CHAPTER 3: ANALYSIS OF WYOMING RESIDENTS' USE OF SELECTED HEALTHCARE SERVICES

In the previous chapters we analyzed Wyoming residents' geographic access to healthcare services and healthcare access in terms of capacity. To gain a more complete understanding of residents' healthcare needs and their use of healthcare services, it is important to understand what services the population is using and where they are seeking these services.

The Rural Healthcare Study Subcommittee was interested in understanding where Wyoming residents seek healthcare and the role that out-of-state providers play in Wyoming healthcare. This chapter addresses these issues for inpatient hospital services and primary care.

Overview of Chapter

In this chapter we:

- Analyze Wyoming residents' use of inpatient hospital services in both Wyoming and neighboring states
- Examine the role of regional medical centers in providing inpatient hospital services to Wyoming residents
- Analyze where Wyoming Medicaid residents receive primary care
- Analyze the use of Veterans Health Administration services by Wyoming veterans

Wyoming Residents' Use of Inpatient Hospital Services

Inpatient hospital services are the most complex and costly healthcare services and as such, the Rural Healthcare Study Subcommittee was interested in understanding the types of inpatient hospital services Wyoming residents use, where Wyoming residents receive this care and the amount that is provided in hospitals in neighboring states.

To address these issues, we analyzed the Wyoming Hospital Discharge database for State Fiscal Year 2003. During this time period, all but two counties – Sublette and Niobrara – had hospitals in operation, and four counties – Big Horn, Fremont, Lincoln and Park – each had two hospitals. Three hospitals – Johnson County Memorial, Star Valley Hospital in Lincoln County and South Big Horn Hospital in Basin – did not report their data. For these

hospitals, we obtained their total discharges and then estimated the distribution among the counties they draw from based on their Medicaid claims data.[80]

We also obtained data for Wyoming residents hospitalized in Colorado, Utah, Nebraska, South Dakota and Montana.[81] Idaho does not have a centralized hospital discharge database, so we used the Medicaid Claims data for Wyoming Medicaid recipients hospitalized in Idaho during State Fiscal Year 2003 to estimate the total number of hospitalizations of Wyoming residents in Idaho hospitals. We did this by assuming that Medicaid claims comprised the same percentage of total Idaho discharges as in Montana hospitals.

Reasons for Hospitalization

We analyzed hospital discharges to understand the reasons for hospitalization both in Wyoming hospitals and in neighboring states' hospitals. To do this, we used the Diagnosis Related Grouping (DRG) data contained in the Wyoming and neighboring states' hospital discharge databases. Within the DRG classification system, diagnoses are classified into Major Diagnostic Categories (MDCs) that correspond to a single organ system or etiology.[82] Within MDCs there are surgical DRGs and medical DRGs.[83] We conducted our analysis at the MDC level and we also analyzed the number of discharges that were in surgical versus medical DRGs within each MDC. We also analyzed the hospital discharge data by MDC and by county of patient origin.

Our key findings of the analyses of MDCs follow:

- As Figure 3.1 on the following page illustrates, the majority of discharges from both Wyoming and out-of-state hospitals are for similar diagnoses categories – the top ten MDCs accounted for 83 percent of discharges in Wyoming hospitals and 80 percent of neighboring state hospital discharges.

- The obstetrics MDC is the exception to this; the obstetrics MDC accounts for the second highest category of discharges from Wyoming hospitals, but the seventh highest for neighboring state hospital discharges.

