRGVS	31.0	24.9	24.3	27.1	25.9	28.0
Other	DRG 468	36.4	0.0	37.5	29.2	21.1	24.7
	NDRGVS	6.7	15.9	14.9	12.8	13.5	11.0

Appendix E-4: DRG 468 reasons for errors by patient demography

	Mis-specification	Miscoding	Resequencing	Other
Age (years)	66.1	59.8	79.0	71.1
Sex (% male)	37.5	50.0	0.0	57.1
LOS (days)	13.9	11.6	12.0	8.9
Payment ($)	6116	4921	5320	5151
Mortality (%)	25.0	0.0	0.0	14.3

Appendix F-1: DRG 468 corrected relative weights

Relative weight	Bed size			Average-total
Average	<100	100-299	300+	
Paid	2.0818	2.0818	2.0818	2.0818
Corrected	1.6092	1.9497	1.8789	1.8911
Difference	0.4726	0.1321	0.2029	0.1908
Total				
Paid	49.9632	60.3722	58.2904	168.6258
Corrected	38.6208	56.5413	52.6092	147.7713
Difference	11.3424	3.8309	5.6812	20.8545

Appendix F-2: DRG 468 corrected reimbursement

$	Bed size			Average-total
	<100	100-299	300+	
Average				
Paid	4,959	5,530	6,416	5,929
Corrected	3,833	5,179	5,791	5,388
Difference	1,126	351	625	541
Total				
Paid	119,023	160,381	179,657	459,063
Corrected	92,003	150,204	162,147	404,354
Difference	27,020	10,177	17,510	54,709
Overpayment rate [%]	[22.7]	[6.3]	[9.7]	[9.1]

Appendix F-3: Overpayment projection

Fiscal Year	Reimbursement ($ million)	Overpayment ($ million)
1984	396.3	36.1
1985	729.4	66.4
1986	887.3	80.8
1987	938.8	85.4
1988 est.	1,184.3	107.8
1989 est.	1,362.8	124.0
1990 est.	1,541.4	140.3

Overpayment calculated as 9.1 percent of reimbursement.
Estimates based on linear regression.

Appendix G-1: Correct MDC for discharges incorrectly assigned to DRG 468

Number	Bed size				
	<100	100-299	300+	Total	[Percent]
01: Nervous System	1	0	0	1	[4.2]
03: Ear, Nose and Throat	0	0	1	1	[4.2]
04: Respiratory System	0	0	1	1	[4.2]
05: Circulatory	1	0	1	2	[8.3]
06: Digestive	1	1	1	3	[12.5]
07: Hepatobiliary & Pancreas	1	0	0	1	[4.2]
08: Musculoskeletal	1	1	1	3	[12.5]
09: Skin and Breast	2	0	0	2	[8.3]
11: Kidney and Urinary Tract	1	0	0	1	[4.2]
12: Urological	0	1	0	1	[4.2]
13: Gynecological	1	1	1	3	[12.5]
14: Delivery	2	0	0	2	[8.3]
16: Blood, Hematopoietic	0	0	1	1	[4.2]
21: Injury, Poisoning & Drugs	0	1	0	1	[4.2]
23: Other	0	0	1	1	[4.2]
Total	11	5	8	24	[100.0]

Appendix G-2: Correct DRG for discharges incorrectly assigned to DRG 468

Number		Bed size				
		<100	100-299	300+	Total	[Percent]
31	Concussion	1	0	0	1	[4.2]
53	Sinus & mastoid procedures	0	0	1	1	[4.2]
79	Respiratory infections	0	0	1	1	[4.2]
127	Heart failure & shock	0	0	1	1	[4.2]
142	Syncope & collapse	1	0	0	1	[4.2]
148	Lower gastrointestinal procedures	0	1	0	1	[4.2]
154	Upper gastrointestinal procedures	0	0	1	1	[4.2]
161	Hernia repair	1	0	0	1	[4.2]
205	Liver disorders	1	0	0	1	[4.2]
210	Hip procedures	1	0	0	1	[4.2]
218	Lower extremity procedures	0	0	1	1	[4.2]
240	Connective tissue disorders	0	1	0	1	[4.2]
264	Skin graft	2	0	0	2	[8.3]
325	Urinary tract symptoms	1	0	0	1	[4.2]
336	Transurethral prostatectomy	0	1	0	1	[4.2]
354	Uterine malignancy procedures	0	0	1	1	[4.2]
360	Vagina, cervix, & vulva procedures	0	1	0	1	[4.2]
364	Conization	1	0	0	1	[4.2]
374	Vaginal delivery & sterilization	2	0	0	2	[8.3]
395	Red blood cell disorders	0	0	1	1	[4.2]
443	Trauma procedures	0	1	0	1	[4.2]
461	Other diagnoses	0	0	1	1	[4.2]
Total		11	5	8	24	[100.0]

Appendix H-1: DRG 468 clinical review

Number [Percent]	Bed size <100	100-299	300+	Total	Weighted percentage Sample	Discharge	Hospital
Unnecessary admissions	2 [8.3]	1 [3.4]	0 [0.0]	3	[3.7]	[2.1]	[5.4]
Poor quality of care	2 [8.3]	2 [6.9]	1 [3.6]	5	[6.2]	[5.6]	[8.5]
Premature discharge	0 [0.0]	1 [3.4]	0 [0.0]	1	[1.2]	[1.5]	[1.1]

