



## Challenges of Singapore's First Acute Geriatric Isolation Facility During the COVID-19 Pandemic

Bernard Kok Chong Yap<sup>1</sup>, Wrenzie Del Valle Espeleta<sup>1</sup>, Savithri Sinnatambay<sup>2</sup>, Jansen Meng Kwang Koh<sup>3</sup>, Lip Hoe Koh<sup>1</sup>, Kiat Sern Goh<sup>1</sup>

1. Department of Geriatric Medicine, Changi General Hospital, Singapore 2. Department of Nursing, Changi General Hospital, Singapore 3 Department of Respiratory and Critical Care Medicine, Changi General Hospital, Singapore

### INTRODUCTION

The COVID-19 pandemic has seen hospitals isolating suspect cases to reduce nosocomial transmission. Isolation ward has been set up in tertiary hospital worldwide<sup>1</sup>. However, isolation of older people poses challenges to care delivery. For example, isolation leads to patient-reported anxiety, fear and loneliness. In addition, older patients often present with geriatric syndromes such as delirium, dementia with behaviour and psychological symptoms of dementia (BPSD), immobility, falls and incontinence<sup>2</sup>. Therefore, while isolating older patients in light of the pandemic is important, managing geriatric syndromes requiring holistic interdisciplinary care is equally important but may be challenging in the isolation facility.

### AIM

This cross-sectional study serves to

- Share our experience in the implementation of Singapore's first acute geriatric respiratory isolation facility, also termed as the geriatric PARI (Pneumonia-Acute Respiratory Infection) ward,
- Describe the patient clinical profiles and geriatric-related adverse outcomes.

### METHODS

This is a retrospective cross-sectional study performed in 7 negative pressure isolation rooms (double room negative pressure, no window, has real time camera monitoring) in an acute care public hospital in Singapore. 100 patients admitted consecutively to the geriatric PARI ward were included. COVID- swab results (2 swabs obtained 24 hours apart) were obtained. Patients will be transferred out once both COVID-swabs are negative. De-identified patients' characteristic were collected from the hospital electronic data. Patient demographics, barthel index, morse fall scale, presenting complaints, geriatric syndromes, adverse outcome such as mortality, inpatient fall, transfer to intensive care unit/high dependency ward, acute urinary retention, intravenous hydration and geriatric-related adverse outcomes associated with hospitalisation were collected and analysed.

The inclusion criteria are

- > 65 years old
- Clinical or radiological signs of pneumonia/ ARI symptoms
- 100 consecutive patients recruited (2 March – 14 April 2020)
- Patients from Emergency Department, General Ward, Specialist clinic

All patients had assessed to multi-disciplinary team of a geriatrician, junior doctor, nurses and therapists. Hospital nurse driven delirium protocol and multifactorial intervention fall prevention protocol are implemented for required patients. Physical restraints were avoided unless a patient is deemed to have high-risk of self-harm.

Univariable logistic regression was performed for the individual parameters. Odds ratios (OR) and its corresponding p- values were reported. Statistical analysis were performed using STATA version 14.

### RESULTS

**Table 1.** Demographics and Comorbidities of Patients.

Demographics of Patients			
	Mean	Standard deviation	Minimum Maximum
Age (Years)	86.4	6.8	64 104
Falls Morse Scale	42	27.8	0 125
Barthel Index (20)	8.6	7.4	0 20
Length of Stay (days)	12.2	9.9	2 51
Gender	Male 38	Female 62	
Place of residence prior to admission	Home 87	Nursing home 13	
Source of referral	Emergency department 85	Ward 13	Clinic 2
Number of Patients			
Comorbidities	Yes	No	
Hypertension	81	19	
Hyperlipidaemia	74	26	
Diabetes	35	65	
Cardiac disease	51	49	
Lung disease	17	83	
Renal disease	70	30	
≥3 comorbidities	77	23	

**Table 2.** Presenting Symptoms, Geriatric Syndromes to the Geriatric PARI (Pneumonia-Acute Respiratory Infection) Ward. This Table Also Shows the Type of Interventions Rendered.

