FAIR WORK COMMISSION

4 Yearly Review of Modern Awards

Matter No.: AM2014/209

Pharmacy Industry Award 2010

Submissions

And

Outline of findings APESMA Submit should be made based on Expert Evidence

Association of Professional Engineers, Scientists and Managers, Australia (APESMA)

DATE: **5 April 2017**

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INTRODUCTION

1. This submission is filed by the Association of Professional Engineers, Scientists and Managers Australia ***(APESMA)*** in accordance with the Directions issued by His Honour, Justice Ross on 21 September 2016 and subsequently amended by Vice President Hatcher on 22 February 2017.[1]

2. These Directions require APESMA to file submissions and a list of expert witnesses to be called (including their qualifications and the nature of the evidence) and an outline of submissions and the findings they submit the Commission should make based on the expert evidence.

SUMMARY OF WORK VALUE CHANGES

3. APESMA in our submission filed on 3rd November 2016[2] provided detailed submissions identifying a number of changes we believe have occurred to the work done by pharmacists employed in community pharmacies since the work value of pharmacists covered by the Pharmacy Industry Award 2010 ***(the Award)*** was last considered by the Commission in June 1998. We believe these changes constitute work value reasons justifying pay increases for pharmacists under the Award.

4. We rely on our submissions of 3rd November 2016 and do not intend to reiterate them in this submission in detail. However, the following provides an outline of the changes we believe have taken place to the work done by pharmacists covered by the Award. We believe these changes show that there has been a significant net increase and complexity for pharmacists:

    4.1.1. in the nature of their work;

    4.1.2. the level of skill or responsibility involved in doing the work;

    4.1.3. the conditions under which the work is done.

[1] https://www.fwc.gov.au/documents/sites/awardsmodernfouryr/am2014209-dir-amended-210916.pdf
[2] https://www.fwc.gov.au/documents/sites/awardsmodernfouryr/am201628-sub-apesma-031116.pdf

Change	Summary of Change[3]	When Implemented	Nature of Change
Cessation of Three Year Degree See p46 of APESMA Submission of 3rd November 2016	In 1999, some universities provided a degree of three years' duration. This was phased out during the late 1990s and after around 2000 only degrees of 4 years or more duration were available. The three-year degree was phased out because it was deemed it was of insufficient duration to provide pharmacists with the skills necessary to perform all the functions required of a pharmacist.	Phased out from 2000	Educational change
Introduction of Extended Undergraduate Degrees See p47 of APESMA	New undergraduate degrees of 4.5 and 5 years' duration have been accredited in recent years. These degrees provide student pharmacists	Commenced around 2010	Educational Change

[3] For Further details See APESMA Submission of 3rd November 2016 https://www.fwc.gov.au/documents/sites/awardsmodernfouryr/am201628-sub-apesma-031116.pdf

Submission of 3rd November 2016	with access to extended and more intensive undergraduate training. They are aimed at providing student pharmacists with a greater understanding and knowledge of the work they will be required to undertake when they become registered pharmacists.		
New Areas of Training in Undergraduate Degrees See p47 of APESMA Submission of 3rd November 2016	In 1998 students undertaking an undergraduate degree in pharmacy received minimal training in counselling and education of patients. Pharmacy students now receive extensive training in education and counselling of patients all through their undergraduate degrees. They also receive extended	Mid 2000s	Educational change, increased training included

	training on how to educate patients on the safe and effective use of the prescribed medicine(s) including any adverse effects related to the medicine(s).		
Introduction of Accredited Pharmacist Qualification See p48 of APESMA Submission of 3rd November 2016	The accreditation of the new higher qualification of Accredited Pharmacist was formally recognised in 2010. This new qualification accredits pharmacists to undertake Home Medicine Reviews and the like.	2010	New Higher Qualification
Increased Training and Skill Requirements for Intern Pharmacists See p48 - 49 of APESMA Submission of 3rd November 2016	In 1998, the only requirement for an intern pharmacist to gain full registration as a pharmacist was for them to have completed 1824 hours of supervised practice. Now intern	2010	Increased Registration Standard

	pharmacists, in addition to completing 1824 hours of supervised practice, are required to undertake further study conducted by an approved provider and to undertake an oral examination and a written examination conducted by the Pharmacy Board of Australia		
Introduction of CPD as registration requirement See p49 of APESMA Submission of 3rd November 2016	In 2010, the Pharmacy Board of Australia introduced a requirement that all pharmacists complete a certain amount of approved Compulsory Professional Development (CPD) each year in order to retain their registration as pharmacists	2010	Increased Registration standard
Additions to Competency	The Competency Standards for	Since 1999 to present day	Indicative of new Skill

Standards See p49 - 50 of APESMA Submission of 3rd November 2016	pharmacists have been varied since they were first introduced in 1999. They have been varied to include options to undertake new training that was not available when they were first introduced. For example, since 1999 new competences have been introduced on matters such as inoculations, Home Medicines Reviews, Medschecks, Medical Certificates		Requirements
Quality Use of Medicines (QUM) See p50 - 53 of APESMA Submission of 3rd November 2016	The federal Government introduction of QUM into the National Medicines Policy in 1999 has resulted in a significant change in the focus of the work done by pharmacists. It has resulted in pharmacists now	1999	New work, change in the nature of the work and increased skill; increased responsibility; new additional qualifications

	being responsible for select and communicating and educating patients on the most appropriate medicine or non-medicine option from all available prevention and treatment options, so that the individual gains optimal, cost effective health outcomes; and for Pharmacists and other health practitioners to provide patients/consumers with information and counselling to promote quality use of medicines. This significant policy change has resulted in pharmacists taking on a significant educative role that was previously not required of them.		
Down Scheduling	Since 2000 many	Around 2000 and	Additional

and other pharmacist only medicines See p54 - 55 of APESMA Submission of 3rd November 2016	previously 'prescription only' medicines have been down-scheduled to 'pharmacist only' and 'pharmacy only' medicines. These medicines may now be dispensed by a pharmacist without a prescription written by an authorised prescriber. This has resulted in pharmacists now requiring diagnosis skills to determine of the patient needs these medicines and if so which is the appropriate medicine to dispense.	extensive additions since	skills; knowledge and responsibility, change in the nature of the work and conditions under which the work is done
Introduction of Generic Medicines See p55 - 56 of APESMA Submission of 3rd November 2016	The federal government decision to allow generic medicines to be available under the PBS has increased the number of medicines registered under the NPS by around half since	Around 2000 and extensive additions since	Additional skills; knowledge and responsibility, change in the nature of the work and conditions under which the work is

	1998. This has resulted in an increase in risk of dispensing errors and drug misadventure by patients, with pharmacists being burdened with the responsibility of reducing risk by ensuring accuracy and compliance.		done
Home Medicines Reviews (HMR) See p56 - 67 of APESMA Submission of 3rd November 2016	HMRs are where an Accredited Pharmacist conducts the review in the patient's home of all the medicines they take and then writes a report to go back to the patient's medical practitioner. In conducting these reviews the pharmacist reviews what prescription, non-prescription and complementary medicines, including vitamins, a patient is taking and makes	2001	New Work requiring additional skills and qualifications, change in the nature of the work and conditions under which the work is done

	recommendations for the pharmacist or their medical practitioner to discuss with the patient which may include education on how to store and to take their medicines; whether the medicines they take are all complementing each other and recommendations where they aren't and if there is a need to change any medicines etc.		
Residential Medication Management Reviews (RMMR) See p57 of APESMA Submission of 3rd November 2016	A RMMR is like an HMR except it is provided to a permanent resident of an Australian Government-funded aged care facility. It also can only be conducted by an accredited pharmacist when requested by a resident's medical	2001	New Work requiring additional skills and qualifications, change in the nature of the work and conditions under which the work is done

	practitioner and undertaken in collaboration with appropriate members of the resident's healthcare team. A comprehensive assessment is undertaken to identify, resolve and prevent medication related problems and is provided to the resident's medical practitioner.		
MedsChecks and Diabetes Medschecks (Medicines Use Review) See p57 - 58 of APESMA Submission of 3rd November 2016	The MedsCheck and Diabetes Medscheck services should take approximately 30 minutes to complete. This service aims to help patients learn more about their medicines including how medicines affect medical conditions; identify problems that a patient may be experiencing with their medicines; improve the quality	2010	New Work requiring additional skills and training, change in the nature of the work

	use of medicines by patients; and educate patients about how to best use and store their medicines		
Dose Administration Aids See p58 – 59 of APESMA Submission of 3rd November 2016	A Dose Administration Aid is an adherence device developed to assist medication management for a consumer by having medicines divided into individual doses and arranged according to the dose schedule throughout the day. It can either be a unit dose (one single type of medicine per compartment) or multi-dose pack (different types for medicines per compartment).	2010	New Work requiring additional skills and training, change in the nature of the work
Diabetes Management See p59 of APESMA Submission of 3rd	The aim of this service is to enhance the capacity of Australians with type 1, type 2,	Early 2000s	New Work requiring additional skills and training,

November 2016	gestational and other diabetes to understand and manage their life with diabetes. Pharmacists provide patients with the equipment and medicines they need to manage their medicines as well as educating and counselling them on initiatives they can take to enable the person to better manage their diabetes and identify any problems relating to these medications, including whether the medicine is the most appropriate for the person, whether the mediation is safe, whether the medicine is effective, and whether the person can take the medicine in the from		change in the nature of the work

	prescribed.		
Asthma Management See p59 of APESMA Submission of 3rd November 2016	The aim of this service is to educate patients on the proper use of their inhaler device and to assist them to develop an asthma management plan and assist them to get the best out of their medicines to enable them to better manage their asthma and reduce the frequency of asthma attacks	Early 2000s	New Work requiring additional skills and training, change in the nature of the work
Clinical Interventions See p60 of APESMA Submission of 3rd November 2016	A Clinical Intervention is a professional activity undertaken by a pharmacist directed towards improving quality use of medicines and resulting in a recommendation for a change in the patient's medication therapy, means of administration or	2010	New Work requiring additional skills and training, change in the nature of the work

	medication taking behaviour.		
Staged Supply of Medicines See p60 - 61 of APESMA Submission of 3rd November 2016	Under this federal government, Department of Health program, pharmacists are encouraged to dispense PBS medicines in instalments, this may be daily, weekly, fortnightly. A request for staged supply of medicines is usually provided by a doctor, but can be initiated by the patient. It is usually used for patients with mental illness, drug addiction or who are otherwise unable to manage medications safely.	2010	New Work requiring additional skills and training, change in the nature of the work and conditions under which work is done
Certificates for Absence from Work See p61 of APESMA	Since the Fair Work Act 2009 came into force pharmacists have been able to sign certificates for absence from work	2009	New Work requiring additional skills and training, change in the

Submission of 3rd November 2016	for people who are unable to attend work because of personal illness or because they must care for a family member with an illness. They are only able to sign a certificate within an area of practice and they must undertake a detailed consultation with the patient to determine the nature of their illness and if and how long they will be unable to attend work		nature of the work
Inoculations See p62 of APESMA Submission of 3rd November 2016	In December 2013, the Pharmacy Board of Australia announced that pharmacists have been authorised to undertake vaccinations if they have obtained suitable additional training to enable them to do so. Since	2013	New Work requiring additional skills and training, change in the nature of the work

	then each of the states has enacted legislation enabling pharmacists to undertake this service.		
Increased Use of Complimentary Medicines and Vitamins See p62 - 63 of APESMA Submission of 3rd November 2016	There has been an increase in use and range of complimentary medicines and vitamins since 1998. Pharmacists need to have knowledge of these products and particularly how they affect various illnesses and diseases. It is also essential for pharmacists to know if these products can cause any negative effects if taken in conjunction with prescription medicines.	Evolving during period	New work and additional skill requirements, change in the nature of the work
Chronic Diseases See p63 - 68 of APESMA Submission of 3rd	With the ageing of the Australian population and better diagnosis skills more	Evolving during period	More Complex conditions under which the work is

November 2016	patients are being diagnosed with more diseases and there are more patients diagnosed with multiple diseases. This results in more complexity for the pharmacist in ensuring the patient's medicines do not conflict with each other and hat patients are educated on how to manage their diseases and medicines.		done, working environment – increased skills and knowledge
Introduction of Generic Medicines / Price Disclosure See p68 of APESMA Submission of 3rd November 2016	The introduction of generic medicines and Price Disclosure have resulted in increased complexity and difficulty for pharmacists. A pharmacy now often carries the original of a medicine and at least one generic of the same medicines. They often carry multiple generics of the more frequently	From to 2005 to present	More Complex conditions under which the work is done, working environment – increased skills and knowledge

	used medicines. Usually these medicines are often in very similar packages and at very differing prices which can make selection difficult. Explaining the options to purchase different versions of the same medicines can make the process of explaining and dispensing a prescription medicine to a patient more difficult than it was when there was only one option of a medicine available.		
Quality Care Pharmacy Program See p68 - 69 of APESMA Submission of 3rd November 2016	The Quality Care Pharmacy Program (QCPP) is a quality assurance program for community pharmacy, and provides support and guidance on professional health services and pharmacy business	2000	More Complex conditions under which the work is done, working Environment

	operations. It aims to ensure that community pharmacies provide quality professional services and customer care. Employee pharmacists must comply with the training requirements and develop, maintain and comply with policies and procedures established through this program.		
Forward Pharmacy Model of Practice See p69 - 70 of APESMA Submission of 3rd November 2016	Since the introduction of QUM almost all pharmacies have adopted what is known as the Forward Pharmacy Model of Practice which takes the pharmacist from behind the counter to being the main point of contact with patients. This	From 2000 and various changes since	More Complex conditions under which the work is done, working Environment

	change in practice has, along with all of the other changes outlined in this submission, significantly changed the role of the pharmacist from someone who is responsible for dispensing medicines and safely storing them with little or no direct contact with patients to a professional who still dispenses and ensures that medicines are safely stored but who also provides a wide range of health services and who's role also encompasses education and counselling patients on the proper use of medicines.		
Workloads See p70 - 71 of	With the significant increase in the number of duties	1999 and continuing between 1999 and	More complex conditions under which

APESMA Submission of 3rd November 2016	undertaken by pharmacists and the increase in the number and variety of medicines dispensed by pharmacists the roles of a pharmacist has become increasingly complex and difficult.	the present time	the work is done, working Environment

EXPERT WITNESSES TO BE CALLED AND THE NATURE OF THE EVIDENCE THEY WILL GIVE

5. APESMA intends to call four expert witnesses. They are:

6. Professor Ines Krass, Professor of Pharmacy Practice University of Sydney

6.1. The Curriculum Vitae of Professor Ines Krass is attached and marked as 'Annexure A'

Evidence:

6.2. Professor Krass will provide expert evidence on the changes in community pharmacy practice and on the changes to undergraduate degrees over the last twenty years. She will also give evidence on research being conducted for APESMA on changes in community pharmacy practice. This research includes a literature review and the outcome of interviews with currently practicing community pharmacists

Biographical Details:

6.3. Ines Krass joined the faculty of Pharmacy at the University of Sydney as a lecturer in 1993 and is now Professor in Pharmacy Practice. In 20 years in academia, she has built a strong national and international reputation in health services research in community pharmacy, as evidenced through her 126 refereed publications, visiting professorships, invitations to speak at national and international conferences, contributions to subject reviews and positions within international research organisations and journal editorial boards. Professor Krass has supervised 19 higher degree students to completion of their higher degree (12 PhDs, seven Master of Pharmacy/Clinical Pharmacy students) and is currently supervising six higher degree students.

7. Professor Parisa Aslani, Professor of Pharmacy Practice, University of Sydney

7.1. The Curriculum Vitae of Professor Parisa Aslani is attached and marked as 'Annexure B'.

Evidence:

7.2. Professor Aslani will provide evidence on research being conducted for APESMA on changes in community pharmacy practice. This research is being conducted by Professor Aslani, Professor Ines Krass and two researchers from the University of Sydney and it includes a literature review and the outcome of interviews with currently practicing community pharmacists

Biographical Details:

7.3. Professor Parisa Aslani's research addresses areas of fundamental significance: the design of Consumer Medicine Information (CMI); and issues that impact the Quality Use of Medicines (QUM). Professor Aslani's profound long-term goal is to determine how consumers evaluate medicine information, enabling the profession to enhance patient access to, and understanding of, medicines. This is a critical step towards promoting adherence, concordance and compliance within various Australian communities. As well as being an active researcher - where research teams of which she is a member have received $2.68 million in grants - Professor Aslani has supervised to completion: six doctoral, five masters by research, five masters by coursework with a research component (Master of Pharmacy) and 19 honours students (Bachelor of Pharmacy).

8. Dr. Lance Emerson, Chief Executive Officer, Pharmaceutical Society of Australia (PSA)

8.1. The Curriculum Vitae of Dr Lance Emerson at attached and marked as ‘Annexure C’.

Evidence:

8.2. Dr. Emerson will provide evidence on the Pharmacist Competency standards, particularly on the new additions and changes in these competency standards. Evidence will also be provided on Pharmacist Practice Notes and Guidelines particularly as to new additions and changes in these Practice Notes and Guidelines.

Organisation Details:

8.3. PSA is the peak national professional pharmacy organisation representing Australia's 29,000 pharmacists working in all sectors and across all locations.

8.4. The core business of PSA is practice improvement in pharmacy by providing continuing professional development and practice support, in order to improve the health of Australians. They are responsible for developing practice standards and procedures for the pharmacy industry and in developing and publishing competency standards in consultation with industry. PSA provides an extensive program of education and professional development activities across Australia, including the PSA Intern Training Program

Biographical Details:

8.5. Dr Emerson is currently chief Executive Officer and Company secretary of the PSA. He is the holder of a Ph.D in Pharmacy from the Faculty of Pharmacy, University of Sydney. He has previously been the holder of a number of senior positions within the pharmacy industry and sat on a number of boards and government inquiries into various aspects of the pharmacy industry.

9. Professor Philip Clarke, Chair in Health Economics within the Centre for Health Policy, Melbourne School of Population and Global Health, Melbourne University

9.1. The Curriculum Vitae of Professor Philip Clarke is attached and marked as 'Annexure D'.

Evidence:

9.2. Professor Philip Clarke will provide evidence on aspects of pharmacy ownership, pharmacy revenues and business sale prices.

9.3.

Biographical Details:

9.4. Philip Clarke holds the chair in Health Economics within the Centre for Health Policy at the Melbourne School of Population and Global Health,

University of Melbourne. He has had previous appointments at Oxford University and the University of Sydney. He was involved in developing the United Kingdom Prospective Diabetes Study (UKPDS) Outcomes Model; a computer simulation model for predicting outcomes for patients with Type 2 diabetes. He has expertise in economic evaluation alongside clinical trials, simulation modeling, measurement of health inequalities and international comparisons of drug prices. He has recently contributed to books on cost-effectiveness analysis and cost-benefit analysis published by Oxford University Press.

9.4.1. His health economic research interests include developing methods to value the benefits of improving access to health care, health inequalities and the use of simulation models in health economic evaluation. He has also undertaken policy relevant research for the World Bank, OECD, AusAID and DoHA.