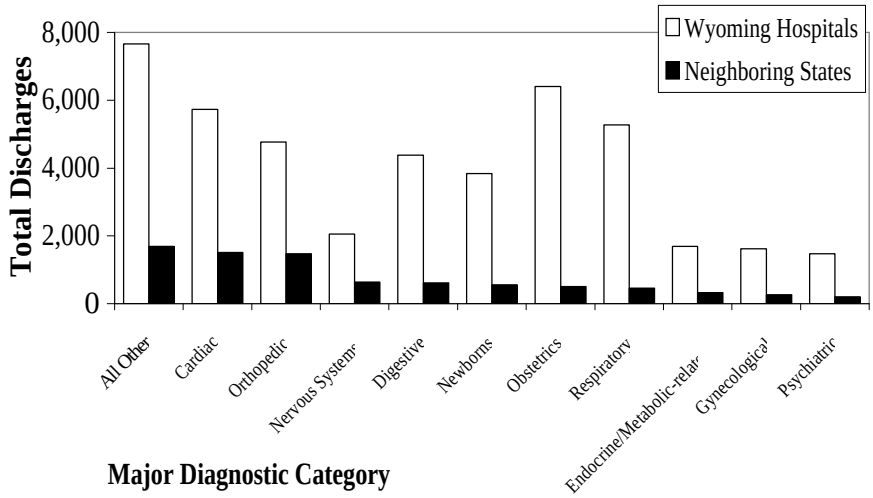
[80] The estimates of total discharges for these hospitals are included in the patient origin by county analysis, but are not included in the diseases and disorders distribution analysis, which is why the total discharges for this analysis is lower than for the patient origin by county analysis.
[81] These datasets are for the following years: Calendar Year 2003 for all States, except Utah whose data are for Calendar Year 2002. The sources for these datasets are as follows: Solucient for Colorado and Utah, Nebraska Hospital Association, South Dakota Hospital Association and Montana Hospital Association. These datasets include acute care, rehabilitation and psychiatric discharges, but not discharges from hospital-based skilled nursing facilities or swing beds.
[82] 3M Health Information Systems, "Diagnosis Related Groups, Definition Manual, Version 13.0."
[83] The Newborn MDC is an exception to this because this MDC only has medical DRGs.

- As Figure 3.2 on the following page illustrates, in each MDC, surgeries account for a higher proportion of Wyoming residents' hospitalizations in neighboring state hospitals than in Wyoming hospitals. Overall, surgeries account for 54 percent of Wyoming residents' hospitalization in neighboring state hospitals, whereas only 27 percent of Wyoming residents' hospitalizations in Wyoming hospitals are surgical-related.

- Wyoming residents tend to use neighboring state hospitals for cardiac, orthopedic and nervous system services most often; these three MDCs account for 44 percent of Wyoming residents' hospitalizations in neighboring states.

Figure 3.1 displays discharges for the top volume MDCs from Wyoming and neighboring state hospitals.

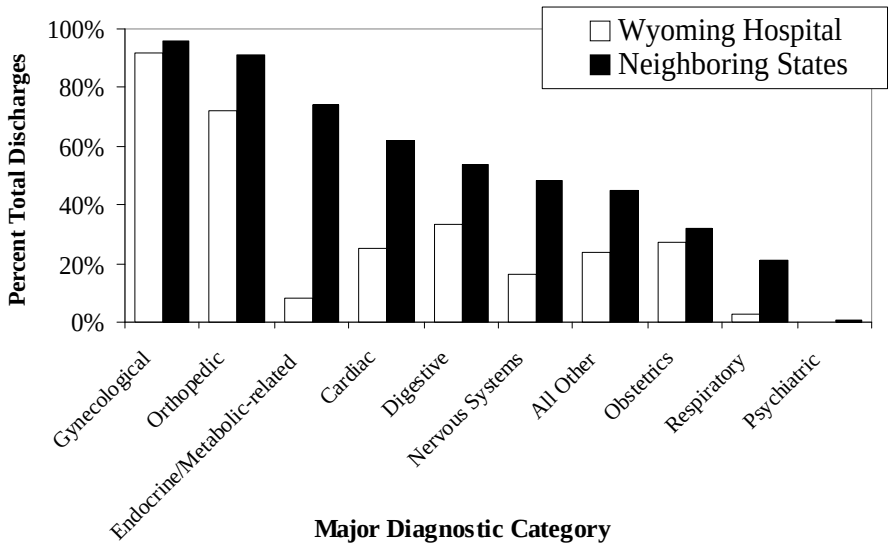
Figure 3.1: Wyoming Residents' Discharges from Wyoming and Neighboring State Hospitals for Highest Volume Major Diagnostic Categories[84]



[84] Source: Analysis based on Wyoming discharge database State Fiscal Year 2003 and surrounding state discharge datasets for the following years: Calendar Year 2003 for all States, except Utah whose data are for Calendar Year 2002. The sources for these datasets are as follows: Solucient for Colorado and Utah, Nebraska Hospital Association, South Dakota Hospital Association and Montana Hospital Association. These datasets include acute care, rehabilitation and psychiatric discharges, but not discharges from hospital-based skilled nursing facilities or swing beds.

