

Alcohol-related Emergency Department presentations to Lakes District Hospital between 01/01/2028 and 31/12/2022

Te Waipounamu, Southern District

09/10/2024

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Purpose: Update of a yearly report

Data: Southern District Patient Information System extract

Limitations: Issues with data recording quality and quality deterioration does not permit direct comparisons of visit counts from year to year and between hospitals.

Introduction

This report is based on the dataset recording presentations to Emergency Department of Lakes District Public Hospital from 2018 to 2022 (extracted in June 2024). Queenstown has an overall resident population of ~ 46 000, including about a million visitors annually, with a total yearly ED visits of ~ 12 500. Whether a presentation is related to alcohol consumption or not is recorded in a flag variable, required by the Ministry of Health, which captures the following grades:

- Yes - alcohol consumption is directly associated with this presentation,
- Secondary - consequence of others' alcohol consumption,
- No - alcohol consumption is NOT directly associated with this presentation,
- Not known - couldn't determine if alcohol is associated with this presentation.

Although the alcohol variable is mandatory, there are issues with data recording quality (see last section). From 01-01-2021 to 10-01-2021 no visits were marked as related to alcohol due to software issue, resulting in a loss of estimated 28 visits. Given these problems with data quality, missing records and those recorded as unrelated to alcohol are combined in a single category. A data gap in early 2021 is treated individually in each table.

Alcohol-related presentations are compared to unrelated ones along the following dimensions:

- Absolute visit counts and visit periodicity (day of the week and hour of the day),
- Basic demographic traits of presenters (age and gender),
- Basic clinical characteristic of the visits (mode of arrival, triage and admission rates).

Periodicity and number of ED visits

The average daily number of directly alcohol-related presentations remained stable at around 1.5 – 1.2 (SD \pm 1.8 – 1.4) and indirectly related ones at around 0.1 – 0.2 (SD \pm 0.4). Altogether, there is no discernible trend in presentation numbers.

Table 1: Total ED presentation counts by alcohol classification

	2018	2019	2020	2021*	2021**	2022
Yes, directly related	464 (4.1%)	547 (4.1%)	548 (4.6%)	474 (3.7%)	499 (3.9%)	455 (3.2%)
Yes, indirectly related	44 (0.4%)	59 (0.4%)	60 (0.5%)	56 (0.4%)	59 (0.4%)	60 (0.4%)
Unrelated or unknown	10882 (95.5%)	12595 (95.4%)	11315 (94.9%)	12388 (95.9%)	12360 (95.7%)	13793 (96.4%)
Total	11390	13201	11923	12918	12918	14308

* Visit counts with data gap in place; ** visit counts including expected numbers based on 4-year averages specific for each of the missing days.

Overall, ED visits are distributed relatively evenly throughout the week, with highest number occurring in daylight hours, between 9 AM and 8 PM. There is some increase in non-alcohol related visits on Mondays and weekends, presumably due to increased number of tourists. Alcohol-related presentations increase markedly toward the weekend, with peaks from 9 PM to 4 AM on Saturday and from 8 PM to 5 Am on Sunday.

Table 2: Average daily ED presentations through the week (2018 to 2022)

	Monday (\pm SD)	Tuesday (\pm SD)	Wednesday (\pm SD)	Thursday (\pm SD)	Friday (\pm SD)	Saturday (\pm SD)	Sunday (\pm SD)
Alcohol-related	1.3 (\pm 1.3)	0.9 (\pm 1.3)	0.8 (\pm 1.2)	1.1 (\pm 1.4)	1.3 (\pm 1.4)	2.5 (\pm 2.0)	2.8 (\pm 1.9)
Unrelated or unknown	34.8 (\pm 9.6)	32.3 (\pm 9.8)	31.3 (\pm 8.7)	31.9 (\pm 8.7)	31.9 (\pm 9.6)	35.9 (\pm 10.0)	35.7 (\pm 9.4)

* Visit counts with data gap in place.

