Five Most Frequent DRGs in Washington's Community Hospitals, 2010–2021:

Part III – Inpatient by age group

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This is part three of a seven-part report on changes in the medical conditions for which Washington residents received care in community hospitals from 2010 to 2021. For an explanation of how these conditions are classified, and the data source and methods used, see part one of the report, available on the OFM website.

Inpatients by age group

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Part III – Inpatient by age group

The top five diagnosis-related groups (DRGs) varied across age groups, particularly the DRG ranked the most frequent.

For the youngest age group—infants less than one year old—DRG 795 (normal newborn) consistently ranked as the most frequent DRG. In the next age group (1-17 years), DRG 203 (bronchitis and asthma without CC/MCC) held the top position from 2010 to 2013 but was replaced by DRG 885 (psychoses) from 2014 onward, remaining the most frequent DRG for the last eight years (2014–2021).

Among the 18-25 and 26-44 age groups, the most frequent DRG was DRG N70 (vaginal delivery with/without sterilization or D&C without CC/MCC), a reflection of the prevalence of childbirth among women in these age ranges.

For the 45-64 age group, DRG 470 (major hip and knee joint replacement or reattachment of the lower extremity without MCC) held the top ranking from 2010 to 2018. However, it was replaced by DRG 871 (septicemia or severe sepsis without MV >96 hours with MCC) in 2019 and 2020. In 2021, DRG 177 (respiratory infections and inflammations with MCC) became the most frequent DRG in this age group, largely due to the impact of the COVID-19 pandemic. Notably, the 45-64 age group was the only one in which DRG 177 ranked 1st during the pandemic. In fact, only one other age group, those aged 65 and older, had DRG 177 among its top five DRGs. This suggests that the pandemic had its strongest impact on the 45-64 age group.

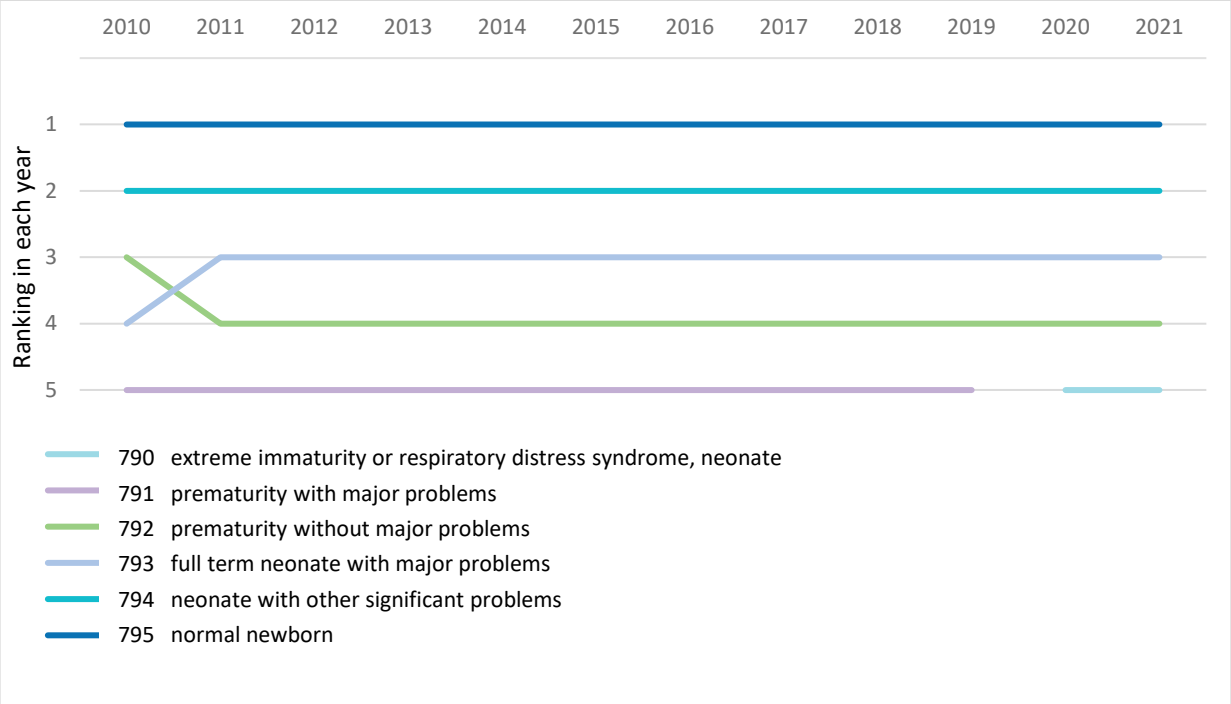
Finally, for patients aged 65 and older, DRG 470 (major hip and knee joint replacement without complications) was the most frequent DRG from 2010 to 2017. However, as hip and knee replacement surgeries shifted from inpatient to outpatient settings, DRG 470 lost its top ranking, and DRG 871 (septicemia or severe sepsis without MV >96 hours with MCC) took its place.

Age group - younger than one year old

For infants younger than one year old, the top five DRGs remained largely consistent from 2010 to 2021, all related to birth. A total of six DRGs appeared in the top five at some point during this period. However, four of these six maintained rankings within the top four across all years with minimal changes in order. These included, from 1st to 4th place: DRG 795 (normal newborn), DRG 794 (neonate with other significant problems), DRG 793 (full-term neonate with major problems), and DRG 792 (prematurity without major problems).

DRG 791 (prematurity with major problems) held the 5th spot until 2019. However, in 2020 and 2021, DRG 790 (extreme immaturity or respiratory distress syndrome, neonate) replaced DRG 791 in the 5th position—likely reflecting the impact of the COVID-19 pandemic.

Figure III-1. Top five DRGs among infants discharged from Washington hospitals, 2010-2021



Each year, the number of infants in the top five DRGs ranged from 75,700 to 83,200. Over time, the share of infants in these DRGs increased slightly, rising from 91% to 93% of all infants discharged from hospitals.

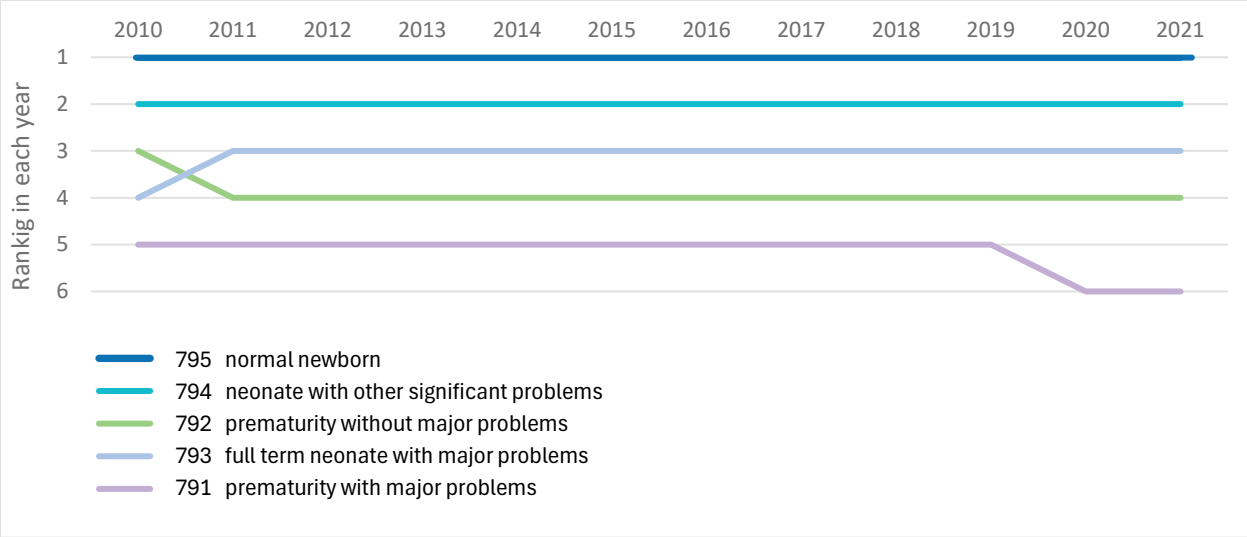
Table III-1. Number and percent of infants discharged from Washington hospitals by top five DRGs, 2010-2021

Age < 1	Top 1st DRG			Top 2nd DRG			Top 3rd DRG			Top 4th DRG			Top 5th DRG		
	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total
2010	795	58,776	66.7%	794	13,037	14.8%	792	3,594	4.1%	793	3,482	4.0%	791	1,494	1.7%
2011	795	59,413	67.8%	794	11,728	13.4%	793	3,764	4.3%	792	3,338	3.8%	791	1,565	1.8%
2012	795	57,694	67.1%	794	12,585	14.6%	793	3,625	4.2%	792	3,430	4.0%	791	1,451	1.7%
2013	795	56,287	66.1%	794	13,096	15.4%	793	3,891	4.6%	792	3,387	4.0%	791	1,494	1.8%
2014	795	57,618	65.6%	794	14,254	16.2%	793	4,260	4.9%	792	3,471	4.0%	791	1,544	1.8%
2015	795	57,263	64.5%	794	15,661	17.6%	793	4,210	4.7%	792	3,388	3.8%	791	1,541	1.7%
2016	795	54,885	61.2%	794	18,395	20.5%	793	4,775	5.3%	792	3,412	3.8%	791	1,787	2.0%
2017	795	50,291	57.8%	794	20,177	23.2%	793	4,713	5.4%	792	3,406	3.9%	791	1,742	2.0%
2018	795	50,163	59.1%	794	18,373	21.7%	793	4,747	5.6%	792	3,289	3.9%	791	1,771	2.1%
2019	795	49,390	58.4%	794	18,815	22.3%	793	4,812	5.7%	792	3,396	4.0%	791	1,709	2.0%
2020	795	45,420	55.9%	794	20,370	25.1%	793	4,839	6.0%	792	3,262	4.0%	790	1,810	2.2%
2021	795	43,833	53.4%	794	22,088	26.9%	793	5,167	6.3%	792	3,467	4.2%	790	1,931	2.4%

