



# Newsline

**HPS** Pharmacies

*GEO Care Reconfirm  
Their Confidence in  
HPS' Correctional Pharmacy Services*

*Plus:*

Forensicare Renews Service Contract  
with HPS Pharmacies, and  
HPS' Annual Gala Evening and Awards Night



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### Managing Editor

Steve Yeo

### Editor

Briar Buttfield

### Cover Image

(Left to right) Steve Yeo, Chief Operating Officer at HPS Pharmacies, with John Hoogeveen, General Manager – Healthcare at GEO Care

### Contributors

Kelly Ho, Clinical Pharmacist, HPS – Calvary North Adelaide, Calvary North Adelaide Hospital, South Australia

Fei Lim, Locum Pharmacist, HPS – Alexander Avenue, South Australia

Yuan Jun Liu, Locum Pharmacist, HPS – Melbourne IVF, Victoria

Blessed Ncube, Clinical Pharmacist, HPS – Modbury, Modbury Public Hospital, South Australia

Vassiliki Poupoulas, Pharmacist In-Charge, HPS – Flinders, Flinders Private Hospital, South Australia

Anne Reeves, Clinical Pharmacist, HPS – Alexander Avenue, South Australia

Daniel Scandrett-Smith, Clinical Pharmacist, HPS – Ashford, Ashford Hospital, South Australia

Rhona Selkirk, Clinical Pharmacist, HPS – Toowoomba, St Vincent's Hospital Toowoomba, Queensland

Wen Li Wong, Dispensary Pharmacist, HPS – John Fawkner, John Fawkner Private Hospital, Victoria

### Peer Reviewer

Dominic Coppola, Partner/Regional Operations Manager, SA/WA/NT, HPS – Corporate Office, South Australia

Megan Farnsworth, Partner/Regional Operations Manager, QLD/NSW, HPS – QLD State Office, Queensland

Janene Garde, Partner/Clinical Publicist, HPS – VIC State Office, Victoria

Daniel Scandrett-Smith, Clinical Pharmacist, HPS – Ashford, Ashford Hospital, South Australia

### Advertising

Catherine Riedel t (08) 8177 8206

### Marketing

Briar Buttfield t (08) 8177 8219  
e [briar.buttfield@hpspharmacies.com.au](mailto:briar.buttfield@hpspharmacies.com.au)

Jessica Matthews t (08) 8177 8245  
e [jessica.matthews@hpspharmacies.com.au](mailto:jessica.matthews@hpspharmacies.com.au)

Catherine Riedel t (08) 8177 8206  
e [catherine.riedel@hpspharmacies.com.au](mailto:catherine.riedel@hpspharmacies.com.au)

Danna-Lee Stoic t (08) 8177 8207  
e [danna.stoic@hpspharmacies.com.au](mailto:danna.stoic@hpspharmacies.com.au)

### Subscriptions

HPS Pharmacies – Corporate Office,  
29 Alexander Ave, Ashford SA 5035  
t (08) 8177 8219 f (08) 8375 3550  
e [briar.buttfield@hpspharmacies.com.au](mailto:briar.buttfield@hpspharmacies.com.au)

### HPS Pharmacies Partners

Kirsten Boyce, Agnes Chung, Dominic Coppola, Megan Farnsworth, Janene Garde, Samantha Greaves, Tin Huynh, James Ischia, Paula Kwan, Puneet (Sunny) Rewal, Sarah Thurlow, Tony Wyatt

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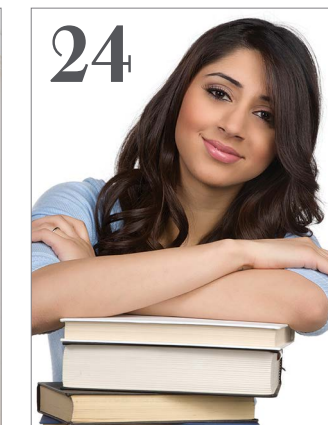
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## Message from Tony Wyatt CEO

With the ringing in of the New Year, we celebrate the close of another successful year for HPS Pharmacies and look towards 2013 and the exciting business developments it brings. In 2012, HPS' charter for growth was realised with the signing, or re-signing, of a number of significant Pharmacy Service Agreements, including Healthscope, Calvary, and Monash IVF Queensland, as well as a number of exciting developments to be communicated early this year.

I am elated to announce the first of these exciting developments with the successful re-signing of an agreement with GEO Care and the forming of a new partnership with Forensicare to deliver pharmacy services to correctional centres in Victoria. This continuing partnership signifies GEO Care's deep confidence in the services delivered by HPS Pharmacies and further strengthens HPS' presence in the Victorian market with an additional three facilities being awarded under the agreement. To read more, please turn to page 6-9.

Moreover, HPS Pharmacies has recently expanded its corrections operations following the successful partnering with Northern Territory Department of Health to trial the delivery of services to correctional centres in Alice Springs. This is an exciting development for HPS Pharmacies as we further strengthen our national footprint within the corrections market.

To celebrate HPS Pharmacies' successes of the past 12 months and in recognition of our company's key performers, HPS Pharmacies' annual Awards Night was held in December. The picturesque Stamford Grand Adelaide provided the perfect backdrop for the awards presentation, before a casino inspired Gala Evening was revealed. To read more about each award, the nominees, and winners, please turn to page 10.

Reflecting on the past 12 months, I am truly inspired by what the year ahead will bring to HPS Pharmacies and our wonderfully dedicated staff and valued clients. I look forward to continuing our journey together during 2013 as we strengthen our position as the nation's leading pharmacy service provider.

**Tony Wyatt**  
*Partner / Chief Executive Officer*



## Message from Steve Yeo COO

Looking towards the exciting year ahead, 2013 will see a number of new sites open across the nation as HPS Pharmacies deploys significant growth on the back of last year's solid Business Development performance.

To ensure this strong momentum continues, HPS Pharmacies' second Management Group Conference (MGC) for 2012 was held in Adelaide in December. This again proved to be a highly successful and productive conference, providing attendees with the opportunity to pursue individual learning pathways before coming together for in-depth discussions on key topics affecting our clients and the industry. The MGC was held in conjunction with the company's Senior Managers Conference, enabling HPS' Executive team and Senior Managers to discuss our strategic corporate plan for the year ahead.

The beginning of a new year also signifies exciting developments to the HPS Pharmacies brand with the unveiling of our new-look corporate logo. This contemporary design replaces the traditional mortar and pestle and will be introduced throughout the business' marketing collateral and site signage throughout 2013. In keeping with this, HPS' marketing team are proud to reveal a refreshed Newsline design, which I hope you enjoy.

Further to HPS' announcement in November regarding the launch of its new corporate website, I am pleased to communicate the completed development of phase 2, namely HPS Pharmacies' Knowledge Centre. This comprehensive online resource delivers healthcare professionals a frequently updated, easy to navigate, and easily accessible wealth of knowledge, including informative clinical articles, timely advice from drug manufacturers regarding critical changes to medication access, up-to-date information on new medicines, important drug-related information, and much more. To access HPS' Knowledge Centre, visit [www.hpspharmacies.com.au](http://www.hpspharmacies.com.au).

HPS Pharmacies' success in 2012 has placed us in an enviable position to further strengthen our position as the nation's leading pharmacy service provider. This is truly an exciting period for HPS Pharmacies and I look forward to sharing with you future developments as they unfold throughout the year.

**Steve Yeo**  
*Chief Operating Officer*





This page: (left to right) Steve Yeo, Chief Operating Officer, and Brooke Kenny, General Manager, Corrections and Health Facilities at HPS Pharmacies, with John Hoogeveen, General Manager – Healthcare at GEO Care.

Cover page (left to right): Steve Yeo, Chief Operating Officer at HPS Pharmacies, with John Hoogeveen, General Manager – Healthcare at GEO Care.

## GEO Care Reconfirm Their Confidence in HPS' Correctional Pharmacy Services

It is with great pleasure and excitement that HPS Pharmacies announces its success in securing the tender for the ongoing provision of pharmacy services in Victorian public prisons in which GEO Care provides primary health services.

Furthermore, as part of the joint tender process between GEO Care and Forensicare, HPS Pharmacies will continue to deliver pharmacy services to two of Forensicare's mental health facilities co-located with GEO Care – the Marmak Program at Dame Phyllis Frost Centre and the Acute Assessment Unit at Melbourne Assessment Prison. To read more about this exciting development, please turn to page 8.

Steve Yeo, HPS Pharmacies' Chief Operating Officer, says "HPS Pharmacies is proud to again be GEO Care's pharmacy service provider of choice. Our business has delivered services to GEO Care for more than a decade and the continuation of this partnership is a real testament to HPS Pharmacies' enduring quality services. We are pleased to provide the specialty services that GEO Care needs in support of their health charter and are excited to see this legacy continue for an extended period."

Established in 1997, (originally as Pacific Shores Healthcare) GEO Care provides high-quality, innovative and effective primary healthcare services to each of the 12 correctional facilities they service in Victoria.