9.4.2. He has over 80 peered review publications and has recently contributed to books on cost-effectiveness analysis and cost-benefit analysis published by Oxford University Press.

FINDINGS SOUGHT TO BE MADE FROM THE EVIDENCE

10. Report Provided by Professor Krass, Professor Aslani and researchers Ms Tong and Ms Luckie – University of Sydney

10.1. Outlined below are the specific findings APESMA submits can be made based on the literature search undertaken by Professor Krass, Professor Aslani and researchers Ms Vivien Tong and Ms Kate Luckie.

10.2. This Report was undertaken because of a Commission initiated by APESMA. A copy of the Project Brief commissioning this Report is attached and marked as 'Annexure E'. A copy of the Literature Search report is attached and marked as 'Annexure F'. The University of Sydney Report on their findings after interviewing pharmacists will be provided at a later date when this part of their work is completed and when the Full Bench requests the provision of lay evidence,

10.3. The Report by the University of Sydney attached at 'Annexure F' is a report of a literature review covering the period from 1996 to 2016. It explores the clinical, economic and/or humanistic outcomes relevant to "cognitive pharmaceutical services" (CPS) delivered by community pharmacists.

10.4. APESMA submits that the findings the Commission should make from this report are:

10.4.1. That the reasons for evolution of pharmacy practice changes include:

10.4.1.1. Externally, with the Commonwealth of Australia health policy change following the development and adoption of the strategy on the Quality Use of Medicines

10.4.1.2. Internally, with the advent and adoption of the concept of "Pharmaceutical Care" with the consequence shift from a practice focus on safe and

efficient dispensing medicines to one of "patient-centredness" where the pharmacist works with the patient and their other health practitioners to ensure people get the best from their medicines.

10.5. The range of funded cognitive pharmacy services has increased over the period 1998 to now, with some CPS currently provided not funded under the current CPA. For any CPS initiated by individual community pharmacists or a small number of community pharmacies alone, the nature of such service(s) may vary. Each community pharmacist will likely provide multiple CPS as part of their practice of the profession. The changes to the greater complexity of the pharmacists' roles and increased responsibilities include:

10.5.1. Medication management services; Home medicines review (CPA funded from 2001; mandatory training and accreditation, with mandatory reaccreditation required), Residential medication management review (CPA funded since 1997; mandatory training and accreditation, with mandatory reaccreditation required), DiabetesChek (CPA funded from 2012; specific training and prior approval required), Medschek (CPA funded from 2012; specific training and prior approval required)

10.5.2. Clinical interventions (CPA funded form 2011, training required)

10.5.3. Dose Administration Aids (CPA funded from 2005, training required)

10.5.4. Staged Supply (CPA funded from 2010, training required)

10.5.5. Continued dispensing (CPA funded from 2012, training required)

10.5.6. Aboriginal and Torres Strait Islander (ATSI) Quality Use of Medicines Service (CPA funded from 2005, training required)

10.5.7. Vaccinations (Changes in States legislation from 2015; training and accreditation required)

10.5.8. Absence from work certificates (Changes to FWA 2009)

10.5.9. Down scheduling of prescription only medicines to Pharmacist only medicines (rescheduling of medicines e.g. levonorgestrel (emergency contraceptive pill), orlistat, fluconazole, chloramphenicol, proton pump inhibitors)

10.5.10. Wound management

10.5.11. Health promotion/Heath screening; CVD risk/CVD (e.g. BP, cholesterol levels, International normalised ratio (INR)/anticoagulant therapy), Diabetes-related markers (e.g. AUSDRISK™, BG, glycosylated haemoglobin (HbA1c)), Asthma/COPD (e.g. lung function), Osteoporosis (e.g. bone mineral density (BMD)), Chlamydia, Bowel cancer, Sleep disorders. (Unfunded, training required)

10.5.12. Chronic disease management (Unfunded, training required)

10.5.13. Smoking cessation (Unfunded, training required)

10.5.14. Sleep apnoea service (Unfunded, training required)

10.5.15. Sexual health service (Unfunded)

10.5.16. Mental health service (Unfunded, training required)

10.5.17. Palliative care service (Unfunded, training required)

10.5.18. Maternal and infant care service (Unfunded, training required)

10.5.19. Opioid Dependency Treatment (partially subsidised, training required)

10.5.20. Compounding (Unfunded, training required)

10.5.21. Provision of safe supply (or refusal of supply) with advice around Pharmacist only, Pharmacy only and unscheduled medicines and products. (Unfunded, training required)

10.5.22. Medication adherence programs (Unfunded, training required)

10.5.23. Health promotion (Unfunded, training required)

10.6. Pharmacists work within a supporting and legislative framework. Reflecting the greater complexity in pharmacists' roles and increased responsibilities, a number of changes have occurred since 1998;

10.6.1. Changes to pharmacy education curriculum with increased emphasis on clinical problem solving and skills related to patient care

10.6.2. Changes to the intern training program requirements

10.6.3. Changes to Professional Practice Standards, National Pharmacy Competency Standards, and practice guidelines

10.6.4. Changes to pharmacist registration requirements including AHPRA Pharmacy registration requirements mandating Continuing Professional Development resulting in increased post graduate (and changes in undergraduate) training

10.6.5. Changes to Pharmacy Board of Australia guidelines

10.6.6. Therapeutic Goods Administration requirements in relation to compounding

10.6.7. Changes to government funding with CPS as a component of the Community Pharmacy Agreements (CPA) between the Australian Government and the Pharmacy Guild of Australia being part of the funding package

10.6.8. Establishment of, compliance with, and changes to the Quality Care Pharmacy Program, a quality management system designed to ensure that standards are maintained in the community pharmacy through an

assessment process which must be satisfactorily completed to obtain accreditation. Assessment process includes ensuring required training for service providers has been completed satisfactorily.

10.6.9. Perception of pharmacists acknowledging the need to adopt CPS as the profession transitions towards a service-based model as the primary function of pharmacists in the future

10.6.10. Changes to consumer opinion wanting pharmacists to have a greater role in their primary care

10.7. The range of funded cognitive pharmacy services has increased over the period 1998 to now, with some CPS currently provided not funded under the current CPA. For any CPS initiated by individual community pharmacists or a small number of community pharmacies alone, the nature of such service(s) may vary. Each community pharmacist will likely provide multiple CPS as part of their practice of the profession. The changes to the greater complexity of the pharmacists' roles and increased responsibilities include:

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Government and the Pharmacy Guild of Australia being part of the funding package

10.8.8. Establishment of, compliance with, and changes to the Quality Care Pharmacy Program, a quality management system designed to ensure that standards are maintained in the community pharmacy through an assessment process which must be satisfactorily completed to obtain accreditation. Assessment process includes ensuring required training for service providers has been completed satisfactorily.

10.8.9. Perception of pharmacists acknowledging the need to adopt CPS as the profession transitions towards a service-based model as the primary function of pharmacists in the future

10.8.10. Changes to consumer opinion wanting pharmacists to have a greater role in their primary care.

11. Documents Produced by Dr Emerson and the PSA arising from Orders to Produce Issued by the Commission on 8th March 2017[4]

11.1. Outlined below are the specific findings APESMA submits can be made based on the documents provided by the PSA. These documents can be viewed at the Registry of the Commission by appointment. Attached and marked as 'Annexure G' is an Index of the documents provided by the PSA.

11.2. The PSA is the peak national professional pharmacy organisation representing Australia's pharmacists working in all sectors and across all locations. Their membership consists of employee pharmacists, employer pharmacists, academics, student pharmacists and the like. They have developed many documents, policies, procedures and the like which provide pharmacists with a guide to undertaking their day to day work. The PSA are also the custodians of and hold and coordinate the development of and variations to the National Competency Standards Framework for Pharmacists in Australia. These policies and practice standards are also used by the Pharmacy Board of

[4] https://www.fwc.gov.au/documents/sites/awardsmodernfouryr/am2014209-order-080317.pdf

AHPRA when determining registration and disciplinary matters. Evidence of the Pharmacy Board of Australia's use of some of the PSAs policies and practice standards can be found at their website[5].

11.3. The documents provided by the PSA detail the various professional practice standards, policies, procedures and the like that have been introduced and varied during the period between 1998 and March 2017. These documents also contain legislative and regulatory and procedural requirements; expected skills and additional training pharmacists are expected to have in order to be able to properly perform carious aspects of their professional practice.

11.4. APESMA submits that the findings the Commission can make from the documents provided by the PSA are that that there have been significant changes in the work done by pharmacists since1998 in terms of greater complexity and increased skill. The changes these documents reflect include:

11.4.1. Federal Government health policy changes, particularly the introduction of QUM into the National Medicines Policy in 1999, is reflected in most the documents provided by the PSA. It can be seen from these documents that this initiative of the federal government has driven significant change to the work required of pharmacists. QUMs emphasis on education and counselling of patients regarding the safe usage of medicines has resulted in many new and varied policies and practice standards particularly in relation to education and counselling and the acquisition of new skills and training to undertake the functions required of a pharmacist as a result of the introduction of QUM into the National Medicines Policy. See, for example, Professional Practice Standards (evaluation report {1999}, 2002, 2006, 2010, 2017 {draft}).

11.4.2. The introduction of new Practice Standards and Guidelines which require pharmacists to obtain new skills. See for example, Guidelines

[5] http://www.pharmacyboard.gov.au/Codes-Guidelines.aspx

for the Continued Dispensing of eligible prescribed medicines by pharmacists (2012) and various new and varied Guidelines for the provision of the increasing number of Pharmacist Only Medicines (Guidelines on provision of Pharmacist Only Medicines – Emergency Contraception {2017, 2015, 20078, 2003}; Naloxone {2016}; Famciclovir {2015, 2012}; Short acting beta-agonists {2015, 2011}; Chloramphenicol for ophthalmic use {2015, 2011}; Combined analgesics containing codeine {2015, 2011}; Fluconazole {2015, 2011, 2005}; Orlistat {2015, 2011, 2005}; Proton Pump Inhibitors {2015, 2011, 2008}; Prochlorperazine {2015, 2011}).

11.4.3. Variations to Professional Practice Standards, Guidelines and Tools and creation of new practice standards and guidelines also reflect changes to regulatory and legislative requirements for dispensing medicines. These sorts of changes can be seen in Guidelines such as the Guidelines for provision of Dose Administration Aids (2007, 2017 etc.); and Guidelines for Pharmacists on PBS brand substitution (2004).

11.4.4. Frequent variations to the Professional Practice Standards (1999, 2002, 2006, 2010, 2017) reflect the significant change occurring in the legislative and regulatory requirement for the provision of medicines by pharmacists

11.4.5. It can be seen through the more recent variations to the different Professional Practice Standards, Guidelines and Tools that there is an increased emphasis on the requirement for pharmacists to educate and counsel patients and for them to obtain increased additional skills in order for them to do this. The more recent variations of these policies, practice notes etc. also highlight the increased number and complexity of additional skills and training pharmacists must undertake and obtain in order to perform the functions now required of them. For example, the various practice guidelines and tools regarding the provision of Dose Administration Aids (2007); dispensing of Pharmacist Only medicines (various); undertaking Medschecks and Diabetes

Medschecks (2012); and the provision of emergency contraception (2017, 2015, 2008, 2003)

11.4.6. Additions and variations to the National Competency Standards Framework for Pharmacists provide evidence of:

11.4.6.1. an increasing number of competencies required by pharmacists.

11.4.6.2. increasingly complex regularity and legislative requirements for the work done by pharmacists

11.4.6.3. an increasing number of additional skills and training a pharmacist must obtain to perform these additional functions.

11.4.7. The variations to the Code of Ethics for Pharmacists (1998, 2011, 2106) indicate that there has been a change in the role, responsibilities, accountabilities legislative and ethical obligations of the Australian Pharmacist.

12. Report of Professor Phillip Clarke

12.1. Outlined below are the specific findings APESMA submits should be made based on the Report provided by Professor Clarke on Data and Information on Aspects of Pharmacy Ownership, Pharmacy Revenues and Business Sale Prices.

12.2. This Report was undertaken because of a Commission initiated by APESMA. A copy of the Project Brief commissioning this Report is attached and marked as 'Annexure H'. A copy of Professor Clarke's report is attached and marked as 'Annexure I'.

12.3. In this Report Professor Clarke outlines that the Report both draws on past research of Prof Clarke as well providing new information and data. He indicates that it represents independent research by him and that neither he, nor the University of Melbourne received any form of payment, or remuneration for the preparation of this report.

12.4. APESMA submits that the findings the Commission should make from this report by Professor Clarke are:

12.4.1. Australian pharmacies are protected from competition by two sets of government regulations that form part of the various CPAs negotiated between the Federal Government and the PGA. These are:

12.4.1.1. Ownership Rules which disallow non-pharmacists from owning a pharmacy; and

12.4.1.2. Location Rules which restrict new pharmacies from opening within regulated distances from existing pharmacies.

12.4.2. That ownership and location rules have prevented new entrants into the sector.

12.4.3. That the number of pharmacies have remained relatively static between 1965 and 2015 when there has been an overall increase in the Australian population which has resulted in the number of persons per pharmacy increasing over the same period from around 2000 to 4000.

12.4.4. That while there are considerable variations Australia is above the OECD average with around 87 pharmacists per 100,000 persons while in terms of the number of Pharmacies per 100,000 Australia at 23.9 is below OECD average of around 28.

12.4.5. That the Australian National Audit Office (ANAO), audit of the administration of the fifth Community Pharmacy Agreement (ending June 2015) found that the remuneration pharmacies have received from government since the early 1990s for dispensing and mark-ups (the amount of money added to the price of drugs, to cover overheads and profit) has tripled from around $750 million in 1991 to over $2 billion by 2013 – even after adjusting for inflation and that this growth is due to much higher volumes of dispensing due to a combination of population increase, ageing, and expanded prescribing from newer

classes of drugs, such statins. But as well as the increase in amounts paid to pharmacies each time a drug is dispensed, government payments are now around 20% higher in real terms than in the early 1990s, due largely to greater pharmacy remuneration from mark-ups.

12.4.6. That the ANAO Report also shows that around 18% of pharmacies receive more than $1 million in remuneration from dispensing drugs listed on the Pharmaceutical Benefits Scheme. A comparison of the 2012 and 2013 financial years indicates a further 140 pharmacies moved into this top-earning bracket.

12.4.7. That the high profitability of established pharmacies mean business sale prices for inner city and suburban pharmacies can run into the millions of dollars.

12.4.8. That while the ownership and location rules protect existing owners, the next generation of pharmacy owners will have to buy their businesses at inflated prices. This makes new owners seek ever more protection from competition to make their business profitable and, in some cases, viable.

ADDENDUM

13. The University of Sydney is currently undertaking the second phase of the research project they are conducting on behalf of APESMA. APESMA is also compiling survey evidence and lay evidence in support of our claim to increase the minimum rates of pay for various pharmacist classifications contained in the Award for work value reasons. APESMA will provide lay and survey evidence when the Commission issues directions requiring us to do so.

14. Should you have any queries in relation to this correspondence, please do not hesitate to contact us.

Jacki Baulch

Senior Industrial Officer, National Office

APESMA

‘Annexure A’

Professor Ines Krass

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Professor in Pharmacy Practice

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Biographical details

Ines Krass joined the Faculty of Pharmacy at the University of Sydney as a lecturer in 1993 and is now Professor in Pharmacy Practice. In 20 years in academia, she has built a strong national and international reputation in health services research in community pharmacy, as evidenced through her 126 refereed publications, visiting professorships, invitations to speak at national and international conferences, contributions to subject reviews and positions within international research organisations and journal editorial boards. Professor Krass has supervised 19 higher degree students to completion of their higher degree (12 PhDs, seven Master of Pharmacy/Clinical Pharmacy students) and is currently supervising six higher degree students.

Research interests

Professor Krass’ research focuses on health services research in community pharmacy. This involves the development, implementation and evaluation of chronic disease care models delivered by pharmacists for asthma and diabetes; screening and prevention of diabetes, CV disease, asthma and sleep disorders; and the validation of measures of pharmacist and consumer attitudes and behaviours. Over recent years she has been intensively involved in research on the development and implementation of disease state management programs (DSM) in community pharmacy for type 2 diabetes and asthma. She led a national research team which published the first Australian evidence supporting the role of the community pharmacist in caring for patients with diabetes. This research has directly informed the implementation of diabetes-related services in community pharmacy. Professor Krass also has a special research interest in measurement and validation of psychometric instruments. A series of instruments to assess the attitudes, knowledge, behaviours and satisfaction of both pharmacists and consumers have been developed and validated.

Current research students

Project title	Research student
An Investigation to Practice Change in Australian and Indonesian Community Pharmacy: An Insight for the Development of Contemporary Practice in Australia and Indonesia	Andi HERMAN SYAH

Themes

Cardiovascular and Diabetes; Health Services and Patient Safety

Keywords

Asthma; Health services and management; Sleep disorders; Cardiovascular diseases; Ageing

Selected grants

2016

- *Diabetes Health Check - Risk Assessment, Screening and Referral*; Krass I; Department of Health (Federal)/6th Community Pharmacy Agreement Trial Program.

2014

- *Cardiovascular risk factor measurement in Community Pharmacy*; McNamara K, Dunbar J, Krass I, Peterson G; National Heart Foundation/Focus Grants.

2012

- *Can we achieve better clinical and economic outcomes for chronic disease management in primary care asthma and hypertension*; Armour C, Bajorek B, Krass I, Hayes A, Roberts C; National Heart Foundation of Australia/Grants-in-Aid.

2010

- *The increasing burden of stroke with ageing: using CARAT to optimise preventative treatment in the community*; Bajorek B, Krass I, Hilmer S, Magin P; National Health and Medical Research Council (NHMRC)/Project Grants.

2009

- *Leica DMI 6000B fully automated digital fluorescence microscope with camera and software*; Krass I, Sukkar M; Clive & Vera Ramaciotti Foundation/Awards for Biomedical Research: Major Equipment.

2008

- *Asthma Pilot Program*; Armour C, Saini B, Krass I, Bosnic-Anticevich S, Smith L; Department of Health (Federal)/Asthma Management Program.
- *Role of pharmacists in sleep health - a screening, awarness and monitoring program*; Saini B, Krass I; Pharmacy Guild of Australia/Investigator Initiated Grants (IIG).

2007

- *Diabetes Pilot Program*; Krass I; Commonwealth Department of Health and Ageing/Research Grant.

2005

- *Goal setting in patient self-management of allergic rhinitis*; Armour C, Saini B, Krass I, Bosnic-Anticevich S, Hammond S, Smith L; Schering-Plough Pty Ltd/Research Grants.
- *Professional ethics in Pharmacy.*; Brien J, Chaar B, Krass I; Pharmacy Board of NSW/Education and Research Grant.

2004

- *Pharmacy Action Care Program*; Armour C, Bosnic-Anticevich S, Krass I, Saini B, Smith L, Stewart K, Burton D, Lough S, Stewart P, Simpson M, Lough S; Pharmacy Guild of Australia/Research Grant.
- *Asthma self-management in the community: pharmacists facilitating empowerment of patient asthma self-management practices through collaboration*; Armour C, Bosnic-Anticevich S, Krass I, Saini B; Pharmacy Guild of Australia/Research Grant.
- *A collaborative, interprofessional, evidence based approach to reducing coronary heart disease in rural areas*; Emerson L, Benrimoj S, Krass I, Grant V, Emerson L; Pharmacy Guild of Australia/Invest Initiat Project.

