

## **Appendix 1**

### **Descriptions of hospitals that were surveyed**

Participant screening and enrolment occurred at seven hospitals in the Cape Town Metro health district, which serves a population of approximately 3.3 million people. Three district hospitals (Mitchell's Plain Hospital, New Somerset Hospital, and Victoria Hospital Wynberg), two tertiary referral hospitals (Groote Schuur Hospital, Red Cross War Memorial Children's Hospital), and two privately funded hospitals (Christian Barnard Hospital, University of Cape Town Private Academic Hospital) were surveyed.

#### **Groote Schuur Hospital (GSH) (721 patients surveyed)**

GSH opened in 1938. The hospital has a bed capacity of 893 and serves the entirety of the Western Metropole. The hospital offers both tertiary-level services, receiving referrals from three secondary-level hospitals (Victoria Hospital Wynberg, New Somerset Hospital and Mitchell's Plain Hospital) and secondary-level services. The patient population has high rates of communicable and non-communicable disease. Attending clinical teams are consultant physician-led teams usually consisting of medical interns, medical officers, and specialist registrars in internal medicine. Subspecialist patient consultation is readily available. Full radiology and laboratory services are available 24 hours a day.

#### **Victoria Hospital Wynberg (VHW) (107 patients surveyed)**

VHW opened in 1889 has a bed capacity of 206. The hospital offers primary and secondary level services and serves the Southern Peninsula Health District, as well as Pollsmoor Prison. Attending clinical teams are consultant physician-led teams usually consisting of medical interns, medical officers, and rotating specialist registrars. VWH does not have an obstetric or neonatal service. Patients are referred for subspecialist care to GSH, e.g. renal dialysis, prolonged intensive care unit (ICU) care. Radiology services include 24 hours a day X-rays, and working hours CT and ultrasonography. All laboratory investigations are sent to the NHLS laboratory at GSH.

#### **New Somerset Hospital, Greenpoint (NSH) (200 patients surveyed)**

NSH is the oldest hospital in South Africa and was built in 1864. NSH has a bed capacity of 330. The hospital offers primary and secondary-level services and serves the Cape Town Central Health District. Attending clinical teams are consultant physician led teams usually consisting of medical interns, medical officers, and rotating specialist registrars. Patients are referred for subspecialist care to GSH, e.g. renal dialysis, but there is a fully functional five-bed ICU on site. Radiology services include 24 hours a day X-

rays, and working hours ultrasonography and CT scanning. All laboratory samples are sent to the accredited NHLS located next door to the hospital site in Greenpoint.

#### Mitchell's Plain Hospital (MPH), Mitchell's Plain (95 patients enrolled)

MPH was built in 2010 has a bed capacity of 200. The hospital offers both primary and secondary-level services. Attending clinical teams are consultant physician-led teams usually consisting of medical interns, officers, and specialist registrars in internal medicine. Patients are referred for subspecialist care to GSH, e.g. renal dialysis and ICU/high-care unit (HCU). Radiology services include 24 hours-a-day X-rays, and working hours ultrasonography and CT scanning. All laboratory investigation (barring histology) are sent to the accredited NHLS laboratory located on site.

#### Christiaan Barnard Memorial Hospital (CBMH) (129 patients surveyed)

CBMH is a privately funded hospital and was relocated in 2016. The facility has a bed capacity of 248. CBMH is situated next to the Cape Town International Conference Centre and offers outpatient and inpatient facilities with onsite radiology services. All laboratory services are outsourced. Clinical care is offered by specialists and hospitalists.

#### University of Cape Town Private Academic Hospital (UCTPAH) (45 patients surveyed)

UCTPAH is a privately funded facility adjacent to GSH that was established in 2012 as a joint venture with the University of Cape Town. UCTPAH has a bed capacity of 124. UCTPAH does not have emergency room facilities or obstetric and neonatal services, but offers an ICU/HCU, medical and surgical inpatient and outpatient facilities. Radiology services (X-ray, ultrasound and CT scan) are available 24 hours per day but MRIs are done through GSH. Clinical services are provided by specialists.

**Supplementary Table 1: Summary of all patients surveyed stratified by hospital**

		Government funded hospitals					Privately funded hospitals	
	All, n=1486	GSH, n=721	NSH, n=200	MPDH, n=95	VWH, n=107	RXCH, n=189	UCTPAH, n=45	CBH, n=129
Bed capacity	2301	893	330	200	206	300	124	248
Bed occupancy (%)	64.4	80.7	60.6	47.5	51.9	63	36.3	52
Female	785 (52.8)	373 (51.7)	123 (61.5)	64 (67.4)	53 (49.5)	90 (47.6)	26 (57.8)	55 (42.6)
Age, IQR in yrs	40 (25; 60)	47 (33; 62)	36 (26; 58)	37 (22; 58)	45 (30; 62)	1.5 (0.4; 5.7)	56 (31; 64)	46 (28; 69)
Unable to speak to patient/parent	303 (20.4)	160 (22.2)	40 (20)	14 (14.7)	18 (16.8)	15 (7.9)	7 (15.6)	32 (24.8)
BLA reported	48 (3.2)	20 (2.8)	11 (5.5)	3 (3.2)	2 (1.9)	0	2 (4.4)	9 (7)

Abbreviations: BLA: Beta-lactam allergy; CBH: Christiaan Barnard Memorial Hospital; GSH: Groote Schuur Hospital; IQR: Interquartile range; MPDH: Mitchell's Plain District Hospital ; NSH: New Somerset Hospital; UCTPAH: University of Cape Town Academic Hospital; VWH: Victoria Wynberg Hospital

