

## Bug Attack! St George Fight Back: Confronting Resistance Integrated Health Care

### Introduction

St George Hospital (SGH) responded to trends of increasing prevalence of antibiotic resistant micro-organisms linked with inappropriate antibiotic use by initiating a comprehensive Antimicrobial Stewardship (AMS) program in 2008 to optimise antibiotic use and deliver high quality health care.

### Aim

To establish an integrated, effective hospital-wide AMS program to reduce broad-spectrum antibiotic prescribing by 40% and stem the rise of antimicrobial resistance with an open multi-disciplinary approach facilitating best practice.

### Method

- established an SGH AMS committee to oversee the AMS program with representation from nursing, pharmacy, medical, microbiology, clinical governance and hospital executive
- AMS implementation restricted broad spectrum antimicrobials after 48 hours of use. This encouraged the treating teams to promptly rationalise, de-escalate and switch IV to oral antibiotic therapy where appropriate
- a direct dial antibiotic hotline mobile phone was used by the Infectious Diseases Department to provide advice to all medical and surgical units on prudent antibiotic prescribing and approvals
- SGH antibiotic usage was submitted bimonthly to the National Antimicrobial Utilisation Surveillance Program (NAUSP) for national benchmarking
- established Intranet resources with links to antibiotic prescribing guidelines (Fig. 1), educational material, NAUSP reports and published AMS literature

### IMO's Survival Guide to ANTIMICROBIAL APPROVALS @ STG

**How do I gain antimicrobial approval?**  
Dial \*8155 which is a mobile phone call to the on-call ID registrar for approvals during 8am-4:30pm. Outside of these hours you should call the on-call ID consultant via switch though most approvals should be obtained within hours.

**What does the ID team need to know?**  
Really what the ID team needs to know is what any other clinician should consider before commencing an antibiotic. General rules are:

**MYTHS**  
**Myth #1: "This is all about cost-cutting"**  
Unlike Jerry McGuire, the catch-phrase with antimicrobial stewardship is not "Show me the money!" as commonly believed. Whilst cost-saving is a side-benefit, it is about primarily about reducing widespread inappropriate use of broad-spectrum antibiotics, which is in part responsible for the accelerating emergence of multi-resistant organisms (MROs). You will come to

Fig.1. IMO Guide for medical officers and the intranet

- The AMS program aimed to facilitate open communication between the doctors, nurses and pharmacists. Departmental education, audit and feedback were integral.

### Results

- NAUSP demonstrated >40% sustained reduction in antibiotic usage following AMS implementation for three years in all core antibiotic classifications, falling below the national benchmark (Fig 2).