Since securing the contract in December 2012, HPS Pharmacies has continued to work hard towards successfully managing the complex transition to delivering GEO Care with state-based services,

ensuring minimal disruptions to ongoing operations, which is of utmost importance to GEO Care's General Manager – Healthcare, John Hoogeveen.

John says, "we have a long-term relationship with HPS Pharmacies and are looking forward to moving [our partnership] to the next level following their successful tender outcome.

"We know HPS has a strong background in correctional health and consequently offers experience in an area with unique challenges.

"We are confident HPS' experience will provide solutions to the challenges associated with delivery of healthcare in complex environments."

Brooke Kenny, HPS Pharmacies' General Manager, Corrections and Health Facilities, says HPS Pharmacies has invested considerably in new technologies, aimed at delivering improved client services and significant cost savings to the State, whilst maintaining the highest quality services available in the market place.

This investment includes the installation of a new state-of-the-art automated packaging machine and medication detection machine at HPS Pharmacies' dedicated correctional pharmacy in Victoria, to facilitate the introduction of mediSACHe across the correctional setting.

mediSACHe, HPS Pharmacies' innovative multi-dose administration packaging system, has delivered significant resource efficiencies for HPS and will lead to significant financial reductions for GEO Care and ultimately to the State.

"HPS have proposed a number of innovative changes to medication management across the system, including the introduction of mediSACHe, and improved technological tools and business processes", John says.

John is keen for GEO Care to capitalise on HPS Pharmacies' correctional and broader industry experience in ensuring the business moves towards best practice in medication management.

Operationally, HPS Pharmacies will deliver services to an additional three remotely located prisons – Dhurringile Prison, Beechworth Correctional Centre and Tarrengower Prison, and has tailored services to meet the needs of the individual correctional facilities.

Tony Wyatt, HPS Pharmacies' Partner and Chief Executive Officer, says "this partnership has evolved under a shared vision to provide health services with an aligned purpose and HPS Pharmacies is elated to now become GEO Care's sole provider of pharmacy services in Victoria for the coming years."

*"We are confident HPS' experience will provide solutions to the challenges associated with delivery of healthcare in complex environments."*

– John Hoogeveen, General Manager – Healthcare, GEO Care





This page: Dame Phyllis Frost Centre in Victoria, Australia. Reproduced with the permission of the Victorian Department of Justice.

## Forensicare Renews Service Contract with HPS Pharmacies

Further to the announcement on page 6, HPS Pharmacies is pleased to communicate the re-signing of its contract with the Victorian Institute of Forensic Mental Health, known as Forensicare.

HPS Pharmacies' Partner and Chief Executive Officer, Tony Wyatt, says "securing this tender delivers significant value for HPS Pharmacies as it positions itself as the pharmacy service provider of choice within the corrections market segment nationally, and additionally highlights HPS Pharmacies' strong involvement with delivering services to government facilities."

Forensicare was established as a statutory agency in 1997 to provide adult forensic mental health services in Victoria. Forensic mental health is a specialist area within the mental health system, focussing on providing clinical services, which includes the effective assessment, treatment and management of forensic patients and clients, and people with a mental illness who have offended, or are at risk of offending.

In addition to their prison service, Forensicare operates a 116-bed secure hospital in the inner-Melbourne suburb of Fairfield, together with comprehensive community based programs across Victoria.

Lee Towell, Forensicare's Operations Manager – Prison Services, says "the relationship between HPS Pharmacies and Forensicare has always been very good and I feel the re-signing of this contract will further enhance our relationship. I am looking forward to working more closely with HPS to achieve an ever improving service for patients in custody."

Lee says, HPS Pharmacies has extensive experience in delivering services within a correctional setting and has a strong understanding of the complexities and idiosyncrasies of the prison environment. She feels that although HPS is a national company, it displays the values of a smaller business, underpinned by their helpful and friendly staff.

"In addition to HPS' deep understanding of the pharmaceutical needs of men and women in custody, it is useful to deal with one pharmacy service provider as prisoners are often transferred between facilities, which then allows for a more streamlined transition and could potentially reduce the risk of errors", says Lee.

With a host of specialised psychiatric pharmacists and a unique understanding of the considerations involved with psychiatric patients, HPS Pharmacies offers a tailored and responsive approach to clients, which ultimately contributes to the delivery of individualised patient care.

Furthermore, HPS Pharmacies has a wealth of experience in managing sensitive drugs, including opioid, clozapine and

methadone, and provides the largest out-patient opioid substitution program in Victoria.

HPS Pharmacies' General Manager, Corrections and Health Facilities, Brooke Kenny, says "as a result of winning this contract HPS Pharmacies are able to work in partnership with Forensicare to focus on patient care, best practice and medication management.

"HPS will continue to deliver Forensicare with the highest quality pharmacy services tailored to meet their facilities unique environment, including the provision of clinical services, technology improvements, enhanced reporting, and the introduction of specialised patient education groups to facilitate interactions between HPS pharmacists and their mental health patients."

HPS Pharmacies values its history with Forensicare and draws upon its pedigree in providing pharmacy services to prisons across Victoria to further strengthen and develop services to meet their client's dynamic needs.

Steve Yeo, HPS Pharmacies' Chief Operating Officer, says "HPS has been the pharmacy service provider to Forensicare and GEO Care for a number of years now, and is excited to embark on this new contract which offers immediate service improvements and technological innovations to be implemented as part of the service."

*HPS Pharmacies has extensive experience in delivering services within a correctional setting and has a strong understanding of the complexities and idiosyncrasies of the prison environment.*

– Lee Towell, Operations Manager – Prison Services, Forensicare





This page: HPS Pharmacies' 2012 Gala Evening and Awards Night, Horizons Cocktail Lounge, Stamford Adelaide Hotel.

Inset: (left to right) Winners of HPS' Annual National Awards – Nathan Zipf, Sarah Thurlow and Jonathan Soon (absent: Julie Ludlow, Pan Kwong and Skender Yashari).

# HPS' Annual Gala Evening and Awards Night

HPS Pharmacies celebrated the many resounding successes of 2012 with a James Bond inspired theme at their Gala Evening and Awards Night, hosted in early December, and enjoyed by over 100 staff and their partners.

The impressive event was held at the prominent Stamford Grand Adelaide Hotel, located on the foreshore at Glenelg, and presented an idealistic setting for an evening of impeccable entertainment, delicious canapés, enchanting cocktails and a celebration of several outstanding contributors from HPS Pharmacies' national teams.

Now a fixture on HPS' annual event calendar, the national awards epitomise HPS Pharmacies' core values of excellence, innovation, leadership, respect and accountability, and commemorates the achievements of individual employees and overall teams across a range of categories.

The six awards include:

- "The Dr Holsman Award for Innovation", recognising outstanding innovation at any level of the organisation;
- "Corporate Team Member of the Year", recognising that individual whose conduct and contribution had a profound impact upon the business and its employees;
- "National Pharmacy Manager of the Year", recognising the outstanding leadership of a Pharmacy Manager within a team environment;
- "National Site of the Year", recognising the leading HPS Pharmacies site for financial and team performance;

"National Pharmacist of the Year", recognising the company's most outstanding pharmacy professional for contributions to HPS, its clients, and the field of pharmacy within healthcare; and

"National Pharmacy Technician or Courier of the Year", recognising the individual whose conduct and contribution had a profound impact upon the business and its clients in the delivery and management of pharmaceuticals.

The annual national awards are an initiative, introduced within the business for the first time in 2011, to encourage the recognition of high performers and promote a culture that nurtures value and hard work.

The awards were presented at the evening's official commencement by HPS Pharmacies' Chief Executive Officer, Tony Wyatt, and Chairman of the HPS Pharmacies Board, Dr Andrew Holsman.

On the evening, Tony said "HPS Pharmacies is deeply committed to providing excellence within both the corporate and clinical setting, and these awards provide an opportunity to recognise those unique individuals that have contributed to embracing the HPS Pharmacies core values and elevating HPS to a position of excellence within the industry.

"On behalf of Dr Holsman and our Executive team I would like to congratulate the recipients of these awards in 2012. They were exceptionally well deserved, and it is a great pleasure to be able to recognise their outstanding achievements."

**National Award Winners**

Congratulations to our award winners who have been immortalised on HPS' Honour Board at HPS Pharmacies' Corporate Office:

<b>1. The Dr Holsman Award for Innovation</b> Nathan Zipf (Allamanda, Queensland)	<b>3. National Pharmacy Manager of the Year</b> Pan Kwong (Knox, Victoria)	<b>5. National Pharmacist of the Year</b> Jonathan Soon (Knox, Victoria)
<b>2. Corporate Team Member of the Year</b> Skender Yashari (Purchasing Team – Corporate Office)	<b>4. National Site of the Year</b> Knox (Victoria)	<b>6. National Pharmacy Technician or Courier of the Year</b> Julie Ludlow (Alexander Avenue, South Australia)



# From The Team



## Puneet (Sunny) Rewal Partner/Pharmacy Manager, HPS – Coburg

In the past few months, HPS – Coburg has undergone significant developments with the relocation of its Moreland Road premises to a facility to encompass its increased operational needs. The new location, also on Moreland Road, is planned to facilitate the site's impending consolidation with HPS Pharmacies' Victorian State Office, which will deliver significant benefits to HPS Pharmacies' state-based clients.

