In this issue, antimicrobial stewardship takes on the perspective in the form of stewardship in the General Practitioner and community setting (see article by Minyon Avent, University of Queensland). New treatments for Clostridium difficile infection have also been in the forefront of recent major Infectious Diseases and Gastroenterology meetings alike (summarized within “In the News”). As always suggestions towards improving the Newsletter are very welcome.

Sharon Chen
ASA Breakpoint Editor
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IN THE NEWS

New pharmacology treatments for Clostridium difficile infection – have we arrived?

The results in print form of the “MODIFY I and II” phase III clinical trials are awaited eagerly with the integrated results of both trials presented at various scientific meetings include ICAAC 2015 and ID weeks 2015. Both Bezlotoxumab (human IgG1 monoclonal antibodies which targets toxin B) and Actoxumab (which targets toxin A) were studied in combination and as a single agent with the primary endpoint being recurrence of C. difficile infection (CDI). Both were given as an addition to “standard of care” therapy. In brief, Bezlotoxumab,
but not Actoxumab, was identified as conferring benefit compared with placebo. It was also efficacious in key subgroups at risk of CDI.

Other drugs with promising potential include Cadazolid (currently completed phase II clinical trials) which demonstrated favourable cure rates and recurrence rates compared with vancomycin, whilst administration of nontoxigenic (NTG) C. difficile spores has been studied for prophylaxis against recurrent CDI.

Further Reading:
2. Wilcox M et al. ID week San Diego, CA, Oct 7-11 (available at ID week website)
Australia is one of the highest users of antibiotics in the developed world, with around 22 million prescriptions written every year in primary care. The defined daily dose in Australia is nearly 23/1000 population/day compared with less than 15/1000 for Denmark, the Netherlands and Sweden combined (figure 1).\(^1\) General Practitioners (GPs) have the potential to be the most effective health care professionals to address the problem of antibiotic resistance as the majority of antibiotics are prescribed in the general practice setting and antibiotics remain the most common class of medicine prescribed.\(^1\) Continued improvements in prescribing practice and a positive influence on individual and community beliefs are essential to limit the spread of antibiotic resistance.\(^2\)

Research shows that up to half of antimicrobials prescribed in Australian hospitals are discordant with guidelines or microbiological results and hence are considered inappropriate,\(^3\) however, little is known about what happens in the primary care setting. Inappropriate use of antimicrobials is thought to contribute to an increased risk of antibiotic-resistant pathogens.\(^4\) Patients with infections caused by antibiotic-resistant organisms have an increased mortality compared with those infected with antibiotic-susceptible organisms.\(^5,6\)

Unfortunately, new antimicrobials are not being developed at a pace that comes anywhere close to meeting the urgent need; therefore, the healthcare system needs to undertake efforts that save one of medicine’s most precious and long-standing resources.\(^7\) This was summarised by the World Health Day 2011 slogan ‘Combat antibiotic resistance: no action today, no cure tomorrow’. Reducing the inappropriate use of antimicrobials has been shown to improve patient outcomes and reduce adverse consequences of antibiotic use (including antibiotic resistance, toxicity and unnecessary costs).\(^8\)

\[\text{Figure 1. Comparison of Australian and European antibiotic use in the community in 2009}\]
There is a strong link between antibiotic consumption and the rate of antibiotic resistance. In Australia antibiotic resistance in common pathogens causing acute respiratory tract infections (ARIs) has increased over the past 20 years. For example, resistance of *Streptococcus pneumoniae* to macrolide antibiotics has increased from 8.7% in 1994 to 20.4% in 2007, and this trend is continuing.

Prescribers are well placed to convey the importance of informing patients that they are twice as likely to carry resistant bacteria after a course of antibiotics as someone who has not taken them. These resistant bacteria can persist for up to 12 months after antibiotic use in primary care; but with no further exposure to antibiotics they will disappear overtime. Therefore we must reduce antibiotic use in primary care in order preserve ‘the miracle of antibiotics’.

Evidence from general practice demonstrates that patient satisfaction is linked more with good communication than a prescription for an antibiotic. Several studies have demonstrated that GPs trained in communication skills prescribed antibiotics significantly less than GPs without training. The benefits of patients managed by a GP trained in enhanced communication skills can persist for at least 3 years, and do not appear to compromise repeat consultation rate, patient recovery or patient satisfaction.