790 = extreme immaturity or respiratory distress syndrome, neonate
791 = prematurity with major problems
792 = prematurity without major problems
793 = full term neonate with major problems
794 = neonate with other significant problems
795 = normal newborn

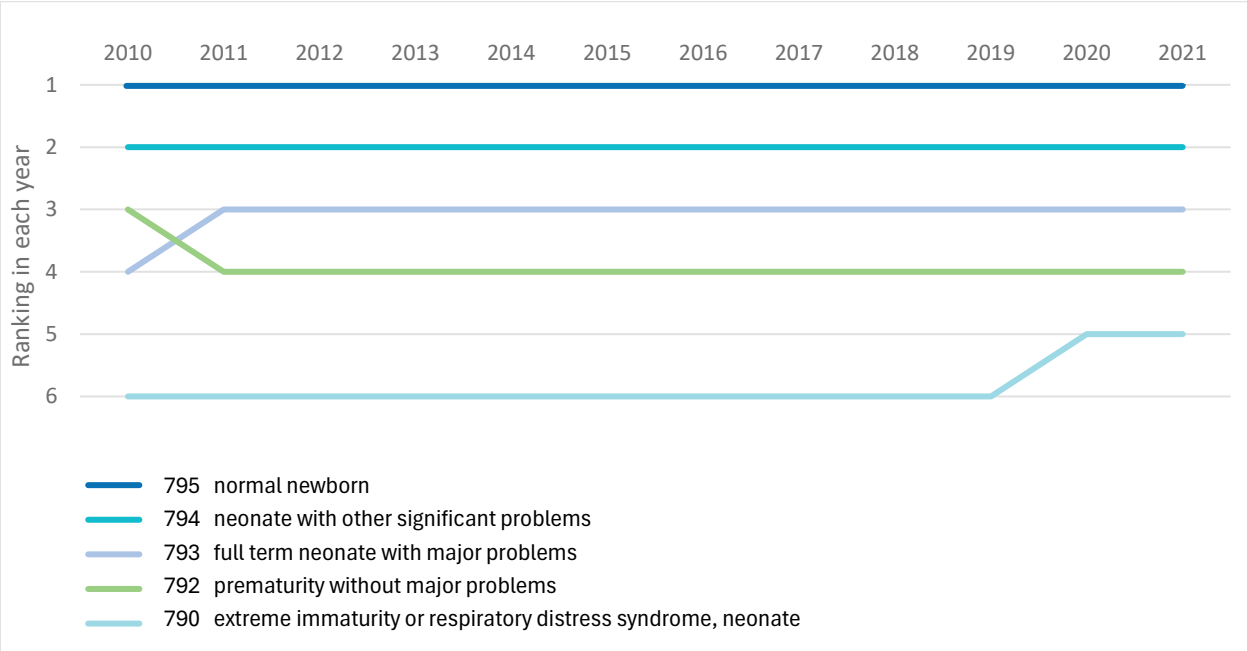
The only DRG from the top five in 2010 that did not remain in the top five in 2021 was DRG 791 (prematurity with major problems). However, its decline was minimal, dropping from 5th place in 2010 to 6th place in both 2020 and 2021.

Figure III-2. Top five DRGs in 2010 and their rank changes in subsequent years: infants discharged from Washington hospitals, 2010-2021



Conversely, DRG 790 (extreme immaturity or respiratory distress syndrome, neonate) was the only DRG in the top five in 2021 that had not been among the top five in previous years. However, its rise in ranking was subtle, having held 6th place consistently from 2010 to 2019 before moving up to 5th place in 2020 and 2021.

Figure III-3. Prior rankings of 2021 top five DRGs: infants discharged from Washington hospitals, 2010-2021

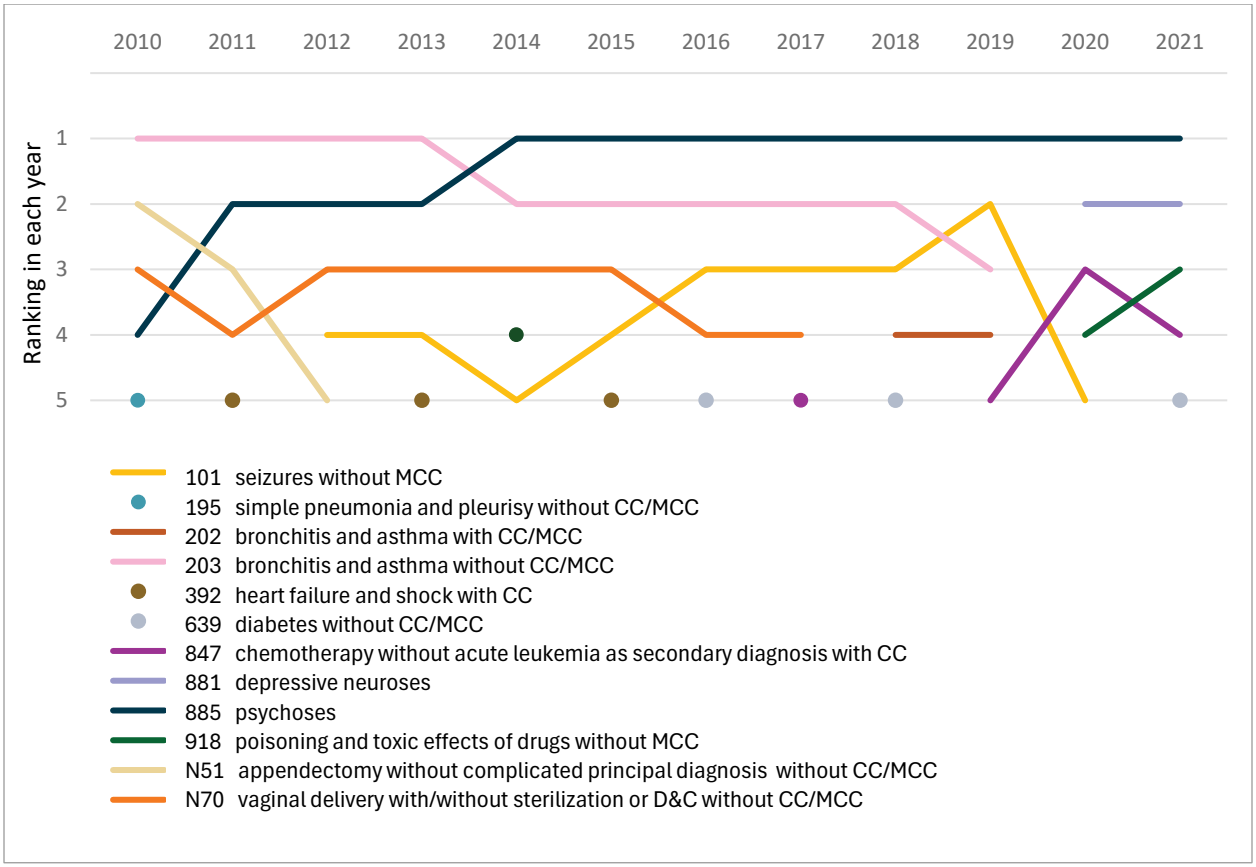


Age group - 1-17 years old

In the 1-17 age group, a total of twelve DRGs ranked in the top five at some point between 2010 and 2021. However, only DRG 885 (psychoses) remained in the top five throughout all years. Its ranking rose from 4th place in 2010-2013 to 1st place for the remainder of the period, highlighting a persistent issue of children experiencing psychotic symptoms severe enough to require hospitalization.

Three other DRGs frequently appeared in the top five across most years: DRG 101 (seizures without MCC), DRG 203 (bronchitis and asthma without CC/MCC), and DRG N70 (vaginal delivery with/without sterilization or D&C without CC/MCC).

Figure III-4. Top five DRGs among children age 1-17 discharged from Washington hospitals, 2010-2021



Each year, the top five DRGs accounted for 16-26% of total discharges among patients aged 1-17, representing between 4,200 and 6,300 cases annually. Over time, there was a slight downward trend in the share of these top five DRGs.