Figure 3.2 displays the proportion of surgeries in Wyoming hospitals compared with neighboring state hospitals for the highest volume Major Diagnostic Categories.[85]

Figure 3.2: Surgical Discharges As a Percent of Total Discharges by Major Diagnostic Category for Wyoming Residents Discharged from Wyoming and Neighboring State Hospitals[86]



Our key findings of the MDC analysis by county of patient origin are:

- For all counties, orthopedic discharges account for a large proportion of their residents' hospitalizations in neighboring states, ranging from nine percent in Weston County to 24 percent in Johnson County.

- For nearly all counties, cardiac discharges account for a large proportion of their residents' hospitalizations in neighboring states. Exceptions to this are Converse and Niobrara Counties where nervous system discharges accounted for higher proportions of their residents' hospitalizations in neighboring states.

[85] The Newborn MDC was the sixth highest in terms of volume discharges in neighboring state hospitals, however, since all the DRGs in this MDC are medical, this MDC is not displayed in Figure 5.2.

[86] Source: Analysis based on Wyoming discharge database State Fiscal Year 2003 and surrounding state discharge datasets for the following years: Calendar Year 2003 for all States, except Utah whose data are for Calendar Year 2002. The sources for these datasets are as follows: Solucient for Colorado and Utah, Nebraska Hospital Association, South Dakota Hospital Association and Montana Hospital Association. These datasets include acute care, rehabilitation and psychiatric discharges, but not discharges from hospital-based skilled nursing facilities or swing beds.

Where Wyoming Residents Receive Inpatient Hospital Services

To address this issue, we analyzed the Wyoming and neighboring states' hospital discharge data based on the patient's county of origin. We have highlighted below the key findings of our analysis of patient origins:

- Hospitals in Wyoming provided an estimated 84 percent of Wyoming residents' hospitalizations (68 percent of their gross charges –$481 million), while hospitals in neighboring states accounted for an estimated 16 percent of Wyoming residents' hospitalizations (32 percent of their gross charges –$223.5 million).

- In 17 counties, the majority of residents – ranging from 54 percent in Lincoln County to 92 percent in Natrona County – are hospitalized in their own counties' hospitals.

- In six of the ten counties with Critical Access Hospitals, residents relied on these hospitals for most of their inpatient care, but in the other four counties more residents were hospitalized in other counties' or neighboring states' hospitals.

- For residents of Sublette County, which has no hospital, St. John's Hospital in Jackson was the primary resource for inpatient hospital care, accounting for 64 percent of their hospitalizations. Residents of Niobrara County, the other county which had no hospital in operation during the time period covered by the hospital discharge data, relied on two hospitals in their neighboring counties – Converse County Memorial in Douglas and Goshen Community Hospital in Torrington- for the majority of their care.

- Colorado hospitals comprised 32 percent of the neighboring state hospitalizations. Colorado hospitals served Wyoming residents from every county, with the largest volume coming from three bordering counties – Laramie, Albany and Carbon – and Natrona County. Colorado hospitals comprised 17 and 11 percent of all the Albany and Laramie County residents' hospitalizations, respectively.

- Hospitals in Montana accounted for the next largest portion – 27 percent – of Wyoming residents' neighboring state hospitalizations. Montana hospitals served Wyoming residents from all but three Wyoming counties, with the largest volume coming from three bordering counties – Park, Sheridan, and Big Horn – and Washakie County.

- Hospitals in Utah comprised 25 percent of Wyoming residents' hospitalizations in neighboring states and served a much more concentrated portion of the State – residents of seven counties – than Colorado and Montana hospitals. However,

Utah hospitals accounted for a relatively high proportion of some counties' hospitalizations; 32 percent of Uinta County's and 22 percent of Sweetwater County's totals.

