

elements of this expanded discharge abstract data set to produce the overall computerized severity level. Thus, the CSI can be used in the future on a national basis to study the implications of the prospective payment system on cancer centers.

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THE LEADING ONCOLOGY DRGs

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Beginning in 1983, the Health Care Financing Administration (HCFA) began reimbursing hospitals for Medicare patients using a system based upon diagnostic related groups (DRGs). The 468 DRGs had been developed at Yale University and were designed to measure resource consumption by specific diagnoses and procedures grouped within body systems.

While most illnesses fall within only a few DRGs, oncology is a conspicuous exception to this rule. Because cancer cuts across body systems, it has been estimated that oncology diagnoses fall into at least a hundred DRGs with substantial concentrations of cancer discharges in at least half of these. While many of the oncology-related DRGs are specific to cancer, other DRGs, particularly those with operative procedures, are split between cancer and non-cancer diagnoses.

This article represents a descriptive attempt to determine those diagnostic-related groups (DRGs) which are most important for oncology. Knowledge of which DRGs these are is an important component of hospital decision-making, particularly for those hospitals with active cancer programs or with substantial numbers of Medicare recipients. Since the most resource intensive oncology discharges are not necessarily the most common ones, oncology DRGs are examined in this article both by absolute number of oncology discharges and by total billed charges for discharges with an oncology diagnosis. Major teaching hospitals are compared to community hospitals and the under 65 population compared to the Medicare population.

The data to be discussed here are from the Massachusetts Rate Setting Commission for Fiscal Year 1983. In 1983, Massachusetts was one of four states which had a waiver from reimbursement under the DRG system. This analysis thus represents an opportunity to examine the actual makeup of the oncology DRGs before they were used for reimbursement purposes.

The Rate Setting Commission data set contains the uniform hospital discharge data set (UHDDS) for all patient discharges from all general hospitals in Massachusetts. The DRG, the total billed charges, and the identification of each hospital are also included in the data. The entire data set is in the public domain.

METHODOLOGY

In order to qualify as an oncology DRG for purposes of this analysis, the DRG was required to have at least 25 percent of its discharges with a primary diagnosis of cancer. In practical terms, this was defined using ICD-9-CM codes 140.0-208.9 except for 173.0-173.9 (skin cancer). In addition, V10.0-V10.99 (history of cancer) and V58.1 (chemotherapy as reason for admission)

were included in the definition. The Yale DRG screen includes a small number of hematological and myeloproliferative diseases and neoplasms of unknown origin in some of the DRGs which, from their labelling, would appear to be entirely cancer. Because of this, the "pure" oncology medical DRGs actually average from 96 to 99 percent cancer using the specified coding.

Ninety-five DRGs had at least a quarter of their discharges with a primary diagnosis of cancer. Of these 95 DRGs, 80 were on the Hematology and Oncology Related DRG list which was published by the Association of Community Cancer Centers (ACCC) in the Federal Register 48(171):39876-85. The DRGs with substantial numbers of oncology discharges not on the ACCC list were defined by major operative procedures and containing both cancer and non-cancer discharges. The most prominent of these DRGs were major large and small bowel procedures, major chest procedures, and transurethral resection. One additional DRG, mismatched primary diagnosis and major procedure, was included because of its very high number of cancer discharges, even though it did not meet the 25 percent criterion.

Three additional DRGs with relatively high total frequency in the data had few or no primary oncology diagnoses but at least 25 percent secondary diagnoses in the ICD-9 oncology range. These three DRGs were:

DRG 89 Pneumonia with complications

DRG 180 GI obstruction with complications

DRG 182 Esophagitis and gastroenteritis with complications

These three DRGs are not further analyzed but are included among the 99 DRGs which form the total number of discharges for this article. A substantial argument could be made that these three DRGs with high percents of secondary diagnoses of cancer should be added to the list of oncology DRGs or that the cancer discharges within these DRGs should be reclassified to oncology DRGs.