Appendix H-2: DRG 468 clinical review comparison

Percent		Bed size <100	100-299	300+	Weighted percentage Sample	Discharge	Hospital
Unnecessary admissions	DRG 468	8.3	3.4	0.0	3.7	2.1	5.4
	NDRGVS	12.6	10.1	8.9	10.5	10.2	11.3
Poor quality of care	DRG 468	8.3	6.9	3.6	6.2	5.6	8.5
	NDRGVS	11.4	5.1	3.5	6.6	5.5	8.1
Premature discharge	DRG 468	0.0	3.4	0.0	1.2	1.5	1.1
	NDRGVS	2.1	0.8	0.4	1.1	0.8	1.4

Appendix I: HCFA comments

Brown/FID file
HOD
Steeley
Hsia
Mangano/Gold

DEPARTMENT OF HEALTH & HUMAN SERVICES

Health Care Financing Administration

FEB 15 1989

Memorandum

Date

From Terry Coleman
Acting Administrator

Subject OIG Draft Report, "DRG 468: Unrelated Operating Room Procedures," OAI-12-88-01170

To The Inspector General
Office of the Secretary

We have reviewed the draft report on DRG 468. HCFA recognized many of the problems with DRG 468, and we have taken a number of steps to correct the deficiencies. Our specific comments on the recommendations are attached for your consideration.

Thank you for the opportunity to comment on this report.

Attachment

IG	✓
DIG	✓
AIG-A	
AIG-AI	✓
AIG-I	
ADM	✓
OGC/IG	✓
EX SEC	
DATE SENT	2/15

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1989 FEB 15 PM 2:35

Comments of the
Health Care Financing Administration
on the OIG Draft Report, "DRG 468:
Unrelated Operating Room Procedures,"
OAI-12-88-01170

General Comments

The period studied was FY 1985. We believe that this report is out of date. Since that time, HCFA has taken steps to reduce the number of cases assigned to DRG 468. These actions should be addressed in the report.

Once again, we find the use of the term overpayment in connection with 81 discharges reviewed to be inappropriate in the context of the Medicare prospective payment system (PPS). While we agree that coding accuracy is vital to the correct DRG assignment, the payment for an individual DRG does not determine the aggregate effect of PPS on individual hospitals or groups of hospitals.

OIG Recommendation

The Health Care Financing Administration (HCFA) should ensure that the PROs review prospectively all bills for DRG 468. This process should yield $140 million annually.

HCFA Response

We disagree with the recommendation and projected savings of $140 million annually for the following reasons:

- The data on which these projections were made is old and based on cases from early in PPS. Substantial growth has taken place in understanding how to document and code for the system.

- HCFA has held training sessions across the country for all PROs and instructed PROs to educate hospitals in correct coding principles. Additionally, outside groups such as the American Medical Record Association and the American Hospital Association have put considerable emphasis on correct coding. These Associations have conducted training sessions and published numerous articles to educate coders. The data for DRG 468 should no longer have the same high percentage of errors.

- For economies of scale, HCFA has reduced the sample for required review to 50 percent in the third scope of work. We believe this to be sufficient to identify problem areas where review should be intensified.

- HCFA recognized that there were problems with the numbers of cases being assigned to DRG 468. In looking at the data, we found that a large volume of cases fell into two distinct categories which, as of October 1988, have been developed into two new DRGs. The number of cases which will now fall into DRG 468 has been substantially reduced and will, therefore, directly impact on the OIG estimated savings.

OIG Recommendation

The HCFA should determine why the on-going PRO review of "all" DRG 468 discharges actually reabstracts only 80.2 percent of this population.

HCFA Response

OIG reported that during the first 18 months of the second scope of work, the PROs reviewed only 80.2 percent of the cases assigned to DRG 468. HCFA's official PRO Medical Review Activity Reports for the 24 months of the second scope of work, received to date, show that PROs reported reviewing 179,598 or 91.9 percent of the population of 195,420 discharges assigned to DRG 468.

The remaining 8.1 percent of discharges assigned to DRG 468 are still in the PRO review process and will be reviewed and reported during the new PRO contract cycle.

OIG Recommendation

The HCFA should reabstract a large sample of DRG 468 bills for coding accuracy to determine why the on-going PRO review of all DRG 468 discharges fails to detect the 14.0 percent (SuperPRO rate) to 24.8 percent (OIG rate) of discharges incorrectly billed to DRG 468.

HCFA Response

We disagree with this recommendation. Through the SuperPRO contract and evaluations protocols, HCFA is validating the PROs' review of DRG 468 bills to determine if the PROs are making correct determinations. These results are used to identify problems and institute necessary corrective action.

OIG Recommendation

The HCFA should reabstract a large sample of DRG 468 bills for coding accuracy to determine why SuperPRO identifies only 14.0 percent of incorrect PRO confirmation of DRG 468 bills, whereas this study identifies a 24.8 percent rate.

HCFA Response

We do not agree with this recommendation. The OIG's disagreement rate is based on FY 1985 data. The SuperPRO disagreement rate is based on current data. Therefore, we do not believe that it is necessary to determine why there is a difference between these disagreement rates since they cannot be compared.

As mentioned previously, since the period the OIG studied, new DRGs have been added and HCFA has conducted training sessions to educate hospitals in correct coding principles. Under the scope of work, PROs will be reviewing a 50 percent sample of DRG 468. Problem areas will be identified and corrective actions will be implemented when appropriate.