**Supplementary Table 2: Summary of self reported beta-lactam antibiotic allergy divided by hospital funding base and by facility**

		Government funded hospitals				Privately funded hospitals	
	All, n=48	GSH, n=20	NSH, n=12	MPDH, n=3	VWH, n=2	UCTPAH, n=2	CBH, n=9
Female	29 (60.4)	13 (61.2)	4 (30)	3 (100)	2 (100)	2 (100)	6 (66.7)
Age	59 (38; 68)	57 (36; 68)	60 (37; 66)	70 (61; 77)	59, 78	52, 85	58 (46; 61)
PENFAST, %							
• Low risk	31 (64.6)	17 (85)	6 (50)	0	1 (50)	2 (100)	5 (55.6)
• Moderate risk	11 (22.9)	3 (15)	3 (25)	1 (33.3)	1 (50)	0	3 (33.3)
• High risk	5 (10.4)	0	3 (25)	1 (33.3)	0	0	1 (11.1)
• Unknown	1 (2)	0	0	1 (33.3)	0	0	0
Reaction >10 years	35 (72.9)	18 (90)	8 (66.7)	0	2 (100)	2 (100)	5 (55.6)
Patient can recall event	31 (64.6)	12 (60)	8 (66.7)	2 (66.7)	0	1 (50)	8 (88.9)
Family history only	6 (12.5)	2 (10)	2 (10)	0	0	1 (50)	1 (11.1)
Required treatment	30 (62.5)	15 (75)	6 (50)	2 (66.7)	1 (50)	1 (50)	5 (55.6)
Required adrenaline	10 (20.8)	2	4 (40)	1 (33.3)	1 (50)	0	2 (22.2)
Duration of admission, days (IQR)	6 (4; 15)	9 (4; 16)	4 (2;15)	9 (9;13)	4 and 39	Unknown	Unknown
Duration of admission not known	12 (24.5)	1	0	0	0	Unknown	Unknown
Number of re-admission in following 6 months	0 (0;2)	0 (0; 3)	0 (0;2)	0 (0;2)	0	Unknown	Unknown

Abbreviations: CBH: Christiaan Barnard Memorial Hospital; GSH: Groote Schuur Hospital; MPDH: Mitchell's Plain District Hospital ; NSH: New Somerset Hospital; UCTPAH: University of Cape Town Academic Hospital; VWH: Victoria Wynberg Hospital

**Supplementary Table 3: summary of antibiotic use in self reported beta-lactam antibiotic allergy patients divided funding base and by facility**

		Government funded hospitals				Privately funded hospitals	
	All, n=48	GSH, n=20	NSH, n=12	MPDH, n=3	VWH, n=2	UCTPAH, n=2	CBH, n=9
BLA on antibiotic script	25 (52.1)	8 (40)	6 (50)	0	2 (100)	2 (100)	7 (77.8)
On antibiotic	34 (71)	16 (80)	8 (66.6)	1 (33.3)	1 (50)	1 (50)	6 (66.7)
Indication for antibiotics on script (% of patients on antibiotics)	15 (44.1)	7 (43.8)	2 (25)	0	1 (100)	1 (100)	4 (66.7)
• Gynaecological / obstetric	1 (2.9)	1 (6.25)	0	0	0	0	0
• Blood stream	2 (5.9)	1 (6.25)	1 (12.5)	0	0	0	0
• Pneumonia	4 (11.8)	2 (12.5)	1 (12.5)	0	0	0	1 (16.7)
• Abdominal infection	1 (2.9)	0	0	0	1 (100)	1 (100)	0
• Urinary tract infection	1 (2.9)	0	0	0	0	0	0
• Not defined	5 (14.7)	2 (12.5)	0	0	0	0	3 (50)
Type of antibiotics							
Beta-lactam antibiotics							
• Beta-lactam / beta-lactamase inhibitor	6 (17.6)	2 (12.5)	2 (25)	0	0	0	2 (33.3)

• Aminopenicillin	5 (14.7)	3 (18.8)	1 (12.5)	0	0	0	1 (16.7)
• Carbapenam	2 (5.9)	0	0	0	1 (100)	1 (100)	0
• Cephalosporin	9 (26.5)	5 (31.3)	3 (37.5)	0	0	1 (100)	0
Non beta-lactam antibiotics							
• Aminoglycoside	3 (8.8)	2 (12.5)	0	0	0	0	1 (16.7)
• Fluroquinalone / Quinalone	2 (5.9)	1 (6.25)	0	1 (100)	0	0	0
• Glycopeptide	1 (2.9)	0	0	0	0	0	1 (16.7)
• Lincosamide	5 (14.7)	0	2 (25)	0	0	0	3 (50)
• Macrolide	2 (5.9)	0	2 (25)	0	0	0	0
• Metronidazole	1 (2.9)	1 (6.25)	0	0	0	0	0
• Unknown	5 (14.7)	5 (31.3)	0	0	1 (100)	0	0
More than one antibiotic	9 (26.5)	1 (6.25)	1 (12.5)	0	0	1 (100)	0

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**Supplementary Table 4: Summary of self reported non Beta-lactam antibiotics allergy patients**

	Self reported non BL antibiotic allergy, n=12
Female	6 (50)
Age, IQR in yrs	52 (29; 66)
Unable to speak to patient/parent	1 (8.3)
BLA reported	6 (50)
On antibiotics	11 (8.3)