The analysis in this article is not entirely representative of general hospitals in Massachusetts. It is limited to 12 major teaching hospitals and to 71 community hospitals out of the 101 short-term general and special hospitals in Massachusetts. Minor teaching hospitals were excluded in order to make the contrast between teaching and community hospitals as clear as possible. Also excluded from the analysis are all children under 18 as well as all discharges from the two children's hospitals. All other specialty hospitals are excluded, as are municipal hospitals.

The most important implication of these exclusions for oncology cases is the deletion of the comprehensive cancer center located in Boston. Discharges from this hospital were omitted because the comprehensive cancer center does not code chemotherapy as a primary diagnoses. It therefore has no cases in DRG 410 but has redistributed its discharges into other oncology DRGs and is thus not comparable on a DRG level. Because the comprehensive cancer center does no surgery, both the

chemotherapy DRG and other medical oncology DRGs are slightly understated in the data reported here.

The total number of discharges with a primary diagnosis of cancer reported on for the 99 DRGs meeting the criteria previously explained is 43,975. This represents slightly under half of the 93,195 discharges in the 99 DRGs.

RESULTS

Table 1 shows that for oncology discharges for the entire adult population, the most frequent numbers of discharges are found in DRG 82 (respiratory neoplasms), followed by admissions for chemotherapy (DRG 410) and digestive tract malignancies in patients 70 and over. There are some substantial differences between teaching and community hospitals. Admission for chemotherapy and leukemia and lymphoma are more common in the teaching hospitals. Teaching hospitals do proportionately more urinary tract procedures for cancer, while community hospitals

TABLE 1

Ten Leading Oncology DRGs: Community vs. Major Teaching Hospitals

Number of Cases with Primary Diagnosis of Cancer

DRG #	DRG Name	All Hospitals (#/ Rank)	Teaching Hospitals (#/Rank)	Comm. Hosp. (#/Rank)
82	Resp. Neoplasms	4,908 (1)	1,226 (2)	3,682 (1)
410	Chemotherapy	3,342 (2)	1,734 (1)	1,608 (3)
172	Digestive Malig. (>69)	2,175 (3)	508 (7)	1,667 (2)
148	Major Lge. & Sm. Bowel Procedures	2,146 (4)	642 (4)	1,504 (4)
403	Lymph/Leuk (>69)	1,907 (5)	697 (3)	1,210 (5)
203	CA of Hepatobiliary System or Pancreas	1,534 (6)	609 (5)	925 (6)
75	Major Chest Procedures	1,321 (7)	580 (6)	
257	Total Mastectomy (>70)	1,214 (8)	378 (9)	836 (7)
239	Path. Fractures & Conn.Tiss. Malig.	1,106 (9)	404 (8)	
310	Transureth. Resec. (>69)	1,085 (10)		783 (9)
274	Breast Cancer (>69)			787 (8)
346	CA of Male Reprod. System. (>69)			756 (10)
303	Urinary Tract Proceds. for Neoplasm		342 (10)	
Total Cases Of 10 Leading Cancer DRGs		20,738	7,120	13,758
TOTAL CASES IN ALL CANCER DRGs (Accounted for by top 10% with a Primary Diagnosis)		43,975 (47.2%)	15,238 (46.7%)	28,737 (47.9%)

have proportionately more medical discharges for patients 70 or over with breast cancer and cancer of the male reproductive systems. About half of the discharges with a primary diagnosis of cancer are contained in the leading 10 DRGs in both settings.

Since the DRG reimbursement system is currently largely limited to patients 65 and over, Table 2 presents the leading oncology DRGs by age. The Medicare population is substantially different from the younger population with cancer. Specifically, admissions for chemotherapy and mastectomies are seen to be much more common for younger patients. On the other hand, the Medicare population accounts for most of the major large and small bowel procedures for cancer. Digestive tract malignancies in those 70 and over (DRG 172) replace chemotherapy in the leading three DRGs for the Medicare population. A slightly higher percentage of Medicare patients falls into the leading DRGs than is true for the younger population.