2003

- *A community pharmacy based anticoalgulant management service*; McLachlan A, Krass I, Chen T; Pharmacy Guild of Australia/Research Grant.
- *Community pharmacy models for asthma managment in rural Australia*; Armour C, Bosnic-Anticevich S, Krass I, Saini B, Taylor S; Pharmacy Guild of Australia/Research Grant.
- *Pharmacy diabetes care program*; Krass I, Armour C, Taylor S, Hughes J, Peterson M, Stewart K; Pharmacy Guild of Australia/Commissioned Projects.

2002

- *Managing Asthma in Rural Communities*; Armour C, Saini B, Bosnic-Anticevich S, Krass I, Taylor S, Dalton A, Hulme F; Commonwealth Department of Health and Ageing/Research Grant.
- *An integrated model for disease state management (DMS) in diabetes: collaboration of the community pharmacist and GP in continuity of care*; Krass I, Armour C, Taylor S; Pharmacy Guild of Australia/Research Grant.

- *Pharmacy Astma Action Plan Program- Pharmacists addressing the issues ini the community*; Krass I, Saini B, Bosnic-Anticevich S, Armour C; NSW Health/Research Grant.

2000

- *SugarCare: Development, implementation and evaluation of best practice guidelines for a disease management program and professional remuneration strategy for ..*; Armour C, Krass I; Commonwealth Department of Health and Aged Care/Other Program and Contract Research.
- *Development, implementation and evaluation of a health promotion and screening service in community pharmacy*; Krass I, Smith D, Chen T; Commonwealth Department of Health and Aged Care/Guild/Government Agreement.
- *Optimising the use of antithrombotic therapy in elderly patients with atrial fibrillation*; Krass I; Commonwealth Department of Health and Aged Care/Quality Use of Medicines Evaluation Program.

2008

- *Asthma Pilot Program*; Armour C, Saini B, Krass I, Bosnic-Anticevich S, Smith L; Department of Health (Federal)/Asthma Management Program.
- *Role of pharmacists in sleep health - a screening, awarness and monitoring program*; Saini B, Krass I; Pharmacy Guild of Australia/Investigator Initiated Grants (IIG).

2007

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- *Professional ethics in Pharmacy.*; Brien J, Chaar B, Krass I; Pharmacy Board of NSW/Education and Research Grant.

2004

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- *Asthma self-management in the community: pharmacists facilitating empowerment of patient asthma self-management practices through collaboration*; Armour C, Bosnic-Anticevich S, Krass I, Saini B; Pharmacy Guild of Australia/Research Grant.
- *A collaborative, interprofessional, evidence based approach to reducing coronary heart disease in rural areas*; Emerson L, Benrimoj S, Krass I, Grant V, Emerson L; Pharmacy Guild of Australia/Invest Initiat Project.

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- *Community pharmacy models for asthma managment in rural Australia*; Armour C, Bosnic-Anticevich S, Krass I, Saini B, Taylor S; Pharmacy Guild of Australia/Research Grant.
- *Pharmacy diabetes care program*; Krass I, Armour C, Taylor S, Hughes J, Peterson M, Stewart K; Pharmacy Guild of Australia/Commissioned Projects.

2002

- *Managing Asthma in Rural Communities*; Armour C, Saini B, Bosnic-Anticevich S, Krass I, Taylor S, Dalton A, Hulme F; Commonwealth Department of Health and Ageing/Research Grant.
- *An integrated model for disease state management (DMS) in diabetes: collaboration of the community pharmacist and GP in continuity of care*; Krass I, Armour C, Taylor S; Pharmacy Guild of Australia/Research Grant.
- *Pharmacy Astma Action Plan Program- Pharmacists addressing the issues ini the community*; Krass I, Saini B, Bosnic-Anticevich S, Armour C; NSW Health/Research Grant.

2000

- *SugarCare: Development, implementation and evaluation of best practice guidelines for a disease management program and professional remuneration strategy for ..*; Armour C, Krass I; Commonwealth Department of Health and Aged Care/Other Program and Contract Research.
- *Development, implementation and evaluation of a health promotion and screening service in community pharmacy*; Krass I, Smith D, Chen T; Commonwealth Department of Health and Aged Care/Guild/Government Agreement.
- *Optimising the use of antithrombotic therapy in elderly patients with atrial fibrillation*; Krass I; Commonwealth Department of Health and Aged Care/Quality Use of Medicines Evaluation Program.

Selected publications

Edited Books

- Krass, I., Aslani, P. (2002). *The 12th International Social Pharmacy Workshop*. Australia: Faculty of Pharmacy, University of Sydney.

Book Chapters

- Armour, C., Chaar, B., Murray, M., Ambler, G., Krass, I. (2012). Current therapies and pharmacy programs for obesity and diabetes. In Louise A. Baur, Stephen M. Twigg, Roger S.Magnusson (Eds.), *A Modern Epidemic: Expert Perspectives on Obesity and Diabetes*, (pp. 315-338). Sydney, Australia: Sydney University Press.

- Krass, I., Bell, J. (2011). An International Perspective. In Janet Krska (Eds.), *Pharmacy in Public Health*, (pp. 67-81). London: Pharmaceutical Press.
- Krass, I., Armour, C. (2011). Preventing Disease: Screening in the Pharmacy. In Janet Krska (Eds.), *Pharmacy in Public Health*, (pp. 221-243). London: Pharmaceutical Press.
- Armour, C., Saini, B., Bosnic-Anticevich, S., Krass, I. (2005). Role of pharmacists in asthma monitoring. In Peter G. Gibson (Eds.), *Monitoring Asthma: Lung Biology in Health and Disease Series, Volume 207*, (pp. 145-158). United States: Taylor and Francis.

Journals

- Puspitasari, H., Costa, D., Aslani, P., Krass, I. (2016). An explanatory model of community pharmacists' support in the secondary prevention of cardiovascular disease. *Research in Social and Administrative Pharmacy*, 12(1), 104-118. [More Information]
- Hayek, A., Joshi, R., Usherwood, T., Webster, R., Kaur, B., Saini, B., Armour, C., Krass, I., Laba, T., Hersch, F., Jan, S., Lo, S., Peiris, D., Rodgers, A., Patel, A., et al (2016). An integrated general practice and pharmacy-based intervention to promote the use of appropriate preventive medications among individuals at high cardiovascular disease risk: Protocol for a cluster randomized controlled trial. *Implementation Science*, 11(1), 1-9. [More Information]
- Lau, Y., Korula, S., Chan, A., Heels, K., Krass, I., Ambler, G. (2016). Analysis of insulin pump settings in children and adolescents with type 1 diabetes mellitus. *Pediatric Diabetes*, 17(5), 319-326. [More Information]
- Santella, A., Schlub, T., Fagan, D., Hillman, R., Krass, I. (2016). Australian pharmacists' willingness to conduct rapid HIV testing in community pharmacies. *Sexual Health*, 13(3), 292-294. [More Information] Hermansyah, A., Sainsbury, E., Krass, I. (2016). Community pharmacy and emerging public health initiatives in developing Southeast Asian countries: a systematic review. *Health and Social Care in the Community*, 24(5), e11-e22. [More Information] Eassey, D., Smith, L., Krass, I., McLachlan, A., Brien, J. (2016). Consumer perspectives of medication-related problems following discharge from hospital in Australia: a quantitative study. *International Journal for Quality in Health Care*, 28(3), 391-397. [More Information] Eh, K., McGill, M., Wong, J., Krass, I. (2016). Cultural issues and other factors that affect self-management of Type 2 Diabetes Mellitus (T2D) by Chinese immigrants in Australia. *Diabetes Research and Clinical Practice*, 119, 97-105. [More Information] Fuller, J., Wong, K., Hoyos, C., Krass, I., Saini, B. (2016). Dispensing good sleep health behaviours not pills - a cluster-randomized controlled trial to test the feasibility and efficacy of pharmacist-provided brief behavioural treatment for insomnia. *Journal of Sleep Research*, 25(1), 104-115. [More Information] Bajorek, B., LeMay, K., Magin, P., Roberts, C., Krass, I., Armour, C. (2016). Implementation and evaluation of a pharmacist-led hypertension management service in primary care: Outcomes and methodological challenges. *Pharmacy Practice*, 14(2), 1-13. [More Information] Um, I., Krass, I., Armour, C., Gill, T., Chaar, B. (2016). Incorporating a Weight Management Skills Workshop in Pharmacy Curricula in Australia. *American Journal of Pharmaceutical Education*, 80(4), 1-9. [More Information] Bajorek, B., Magin, P., Hilmer, S., Krass, I. (2016). Optimizing stroke prevention in patients with atrial fibrillation: A cluster-randomized controlled trial of a computerized antithrombotic risk assessment tool in australian general practice, 2012-2013. *Preventing Chronic Disease*, 13(7), 1-13. [More Information] Rathbone, A., Mansoor, S., Krass, I., Hamrosi, K., Aslani, P. (2016). Qualitative

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‘Annexure B’

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Biographical details

Associate Professor Parisa Aslani's research addresses areas of fundamental significance: the design of Consumer Medicine Information (CMI); and issues that impact the Quality Use of Medicines (QUM). Associate Professor Aslani's profound long-term goal is to determine how consumers evaluate medicine information, enabling the profession to enhance patient access to, and understanding of, medicines. This is a critical step towards promoting adherence, concordance and compliance within various Australian communities. As well as being an active researcher - where research teams of which she is a member have received $2.68 million in grants - Associate Professor Aslani has supervised to completion: six doctoral, five masters by research, five masters by coursework with a research component (Master of Pharmacy) and 19 honours students (Bachelor of Pharmacy).

Research interests

Associate Professor Aslani's area of research focuses on Consumer Medicine Information (CMI), where she aims to optimise patient care and quality use of medicines through effective medicine information. Measuring the effectiveness of medicine information format and delivery is a critical step towards promoting patient adherence. Associate Professor Aslani's research also focuses on adherence to therapy, in particular in the area of chronic therapy. Her research aims to improve patient adherence through educating patients and healthcare professionals, and fostering a concordant approach to patient care. In the 'Consumer Medicine Information Effectiveness' project, Associate Professor Aslani led a team of national and international experts who developed and evaluated viable alternative CMI formats for optimal effectiveness and best-practice delivery in community pharmacy practice. Associate Professor Aslani has also recently led a team to develop a program for the Heart Foundation targeted at healthcare professionals. This educational program aimed to

promote an understanding of the issues related to adherence, how to overcome them and the importance of adherence in achieving health outcomes, in particular, through a multiprofessional collaborative team.

Currently, Associate Professor Aslani is holder of the prestigious University of Sydney Thompson Fellowship. She intends to use the Fellowship to complete a study that aims to develop and evaluate useable patient medicine information documents for non-prescription medicines to meet consumer needs, and ensure optimal delivery by healthcare professionals.

Teaching and supervision

2015 Summer Scholarship Project

Current research students

Project title	Research student
Health literacy and complementary medicine use in pregnancy and lactation.	Larisa BARNES
Comparison of International Regulation of Written Medicine Information (WMI) in Prescription Medicines	Tony YUAN

Themes

Health Services and Patient Safety

Keywords

Medicine Information; Compliance; Quality Use of Medicines; Adherence; Pharmacy

PhD and master's project opportunities

- Consumer Medicine Information evaluation and impact on consumers
- Adherence monitoring services on community pharmacy practice
- Consumer Medicine Information: Assessment of pharmacists' behavour
- Acute and chronic therapy: Factors that influence patient adherence and persistence

Selected grants

2017

- *Asking the right questions about attention-deficit hyperactivity disorder in children: a cluster randomized controlled tria*; Aslani P, Kohn M, Silove N, Kelly P, Clarke S; National Health and Medical Research Council (NHMRC)/Project Grants.

2014

- *Qualitative study on consumer opinions of adverse events from medicines and medical devices and their reporting*; Aslani P, Chen T, Fois R; Therapeutic Goods Administration/Research.

2013

- *Written medicine information: empowering shared decision making*; Aslani P; DVC Research/Thompson Fellowships.

2012

- *Needs analysis of pharmacists and consumers perspectives of complementary medicines*; Aslani P; Blackmores Ltd/Project Support.

2011

- *The use of Statins in Children - an audit of prescribing data from Australian Children's Hospitals*; Moles R, Gelissen I, Aslani P; Society of Hospital Pharmacists of Australia/Research and Development Grants Program

2010

- *WUN Collaboration in Medicines Information Review and Partnership*; Aslani P; Office of Global Engagement/IPDF Grant.

2009

- *The WUN Collaboration in Medicine Information, Review and Partnership*; Aslani P; Office of Global Engagement/IPDF Grant.

2008

- *CMI Effectiveness*; Aslani P; Pharmacy Guild of Australia/Community Pharmacy Agreement Research and Development Funding Opportunities.

2007

- *A-CAP Pilot Study*; Aslani P; Alphapharm Pty Ltd/Research Grant.

2004

- *Collaboration Between Community Pharmacists And Mental Health Care Practitioners: A Case Conferencing Model*; Chen T, Aslani P, Bell J, Whitehead P; Pharmacy Guild of Australia/Community Pharmacy Agreement R&D Grants.

- *Quantification of facilitators to accelerate uptake of cognitive pharmaceutical services (CPS) in community pharmacy*; Aslani P, Benrimoj S, Chen T, Williams K, Roberts A; Pharmacy Guild of Australia/Research Grant.

2003

- *Investigation of current consumer behaviour in the use of S3 and S2 topical corticosteroids*; Benrimoj S, Aslani P, Dunagan F, Williams K, Gelgor L; Glaxo SmithKline Aust Pty Ltd/BLO Project.
- *A community pharmacists delivered therapeutics outcome monitoring service for hyperlipidaemia*; Aslani P; Pharmacy Guild of Australia/Research Grant.

2002

- *An investigation into business and professional facilitators for change for the pharmacy profession in light of the third guild/government agreement*; Benrimoj S, Williams K, Aslani P, Chen T, Roberts A, Gadiel D; Pharmacy Guild of Australia/Research Grant.
- *Quality Assurance in the Clinical Pharmacy Practice Placement Program*; Armour C, Aslani P, Brien J, Chen T, Moles R, Sainsbury E, Whitehead P; Quality Teaching Improvement Fund/Contract.
- *Case conferences and care planning - Collaboration between community pharmacist and general practitioners*; Aslani P, Benrimoj S, Chen T, Whitehead P, Chan J; Pharmacy Guild of Australia/Research Grant.

2001

- *Review of previous research in Community Pharmacy research agreement between the Pharmacy Guild of Australia and The University of Sydney*; Harvey D, Aslani P; Pharmacy Guild of Australia/Research Grants.

2000

- *The use of consumer medicine information by consumers*; Aslani P; Commonwealth Department of Health and Aged Care/Research Grant.

Books

- Pont, L., Swain, L., Wilcox, K., Stirling, J., Aslani, P. (2011). *Heart Information: Living every day with my heart failure*. Australia: National Heart Foundation of Australia.
- Chen, T., Moles, R., Bajorek, B., Aslani, P. (2003). *Case Studies in Practice: Pharmacist Only and Pharmacy Medicines: A Process Guide for Pharmacists*. Sydney: Pharmaceutical Society of Australia.
- Chen, T., Whitehead, P., Williams, K., Moles, R., Aslani, P., Benrimoj, S. (2002). *Case Studies in Practice Medication review: A process guide for pharmacists*. Australia: Pharmaceutical Society of Australia.
- Williams, K., Aslani, P. (2001). *Antifungals*. Australia: Pharmaceutical Society of Australia.

Edited Books

- Krass, I., Aslani, P. (2002). *The 12th International Social Pharmacy Workshop*. Australia: Faculty of Pharmacy, University of Sydney.

- Sapkota, S., Brien, J., Gwynn, J., Flood, V., Aslani, P. (2017). Perceived impact of Nepalese food and food culture in diabetes. *Appetite*, 113, 376-386.
- Ahmed, R., McCaffery, K., Silove, N., Butow, P., Clarke, S., Kohn, M., Aslani, P. (2017). The evaluation of a question prompt list for attention-deficit/hyperactivity disorder in pediatric care: A pilot study. *Research in Social and Administrative Pharmacy*, 13(1), 172-186. [More Information]
- Tong, V., Raynor, D., Aslani, P. (2016). 'It's all there in black and white' - or is it? Consumer perspectives on the proposed Australian Medicine Information Box over-the-counter label format. *Health Expectations*, 19(4), 948-961. [More Information]

Journals

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Ahmed, R., McCaffery, K., Aslani, P. (2016). Development and validation of a question prompt list for parents of children with attention-deficit/hyperactivity disorder: A Delphi study. *Health Expectations*, 19(2), 234-252. [More Information]

Tong, V., Raynor, D., Blalock, S., Aslani, P. (2016). Exploring consumer opinions on the presentation of side-effects information in Australian Consumer Medicine Information leaflets. *Health Expectations*, 19(3), 543-556. [More Information]

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Benetoli, A., Chen, T., Schaefer, M., Chaar, B., Aslani, P. (2016). Professional use of social media by pharmacists: A qualitative study. *Journal of Medical Internet Research*, 18(9), 1-11. [More Information]

Rathbone, A., Mansoor, S., Krass, I., Hamrosi, K., Aslani, P. (2016). Qualitative study to conceptualise a model of interprofessional collaboration between pharmacists and general practitioners to support patients' adherence to medication. *BMJ Open*, 6(3), 1-9. [More Information]

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pharmacist and consumer perspectives.
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Chen, T., Aslani, P. (2001). Patient-centred learning in clinical practice settings.
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- Whitehead, P., Bell, S., Chen, T., Aslani, P. (2007). *Collaboration between community pharmacists and mental health care practitioners: a case conferencing model*.
- Aslani, P., Krass, I., Chen, T., Whitehead, P., Rose, G. (2006). *A Community Pharmacist Delivered Therapeutics Outcome Monitoring Service for Hyperlipidaemia*.
- Roberts, A., Benrimoj, S., Chen, T., Williams, K., Aslani, P. (2004). *Facilitating implementation of cognitive services: Quantification of Facilitators to accelerate uptake of cognitive pharmaceutical services (CPS) in community pharmacy (2003-2007)*.

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Roberts, A., Benrimoj, S., Chen, T., Williams, K., Aslani, P., Gadiel, D., Riddoutt, L. (2003). *An investigation into business and professional facilitators for change for the pharmacy profession in light of the Third*

Guild/Government Agreement.

Research Reports

- Aslani, P., Hamrosi, K., Feletto, E., Raynor, D., Knapp, P., Parkinson, B., Hughes, J., Nissen, L., Moore, A. (2010). *Investigating Consumer Medicine Information (I-CMI) Project*, (pp. 8 - 319). Canberra, Australia: The Pharmacy Guild of Australia.

