

Supplementary Material

The impact of COVID-19 on public and private emergency departments in Queensland, Australia

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Supplementary Material

S1. Data sources and variables utilised in the study

S1.a Emergency department (ED) administrative data

Variables obtained and used in this study from private hospital EDs 1 and 2: Episode-level data consisting of age, Australasian Triage Scale (ATS) category (1, 2, 3, 4, 5), attendance date, discharge disposition (admitted, transferred, discharged home), arrival mode (ambulance, self-presenting).

Variables obtained and used from private hospital ED 3: Monthly counts of ED presentations by: age category (0-16 years, 17-64 years, 65years and older), ATS category (1, 2, 3, 4, 5), discharge disposition (admitted, transferred, discharged home), arrival mode (ambulance, self-presenting).

Variables obtained and used from the two public hospital EDs: Episode-level data consisting of triage date and time, ED discharge date and time, age, arrival mode, ATS, discharge disposition, total, direct and indirect costs. Costs were sourced from the clinical costing system Power Performance Manager™ (PPM). Direct costs were applied at the patient level and included pathology, and imaging costs incurred by the patient, and staff costs set by patient location and based on patient's length of stay at each location. Indirect costs were spread across the patient cohort for the month and weighted by patient length of stay. Indirect costs included costs associated with cleaning, supplies, administrative overhead, utilities, facility maintenance and facility operations. Total cost was the sum of direct and indirect costs.

S1.b Notifiable Conditions Systems data – Public Health Unit (PHU)

Variables obtained and used for patients testing positive for SARS-CoV-2 and assigned to the PHU:

Linkage key, URN, sex, onset of symptoms date, clinical symptoms (e.g., fever, cough, sore throat, increased sputum production, shortness of breath, myalgia, fatigue, diarrhoea, headache).

S1.c Electronic Medical Record from the designated COVID-19 hospital

Variables obtained and used for patients identified through **S1.b** as positive for SARS-CoV-2, and with a hospital medical record:

Patient flow and disease severity (all SARS-CoV-2 positive patients):

Testing location, presentation to ED, direct admission to hospital or virtual ward, re-presentation to ED, re-presentation to hospital, or readmission to virtual ward, intensive care unit admission, oxygen requirements whilst admitted (i.e. none, supplemental oxygenation and route, non-invasive ventilation, or invasive management – intubation and mechanical ventilation), discharge disposition.

Emergency department characteristics (SARS-CoV-2 positive patients seen in ED):

Clinical symptoms fever, cough, sore throat, increased sputum production, shortness of breath, myalgia, fatigue, diarrhoea, headache; co-morbidities, vital signs (first set and worst set in ED), imaging (x-ray, CT, or MRI) requirement (Yes / No) and findings, pathology (e.g., CRP, WCC, leukocytes, or troponin) requirement and findings, treatments administered (e.g. antivirals, antibiotics, antimalarials, experimental drugs, inotropes, bronchodilators, anticoagulation, steroids), airway management (i.e. none, supplemental oxygenation and route, non-invasive ventilation, or invasive management - intubation); usual medications pre-hospital, ED re-presentation within 72 hours; hospital re-admission within days of discharge; disposition from ED (in-hospital, hotel, virtual ward), ICU admission requirement (Yes/No).

S2. Cleaning and coding of data

S2.a Method to remove (for analysis) patients presenting to the fever clinic co-located at the public hospital A

To prepare data for analysis, data cleaning was required to exclude patients presenting for COVID-19 testing only. These attendances were recorded in the ED dataset for Hospital A, but reflect 'fever clinic' presentations rather than ED presentations. To identify these atypical patient presentations in our dataset we consulted with colleagues from the hospital to understand their registration processes for patients requiring COVID-19 testing. As a result, a combination of low urgency triage categories (i.e., 4 or 5) and International Classification of Disease, 10th edition, Australian Modification (ICD-10-AM) codes (e.g., viral infection unspecified (B34.9), persons with feared complaint (Z71.1), or special screening examination (Z11.5)) was used to screen for and exclude these presentations from our dataset for any presentations after March 11, 2020.

S2.b. Configuration of public datasets to match private datasets configuration

To provide consistent information across the five EDs in the region, the public hospitals' datasets required configuration into monthly presentation numbers using the same categories as provided by the private hospitals (see S1a).

Thus, following S2.a procedures, episode-level data from the two public hospitals was tallied by presentation month (January 2018 through June 2021) for each of the age, ATS, arrival mode, and discharge disposition categories described in S1a. Totals for each hospital were then added together month by month and category by category to arrive at the total counts.