Additionally, with the successful re-signing of an exciting agreement with GEO Care, HPS Pharmacies is now the principal provider of pharmaceutical services to correctional centres in Victoria. Operationally, HPS – Coburg will deliver services to an additional three prisons – Dhurringile Prison, Beechworth Correctional Centre and Tarrengower Prison, to its existing client list.

Over the past twelve months, HPS Pharmacies has experienced significant growth in the corrections market. This growth has led to a considerable investment in automated technology to further enhance quality assurance measures. The new automated packing system will reduce the already low packing error rate to less than 0.1% through the introduction of a medication detection machine to verify the contents of each individually barcoded sachet.

I am excited by the significantly improved quality service for correctional facilities, including the provision of clinical services. Working collaboratively with our clients, we would like to create an exemplary model of a multi-disciplinary approach to patient care akin to hospital pharmacy.



## Catherine Riedel Senior Marketing Coordinator

The Marketing team have been working diligently over the last 12 months to deliver a comprehensive brand strategy to the business that is both progressive and responsive, further cementing our presence within the wider health community.

The Marketing strategy was developed after a period of intense market research and environmental analysis, in alliance with the business' charter for growth, and to provide a strengthened support to HPS Pharmacies' Business Development team.

With a focus in heightening brand value and market confidence, the strategy has included deliverance of a new corporate website, launch of the innovative Knowledge Centre, redesign of HPS Pharmacies' extensive publication suite, and will now reveal a refreshed corporate logo to be rolled out to the market in 2013.

The new brand offers a marginal augmentation to our existing market presence and 35 year pedigree, whilst enhancing the contemporary reflection of the organisation today.

In consideration of the brand, the redesign ensures the evolution remains consistent with the dynamic market environment and allows flexibility for future adaptation and development.

Underpinned by our unrivalled experience, expertise and knowledge, the strategy validates HPS Pharmacies as an industry leader in pharmacy services nationally.

We look forward to unveiling this new brand and other exciting initiatives to you throughout the course of the year.



## Zeyad Ibrahim National Oncology Manager

HPS Pharmacies has recently introduced an innovative National Oncology Manager role to its operations, in line with the business' strategic plan and charter for growth.

In this role, I am responsible for overseeing three main facets, including: the standardisation of operations, safety, and professional development.

HPS Pharmacies' oncology portfolio is rapidly growing, thus enhancing the standardisation of practices across our sites is essential to the continued deliverance of high quality, patient-focussed cancer services to clients that meets, or exceeds, national standards and guidelines.

Additionally, HPS' oncology pharmacists and pharmacy technicians regularly handle dangerous cytotoxic substances; therefore safe work practices and environments are paramount. This responsibility to provide safe conditions also extends to our client's nursing staff and cancer patients.

The field of oncology is rapidly developing, therefore staying abreast of concurrent evidences can be challenging. The ongoing education of HPS' oncology staff and clients is vital to ensure they are well equipped with the latest knowledge and skills that allow them to provide the highest quality cancer care to patients.

I am extremely excited about the future of oncology at HPS Pharmacies and look forward to developing strong relationships with many of our clients in the future.



## Brooke Kenny General Manager – Corrections & Health Facilities

The 3<sup>rd</sup> Annual Correctional Services Healthcare Summit was held in Melbourne late last year, with HPS Pharmacies proud sponsors of the day one luncheon. The annual summit provides health professionals with networking opportunities and informative presentations showcasing industry innovations aimed at improving healthcare within the correctional setting.

HPS Pharmacies has experienced significant growth in the past twelve months, with a number of exciting developments within its corrections portfolio adding to its success. Recently, HPS commenced operations in the Northern Territory following a successful tender process to trial the delivery of services to correctional centres in Alice Springs, as well as proudly partnering with GEO Care and Forensicare to service a number of Victorian correctional centres.

The business is also focused on tailoring services to more closely align with the needs of individual correctional centres. HPS Pharmacies understands each health centre has its own unique and complex set of circumstances; therefore we continue to collaborate with our clients to develop tailored and robust best practice service models.

Additionally, HPS Pharmacies has introduced innovative methadone bottles and suboxone packaging to clients and invested significantly in state-of-the-art automated technology, including medication detection machines, across a number of our dedicated correctional pharmacies, improving efficiency, reducing risk and building a strong audit trail.

# Pharmacy Business

## HPS Pharmacies Now Offers MedsCheck

Amidst the rush of the hospital stay, patients may find themselves going home without a full understanding of their new prescriptions. This confusion contributes to potentially 20% of hospital readmissions that occur within 28 days of discharge.

Providing a professional service includes ensuring that patients understand the purpose of their medicines and commit to the administration schedules involved (which can be difficult to achieve before they are fully independent), and is improved with communication and education about medication management.

Many HPS Pharmacies can now offer a free personalised consultation to patients either through the discharge process, or as an

outpatient service. The *MedsCheck* service occurs within the pharmacy, and aims to:

- Help patients learn more about their medicines including how medicines affect medical conditions;
- Identify problems patients may be experiencing with their medicines;
- Improve the effective use of medicines by patients; and
- Educate patients about how to best use and store their medicines.

The ideal candidates for *MedsCheck* are patients living at home, taking five or more medicines, have had a recent significant medical event (hospitalisation), or are demonstrating signs of confusion about their medicines and when to take them.

Patients taking 'high risk' medicines such as warfarin, amiodarone, tramadol, digoxin, and lithium would also benefit.

*Diabetes MedsChecks* are also offered for patients with Type 2 Diabetes. This review focuses on their diabetes medicines, monitoring devices and self management.

If you think your patient would benefit from a *MedsCheck* or *Diabetes MedsCheck*, please advise your visiting pharmacist, ring your local HPS pharmacy, or recommend us to your patient and their family.

### References:

1. PSA. Pharmaceutical Society of Australia. Parkville, Australia. Available from <www.psa.org.au>. Accessed 8 January 2013.
2. Rothwell M, Jukka C, Lum E, Mitchell C, Kyriakides P. *Retrospective analysis of emergency readmissions to rural and regional hospitals*. JPPR 2011; 41(4): 290–4.

## Australasian Clinical Indicator Report

The *Australasian Clinical Indicator Report* helps healthcare organisations (HCOs) reflect on their place in the ongoing improvement of our health system through analysing the raw data contributed to the Australian Council of Healthcare Standards for 2011 by 690 facilities, now evenly balanced between the public and private sectors. Of the six (out of 10) Medication Safety Indicators suited for trend analysis, two improved and two deteriorated.

The reporting of adverse drug reactions from HCOs declined from 0.17 to 0.093 per 100 separations in 2011, continuing a trend that has seen them halve since 2004. This is a concern when our ageing population

is more likely to suffer from the effects of polypharmacy, as is reflected by the TGA receiving more reports overall. Medication errors resulting in an adverse event, however, did improve from 0.051 to 0.030 per 100 bed days.

Warfarin management had some interesting variations, with more patients showing abnormal bleeding, while fewer showed high INRs. Only 23 HCOs reported on reviewing dosage after measuring a high INR, and seven reported on compliance to hospital protocol when initiating warfarin.

Three hospitals demonstrated their implementation of *antibiotic stewardship* through timely monitoring and dosage adjustment in 97.8% of their aminoglycoside antibiotic patients. Error-prone abbreviations were seen in 4.7% of medication orders in the 36 HCOs reporting this indicator.

Medications also feature in other sets of indicators, as seen in the steady improvement in initiating venous thromboembolism prophylaxis for high risk patients, antibiotic prophylaxis in caesarean sections, and a considerable decline in acquired methicillin resistant *Staphylococcus aureus* (MRSA).

Now that the *National Safety and Quality Health Service (NSQHS) Standards* have become mandatory for accreditation, these clinical indicator reports will become increasingly useful as hospitals contribute more.

### Reference:

1. Australian Council on Healthcare Standards (ACHS). *Australasian Clinical Indicator Report 2004–2011*: 13<sup>th</sup> edition. Sydney NSW; ACHS; 2012.

## Anticoagulants in Atrial Fibrillation Under Review

Atrial fibrillation (AF) affects up to 400,000 Australians and significantly increases the risk of ischaemic strokes, which are usually more severe than those from other causes. The overall cost of AF was estimated to be potentially \$1.8 billion in 2010.

Applications for extended listing of new oral anticoagulants (NOACs) on the PBS prompted the Government to commission the *Review of Anticoagulation Therapies in Atrial Fibrillation* to identify options for improving the health of these patients.

The published review makes 15 recommendations around developing and implementing:

- Inaugural national guidelines for detection and management including detailed strategies for optimising anticoagulant therapy;
- Programs to increase awareness of both AF and its management for patients and health professionals using a broad range of convenient formats;
- Standards for hospital accreditation to ensure patients commenced on warfarin are being included in programs to

improve outcomes and minimise risks;

- Further research and analysis of the risks and benefits of all available therapies; and
- Improved warfarin management through education, dietary controls of vitamin K, point-of-care INR testing, tracking, and follow-up using a new multidisciplinary approach which will benefit from shared access to e-health records.