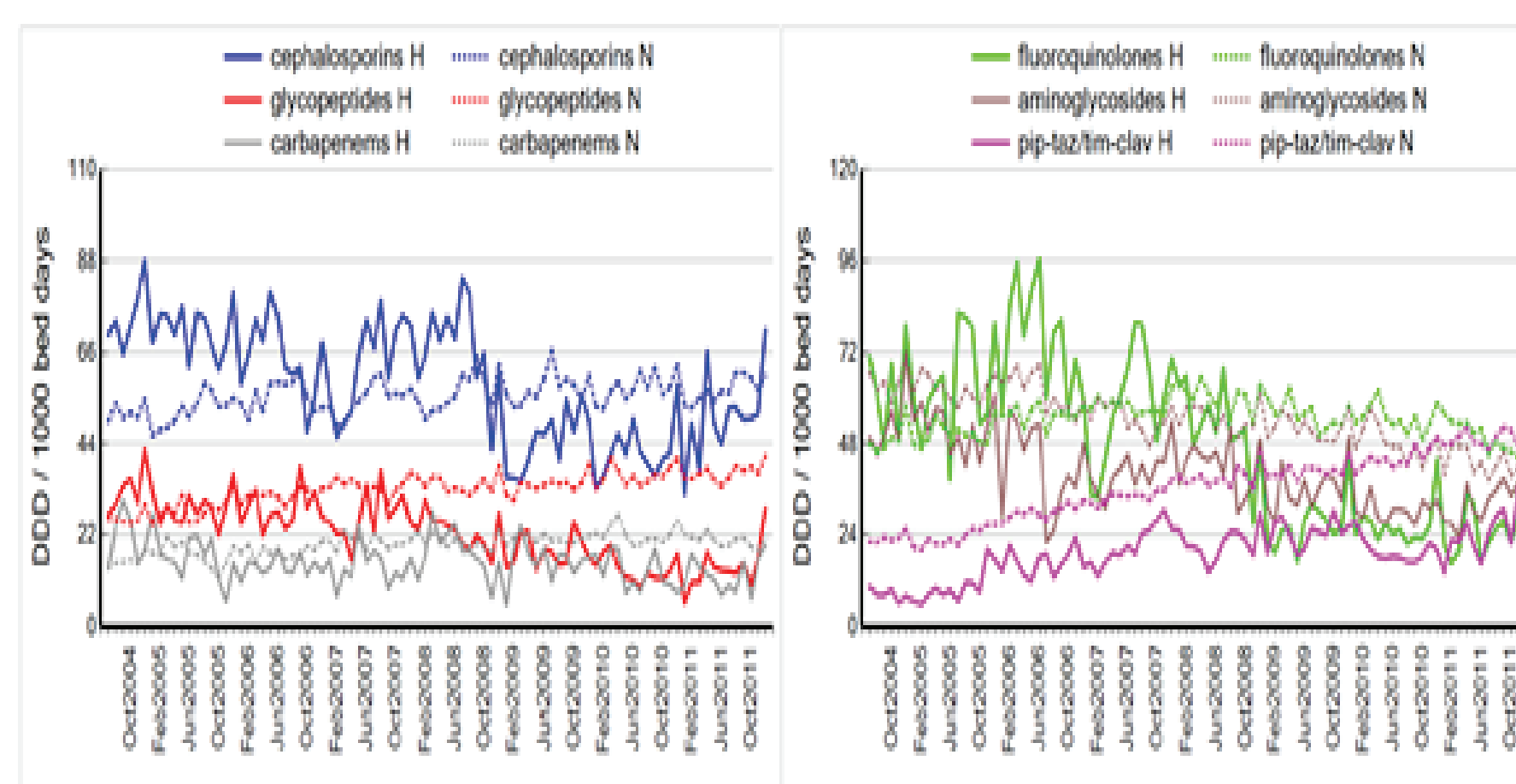


Chart1: Total hospital usage of 3rd/4th generation cephalosporins, glycopeptides and carbapenems.  
Chart2: Total hospital usage of fluoroquinolones, aminoglycosides and anti-pseudomonal penicillins plus  $\beta$ -lactamase inhibitor.

Fig.2. NAUSP report benchmarked SGH (H) against national aggregate usage (N) using defined daily doses (DDD)/1000 bed days (WHO) and demonstrates reduction of antibiotic usage across all major antibiotic classes after AMS implementation

- a 34% reduction in inappropriate antibiotic prescribing on a hospital-wide survey in 2011 with demonstrated rationalisation to narrower spectrum antibiotics (Fig.3)