The actual number of oncology discharges is in some ways only a starting point for determining the most significant oncology DRGs. Obviously, examining total resource use for all patients with cancer in a given DRG is another way to measure the importance of a particular DRG, and one which has a substantial financial impact on the hospital.

Table 3 defines the leading oncology DRGs using total resource consumption for cancer discharges for Medicare patients. This has been done using 1985 weights from the Prospective Payment Assessment Commission (ProPAC) multiplied by the number of discharges with a primary diagnosis of cancer. PROPAC weights rather than actual billed charges have been used to adjust for the discrepancy in charges between teaching and community hospitals in Massachusetts.

Using this methodology keeps the same three DRGs in the lead for the Medicare population but changes their relationship. Cancer discharges requiring a large or small bowel procedure are in first place when resource use is considered. Major chest procedures have moved up to fourth place and DRG 468 - mismatched primary diagnosis and major procedure -- has moved into sixth place.

TABLE 2

Ten Leading Cancer DRGs For Patients 65 and Over

DRG #	DRG Name	Number of Cases with a Primary Diagnosis of Cancer		
		All Hospitals (#/Rank)	Under 65 (#/Rank)	65 and Over (#/Rank)
82	Resp. Neoplasms	4,908 (1)	2,085 (2)	2,823 (1)
410	Chemotherapy	3,342 (2)	2,425 (1)	917 (8)
172	Digestive Malig (70 or Older)	2,175 (3)	530 (8)	1,645 (3)
148	Major Lge & Sm. Bowel Procedures	2,146 (4)	448 (10)	1,698 (2)
403	Lymph/Leuk (>69)	1,907 (5)	581 (6)	1,326 (4)
203	CA of Hepatobiliary System or Pancreas	1,534 (6)	576 (7)	958 (6)
75	Major Chest Procedures	1,321 (7)	711 (4)	
257	Total Mastectomy (>69)	1,214 (8)		849 (9)
239	Path. Fractures & Conn. Tiss. Malignancy	1,106 (9)	486 (9)	
310	Transureth. Resec. >69 with Complications	1,085 (10)		982 (5)
336	Prostatectomy >69 with Complications			927 (7)
258	Total Mastectomy (<70)		713 (3)	
413	Myeloproliferative Disease (>70)			658 (10)
404	Lymph/Leuk (<70)		651 (5)	
Total Cases Of 10 Leading Cancer DRGs		20,738	9,206	12,783
Total Cases In All Cancer DRGs (Accounted for by top 10% with a Primary Diagnosis)		43,975 (47.2%)	19,800 (46.4%)	24,175 (52.9%)

TABLE 3

Ten Leading Cancer DRGs for Patients >65 by Total Resource Use

DRG #	DRG Name	Patients > 64 With Primary DX of Cancer	PROPAC Weights	Total Resource Use
148	Major Lge & Sm. Bowel Procedures	1,698	2.58	4,380.84
82	Respiratory Neoplasms	2,832	1.13	3,189.99
172	Digestive Malig. (>69)	1,645	1.21	1,990.45
75	Major Chest Procedures	610	2.58	1,573.80
403	Lymph/Leuk. (>69)	1,326	1.16	1,538.16
468	Mismatched Primary Diag. & Major Procedure	565	2.08	1,175.20
146	Rectal Resec. >69 or With Complications	425	2.68	1,139.00
303	Urinary Tract Procedure for Neoplasm	427	2.51	1,071.77
203	Cancer of Hepatobiliary System or Pancreas	958	1.08	1,034.64
154	Stomach, Esoph. or Duodenal Proced. >69 &/or Complications	372	2.66	989.52

Total Resource is the product of the weight and number of discharges. It is not a dollar amount but a measurement of relative resource.