It is important to note that the review observes that NOACs only offer benefits for the 20% of patients who are unable to take warfarin. It invests strongly in warfarin as the drug of choice in producing a 65% reduction of strokes in AF patients, despite the many recognised 'barriers' to its use. This investment by the reviewers is not because of differences in efficacy between warfarin and NOACs, but rather that the use of NOACs is seen as even more problematic at this time.

### References:

1. Sansom L. *Review of anticoagulation therapies in atrial fibrillation*. Department of Health and Ageing. October 2012.
2. PricewaterhouseCoopers. *The economic costs of atrial fibrillation in Australia*. National Stroke Foundation. June 2010.

## June Correctional Centre Improves Health

June Correctional Centre can accommodate 790 male inmates in a medium/minimum security correctional centre located 450km west of Sydney and 40km from Wagga Wagga. A client of HPS Pharmacies since 2005; it was the first privately run correctional centre in New South Wales, and the first in Australia to be designed, constructed and managed by the private sector.

June Correctional Centre deserves congratulations for being Highly Commended at the *ACHS Quality Improvement Awards* in the *Healthcare Measurement Category* for their *Healthy Inside Program*.

The program combines lifestyle choices, low-impact exercise, nutrition and education in its holistic model. It aims to improve health by turning around the poor engagement of high-risk and hard-to-reach inmates. They were involved in developing

the original, entertaining and educational program, which sees them mentor and encourage each other to sustain improvements.

June's Matthew Canny reported that of the 77% of participants who completed a three month commitment:

- 68% saw a reduction in their cholesterol;
- 97% lost an average of 3kg;
- 25% experienced a decrease in smoking rates;
- 73% are still involved in regular exercise; and
- 81% are embarking on a healthy eating regime.

With so many in the wider community choosing to take medication rather than make healthy lifestyle changes, we may learn useful strategies and motivation from the microcosm at June Correctional Centre.

### References:

1. Australian Council on Healthcare Standards. *QI Awards* 2012. Sydney NSW; ACHS 2012.



## Pharmacological Prophylaxis of Opioid Induced Constipation

**Yuan Jun Liu, Locum Pharmacist**

HPS – Melbourne IVF, Victoria

Laxative Name	Brand Name	Dosage	Notes
Docusate and Senna 50mg/8mg	Coloxyl with Senna Sennesoft	2-3 tablets once or twice daily	Works in 6-24 hours Abdominal cramps, diarrhoea, nausea, rash
Lactulose 3.4g/5mL	Actilax, Duphalac, Genlac, GenRx Lactulose, Lac-Dol, Lactocur	15-30mL once or twice on day one, then 10-25mL daily	Works in 24-72 hours Flatulence, cramps, diarrhoea, electrolyte imbalance
Macrogol 3350 and Electrolytes	Movicol	1-3 sachets daily dissolved in 125mL of water	Works in 1-4 days for constipation Fluid and electrolyte disturbance, nausea, diarrhoea, cramps, distension

Table 1. Commonly used laxatives

Opioid analgesics are commonly used to treat moderate to severe pain where use of paracetamol and/or a non-steroidal anti-inflammatory is inadequate in relieving the symptoms. Although beneficial in their actions for relief of moderate to severe pain, inherently their actions at other sites of the body can lead to side effects including nausea, vomiting, sedation and constipation. Nausea, vomiting and sedation typically improve as tolerance in the body builds over time, whereas tolerance to constipation generally occurs slowly, if at all.

Studies estimate that approximately 40% of patients using opioids for analgesia also experience opioid induced constipation (OIC). This estimate increases to over 60% for people using opioid analgesics to treat cancer related pain, mainly due to the doses used being typically higher and for longer periods. In some cases, patients may actually forgo the benefits of opioid analgesia due to the severity of the constipation, leading to sub-optimal pain management outcomes for the patient.

To maximise the potential benefit of opioid analgesia, regular prophylactic use of laxatives should be considered as an essential part of an overarching strategy for optimal pain management. In conjunction with adequate fluid intake, diet and mobility, especially in 'at risk' patients such as those with cancer or chronic pain, the elderly, and post-operatively; active management of OIC may improve pain quality and assist in better patient recovery. Economically, studies suggest that a patient with well controlled symptoms of OIC has a 50% decrease in relative cost burden compared to those with severe symptoms. Moreover, a multi-centre study recently found prophylactic laxatives in oncology patients using opioid analgesia for the first time resulted in a significant reduction in OIC.

Table 1 describes some commonly used laxatives in hospital settings, with evidence suggesting no superiority of any one over another in the management of OIC. Consideration for what to use must be taken in light of the patient's comorbidities, electrolyte status, and concurrent medications amongst others. Your HPS Pharmacies pharmacist is a reliable reference point for any further information required.

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## PBS Safety Net: How it Benefits Patients and Hospitals

**Wen Li Wong, Dispensary Pharmacist**

HPS – John Fawkner, Victoria

The Australian Government provides affordable access to medicines by subsidising the cost of a wide range of prescription medicines through the Pharmaceutical Benefits Scheme (PBS). The price an individual pays for PBS medicines will depend on their eligibility. In 2013, the general patient contribution is up to \$36.10 and the concession card holder patient contribution is \$5.90 for each PBS medicine. The PBS benefits all Australian citizens and residents as well as people from countries that have a Reciprocal Health Care Agreement with Australia. Australia currently has agreements with New Zealand, the United Kingdom, the Republic of Ireland, the Netherlands, Finland, Sweden, Norway, Malta, and Italy. The Repatriation Pharmaceutical Benefits Scheme (RPBS) gives eligible veterans, war widows/widowers, and their dependants, access to pharmaceutical benefits additional to the PBS.

Anyone eligible for the PBS and RPBS is also eligible for the PBS Safety Net scheme. The PBS Safety Net scheme is a system designed to protect individuals and families from the high total cost of needing large numbers of PBS medicines. The Safety Net threshold is reached by accumulating eligible patient contributions for PBS prescriptions supplied through community pharmacies, private hospitals and out-patient supplies from public hospitals. The patient is responsible for keeping a record of the amount spent on PBS medicines, which includes keeping track of their dependents' spending by using a Prescription Record Form (PRF) available at any pharmacy. Each time a PBS medicine is supplied, the form can be handed to the pharmacist to record the supply.

The dispensing system used at pharmacies helps patients by also keeping a record of the number of prescriptions dispensed and will prompt pharmacists to issue a Safety Net card once the patient reaches the Safety Net threshold. In 2013, the general patient Safety Net threshold is \$1,390.60 and the concessional threshold is \$354.00, which can be as few as 60 prescriptions shared between all family members in a calendar year. After achieving the Safety Net threshold, PBS medicines for general patients will be charged at the concessional rate of \$5.90 and PBS medicines will be free for concessional patients for the remainder of the calendar year. Therefore, the overall cost of medicines is reduced.

If a patient doesn't have their card on admission to hospital, the pharmacist can obtain the patient's Safety Net card number or PRF records from their local pharmacy (if they are approaching the Safety Net threshold). This is to ensure that medicines dispensed to the patient are charged at the correct rate. Furthermore, PBS medicines dispensed whilst the patient is in hospital contribute to their Safety Net threshold, enabling patients to reach their eligibility quicker. Therefore, if the patient reaches their Safety Net whilst in hospital, the pharmacist will issue a Safety Net card. As a result, this reduces the patient's (and hospital's) financial burden.

A large number of oral and injectable medicines that are kept on the imprest at hospitals are covered under the PBS. Hence, medicines prescribed during a patient's hospital admission that are dispensed by the pharmacy will be covered by the hospital at minimal cost when the patient has reached their PBS Safety Net threshold for that calendar year. This provides significant cost savings to the hospital as the cost of each medicine provided is only \$5.90 or free. The Australian Government will reimburse the pharmacy for the balance of costs of medicines.

Through the PBS Safety Net scheme, the Australian Government subsidises medicines that are necessary to maintain the health of the community in a cost effective way. As a result, patients and hospitals are able to have access to PBS medicines in a timely and affordable manner.

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# Regulation of Medicines in Australia

**Vassiliki Poupoulas, Pharmacist In-Charge**  
HPS – Flinders, South Australia

## Introduction

All therapeutic goods on the Australian market are regulated, and this extends to medicines, medical devices, human blood, blood products and tissues. The Therapeutic Goods Administration (TGA) is the Australian Government department which is responsible for this. The purpose of national regulation of therapeutic goods is in order to ensure their safety and quality so as to protect the general public.

## Australian Register of Therapeutic Goods

Any medicinal product that is to be legally supplied in Australia must be recorded on the Australian Register of Therapeutic Goods (ARTG). There are two classifications on the ARTG. Products are either 'registered' and assigned an *AUST R* number or 'listed' and assigned an *AUST L* number. The designation is decided by the TGA. Registered products are those which have been assessed for quality, safety and efficacy.

