

## **Memo**

**To: Honorable Minister Zweli Mkhize**

**From: Professor Salim S. Abdool Karim**

**CC: Dr Anban Pillay**

**Date: 5 April 2020**

## **Report on SARS-CoV-2 infection outbreak at St. Augustine's Hospital**

### **Summary:**

1. The current outbreak at St Augustine's Hospital started on 9 March and almost all cases can be traced back to Patient Zero (who had returned from the UK). He attended the Emergency room with Covid-19 symptoms on 9 March – he was not admitted.
2. The chains of Coronavirus transmission that started on 9 March have continued up to at least a week ago and are most probably continuing at present – based on the most recent positive SARS-CoV-2 results.
3. Standard infection control measures already in place at St. Augustine's have not been able to stop the chains of transmission. There is evidence of both droplet and contact spread.
4. Doctors and nurses are integral to the viral transmission chains – at least 2 transmissions to patients are likely to have occurred through doctors or nurses. At present, just over 10% of the 235 nurses tested by PCR were positive – though information on the extent of SARS-CoV-2 infections in staff members is incomplete and is in the process of being collected.
5. At present, there is almost no information on the potential spill-over of infections into the community from patients discharged from hospital or staff from 9 March to now. The notable exception is the Bill Buchanan Home for the Aged where Patient 3 was the source of local transmission within the Home.

### **Recommendations:**

1. Patient visits and admissions should not be allowed until step 2 below is completed. This was implemented several days ago by the hospital as part of preparations for Covid-19.
2. The main section of the hospital should be closed off, once the current patients have been moved to one wing (possibly the rear wing) of the hospital (maintaining current isolation until lab results are available). This section should be cleaned and sanitised by staff with PPE. Once completed, no-one should enter this section for 5 days (the lifespan of SARS-CoV-2 on steel). Thereafter, this section can be re-opened as a clean and sanitised section. When all the patients from the one (rear) wing have been discharged, this section should follow the same procedure.

3. The 80 or so patients currently in the hospital, should be tested by PCR – this started yesterday. Positive patients should be moved to the Covid ward, while negative patients should continue to be treated in the hospital and discharged, when clinically indicated, with obligatory 14 days isolation. Since all these patients are potentially SARS-CoV-2 exposed, it is preferable to keep them in one section of this hospital rather than moving them to other hospitals, which may spread the problem to other hospitals.
4. Almost 4000 patients have been either admitted or attended to in the Emergency Room since 9 March. Each of them should be contacted by phone and the standard NDoH 6-question symptom check should be administered – since PCR is only positive for a short period, testing of these patients should be done only when indicated, based on symptoms. Anyone who meets the symptom criteria should be tested with PCR. All PCR positive patients should have their contacts traced.
5. The rest of the approximately 2000 staff should be tested with PCR to identify every staff member who is Covid positive and infectious. Any staff member who is positive should complete 14 days quarantine. Those staff members who have been exposed to a Covid positive staff member or patient more than 7 days ago should be tested by PCR and quarantined until their results are available. They should only return to work if negative. Those staff members exposed within the last 7 days should be quarantined and tested with PCR on day 7 post-exposure. PCR negative staff members can then return to work. On staff members, both blood and swabs should preferably be collected, with bloods stored until Ab tests become available as an antibody test can identify those staff members who may have had asymptomatic Covid-19 and have recovered. Antibody positive staff could potentially play an important role in the Covid ward in future.
6. Staff should be rostered in teams in future for the duration of the Covid-19 situation. This will reduce the risk of cross-contamination and avoid a situation where large numbers of staff have to quarantine following inadvertent exposure.
7. When the hospital re-opens, it should have demarcated red zones (for Covid patients and Covid suspects), green zones for non-Covid patients (eg. for motor vehicle accidents, etc) and yellow zones which may have both Covid and non-Covid patients.
8. The Hospital's Infection Control team needs to enhance current infection protocols and enforcement before the hospital opens again.
9. These steps should be part of an overall plan by hospital management to remedy the current situation and prevent a recurrence.