- South Dakota hospitals accounted for ten percent of Wyoming residents' neighboring state hospitalizations. Although hospitals in South Dakota serve a much smaller number of Wyoming residents than Colorado, Montana and Utah hospitals, for the residents of two counties – Crook and Weston – they comprise a significant proportion of their inpatient hospital care – 49 percent of Crook County residents' hospitalizations and 44 percent of Weston County residents' hospitalizations.
- Hospitals in Nebraska comprised four percent of Wyoming residents' neighboring state hospitalizations. Seventy-two percent of Wyoming residents hospitalized in Nebraska were from Goshen County. Nebraska hospitals accounted for 16 percent of Goshen County residents' total hospitalizations and six percent of Niobrara's total hospitalizations.

In summary, nearly three quarters of Wyoming residents' hospitalizations were in hospitals within their own counties. Not surprisingly, residents of border counties had higher proportions of their hospitalizations in neighboring state hospitals than non-border county residents. The presence of Wyoming Medical Center, which provides a broad range of services in the non-border Natrona County, combined with the distance to other states, probably explains why some non-border county residents had smaller proportions of their hospitalization in neighboring states. Exhibit 3.1, on the following page, summarizes the patient origin analysis for Wyoming residents.

Role of Regional Medical Centers

For purposes of this analysis, we defined a regional medical center as a Wyoming hospital that provides a wide range of services and serves residents from most parts of the State, and the hospitals in neighboring states that serve the largest numbers of Wyoming residents. Within Wyoming, Wyoming Medical Center in Casper and United Medical Center in Cheyenne serve Wyoming residents from most areas of the State. Combined, these two hospitals comprised 31 percent of total Wyoming residents' hospital discharges (including Wyoming hospitals and neighboring states' hospitals). Wyoming Medical Center in Casper provided services to residents from every county in the State and served 45 percent of Converse County's, 22 percent of Niobrara's, 14 percent of Johnson's, 13 percent of Fremont's and 12 percent of Hot Springs Counties' hospitalized residents. This is most likely due to the air transport service that Wyoming Medical Center operates, as well as its relatively central location in the State compared with United Medical Center in Cheyenne. United Medical Center provided services to residents from all but four counties and served 19 percent of Platte and 12 percent of Goshen Counties' hospitalized residents.

Exhibit 3.1: Hospital Discharges by Patients' County of Origin[i]

Patients' County of Origin	Number of Hospitals in County	Critical Access Hospital in County	Discharges From Hospitals[ii, iii]			
			In Own County	In Other WY Counties	Neighboring States	Total
Albany	1	Pending	1,910 (78)	128 (5)	421 (17)	2,459 (100)
Big Horn	2	Yes, both	329 (25)	582 (44)	407 (31)	1,318 (100)
Campbell	1	No	3,254 (82)	318 (8)	375 (10)	3,947 (100)
Carbon	1	No	1,546 (65)	594 (25)	228 (10)	2,368 (100)
Converse	1	Yes	476 (42)	582 (51)	73 (6)	1,131 (100)
Crook	1	Yes	106 (17)	195 (31)	332 (52)	633 (100)
Fremont	2	No	3,521 (75)	744 (16)	431 (9)	4,696 (100)
Goshen	1	Yes	922 (59)	267 (17)	366 (24)	1,555 (100)
Hot Springs	1	Yes	421 (62)	177 (26)	76 (11)	674 (100)
Johnson	1	Yes	381 (53)	253 (35)	89 (12)	723 (100)
Laramie	1	No	7,261 (87)	127 (2)	987 (12)	8,375 (100)
Lincoln	2	No	834 (54)	325 (21)	394 (25)	1,553 (100)
Natrona	1	No	6,895 (92)	201 (3)	353 (5)	7,449 (100)
Niobrara[iv]	0	Pending	0 (0)	253 (87)	37 (13)	290 (100)

Exhibit 3.1: Hospital Discharges by Patients' County of Origin (Cont'd)