Such assessment follows TGA analysis of information required to be submitted by the manufacturer, including how the molecule was synthesised, the manufacturing

procedure of the dosage form (and compliance with Good Manufacturing Practice), pharmacological and toxicological data from animal clinical trials, and human clinical trial data in relation to its proposed indication. These products include most prescription drugs in use today, vaccines, many common over-the-counter medicines and several complementary medicines for which there is sufficient evidence of their efficacy.

When new brands of generic medicines are released, they need to meet the same standards of quality and manufacturing, but only evidence of bioequivalence to the originator molecule is required rather than a full presentation of safety and efficacy data.

Listed products are those which have been tested for safety and quality but not efficacy, and so the manufacturer is limited to saying that the product "may" assist in managing or treating the condition it is marketed for. These medicines comprise of almost all other complementary medicines, such as vitamin and mineral supplements, herbal medicines, nutritional supplements, aromatherapy oils, and traditional medicines such as Chinese and Ayurvedic (Ancient Indian) medicines.

There is no expiry on registration except if the drug is removed from the market, or for a particular reason that has become evident. One such example is that of dextropropoxyphene where, after examination of the existing data, the TGA announced it would cancel registration of all pain-relievers containing dextropropoxyphene from the ARTG as of 1<sup>st</sup> March 2012.

The TGA based its decision on evidence that showed that the benefits of dextropropoxyphene as a pain-reliever did not outweigh the safety risks, as dextropropoxyphene can affect cardiac electrical activity in a dose-dependent fashion, increasing the possibility of severe arrhythmias. However, in accordance with the Therapeutic Goods Act 1989 the Australian sponsors of Doloxene and Digesic appealed for a review of the decision. Following the appeals process, the TGA remains with its decision to cancel the registration of the remaining products which is still to be effected. There was no such request submitted for Capadex and Paradex, so the registration of these products was consequently cancelled as of 1<sup>st</sup> March 2012.



## Products That Are Not Regulated

There are certain medicines that do not require TGA regulation. These include any medicines dispensed or extemporaneously prepared for a particular patient, traditional Chinese medicine, or homeopathic products dispensed by such practitioners. Certain other products, for example those imported privately from overseas, are also not listed on the ARTG. If these products are required, they should be accessed via the Special Access Scheme (SAS), which permits the supply of such products for individual patients based on their particular case.

Essentially, the responsibility for prescription of an unapproved product belongs to the prescriber and the patient. Via this scheme, any product which is unapproved in Australia can still be accessed, except for drugs of abuse that have been forbidden by legislation. There are two streams which patients can be classified into:

- **Category A:** includes patients who "are seriously ill with a condition from which death is reasonably likely to occur within a matter of months, or from which premature death is reasonably likely to occur in the absence of early treatment".
- **Category B:** includes patients who do not meet the *Category A* criteria.

Doctors are required to complete the appropriate application form depending on the definition their patient fits. *Category A* approval is immediate and does not require further TGA involvement, so doctors only need to submit the completed form directly to the pharmacy. Upon receipt of the form, the pharmacy will contact the supplier to place the order and when the supplier receives the form, the product is able to be released to the pharmacy.

For *Category B* patients, the completed form must be sent to the TGA for individual consideration and, if approval is granted, the TGA will then send the approval to the doctor to in turn be forwarded to the pharmacy. The supplier will again release the product to the pharmacy upon receipt of the TGA approval documentation.

## Conclusion

The TGA provides a regulatory framework in order to ensure the safety and quality of therapeutic products provided in Australia, and to facilitate the accessibility and supply of unregulated products for patients. With the advent of internet shopping, the TGA faces a new set of challenges as products available for purchase from websites are not regulated by the TGA.

It is important that consumers are vigilant and consult their doctor and/or pharmacist prior to purchasing such products as one may waste their money, unintentionally breach legislation, or ultimately compromise their health.

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## Role of Complementary Medicines in Hospital Pharmacy

**Blessed Ncube, Clinical Pharmacist**  
HPS – Modbury, South Australia

Complementary medicines can be herbal medicines, traditional medicines, vitamins and minerals, nutritional supplements, homeopathic medicines and aromatherapy products. Under the Therapeutic Goods Act, complementary medicines are either registered or listed. An *AUST R* number on the label shows the medicine is registered and has been individually assessed for quality, safety and efficacy, whereas listed (*AUST L*) products have been tested only for quality and safety, but not efficacy. The role of complementary medicines as part of the holistic treatment of a patient, can be from the establishment of the regimen, or following the patient's treatment with conventional medicines first, using complementary medicines in an integrative manner to maintain remission or reduce relapse of disease.

Complementary medicines with established roles in therapy include:

### ***Psyllium Husk***

This is a soluble fibre which passes through the intestine without being absorbed. It is used for constipation and irritable bowel syndrome. The average Australian has around 20g of fibre daily, where the target should be 30g, and psyllium husk can be added in doses of 7–40g per day in 2 to 4 divided doses. Psyllium husk can reduce absorption of some drugs like iron and carbamazepine, hence it should be given at least two hours before or after other prescribed medicines, and it can also reduce blood glucose levels in patients with type 2 diabetes.

### ***Probiotics***

Probiotics are live, non-pathogenic yeast or bacteria that are found in a range of products (e.g. fermented milks, powders and capsules). Probiotics work as immunomodulators and stimulate lymphocyte and macrophage activity, cytokine production by mononuclear cells, and increase immunoglobulin A in the intestines. Studies have demonstrated that the gut microflora modulate intestinal inflammation,

reduce colonic permeability and enhance barrier function. Used alongside rehydration therapy, probiotics shorten the duration and reduce stool frequency in acute infectious diarrhoea and Crohn's disease. They can prevent increases in pathogenic bacteria and relapses of ulcerative colitis. *Saccharomyces boulardii* is a particularly beneficial yeast strain and can be given with antibiotics, especially in long-term antibiotic therapy, in doses of 1000mg daily. It is best taken with meals to prevent acid killing the probiotic.

### ***St John's Wort***

The aerial parts of the plant *Hypericum perforatum* contain hypericin and hyperforin, the active ingredients with antidepressant and anti-inflammatory effects, which act by rebalancing serotonin levels in the brain. St John's Wort has been shown to be as effective as standard antidepressants in mild to moderate depression. Its preparation has been standardised to a content of 0.3% hypericin and is available as 300mg tablets with a recommended dose of one tablet three times daily. Maximum effects are seen after two weeks of continuous therapy. Adverse effects include gastrointestinal symptoms such as abdominal discomfort, bloating and nausea.

St John's Wort induces hepatic cytochrome P450 isoenzymes, mainly CYP3A4, CYP2E1 and CYP2C19, and therefore it reduces plasma concentrations of drugs metabolised by this route. Clinically important interactions have been reported with anticonvulsants, cyclosporin, HIV drugs, warfarin, digoxin, oral contraceptives, verapamil, and theophylline. St John's Wort also increases serotonin levels and hence the risk of serotonin toxicity when used in combination with selective serotonin reuptake inhibitors, serotonin noradrenaline reuptake inhibitors, tricyclic antidepressants, monoamine oxidase inhibitors, triptans, opioid analgesics, tramadol and some recreational drugs (ecstasy, cocaine and LSD).



### ***Valerian***

The therapeutic valepotriates and valerenic acid are obtained from the rhizome of *Valeriana officinale*. Valerian has both hypnotic and anxiolytic effects and works by stimulating the release of gamma aminobutyric acid and inhibiting its reuptake. A dose of 600mg of valerian extract has comparable effects to 10mg of oxazepam with less somnolence. It works best after one to two weeks of regular use and adverse effects include gastrointestinal problems and headache.

### ***Fish Oil (Omega 3)***

Fish oil is used as a supplement to relieve the symptoms of arthritis, improve cardiovascular health (help to maintain normal cholesterol levels in healthy individuals) and support healthy cognitive function. Fish oil helps increase serum high-density lipoproteins (good cholesterol) and lowers triglycerides while increasing joint mobility and reducing inflammation in arthritis. Fish oil is indicated for rheumatoid arthritis and although it has not been specifically tested for treatment of osteoarthritis, it is possible that an anti-inflammatory dose of fish oil may be of benefit to patients with osteoarthritis. However, more direct studies are required to clarify dosing specifically for osteoarthritis.

The dose of fish oil is measured by the content of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) with a standard 1000mg fish oil capsule having 180mg of EPA and 120mg DHA. Dosage of fish oil is 40mg/kg body weight/day with a dietary fatty acid intake of 10g per day in the background. Monitoring is recommended for signs and symptoms of increased bleeding in patients taking fish oil, especially if used in combination with aspirin or other antiplatelet drugs (such as clopidogrel and dipyridamole), or anticoagulants (such as warfarin, heparin and low molecular weight heparin).