![Figure 2: Distribution for percent of respiratory tract infection consultations with antibiotics prescribed for adults aged 18 – 59 years at 568 UK General Practices](image-url)
Recently surveys of Antimicrobial Stewardship (AMS) in Australian hospitals have identified areas for improvement: reviewing antimicrobial prescribing with feedback to the prescriber, auditing and training and education in antimicrobial use. In addition, there appears to be a lack of resources to support an AMS programs in some facilities. Other barriers were also identified: doctors reluctant to change their prescribing practices; high level of transient and/or seconded staff; lack of leadership to promote AMS; lack of support from senior clinicians as well as insufficient training and education in antimicrobial use provided to clinicians. However, little is known about what happens in the primary health care setting in Australia.

There are a number of interventions that have shown promise at decreasing antibiotic prescribing for ARIs in primary care. None of these strategies or interventions on their own will greatly improve the use of antibiotics (figure 3). However, used in concert, combinations are likely to enable clinicians and health care systems to implement the strategies that will reduce antimicrobial resistance in the future. In addition, professional colleges and collaborations between industry and professional bodies could be used to promote and increase the uptake of, and compliance with, antimicrobial
resistance related training and initiatives. For example, in the UK, educational and guidance material has been developed in association with professional bodies and industry alliances to aid and promote the appropriate use of antibiotics in both human and animal health. Examples include: a GP toolkit, Treat Antibiotics Responsibly, Guidance and Education Tool (TARGET), developed by the Antimicrobial Stewardship in Primary Care Collaboration and hosted on the Royal College of General Practitioners website; and a similar initiative, Stemming the Tide of Antibiotic Resistance (STAR), which provides resources for GPs to provide to patients during consultations.

Currently in Australia an exciting research project is underway to evaluate the uptake and effectiveness of a number of interventions for the management of ARIs entitled General Practitioner Antimicrobial Stewardship Programme Study (GAPS). This trial is funded by the Department of Health and being conducted by The University of Queensland, Bond University and QUT. The study aims to reduce antibiotic resistance in Australia, by reducing the antibiotic prescribing rates for ARIs. Twenty-eight urban general practices in Queensland (20 in Brisbane and 8 in the Gold Coast) are participating: 14 are intervention practices; their performance in antibiotic prescribing will be compared with 14 control practices. The rate of antimicrobial prescribing will be compared with the preceding year’s rates, in the same time period, as an internal control/comparison. Semi-structured interviews will be conducted with the practice staff from the intervention group by the investigators. Questions will be about the acceptability and feasibility of the interventions. In addition, health economic data will be used to estimate the costs of implementing the package and determine cost-effectiveness.

The interventions include:

1. a delayed prescribing protocol: which is a poster-sized commitment letter that is displayed in the GPs waiting room and/or examination room. Each GPs photograph and signature will be inserted as endorsement on the letters. The posted commitment letter, written at the eighth grade reading level and displayed in English emphasises GP commitment to guidelines, i.e. Therapeutic Guidelines: Antibiotic, for appropriate antibiotic prescribing and explains why antibiotics are not appropriate in many cases.

2. Patient information leaflet: which consists of an information leaflet that will provide more information to the patient about the poster-sized commitment letter in the GPs waiting room and/or examination room.

3. Delayed antibiotic prescribing: the GP can choose to provide the patient with a delayed antibiotic prescription with advice to the patient to only have the prescription filled at a pharmacy after a few days if symptoms are not starting to settle or become more severe. A sticker will be applied to the prescription labelling it as a delayed prescription.
4. Patient Decision Aids: which is a brief summary of evidence for the management of a number of ARI conditions. The decision aids have been developed to assist the patient to make an appropriate decision about their condition in conjunction with the GP.

5. Online communication training package: which is offered in combination with background information on the problem of antimicrobial resistance in primary care and the effectiveness of antibiotics for most commonly presenting ARIs

6. Point of care test C-reactive protein (CRP): which is performed on a finger prick blood sample and the result is available during patient consultation and can, therefore, guide antibiotic use.

7. Infection Control strategies. there are very few data about effective Infection control strategies in the GP setting. Surveillance anterior nasal and throat swabs will be taken from General Practice staff and patients to define rates of transmission in staff and community members attending the GP practice for consultation with non-infectious complaints. This will help define what ICP protocols need to be implemented in GP settings.

More information about the project can be obtained from the website http://gaps.uq.edu.au/

References


2 Antibiotic resistance: a problem for everyone. NPS news 77 2012


8 MacDougall C, Polk RE. Antimicrobial stewardship programs in health care systems. *Clinical microbiology reviews*. 2005; **18**: 638-56.