Table III-2. Number and percent of children age 1-17 discharged from Washington hospitals by top five DRGs, 2010-2021

Age 1-17	Top 1st DRG			Top 2nd DRG			Top 3rd DRG			Top 4th DRG			Top 5th DRG		
	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total
2010	203	1,644	6.0%	N51	1,385	6.0%	N70	1,209	5.3%	885	1,185	5.2%	195	828	3.6%
2011	203	1,418	5.8%	885	1,276	5.8%	N51	1,131	5.2%	N70	1,053	4.8%	392	818	3.7%
2012	203	1,552	6.1%	885	1,250	6.1%	N70	941	4.6%	101	852	4.2%	N51	799	3.9%
2013	203	1,170	6.2%	885	1,147	6.2%	N70	781	4.2%	101	686	3.7%	392	632	3.4%
2014	885	1,429	6.3%	203	1,086	6.3%	N70	722	4.2%	202	561	3.2%	101	513	3.0%
2015	885	1,584	5.3%	203	963	5.3%	N70	650	3.6%	101	621	3.4%	392	519	2.9%
2016	885	1,535	5.3%	203	915	5.3%	101	612	3.6%	N70	575	3.4%	639	550	3.2%
2017	885	1,882	5.0%	203	837	5.0%	101	563	3.4%	N70	543	3.2%	847	511	3.0%
2018	885	2,033	4.4%	203	728	4.4%	101	651	4.0%	202	500	3.0%	639	489	3.0%
2019	885	2,067	3.7%	101	582	3.7%	203	534	3.4%	202	505	3.2%	847	482	3.1%
2020	885	2,749	3.4%	881	458	3.4%	847	413	3.0%	918	404	3.0%	101	385	2.8%
2021	885	3,317	5.3%	881	781	5.3%	918	523	3.5%	847	422	2.8%	639	380	2.6%

101 = seizures without MCC
195 = simple pneumonia and pleurisy without CC/MCC
202 = bronchitis and asthma with CC/MCC
203 = bronchitis and asthma without CC/MCC
392 = heart failure and shock with CC
639 = diabetes without CC/MCC
847 = chemotherapy without acute leukemia as secondary diagnosis with CC
881 = depressive neuroses
885 = psychoses
918 = poisoning and toxic effects of drugs without MCC
N51 = appendectomy without complicated principal diagnosis without CC/MCC
N70 = vaginal delivery with/without sterilization or D&C without CC/MCC

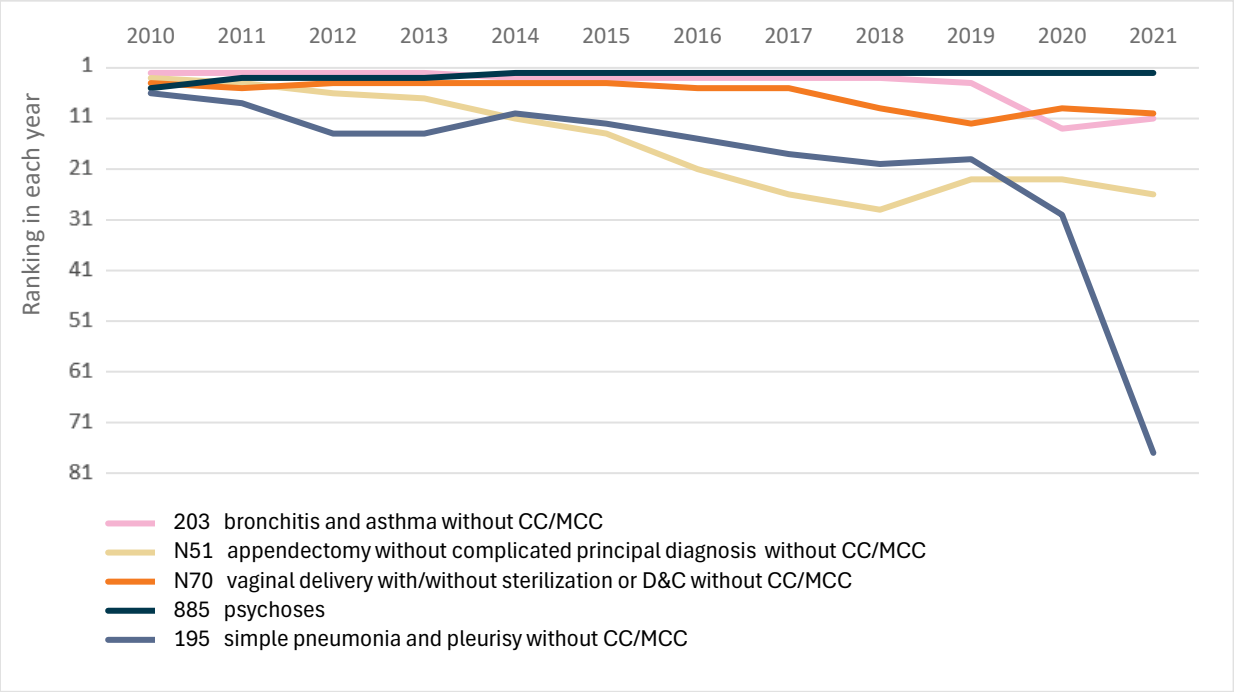
Among the top five DRGs in 2010, four dropped out of the top five by 2021, each experiencing a different degree of downward movement.

- DRG N70 (vaginal delivery with/without sterilization or D&C without CC/MCC) fell from 3rd place to 9th place, suggesting that efforts to prevent teen pregnancy in Washington were making progress.[1]
- DRG 203 (bronchitis and asthma without CC/MCC) declined from 1st place to 10th place.

[1] https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/160-015-MCHDataRptAdolesPreg.pdf

- DRG N51 (appendectomy without complicated principal diagnosis without CC/MCC) showed a continuous downward trend, dropping from 2nd place in 2010 to 28th place in 2018 before moving back up slightly to 25th place in 2021. This decline may reflect both a paradigm shift in appendicitis treatment—where non-surgical approaches became more common[2]—and the transition of some appendectomy procedures from inpatient to outpatient settings[3].
- DRG 195 (simple pneumonia and pleurisy without CC/MCC) experienced the steepest drop, plummeting from 5th place to 76th place. Most of this decline occurred in the last two years, falling from 18th place in 2019 to 29th in 2020 and then to 76th place in 2021. The sharp decrease in hospitalizations for pneumonia during 2020 and 2021 may have been an unintended consequence of pandemic-related protective measures—such as social distancing and widespread mask-wearing—which likely curtailed the spread of pneumonia-causing viruses.[4]

Figure III-5. Top five DRGs in 2010 and their rank changes in subsequent years in Washington: children age 1-17 discharged from Washington hospitals, 2010-2021



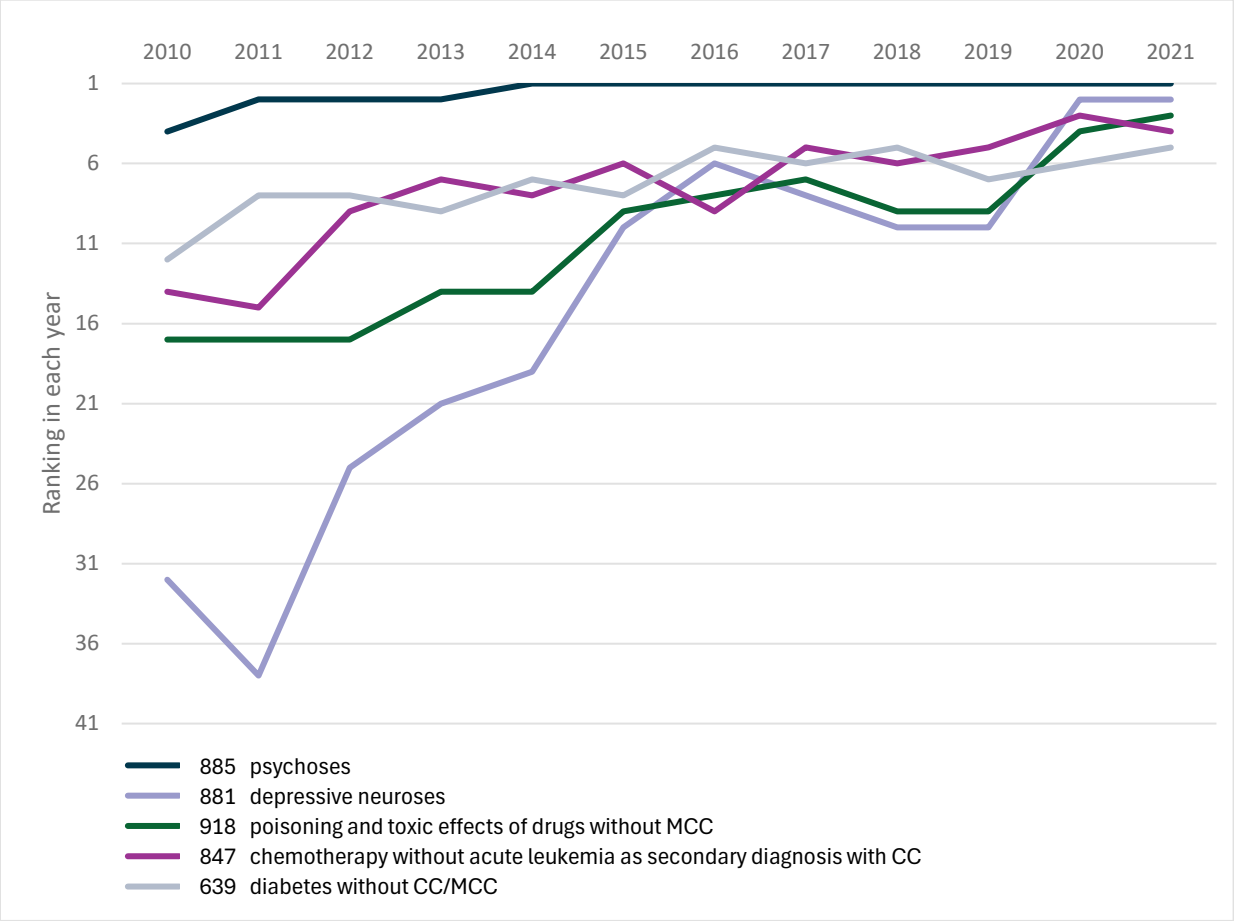
[2] See "Changing the landscape of surgery for simple appendicitis - The Lancet" at https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(23)01555-6/abstract.
[3] See "Procedures Commonly Performed at Ambulatory Surgery Centers" at https://health.usnews.com/best-ascs/articles/common-procedures.
[4] See "Impact of Wearing Masks, Hand Hygiene, and Social Distancing on Influenza, Enterovirus, and All-Cause Pneumonia During the Coronavirus Pandemic: Retrospective National Epidemiological Surveillance Study" at https://pmc.ncbi.nlm.nih.gov/articles/PMC7471891/.