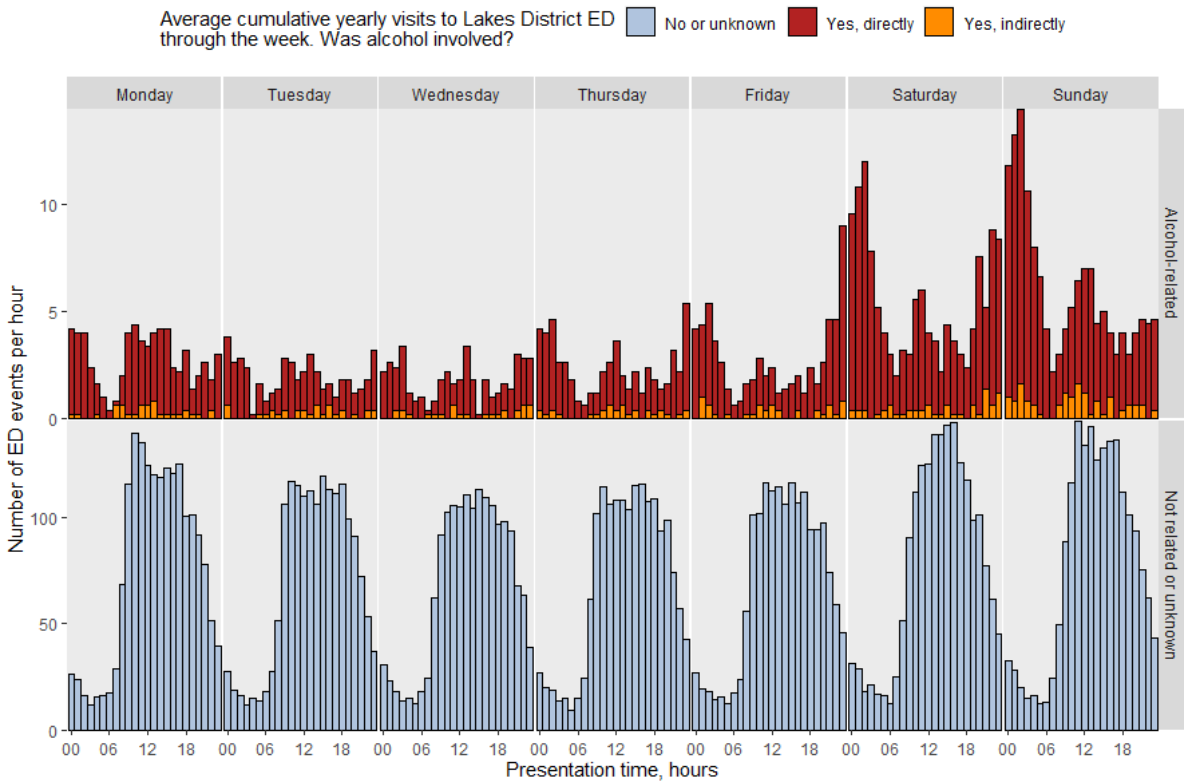


Figure 1. Distribution of yearly visits by time of the day and day of the week.

Demography of presentations: gender and age

Presenters aged 15 to 24 years consistently have the highest alcohol-related ED presentations and make up the highest proportion (9.3%) of all ED presentations compared to other age-groups. The next highest fraction (6%) is found in the age group of 25 to 34. In adults older than 55 years the percentage of alcohol-related presentations falls quickly.

With the exception of the 15-24 age group, males visit Lakes District Hospital ED with alcohol-related presentations more frequently than females regardless of the age group. The overall number of ED presentations is very similar between genders. The average percentage of alcohol-related presentations out of all visits is higher for males (5.0%) compared to females (3.6%).