Patients' County of Origin	Number of Hospitals in County	Critical Access Hospital in County	Discharges From Hospitals			
			In Own County	In Other WY Counties	Neighboring States	Total
Park	2	Yes, both	1,811	38	792	2,641
			(69)	(1)	(30)	(100)
Platte	1	Yes	689	407	113	1,209
			(57)	(34)	(9)	(100)
Sheridan	1	No	2,789	118	558	3,465
			(81)	(3)	(16)	(100)
Sublette	0	No	0	521	108	629
			(0)	(83)	(17)	(100)
Sweetwater	1	No	2,733	347	928	4,008
			(68)	(9)	(23)	(100)
Teton	1	No	1,320	23	164	1,507
			(88)	(1)	(11)	(100)
Uinta	1	No	1,380	69	688	2,137
			(65)	(3)	(32)	(100)
Washakie	1	Yes	828	175	250	1,253
			(66)	(14)	(20)	(100)
Weston	1	Yes	263	116	336	715
			(37)	(16)	(47)	(100)
Total	**25**		**39,669**	**6,560**	**8,506**	**54,735**
			(72)	**(12)**	**(16)**	**(100)**

[i] Source: Analysis based on Wyoming discharge database State Fiscal Year 2003 and surrounding state discharge datasets for the following years: Calendar Year 2003 for all States, except Utah whose data are for Calendar Year 2002. The sources for these datasets are as follows: Solucient for Colorado and Utah, Nebraska Hospital Association, South Dakota Hospital Association and Montana Hospital Association. These datasets include acute care, rehabilitation and psychiatric discharges, but not discharges from hospital-based skilled nursing facilities or swing beds.

[ii] Numbers in parentheses are percentages of total discharges.

[iii] Numbers in parentheses do not always add up to 100 due to rounding error.

[iv] Hospital is expected to open in 2005 and it will be a Critical Access Hospital

Only the Colorado and Utah hospital discharge datasets identified individual hospitals and therefore, we were able to identify particular hospitals in these states that serve as regional medical centers for Wyoming residents, but not particular hospitals in the other states. Poudre Valley Hospital in Fort Collins, Colorado serves the largest number (982) of Wyoming residents hospitalized in Colorado and Utah hospitals, 79 percent more than the hospital with next largest volume, University of Utah Hospital and Clinics in Salt Lake City, with 548 Wyoming cases. As noted earlier, the Montana hospital discharge dataset we obtained does not identify individual hospitals, but Wyoming Medicaid claims data indicates that St. Vincent Hospital in Billings accounted for the largest volume – 60 percent of Wyoming Medicaid recipient hospitalizations in Montana hospitals. Table 3.1 summarizes discharges of Wyoming residents from hospitals that serve as regional medical centers for Wyoming.

Table 3.1: Wyoming, Colorado and Utah Hospitals That Serve As Regional Medical Centers for Wyoming Residents[87]

Hospital	Number of Wyoming Resident Discharges	Percent of Total Wyoming Resident Out-of-State Hospital Discharges	Percent of Total Wyoming Resident Hospital Discharges
Wyoming Medical Center - Casper	8,961	NA	16
United Medical Center - Cheyenne	7,998	NA	15
Poudre Valley – Fort Collins	982	12	2
University of Utah Hospital – Salt Lake City	548	6	1
LDS Hospital – Salt Lake City	489	6	1
Presbyterian-St. Luke's Hospital – Denver	398	5	1
University of Colorado Hospital – Denver	372	4	1
Children's Hospital – Denver	297	4	1
Primary Children's Medical Center – Salt Lake City	294	4	1

[87] Source: Analysis based on Wyoming discharge database State Fiscal Year 2003 and surrounding state discharge datasets for the following years: Calendar Year 2003 for all States, except Utah whose data are for Calendar Year 2002. The sources for these datasets are as follows: Solucient for Colorado and Utah, Nebraska Hospital Association, South Dakota Hospital Association and Montana Hospital Association. These datasets include acute care, rehabilitation and psychiatric discharges, but not discharges from hospital-based skilled nursing facilities or swing beds.

Where Wyoming Medicaid Recipients Receive Primary Care

Unlike for inpatient hospital care, there are no centralized databases for primary care services that include all types of payers. The only claims data available to us for analyzing Wyoming residents' use of primary care was Medicaid claims, so our analysis is necessarily limited to the experience of Medicaid recipients. We analyzed Medicaid claims for Wyoming Medicaid recipients who received services from primary care physicians during State Fiscal Year 2004 and conducted our analysis based on the recipient's county of origin. We have highlighted below the key findings of our analysis of patient origins:

- In 19 counties, the majority of services provided by primary care physicians to Medicaid recipients – ranging from 54 percent in Johnson County to 96 percent in Laramie County – were in the Medicaid recipients' own counties.