Among the top five DRGs in 2021, four had not been in the top five in 2010, each exhibiting a notable upward movement:

- DRG 881 (depressive neuroses) surged from 32nd place to 2nd place.
- DRG 918 (poisoning and toxic effects of drugs without MCC) climbed from 17th to 3rd place.
- DRG 847 (chemotherapy without acute leukemia as a secondary diagnosis with CC) rose from 14th to 4th place.
- DRG 639 (diabetes without CC/MCC) advanced from 12th to 5th place.

These four DRGs warrant further investigation, as they highlight concerning trends among children in the 1-17 age group. The rise in depressive neuroses, drug poisoning, and chemotherapy cases suggests emerging health challenges that require attention. Additionally, the increase in hospitalizations for diabetes underscores potential gaps in primary care, as many cases could likely be prevented with proper early intervention and management.

Figure III-6. Prior rankings of 2021 top five DRGs: children age 1-17 discharged from Washington hospitals, 2010-2021



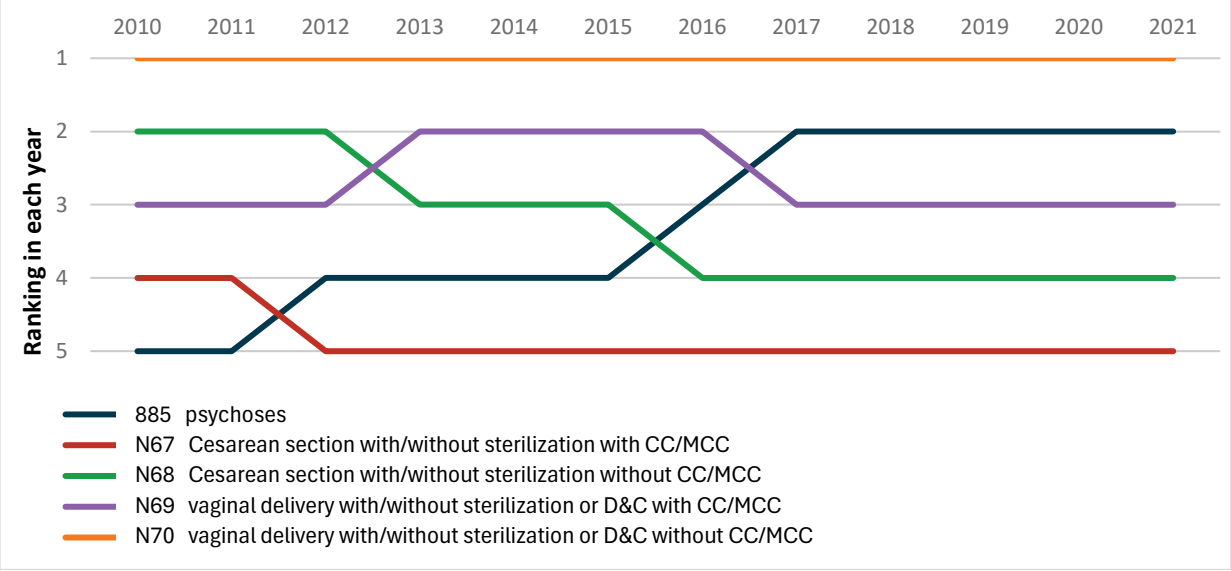
Age group – 18-25 years old

For young adults aged 18 to 25, the top five DRGs remained the same throughout the years, with only minor shifts in ranking positions. Four of these five DRGs were related to childbirth.

- DRG N70 (vaginal delivery with/without sterilization or D&C without CC/MCC) held 1st place across all years.
- DRG N68 (Cesarean section with/without sterilization without CC/MCC) dropped from 2nd place to 4th place.
- DRG N69 (vaginal delivery with/without sterilization or D&C with CC/MCC) remained in 3rd place in both 2010 and 2021, though for a few years, it briefly rose to 2nd place.
- DRG N67 (Cesarean section with/without sterilization with CC/MCC) started in 4th place in the first two years before settling in 5th place for the remainder of the years.
- DRG 885 (psychoses) saw the most significant upward movement, rising from 5th place to 2nd place over time.

These trends highlight the continued prevalence of childbirth-related hospitalizations in this age group, along with an increasing presence of mental health-related admissions.

Figure III-7. Top five DRGs among persons age 18-25 discharged from Washington hospitals, 2010-2021



The total number of discharges for the top five DRGs in the 18-25 age group declined from 27,200 in 2010 to 20,100 in 2021. However, despite this decrease, the share of total discharges represented by these top five DRGs rose from 61% to 65%, indicating a greater concentration of hospitalizations within these specific conditions.

In this paper, for most age groups we present figures showing the top five DRGs in 2010 and their subsequent positions looking forward through 2021, and the top five DRGs in 2021 and their previous positions looking back to 2010. For this age group (18-25), the top five DRGs varied little across the study period, so we have omitted those figures.

Table III-3. Number and percent of persons age 18-25 discharged from Washington hospitals by top five DRGs, 2010-2021

Age 18-25	Top 1st DRG			Top 2nd DRG			Top 3rd DRG			Top 4th DRG			Top 5th DRG		
	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total
2010	N70	16,006	35.9%	N68	3,855	8.7%	N69	3,121	7.0%	N67	2,245	5.0%	885	1,949	4.4%
2011	N70	15,460	35.4%	N68	3,685	8.4%	N69	3,115	7.1%	N67	2,150	4.9%	885	2,130	4.9%
2012	N70	14,615	34.5%	N68	3,408	8.1%	N69	2,996	7.1%	885	2,185	5.2%	N67	2,151	5.1%
2013	N70	14,292	35.4%	N69	3,047	7.5%	N68	3,010	7.5%	885	2,191	5.4%	N67	2,092	5.2%
2014	N70	14,326	36.5%	N69	3,035	7.7%	N68	2,814	7.2%	885	2,313	5.9%	N67	2,053	5.2%
2015	N70	13,674	36.0%	N69	2,975	7.8%	N68	2,517	6.6%	885	2,386	6.3%	N67	2,110	5.6%
2016	N70	13,210	36.1%	N69	2,777	7.6%	885	2,580	7.1%	N68	2,421	6.6%	N67	2,045	5.6%
2017	N70	12,943	36.6%	885	3,024	8.5%	N69	2,579	7.3%	N68	2,205	6.2%	N67	1,889	5.3%
2018	N70	11,536	34.6%	885	3,430	10.3%	N69	2,665	8.0%	N68	2,072	6.2%	N67	1,729	5.2%
2019	N70	10,237	31.1%	885	3,746	11.4%	N69	3,234	9.8%	N68	2,289	7.0%	N67	1,465	4.5%
2020	N70	9,155	29.6%	885	4,320	14.0%	N69	3,301	10.7%	N68	2,109	6.8%	N67	1,503	4.9%
2021	N70	8,551	27.8%	885	4,403	14.3%	N69	3,508	11.4%	N68	1,924	6.2%	N67	1,760	5.7%

885 = psychoses
N67 = Cesarean section with/without sterilization with CC/MCC
N68 = Cesarean section with/without sterilization without CC/MCC
N69 = vaginal delivery with/without sterilization or D&C with CC/MCC
N70 = vaginal delivery with/without sterilization or D&C without CC/MCC