### ***Cranberry***

Cranberry has bacteriostatic and antioxidant effects. Its role in the prevention of urinary tract infection is currently under scrutiny. There

is some evidence for cranberry's use in prevention of urinary tract infections (UTIs) over a 12-month period for women with recurrent UTIs. Cranberry prevents *Escherichia coli* from adhering to the urethra, relieves symptoms of cystitis (e.g. pain or burning on urination) and masks urinary odour associated with incontinence.

However cranberry is not effective in treatment of UTIs and, if symptoms appear, conventional treatment should be applied. Adverse effects associated with high doses include gastrointestinal discomfort, nausea and increased blood glucose, which requires monitoring in diabetic patients especially if the fruit juice is used.

In conclusion the role of complementary medicines should be acknowledged rather than dismissed and patients who choose to use these products and treatments should be assisted in making informed (evidence-based) decisions rather than be categorised as being superstitious. Medical professionals who have embraced complementary medicines should be commended and these practitioners' role should be enhanced.

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# Gentamicin Dosing and Monitoring

**Daniel Scandrett-Smith, Clinical Pharmacist**  
HPS – Ashford, South Australia

Article edited by Assoc. Prof. R Philpot. Special acknowledgment to Shivani Manini and Michael Soriano for performing the survey.

## New Guidelines

With the release of the 14<sup>th</sup> edition of the *Antibiotic Guidelines* ('the pink book') published by Therapeutic Guidelines Limited in Melbourne, the South Australian expert Advisory Group on Antimicrobial Resistance (SAAGAR) developed a state-wide recommendation on aminoglycoside use, dosing and monitoring.

This useful document was circulated by SA Health throughout the public hospitals of South Australia to improve the interpretation of the guidelines. HPS Pharmacies implemented the recommendations for the group of private hospitals represented on SAAGAR.

## Our Survey

As a precursor to this article, HPS Pharmacies performed a three-month survey of the use, dosing, and monitoring of gentamicin in selected hospitals. The salient findings include:

- The majority of patients who received gentamicin throughout the group of hospitals, received empirical gentamicin therapy, i.e. 24 to 48 hours only.
- The majority of gentamicin doses given were conservative, and in over 70% of patients were under-dosed according to the 14<sup>th</sup> edition of the *Antibiotic Guidelines*. This was thought to be related to the prescribers' perceived toxicity risk associated with gentamicin use.
- Of those patients who were on gentamicin greater than 48 hours, only a very small number had serum levels done to allow dosage optimisation.

## Current practical guidelines

The results were not surprising for a number of reasons: gentamicin is a rapidly bactericidal antibiotic with low resistance rates shown in both

community and hospital acquired gram-negative pathogens. It is well suited to empirical therapy for rapid control of serious infection.

Gentamicin is both ototoxic and nephrotoxic. This may cause prescribers' to under-dose or avoid use by choosing a broader spectrum antibiotic (e.g. cephalosporin or quinolone). This practice has been linked to increasing patterns of antibiotic resistance (MRSA, VRE, multi-resistant gram-negative pathogens).

With this in mind, the working group of the 14<sup>th</sup> edition of the *Antibiotic Guidelines* aimed to simplify the dosing/monitoring of aminoglycosides, including gentamicin, by recommending that empirical therapy be limited to a duration of 48 hours with the dosage being dependent on the patient's renal function, ideal body weight and age.

**Monitoring of plasma concentrations is not required if not using gentamicin beyond 48 hours.**

## Dosage tables from the Therapeutic Guidelines

The 14<sup>th</sup> edition of the *Antibiotic Guidelines* provides dosage tables advising that gentamicin for empirical and directed therapies should be initiated between 4-7mg/kg up to 640mg daily depending on age and the severity of the infection. Streptococcal and enterococcal endocarditis infections at any age should be treated with the lower dose of 3mg/kg/day in divided doses as synergistic treatment.

Subsequent dosing for directed therapy is based on plasma concentration monitoring as discussed below. Empiric therapy should have the dosing interval adjusted according to renal function, using a recent creatinine measurement, although this might still overestimate renal function in acute renal failure.

## Greater than 48 hours of gentamicin dosing

Subsequent antibiotic use should be guided by susceptibility results. Even if initial cultures have been uninformative in defining directed therapy the beta-lactamase inhibitor combinations, e.g. piperacillin

and tazobactam, are better substitutes than broad spectrum antibiotics like third generation cephalosporins, since they generate less selective pressure for multi-resistant organisms.

The only indications for continuing gentamicin as a part of directed therapy are:

- Infections involving organisms resistant to safer antimicrobials;
- Combination therapy for serious *Pseudomonas aeruginosa* infections; and
- Low doses as synergistic treatment for streptococcal and enterococcal endocarditis (frequent trough serum levels required in this population).

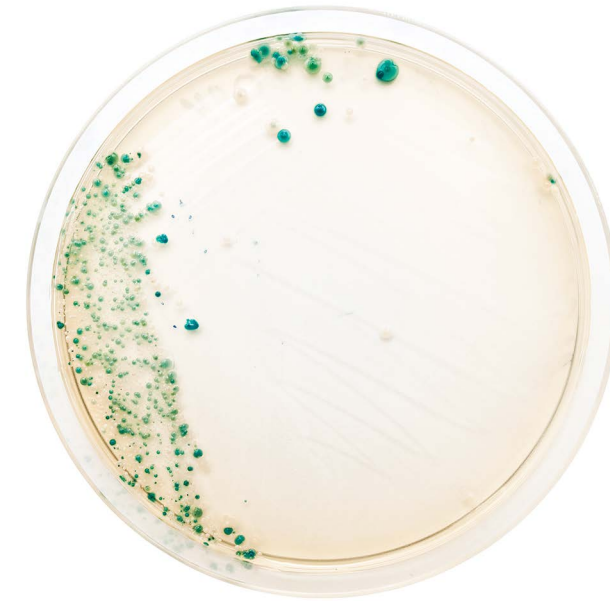
When deciding on directed therapy including aminoglycosides, appropriate patient selection should involve avoiding known risk factors such as poor renal function, advanced age, poor baseline hearing, pre-existing ear conditions (tinnitus), and previous exposure to aminoglycosides.

Monitoring of serum gentamicin levels should begin with the first dose of directed therapy, i.e. after 72 hours in patients on daily doses of gentamicin. The graphical nomogram for dosage calculation that was available in previous editions of the *Antibiotic Guidelines* has been deleted in the 14<sup>th</sup> edition, since it had significant limitations such as pharmacokinetics data being only validated in an adult population with normal renal function. This simple nomogram, or trough concentration monitoring, is no longer recommended.

A computerised aminoglycoside dose prediction method based on area under the concentration curve (AUC) should be used. A number of computer programs exist, such as TCI Works<sup>®</sup>, Aladdin<sup>®</sup> and SeBagen<sup>®</sup>, and are available online at no charge. HPS' pharmacists use TCI Works<sup>®</sup> and can provide accurate dosing recommendations where a peak level (one hour post infusion) is provided along with other patient details (age, height, weight, serum creatinine) and, if available, a subsequent serum level of 6 to 14 hours post infusion. It is imperative that the timing of the dose and any subsequent serum level collection times are recorded in the patient's medication chart, medical notes and pathology request form.

## Toxicity detection and monitoring

Renal effects can be monitored by serial readings of eGFR (population estimate of glomerular filtration rate in an individual), as well as serum urea and creatinine.



The recommendation of monitoring for ototoxicity by auditory and vestibular testing in patients on therapy greater than five days has raised great debate and concern amongst practitioners. SAAGAR noted that the efficacy of such monitoring is not established, and that services to the public sector, let alone the private sector, are significantly limited. SAAGAR therefore recommended appropriate patient selection and adoption of accurate monitoring and dosing guidelines to reduce the risk of toxicity.

A simple and practical way of determining vestibular function is to ask the patient to walk as accurately as they can and to walk heel-to-toe (if safe). Record the result on each occasion. Audiometry is cumbersome and costly, so ask the patient if they can hear a watch ticking.

## Conclusions

- The new guidelines make gentamicin therapy easier and safer.
- Most patients need less than 48 hours of gentamicin dosing so blood assays are not required.
- All patients who are given gentamicin for greater than 48 hours are potentially at risk of toxicity, especially if:
  - a) they remain unwell, e.g. increasing renal dysfunction and/or poor general health; and
  - b) they receive gentamicin for more than seven days.
- All patients receiving gentamicin therapy for greater than 48 hours require serum level and toxicity monitoring to achieve safe antibiotic stewardship.

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## HPS' Lecture Series Program 2013

**Anne Reeves, Clinical Pharmacist**  
HPS – Alexander Avenue, South Australia

HPS Pharmacies' Lecture Series Program is an integral part of the professional services provided to our sites. This annual program consists of a minimum of twelve lectures, at least one of which becomes available at the beginning of every month and others throughout the year.

The topics are selected from those suggested by feedback and surveys from our clients; the lectures are then written by one of our 130 pharmacists who may have a general interest, or work, in the specialist field covered by that topic, and then shared with all our pharmacists to present to their interested clients.

The diverse schedule for the 2013 HPS Pharmacies Lecture Series Program can be seen opposite.