DRG 468 is commonly known as the "garbage" DRG, but this is a misnomer when the oncology discharges are considered. The most common oncology discharges to fall into DRG 468 are breast cancer with a metastasis to the liver and a liver procedure and metastasized cancer of the ovary with a procedure outside of the female genital system. DRG 468 (mismatched diagnosis and procedure) had only about 10 percent of its total diagnoses with a primary diagnosis of oncology. Because it is so large and so resource-intensive, however, it is included in the analysis and has proved to be one of the ten leading DRGs for the Medicare population when the resource use of patients with a primary diagnosis of cancer is considered.

So far, this article has considered only discharges with a primary diagnosis of cancer in the analysis. Table 4 ranks the DRGs by resource consumption for all Medicare discharges within the DRG, rather than just for oncology discharges. Using this methodology, the mismatched DRG, 468, moves into first place followed by major large and small bowel procedures and DRG 154, digestive system procedures with complications or comorbidity. This is followed by prostatectomy (DRG 336). Respiratory neoplasms are in fifth place. Actual billed charges for all discharges in the DRG have been used in Table 4.

The substantial change in rank by resource consumption between these two tables is of course due to the differing percents of oncology discharges within each of these DRGs. For the top five DRGs for the Medicare population, only the fifth has at least two thirds of discharges with a primary diagnosis of cancer. For major large and small bowel procedures, the most common non-oncology diagnoses are intestinal obstruction and diverticulitis.

One worrisome management question remains concerning the mixed DRGs for Medicare patients. This question is, of course, whether the cancer patients cost more than the non-cancer patients within the same DRG. Table 5 displays the results of this analysis for the same discharges shown in Table 4.

Cancer discharges are considerably more expensive than non-cancer

TABLE 4

Ten Leading Oncology DRGs For Medicare Patients
Total Billed Charges For All Cases

Total DRG	DRG Name	Discharges for Patients > 64	Total # of Total '83 Charges	Means of Charges (in Millions)
468	Mismatched Primary Diag. & Maj. Procedure	4,314	11,875	51.
148	Major Lge & Sm.	3,093		
154	Stomach, esoph. or Duo. Proced. (>69) with Comps.	1,589	12,941	20.6
336	Prostatectomy >69 or With Complications	3,441	4,715	16.2
082	Respiratory Neoplasms	2,889	4,844	14.0
075	Major Chest Procedures	873	13,964	12.2
403	Lymph/Leuk >69	1,501	6,528	9.8
146	Rectal resec. >69 or With Complications	551	14,640	8.1
172	Digestive Malig. >69	1,723	4,568	7.9
303	Urinary Tract Procedure for Neoplasm	444	14,725	6.5

TABLE 5

Differences in Billed Charges for Six Mixed DRGs
Medicare Patients With or Without Primary Diagnosis of Cancer

DRG #	DRG Name	All Discharges	Primary Diagnosis is Cancer	Primary Diagnosis is not Cancer	Percent of Discharges with Primary Diagnosis of Cancer
468	Mismatched Primary DX & Major Procedure	\$11,875	\$11,110	\$11,990	13.4%
148	Major Lge & Small Bowel Procedure	\$13,891	\$12,713	\$15,322	54.9
154	Stomach, Esoph. or Duo. Proced. >69 and/or Compications	\$12,941	\$16,801	\$11,791	23.4
336	Prostatectomy, >69 and/or Compications	\$ 4,715	\$ 5,064	\$ 4,577	26.9
75	Major Chest Procedures	\$13,964	\$13,821	\$14,330	70.0
146	Rectal Resec >69 or with complications	\$14,640	\$13,762	\$17,867	77.1

discharges for only one of the six mixed DRGs: DRG 154, stomach, esophageal and duodenal procedures. For this DRG, discharges with a primary diagnosis of cancer cost 42 percent more than those without this diagnosis. For two other mixed DRGs, non-cancer discharges appear to cost more. The other three mixed DRGs showed roughly similar results. While these findings are based upon untrimmed data and clearly need to be replicated, they should provide hospitals with some much needed basic information about their cancer cases undergoing operative procedures compared to other cases in the same DRG.