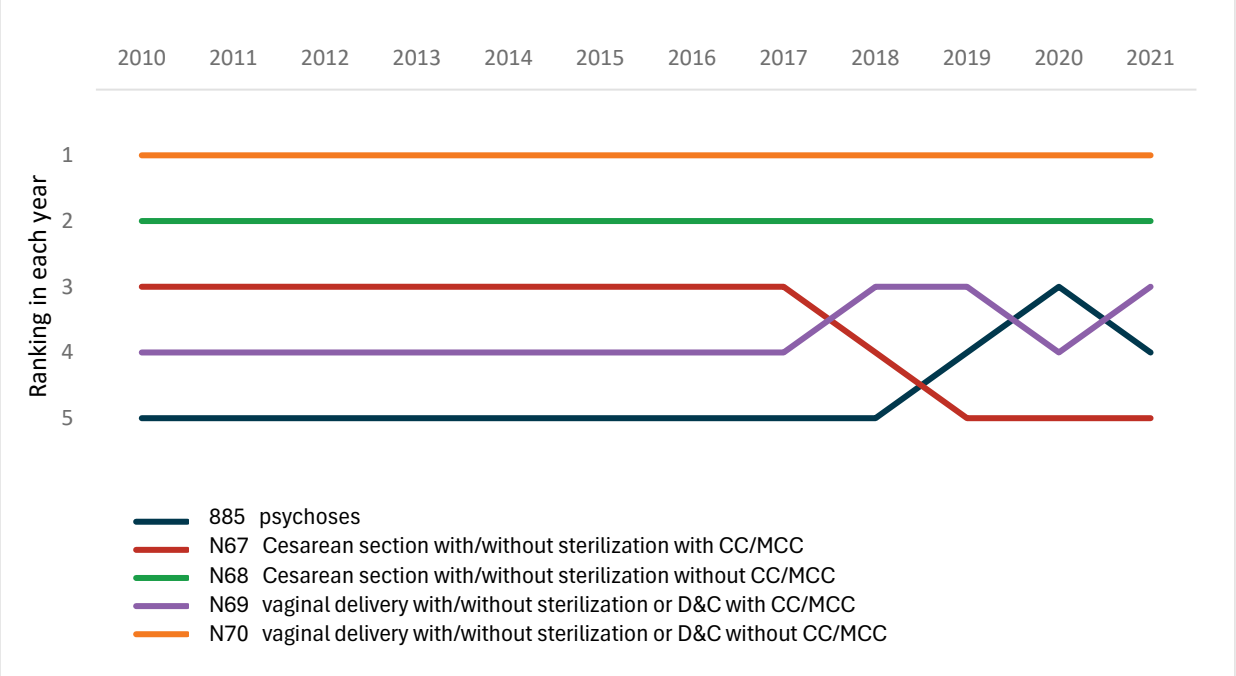
Age group - 26-44 years old

Like the previous age group, adults aged 26 to 44 consistently had the same top five DRGs throughout the years, with only minor shifts in rankings. Four of these five DRGs were related to childbirth.

- DRG N70 (vaginal delivery with/without sterilization or D&C without CC/MCC) held 1st place in all years.
- DRG N68 (Cesarean section with/without sterilization without CC/MCC) remained in 2nd place.
- DRG N67 (Cesarean section with/without sterilization with CC/MCC), DRG N69 (vaginal delivery with/without sterilization or D&C with CC/MCC), and DRG 885 (psychoses) maintained their rankings in 3rd through 5th place, respectively, until around 2017.
- By the end of the period, DRG N67 dropped to 5th place, DRG N69 moved up to 3rd place, and DRG 885 rose to 4th place.

These trends reinforce the continued prevalence of childbirth-related hospitalizations in this age group and an increasing prominence of mental health-related admissions.

Figure III-8. Top five DRGs among persons age 26-44 discharged from Washington hospitals, 2010-2021



Discharges in the top five DRGs accounted for about 49-57% of the total discharges in this age group. Their share presented a rising trend, from 49% in 2010 to 56.2% in 2021.

In this paper, for most age groups we present figures showing the top five DRGs in 2010 and their subsequent positions looking forward through 2021, and the top five DRGs in 2021 and their previous positions looking back to 2010. For this age group (26-44), the top five DRGs varied little across the study period, so we have omitted those figures.

Table III-4. Number and percent of persons age 26-44 discharged from Washington hospitals by top five DRGs, 2010-2021

Age 26-44	Top 1st DRG			Top 2nd DRG			Top 3rd DRG			Top 4th DRG			Top 5th DRG		
	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total
2010	N70	28,121	24.5%	N68	10,768	9.4%	N67	6,263	5.5%	N69	6,117	5.3%	885	4,892	4.3%
2011	N70	28,173	24.8%	N68	10,817	9.5%	N67	6,514	5.7%	N69	6,464	5.7%	885	4,904	4.3%
2012	N70	28,217	25.2%	N68	10,519	9.4%	N67	6,724	6.0%	N69	6,635	5.9%	885	4,981	4.4%
2013	N70	28,924	26.4%	N68	10,217	9.3%	N67	6,990	6.4%	N69	6,838	6.2%	885	4,831	4.4%
2014	N70	30,771	27.5%	N68	10,193	9.1%	N67	7,643	6.8%	N69	7,386	6.6%	885	4,798	4.3%
2015	N70	31,710	27.7%	N68	10,239	9.0%	N67	7,932	6.9%	N69	7,764	6.8%	885	5,148	4.5%
2016	N70	32,968	28.3%	N68	10,551	9.1%	N67	8,124	7.0%	N69	7,866	6.8%	885	5,689	4.9%
2017	N70	32,753	28.3%	N68	10,579	9.1%	N67	8,127	7.0%	N69	7,856	6.8%	885	6,523	5.6%
2018	N70	31,566	27.4%	N68	10,522	9.1%	N69	8,070	7.0%	N67	7,946	6.9%	885	7,214	6.3%
2019	N70	28,851	24.8%	N68	11,664	10.0%	N69	9,063	7.8%	885	8,618	7.4%	N67	6,660	5.7%
2020	N70	27,776	24.2%	N68	11,102	9.7%	885	10,057	8.8%	N69	9,544	8.3%	N67	7,582	6.6%
2021	N70	27,470	23.0%	N68	10,574	8.9%	N69	10,369	8.7%	885	9,974	8.4%	N67	8,694	7.3%

885 = psychoses
N67 = Cesarean section with/without sterilization with CC/MCC
N68 = Cesarean section with/without sterilization without CC/MCC
N69 = vaginal delivery with/without sterilization or D&C with CC/MCC
N70 = vaginal delivery with/without sterilization or D&C without CC/MCC

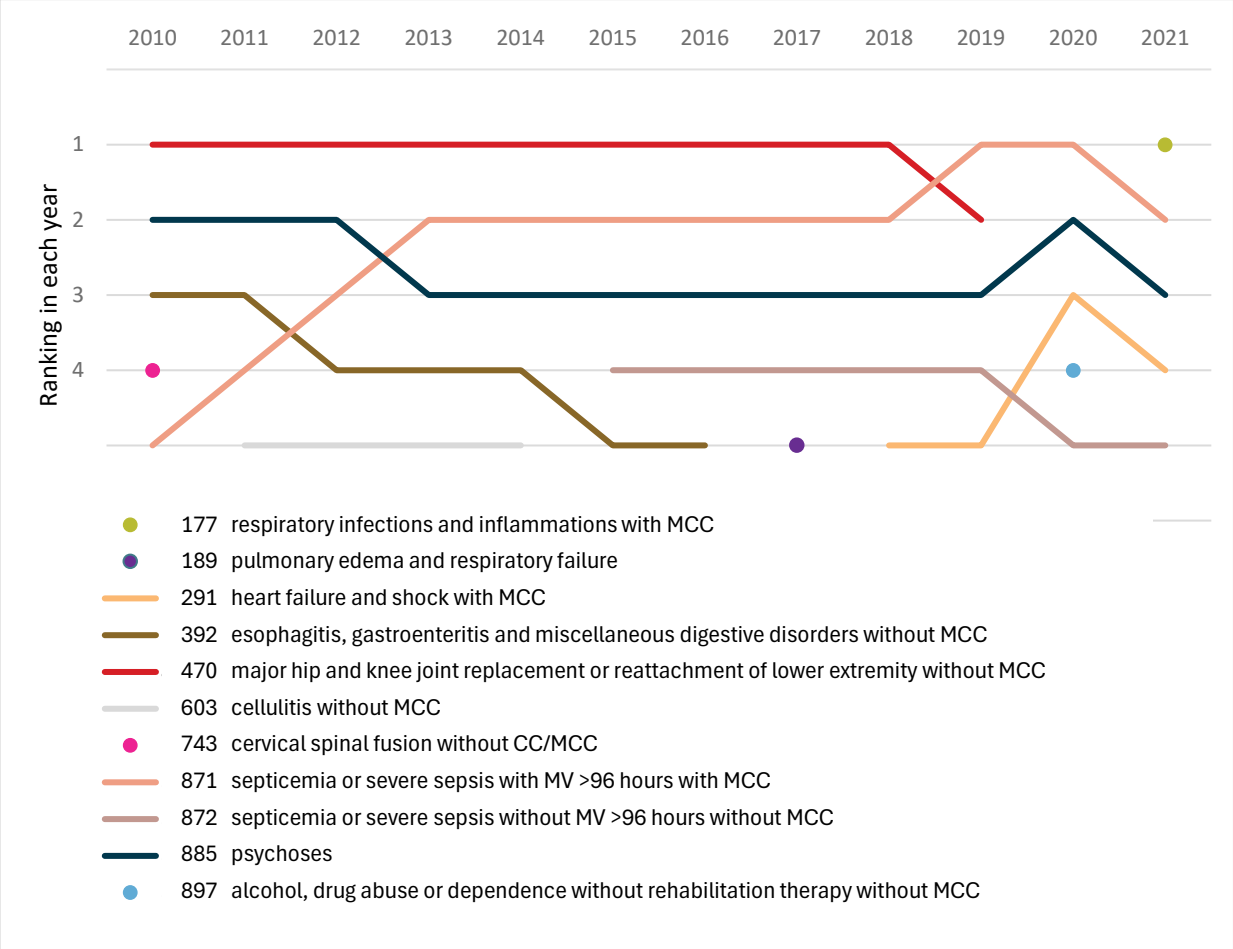
Age group - 45-64 years old

The top five DRGs for adults aged 45-64 experienced significant changes over time, with a total of eleven different DRGs appearing in the rankings at some point. However, only DRG 871 (septicemia or severe sepsis with MV >96 hours with MCC) and DRG 885 (psychoses) consistently remained by top five throughout all years.

