

## Hospital Admissions

Health service utilisation data such as hospital admissions can provide insight into the activity of our health system but are not necessarily indicators of health (illness) status. This is because they do not measure the prevalence of conditions or diseases at the population level. People do not always access health services for many of the conditions and diseases that contribute to the disease burden. And people can only use health services that exist or are accessible and appropriate to them. In other words, the population's experience of illness might be far and above what health service utilisation data tell us.

One way of evaluating the activity of the health system is through the *Victorian Ambulatory Care Sensitive Conditions (ACSC) Study*, managed by the Health Intelligence Unit, Prevention and Population Health Branch, DoH.<sup>23</sup> ACSC are conditions for which hospitalisation is thought to be avoidable with the application of public health interventions and early disease management, usually delivered in an ambulatory setting such as primary care. Hospitalisations can be significantly reduced through preventing the onset of illnesses or conditions, or controlling acute episodic illnesses or conditions, or managing chronic diseases or conditions outside of the acute setting. There are three kinds of ACSC:

- Vaccine-preventable. This group of ACSC includes influenza, bacterial pneumonia, tetanus, measles, mumps, rubella, pertussis and polio-conditions for which vaccinations are available.
- Acute. This group of ACSC includes dehydration/gastroenteritis, kidney infection, perforated ulcer, cellulitis, pelvic inflammatory disease, dental conditions, and ear, nose and throat infections. Acute ACSC might not be preventable but need not result in hospitalisation if adequate and timely primary care is received.
- Chronic. This group of ACSC includes diabetes, asthma, angina, hypertension, congestive heart failure and COPD. Chronic ACSC are preventable through health and lifestyle-related behaviours or can be managed through primary care to avoid hospitalisation.

High rates of hospital admissions for ACSC in a given area can indicate problems with patient access to primary healthcare, inadequate skills and resources, disconnection with specialist services, or a combination of these and other factors. ACSC hospital admissions

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<sup>23</sup> Prevention and Population Health Branch, Wellbeing, Integrated Care and Ageing Division, Department of Health, *Victorian Ambulatory Care Sensitive Conditions Study*, <http://www.health.vic.gov.au/healthstatus/acsc/index.htm>.

data can therefore help planners and policy makers to develop strategies to improve these facets of the health service system.

Information on Victorian ACSC at the local government area level is generated through the Victorian Health Information Surveillance System interactive reporting facility. The number and rate (per 1,000 population) of ACSC hospital admissions for females in the region's LGAs are presented below.<sup>24</sup> The reference year is 2008–2009.



The information shows that diabetes complications are the most common reasons for ACSC hospital admissions amongst females in the region, and this is consistent with the greater Melbourne area. Knox has an age-standardised rate of 11.2 admissions per 1,000 females and this is the highest of the LGAs. The age-standardised rate for females in the greater Melbourne area is 10.8 per 1,000.

Other common reasons for female ACSC hospital admissions include COPD, pyelonephritis and dental conditions.

ACSC Hospitalisations of Females, 2008–2009 Boroondara						
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days
Diabetes Complications	539	5.6	5.1	6.0	8.9	4776
Dental Conditions	424	4.9	4.4	5.3	1.0	430
Pyelonephritis	266	2.7	2.4	3.0	5.4	1433
Iron Deficiency Anaemia	191	2.1	1.8	2.4	1.8	334
Dehydration and Gastroenteritis	140	1.5	1.3	1.8	3.7	517
Congestive Cardiac Failure	179	1.5	1.2	1.7	8.7	1560
COPD	115	1.2	1.0	1.4	8.9	1028
Ear, Nose, Throat Infections	91	1.1	0.9	1.3	1.7	154
Cellulitis	100	1.1	0.9	1.3	7.0	695
Asthma	83	1.0	0.8	1.2	2.8	233
Convulsions and Epilepsy	63	0.7	0.5	0.9	5.5	349
Angina	57	0.6	0.4	0.7	1.7	97
Gangrene	62	0.5	0.4	0.6	9.1	566
Influenza and Pneumonia	34	0.4	0.2	0.5	8.7	297
Hypertension	29	0.3	0.2	0.4	2.4	69
Pelvic Inflammatory Disease	23	0.3	0.2	0.4	6.4	146
Other Vaccine-preventable	13	0.2	0.1	0.2	3.3	43
Perforated or Bleeding Ulcer	14	0.1	0.1	0.2	9.7	136

<sup>24</sup> As generated using the ACSC reporting facility, <http://www.health.vic.gov.au/healthstatus/acsc/index.htm> on 27/09/10. ACSC rates are age standardised and use population figures for 2006.