Number of patients		
	Yes	No
Presenting geriatric syndromes		
Dementia	51	49
Behaviour and psychological symptoms of dementia	24	76
Urinary incontinence	59	41
Bowel incontinence	53	47
Fall in the past 1 year	16	84
Presenting symptoms		
Acute respiratory symptoms	58	42
Pneumonia	57	43
Fall	15	85
Delirium	27	73
Constitutional symptoms	22	78
Other symptoms	56	31
Overlapping symptoms	20	80
Intervention		
Delirium protocol	37	63
Restraint used	21	79
Restraint removed in general ward	19	2

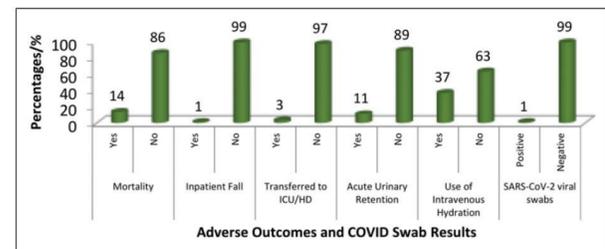
### References

- Wee LE, Hsieh JYC, Phua GC, et al. Respiratory surveillance wards as a strategy to reduce nosocomial transmission of COVID-19 through early detection: the experience of a tertiary care hospital in Singapore. *Infect Control Hosp Epidemiol* 2020; 41: 820–825.
- Isaia G, Marinello R, Tibaldi V, et al. Atypical presentation of Covid-19 in an older adult with severe alzheimer disease. *Am J Geriatr Psychiatry* 2020; 28: 790–791
- Yang J, Zheng Y, Gou X, et al. Prevalence of comorbidities and its effects in patients infected with SARS-CoV-2: a systematic review and meta-analysis. *Int J Infect Dis* 2020; 94: 91–95.
- Lee VJ, Chiew CJ and Khong WX. Interrupting transmission of COVID-19: lessons from containment efforts in Singapore. *J Trav Med* 2020; 27(3): taaa039.

### RESULTS

**Table 3.** Univariable Analysis of Factors Associated with the Use of Physical Restraint.

Variable	Odds ratio (95% confidence interval)	p-value
Age (per year)	1.01 (0.94–1.07)	0.84
Male	1.45 (0.46–4.56)	0.52
Log-transformed Barthel Index	1.21 (0.58–2.52)	0.62
History of dementia	2.61 (0.83–8.16)	0.10
Behaviour and psychological symptoms of dementia	1.64 (0.50–5.34)	0.41
History of fall	2.18 (0.60–7.98)	0.24
Delirium	3.88 (1.27–11.85)	0.01
Log-transformed Morse Fall Scale	1.01 (0.45–2.27)	0.98



**Figure 1.** Shows the Adverse Outcomes of Patients and COVID Swab Results.

### DISCUSSION

#### Importance of Isolation Facility in Geriatrics Population During COVID-19 Pandemic

- Majority (77%) of elderly patients had ≥3 comorbidities predicting more severe disease and higher mortality<sup>3</sup>
- 13% came from nursing home hence pro- active screening is important to avoid rapid nosocomial spread in the nursing home
- 56% of the older people presented atypically with non respiratory symptoms making triaging challenging
- 1 COVID +ve case explainable by the absence of widespread community transmission in Singapore at the time of study<sup>4</sup>
- Nonetheless, imperative to isolate and screen for COVID- 19

#### Challenges to Patient-Centred Care Delivery in an Isolation Facility

##### A) Delirium, Dementia and BPSD

- 27% presented with delirium which is similar to existing study of 20-30% of hospitalized covid patients
- 51% had dementia of which 24% had BPSD
- 36% patients had delirium protocol implemented
  - Compromised care due to isolation environment
  - Intimidating healthcare workers in Personal Protective Equipment
  - Frequent transferring of wards
- Delirium was associated with physical restraint use (univariable odds ratio of 3.88; p value 0.01)
- 21% restraint in PARI (19 of 21 removed in GW) exceeded international published average of 4-13% in geriatric wards and local acute ward (8%)
  - Prioritize patient safety, fear of inpatient fall, physical limitation led to institution of physical restraint

##### B) Fall

- Morse Fall Scale of 42 is close to standard cut off of 45 for fall risk
- Overall inpatient fall rate of 1.64 per 1000 occupied bed days which is lower than published literature of 5.71–17.1 falls per 1000 bed days occupied in general wards
- Only inpatient PARI fall occurred in the 3rd patient admitted
  - May have evoked sense of insecurity and hence use of physical restraint

##### C) Acute Urinary Retention and Intravenous Hydration

- 36% had intravenous hydration due to limited accessibility to patients
- 11% developed ARU due to immobility and limited accessibility to patients to double void, screen post-void residual volume

### Conclusion

The geriatric PARI ward is essential for curbing nosocomial transmission of COVID-19. This is important in the older people with comorbidities who are more likely to develop morbidity and mortality. Our study reveals challenges in delivering person-centred care to the older patients in isolation rooms, especially in the management of delirium and falls prevention. Innovative strategies should be developed to minimise isolation-related adverse outcome.