- DRG 885 started in 2nd place, fluctuated between 2nd and 3rd place in the intervening years, and ultimately settled in 3rd place in 2021.
- DRG 871 began in 5th place, gradually rising to 1st place in both 2019 and 2020, before ending in 2nd place in 2021.

These trends highlight the evolving nature of hospitalizations in this age group, with septicemia becoming increasingly prevalent in the later years, while psychoses maintained a consistently high ranking.

Figure III-9. Top five DRGs among persons age 45-64 discharged from Washington hospitals, 2010-2021



Each year, the total number of inpatients by top five DRGs for this age group ranged from 20,500 in 2020 to 28,000 in 2017. Over time, the share of total inpatients represented by these top five DRGs gradually increased, rising from 17% in 2010 to 22% in 2021.

Table III-5. Number and percent of persons age 45-64 discharged from Washington hospitals by top five DRGs, 2010-2021

Age 45-64	Top 1st DRG			Top 2nd DRG			Top 3rd DRG			Top 4th DRG			Top 5th DRG		
	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total
2010	470	9,069	6.6%	885	4,270	3.1%	392	3,690	2.7%	743	3,367	2.5%	871	3,072	2.2%
2011	470	9,435	6.9%	885	4,353	3.2%	392	3,544	2.6%	871	3,384	2.5%	603	3,038	2.2%
2012	470	9,187	6.8%	885	4,334	3.2%	871	3,953	2.9%	392	3,452	2.6%	603	2,821	2.1%
2013	470	9,803	7.5%	871	4,726	3.6%	885	4,153	3.2%	392	3,093	2.4%	603	2,827	2.2%
2014	470	10,738	8.1%	871	5,822	4.4%	885	4,247	3.2%	392	3,042	2.3%	603	2,830	2.1%
2015	470	11,073	8.3%	871	6,374	4.8%	885	4,428	3.3%	872	3,103	2.3%	392	2,825	2.1%
2016	470	11,008	8.3%	871	6,455	4.9%	885	4,466	3.4%	872	3,076	2.3%	392	2,583	1.9%
2017	470	10,690	8.1%	871	6,915	5.2%	885	4,591	3.5%	872	3,157	2.4%	189	2,677	2.0%
2018	470	8,995	7.1%	871	6,866	5.4%	885	4,991	3.9%	872	3,278	2.6%	291	2,570	2.0%
2019	871	7,028	5.7%	470	6,762	5.5%	885	5,658	4.6%	872	3,064	2.5%	291	2,926	2.4%
2020	871	6,856	6.2%	885	5,784	5.3%	291	2,811	2.6%	897	2,569	2.3%	872	2,513	2.3%
2021	177	7,026	6.4%	871	7,011	6.4%	885	5,317	4.8%	291	3,033	2.8%	872	2,490	2.3%

177 = respiratory infections and inflammations with MCC
189 = pulmonary edema and respiratory failure
291 = heart failure and shock with MCC
392 = esophagitis, gastroenteritis and miscellaneous digestive disorders without MCC
470 = major hip and knee joint replacement or reattachment of lower extremity without MCC
603 = cellulitis without MCC
743 = cervical spinal fusion without CC/MCC
871 = septicemia or severe sepsis with MV >96 hours with MCC
872 = septicemia or severe sepsis without MV >96 hours without MCC
885 = psychoses
897 = alcohol, drug abuse or dependence without rehabilitation therapy without MCC

Three of the top five DRGs in 2010 dropped out of the top five by 2021, each experiencing a notable decline in ranking:

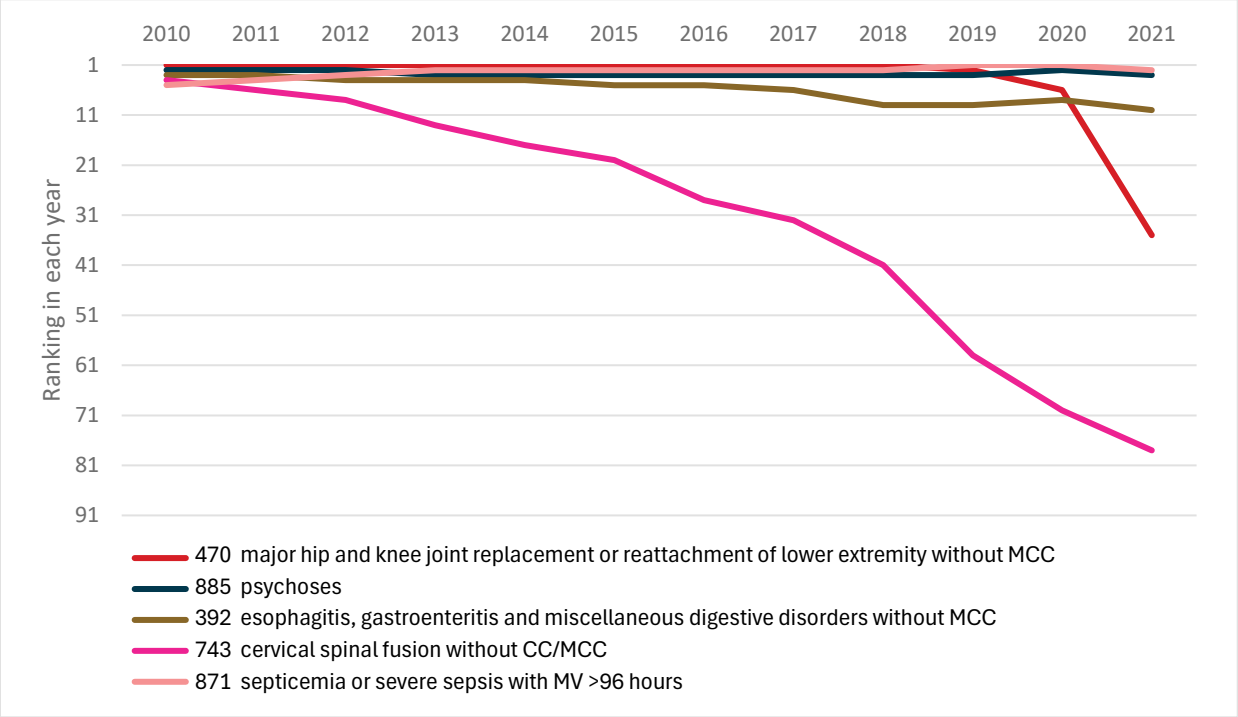
- DRG 392 (esophagitis, gastroenteritis, and miscellaneous digestive disorders without MCC) fell from 3rd place to 10th place.
- DRG 470 (major hip and knee joint replacement or reattachment of the lower extremity without MCC) dropped from 1st place to 2nd place in 2019, then to 6th in 2020, and ultimately to 35th place in 2021. This decline was driven by two major factors: the initial shift of hip and knee replacement surgeries from inpatient to outpatient settings,

followed by the suspension of elective surgeries during the COVID-19 pandemic, which heavily impacted DRG 470 cases.

- DRG 473 (cervical spinal fusion without CC/MCC) experienced a continuous downward trend, dropping from 4th place in 2010 to 78th place in 2021. This decline was largely due to the increasing shift of spinal fusion procedures from hospitals to ambulatory surgery centers.

These changes reflect broader shifts in medical practice, including the transition of certain procedures to outpatient settings and the impact of the pandemic on elective surgeries.

Figure III-10. Top five DRGs in 2010 and their rank changes in subsequent years: persons age 45-64 discharged from Washington hospitals, 2010-2021



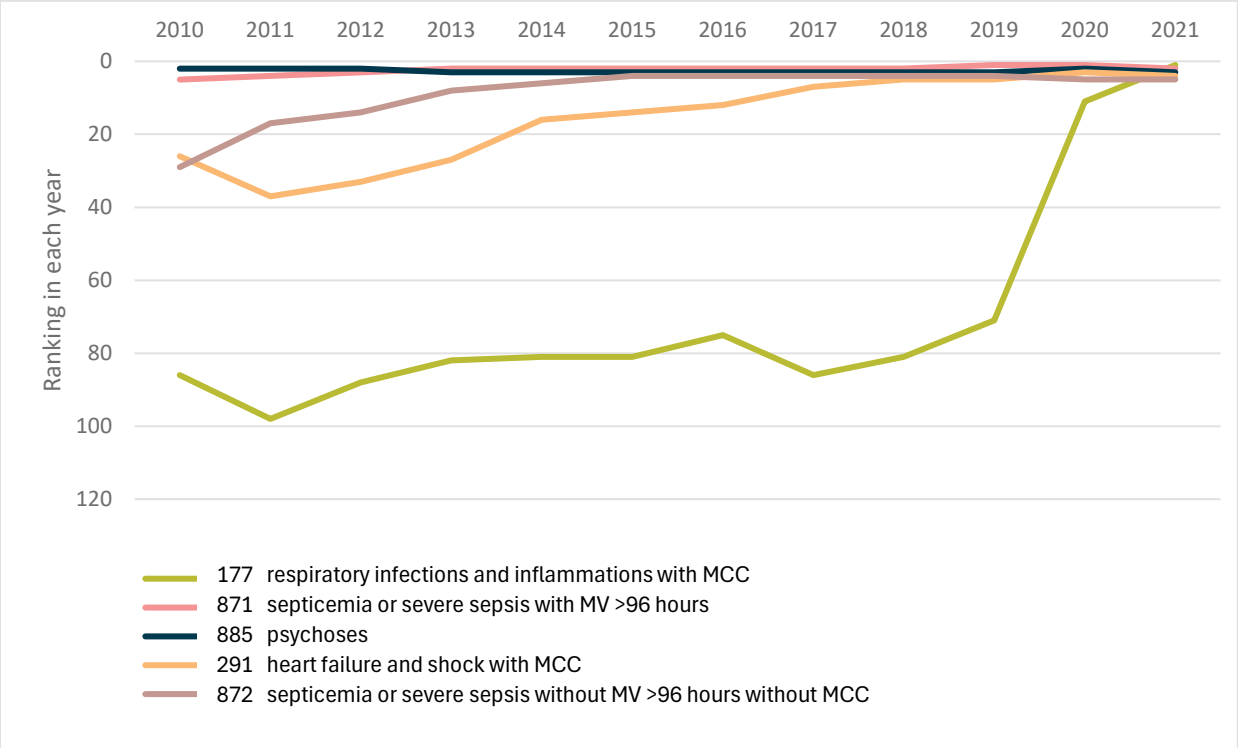
Among the three DRGs that ranked in the top five in 2021 but were not in the top five in 2010, two followed distinct trajectories in their upward movement.