On behalf of the Australian Society for Antimicrobials I would like to invite you to the Society’s 17th Annual Scientific Meeting “Antimicrobials 2016” to be held at the Melbourne Convention Exhibition Centre, Melbourne, on Thursday 25th - Saturday 27th February 2016.

I am pleased to announce Robin Patel, Mayo Clinic, USA; Neil Woodford, Imperial College London, UK; and Chris Baggoley (Chief Medical Officer) and Mark Schipp (Chief Veterinary Officer) will be participating at the meeting. Robin will be presenting the plenary “Biofilm Associated Implant Infections”, and Neil will be presenting “Gram Negative Susceptibility/Resistance Epidemiology”. Chris and Mark will be providing an update on the “Australian Response to the Antimicrobial Resistance Crisis” with particular reference to the recently released “The Australian National Antimicrobial Resistance Strategy” (www.health.gov.au/amr).

The 2016 Howard Florey Oration will be delivered by Lyn Gilbert from the Institute of Clinical Pathology and Medical Research, New South Wales. Lyn will be presenting the talk “Reflections on 50 Years of Antimicrobial Resistance – Will Science and Technology or Social Science win the Next 50 Years?”

The programme’s symposia cover many different aspects on antimicrobials and sessions include “One Health”, “Resistant Epidemics - KPCs”, “ICU Related Infections: Does one Size Fit All?”, “Infective Endocarditis” and “Mycobacterium tuberculosis”. In addition we have two pharmacy symposia on Saturday afternoon titled “Monitoring Outcomes of Antimicrobial Therapy” and “Using Antimicrobials Better”. The scientific symposia it titled “Whole Genome Sequencing: Embracing New Technologies”. Six proffered papers and two poster sessions are also planned for the meeting.

To promote discussion and interaction between delegates and the invited speakers the meeting’s registration includes lunches, morning and afternoon teas and admission to the Howard Florey Reception and the Industry Reception. I am confident that you will find the meeting’s programme both scientifically stimulating and informative and we look forward to meeting you in “Melbourne.

The meeting’s website, Antimicrobials2016.com, will be available soon

IMPORTANT DATES

- Abstract Submission Deadline Friday 11th December 2015
- Abstract Notification Friday 18th December 2015
- Early Bird Registration Friday 8th January 2016