Your HPS Pharmacies pharmacist will assist in developing a lecture program suitable for your facility; if a lecture is required on an issue or topic not covered by the current programme, HPS' pharmacists can draw on our comprehensive library of lectures which has been built up from previous series, or request a specialist pharmacist to prepare a lecture on the new topic.

Initially written for an audience of nurses, the lectures are often delivered as an informal presentation during handover, with a handout included. However each lecture can easily be adapted to suit a variety of audiences and group sizes. Different presentation styles and needs can be catered for such as in-depth discussions or PowerPoint presentations. Our pharmacists are also actively involved in community education programs such as, pulmonary and cardiac rehabilitation, and adapt lectures and develop materials to suit participants without a medical background.

All topics are medication related, but may approach medication from different perspectives such as discussion of:

- The uses and adverse effects of a single drug, e.g. infliximab (Remicade);
- The uses and adverse effects of a class or group of drugs, e.g. beta blockers;
- Medications used to treat a particular condition or range of symptoms, e.g. diabetes or cardiac arrhythmia;
- Drug administration practices, e.g. crushing of medications; and
- Drug monitoring practices, e.g. antibiotic stewardship or warfarin.

Each edition of *Newsline* includes a *Lecture Series* article based on a lecture selected from the current program. A précis of one lecture from the 2012 series, *Treatment of Eye Problems* is included in this edition on the following page.

Many nurses record attendance at these lectures as part of their portfolio of evidence for Continuing Professional Development, and starting in 2013, each lecture will include a self-assessment tool. Self-assessment will consist of five multiple choice questions, initially with answers included on the handout, and will progress to being accessed via our website. A link to our survey will also assist with the further development of lectures through feedback and suggestions.

For further information on how to take advantage of our comprehensive lecture series, please talk to your HPS Pharmacies pharmacist or contact the Regional Operations Manager in your state (details are listed on the inside back cover of this edition of *Newsline*).



Available From	Topic Title	Topic Summary
1 <sup>st</sup> January	Vitamins	Overview of commonly used vitamin supplements
1 <sup>st</sup> February	Crushing of Tablets	Which medications should not be crushed and why
1 <sup>st</sup> March	Dementia Medications	General overview, doses, side effects, and medications which can aggravate dementia
1 <sup>st</sup> April	Drugs Used in Cardiac Failure	General overview, rationale for use and place in guidelines
1 <sup>st</sup> May	Drug Treatment of Gastro Oesophageal Reflux Disease (GORD)	Medications, rationale for use, and side effects
1 <sup>st</sup> June	Systemic Antifungals	In particular those administered parenterally
1 <sup>st</sup> July	Warfarin Versus the Newer Oral Anticoagulants	Comparison of all oral anticoagulants, differences, and rationale for use
1 <sup>st</sup> August	Update on Antidepressants	Newer medication versus older medications, side effects, and rationale for use
1 <sup>st</sup> September	Safe Handling of Cytotoxics	Disposal of contaminated waste, dealing with spills, handling risks and how to manage them
1 <sup>st</sup> October	Iron Infusions	Parenteral use versus oral use, what is available, comparisons, and administration issues
1 <sup>st</sup> November	Transdermal Pain Preparations	General overview, comparisons, administration issues, conversion issues between transdermal preparations and from oral to transdermal
1 <sup>st</sup> December	Antimicrobial Stewardship: New Generation Cephalosporins	What to choose – similarities and differences, use in empirical treatment of febrile neutropenia

Table 1. 2013 Lecture Series Program Timetable

### Additional lectures which will become available throughout the year:

- Tenecteplase (Metalyse) – use and administration issues
- Infliximab (Remicade) – use and administration issues
- Bevacizumab (Avastin) – use and administration issues
- Oxycodone/Naloxone combinations (Targin) – rational use, side effects
- Special Access Scheme medications and regulations – what does this mean? How is administration affected?

- Ketamine infusion – use and administration issues
- New insulins – comparison between newer insulins and between those and older insulins, administration issues, and availability
- Update on medications used in Parkinson's disease – new medication/combinations, rationale for use and potential problems
- Medications used in renal failure, and medications used specifically to treat issues arising from renal failure



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# Treatment of Eye Problems

**Kelly Ho, Clinical Pharmacist**

HPS – Calvary North Adelaide, South Australia

**Fei Lim, Locum Pharmacist**

HPS – Alexander Avenue, South Australia

*This article is a summary of a lecture from the HPS Pharmacies Lecture Series of 2013. For more information, or to book a lecture, contact your local HPS Pharmacies Clinical Pharmacist.*

The eyes are the most sensitive and complicated organs in the human body. Therefore, they are susceptible to several types of disorders, including glaucoma, infections, inflammatory and allergic conditions, as well as common Dry Eye syndrome. Eye preparations are applied to the eyes to provide therapeutic concentrations, while using the lowest effective dose and thereby minimising the risk of local and systemic adverse effects.

## Glaucoma

Glaucoma is an irreversible, progressive eye disease in which the optic nerve at the back of the eye is slowly destroyed due to increased intraocular pressure (IOP). Common causes of ocular hypertension include blockage of the circulation of aqueous humour, its drainage, poor blood supply or structural weakness of the optic nerve.

One in 10 Australians over 80 will develop glaucoma. At present, 50% of people with glaucoma in Australia are undiagnosed. It is estimated that the cost burden in Australia will increase to \$4.3 billion by 2025.

Chronic primary open-angle glaucoma and acute closed-angle glaucoma are the two most common types. The major risk factors for developing glaucoma include family history, diabetes, migraine, short sightedness, long sightedness, previous eye injury, hypertension, prolonged steroid use and African or Latino ancestry.

There is no cure for glaucoma. The goal of therapy is to reduce the IOP and to prevent further disease progression. In the last decade there has been an increase in the number of drugs available to treat glaucoma; however the key strategy remains the reduction of intraocular pressure by decreasing aqueous humour production or increasing aqueous humour outflow. There is no threshold for the initiation of treatment or standard guidelines for the optimal target IOP. Treatment is adjusted based on close follow-up of visual field and optic disc damage.

The prostaglandin analogues (bimatoprost, latanoprost and travoprost) are replacing beta-blockers as first-line agents due to their effectiveness and long-term efficacy. Brimonidine or topical carbonic anhydrase inhibitors (brinzolamide, dorzolamide) tend to be used third line. Use of pilocarpine is declining, although it may still be useful as adjunctive treatment. Newer eye drops containing two drugs, such as timolol with a prostaglandin analogue have been developed to aid patient compliance.

## Allergic and Inflammatory Eye Conditions:

### Allergic Conjunctivitis

Allergic conjunctivitis is a common eye problem in Australia. It can be triggered by pollens, cosmetics, contact lenses and solutions, house dust mites, and ophthalmic drugs. Clinical presentation includes itchy, red, watery eyes, and with swelling of the conjunctiva. Allergic conjunctivitis can be categorised into: *seasonal* (hay fever) and *recurrent*. Mild conjunctivitis may be managed with cold compression and frequent use of ocular lubricants. Topical treatments for moderate to severe symptoms include: decongestants, antihistamines, corticosteroids or non-steroidal anti-inflammatories. Cromoglycate eye drops can be used as a preventative measure, starting one month before hay fever season as it takes 3–6 weeks for its full effects.

### Bacterial Conjunctivitis

Bacterial conjunctivitis is caused by common pyogenic bacteria, e.g. *Staphylococcus*, *Pneumococcus* or *Haemophilus*. It has rapid onset but most cases are self-limiting and resolve after 2–3 days without any treatment. Signs and symptoms include grittiness and a stringy, opaque, greyish or yellowish discharge that may cause crusty lids on waking up. Swabs for culture and sensitivity are usually not required. Cold compression

and antibiotic eye drops (chloramphenicol) may be used to hasten recovery. Broad-spectrum antibacterial eye drops (ciprofloxacin, ofloxacin) are reserved for use in bacterial keratitis to prevent emergence of antibiotic resistance.

### Viral Conjunctivitis

Viral conjunctivitis is often associated with upper respiratory tract infection, common cold, and sore throat. Patients often present with watery and itchy eyes. It is infectious until redness and weeping resolve, normally within 10–12 days. Cold compression and regular artificial tears eye drops may help to alleviate symptoms. Topical antiviral eye drops are not indicated for use in viral conjunctivitis (aciclovir eye drops are only indicated for the treatment of herpes zoster keratitis).

### Blepharitis

Blepharitis can be classed into seborrhoeic blepharitis and *Staphylococcal* blepharitis. The symptoms can be recurrent and don't always respond to antibacterials. Warm compresses and daily eyelid cleaning with mild soap (1:10 diluted baby shampoo, or Lidcare®) or dilute bicarbonate solution (one teaspoon: 250mL hot tap water) may help with the symptoms and prevent recurrence. Weakly amoebistatic eye drops (propamidine, Brolene®) are available over-the-counter for treatment of blepharitis.

### Stye

This is an acute *Staphylococcal* infection of a sebaceous gland causing pain and swollen eyelids. Hot compresses help relieve the pain and encourage the stye to burst. Antibacterials are usually not needed.