CONCLUSIONS

This article has reimbursement implications for hospitals with substantial numbers of oncology patients. Specifically, the chemotherapy DRG appears to be an issue with the younger population, rather than with Medicare patients. When total resource use is considered, the mixed surgical DRGs, rather than pure oncology DRGs, appear to account for the greatest resource use even when only discharges with a primary diagnosis of cancer are considered. Examining the mixed DRGs

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Call For Abstracts: National Meeting and Advances In Cancer Control V

The ACCC Program Committee has announced that abstracts are now being accepted for presentation at the Association's National Meeting, March 11-15, 1987. Simultaneously, abstracts are being solicited for "Advances in Cancer Control V", a joint meeting of the Association of American Cancer Institutes (AACI) and ACCC scheduled for March 11, 1987.

ACCC ABSTRACTS

ACCC abstracts will be presented on Friday, March 13th, 1987. The topics are:

Health Care Financing and the Patterns of Care: This session will focus on health care financing issues, patterns of care issues, and also their interrelationships.

Research in the Community: This session will focus on specific results of research that has taken place in a community hospital setting. This includes both clinical and social science research, conducted by university and/or community investigators.

Oncology Product Line Management: This session will address the administrative and marketing issues facing community cancer programs including finance, personnel, program management, goals and objectives, and other topics pertinent to administration.

ADVANCES ABSTRACTS

"Advances in Cancer Control V", a national meeting jointly sponsored by ACCC and AACI, is also announcing a call for abstracts. "Advances in Cancer Control V" provides an opportunity for the presentation of papers on selected topics in cancer control. The topic areas are:

Networking Cancer Control: This session will discuss efforts to develop cancer control activities and

cancer control research networks with institutions and organizations of different sizes.

Cancer Control Research and CCOPs: This session will discuss cancer control research efforts as they have been defined in the recent CCOP solicitation.

Population-Based Cancer Control Research: This session will cover cancer control research and activities utilizing population-based research methodologies.

ACCC REVIEW

Abstract screening is conducted by a multidisciplinary committee. Committee members evaluate each submitted abstract, awarding a score between 1 and 5. Composite scores are then calculated and abstracts are ranked by their composite score. A cut-off point is defined by the number of abstracts which can be presented in the time available. Due to the limited time available, each presentation should be no more than ten minutes in length. An additional five minutes is allotted for questions following each presentation.

The submitted abstracts are collected in a proceedings volume, which is distributed to attendees of the National Meeting. Select papers will also be included in a book to be published in conjunction with the "Advances in Cancer Control V" meeting.

Individuals who wish to submit abstracts are required to use the 1987 ACCC Abstract Form (on the following page). **ABSTRACTS MUST BE RECEIVED IN THE ACCC EXECUTIVE OFFICE NO LATER THAN DECEMBER 31, 1986.** It should be noted that each abstract for ACCC requires a Delegate Member as a sponsor. Individuals who need assistance in obtaining Delegate sponsorship are encouraged to contact Eileen Cahill, ACCC Associate Director, at (301) 984-9496.

Cancer control practitioners in communities, cancer centers, and coopera-

tive groups are invited to submit abstracts for the "Advances in Cancer Control V" meeting. **ABSTRACTS MUST BE RECEIVED BY DECEMBER 31, 1986.** Additional information may also be obtained by contacting the ACCC Executive Office at (301) 984-9496.

INSTRUCTIONS TO AUTHORS

Abstract title should be in capital letters, flush with left margin of box. Include the names of all authors, their institutional affiliation, city, state and zip code. Indent the first line of text; text should be in one paragraph. The abstract should contain an introduction describing the objective of the study, description of methodology employed, the results of the research (a condensed chart may be employed), and the conclusions indicating the significance of the results. ■

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in greater detail reveals that they vary substantially both in the percent of their total discharges which are for cancer and in the relative expensiveness of cancer and non-cancer discharges. Further detailed analysis is clearly needed.

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Mark your calendar...

ACCC National Meeting, March 11-15th, Sheraton Washington Hotel, Washington, D.C.