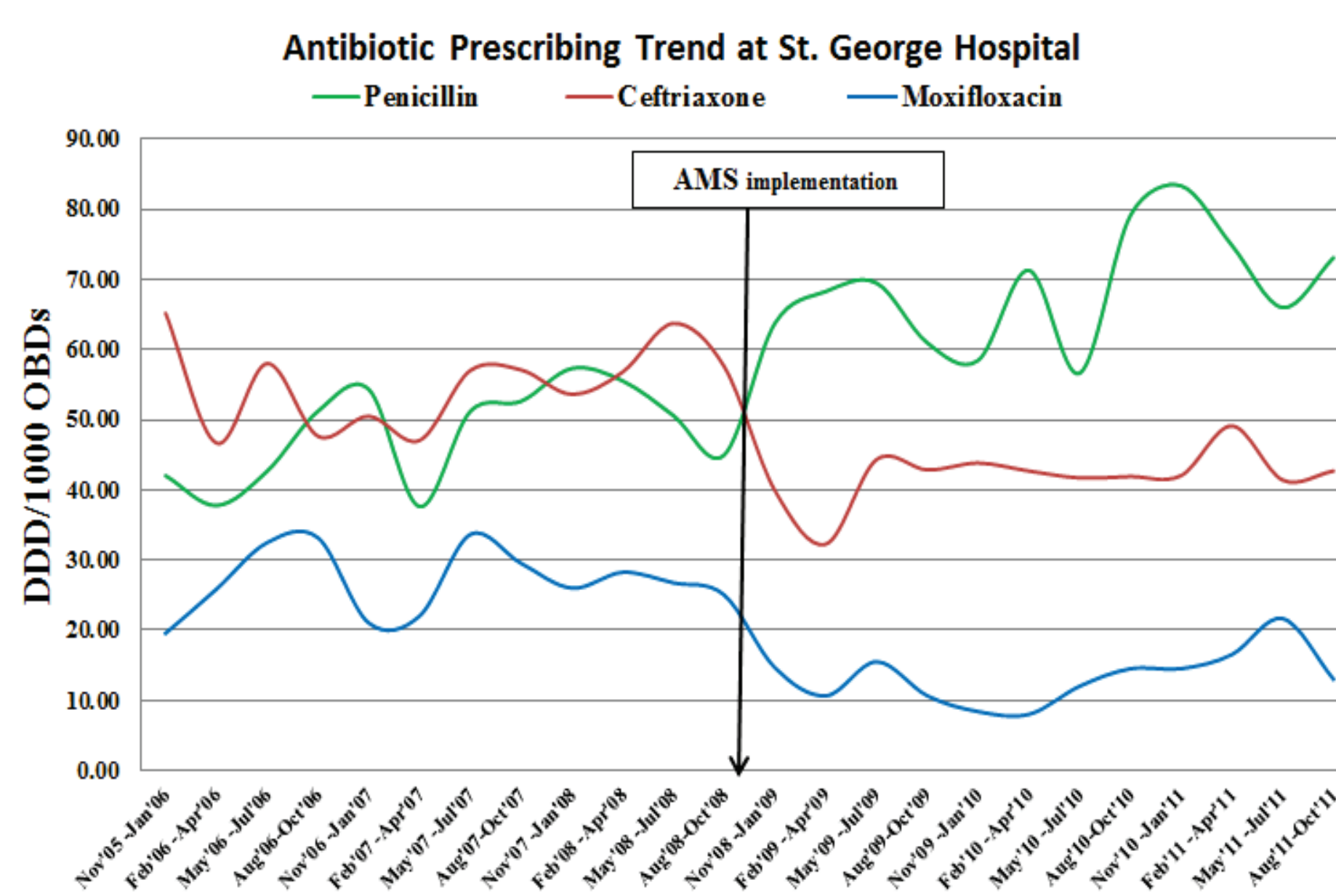


Fig.3. Antibiotic prescribing trends reflect replacement of broad-spectrum ceftriaxone, moxifloxacin with narrow spectrum penicillin.

- Ceftriaxone-resistance in *E.coli* blood isolates declined three years post-AMS implementation, compared to rising rates elsewhere
- anonymous user surveys indicated the majority of doctors, NUMs and pharmacists found the AMS program educational, important and assisted with antimicrobial prescribing

### Results

- Significant reduction in antibiotic expenditure (Fig 4).