S3. Gold Coast Local Government Area Census results by age group

Available at: <https://abs.gov.au/census/find-census-data/quickstats/2021/LGA33430>

04/10/2023, 14:16		2021 Gold Coast, Census All persons QuickStats Australian Bureau of Statistics					
Small random changes have been made to all cell values for privacy reasons. These changes may cause the sum of rows or columns to differ by small amounts from the table totals.							
People and population							
<hr/>							
People							
<i>All people</i>	Gold Coast	%	Queensland	%	Australia	%	
Male	303,424	48.5	2,540,404	49.3	12,545,154	49.3	
Female	321,659	51.5	2,615,736	50.7	12,877,635	50.7	
<i>More information on Sex (SEXP), Place of usual residence (PURP).</i>							
<i>Table based on place of usual residence</i>							
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Indigenous status							
<i>All people</i>	Gold Coast	%	Queensland	%	Australia	%	
Aboriginal and/or Torres Strait Islander	13,593	2.2	237,303	4.6	812,728	3.2	
Non-Indigenous	577,543	92.4	4,635,042	89.9	23,375,949	91.9	
Indigenous status not stated	33,952	5.4	283,793	5.5	1,234,112	4.9	
<i>More information on Indigenous status (INGP).</i>							
<i>Table based on place of usual residence</i>							
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Age							
<i>All people</i>	Gold Coast	%	Queensland	%	Australia	%	
Median age	39	N/A	38	N/A	38	N/A	
0-4 years	33,491	5.4	292,452	5.7	1,463,817	5.8	
5-9 years	37,539	6.0	329,311	6.4	1,586,138	6.2	
10-14 years	38,900	6.2	342,560	6.6	1,588,051	6.2	
15-19 years	36,369	5.8	313,506	6.1	1,457,812	5.7	
20-24 years	39,338	6.3	323,739	6.3	1,579,539	6.2	
25-29 years	42,664	6.8	347,687	6.7	1,771,676	7.0	
30-34 years	43,757	7.0	354,033	6.9	1,853,085	7.3	
35-39 years	43,454	7.0	357,120	6.9	1,838,822	7.2	
40-44 years	41,491	6.6	330,692	6.4	1,648,843	6.5	
45-49 years	42,896	6.9	340,287	6.6	1,635,963	6.4	
50-54 years	41,018	6.6	333,843	6.5	1,610,944	6.3	
55-59 years	37,818	6.1	316,378	6.1	1,541,911	6.1	
60-64 years	35,366	5.7	298,919	5.8	1,468,097	5.8	
65-69 years	31,587	5.1	264,515	5.1	1,298,460	5.1	
70-74 years	30,632	4.9	238,952	4.6	1,160,768	4.6	
75-79 years	22,013	3.5	168,385	3.3	821,920	3.2	
80-84 years	13,938	2.2	106,611	2.1	554,598	2.2	
85 years and over	12,805	2.0	97,140	1.9	542,342	2.1	

S4. Clinical characteristics and management of COVID-19 patients presenting to ED, 2020-June 2021.

Nineteen (7%) of 269 individuals notified with COVID-19 in the region presented to ED; the remaining 250 (93%) had no interface with ED. The median age of these 19 patients was 61 years (IQR: 32-70). Nine (47%) arrived by ambulance, the remaining 10 (53%) arrived via other means. The triage category assigned was ATS 2 (n=9, 47%), ATS 3 (n=7, 37%), or ATS 4 (n=3, 16%). No patients were assigned ATS 1 or 5.

Common symptoms reported prior to attending ED were cough (n=17, 90%), fever (n=15, 79%) and fatigue (n=11, 58%). Whilst in ED, all adult patients received a chest x-ray; 11 patients (58%) had an abnormal x-ray showing changes consistent with respiratory infection and/or pulmonary oedema, including consolidation and/or opacification. Most patients (n=17, 90%) also had pathology (blood) tests; CRP was abnormal in 11 patients (67%), WCC was abnormal in four patients (24%).

Medication was administered to 11 patients (58%) in the ED, mainly paracetamol and antibiotics. Most patients (n=16, 84%) did not require supplemental oxygen; three (16%) required oxygen via nasal prongs. Around two-thirds of the patients (n=12, 63%) were tachycardic and/or tachypnoeic while in ED; 11 patients (58%) were febrile (>38.0°C). The median ED length of stay for the 19 patients was 245 minutes (IQR: 199-379); 17 (89.5%) patients were admitted to hospital ward and two were discharged to the region's virtual ward. Of the admitted patients, three met the World Health Organization's (WHO, 2020) criteria of Severe Acute Respiratory Distress (i.e., scored ≥ 5), but not until later in their hospital stay.

References:

World Health Organization. [WHO R & D Blueprint, novel Coronavirus. COVID-19 Therapeutic Trial Synopsis. World Health Organisation. Geneva: World Health Organisation; 2020. Available at https://www.who.int/publications-detail/covid-19-therapeutic-trial-synopsis. \[cited 19 Nov 2024\]](https://www.who.int/publications-detail/covid-19-therapeutic-trial-synopsis)

Note: Permission to use the Ordinal Scale for Clinical Improvement (Box 1 in article) obtained from the World Health Organization.