Kind regards

Thomas Gottlieb
President ASA
## Proposed Program

### Thursday 25 February

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<td>1045 – 1245</td>
<td>Symposium 1&lt;br&gt;One Health&lt;br&gt;Salmonella Zoonosis: Epidemiology and Source Tracking&lt;br&gt;Nigel French, Massey University, New Zealand&lt;br&gt;&lt;br&gt;E. coli ST131&lt;br&gt; Darren Trott, Adelaide University, South Australia&lt;br&gt;&lt;br&gt;Antimicrobial Resistance Surveillance: A Veterinary and Agriculture Perspective&lt;br&gt;David Jordan, Department of Primary Industries, New South Wales&lt;br&gt;&lt;br&gt;Antimicrobial Stewardship: A Veterinary and Agriculture Perspective&lt;br&gt;Glenn Browning, Melbourne University, Victoria</td>
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<tr>
<td>1245 – 1415</td>
<td>Proffered Paper Sessions 1 - 3&lt;br&gt;(Three concurrent sessions)</td>
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<td>Proffered Paper Sessions 4 - 6&lt;br&gt;(Three concurrent sessions)</td>
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<td>Symposium 4&lt;br&gt;Resistant Endocarditis&lt;br&gt;Neel Woodford, Imperial College London, United Kingdom</td>
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<td>Plenary 2&lt;br&gt;Gram Negative Susceptibility/Resistance Epidemiology&lt;br&gt;Neil Woodford, Imperial College London, United Kingdom</td>
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<td>1030 – 1200</td>
<td>Symposium 3&lt;br&gt;ICU Related Infections: Does one Size fit all?&lt;br&gt;Sepsis Pathway: Have we got it Right and Implications for Antibiotic Use?&lt;br&gt;Simon Finter, The George Institute for Global Health, New South Wales&lt;br&gt;&lt;br&gt;What is the Role of MRO Screening in the 2016 ICU?&lt;br&gt;Ailen Cheng, Alfred Hospital, Victoria&lt;br&gt;&lt;br&gt;Topical Antiseptics in the ICU: Are we Hexed - What is the Role for Antiseptic and Disinfectant Use?&lt;br&gt;Caroline Marshall, Royal Melbourne Hospital, Victoria</td>
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<tr>
<td>1245 – 1415</td>
<td>Proffered Paper Sessions 4 - 6&lt;br&gt;(Three concurrent sessions)</td>
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<td>1445 – 1500</td>
<td>Proffered Paper Sessions 7 - 9&lt;br&gt;(Three concurrent sessions)</td>
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<td>1545 – 1715</td>
<td>Symposium 4&lt;br&gt;Direct Acting Antivirals&lt;br&gt;Changing Paradigm of Use of Hepatitis C: The Role of the Laboratory&lt;br&gt;Sue Benson, PathWest Laboratory Medicine-WA, Western Australia&lt;br&gt;&lt;br&gt;A Coordinated National Response&lt;br&gt;Grant Hill-Cawthorne, University of Sydney, New South Wales&lt;br&gt;&lt;br&gt;WGS for Tracking Mtb Transmission&lt;br&gt;Josef Hill-Cawthorne, University of Sydney, New South Wales&lt;br&gt;&lt;br&gt;Update on Mtb Treatment&lt;br&gt;Ivan Bastian, SA Pathology, South Australia&lt;br&gt;&lt;br&gt;Susceptibility Testing: Beyond the Dark Ages&lt;br&gt;John Turnidge, Australian Commission on Safety and Quality in Health Care, New South Wales&lt;br&gt;&lt;br&gt;Rapid Diagnostics: Practical Application of Resistance Gene Testing&lt;br&gt;Chris Coult, Pathology Queensland, Queensland</td>
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<tr>
<td>0900 – 1000</td>
<td>Plenary 3&lt;br&gt;Biofilm Associated Implant Infections&lt;br&gt;Robin Patel, Mayo Clinic, USA</td>
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<tr>
<td>1200 – 1330</td>
<td>Symposium 5&lt;br&gt;Antimicrobial Resistance Crisis&lt;br&gt;Neil Woodford, Imperial College London, United Kingdom&lt;br&gt;Biological, bacterial, and antimicrobial technologies&lt;br&gt;Ben Howden, Melbourne University, Victoria&lt;br&gt;Antimicrobial Stewardship&lt;br&gt;Using Antimicrobials Better&lt;br&gt;Pharmacy Symposium II&lt;br&gt;Mike Richards, The Royal Melbourne Hospital, Victoria&lt;br&gt;Direct Acting Antivirals&lt;br&gt;Changing Paradigm of Use of Hepatitis C: The Role of the Laboratory&lt;br&gt;Sue Benson, PathWest Laboratory Medicine-WA, Western Australia&lt;br&gt;&lt;br&gt;Mycobacterium tuberculosis&lt;br&gt;Current and Future WGS Platforms for the Diagnostic Laboratory&lt;br&gt;Robin Patel, Mayo Clinic, USA&lt;br&gt;&lt;br&gt;Bioinformatic Tools for the Diagnostic Laboratory&lt;br&gt;Torsten Seemann, MDU, Doherty Institute, Victoria</td>
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<td>1315 – 1445</td>
<td>Scientific Symposium I&lt;br&gt;WGS: Embracing New Technologies&lt;br&gt;Current and Future WGS Platforms for the Diagnostic Laboratory&lt;br&gt;Robin Patel, Mayo Clinic, USA&lt;br&gt;&lt;br&gt;Bioinformatic Tools for the Diagnostic Laboratory&lt;br&gt;Torsten Seemann, MDU, Doherty Institute, Victoria&lt;br&gt;&lt;br&gt;WGS for Tracking Mtb Transmission&lt;br&gt;Josef Hill-Cawthorne, University of Sydney, New South Wales&lt;br&gt;&lt;br&gt;Update on Mtb Treatment&lt;br&gt;Ivan Bastian, SA Pathology, South Australia&lt;br&gt;&lt;br&gt;Susceptibility Testing: Beyond the Dark Ages&lt;br&gt;John Turnidge, Australian Commission on Safety and Quality in Health Care, New South Wales&lt;br&gt;&lt;br&gt;Rapid Diagnostics: Practical Application of Resistance Gene Testing&lt;br&gt;Chris Coult, Pathology Queensland, Queensland</td>
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<td>1500 – 1630</td>
<td>Scientific Symposium II&lt;br&gt;Antimicrobial Resistance Crisis&lt;br&gt;Neil Woodford, Imperial College London, United Kingdom&lt;br&gt;&lt;br&gt;Phenotype from Genotype&lt;br&gt;Neel Woodford, Imperial College London, United Kingdom&lt;br&gt;&lt;br&gt;Using Genomics to Understand Resistance&lt;br&gt;Ben Howden, MDU, Doherty Institute, Victoria</td>
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<tr>
<td>1800 – 1845</td>
<td>Symposium 2&lt;br&gt;Resistant Epidemics - KPCs&lt;br&gt;Killer KPCs Worldwide&lt;br&gt;Neil Woodford, Imperial College London, United Kingdom&lt;br&gt;&lt;br&gt;Victorian KPC Experience&lt;br&gt;Joseph Torresi, Melbourne University, Victoria&lt;br&gt;&lt;br&gt;A Coordinated National Response&lt;br&gt;Mike Richards, The Royal Melbourne Hospital, Victoria</td>
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<td>1845 – 2015</td>
<td>Howard Florey Reception&lt;br&gt;Reflections on 50 Years of Antimicrobial Resistance – Will Science and Technology or Social Science win the next 50 Years?&lt;br&gt;Gvechdy Gilb, Institute of Clinical Pathology and Medical Research, New South Wales</td>
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2016 - 2017 MEETING CALENDAR