- DRG 872 (septicemia or severe sepsis without MV >96 hours without MCC) experienced a rapid ascent, rising from 29th place to 4th place between 2015 and 2019, then settling at 5th place in both 2020 and 2021.
- DRG 291 (heart failure and shock with MCC) followed a more gradual climb, moving from 26th place in 2010 to 3rd place in 2020 before ending in 4th place in 2021.

The increasing prevalence of heart failure and shock cases in this middle-aged population warrants further investigation, as it may reflect broader health trends, shifts in medical care, or underlying demographic and lifestyle factors.

DRG 177 (respiratory infections and inflammations with MCC) remained mostly below 80th place until 2020, when it suddenly surged to 11th place. A year later, it rose even further, reaching 1st place in 2021. This sharp ascent was directly driven by the COVID-19 pandemic, indicating that this age group experienced the most significant impact from the crisis. The sudden rise in hospitalizations for respiratory infections highlights the severe toll the pandemic took on individuals in this demographic, likely reflecting widespread complications and increased severity of illness.

Figure III-11. Prior rankings of 2021 top five DRGs: persons age 45-64 discharged from Washington hospitals, 2010-2021



Age group - 65 and older

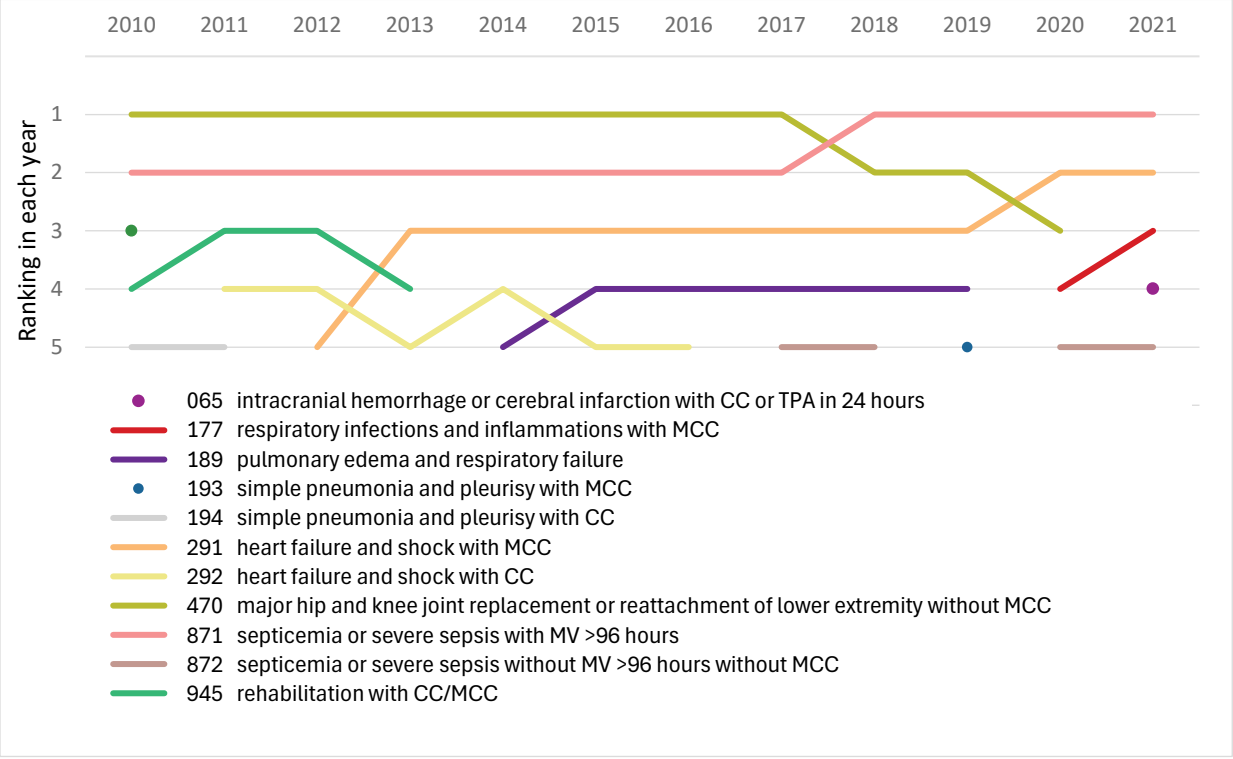
The top five DRGs for individuals aged 65 and older saw considerable movement over time. DRG 871 (septicemia or severe sepsis without MV >96 hours with MCC) was the only DRG that remained in the top five throughout all years, rising from 2nd place in 2010 to 1st place by 2021.

Two other DRGs—DRG 470 (major hip and knee joint replacement or reattachment of the lower extremity without MCC) and DRG 291 (heart failure and shock with MCC)—were in the top five for nearly all years, except for one:

- DRG 470 consistently held 1st place through 2017, then dropped to 3rd place in 2020 before falling out of the top five entirely by 2021.
- DRG 291 was in 4th place in 2010, briefly dropping out of the top five in 2011 before re-entering at 5th place in 2012 and steadily climbing to 2nd place in 2021.

These shifts highlight changes in hospitalization patterns for older adults, particularly the increasing prevalence of severe infections and heart failure, while hip and knee replacements became less frequent in inpatient settings.

Figure III-12. Top five DRGs among persons age 65 and older discharged from Washington hospitals, 2010-2021



Each year, the top five DRGs for individuals aged 65 and older accounted for 31,000 to 52,800 total discharges, representing 17% to 25% of all hospitalizations in this age group. Both the total number of patients and the share of discharges attributed to these top five DRGs peaked in 2017 but have gradually declined since then.

Table III-6. Number and percent of persons age 65 and older discharged from Washington hospitals by top five DRGs, 2010-2021

Age 65+	Top 1st DRG			Top 2nd DRG			Top 3rd DRG			Top 4th DRG			Top 5th DRG		
	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total	MS-DRG	N	% Total
2010	470	12,485	6.7%	871	7,040	3.8%	291	3,982	2.1%	945	3,838	2.1%	194	3,612	1.9%
2011	470	12,677	6.7%	871	7,613	4.0%	945	4,179	2.2%	292	4,079	2.2%	194	4,063	2.2%
2012	470	13,171	6.8%	871	9,000	4.7%	945	4,147	2.2%	292	4,073	2.1%	291	3,704	1.9%
2013	470	14,169	7.3%	871	11,028	5.7%	291	4,399	2.3%	945	4,152	2.1%	292	3,847	2.0%
2014	470	14,863	7.7%	871	12,803	6.6%	291	4,913	2.5%	292	4,116	2.1%	189	3,847	2.0%
2015	470	15,841	7.9%	871	14,308	7.1%	291	5,645	2.8%	189	4,878	2.4%	292	4,182	2.1%
2016	470	16,886	8.3%	871	14,147	6.9%	291	6,553	3.2%	189	4,948	2.4%	292	3,853	1.9%
2017	470	17,820	8.3%	871	16,000	7.5%	291	9,503	4.4%	189	5,463	2.6%	872	3,983	1.9%
2018	871	16,054	7.5%	470	15,788	7.4%	291	10,040	4.7%	189	4,833	2.3%	872	4,090	1.9%
2019	871	16,699	7.8%	470	13,636	6.3%	291	10,710	5.0%	189	4,821	2.2%	193	4,037	1.9%
2020	871	15,236	8.1%	291	9,241	4.9%	470	5,395	2.9%	177	3,613	1.9%	872	3,603	1.9%
2021	871	14,976	7.9%	291	10,025	5.3%	177	9,438	5.0%	065	3,519	1.9%	872	3,423	1.8%

065 = intracranial hemorrhage or cerebral infarction with CC or TPA in 24 hours
177 = respiratory infections and inflammations with MCC
189 = pulmonary edema and respiratory failure
193 = simple pneumonia and pleurisy with MCC
194 = simple pneumonia and pleurisy with CC
291 = heart failure and shock with MCC
292 = heart failure and shock with CC
470 = major hip and knee joint replacement or reattachment of lower extremity without MCC
871 = septicemia or severe sepsis with MV >96 hours with MCC
872 = septicemia or severe sepsis without MV >96 hours without MCC
945 = rehabilitation with CC/MCC

Among the top five DRGs in 2010 that dropped out of the top five in subsequent years, the following trends emerged:

- DRG 291 (heart failure and shock with MCC) briefly dropped out of the top five in 2011, falling to 8th place, but re-entered the rankings in 2012 and remained among the top five thereafter.
- DRG 470 (major hip and knee joint replacement or reattachment of the lower extremity without MCC) held 1st place for most years until 2018, when it dropped to 2nd place, then to 3rd place in 2020, and finally to 27th place in 2021. This decline was initially due to the transition of hip and knee replacement procedures from inpatient to outpatient

settings. Later, in 2020 and 2021, the suspension of elective surgeries during the COVID-19 pandemic significantly impacted DRG 470 cases.