### Dry Eye

Dry Eye is caused by reduced tear production or increased tear evaporation. Symptoms include irritation, stinging, burning, itchiness, grittiness, pain, redness of the eyes and blurred vision. It is common in the elderly and in post-menopausal women.

Secondary causes may include climate, contact lenses, Sjögren's syndrome, rheumatoid arthritis or adverse drug effects (e.g. anticholinergics, oral contraceptives, isotretinoin), lifestyle (e.g. prolonged computer use, flying, eye surgery).

Ocular lubricants/artificial tears in the form of drops, gel or ointment are used to provide symptomatic relief. No one lubricants' drop is superior to another, and trial and error may be needed to find a suitable product for a patient. Regular administration (upto hourly) of eye drops is recommended if Dry Eye symptoms are severe. Multidose eye drops contain preservatives such as benzalkonium chloride (most irritant), polyquaternium, sodium chlorite, sodium perborate (less irritant) may

irritate the cornea and further aggravate Dry Eye syndromes. These products should be avoided in patients with severe Dry Eye.

Preservative free eye drops are more expensive and bulkier for storage. Lecithin spray (Tearsagain®) is available on a PBS authority prescription for treatment of severe Dry Eye syndrome in patients who are sensitive to preservatives in multidose eye drops. It is sprayed onto closed eyes 3 to 4 times daily. It works by stabilising the eye's lipid layer and thus reducing tear evaporation.

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## Opioid Conversions

**Rhona Selkirk, Clinical Pharmacist**  
HPS – Toowoomba, Queensland

Approximately one in five Australians suffers from chronic pain. Pain is classified as chronic when it does not subside, occurs on most days, and continues for at least three months. Many people with chronic pain find adequate relief from a specific opioid regime, whereas others can be troubled by adverse effects, tolerance and inadequate pain relief. For the latter, it has become common practice to improve treatment by changing therapy; either by formulation, route of administration, and/or opioid. Many reference sources provide opioid conversion charts to aid this process.

Webster's recent study analysing hospital medical charts in the United States found that the class of drugs with the highest predictive value of prescribing discrepancies for adverse events was opioids. There is not sufficient data at present to conclude the reasons for the prescribing errors, however evidence suggests that the reliance on dose conversion tables may be an important contributing factor.

Most studies on opioid potency to determine equianalgesic doses are with one opioid versus a standard, usually parenteral morphine, both at a low and high dose and in patients with a minimal or relatively low opioid exposure to ensure that tolerance was unlikely. This has its drawbacks when dealing with chronic pain patients who have developed a great tolerance to their current treatment.

Tolerance is the term used to describe the effect when regular exposure to a drug over time results in a reduced effect and the need

for a higher dose to maintain an adequate response. Tolerance can also occur on the first administration of a drug due to genetically determined sensitivity (or lack thereof) and this is known as innate tolerance. Acquired tolerance can be broken down into three different categories; **pharmacokinetic** which refers to a change in distribution of metabolism after repeated administration of the drug. **Pharmacodynamic** tolerance involves adaptive changes within systems affected by the drug, e.g. changes in receptor density. The third kind of acquired tolerance involves the patient using compensatory mechanisms to reduce the effect of the drug and is known as **learned tolerance**. This could be behavioural such as learning how to walk in a straight line while intoxicated with alcohol.

50-80% of patients with chronic pain who have responded poorly to one opioid improve after being rotated to another opioid. The terms '*opioid switching*' and '*opioid rotation*' are often used synonymously, however some reports clearly differentiate. '*Opioid switching*' has been defined as occurring soon after opioid initiation due to an inadequate initial response. In this case, conversion tables can generally be used without a lot of alteration as it occurs early in treatment before tolerance has emerged. '*Opioid rotation*' has been defined as taking place during long-term opioid treatment due to increasing adverse effects and/or reducing efficacy. In this scenario, patients may have a tolerance to their current opioid and therefore the suggested equianalgesic dose may be too high for them, therefore the dose should be adjusted.

Studies examining cross-tolerance have shown that, in animals, one drug may cause tolerance to itself only, e.g. morphine, whereas when mice were treated with methadone they were also tolerant to morphine and codeine. Evidence has shown that a mu-selective drug induces only minimal tolerance at kappa or delta receptors. Therefore this may help prescribers to choose which opioid to use first. Further studies are required to understand this cross-tolerance as results which have been shown so far are unpredictable and appear to be incomplete.

There are many other variables that these 'general' tables do not take into account. Organ dysfunction can cause disruption to the normal pharmacokinetics of a drug and therefore conversion is not so clear cut. For example, when switching opioids in someone with renal or hepatic impairment, the way in which both opioids are metabolised and excreted would need serious consideration. Adrenal insufficiency, hypothyroidism and abnormal plasma protein levels can also affect conversions.

Gender, race and age also play a major roll. CYP2D isoenzyme of the hepatic P450 system is known to catalyse more than 50 clinically important drugs and it is not inducible. CYP2D is involved in the metabolism of codeine, oxycodone, tramadol and many other opioids. Patients have been found to range from ultrarapid metabolisers to poor metabolisers. It has been shown that CYP2D activity is significantly greater in Caucasian than Asian patients and therefore this could explain the varying responses displayed to treatment with these opioids.

Further studies are needed to review and improve current data by analysing higher opioid doses, long-term therapy and different demographics. The importance of bidirectional change should also be considered given the above information and the scope for variation between different opioids, and to ensure the conversion table works for both drug A to drug B, and from drug B to drug A.

Switching between any two drugs, particularly between opioids, should be carried out with caution and it's not a simple case of looking at a table and picking the relative dose. Demographics, concomitant medication, comorbidities and cross-tolerance need to be considered. From the different points raised in this article it's clear each patient should be taken on a case-by-case basis as it could be easy to either under or over-dose them. I would suggest when using opioid conversion tables to use the lower dose of the new opioid, making sure there are adequate doses of breakthrough medication to cover the patient, and review their requirements on a daily basis.

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**Dominic Coppola**  
Partner/Regional Operations Manager,  
SA/WA/NT  
t 08 8193 9100

**Megan Farnsworth**  
Partner/Regional Operations Manager,  
NSW/QLD  
m 0417 770 499

**Alan Tuxford**  
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VIC/TAS  
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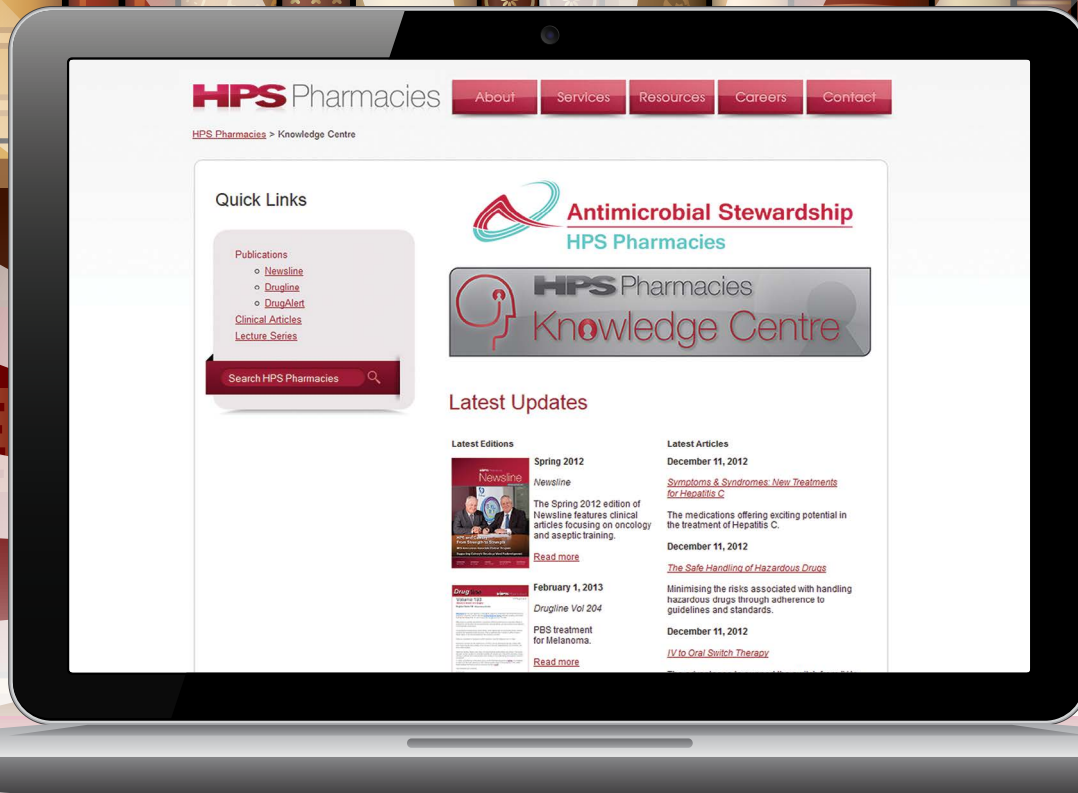
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