	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days
Diabetes Complications	778	11.2	10.4	12.0	7.7	6012
Pyelonephritis	281	4.0	3.5	4.4	3.7	1048
COPD	172	2.6	2.2	3.0	7.0	1206
Congestive Cardiac Failure	166	2.6	2.2	3.0	7.3	1216
Dental Conditions	194	2.5	2.1	2.8	1.4	274
Iron Deficiency Anaemia	177	2.4	2.1	2.8	1.5	262
Cellulitis	163	2.3	1.9	2.6	5.3	869
Asthma	132	1.7	1.4	2.0	2.9	383
Ear, Nose, Throat Infections	122	1.6	1.3	1.9	1.6	200
Convulsions and Epilepsy	104	1.4	1.1	1.6	2.0	203
Dehydration and Gastroenteritis	86	1.2	0.9	1.4	1.8	158
Angina	72	1.1	0.8	1.3	2.3	164
Influenza and Pneumonia	34	0.5	0.3	0.6	10.7	363
Pelvic Inflammatory Disease	36	0.5	0.3	0.6	2.8	102
Hypertension	26	0.4	0.2	0.5	3.2	83
Gangrene	26	0.4	0.2	0.5	28.9	750
Perforated or Bleeding Ulcer	11	0.2	0.1	0.3	10.0	110
Other Vaccine-preventable	9	0.1	0.0	0.2	5.9	53

ACSC Hospitalisations of Females, 2008–2009 Manningham						
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days
Diabetes Complications	518	7.8	7.1	8.5	7.5	3882
Dental Conditions	180	3.0	2.6	3.5	1.1	206
Pyelonephritis	152	2.4	2.0	2.8	3.8	572
Iron Deficiency Anaemia	148	2.3	1.9	2.6	1.4	203
COPD	106	1.6	1.3	1.9	7.2	766
Congestive Cardiac Failure	93	1.5	1.2	1.8	6.0	556
Dehydration and Gastroenteritis	75	1.2	0.9	1.5	1.8	132
Ear, Nose and Throat Infections	62	1.1	0.8	1.4	1.7	103
Cellulitis	64	1.0	0.7	1.2	5.5	351
Asthma	54	0.9	0.7	1.2	2.7	143
Angina	53	0.8	0.6	1.0	1.6	87
Convulsions and Epilepsy	47	0.8	0.6	1.0	3.8	178
Influenza and Pneumonia	26	0.5	0.3	0.6	8.9	231
Pelvic Inflammatory Disease	26	0.5	0.3	0.6	2.3	59
Other Vaccine-preventable	14	0.2	0.1	0.4	3.7	52
Hypertension	13	0.2	0.1	0.3	1.5	20
Gangrene	11	0.2	0.1	0.3	13.7	151
Perforated or Bleeding Ulcer	10	0.1	0.1	0.2	2.8	28

ACSC Hospitalisations of Females, 2008–2009 Maroondah						
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days
Diabetes Complications	471	8.2	7.5	8.9	8.8	4144
COPD	201	3.4	3.0	3.9	7.2	1437
Pyelonephritis	188	3.3	2.8	3.7	5.0	932
Dental Conditions	149	2.8	2.3	3.2	1.0	150
Congestive Cardiac Failure	156	2.5	2.1	2.9	7.8	1219
Iron Deficiency Anaemia	94	1.7	1.4	2.1	2.2	202
Cellulitis	91	1.6	1.3	1.9	5.6	507
Dehydration and Gastroenteritis	80	1.4	1.1	1.8	1.8	141
Ear, Nose, Throat Infections	72	1.4	1.1	1.7	1.8	126
Asthma	73	1.4	1.1	1.7	2.8	205
Convulsions and Epilepsy	70	1.3	1.0	1.6	2.5	177
Angina	53	0.9	0.7	1.1	3.0	160
Pelvic Inflammatory Disease	28	0.5	0.3	0.7	2.2	61
Influenza and Pneumonia	29	0.5	0.3	0.7	14.3	415
Gangrene	22	0.4	0.2	0.6	22.2	489
Hypertension	16	0.3	0.1	0.4	2.5	40
Perforated or Bleeding Ulcer	8	0.1	0.0	0.2	11.1	89

ACSC Hospitalisations of Females, 2008–2009 Monash						
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days
Diabetes Complications	772	7.7	7.1	8.2	7.7	5911
Pyelonephritis	284	3.0	2.7	3.4	3.9	1109
Dental Conditions	201	2.4	2.1	2.7	1.2	246
Iron Deficiency Anaemia	217	2.3	2.0	2.7	1.4	298
Congestive Cardiac Failure	207	2.0	1.7	2.3	8.1	1680
COPD	175	1.7	1.5	2.0	8.3	1458
Asthma	120	1.5	1.2	1.7	2.6	310
Dehydration and Gastroenteritis	130	1.4	1.2	1.7	1.8	229
Cellulitis	113	1.2	1.0	1.4	5.2	583
Ear, Nose, Throat Infections	91	1.1	0.9	1.4	1.7	157
Convulsions and Epilepsy	95	1.1	0.9	1.3	3.8	365
Angina	89	0.9	0.7	1.1	1.7	148
Influenza and Pneumonia	38	0.4	0.3	0.6	12.1	460
Pelvic Inflammatory Disease	32	0.4	0.2	0.5	1.8	57
Gangrene	37	0.4	0.3	0.5	11.3	418
Hypertension	19	0.2	0.1	0.3	4.9	93
Perforated or Bleeding Ulcer	17	0.2	0.1	0.3	9.8	166
Other vaccine-preventable	12	0.1	0.1	0.2	1.5	18

