

Impact of COVID-19 pandemic lockdown on a Victorian regional ST-elevation myocardial infarction service



Herbert, N.^[1,2], Murphy, M.^[2], Hutchison, A.^[1,3], George, M.^[2] & Hiew, C.^[1,3]

1. Barwon Health 2. La Trobe University 3. Deakin University

Table 2

<u>AIM</u> – We seek to examine the potential impact of the lockdowns associated with the COVID-19 pandemic on STEMI presentations, system delays and patient outcomes, in the largest regional area of Victoria.

BACKGROUND

The COVID-19 pandemic impacted the utilisation of health services worldwide ^[1]. A parallel decrease in global ST-elevation myocardial infarction (STEMI) presentations was reported ^[2,3]. Many countries implemented 'lockdowns' to slow the spread of the virus ^[3,4]. Minimal published data exists on the pandemic's impact in regional Victoria.



Variable	Pre-lockdown	During-lockdown	p-value
	(N=214)	(N=277)	
PPCI (<12hrs)	152 (71%)	180 (65%)	0.16
Late presentation STEMI (>12hours)	21 (9.8%)	32 (11.5%)	0.54
STEMI (unstable following lysis)	25 (11.7%)	37 (13.4%)	0.58
STEMI (stable following lysis)	16 (7.5%)	28 (10.1%)	0.15

Note: lysis: thrombolysis, PPCI: primary percutaneous coronary intervention

Patient related delay was measured as symptom onset-to-first medical contact (FMC). The pre-lockdown median (IQR1-3) was 68 (32-189.5) minutes while the during-lockdown median (IQR1-3) was 70 (35-205) minutes, p=0.525 (see Figure 2). Examination of potential system delays (Door-to-Balloon/Device times for primary PCI between the two study periods did not reveal any significant differences. The pre-lockdown median (IQR1-3) was 50 (37-67) minutes while the during-lockdown median (IQR1-3) was 55 (43-80) minutes, p=0.155 (see Figure 3).

SETTING

University Hospital Geelong (UHG) is part of the Barwon South West (BSW) region of Victoria. The region stretches from the Queenscliff Heads to the South Australian boarder (see Figure 1). This is Victoria's largest region by population with an estimated 434,619 people across 32,767 km²^[5]. The UHG is the only hospital in the region providing a 24/7 STEMI service.

Figure 1 laracoorte Lucindale Southern Grampians Pvrenees Wattle Range Mount Gamb Grant Map layers Surf Coast Postal Area University Local Governme Hospital State Geelong 6 and belov **STEMI** presentations in the 🚺 7 to 19 20 to 59 **Barwon South West region** 60 and above ©2020 CALIPER; ©2019 HE





During-lockdown

p-value

METHODS

A retrospective study was performed to investigate the effect of lockdowns on patient and system delays and clinical outcomes in STEMI treatment.

This study uses the widely accepted date of 31st March, 2020 as the beginning of the first lockdown period in Victoria.

Pre-lockdown period is defined as: 1st January, 2019 to 30th March, 2020, and During-lockdown: 31st March, 2020 to 31st December, 2021.

INCLUSION

All patients presenting with STEMI to the UHG from 2019 - 2021, who underwent percutaneous coronary intervention (PCI) were included in this study.

RESULTS

491 patients met the inclusion criteria. Table 1 shows patient demographics. There were no statistically significant differences in the number of STEMI presentations between the two study periods (214 vs 277 cases, p=0.19). Table 2 reports PCI indication between the two study periods.

Table 1			
Variable	Pre-lockdown (N=214)	During-lockdown (N=277)	p-value
Male	162 (75.4%)	201 (72.6%)	0.43
Age M(SD) (years)	63.51(11.98)	64.79(12.78)	0.26
BMI M(SD) (kg/m^2)	28.85(5.41)	28.5(5.47)	0.48
Smoking status			0.13
Never	94 (43.9%)	127 (45.8%)	
Current	61 (28.5%)	94 (33.9%)	
Previous	59 (27.6%)	56 (20.3%)	
Asthma	12 (5.6%)	8 (2.9%)	0.13
COPD	11 (5.1%)	15 (5.4%)	0.89
Diabetes	33 (15.2%)	39 (14.1%)	0.68
Hypertension	130 (60.7%)	151 (54.5%)	0.17
Dyslipidaemia	158 (73.8%)	164 (59.2%)	<0.001*
Previous MI	30 (14%)	34 (12.3%)	0.57
Family cardiac history	81 (37.9%)	54 (19.5%)	<0.001*
Pre procedural creatinine			
$(\mu mol/L) M(IQR1-3)$	93 (77.5-111.5)	92 (77-105.5)	0.18
Previous PCI	25 (11.7%)	30 (10.8%)	0.77
Previous CABG	10 (4.7%)	8 (2.9%)	0.31

There was no statistically significant differences in clinical outcomes seen during the lockdown period (Table 3).

Pre-lockdown

Variable

Table 3

	(N=214)	(N=277)	
n Hospital			
Bleeding	3 (1.4%)	4 (1.4%)	0.97
Stroke	3 (1.4%)	5 (1.8%)	0.73
n-hospital mortality (all-cause) n-hospital mortality (excluding	11 (5.1%)	20 (7.2%)	0.35
Cardiogenic Shock/OOHCA)	3 (1.4%)	6 (2.2%)	0.53
80-Day	Pre-lockdown (N=203)	During-lockdown (N=257)	
Bleeding	4 (1.9%)	2 (0.7%)	0.28
Stroke	0 (0%)	0(0%)	
Jnplanned Cardiac Readmission	5 (2.5%)	6 (2.3%)	0.92
30-day mortality (all-cause)	4 (1.9%)	4 (1.6%)	0.52
Mortality	Pre-lockdown	During-lockdown	
-	(N=214)	(N=277)	
All-cause Mortality (In hospital			
and 20 days	15(70/)	24(9.70/)	0.50

Note: *p<0.05, BMI: Body mass index, CABG: Coronary artery bypass graft, COPD: Chronic obstructive pulmonary disease, MI: Myocardial infarction, PCI: Percutaneous coronary intervention

and 50-days)	13(7%)	24 (8.7%)	0.30

Note: OOHCA: Out of Hospital Cardiac Arrest

CONCLUSION

STEMI presentations and clinical outcomes at the UHG did not change significantly during the lockdown periods associated with the COVID-19 pandemic.

Individuals of the BSW region continue to follow healthcare advice and present in a timely manner for life saving treatment.

The UHG provided the BSW region with timely treatment despite the added complexities during this time; personal protective equipment, patient screening and transport. Healthcare services within the BSW region, including Ambulance Victoria and the UHG showed resilience in the face of the unprecedented COVID-19 pandemic.

Kaye, A.D., et al., Economic impact of COVID-19 pandemic on healthcare facilities and systems: International perspectives. Best Practice & Research. Clinical Anaesthesiology, 2020. Garcia, S., et al., Impact of COVID-19 pandemic on STEMI care: An expanded analysis from the United States. Catheter Cardiovasc Interv, 2020. Kwok, C.S., et al., Impact of COVID-19 on percutaneous coronary intervention for ST-elevation myocardial infarction. Heart, 2020. 106(23): p. 1805-1811. Han, E., et al., Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. The Lancet, 2020. 396(10261): p. 1525-1534. .id. Barwon South West Region. 2021 [cited 28th March, 2021]; Available from: ht

Barwon Health [@barwonhealth]. (2019). Tweets [Twitter Profile]. Retrieved July 12, 2022, from https://twitter.com/BarwonHealth/status/1153827493545152512/photo/1