‘Annexure C’

DR. LANCE EMERSON

Curriculum Vitae: Dr Lance Emerson

@Lance_PSA Lance Emerson lance.emerson@psa.org.au

Qualifications

- Ph.D 2006. Faculty of Pharmacy, University of Sydney *"An inter-disciplinary continuous quality improvement approach to improving health"*
- Master of Science (Primary Health Care) 1998. Flinders University, South Australia
- Graduate Diploma in Health Service Management 1993. Flinders University. South Australia
- Bachelor of Science 1989, Australian National University, Canberra, Australia. Majored in human genetics and physiology.

Relevant employment history

The Pharmaceutical Society of Australia (PSA) – CEO & Company Secretary. May 2014 – Present.

- ***Key responsibilities:*** Overseeing all aspects of the operation of PSA, including finances, government and stakeholder relations, public and pharmacy media, strategic planning, strategic human resources, board and governance issues, major conferences and other member events.

The Australian Research Alliance for Children and Youth (ARACY) – CEO and Board Director. October 2007 – April 2014.

- ***Key responsibilities:*** Overseeing all aspects of the operation of ARACY, including finances, fundraising, strategic planning and collaborative projects, government and stakeholder relations, membership, board and governance issues, conferences and other member events.

The Pharmacy Guild of Australia. General Manager, Professional Services, 1999 – 2007, Acting National CEO, January – February 2006, National Project Director, 1996 - 1999, Strategic Planning and Research Division

Key responsibilities:

- High level representation and main adviser to the Pharmacy Guild on Pharmacy Professional Services, Rural and Aboriginal medicines access issues, and Research & Development issues
- Liaising and partnering with external stakeholders including other professional organisations such as PSA, AMA, researchers, universities, Government, and consumer organisations
- Negotiating and managing large Government contracts for programs including professional services

- Facilitating research to drive innovative pharmacy services
- Pro-actively identifying commercial professional service opportunities to further the role and interests of community pharmacy in Australia; partnering with other organisations to progress these
- Ongoing management and mentoring of staff
- Reporting to the National Board of the Pharmacy Guild to ensure the Guild members' needs were met.

"Primary Health Solutions". Director. December 1996 to 2003. Part time consultancy partnership involving development of educational, primary health care and health promotion programs and training for primary health care workforce in the ACT

Department of Health, A.C.T, Manager, Social Marketing Unit, Health Advancement Services, September 1993 to August 1996.

South East Region Department of Health, N.S.W. Regional Public Health Manager (Harm Reduction / HIV/AIDS Programs), February 1991 - September 1993.

South East Region Department of Health, N.S.W. Regional Project Officer, April 1990 - February 1991.

Board and professional affiliations

Membership

- Member - International Pharmacy Federation
- Member – Public Health Association Australia
- Member – Australian Institute of Company Directors
- Member – International Society for Evidence-Based Health Care

Significant board membership / positions

- Company Secretary – PSA (2014 – present)
- Board member – ARACY (2008-2014)
- Board of management – The Climate and Health Alliance (2010 – 2013)
- Ministerial appointments:
    - Children and Family Roundtable (2011 – 2014)
    - Common Approach to Assessment, Referral and Support (CAARS) taskforce (2009 – 2014)
    - Professional Programs & Services advisory committee to Minister for Health (2005 – 2007)
    - Community Pharmacy Agreement Pharmacy Research and Development Grants (2000 – 2007)
    - National Medication Review Facilitator Management Committee (2000 – 2007)
    - National Rural and Remote Pharmacy Workforce Development Program (2000 – 2007)
    - Rural and Indigenous Health Steering Committee (2006 – 2007)
    - Pharmaceutical Advisory Committee remote medicines access working group (1997 – 2007)
- President – Public Health Association (ACT) 1994 – 1998
- Co-chair – The Australian African Children's Aid and Support Association (2003 – 2005)
- Board Member – Alfa Romeo Owners Club of Australia & convener of vintage GT interest group

‘Annexure D’

PROF PHILIP CLARKE

Positions

Honorary, Melbourne Institute of Applied Economic and Social Research
Academic, Melbourne School of Population and Global Health

Overview

Philip Clarke holds the chair in Health Economics within the Centre for Health Policy at the Melbourne School of Population and Global Health, University of Melbourne. He has had previous appointments at Oxford University and the University of Sydney. He was involved in developing the United Kingdom Prospective Diabetes Study (UKPDS) Outcomes Model; a computer simulation model for predicting outcomes for patients with Type 2 diabetes. He has expertise in economic evaluation alongside clinical trials, simulation modeling, measurement of health inequalities and international comparisons of drug prices. He has recently contributed to books on cost-effectiveness analysis and cost-benefit analysis published by Oxford University Press.

Professor Philip Clarke joined the Melbourne School of Population and Global Health, University of Melbourne in February 2012 as the Chair in Health Economics. Previously, Prof Clarke was the A/Prof at the Sydney School of Public Health. Prof Clarke previously spent six years engaged in health economic research at the University of Oxford. His research in Oxford focused on the economic analysis of the United Kingdom Prospective Diabetes Study (UKPDS) – a landmark trial of policies to improve the management of people with Type 2 diabetes.

His health economic research interests include developing methods to value the benefits of improving access to health care, health inequalities and the use of simulation models in health economic evaluation. He has also undertaken policy relevant research for the World Bank, OECD, AusAID and DoHA.

He has over 80 peered review publications and has recently contributed to books on cost-effectiveness analysis and cost-benefit analysis published by Oxford University Press.

Selected publications

- **2016**
  - **Journal Articles**
    - In reply 3. *JAMA: Journal of the American Medical Association*. 316. 2016

- **Journal Articles Refereed**
  - A randomized trial of fellowships for early career researchers finds a high reliability in funding decisions. *Journal of Clinical Epidemiology*. 69. 2016
  - A randomized-controlled trial of high- or low-volume intravenous Plasma-Lyte((R)) to prevent hypotension during sedation for colonoscopy. *Canadian Journal of Anaesthesia*. 63. 2016
  - Alexander Sutherland: A Forgotten Pioneer of Health Economics in Australia?. *Australian Economic Review*. 49. 2016
  - Changes in Quality of Life Associated with Complications of Diabetes: Results from the ADVANCE Study. *Value in Health*. 19. 2016
  - Cost-effectiveness of screening for anal cancer using regular digital ano-rectal examinations in men who have sex with men living with HIV. *Journal of the International AIDS Society*. 19. 2016
  - Do Model-Based Studies in Chronic Obstructive Pulmonary Disease Measure Correct Values of Utility? A Meta-Analysis. *Value in Health*. 19. 2016
  - Estimating Health-State Utility for Economic Models in Clinical Studies: An ISPOR Good Research Practices Task Force Report. *Value in Health*. 19. 2016
  - Growth of linked hospital data use in Australia: a systematic review.. *Australian Health Review*. 2016
  - Health State Utility Value in Chronic Obstructive Pulmonary Disease (COPD); The Challenge of Heterogeneity: A Systematic Review and Meta-Analysis 2016
  - Predicting the Long-Term Gains in Health-Related Quality of Life After Total Knee Arthroplasty. *Journal of Arthroplasty*. 2016
  - Recent trends in life expectancy for people with type 1 diabetes in Sweden. *Diabetologia*. 59. 2016
  - Revisiting the “Christmas Holiday Effect” in the Southern Hemisphere. *Journal of the American Heart Association*. 5. 2016
  - The effect of pentoxifylline on oxidative stress in chronic kidney disease patients with erythropoiesis-stimulating agent hyporesponsiveness: Sub-study of the HERO trial. *Redox Report*. 21. 2016
  - Using Classification and Regression Trees (CART) to Identify Prescribing Thresholds for Cardiovascular Disease. *Pharmacoeconomics*. 34. 2016
  - Using Patient-Reported Outcomes for Economic Evaluation: Getting the Timing Right. *Value in Health*. 2016

- ## Journal Articles Unrefereed Letters or Notes
    - Expenditures and Prices of Antihyperglycemic Medications in the United States: 2002-2013. *JAMA: Journal of the American Medical Association*. 315. 2016

- ## 2015
    - ## Journal Articles Refereed
        - A Randomized, Placebo-Controlled Trial of Pentoxifylline on Erythropoiesis-Stimulating Agent Hyporesponsiveness in Anemic Patients With CKD: The Handling Erythropoietin Resistance With Oxpentifylline (HERO) Trial. *American Journal of Kidney Diseases*. 65. 2015
        - Association between serum alkaline phosphatase and primary resistance to erythropoiesis stimulating agents in chronic kidney disease: A secondary analysis of the HERO trial 2015
        - Estimating The Potential Impact Of Insurance Expansion On Undiagnosed And Uncontrolled Chronic Conditions. *Health Affairs*. 34. 2015
        - Income contingent collection of a 'brain drain tax': Theory, policy and empirical potential 2015
        - Long-term Disability Associated With War-related Experience Among Vietnam Veterans Retrospective Cohort Study. *Medical Care*. 53. 2015
        - Measuring the Progressivity of the Pharmaceutical Benefits Scheme. *Australian Economic Review*. 48. 2015
        - Optimal strategies for monitoring lipid levels in patients at risk or with cardiovascular disease: a systematic review with statistical and cost-effectiveness modelling. *Health Technology Assessment*. 19. 2015
        - Patterns of Cancer Care Costs in a Country With Detailed Individual Data. *Medical Care*. 53. 2015
        - Survival of the fittest: retrospective cohort study of the longevity of Olympic medallists in the modern era. *British Journal of Sports Medicine*. 49. 2015
        - The effects of reduced copayments on discontinuation and adherence failure to statin medication in Australia. *Health Policy*. 119. 2015
        - The impact of a streamlined funding application process on application time: two cross-sectional surveys of Australian researchers. *BMJ Open*. 5. 2015
        - Using simplified peer review processes to fund research: a prospective study. *BMJ Open*. 5. 2015

- **2014**
  - **Journal Articles**
    - A RANDOMIZED, PLACEBO-CONTROLLED TRIAL OF PENTOXIFYLLINE ON ERYTHROPOIESIS STIMULATING AGENT RESISTANCE IN ANAEMIC PATIENTS WITH CHRONIC KIDNEY DISEASE - THE HERO TRIAL. *Nephrology*. 19. 2014
    - ASSOCIATION BETWEEN SERUM ALKALINE PHOSPHATASE AND RESISTANCE TO ERYTHROPOIESIS STIMULATING AGENTS IN CHRONIC KIDNEY DISEASE: A POST-HOC ANALYSIS OF THE HERO TRIAL. *Nephrology*. 19. 2014
  - **Journal Articles Refereed**
    - A Meta-Analysis of the Relative Risk of Mortality for Type 1 Diabetes Patients Compared to the General Population: Exploring Temporal Changes in Relative Mortality. *PLoS One*. 9. 2014
    - Evaluating the costs and benefits of using combination therapies. *Medical Journal of Australia*. 200. 2014
    - Forgetting to remember or remembering to forget: A study of the recall period length in health care survey questions. *Journal of Health Economics*. 35. 2014
    - Optimal strategies for identifying kidney disease in diabetes: properties of screening tests, progression of renal dysfunction and impact of treatment - systematic review and modelling of progression and cost-effectiveness. *Health Technology Assessment*. 18. 2014
    - Predicting mortality in people with Type 2 diabetes mellitus after major complications: a study using Swedish National Diabetes Register data. *Diabetic Medicine*. 31. 2014
    - Severe Hypoglycemia and Mortality After Cardiovascular Events for Type 1 Diabetic Patients in Sweden. *Diabetes Care*. 37. 2014
    - The effect of diabetes complications on health-related quality of life: the importance of longitudinal data to address patient heterogeneity. *Health Economics*. 23. 2014
    - The impact of funding deadlines on personal workloads, stress and family relationships: a qualitative study of Australian researchers. *BMJ Open*. 4. 2014
  - **Journal Articles Unrefereed Letters or Notes**
    - Performance of the UKPDS Outcomes Model for Prediction of Myocardial Infarction and Stroke in the ADDITION-Europe Trial Cohort: Does the ADDITION Validation Add Up?. *Value in Health*. 17. 2014
    - Pharmaceuticals, Pharmacists and profits: A health policy perspective. *Australian Prescriber*. 37. 2014

- **2013**
  - **Journal Articles**
    - The pricing of statins and implications for Pharmaceutical Benefits Scheme expenditure. *Medical Journal of Australia*. 198. 2013
  - **Journal Articles Refereed**
    - Adapting and validating diabetes simulation models across settings: Accounting for mortality differences using administrative data. *Journal of Diabetes and its Complications*. 27. 2013
    - Computer Modeling of Diabetes and Its Complications: A Report on the Fifth Mount Hood Challenge Meeting. *Value in Health*. 16. 2013
    - On the time spent preparing grant proposals: an observational study of Australian researchers. *BMJ Open*. 3. 2013
    - Predicting changes in cardiovascular risk factors in type 2 diabetes in the post-UKPDS era: Longitudinal analysis of the Swedish National Diabetes Register. *Journal of Diabetes Research*. 2013. 2013
    - Simulating Lifetime Outcomes Associated with Complications for People with Type 1 Diabetes. *Pharmacoeconomics*. 31. 2013
    - Temporal Validation of the UKPDS Outcomes Model Using 10-Year Posttrial Monitoring Data. *Diabetes Care*. 36. 2013
    - The effects of patient characteristics and geographical region on hospitalization in patients with Type 2 diabetes. *Diabetic Medicine*. 30. 2013
    - UKPDS Outcomes Model 2: a new version of a model to simulate lifetime health outcomes of patients with type 2 diabetes mellitus using data from the 30 year United Kingdom Prospective Diabetes Study: UKPDS 82. *Diabetologia*. 56. 2013
- **2012**
  - **Journal Articles Refereed**
    - "Mirror, mirror, on the wall, who in this land is fairest of all?" - Distributional sensitivity in the measurement of socioeconomic inequality of health. *Journal of Health Economics*. 31. 2012
    - How fair is Medicare? The income-related distribution of Medicare benefits with special focus on chronic care items. *Medical Journal of Australia*. 197. 2012
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    - In reply. *Medical Journal of Australia*. 194. 2011
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    - A Simple Correction to Remove the Bias of the Gini Coefficient due to Grouping. *The Review of Economics and Statistics*. 93. 2011
    - A meta-analysis of health state valuations for people with diabetes: explaining the variation across methods and implications for economic evaluation. *Quality of Life Research*. 20. 2011
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- Predicting changes in risk factors in type 2 diabetes in the post-UKPDS era: longitudinal analysis of the Swedish national diabetes register. *Diabetologia*. 2011
- Predicting the mortality of people with type 2 diabetes mellitus following a major complication: a study using Swedish National Diabetes Register data. *Diabetologia*. 2011

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- COST-EFFECTIVENESS OF BLOOD PRESSURE LOWERING WITH A FIXED COMBINATION OF PERINDOPRIL AND INDAPAMIDE IN TYPE 2 DIABETES MELLITUS: A TRIAL-BASED ANALYSIS USING THE ADVANCE STUDY. *Value in Health*. 13. 2010
- Expiry of patent protection on statins: effects on pharmaceutical expenditure in Australia REPLY. *Medical Journal of Australia*. 193. 2010

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  - Pharmacy diabetes care program: Analysis of two screening methods for undiagnosed type 2 diabetes in Australian community pharmacy.. *Diabetes Research and Clinical Practice*. 75. 2007
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    - Factors influencing the cost of hospital care for people with diabetes in Australia. *Journal of Diabetes and its Complications*. 20. 2006
    - Self-reported health: Reliability and consequences for health inequality measurement. *Health Economics*. 15. 2006

- **2005**
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    - Cost-utility analyses of intensive blood glucose and tight blood pressure control in type 2 diabetes (UKPDS 72). *Diabetologia*. 48. 2005
    - Estimating utility values for health states of overweight and obese individuals using the SF-36. *Quality of Life Research*. 14. 2005

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    - A model to estimate the lifetime health outcomes of patients with Type 2 diabetes: The United Kingdom Prospective Diabetes Study (UKPDS) Outcomes Model (UKPDS no. 68). *Diabetologia*. 47. 2004
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    - Missing....presumed at random: Cost-analysis of incomplete data. *Health Economics*. 12. 2003
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  - **Journal Articles**
    - Comparing health inequalities among men aged 18-65 years in Australia and England using the SF-36. *Australian and New Zealand Journal of Public Health*. 26. 2002
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    - On the measurement of relative and absolute income-related health inequality. *Social Science & Medicine*. 55. 2002
    - Testing the convergent validity of the contingent valuation and travel cost methods in valuing the benefits of health care. *Health Economics*. 11. 2002
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  - **Journal Articles**
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    - More or less equal? Comparing Australian income-related inequality in self-reported health with other industrialised countries. *Australian and New Zealand Journal of Public Health*. 24. 2000
    - Valuing the benefits of mobile mammographic screening units using the contingent valuation method. *Applied Economics*. 32. 2000
- **1998**
  - **Journal Articles**
    - Cost-benefit analysis and mammographic screening: A travel cost approach. *Journal of Health Economics*. 17. 1998
- **1996**
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    - Developing methodologies for evaluating community-wide health promotion. *Health Promotion International*. 11. 1996
- **1993**
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    - Allogeneic blood transfusion reduces murine pulmonary natural killer (NK) activity and enhances lung metastasis of a syngeneic tumour. *International Journal of Cancer*. 55. 1993

Research

Investigator on Contract

- advice and regulatory modelling to inform a Prostheses Benefit Setting Framework. awarded by DEPARTMENT OF HEALTH 2016
- Australia Indonesia Partnership for Health systems Strenthening awarded by COFFEY INTERNATIONAL DEVELOPMENT 2014 -
- Health Economics of the Diabetes Care Project awarded by MCKINSEY & CO 2013 - 2014
- Mathematical Modelling and Research of Personal Protective Equipment for use in a health emergency awarded by AUSTRALIAN GOVERNMENT DEPARTMENT OF HEALTH 2013

- **Grant**
  - CENTRE FOR RESEARCH EXCELLENCE IN TOTAL JOINT REPLACEMENT OPTIMISING OUTCOMES, EQUITY, COST EFFECTIVENESS AND PATIENT SELECTION (OPUS) (Centres of Research Excellence) awarded by NHMRC 2016 - 2022

- EVALUATION OF THE EFFICACY OF LONG TERM CLOSED LOOP INSULIN DELIVERY IN IMPROVING GLYCAEMIC, PSYCHOLOGICAL AND COGNITIVE OUTCOMES IN ADULTS WITH TYPE 1 DIABETES (Australian Type 1 Diabetes Clinical Research Network (T1DCRN)) awarded by JUVENILE DIABETES RESEARCH FOUNDATION AUSTRALIA 2016 - 2019
- BUILDING A SIMULATION MODEL TO IMPROVE CARDIOVASCULAR DISEASE RISK PREDICTION AND TREATMENT FOR INDIGENOUS AUSTRALIANS (Project Grants) awarded by NHMRC 2016 - 2018
- STEP: St Vincent's Melbourne Early Mobilisation Pathway in Total Joint Arthroplasty (Grants Program) awarded by BUPA FOUNDATION 2015 - 2018
- DEVELOPMENT AND VALIDATION OF A HEALTH POLICY SIMULATION MODEL FOR CARDIOVASCULAR DISEASE (Project Grants) awarded by NHMRC 2015 - 2017
- /individual/grant501571
- /individual/grant19741
- /individual/grant17972
- /individual/grant17966/individual/org145
- /individual/grant18017
- /individual/grant18483
- /individual/grant18768
- /individual/grant100321
- /individual/grant100312more...