Table 3: Alcohol-related ED presentations by age group and gender

Age group	2018 F/M	2019 F/M	2020 F/M	2021* F/M	2022 F/M	Yearly average (% of all visits)
< 15	0/0	2/2	1/0	2/2	2/1	2 (0.1%)
15-24	64/124	107/119	88/129	86/96	82/93	198 (9.3%)
25-34	58/146	80/138	79/151	61/127	55/138	207 (6%)

35-44	15/41	32/56	47/40	30/37	27/40	73 (4.7%)
45-54	7/21	7/23	12/30	12/33	17/34	39 (3.3%)
55-64	6/13	12/11	7/14	12/15	7/8	21 (2.2%)
65-74	2/8	3/9	3/5	2/8	1/7	10 (1.4%)
75+	0/2	1/4	2/0	1/6	2/1	4 (0.6%)

Note: cases where gender is recorded as “other” or “unknown” are excluded from gender-specific counts, but not from yearly averages and percentages. * Visit counts with data gap in place.

Clinical characteristics

For alcohol-related presentations, ambulance and police were significantly more frequent modes of arrival to ED compared to visits unrelated to alcohol. Ambulance was involved 3 times more frequently and police – 20 times more frequently in alcohol-related presentations. Walk-ins, by contrast, were much less frequent for this group (66% vs 91%).

Table 4: Mode of arrival for ED presentations: yearly average*.

Mode of arrival	Alcohol-related (directly and indirectly)	Unrelated to alcohol or unknown	Pairwise z-test p-value
Ambulance	154 (27.8%)	1044 (8.6%)	< 0.001
Police	33 (5.9%)	33 (0.3%)	< 0.001
Walk-in	366 (66.2%)	11095 (91%)	< 0.001
Other or unknown	1 (0.1%)	22 (0.2%)	> 0.05

* Visit counts with data gap in place.

Presentations with the highest severity grade (resuscitation) were significantly more frequent among alcohol-related visits; non-urgent visits were significantly less frequent, and the rest of triage grades did not differ significantly in frequency between the groups.

Table 5: Severity for ED presentations: a yearly average and percentage*.

Severity of presentation	Alcohol-related	Unrelated or unknown	Pairwise z- test p-value
Resuscitation [immediately life threatening]	4 (0.8%)	22 (0.2%)	< 0.001
Emergency	43 (7.8%)	872 (7.2%)	> 0.05

[imminently life-threatening, or important time-critical]

Urgent [potentially life-threatening, or severe discomfort or distress]	187 (33.9%)	3939 (32.3%)	> 0.05
Semi-urgent [potentially serious, or significant complexity or severity, or discomfort or distress]	288 (52%)	6501 (53.3%)	> 0.05
Non-urgent or unknown	31 (5.6%)	860 (7.1%)	< 0.05

* Visit counts with data gap in place.

The admission rate for alcohol-related ED presentations was similar or somewhat lower compared to visits unrelated to alcohol (5-year average of 9 vs 11%). Notably, COVID-19 lockdowns of 2020 had no obvious effect on admission rates in Lakes District Hospital.

Table 6: Admission rates of ED presentations (Dunedin Hospital) by year.

	2018	2019	2020	2021*	2022	Yearly average (% of all visits)
Alcohol-related	48 (9%)	71 (12%)	54 (9%)	51 (10%)	37 (7%)	52 (9%)
Not related or unknown	1379 (13%)	1467 (12%)	1253 (11%)	1361 (11%)	1487 (11%)	1389 (11%)

* Visit counts with data gap in place.

A technical note on data recording quality

Over the 5-year interval a total of 369 ED visits were diagnosed with 100% alcohol-attributable conditions (ICD-10 codes F10.0, F10.2, F10.3, F10.4, F10.5, K29.2, K70.3, R78.0 and T51.0). Of those, 50 (14%) were not labelled as alcohol-related by Ministry of Health alcohol flag variable, suggesting undercounting of true alcohol-related presentations, with the undercount varying randomly from year to year.