### **Findings of the outbreak investigation that are the basis for the recommendations:**

This is a preliminary report of an outbreak of COVID-19 at Netcare St. Augustine's Hospital. A chain of transmission seems most plausibly to have begun on 9 March when a 38 year old male recently returned from the United Kingdom attended the Emergency Department with fever and respiratory symptoms. He tested positive for SARS-CoV-2 on rt-PCR from swabs collected on 9 March. Since then up to 5 April, there have then been 45 confirmed cases associated with the hospital – including 16 patients and 29 staff members. Figure 1 shows

the basic preliminary epidemiological curve for the outbreak, based on the date swabs were collected.

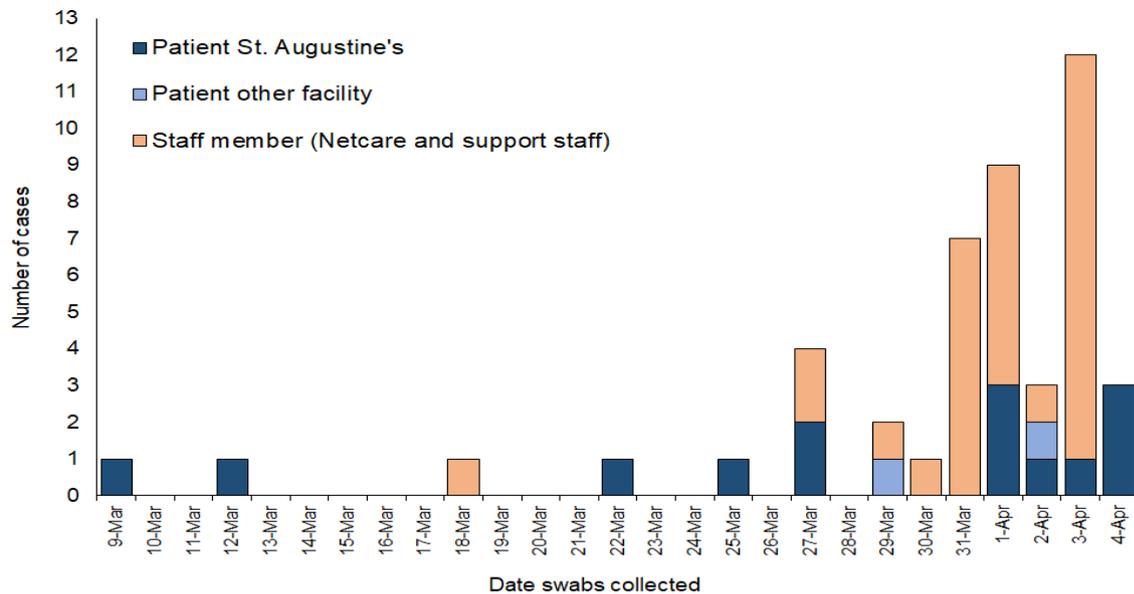


Figure 1 Epidemiological curve for outbreak of COVID-19 at St. Augustine's Hospital March-April 2020

A more detailed timeline of the initial in-patient cases is provided in Figure 2. In summary, this demonstrates that an 81-year old female may have been exposed in the emergency department on 9 March and subsequently became symptomatic on 15 March while on medical ward 1. Further transmission then occurred to both staff members and other patients, on specific hospital wards. Further information is being collected about all the infected staff members to understand how many wards have been involved.