Additional Grant Information

- Prof Clarke has had a consistent track record in obtaining and leading internationally and nationally competitive research funding (including 4 NHMRC project grants as CIA and a NHMRC Senior Research Fellowship. He has also received international research funding from the United States (NIH R01 Grant), English NIHR grants; and a visiting fellowship from the Swedish Research Council. All of which have provided funds for his research team in Australia.

Awards

Education and training

- PhD, The Australian National University 1999
- MEc, University of Sydney 1993
- BEc, The University of Newcastle 1990

Awards and honors

- Fellow of the Academy of the Social Sciences in Australia, 2015

- NHMRC Fellowship, 2014

‘Annexure E’

Professional Pharmacists Australia

Commissioned Research Brief

Instigator

Professional Pharmacists Australia (PPA) is a Division of Professionals Australia.

Professionals Australia (PA) is an organisation registered as the Association of Professional Engineers, Scientists and Managers Australia under the *Fair Work (Registered Organisations) Act 2009*. We represent a network of over 25,000 professionals including non owner pharmacists who work in community pharmacies right across Australia.

We advocate strongly for our members to help create a better future for their profession. We want to make sure Australian professionals get the respect, recognition and reward they deserve.

Research proposal

To investigate changes in work value of a community pharmacist comparing 1998 with 2016.

Background

The Fair Work Commission (FWC) is a national independent tribunal established by the Federal government under the *Fair Work Act 2009*. Their role is to set award pay rates and conditions; to prevent and resolve disputes between employees and employers; and to assist and help employers and employees work towards cooperative and productive workplace relations.

The FWC is currently conducting a four yearly review of all modern awards as is required by the *Fair Work Act 2009*. This review is an extensive review aimed at ensuring that all modern awards meet the requirements of the *Fair Work Act 2009*. This means they must ensure that modern awards provide a fair and relevant minimum safety net of terms and conditions of employment. In doing this they must take into account:

(a) relative living standards and the needs of the low paid; and
(b) the need to encourage collective bargaining; and
(c) the need to promote social inclusion through increased workforce participation; and
(d) the need to promote flexible modern work practices and the efficient and productive performance of work; and
(e) the principle of equal remuneration for work of equal or comparable value; and

(f) the likely impact of any exercise of modern award powers on business, including on productivity, employment costs and the regulatory burden; and

(g) the need to ensure a simple, easy to understand, stable and sustainable modern award system for Australia that avoids unnecessary overlap of modern awards; and

(h) the likely impact of any exercise of modern award powers on employment growth, inflation and the sustainability, performance and competitiveness of the national economy.

Under this review they may also vary award minimum wages only if they are satisfied that the variation of modern award minimum wages is justified by work value reasons.

> ***Work value reasons*** are reasons justifying the amount that employees should be paid for doing a particular kind of work, being reasons related to any of the following:
>
> (a) the nature of the work;
> (b) the level of skill or responsibility involved in doing the work;
> (c) the conditions under which the work is done.

PPA members have, for some time, been arguing that the pay they receive is not reflective of the work they do and that the current award minimum rates of pay do not reflect the skill, responsibility and complexity of the work they currently do.

We have discovered that the last time the FWC considered the value of the work performed by pharmacists working in community pharmacies was in 1998. We believe there have been such significant changes in the work done by these people since then that there is a real and pressing need to review the current award rates of pay to ensure that they reflect the value of the work done by employee community pharmacists in 2016. As a result, PPA have lodged a claim seeking a review and an increases in the award rates of pay for employee pharmacists working in community pharmacies.

In order to achieve a Decision of the FWC where an increase in the award rates of pay is granted PPA must lead evidence that addresses the relevant legislative provisions, outlined above, and is accompanied by probative evidence properly directed to demonstrating the facts supporting the proposed pay increase.

PPA has compiled a significant amount of evidence that supports our claim that an increase in the award rates of pay should be granted. This evidence includes government, industry and academic inquiries and reports; the Community Pharmacy Agreements; changes to PBS requirements and legislation; changes in academic curricula; and survey results and the like.

The Brief

PPA is seeking an academic (the lead researcher) with extensive knowledge of community pharmacy practice to supplement the evidence PPA currently hold by conducting independent research into the changes that have taken place in the community pharmacy industry since 1998 with specific attention being given to the changes that have impacted on the skills, knowledge and complexity requirements of the work performed by employee pharmacists employed in community pharmacies across the country.

This research will be used as evidence to support PPAs claim that the minimum rates of pay for employee pharmacists covered by the Pharmacy Industry Award be increased to take account of work value changes since 1998.

The lead researcher will be required to provide a written report to PPA on the outcome of their research. It will also be necessary for the lead researcher to make him/herself available to attend a FWC hearing to explain their research if required.

What is required?

1. Literature review

    a. We expect a thorough literature search to identify any changes in work value between 1998 and 2016. Topic examples, but not necessarily all the topics that could be covered, include changes in pharmacy services (eg no HMR in 1998), changes in regulatory requirements (PBA, CPD, guidelines etc.), changes in policy (eg establishment of the national strategy of the Quality Use of Medicines), philosophical underpinning of practice (shift from focus on the drug to the person), training requirements (comparison of pharmacy program accreditation requirements for 1998 and now, establishment of formal intern training programs vs registration requirements for interns in1998), changes in professional expectations (eg establishment of practice standards and competency standards).

2. Semi structured interviews with a convenience sample of community pharmacists to explore their understanding and experiences of changes to work value between 1998 and 2016. The data from the interviews will be presented as case studies. The sample size will be dependent on exhaustion of new information, but it would be expected that no more than 20 case studies would be required. The indicative script for the semi structured interviews would be developed from analysis of the literature review and discussions with the PPA project team. The PPA project team is cognisant of the tight timeline for this project. Changes in the method may be discussed where necessary.

3. A final report presented to the project team within 8 weeks of commencement of the project. An interim/draft report will not be expected in light of the short time frame. However, the commissioned researchers would be expected to keep the PPA project team informed of progress and raise any barriers/issues to the progress/finalisation of the research.

4. The commissioned researchers will be responsible for gaining ethics approval from their institution.

What will PPA provide?

1. In line with the short time frame, PPA will provide 70% of the agreed funding at the beginning of the project, 20% at the completion of the pharmacist interviews and 10% upon acceptance of the research report by PPA.

2. PPA will provide any necessary background information to enable the researchers to understand the industrial environment that this research covers.

3. PPA can assist with the identification of the convenience sample of pharmacists.

Indicative Time Frame

1. First 3 weeks

    a. Undertake literature review. Draft findings should inform the construction of the semi structured interview questions.

    b. Ethics application started.

    c. Identification of participant pharmacists.

2. Weeks 4 – 8

    a. Finalisation of semi structured interview format.

    b. Completion of Ethics application

    c. When Ethics approval granted, undertake pharmacist interviews and collect data.

    d. Complete and analyse data collection to present in case study format

    e. Complete final report consistent with usual academic presentation consisting of two parts; the first relates to the literature review with a summary of findings, and the second part reporting on the semi structured interviews (including the methodology and case study findings).

    Note: PPA understands that this timeframe may need to be altered in light of requirements out of control of the researchers (eg time taken to receive ethics approval). It would be expected that the PPA project team be kept fully informed of any such issues.

Intellectual property.

The Association of Professional Engineers, Scientists and Managers Australia will retain ownership of the final report and all intellectual property rights in the final report. However, recognising that the findings of this research may have wider interest and use in the pharmacy industry, the Association of Professional Engineers, Scientists and Managers Australia is prepared to grant a licence to the researcher/research team who conducts this research to publish the study in a recognised academic journal.

PPA and the Lead Researcher will execute a written agreement recording the terms and conditions governing the provision of the Lead Researcher's services in fulfilling the requirements of this Commissioned Research brief.

Contacts

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‘Annexure F’

Work value of a community pharmacist

Professor Parisa Aslani

Professor Ines Krass

Faculty of Pharmacy

The University of Sydney

2016-2017

Preface

This report outlines a literature review that was conducted to explore the range and evidence for cognitive pharmaceutical services delivered by pharmacists in community settings.

It is acknowledged that, in the published literature, there are numerous largely synonymous terms used to describe non-dispensing health care services delivered by pharmacists including, pharmaceutical care, cognitive pharmaceutical services, or professional pharmacy services. In this report we refer to these as cognitive pharmaceutical services.

The definition for cognitive pharmaceutical services used is derived from that proposed for use in relation to professional pharmacy services by Moullin et al.[1]:

> "A professional pharmacy service is an action or set of actions undertaken in or organized by a pharmacy, delivered by a pharmacist or other health practitioner, who applies their specialized health knowledge personally or via an intermediary, with a patient/client, population or other health professional, to optimize the process of care, with the aim to improve health outcomes and the value of healthcare."[1(p990)]

Although this comprehensive definition encompasses services which can be delivered by other health care professionals within a pharmacy setting, the focus of this report is on the roles, responsibilities, and value of community pharmacists with respect to the provision of cognitive pharmaceutical services in community settings.

Key abbreviations

ADR	Adverse drug reaction
ATSI	Aboriginal and Torres Strait Islander
BG	Blood glucose
BMD	Bone mineral density
BP	Blood pressure
CAM	Complementary and alternative medicine
CHD	Coronary heart disease
CI	Confidence interval
CMI	Consumer Medicine Information
CMR	Clinical medication review
COPD	Chronic obstructive pulmonary disease
CPA	Community Pharmacy Agreement
2CPA	Second Community Pharmacy Agreement
3CPA	Third Community Pharmacy Agreement
4CPA	Fourth Community Pharmacy Agreement
5CPA	Fifth Community Pharmacy Agreement
6CPA	Sixth Community Pharmacy Agreement
CPS	Cognitive pharmaceutical services
CVD	Cardiovascular disease
DAA	Dose administration aid
DEPICT	Descriptive Elements of Pharmacist Intervention Characterization Tool
DMAS	Diabetes Medication Assistance Service
DRP	Drug-related problem
DSM	Disease state management
FEV1	Forced expiratory volume in 1 second
GP	General practitioner
HbA1c	Glycosylated haemoglobin
HCP	Health care professional
HDL	High-density lipoprotein

HIV	Human immunodeficiency virus
HMR	Home Medicines Review
ICER	Incremental cost-effectiveness ratio
INR	International Normalised Ratio
LDL	Low-density lipoprotein
MeSH	Medical Subject Headings
MMS	Medication Management Services
MRP	Medication-related problem
MTM	Medication Therapy Management
MUR	Medicines Use Review
NACCHO	National Aboriginal Community Controlled Health Organisation
NHS	National Health Service
OR	Odds ratio
OSA	Obstructive sleep apnoea
OTC	Over-the-counter
ODT	Opioid dependence treatment
PAMS	Pharmacy Asthma Management Service
PBS	Pharmaceutical Benefits Scheme
PGA	Pharmacy Guild of Australia
PPI	Pharmacy Practice Incentive
QALY	Quality Adjusted Life Year
QCPP	Quality Care Pharmacy Program
QUM	Quality use of medicines
QUMAX	Quality Use of Medicines Maximised for Aboriginal and Torres Strait Islander Peoples
RCT	Randomised controlled trial
RMMR	Residential Medication Management Review
RR	Relative risk
RUM	Return of Unwanted Medicines
STI	Sexually transmitted infection
T2DM	Type 2 diabetes
UK	United Kingdom
UTS	University of Technology, Sydney

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1. Background

Facilitating quality use of medicines: evolution of community pharmacy practice in Australia

Pharmacists play a vital role in supporting quality use of medicines (QUM), one of the four key components of the National Medicines Policy,[2] which denotes ensuring medication use by patients is judicious, appropriate, safe and efficacious.[2] The National Competency Standards Framework for Pharmacists in Australia,[3] published by the Pharmaceutical Society of Australia, is underpinned by the National Medicines Policy.[2]

Community pharmacy contributes to the facilitation of quality use of medicines.[4] With the emergence of the concept of pharmaceutical care,[5] patient-centred care within pharmacy practice has gained momentum, challenging the traditional dispensing-oriented role of pharmacists. Evident expansion of the provision of cognitive pharmaceutical services (CPS), within the community pharmacy setting is occurring both nationally and internationally. Pharmacy practice in Australia has since undergone a significant paradigm shift over the last two decades.

Pharmacy education

Accredited pharmacy programs in Australia should deliver a curriculum which helps equip pharmacy graduates with the necessary foundation for commencement of the intern training program,[6] and then to progress on to achieve the competencies set out in the national competency standards for pharmacists. When comparing the overall indicative pharmacy curriculum components in place in 2008[7] versus those currently implemented (effective from January 2014),[6] several notable differences are evident, reflecting changes in pharmacy practice (Table 1). Along with changes to pharmacy curricula and subsequent training to upskill graduates to ensure they are workforce-ready, pharmacists are now also required to engage in continuing professional development (CPD) throughout their careers. To be able to provide some of the remunerated CPS, pharmacist must also undertake further training to gain accreditation,[8, 9] in addition to any upskilling necessary to ensure that core professional competencies are maintained.

Table 1. Changes with respect to pharmacy program accreditation standards- comparing "indicative" pharmacy learning domains accessed in 2008 and current accreditation standards

Accreditation of pharmacy degree courses in Australia and New Zealand[7] (as accessed in 2008)	Accreditation standards for pharmacy programs in Australia and New Zealand- Appendix 1: Pharmacy learning domains[6] (effective from 2014)
Learning domain 1: The patient	Learning domain 1: The health care consumer
Point 1: "The unique role of the pharmacist in ensuring that the patient benefits from pharmaceutical intervention."[7(p11)]	Point 1: "The unique expertise of the pharmacist in ensuring that the consumer achieves optimal health outcomes from medicines and minimises the potential for harm."[6(p19)]
	Point 3: "Cultural competence and cultural awareness"[6(p19)]
Point 4: "Theory and practice of personal and inter-personal skills, including written and oral communication skills, and study skills."[7(p11)]	Point 5: "Theory and practice of personal and inter-personal skills, including written and oral communication skills to proactively build trust, support, motivate and influence professional colleagues and consumers with varying levels of health literacy, as well as study skills."[6(p19)]
Point 10: "Disease management and care planning, including application of clinical guidelines, prescribing guidelines and medication review."[7(p11)]	Point 11: "Disease management and care planning, including application of clinical guidelines, prescribing guidelines, medication review and new models of care."[6(p20)]
	Point 12: "Clinical reasoning, collaborative decision making and documentation."[6(p20)]
	Learning domain 6: The wider context
	"The pharmacy graduate needs a realistic and well-informed view of how health care, and pharmacy fits within and operates in the wider world. Indicative Elements • The political and legal framework, requirements and processes relevant to pharmacy. • Health policy and economics, particularly pharmacoeconomics. • Population health. • Scientific, clinical, health services and social services research; methods, results and their application as they are relevant to pharmacy. • Occupational and environmental health and safety."[6(p21)]

Government funding: supporting the viability of Australian community pharmacy

In Australia, 5-yearly Community Pharmacy Agreements (CPAs) commenced in 1990 between The Pharmacy Guild of Australia (PGA) and the Australian Federal Government, have secured funding to support community pharmacy initiatives in promoting QUM and the viability of the industry. Over the years, increased funding has been allocated to the provision of CPS in community pharmacy (Table 2). While the Second CPA (2CPA) (1995-2000) pledged a modest amount of funding of up to $4 million for CPS,[10] the current Sixth CPA (6CPA)[11] effectively saw a doubling of funds pledged compared to the previous CPA to facilitate remuneration for CPS provision, yielding:

- $613 million in funding to support community pharmacy programs, which comprise many cognitive pharmaceutical services[11] (Table 2),
- $50 million for the Pharmacy Trial Program,[11] along with
- "access to additional funding of up to $600 million over the Term to support new and expanded Community Pharmacy Programmes."[11(Subclause 6.1.2(c))]

Table 2. Summary of expanded remuneration of cognitive pharmaceutical services in Australia, as funded under the 3CPA to 6CPA

Service(s)	Third CPA[12] (3CPA) (2000-2005)	Fourth CPA[13] (4CPA) (2005-2010)	Fifth CPA[14] (5CPA) (2010-2015)	Sixth CPA[11] (6CPA) (2015-2020)
Medication management	Medication Management Services (MMS) ($114 million) inclusive of: • Domiciliary MMS, • MMS for Residential Aged Care Facilities residents • Case discussions and care planning • Pharmacist facilitators in General Practice divisions	Medication Management Review ($150 million), inclusive of • Home Medicines Reviews (HMRs), • Residential Medication Management Reviews (RMMRs) • Accreditation incentives • Pharmacy services facilitators	HMRs ($52.11 million) RMMRs ($70 million) Medicines Use Review (MUR) (MedsCheck) ($29.6 million) Diabetes Medication Management (Diabetes MedsCheck) Service ($12.2 million) Clinical interventions ($97 million)	Medication management programs ($178.3 million), including: • HMRs • RMMRs • MedsCheck • Clinical interventions
Medication adherence		See Better Community Health below	Medication Continuance ($1 million) Support for the Provision of Dose Administration Aids (DAAs) ($132 million) Staged Supply Support Allowance ($35 million)	Medication adherence programs ($189.2 million), including: • DAAs • Staged supply
Rural and/or indigenous health	Rural initiatives ($74 million) Aboriginal health services	Rural Pharmacy Allowance and Support (rural programs) ($111 million) Indigenous Access (Aboriginal and Torres Strait Islander Programs) ($27 million)	Rural Support Programs ($107 million) Aboriginal and Torres Strait Islander Programs ($28.9 million)	Rural Support Programs ($120.3 million) Aboriginal and Torres Strait Islander Specific Programs ($40 million)

Service(s)	Third CPA[12] (3CPA) (2000-2005)	Fourth CPA[13] (4CPA) (2005-2010)	Fifth CPA[14] (5CPA) (2010-2015)	Sixth CPA[11] (6CPA) (2015-2020)
Broad funded programs	Pharmacy Development Program ($188 million) (also see Other[15]) e.g. • Medicines Information for Consumers program (financial incentives for provision of Consumer Medicine Information [CMI])	Better Community Health ($192 million and supplementary funds), inclusive of: • Asthma pilot program • Diabetes pilot program • DAAs • Communicable disease prevention • Improved emergency contraception counselling • QCPP • Patient medication profiling service • Practice change and education initiative scheme • Research and development • Other projects		Pharmacy Trial Program ($50 million) New and expanded Community Pharmacy Programs (up to $600 million)
Other	Quality Care Pharmacy Program (QCPP) Research and development ($15 million) (relevant to the Pharmacy development program objectives) Information Technology[15]	QCPP E-Health ($20 million) Financial incentives for provision of CMI	Pharmacy Practice Incentive and Accreditation (QCPP) ($75 million) Research and development ($10.6 million) Supply and PBS claiming from a medication chart in Residential Aged Care Facilities ($3 million) Electronic recording of controlled drugs ($5 million)	E-Health ($61 million) Program administration and audit ($21.2 million) Pharmacy remuneration and regulation review ($3 million)
Approximate total funds allocated to CPS (where amounts were specified in the CPA)	$400 million[13]	$568 million ($500 million + $68 million from remaining funds from 3CPA Pharmacy Development Program)	$663.41 million [$386.41 million (programs and services) + $277 million (additional programs)]	**Up to $1.26 billion**

CPS and remuneration: the current state of play in Australia

Internationally, when CPS are remunerated, this commonly occurs via fee-for-service models,[16] where governments are the key remunerating bodies for CPS.[8, 16] In Australia, most government-funded CPS remuneration is provided to the respective pharmacies/pharmacy owners (with the exception for specific services, for instance such as Home Medicines Reviews (HMRs), Residential Medication Management Reviews (RMMRs) that are performed by accredited pharmacists). Some CPS may also be directly paid for by users of the service e.g. dose administration aids (DAAs)[17] and pharmacist-administered vaccinations, as some CPS examples. However, considering the total quantum of CPA funding, it is clear that the overwhelming majority is still directly linked with the dispensing/supply of medicine products to patients via the Pharmaceutical Benefits Scheme (PBS).