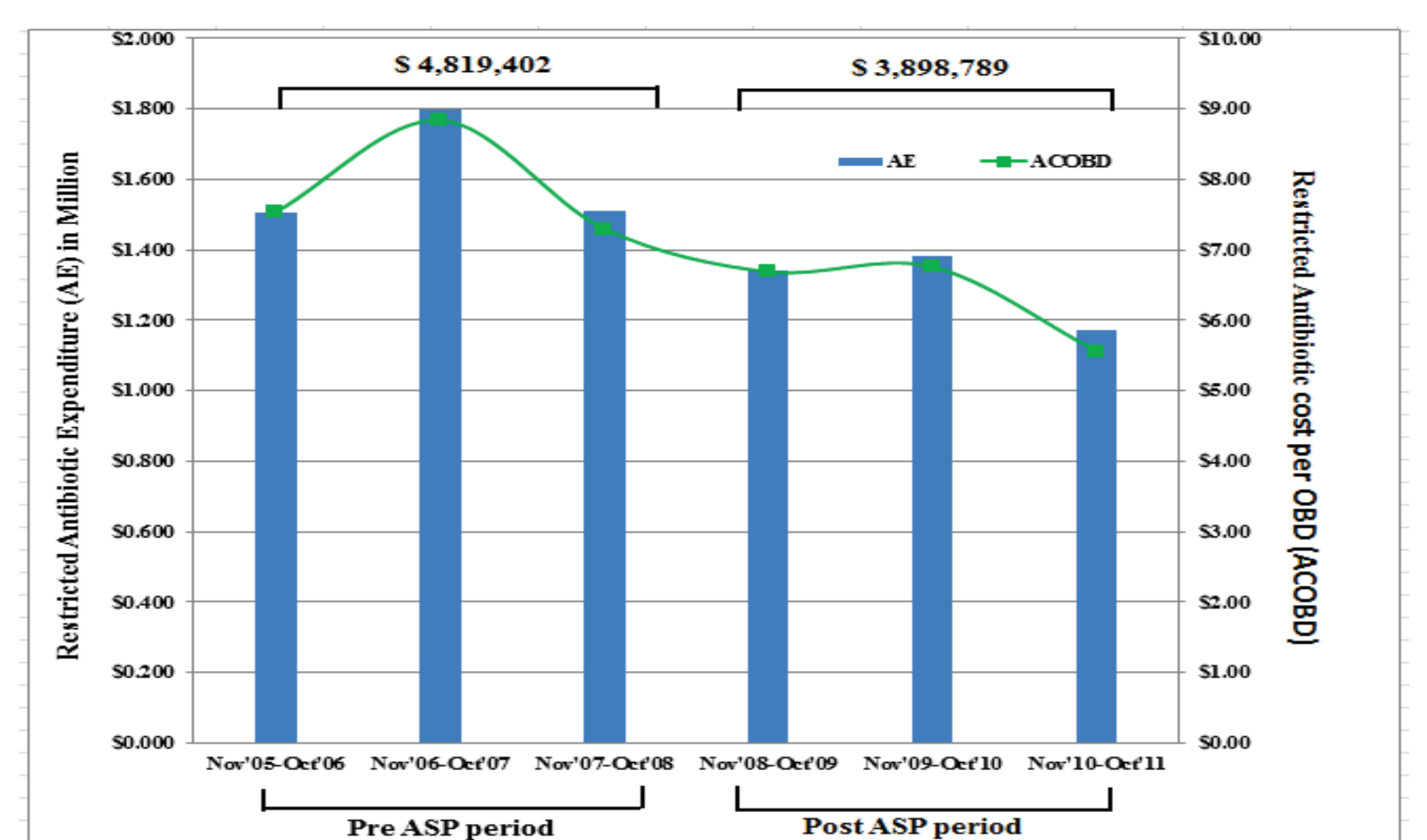


Fig.4. A 19.10% average reduction in antibiotic expenditure was demonstrated over three years. Total Savings: \$920,613

### Conclusion

Enhanced clinician knowledge and rationalisation of antibiotic prescribing resulted in dramatic reduction in antibiotic usage and decline in antibiotic resistant blood stream infections without adverse clinical impact.

Approximately \$1 million in savings in antibiotic expenditure facilitated self-sustainment.

The major local benefits of SGH AMS 2008-2011 provided the basis for wider implementation strategies of AMS across the SESLHD, ILSLHD and SCH network in 2012.

### Acknowledgements

#### SGH AMS Team

- Dr Pam Konecny, Staff Specialist, Infectious Diseases
- Suman Adhikari, AMS Pharmacist
- Dr Martin Mackertich, Director Clinical Services, SGH
- Alastair McDougall, former Director of Pharmacy
- Miriam Burns, former DUE Pharmacist
- A/Professor Peter Taylor, Acting Director SEALS, Microbiologist
- A/Professor Spiros Miyakis, Infectious Diseases Staff Specialist
- Dr. Jennifer Ho, Advanced Trainee, Infectious Diseases 2008
- Dr. Eunice Liu, Advanced Trainee, Infectious Diseases 2009
- Dr. Robert Stevens, Advanced Trainee, Infectious Diseases 2008
- Dr. Rory Hannah, Advanced Trainee, Infectious Diseases 2009
- Johnneen Tierney, Acting Director Pharmacy
- Dr. Niladri Ghosh, Advanced Trainee, Infectious Diseases 2010
- Dr. Indy Sandaradura, Advanced Trainee, Infectious Diseases 2010
- Dr. Rohan Bopage, Advanced Trainee, Infectious Diseases 2011,
- Dr. Chris Heather, Advanced Trainee, Infectious Diseases 2011
- Dr. Kylie Scott, Trainee, Advanced Trainee Infectious Diseases 2012
- Dr. Shyamala Arunasalam, Advanced Trainee,
- Dr. Chris Weatherall, Staff Specialist, Infectious Diseases
- Professor Steven Krilis, Immunology & Infectious Diseases