- DRG 194 (simple pneumonia and pleurisy with CC) was in 5th place in 2010-2011 but dropped to 7th place in 2012, eventually falling to 58th place in 2021. Its decline accelerated in the last three years, moving from 13th place in 2018 to 20th in 2019, 37th in 2020, and 58th in 2021. The sharp drop in pneumonia hospitalizations during the COVID-19 pandemic may have been an unintended positive effect of public health measures, such as lockdowns and restrictions on social gatherings, which not only curtailed the spread of COVID-19 but also reduced transmission of pneumonia-causing bacteria and viruses.

However, further investigation is needed to explain the downward trend in pneumonia hospitalizations before the pandemic, as data elsewhere suggest that pneumococcal vaccination rates for this age group in Washington had been declining.[5]

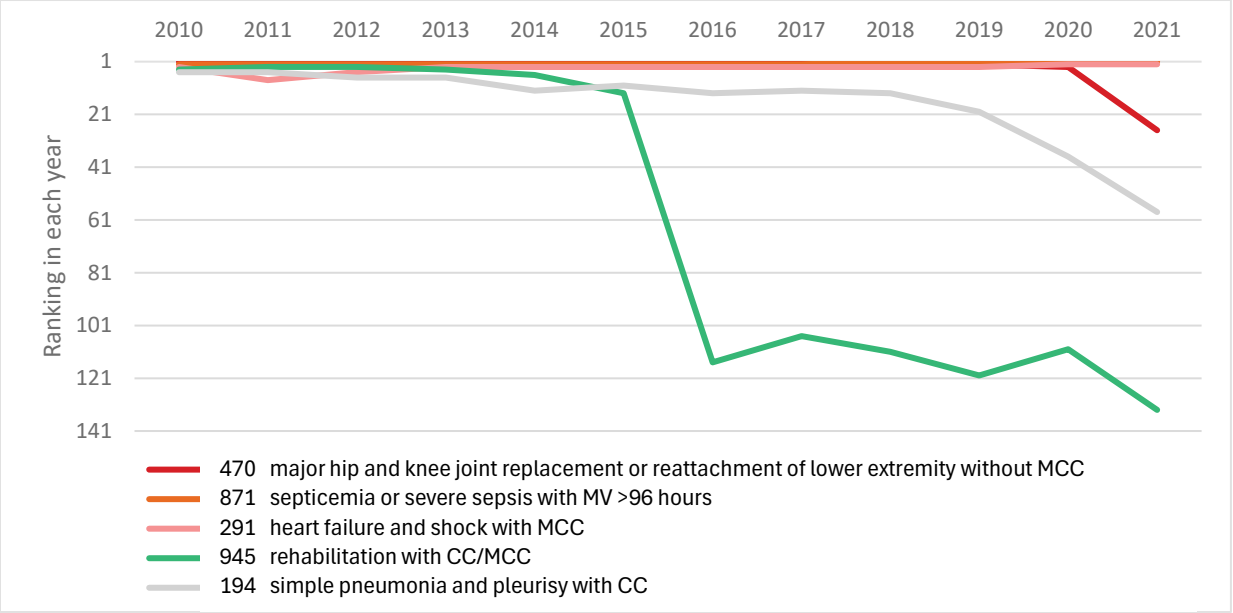
DRG 945 (rehabilitation with CC/MCC) experienced a steady decline from 4th place in 2010 to 10th place in 2015. In 2016, however, it saw a sharp drop to 115th place, followed by a continued but more gradual decline, reaching its lowest ranking of 133rd place in 2021.

The significant single-year decline in 2016 was likely the result of Ricky's Law, a policy change enacted by the Washington legislature that integrated two previously separate systems for involuntary commitment of individuals requiring intervention due to mental health or substance use disorders. This integration led to fewer individuals under commitment being sent to emergency departments or hospitalized, contributing to the sharp decrease in inpatient rehabilitation cases.[6]

[5] See pneumococcal vaccination rates during 2018-21 for adults age 65 and older in Washington at BRFSS Prevalence & Trends Data: Explore by Location | DPH | CDC

[6] https://wsipp.wa.gov/ReportFile/1766/Wsipp_Involuntary-Treatment-for-Substance-Abuse-Client-Outcomes_Report.pdf.

Figure III-13. Top five DRGs in 2010 and their rank changes in subsequent years: persons age 65 and older discharged from Washington hospitals, 2010-2021



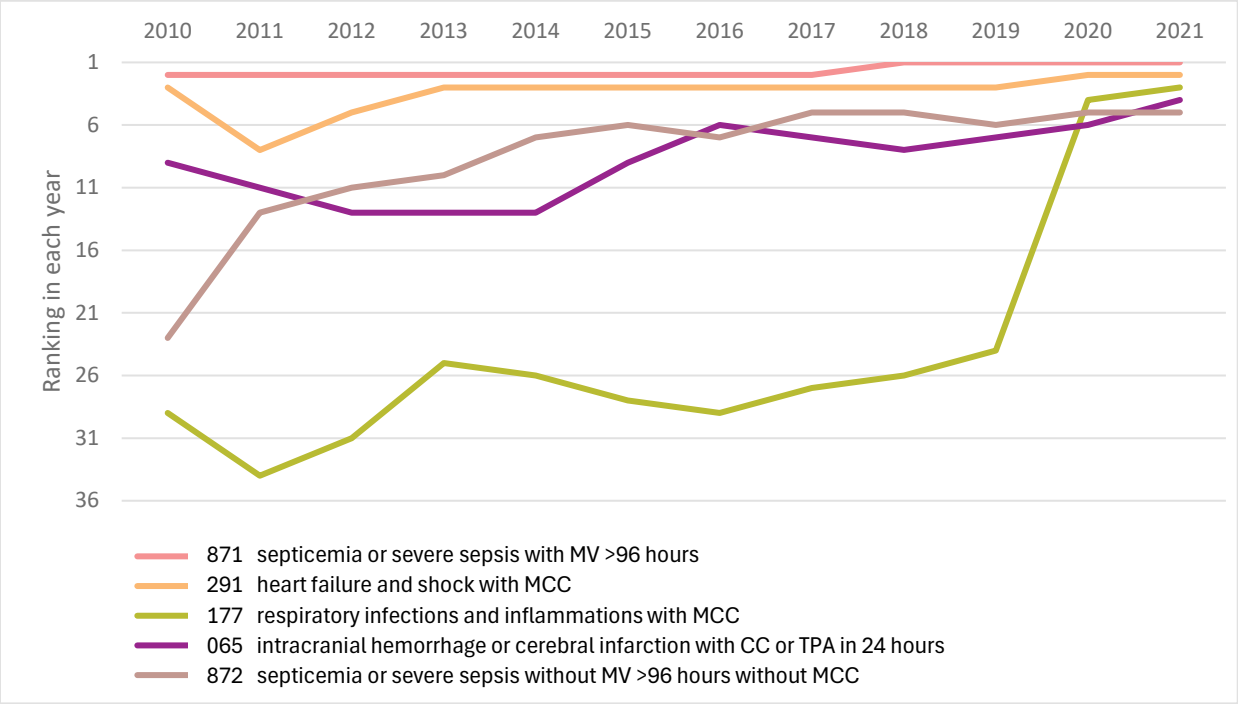
Among the top five DRGs in 2021, three had not been in the top five in 2010: DRG 065, DRG 872, and DRG 177. Each followed distinct trajectories in their upward movement:

- DRG 065 (intracranial hemorrhage or cerebral infarction with CC or TPA in 24 hours) experienced a slight decline early on, dropping from 9th place in 2010 to 13th place between 2012 and 2014. However, it steadily climbed thereafter, reaching 4th place in 2021.
- DRG 872 (septicemia or severe sepsis without MV >96 hours without MCC) had a more dramatic ascent, moving from 23rd place in 2010 to 5th place in 2021. Notably, its rise occurred before 2017, after which it remained consistently high but stable. The rising trend of DRG 872 before 2017 could be the result of changes in the diagnosis patterns in addition to increases in the prevalence of this condition.[7]
- DRG 177 (respiratory infections and inflammations with MCC) followed a gradual upward trend, fluctuating between 29th place in 2010 and 24th place in 2019. However, between 2019 and 2021, it surged to 3rd place, largely driven by the COVID-19 pandemic.

[7] See "Changing Diagnosis Patterns Are Increasing Medicare Spending for Inpatient Hospital Services" at https://www.commonwealthfund.org/publications/2021/apr/changing-diagnosis-patterns-are-increasing-medicare-spending-inpatient.

These trends underscore shifting hospitalization patterns among older adults, influenced by changes in disease prevalence, medical care practices, external factors such as the pandemic, and possibly changes in diagnosis patterns as in the case of DRG 872.

Figure III-14. Prior rankings of 2021 top five DRGs: persons age 65 and older discharged from Washington hospitals, 2010-2021



The data source and methods section for this report can be found at the end of Part I.