In recent years, PBS reforms and price disclosure, aimed to help reduce PBS expenditure growth,[18] alongside proliferation of discount pharmacy business models has led to increased financial pressures across the community pharmacy sector in general, among other factors.[19, 20] The Pharmacy Barometer, an initiative from the University of Technology Sydney (UTS), has sought to explore "perceptions, attitudes, knowledge, experiences and behaviours of community pharmacists as they relate to the future professional practice and business of Community Pharmacy"[21] within the Australian context, with annual reports published since 2012 detailing the key survey findings. In the April 2012 UTS Pharmacy Barometer report,[22] financial pressures, increased competition from factors such as discount pharmacies or the online market space, in addition to issues related to government influences on community pharmacy (PBS reforms, deregulation) were reiterated by pharmacists as the three main themes for their responses to the question "What are the major issues facing pharmacy today?."[22(p24)] These concerns among pharmacists have persisted, as is seen in subsequent UTS Pharmacy Barometer reports.[23, 24]

Taking into account the changing landscape of community pharmacy and the resultant financial implications, other avenues through which additional revenue/income can be obtained are being further explored. One important domain is increasing CPS provision, where the majority of Australian pharmacist respondents consistently perceived CPS

provision and the transition towards a service-based model as a core opportunity for community pharmacy when looking ahead.[22-27]

From the consumers' perspective, in the 2015 Pharmacists and Primary Health Care Consumer Survey conducted by the Consumers Health Forum of Australia,[28] 71.5% of respondents held the belief that pharmacists "have a larger role to play in providing primary care services".[28(p13, Appendix 1)] Reported consumer awareness of CPS has been mixed. Despite awareness of services funded by the 5CPA previously reported as lacking among consumers,[29] in another survey, 79.5% of respondents reported the provision (by their "local pharmacy") of at least one of the 6 services specified in the survey (BP monitoring, weight management, diabetes screening and management, vaccinations, "addiction intervention", and mental health support).[28] BP, weight management, and/or diabetes services were those most commonly reported (by more than 40% of respondents).[28(p4)] In the recent Pharmacy Guild Customers Experience Index, a series of exit surveys conducted at 1000 pharmacies Australia-wide and comprising more than 8000 consumer interviews, a similar percentage of consumer respondents were aware of the key CPS included in the index survey.[30] Of the CPS offered in community pharmacies, those most frequently reported to be used by consumers include BP checks and vaccinations,[28, 30] in addition to diabetes-related[30] and/or weight management[28] services. Moreover, the Customers Experience Index found that "additional services which rated highly with awareness of consumers included dose administration aids, blood glucose (BG) testing, in-pharmacy medicines reviews, and weight loss and weight management."[30]

The nature and breadth of CPS provision by pharmacists is changing within the community pharmacy setting, where the UTS Pharmacy Barometer (October 2016) highlighted that 59% of pharmacist respondents had begun to provide new CPS during the preceding 12 months.[27] Interestingly, 80% of employee pharmacists reported that they were providing CPS, which was a higher proportion in comparison to pharmacists in managerial positions and pharmacist owners.[27] It is also noteworthy that a large proportion of new CPS delivered in community pharmacies do not solely comprise CPS currently funded under the 6CPA.[27] This reinforces the broadening of the scope of practice with respect to CPS provision by community pharmacists. Undoubtedly, as pharmacists are health care professionals (HCPs)

it is imperative they deliver CPS in community pharmacy. Consequently, together with the shift towards patient-centred care, changes are evident in the role and responsibilities of pharmacists working in the community pharmacy sector.

Remuneration concerns among pharmacists

Reduced pharmacist wages in community pharmacy has been acknowledged as a concern among pharmacists,[22, 24, 31] where wages may be a factor contributing to pharmacists choosing to leave the profession.[32] Mak et al.[33] identified that Australian pharmacists "saw minimal opportunities to negotiate salaries, giving the impression that employers did not appreciate the value of employees and employees were easily replaceable with other pharmacists who are willing to work for a lower pay."[33(p133)] Among employee pharmacists, an oversupply of pharmacists was seen to contribute to reducing wages, and concerns involved *"workload, price competitiveness, wages for pharmacists reducing, having a lot of pressure to meet generic substitution targets, [and] not many jobs available."*[22(p24)] In addition, the presence of an *"over-supply of pharmacists leading to lower wages and a devaluing of the skills of the profession as a whole"*[22(p24)] was also raised. However, such perceptions regarding an oversupply of pharmacists may not be an accurate representation of the current Australian situation, since others in recruitment roles report ample job opportunities available.[32] It may also reflect regional differences in the gaps between supply and demand for employee pharmacists.[32]

Rates of pay are more often of particular concern among employee pharmacists more so than pharmacy owners.[23] An imbalance between pharmacist wages and workload expectations was also seen, with *"unreasonable service required and adding on workload and not enough payment."*[24(p23)] Low award wage rates are also seen as a negative factor that potentially compromised the viability of the community pharmacy industry on the whole. A 2013 UTS Pharmacy Barometer respondent noted: *"Low wage rate for pharmacists allows warehouse pharmacies to pay their employees at a low rate. Those of us who pay for good pharmacists are blowing out our wage budget in comparison. Makes it difficult to compete on price."*[24(p23)] The negative impact that wage reduction can have is highlighted in the following quote of Professor Benrimoj[25]:

"Owners are becoming fully aware of the impact of price-disclosure and that this is very negative. However the problem is the strategy of cutting labour costs is negatively affecting employee pharmacists through a reduction in wage or a reduction in hours. The owner is now squeezing costs through the salary element as part of their strategy. Short term thinking for short term results!!! There appears to be no strategic or operational move to increase productivity or to increase the capacity of their employees or to develop their business. For the sake of the profession we need to urgently consider employee pharmacists since they are a valuable asset for the present and future of the profession. We wish to attract the best to our profession."[25(p18)]

Current wages received by community pharmacists in Australia

The UTS Pharmacy Barometer October 2016 encompassed some questions asked in relation to pharmacist wages.[27] More than half of the survey respondents (68%) reported that no changes had been made in the remuneration received by pharmacists in the preceding 12-month period.[27] Pharmacy owners were asked to detail the mean employee pharmacist hourly wage rate, where approximately 75% of pharmacists reportedly earned $30-$40 per hour, with an hourly rate of $40-$50 received by 20% of pharmacists.[27] On the whole, this $30-$40 hourly rate range is comparable to the mean hourly rates reported in the 2015 Professionals Australia Community & Hospital Pharmacists' Remuneration Survey for community pharmacists.[34]

Once again, the following recent comment by Professor Benrimoj[27] voices the similar concerns among those in the profession regarding low wage rates:

"The way that pharmacists reacted to discounting was to cut wages, the size of the pharmacy and staff instead of looking at where they could compete effectively. That has had a really staggering effect on salaries. Vast majority of pharmacists have had no wage changes in twelve months. The level of remuneration for your average employee is frightening low. How are we to attract the best to our profession at this level?"[27(p32)]

Perceived changes needed to pharmacist remuneration among members of the profession

As pharmacists are HCPs critical to facilitating QUM and CPS implementation, it is important to re-examine individual pharmacist remuneration for those providing actual CPS, such as via pharmacist wages and any fees-for-services given directly to pharmacists responsible for delivering CPS. The results of the 2015 UTS Community Pharmacy Barometer™ report showed that more than half of respondents believed that pharmacists providing CPS should be more highly remunerated than those with dispensing-oriented roles.[26] Of those who felt that increased remuneration was warranted (n=119), 43% and 35% of respondents indicated that pharmacists delivering CPS should receive 20% or 30% more, respectively.[26] This signifies that among members of the profession, CPS provision is associated with an increase in work value. Following on from this, Professor Benrimoj[26] observed that:

> *"There is one labour agreement and that is it. Now we have half of owners saying they are willing to pay for services, there needs to be a new wage contract for those [pharmacists] who are service providers. At the moment there is no national system to differentiate the capability of individual pharmacists. We would encourage people from professional organisations and unions who are in-charge of organising these contracts to push for a change."*[26(p34)]

Interestingly, the General Manager of a healthcare recruitment agency commented that there were currently increased job opportunities for "professional services pharmacists."[32(p28)] There was a demand by some employers for pharmacists who were more oriented towards providing CPS, rather than dispensing-oriented pharmacists (however, this trend was not apparent for discount pharmacies).[32] Job opportunities for professional services pharmacists were initially posted by this agency approximately 2 years ago (i.e. 2014).[32] This signifies that CPS provision by pharmacists is an evolving trend.

Despite the incremental expansion of CPS funding with each CPA, which indirectly reflects the changing roles in practice within the community pharmacy setting, pharmacists' work values have not been assessed by the Australian Fair Work Commission since 1998. This highlights the importance of investigating the value of CPS in terms of its impact on clinical, humanistic, and economic outcomes, with a specific focus on the Australian context. Such

evidence will help support the work value exhibited by community pharmacists and provide further evidential support for an increase in award rates of pay for pharmacists.

2. Literature review aims and methods

This literature review aims to identify the:

- Range of cognitive pharmaceutical services and health services delivered by community pharmacists, including those currently reimbursed by the CPAs (describing the nature of the service, the work involved, skills required, the roles and responsibilities of the pharmacist, and the health and economic outcomes of the services);
- Changes in the services delivered over the past 20 years;
- Changes in policy, legislation and reimbursement;
- Changes in professional expectations, professional guidelines; and
- Pharmacists' skills and knowledge, and expected competencies reflecting changes in education training at undergraduate, intern and postgraduate levels.

This review focusses on the Australian context, with supplemental evidence for CPS offered by community pharmacists and/or in the community pharmacy setting obtained via the identification of published systematic reviews in the literature.

Review of the Australian literature with respect to CPS provision by community pharmacists

The evidence of benefits surrounding implemented CPS that are currently or have been previously remunerated as part of previous CPAs in the Australian context were the focus of this literature review. This focus on remunerated CPS is similar to the objectives of previous systematic reviews conducted by Chan et al.[16] and Houle et al.,[8] which looked at remunerated CPS internationally. Although there is a plethora of valuable pharmacy practice research that has had both direct and indirect significant impact on CPS and its implementation in the Australian community setting, this review has not been able to encompass studies that involved the short term implementation of CPS as part of pilot or

feasibility studies, or short term research projects as these specific CPS are currently not being provided by community pharmacists.

Searches were conducted in known websites relevant to the pharmacy profession e.g. The PGA, 6CPA, Pharmaceutical Society of Australia, and Australian Department of Health websites. CPS currently provided in Australian community pharmacies were identified and tabulated. The Program Development Templates, published by The PGA in association with "The Roadmap—The Strategic Direction for Community Pharmacy",[35] were primarily accessed in order to synthesise a comprehensive scaffold of currently provided CPS. Data extracted from the Program Development Templates relevant to CPS included information such as details of the specific service, skills/training required (where applicable), and broad health and economic outcomes associated with the service itself, where available. Evaluations conducted of CPA-remunerated CPS that were also funded by the government were identified via the known websites above to provide health and economic outcome evaluation data where available.

Systematic reviews on CPS

An overview and understanding of the available evidence for CPS provided in the community setting was primarily undertaken via the identification of relevant systematic reviews. Due to the extensive research previously conducted in the area of CPS as known to the research team, the identification of systematic reviews was of particular interest in order to provide a broader indication of the impact of CPS on economic, clinical and/or humanistic outcomes provided in community settings.

Database searches were conducted in Medline, PubMed, Cochrane Database of Systematic Reviews (database within the Cochrane Library), and International Pharmaceutical Abstracts for relevant systematic reviews exploring CPS in community settings. Systematic reviews were considered for inclusion if they were:

- Written in English,
- Published between 1996 and 2016, and

- Examined clinical, economic and/or or humanistic outcomes relevant to CPS delivered by community pharmacists as the focus of the systematic review/meta-analysis, or primarily focussed on CPS provided in a community pharmacy and/or community setting(s).

Any meta-analyses identified via the database searches conducted and which adhered to the above inclusion criteria were also included in the review. For the purposes of this review, a community setting was considered a non-hospital, outpatient, and/or ambulatory setting. Reviews were not included if they did not meet the above inclusion criteria.

Relevant Medical Subject Headings (MeSH) terms and key words were identified and agreed upon within the research team for use in the database searches. Please see Appendix 1 for the database search strategies employed. References for the relevant articles identified via the searches were downloaded to a citation manager and duplicates were identified and removed. Titles and abstracts were screened for key terms in relation to the scope of the review. Where there was ambiguity in the relevance of the systematic review for inclusion, the full text article was accessed.

Further to this, literature (both 'grey' and published literature) known to the research team was also contributed for inclusion in the review (inclusion criteria were still applied). Database searches were supplemented with Internet searches (via Google and/or Google Scholar) for systematic reviews of relevance, which may not have been indexed in databases because of their recent publication. Search terms used included: systematic review, community pharmacy services, cognitive pharmaceutical service, and review.

3. Findings

3.1 Overview and descriptions of CPS provided in the Australian community setting: pharmacists' roles, responsibilities, alongside perceived and actual impact of CPS

The National Competency Standards Framework for Pharmacists in Australia states the following in relation to the role of a pharmacist:

> "The practice of pharmacy includes the custody, preparation, dispensing and provision of medicines, together with systems and information to assure quality of use."[3(p3)]

In the interest of promoting QUM and reducing prescription errors, basic standards and guidelines on best dispensing practice have been developed by various bodies (such as The Pharmaceutical Society of Australia and the Pharmacy Defence Limited).[36] These standards and guidelines can in turn form the basis on which protocols are developed and employed to aid the pharmacist. In particular, dispensing must be performed to satisfy the requirements of Domain 4 of the National Competency Standard for Pharmacists in Australia 2010.[3]

The present CPS offered in community pharmacies in Australia (additional to the core dispensing-related duties that are completed) are described in Table 3, based on those outlined by The Pharmacy Guild of Australia,[35] together with the Pharmaceutical Society of Australia.[3, 37] All services must be performed to a level which meets the competency level as outlined in The National Competency Standards Framework for Pharmacists in Australia.[3] These standards set the skill level and attributes which must be acquired by the pharmacist in order to practice as a pharmacist. Further to this, each pharmacist must meet the Professional Practice Standards[37] which outlines the quality which is expected of the pharmacist when performing a particular service by both their peers and the consumer. Guidelines published by the Pharmaceutical Society of Australia are also available for specific CPS offered in pharmacies (see details in Table 3). Training is required at an undergraduate level and often also at a postgraduate level for each pharmacist to firstly to achieve the competency and professional practice standards, and then to ensure that relevant knowledge and skills are kept up to date.

The training requirements for many pharmacy services are obtained through the successful completion of a pharmacy program and subsequent prerequisite (intern) training for registration as a pharmacist. However, many of the services that are offered in community pharmacies require further training post registration to achieve a satisfactory level required by the profession,[3, 37] and which satisfies the minimum standards set by the Quality Care Pharmacy Program (QCPP).[38] The QCPP is a quality management system designed to ensure that standards are maintained in the community pharmacy through an assessment process which must be completed satisfactorily to obtain accreditation.[38] Over 94% of pharmacies are QCPP accredited or in the process of QCPP accreditation.[39] The program provides checklists to ensure that minimum standards are maintained. The accreditation process is also a means of identifying gaps in training.

CPS offered in Australian community pharmacies

Overall, from Table 3, a range of CPS have become characteristic of community pharmacy practice in Australia. DAAs continue to be provided to patients in order to help optimise medicines management and adherence, particularly for instance where polypharmacy is evident. Community pharmacies also continue to be a primary point of access for non-prescription or OTC medicines for consumers and thus, advice on minor ailments continues to be a key role of pharmacists. However, there is still a need for pharmacists to upskill in this domain, considering the number of OTC medicines available in pharmacies has increased over the last 20 years e.g. emergence of new Pharmacist Only medicines for which guidelines for their provision may then be developed,[40] among other OTC medicines and proprietary products becoming available on the market.

HMRs have been consistently funded as a CPS since 2001[41] (with RMMRs being funded since 1997[42]). Additional funding opportunities for CPS have also emerged. As an extension to medication review-related activities conducted by pharmacists, MedsChecks (medication management reviews conducted in the pharmacy[43]) have been recently introduced as a funded CPS under the CPA within the last 5 years.[14] Similarly, some financial incentive to conduct clinical interventions has also been incorporated into the Pharmacy Practice Incentives Program since 2011,[44] also denoting the expansion and recognition of value in

pharmacists as health and medicines experts. As per the 6CPA website, a clinical intervention is defined as: “a professional activity undertaken by a registered pharmacist directed towards improving quality use of medicines and resulting in a recommendation for a change in the patient’s medication therapy, means of administration or medication-taking behaviour. It must relate to a medicine and be recorded using the D.O.C.U.M.E.N.T. classification system.”[45] It excludes “generic medicine substitution, routine prescription-related counselling, CMI provision or QUM activities conducted during a HMR, RMMR, MedsCheck or Diabetes MedsCheck.”[45]

In addition, pharmacies have also been providing screening/monitoring activities, which assist in the management of chronic disease and support of a healthy lifestyle. Funding for such services has fluctuated over the years e.g. asthma and diabetes chronic disease management intervention programs were funded under the 4CPA[46, 47]; however, funding for these specific CPS interventions was not sustained in subsequent CPAs. Aspects of CPS delivered in the 4CPA funded diabetes service may however have carried over into the 5CPA funded Diabetes Medication Management Service (Diabetes MedsCheck).[14] Thus, many of these services may be offered by pharmacies at a cost to the patient and/or provided free of charge.

In addition to funding opportunities, legislation changes have also enabled pharmacists to expand their roles in CPS provision in recent years, for instance, regarding the provision of absence from work certificates (under the Fair Work Act 2009[48]), continued dispensing (legislation changed in 2012[39]), as well as pharmacist-administered vaccinations (permitting vaccination under the National Immunisation Program by pharmacists[39]).