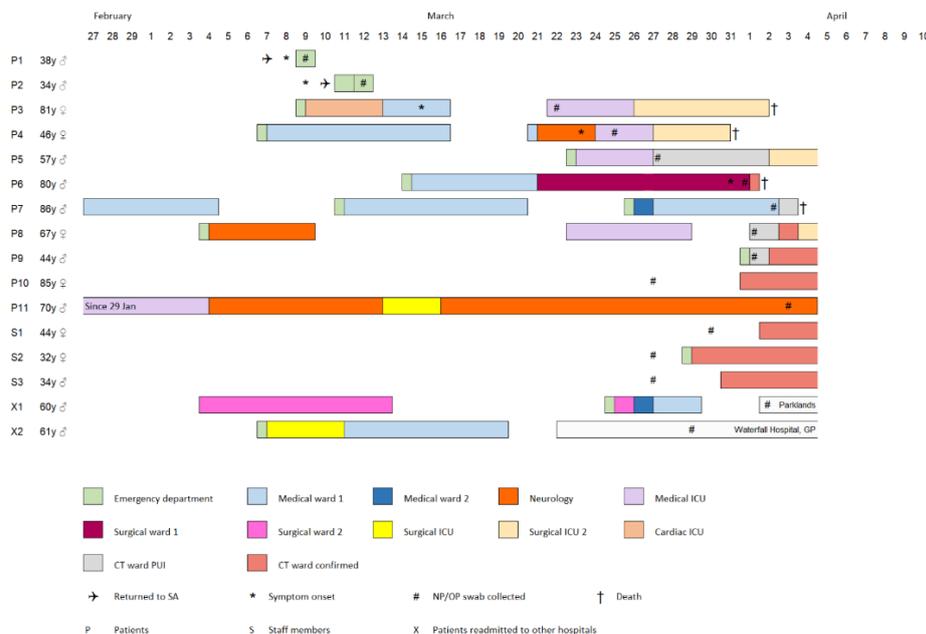


Figure 2 Detailed timeline of confirmed cases in inpatients (this does not include staff members who have not been admitted and are self-isolating at home or in a community-based facility)

Figure 3 is a simple description of the most plausible hypothesis for how transmission in the facility began and how further spread occurred.

Hypothesis 1 – propagated epidemic

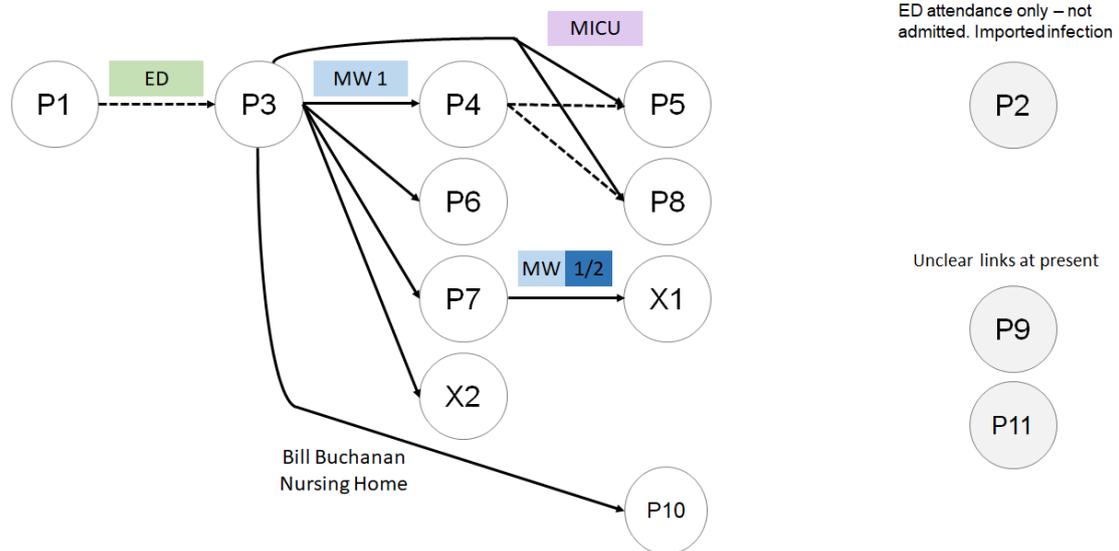


Figure 3 Chains of transmission in St. Augustine's Hospital outbreak (note this only includes inpatients at present and does not include staff cases)

**Current status of staff testing**

In total, as of 5 March, a total of 634 staff have had swabs collected – 525 were done through Netcare and 109 by the Department of Health (who organized swabbing of staff on 27 Mar, 1 Apr and 2 Apr). The exact categories of staff tested by the DoH are unclear. The breakdown of staff tested through Netcare and the number of positive tests per category are shown in Table 1 below.

Table 1 Number of staff, number tested and number of positive tests by category of staff

	No. employed	No. tested	No. positive
Nursing Staff	484	235	25
Admin and other	251	35	
Nursing Agency	281		
Cleaning and porters	190	100	1
Catering	105	1	
Security	53	30	
Laundry	21	2	1
Ampath-Lab	32		
Lancet-Lab	29		
X-ray	55	24	
Doctors	139	63	1
Doctors Staff	278	7	

Physiotherapists	36	17	
Occupational Therapists	4		
Dietitian	2	2	
Audiologist	1	1	
Radiographers	9	7	1
Technologist	7		
Perfusionist	3		
Speech and Language	1	1	
Social Worker	1		
<b>Total</b>	<b>1982</b>	<b>525</b>	<b>29</b>

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