### 2016

**ESCMID postgraduate course: diagnosis and management of Drug-resistant TB**  
18-19 January, Cape Town, RSA  
Website: [www.escmid.org](http://www.escmid.org)

**ASA Annual Meeting**  
25-27 February, Melbourne  
Website: [www.asainc.net.au](http://www.asainc.net.au)

**Pathology Update**  
26-28 February, Melbourne  
Website: [www.rcpa.edu.au](http://www.rcpa.edu.au)

**17th International Congress of Infectious Diseases**  
2-5 March, Hyderabad, India  
Website: [www.isid.org](http://www.isid.org)

**11th International Meeting on Microbial epidemiological markers (postgraduate course)**  
9-12 March, Estoril, Portugal  
Website: [www.escmid.org](http://www.escmid.org)

**British Society for Microbiology Annual Meeting**  
21-24 March, Liverpool, UK  
Website: [www.microbiologysociety.org](http://www.microbiologysociety.org)

**Population modeling and dose optimization with Pmetrics and BestDose: antimicrobial approaches**  
13-16 April, Lyons, France  
Website: [www.escmid.org](http://www.escmid.org)

**ASID**  
20-23 April, Launceston, Tasmania  
Website: [www.asid.net.au](http://www.asid.net.au)

**26th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID 2015)**  
9-12 April 2016, Amsterdam, The Netherlands  
Website: [http://escmid.org/dates_events/](http://escmid.org/dates_events/)

**American Transplant Congress (ATS congress)**  
11-15 June, Boston, MA  
Website: [https://www.myast.org](https://www.myast.org)

**New * ASM Microbe 2016 (Inaugural combined ASM general meeting with ICAAC)**  
16-20 June 2016, Boston, MA  
Website: [www.asm.org/microbe2016](http://www.asm.org/microbe2016)

**Virulence and Resistance in Staphylococcus aureus: 2016 State of the Art, ESCMID Postgraduate Education Course**  
28 June – 1 July, Lyons, France  
Website: [www.escmid.org](http://www.escmid.org)

**ASM conference on streptococcal genetics**  
July 31-August 3 2016, Washington DC  
Website: [www.asm.org](http://www.asm.org)

**21st International AIDS Conference**  
17-20 July, Durban, SA  
Website: [www.aids2016.org/](http://www.aids2016.org/)

**ASM conference on streptococcal genetics**  
July 31-August 3 2016, Washington DC  
Website: [www.asm.org](http://www.asm.org)

**10th International Transplant Infectious Diseases Conference**  
Aug 17-19, Hong Kong, China  
Website: [www.tts.org/](http://www.tts.org/)

**IMED 2016: International Meeting on Emerging Diseases and Surveillance**  
4-7 November, Vienna, Austria  
Website: [http://imed.isid.org](http://imed.isid.org)

**16th Asia Pacific Conference on Clinical Microbiology and Infection (APCCMI)**  
30 Nov-3 Dec, Melbourne, Australia  
Website: [http://www.asainc.net.au](http://www.asainc.net.au)

### 2017

**ASA Annual Meeting, in conjunction with the StaphPath Meeting**  
23-25 February, TBD  
Website: [www.asainc.net.au](http://www.asainc.net.au)

**27th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID 2017)**  
22-25 April 2017, Vienna, Austria  
Website: [http://escmid.org/dates_events](http://escmid.org/dates_events/)

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In 2016, the ASM general meeting and ICAAC will be co-located in Boston, June 2016.