Table 3. CPS provision in Australia: pharmacists' roles, responsibilities, and evidence of impact on patient and economic outcomes

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Medication Management Review • **HMR**[49] • **RMMR**[50]	A medication management review is provided to an Australian resident either within their own home[49] (HMR) or within a residential aged care facility (RMMR).[50] The service consists of a review of all medications and medication related issues and also involves an interview with the patient. A report is then compiled for the patient's general practitioner (GP) and in some cases the patient with recommendations regarding ongoing medication management issues. Each HMR conducted by an accredited pharmacist upon referral from a GP is eligible to be reimbursed at the rate of $210.93 (as of 1st July 2015).[51] This amount is reimbursed directly to the pharmacist who provided the service. The corresponding rate for a RMMR is $106.66 (as of 1st July 2015).[52]	• Eligibility to conduct HMR and RMMR requires specific training; accreditation is conferred by the Australian Association of Consultant Pharmacy (AACP) upon successful training completion[49] • "AACP requires mandatory reaccreditation assessment every three years and yearly evidence of completion of continuing professional development (CPD). SHPA has annual reaccreditation requirements and full reassessment and certification every five years to ensure knowledge remains relevant and current"[41(p7)] • QCPP require successful approved communication module completion.[38] • In particular, these	• **See Jokanovic et al.[53] (2016) (Table 6)** • 180 HMRs conducted in 2008, evaluated in the VALMER study funded under the 4CPA,[54] yielded a total of 2727 pharmacist recommendations in relation to 2323 drug-related problems (DRPs) • Improved perceived patient confidence regarding medication use,[55, 56] perceived health improvement,[56] perceived decrease in side effects/medicine interactions[56] and improved understanding about their medicines[56] and/or rationale for treatment[55] associated with HMR • HMRs may improve quality of life[54, 55] • An RMMR program evaluation conducted in 2010 approximated that "11,574 residents benefited from one or more positive health outcomes as a result of reviews conducted under RMMR"[57(p5)]	• **See Jokanovic et al.[53] (2016) (Table 6)** • Reduced health care resource utilisation costs (savings varied between HMRs)[54] • Incremental cost effectiveness ratio (ICER) of $64,939 per quality-adjusted life year (QALY) gained (in conservative baseline scenario)[54]; "estimate of the economic benefits of HMRs generated in the VALMER study is likely to be highly conservative"[54(p4)] • Model presented in the Urbis Keys Young report (cost utility analysis), funded under the 3CPA, "suggests a cost-saving in 2004 of $4.5 million and a gain of 1,435 QALYs"[55(p143)]	• HMR was included in the Medical Benefits Schedule in 2001[41] • Pharmacists were remunerated for RMMR from 1997, initiated under the 2CPA[42] • Although a number of included systematic reviews address medication management/review,[53, 58-61] or clinical pharmacy services,[62] findings from the Jokanovic et al.[53] (2016) systematic review are specific to clinical medication review conducted in the Australian community setting • Almost all respondents in a consumer survey indicated satisfaction with HMR services provided by pharmacists[56]

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
		services need to satisfy the requirements of Domain 7 of the National Competency Standards.[3] • See "Guidelines for pharmacists providing Home Medicines Review (HMR) services"[41] • See "Guidelines for pharmacists providing Residential Medication Management Review (RMMR) and Quality Use of Medicines (QUM) services"[42]			

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Medication Management Review • MedsCheck • Diabetes MedsCheck	"MedsCheck and Diabetes MedsCheck services are structured pharmacy services, which take place in the pharmacy, involving face-to-face consultations between the pharmacist and consumer. These services are designed to sit between adhoc medication reviews that occur at time of dispensing and Home Medicines Reviews (HMR)."[43(p3)] Unlike HMRs, "MedsCheck and Diabetes MedsCheck services are not comprehensive clinical reviews… [and] are limited by the information available at the time of the consultation."[43(p3)] The consultation between pharmacist and consumer focuses on improving medicine use and health outcomes through education and support of self-management and medication adherence.[43(p3)]	• MedsCheck/Diabetes MedsCheck medication management services require specific training and prior approval before the services can be performed.[39] • These services need to satisfy the requirements of Domain 6 of the National Competency Standard for Pharmacists in Australia 2010[3]. • See "Guidelines for pharmacists providing medicines use review (MedsCheck) and diabetes medication management (Diabetes MedsCheck) services"[43] for further information	• MedsCheck and Diabetes MedsCheck pilot program underwent process evaluation[63]; users agreed useful information was given by the pharmacist (93/95 responses), 86/89 responses reported service satisfaction, and 88/92 responses noted that they would recommend the service to others[63] • The service was broadly perceived to be beneficial[63]; majority agreed that it improved understanding regarding their medicines,[56, 63] improved confidence in medicines management,[56, 63] and their health improved[56] • 12/13 responses regarding Diabetes MedsCheck specifically noted agreement that useful information regarding BG monitoring was given by the pharmacist[63] • Reported behavioural changes and/or uptake of recommendations from the service were mixed[63] • **No health outcomes data available**	• These services aim to be cost-effective in the long term i.e. "MedsCheck programs achieve value for money (improved patient health and less wastage of medicines for a reasonable financial investment)"[63(p115)] • Note, the review of 5CPA medication management programs commissioned by the Australian Government Department of Health (and published in 2015) did not undertake a full economic evaluation to ascertain the benefits of the services[56]	• Both MedsCheck and Diabetes MedsCheck funded under 5CPA[14] • MedsCheck and Diabetes MedsCheck implemented Australia wide since 01 July 2012[64] • MedsCheck funded under the current 6CPA[11] for one year. Continued funding will depend on economic evaluation currently underway.

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Clinical interventions[44]	A clinical Intervention[44] is primarily performed by the pharmacist to improve QUM. It can involve a recommendation for a change in the type of medication, method of administration, and other relevant health-related advice. This service is concerned with optimizing the use of medications in each patient in line with the principles of QUM.	• QCPP accreditation requires that appropriate training has been completed.[38] • In particular, Domains 4 and 7 of the National Competency Standards[3] outline the necessary requirements; Domains 1 and 2 also applicable[65] • Please see "Standard and Guidelines for Pharmacists Performing Clinical Interventions"[65] for further details	• The PROMISe Intervention Study (conducted in 2005 and funded under the 3CPA[66]) approximated that interventions made by community pharmacists for prescription medicines would lead to an estimated impact per year, where "around 262,000 hospital bed-days are avoided (1.3 days per 1000 population) and 53.1M days of adverse health impact are avoided" [66(p12)]	• Improving medication use may lead to better health outcomes, and a reduction in misadventure or comorbidities. Cost savings could result from reduced reliance on health care resources. • The PROMISe Intervention Study noted that community pharmacist interventions for prescription medicines would yield approx. $349 million/year in prevented health care system costs[66] • "For every hour a pharmacist works, their interventions prevent $17.60 in medical and hospital costs, and for every 100 hours worked, their interventions prevent 1.3 days in hospital."[66(p12)]	• Clinical interventions are one of the priority domains funded since July 2011 under the 5CPA Pharmacy Practice Incentives (PPIs) Program[44] and are currently funded under the 6CPA[11] • A study published by Ortiz et al.[67] detailing clinical interventions via the GuildCare software in the first 12 months of the 5CPA noted that approx. 750000 clinical interventions were documented in 2950 pharmacies in total during this period; the initial 7 months of the 5CPA yielded approx. 230000 clinical interventions from 2571 pharmacies[68]
Medication Adherence Programs[69]	Adherence programs[69] are developed to alert the pharmacist to potential non-compliance issues with patients in regard to their	• QCPP accreditation requires that adherence program training has been completed by the pharmacist.[38]	• **See Van Wijk et al.[70] (2005) and Rubio-Valera et al.[71] (2011) in Table 6** • Improving medication adherence may lead to better	• Reducing the harmful effects which result from non-compliance with medications may reduce the burden on the health	• Further research is needed to ascertain the health and economic outcomes of medication

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
	medication management. Programs are often incorporated into the pharmacy's dispensing software e.g. GuildCare.	• In particular, Domains 4, 6 and 7 of the National Competency Standards[3] outline the necessary requirements.	health outcomes in patients • A study evaluating the impact of the Mirixa program on compliance found that the program led to improved MedsIndex scores (mean baseline MedsIndex score was 41 with statistically significant improvement to a score of 53 at the second session with the pharmacist)[72]	system by reducing the need for costly interventions.	adherence programs currently offered in Australian community pharmacy settings

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Dose Administration Aids[73] (DAAs)	DAAs[73] facilitate the administration of medicines, through the provision of packaging systems or compliance devices. They can include unit dose or multi-dose packing in which medication is packed into a compartment/sachet/blister for individual patients.	• QCPP accreditation requires that appropriate training has been completed.[38] • In particular, Domains 4 and 7 of the National Competency Standards[3] outline the necessary requirements. • See "Guidelines and standards for pharmacists- Dose Administration Aids Service"[74] for further details	• A 2004 DAA evaluation funded by the 3CPA[75] found that DAA users value it as an effective and useful service; willingness to pay for the DAA service was valued at an average of $5.25/week[75] ($5.61/week in later phase of project[76]) • DAA users experienced fewer adverse drug reactions (ADRs) and were less likely to have inadequate supply of their medicines than non-DAA users.[75] Thus, DAAs can help achieve better patient outcomes through improved compliance and reduction in medication errors or misadventure. This service is in line with QUM. • A follow-on 2006 evaluation report also funded by the 3CPA[76] suggested that a benefit associated with DAAs provided in a community setting was that "using a pharmacy-provided DAA maintains people with higher care needs in the community"[76(p261)]	• Reduced medication misadventures could lead to cost savings e.g. for 30 community DAA users per year, estimated cost savings for the health care system associated with fewer ADRs (compared to non-DAA users) were $15,316[75] (however, this estimated saving was approx. 1/3 at 1 year follow-up[76]) • Via DAA use in community setting: ICER $9163 to prevent one ADR, ICER $16,362 to avoid 1 death[76] • DAA cost-effectiveness in community is impacted by cost of packing and checking, where the service was provided at higher costs compared to savings[75] • In residential care facilities, DAAs can improve time taken for nurses to administer medicines per resident[75]; cost minimisation analysis calculated savings at $85,307 per year for 120 residents comparing DAA provision with medicines supplied in original boxes[75]	• DAA program was included as part of the 4CPA[13, 74] for which some financial incentives are still being paid to community pharmacies to provide DAAs under the current 6CPA[11]

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Staged Supply[77] (service for prescribed medicines)	Staged supply[77] of medicine is the supply of medicine in instalments rather than supplying the full amount upfront. This is usually done at the bequest of the prescriber for certain patient groups such as those with adherence issues or those who are prone to misuse/abuse. Staged supply also offers the pharmacist more opportunity for consultation with the patient.	• QCPP accreditation requires that appropriate training has been completed.[38] • In particular, Domains 1,2 4, and 7 of the National Competency Standards[3] outline the necessary requirements.[78] • See "Standard and guidelines for pharmacists providing a staged supply service for prescribed medicines"[78] for further details	• "Safe and effective administration of medicines or devices and improved adherence are the overall goal of this service. Supporting patients with drug abuse/misuse issues can impact the diversion of at-risk medicines. Similarly, supporting patients with adherence issues (e.g. those with mental health problems) facilitates self-management with better health outcomes."[77]	• Potential for greater efficiencies within the health system. Cost savings may result from reduced hospitalizations and reliance on health care resources. • No hard economic outcomes data available	• Some funding for staged supply was included under the 5CPA[14]; funding has also been allocated under the 6CPA[11] • Prior to this, no government funding for staged supply was given to pharmacies, where patients were charged approx. $5 for the service per instalment[79]
Continued Dispensing[80] (also known as medication continuance)	Continued dispensing or medication continuance[80] involves dispensing certain PBS medicines without a prescription. PBS medicines prescribed on an ongoing basis are permitted in this service, where therapy is stable (with prior clinical review to support continuation) and it is a safe and appropriate medicine for the patient.[39]	• Training required for QCPP accreditation[38] and Domain 7 of the National Competency Standards.[3] • In particular, Domains 4 and 6 also apply to continued dispensing, overlapping with the core competencies for dispensing.[81] • See "Guidelines for the Continued Dispensing of eligible prescribed medicines by pharmacists"[81] for details.	• Potential to improve adherence in the chronically ill patient by reducing the administrative burden involved with managing medications.	• Can reduce administrative costs associated with obtaining missing prescriptions.	• Legislation changed in 2012 to permit continued dispensing by pharmacists under Commonwealth law.[39]
Continuity of	Community pharmacy	• Training will be required	• **See Nazar et al. (2015)[83] in**	• Potential cost savings as a	• Not yet widely

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Care, including through Community Pharmacy Liaison Services[82]	liaison services[82] integrate a community pharmacist in the general health management plan for a patient. Facilitating communications around medication management between health care providers at the time of discharge, in residential aged care, and/or palliative care settings could enable a smooth transition for the patient between different health care settings. The pharmacist would be involved with the review of medications, and management of associated issues (e.g. adherence, misadventure risk, need for DAAs, among others).	in the Inter-professional Collaboration Policy.[38] • In particular, these services need to satisfy the requirements of Domains 2 and 7 of the National Competency Standards.[3]	**Table 6** • Community liaison pharmacists would reduce the risk of misadventure and misuse of medicines when transitioning between different health care settings. Further to this, the quality of life and health outcomes could be enhanced by the QUM services provided.	result of QUM activities and reduced risk of misadventure particularly for chronically ill patients moving between health care settings.	implemented

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Aboriginal and Torres Strait Islander (ATSI) Quality Use of Medicines Service[84]	Under the 6CPA,[11] Quality Use of Medicines Maximised for Aboriginal and Torres Strait Islander Peoples (QUMAX) and S100 Support Allowance (paid to certain community pharmacies or hospital authorities to help provide QUM services linked with S100) support CPS provision for ATSI patients. QUMAX aims "to improve QUM and medication compliance and to support improved access to medicines under the PBS, by addressing cultural, transport and financial barriers."[84] QUMAX supports efforts of eligible community pharmacies together with Aboriginal Community Controlled Health Organisations[85] to facilitate "implementation of service-level QUM work plans. These plans can include provisions for dose administration aid arrangements, QUM pharmacy support, HMR models of support, QUM devices, QUM education, cultural awareness and	• Cultural safety training is highly recommended prior to delivering QUM services to Aboriginal and Torres Strait Islander peoples.[84] • In particular, training is required to maintain Domains 6 and 7 of the National Competency Standards.[3] • Please see "Guide to providing pharmacy services to Aboriginal and Torres Strait Islander people"[86] for further details	• Utilising the QUM skills of the pharmacist, access to medications, and compliance should improve within the Aboriginal and Torres Strait Islander populations and the risk of medication misadventure should be lowered. • Aboriginal Community Controlled Health Services reported that QUMAX financial assistance helped to alleviate barriers to accessing medical care/treatment for patients, and promoted continuity of care[87] • Treating HCPs also noted improved medication compliance and monitoring among patients[87] • Improved patient understanding of their medical condition(s) together with improved self-management (from patient self-reports, and anecdotal evidence)[87] • 4/5 de-identified case studies of QUMAX services highlighted some positive improvements to patient health outcomes associated with QUMAX[87]	• Increased efficiencies and budgetary savings may result from improved access to medicines, QUM and medicine compliance. QUM services within this population may prevent the associated costs of medication misadventure or misuse. Increased use of appropriate medications may reduce the health costs associated with the treatment of chronic conditions and associated comorbidities. • A report published in 2016 by the National Aboriginal Community Controlled Health Organisation (NACCHO) stated: "The current Programme reports support accountability and activities to be documented in accordance with the current Programme Guidelines as approved by the Minister for Health. However, NACCHO is aware of deficiencies in the current Programme Guidelines wherein the outcomes of the QUMAX-sponsored interventions are	• QUMAX included under the 4CPA[87] • Funding for QUMAX included under the current 6CPA[11]

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
	transport arrangements."[84]			not recorded."[88(p29)]	
Chronic Disease Management[89]	Pharmacists play a significant role in chronic disease management (and related medication management).[89] Pharmacists offer support through services such as patient education around adherence, and assisting patients of all health literacy levels to facilitate self-management of chronic disease(s). Screening and monitoring services are important in chronic disease management and complement lifestyle support programs also offered in community pharmacies, such as weight loss and smoking cessation.	• QCPP accreditation requires that appropriate training has been completed.[38] • Pharmacists should be up to date with clinical guidelines which cover chronic diseases,[89] as well as the appropriate DSM programs that may be needed.[37] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency Standards.[3]	• **See systematic reviews on CPS relevant to chronic respiratory disease[90], COPD,[91] diabetes and CVD,[92] hypertension/blood pressure,[93-96] coronary heart disease risk factors/CVD prevention,[97-99] dyslipidaemia/lipid levels,[100, 101] diabetes,[102, 103] osteoporosis,[104] and chronic pain[105] in Table 6** • Pharmacist involvement in QUM in chronic disease management may lead to better health outcomes. • Commissioned evaluations were completed for the Diabetes Medication Assistance Service (DMAS)[46] and Pharmacy Asthma Management Service (PAMS)[47] (both 4CPA-funded) • DMAS improved patients' perceived lifestyle and medication management; improved patient outcomes were seen for mean BG level, mean systolic BP and mean diastolic BP, and proportion of those with adherence-related problems[46]; however, impact on quality of life was	• The chronically ill patient is usually a frequent visitor to the community pharmacy. Utilising the pharmacists' QUM skills the chronically ill patient can bring greater efficiencies and cost savings as there are many opportunities to promote better self-management of chronic disease. This in turn may reduce reliance on GPs and reduce hospitalisations. • PAMS economic evaluation-cost per QALY ranged between $6,930 and $79,404 depending on the costs factored into the analysis[47] • Less favourable DMAS economic evaluation findings from the health system perspective were impacted by smaller than anticipated number of service users; however, just over one third of users would be willing to pay more for DMAS consultations at the conclusion of the program compared to their nominated amount at the	• Although a number of systematic reviews provide evidence for CPS targeted at chronic disease management, the range and specific CPS evaluated in the systematic reviews may not directly correspond to all particular components of CPS currently widely implemented in the Australian community pharmacy setting. However, aspects of the interventions delivered by community pharmacists in chronic disease management CPS would be reflective of components of "usual care"