- In the remaining four counties – Big Horn, Crook, Hot Springs and Weston – there were more services provided to Medicaid recipients by primary care physicians in other Wyoming counties than the recipients' own counties. All of these counties, except Hot Springs, are designated as Health Professional Shortage Areas (HPSA) by the Federal Health Resources and Services Administration.

- Crook County had the highest proportion of services – 46 percent – provided to Medicaid recipients by primary care physicians in neighboring states.

In summary, 85 percent of the services provided by primary care physicians to Wyoming Medicaid recipients were in Wyoming in counties where the recipient lived. Twelve percent of primary care physician services to Wyoming Medicaid recipients were provided in Wyoming counties other than the recipients' own and three percent were provided by primary care physicians in neighboring states. Exhibit 3.2, on the following page, summarizes our analysis.

Veterans Administration Services

At the request of the Healthcare Commission, we also researched the use of Veterans Health Administration services in Wyoming by Wyoming veterans. Appendix 6 provides information on the Wyoming veteran population, by county.

Exhibit 3.2: Medicaid Primary Care Physician Services by Patients' County of Origin[v,vi,vii]

Patients' County of Origin	HPSA Designation	Within Own County	In Other WY Counties	In Neighboring States	Total
Albany	No	11,820	637	121	12,578
		(94)	(5)	(1)	(100)
Big Horn	Entire County	251	1,282	130	1,663
		(15)	(77)	(8)	(100)
Campbell	Part of County	12,425	1,087	245	13,757
		(90)	(8)	(2)	(100)
Carbon	Entire County	4,416	1,003	141	5,560
		(79)	(18)	(3)	(100)
Converse	Entire County	2,612	1,683	29	4,324
		(60)	(39)	(1)	(100)
Crook	Entire County	52	459	435	946
		(5)	(49)	(46)	(100)
Fremont	Part of County	19,003	2,659	365	22,027
		(86)	(12)	(2)	(100)
Goshen	No	5,321	1,853	1,060	8,234
		(65)	(23)	(13)	(100)
Hot Springs	No	415	402	45	862
		(48)	(47)	(5)	(100)
Johnson	Part of County	1,132	937	36	2,105
		(54)	(45)	(2)	(100)
Laramie	Part of County	32,718	1,273	248	34,239
		(96)	(4)	(1)	(100)
Lincoln	Part of County	3,940	1,829	222	5,991
		(66)	(31)	(4)	(100)
Natrona	Part of County	23,476	1,434	269	25,179
		(93)	(6)	(1)	(100)
Niobrara	Entire County	1,076	327	46	1,449
		(74)	(23)	(3)	(100)

Exhibit 3.2: Medicaid Primary Care Physician Services by County of Patient Origin (Cont'd)[viii,ix]

Patient Origin County	HPSA Designation	Within Own County	In Other WY Counties	In Neighboring States	Total
Park	Part of County	7,473	1,090	365	8,928
		(84)	(12)	(4)	(100)
Platte	Entire County	2,048	1,017	37	3,102
		(66)	(33)	(1)	(100)
Sheridan	No	10,727	918	233	11,878
		(90)	(8)	(2)	(100)
Sublette	Entire County	973	618	41	1,632
		(60)	(38)	(3)	(100)
Sweetwater	Entire County	5,958	707	458	7,123
		(84)	(10)	(6)	(100)
Teton	No	2,370	40	80	2,490
		(95)	(2)	(3)	(100)
Uinta	No	9,360	289	443	10,092
		(93)	(3)	(4)	(100)
Washakie	No	3,491	307	112	3,910
		(89)	(8)	(3)	(100)
Weston	Entire County	269	479	135	883
		(30)	(54)	(15)	(100)
Total		**161,326**	**22,330**	**5,296**	**188,952**
		(85)	**(12)**	**(3)**	**(100)**

[v] Source: Analysis based on Wyoming Medicaid paid claims data (State fiscal year 2004).
[vi] Numbers in parentheses are percentages of total discharges.
[vii] Numbers in parentheses do not always add up to 100 due to rounding error.
[viii] Numbers in parentheses are percentages of total discharges.
[ix] Numbers in parentheses do not always add up to 100 due to rounding error.