ACSC Hospitalisations of Females, 2008–2009 Whitehorse							
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days	
Diabetes Complications	853	8.78	8.19	9.36	9.11	7773	
Dental Conditions	281	3.57	3.15	3.99	1.24	349	
Pyelonephritis	279	2.98	2.62	3.33	5.24	1463	
Iron Deficiency Anaemia	203	2.24	1.93	2.55	1.65	335	
Congestive Cardiac Failure	215	2.00	1.73	2.27	9.04	1943	
COPD	154	1.54	1.29	1.78	7.80	1201	
Asthma	121	1.48	1.21	1.74	3.35	405	
Cellulitis	124	1.32	1.08	1.55	6.88	853	
Ear, Nose, Throat Infections	97	1.23	0.98	1.47	1.52	147	
Dehydration and Gastroenteritis	110	1.22	0.99	1.45	2.69	296	
Convulsions and Epilepsy	96	1.18	0.94	1.42	2.92	280	
Angina	101	0.98	0.79	1.18	1.96	198	
Hypertension	44	0.45	0.31	0.58	3.02	133	
Influenza and Pneumonia	37	0.42	0.28	0.56	12.43	460	
Pelvic inflammatory Disease	23	0.30	0.17	0.42	1.61	37	
Perforated or Bleeding Ulcer	23	0.23	0.14	0.33	6.65	153	
Gangrene	18	0.20	0.10	0.29	36.67	660	
Other Vaccine-preventable	8	0.10	0.03	0.17	6.50	52	

ACSC Hospitalisations of Females, 2008–2009 Yarra Ranges							
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days	
Diabetes Complications	472	7.8	7.1	8.5	9.4	4419	
Dental Conditions	259	3.5	3.1	3.9	1.0	267	
Pyelonephritis	202	3.1	2.7	3.5	3.6	730	
Dehydration and Gastroenteritis	201	2.9	2.5	3.4	1.6	330	
COPD	167	2.8	2.4	3.2	7.8	1309	
Congestive Cardiac Failure	132	2.4	2.0	2.8	7.2	953	
Iron Deficiency Anaemia	157	2.4	2.0	2.7	1.3	203	
Cellulitis	151	2.2	1.9	2.6	3.8	574	
Asthma	139	1.9	1.6	2.2	2.2	310	
Ear, Nose, Throat Infections	111	1.6	1.3	1.9	1.5	171	
Angina	86	1.3	1.1	1.6	1.8	156	
Convulsions and Epilepsy	90	1.2	1.0	1.5	2.7	243	
Influenza and Pneumonia	34	0.5	0.3	0.7	11.2	382	
Pelvic Inflammatory Disease	30	0.4	0.3	0.6	2.0	60	
Gangrene	25	0.4	0.2	0.6	18.7	467	
Hypertension	22	0.4	0.2	0.5	1.9	42	
Perforated or Bleeding Ulcer	10	0.2	0.1	0.3	16.9	169	

ACSC Hospitalisations of Females, 2008–2009 Greater Melbourne						
	No. Admissions	Rate per 1000	Lower Limit 95.0% CI	Upper Limit 95.0% CI	Average No. Bed Days	Total No. Bed Days
Diabetes Complications	20275	10.8	10.6	10.9	8.4	170177
Pyelonephritis	6815	3.5	3.4	3.6	3.9	26488
Dental Conditions	5702	2.9	2.8	3.0	1.1	6424
COPD	4504	2.4	2.3	2.5	7.0	31446
Iron Deficiency Anaemia	4528	2.4	2.3	2.4	1.6	7161
Congestive Cardiac Failure	4406	2.3	2.3	2.4	7.3	32201
Asthma	3480	1.8	1.7	1.8	2.4	8179
Dehydration and Gastroenteritis	3105	1.6	1.5	1.7	2.1	6416
Cellulitis	2603	1.4	1.3	1.4	5.1	13165
Ear, Nose, Throat Infections	2654	1.3	1.3	1.4	1.7	4459
Convulsions and Epilepsy	2442	1.2	1.2	1.3	3.2	7708
Angina	2327	1.2	1.2	1.3	1.7	4055
Influenza and Pneumonia	922	0.5	0.4	0.5	8.7	8004
Pelvic Inflammatory Disease	834	0.4	0.4	0.4	2.4	1958
Hypertension	560	0.3	0.3	0.3	2.8	1570
Gangrene	558	0.3	0.3	0.3	19.0	10599
Perforated or Bleeding Ulcer	410	0.2	0.2	0.2	9.0	3696

Source: Department of Health, *Victorian Ambulatory Care Sensitive Conditions Study*<sup>25</sup>

<sup>25</sup> 'CI' is for confidence interval. According to the ACSC reporting facility, 'A confidence interval (CI) is a range of values for a variable of interest constructed so that this range has a specified probability of including the true value of the variable. The specified probability is called the confidence level, and the end points of the confidence interval are called the confidence limits. It is a widespread convention to create confidence intervals at the 95.0% level – so this means that 95.0% of the time the CI should contain the true value of the variable of interest.'