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
			not substantial for the majority, despite 54% rating their health as better at completion of DMAS[46] • PAMS improved patient outcomes in relation to asthma control, inhaler technique, asthma action plan ownership, asthma knowledge, perceived asthma impact on quality of life, and proportion of patients only using a reliever[47]	start[46]	
Healthy Lifestyle Support[106]	Community pharmacies now offer a number of healthy lifestyle support services.[106] These include weight management, smoking cessation (see below), and alcohol withdrawal support programs. These are aimed at educating patients and providing structured programs to facilitate a healthier lifestyle.	• QCPP accreditation requires that appropriate training and skills development in health promotion has been completed.[38] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency Standards.[3]	• **See Brown et al.[9] (2016) and Gordon et al.[107] (2011) in Table 6** • Pharmacy-based Healthy Lifestyle Support programs assist patients in achieving their goals to a healthier lifestyle. •	• Achieving healthier lifestyle goals such as weight loss and smoking cessation may reduce healthcare costs. •	• Further research is needed to ascertain the health and economic outcomes of healthy lifestyle support services currently offered in Australian community pharmacy settings
Smoking Cessation[108]	Community pharmacists play a role in educating patients about smoking cessation, including advice on existing smoking cessation programs.[108] They also play an important role providing support and	• QCPP accreditation requires appropriate training completion.[38] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency	• **See Sinclair et al.[109] (2008), Dent et al.[110] (2007), Saba et al.[111] (2014), Mdege et al.[112] (2014), Brown et al.[9] (2016), and Peletidi et al.[113] (2016) in Table 6** • Successful cessation of smoking can reduce	• **See Brown et al.[9] (2016) in Table 6** • Increased identification and engagement of smokers could reduce morbidity and mortality associated with smoking, and health care resource utilisation costs.	• Further research is needed to ascertain the health and economic outcomes of smoking cessation services currently offered in Australian community pharmacy

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
	counselling throughout their cessation attempt.	Standards.[3]	morbidity and mortality.	•	settings

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Screening/ Monitoring Activities[114] (Health Checks)	Screening/monitoring activities[114] (which have also been regarded as "health checks"[23]) can include, and is not limited to, screening and/or monitoring of[114]: • Cardiovascular disease (CVD) risk / CVD (e.g. blood pressure, cholesterol levels, INR/ anticoagulant therapy) • Diabetes-related (e.g. AUSDRISK™, BG, HbA1c) • Asthma/COPD (e.g. lung function) • Osteoporosis (e.g. bone mineral density (BMD)) • Chlamydia • Bowel cancer • Sleep disorders	• QCPP accreditation requires that program training has been completed.[37, 38] • Further training would need to be provided for more specialized services[35]. Any screening/monitoring functions must be consistent with national guidelines, performed to a level consistent with that described in the Professional Practice Standards.[37] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency Standards.[3]	• **See Willis et al.[115] (2014), Elias et al.[104] (2011), Cheema et al.[95] (2014), Fathima et al.[90] (2013), and Ayorinde et al.[116] (2013) in Table 6** • Screening can aid in both early detection and monitoring of chronic diseases such as diabetes and hypertension	• There is a potential for cost savings for the healthcare system in the long term if screening services lead to early detection and intervention. Monitoring services for those with chronic diseases can lead to a more efficient use of health resources • Different screening methods may lead to varying cost effectiveness e.g. when Krass et al.[117] compared screening methods for diabetes, one method involved the completion of a risk assessment checklist; the second method involved both risk assessment checklist completion and a capillary blood glucose finger-prick test and subsequent actions depending on the results (referral or counselling). Although the incremental cost for the second method was higher, it led to a higher rate of cases of diabetes being detected and was more cost-effective ($6241 versus $788 mean	• Previous CPAs have funded a number of research projects exploring screening/ monitoring services in community pharmacy settings[118] • Further research is needed to ascertain the health and economic outcomes of screening/ monitoring services currently offered in Australian community pharmacy settings

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
				cost per case detected)[117]	
Compounding Services[119]	Compounding services[119] involve the extemporaneous preparation of a medicine by a pharmacist. Individualized treatments for specific needs, include paediatric formulations which are not readily available and specific chemotherapy for cancer patients.	• Further pharmaceutics training deemed critical for those who intend to specialise in compounding[119] • In particular, compounding services need to satisfy the requirements of Domains 4 and 5 of the National Competency Standards.[3]	• Allows for greater access to individualised treatments • Community pharmacies in rural and regional areas could potentially provide these benefits to all individuals.	• Individualised medicines for specific patients could provide cost savings by negating the need for more costly alternative services or products	• Further research is needed to ascertain the health and economic outcomes of compounding services currently offered in Australian community pharmacy settings
Vaccination[120]	Pneumococcal and influenza vaccination services are now available in pharmacies.[120] The community pharmacist also provides education around the importance of vaccinations.	• Accreditation training required for pharmacists to administer vaccinations[38]; training also required in vaccination procedures and dealing with emergencies.[38] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency Standards.[3] • See "Practice guidelines for the provision of immunisation services within pharmacy"[121] for further details	• **See Burson et al.[122] (2016) in Table 6** • Increasing the ease of access to vaccinations could increase the reach of the vaccination program and lead to a reduction in influenza infection rates and associated morbidity.	• **See Burson et al.[122] (2016) in Table 6** • More vaccinations which result from better access it vaccinations for vulnerable groups may improve public health outcomes with associated lower costs to the health care system.	• Legislation recently amended allowing trained pharmacists to supply and administer vaccinations as part of the National Immunisation Program[39] • University of Sydney Master of Pharmacy graduates will now be accredited to administer vaccinations[123] • Ongoing research will be important to ascertain health and economic outcomes

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Sleep Apnoea Services[124]	Community pharmacists have a role in identification of patients at risk of sleep apnoea through the diagnosis process and if applicable, provide support with supply of continuous positive airway pressure equipment and appropriate lifestyle advice (such as weight loss).[124]	• QCPP accreditation requires training/skills development in health promotion.[38] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency Standards.[3] • See "Practice guidelines for the provision of sleep apnoea services within pharmacy"[125] for further details	• **See Cawley and Warning II[126] (2016) in Table 6** • Early detection and treatment of sleep apnoea may lead to decreased morbidity and mortality and improved quality of life. •	• Community pharmacists can provide a more cost-effective sleep apnoea service which in turn can allow the public hospital system to reduce costs and direct resources toward more specialised areas. •	• Further research is needed to ascertain the health and economic outcomes of sleep apnoea services currently offered in Australian community pharmacy settings
Sexual Health Services[127]	Sexual health services[127] in community pharmacies relate to emergency oral contraceptive provision, whereby sale and advice for both prescription and OTC contraceptive and fertility devices and medications have been provided through community pharmacy for some time. The provision of these services would enable discussion around general sexual health information and advice.	• Competency standards specify health promotion and related efforts as a core domain.[3] • QCPP and competency standards would also require that services such as provision of the morning after pill be performed to a satisfactory standard for the provision of S3 Pharmacist Only medicines.[3, 38]	• Advice around sexual health which includes contraception, fertility and awareness of sexually transmitted infections (STIs) can lead to better health outcomes and improved quality of life. •	• Direct and indirect benefits to the health budget through contraceptive help and advice and a lower incidence of STIs could drive savings through a reduced reliance on primary care services and hospitals. •	• Further research is needed to ascertain the health and economic outcomes of sexual health services currently offered in Australian community pharmacy settings
Mental Health Services[128]	Mental health services[128] provided in a community pharmacy setting would promote medication	• QCPP accreditation requires appropriate training to be completed.[38]	• **See Bell et al.[129] (2005) and Rubio-Valera et al.[71] (2011) in Table 6** • QUM activities such as	• Community pharmacy is very accessible and could provide a cost effective means of engaging mentally	• QCPP introduced a new requirement in recent years, whereby at least one

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
	adherence and increase self-awareness through education around mental health issues, including drug misuse. The community pharmacy setting is also well placed to offer lifestyle support programs.	• Pharmacists would need training to enable confidence in mental health service provision. Training should encompass current mental health clinical guidelines, and mental health first aid.[128] • In particular, these services need to satisfy the requirements of Domain 6 of the National Competency Standards.[3]	medication adherence programs could be performed for those patients in need. Patients with mental illness can have difficulty accessing health services. Lifestyle support programs including education around the dangers of medication misuse could promote better health outcomes and a better quality of life. •	ill patients and reducing the health burden of mental illness. •	pharmacy staff member must have completed mental health first aid training (Element 17 Action 4)[130] • Further research is needed to ascertain the health and economic outcomes of mental health services currently offered in Australian community pharmacy settings
Palliative Care Services[131]	Community pharmacists could undergo specialty training to improve the knowledge and understanding of palliative care services to enable them to conduct specialist medication management review services.[131]	• QCPP accreditation requires that appropriate training has been completed.[38] • In particular, these services would need to satisfy the requirements of Domain 6 of the National Competency Standards.[3]	• QUM and the involvement of a pharmacist trained in palliative care may increase the effectiveness of medications which in turn lead to better quality of life. •	• Specialist medication management review services may lead to rationalization of medications and associated cost savings.	• Palliative care services may fall outside the scope of CPS offered by many community pharmacies
Maternal and Infant services[132]	Maternal and infant services[132] involve provision of advice around health care of the nursing mother, the pregnant woman, and the infant. This includes, but is not limited to, the provision of infant formula and advice around breastfeeding, and	• QCPP accreditation requires that appropriate training and skills development in health promotion has been completed.[38] • In particular, these services need to satisfy the requirements of	• Education and advice may lead to early detection of issues such as post-natal depression and gestational diabetes, and subsequently better health outcomes for the mother and the infant. Further to this, the health of the infant could be optimized	• Education and support of the woman and infants through pregnancy and the post- partum period could potentially reduce the risk of harm and the associated costs. •	• These services are often provided by a child health professional within the community pharmacy. • Further research is needed to ascertain the health and

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
	immunisation of the infant.	Domains 6 and 7 of the National Competency Standards.[3]	with appropriate advice around smoking cessation in pregnancy, alcohol misuse, breastfeeding, and the importance of immunisation. •		economic outcomes of maternal and infant services currently offered in Australian community pharmacy settings
Wound Management[133]	First aid and wound management products are available through most community pharmacies in Australia, with pharmacists and pharmacy staff offering important advice about appropriate use.[133]	• QCPP accreditation requires appropriate training to be completed.[38] • In particular, these services need to satisfy the requirements of Domain 7 of the National Competency Standards.[3]	• Community pharmacists can reduce the morbidity associated with poor wound management and provide advice to prevent problems such as infection. •	• Health care resources in emergency departments can be used more efficiently for minor wounds which can be treated through a community pharmacy •	• Further research is needed to ascertain the health and economic outcomes of wound management services currently offered in Australian community pharmacy settings
Advice on minor ailments[134]	Community pharmacists advise on medicines and treatment for minor ailments such as coughs, colds, headaches, skin disorders, diarrhoea, constipation, eye infections among others.[134]	• In particular, these services need to satisfy the requirements of Domains 6 and 7 of the National Competency Standards.[3]	• **See Paudyal et al.[135] (2013) in Table 6** • Can lead to resolution of symptoms associated with minor ailments; empowering patients to self-manage minor ailments may improve quality of life.	• **See Paudyal et al.[135] (2013) in Table 6** • Treating minor ailments in a community pharmacy may lead to a more efficient and cost-effective health system, and can lead to less reliance on GPs.	• Australian Pharmacists play a critical role in the management of minor ailments, despite not being reimbursed via a fee-for-service
Provision of Pharmacist Only (Schedule 3) medicines (OTC), including Pharmacist Only Medicine Notifiable[136]	Pharmacists play a critical role in ensuring the quality use of OTC medicines, where Pharmacist Only medicines in particular must be supplied by pharmacists. Pharmacist Only Medicine Notifiable[136] include Schedule 3 medicines such	• QCPP accreditation requires completion of appropriate training.[38] • In particular, Pharmacist Only medicine provision must satisfy Domains 6 and 7 of the National Competency Standards.[3] • Guidelines exist for	• As part of a cost-benefit analysis of Pharmacy and Pharmacist Only medicines, funded under the 3CPA, approximated that 485,912 interventions were conducted in Australian community pharmacies per year in relation to OTC	• With a distinct Pharmacist Only schedule (Schedule 3) and Pharmacy medicine schedule (Schedule 2), the model yielded a benefit of $2.75 billion per year (central estimate) associated with prevention of short-term disability and	• There has been an increasing number of Pharmacist Only medicines available over the last 20 years, which has resulted from the rescheduling of medicines e.g.

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
	as products containing pseudoephedrine. These medications must be given out by a pharmacist and details of the patient are recorded. Project STOP is used to assist in monitoring pseudoephedrine use and MedsASSIST is a clinical decision support tool which can be used when dispensing products containing codeine.[39]	some Pharmacist Only medicines detailing "appropriate and effective processes, desired behaviour of good practice, how professional responsibilities may be best fulfilled."[40] • See "Standards for the Provision of Pharmacy Medicines and Pharmacist Only Medicines in Community Pharmacy- Revised, November 2005"[137]	medicines, of which 101,324 were regarded as interventions of high significance i.e. "averting emergency medical attention, serious harm or potentially life-saving"[138(p11)] • An approximated 30,808 visits to Accident and Emergency were prevented by pharmacy staff (76 leading to intensive care unit admission), along with 84,650 urgent GP visits[138]	death[138]; present net benefit was valued at $2.61 billion per year as the central estimate (having factored in costs associated with pharmacy staff providing Pharmacy and Pharmacist Only medicines)[138]	levonorgestrel (emergency contraceptive pill), orlistat, fluconazole, chloramphenicol, proton pump inhibitors, as some examples
Complementary and Alternative Medicine[139]	Community pharmacists are in a position to counsel patients around the evidence to support the use of complementary and alternative medicine (CAM).[139]	• "The sale of complementary medicines is covered by current undergraduate training complemented by Continuing Professional Development (CPD) training for graduate pharmacists."[139] • In particular, these services need to satisfy the requirements of Domains 1,2,3,4,6 &7 of the National Competency Standards.[3]	• Less morbidity and mortality is expected when a pharmacist is able to use their skills base to communicate known drug interactions and side effects associated with CAM use.	• When used appropriately with involvement of a pharmacist, CAMs can lead to better health outcomes with reduced morbidity and mortality associated with known drug interactions and side effects.	• "Evidence- based complementary medicine education" recently embedded into Bachelor's and Master's programs offered at the Faculty of Pharmacy, The University of Sydney[140] • Graduate Certificate in Evidence-Based Complementary Medicines will be launched in 2018[140] • Further research is needed to ascertain

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
					the health and economic outcomes of complementary and alternative medicine services currently offered in Australian community pharmacy settings
Opioid Dependence Treatment[141] (ODT)	ODT services[141] primarily consist of the provision of individual (sometimes takeaway) doses of opioid medications as a replacement for illicit opioid dependent patients. Legislation exists in each jurisdiction regarding the dispensing and prescribing requirements.[39]	• All staff involved in ODT must undergo training in essential legislative and administrative requisites.[141] • QCPP accreditation requires that program training has been completed.[38] • In particular, Domains 4, 6 and 7 of the National Competency Standards[3] outline necessary requirements.	• The ODT program aims to minimize the known physical, social, and health-related harms associated with illicit opioid use.	• Potential reduction in the costs to individuals/families and the community of the multifaceted harms associated with illicit drug use. • A literature review conducted as part of a 3CPA-funded project that explored funding models for opioid dependence treatment dispensing concluded that "In economic terms the cost to government of providing subsidised methadone treatment is far less than the cost of providing alternative health services to injecting drug users."[142(p39)]	•

CPS	Nature of CPS	Skills/training required	Patient outcome benefits	Economic outcome benefits	Comments
Return of Unwanted Medicines[143] (RUM)	RUM[143] involves the collection and disposal of unwanted medicines is provided by the community pharmacist in conjunction with the wholesaler. It also provides pharmacists with an additional opportunity to review the medicines of the person who utilises the RUM service.	• QCPP accreditation requires that appropriate training has been completed.[38]	• This provides an opportunity for consultation and review of a patient's medication. This service also lowers the risk of inadvertent misuse of medication.	• This service provides an opportunity for an interaction with the pharmacist about QUM. Safe destruction of medication also lowers the potential costs associated with environmental toxicity and accidental poisoning.	•
Absence From Work Certificates[48]	The pharmacist is able to provide certification that the person is unable to attend work due to illness or injury that the pharmacist is qualified to assess.[48] This illness or injury can be to themselves of someone in their household who needs to be cared for by them.	• QCPP accreditation requires that appropriate training has been completed.[38]	• Improved convenience to obtaining absence from work certificates for those who require them (e.g. reduced wait times for patients who do not need to visit their doctor to obtain the relevant documentation)	• May reduce health care system resource utilisation for illness or injury within the pharmacists' scope of practice, for instance, reducing medical practitioner consultations for absence from work certificates needed for minor ailments	• The Fair Work Act 2009 permits pharmacists to provide absence from work certificates[48]

Self-reported CPS provision by pharmacists

In 2012, 81% of pharmacies had reportedly delivered CPS at the time or within the year immediately prior to the UTS Pharmacy Barometer survey.[23] CPS offered included those included under the Pharmacy Practice Incentive(s) (PPI), DAAs, clinical interventions, Home Medicines Reviews (HMRs), and BP monitoring (Table 4).[23] Of the CPS delivered in community pharmacies that were considered successful, 75% were delivered by pharmacists.[23] Interestingly, when examining sources of remuneration, 42% and 37% of successful services were funded by the government and consumers, respectively.[23] This indicates that there is value associated with CPS from the perspectives of both "payers".

Comparing CPS reported by pharmacist respondents to the UTS Pharmacy Barometer reports (Table 4) to those reported by the respondents from the 2014 Pharmacy Services Expectations Survey,[144] there is significant overlap. CPS reported in this 2014 survey included:

- DAAs,
- staged supply,
- management of minor ailments,
- health advice,
- adherence support services,
- screening/testing services (blood pressures (BP) and cardiovascular disease (CVD) risk; cholesterol testing; diabetes risk; BG testing; self-administered testing for bowel cancer, chlamydia; BMD testing; international normalised ratio (INR) monitoring in anticoagulation therapy),
- provision of health aids/equipment and other targeted services (e.g. aged care; diabetes; CVD; weight management/nutrition; opioid dependence; smoking cessation; respiratory (asthma, chronic obstructive pulmonary disease (COPD)); pain management; immunisation (via nurses); mental health; arthritis; maternal and child health; sleep apnoea; palliative support),
- provision of absence from work/sick certificates,
- compounding, and
- DVT compression garment fitting.[144]

Table 4. Provision of specific CPS in community pharmacies as reported by survey respondents in the October 2012 and 2016 UTS Pharmacy Barometer reports

Service	UTS Pharmacy Barometer[23] (Oct 2012)[a]	UTS Pharmacy Barometer[27] (Oct 2016)[b]
BG monitoring	✓	
BMD testing	✓	
Counselling	✓	
Dose administration aids (DAAs)	✓	
Hearing test	✓	
Know your numbers (Stroke Foundation)	✓	
Medication management	✓	
Mirixa (medication adherence support program)	✓	
Opioid treatment program	✓	
Pharmacy Practice Incentives	✓	
Skin clinic	✓	
Smoking cessation	✓	
Asthma management	✓	
Heart promotion	✓	
Residential Medicines Management Review (RMMR)	✓	
Medication Use Review	✓	
Patient medication profile	✓	
Compliance program (pharmaceutical company)	✓	
Lipitor program	✓	
Revive clinic	✓	
Clinical interventions	✓	✓
Diabetes	✓	✓
Flu clinic/vaccinations	✓	✓
Health checks	✓	✓
Blood pressure monitoring	✓	✓
Home Medicines Reviews (HMRs)	✓	✓
MedsCheck	✓	✓
Sick certificates	✓	✓
Sleep apnoea	✓	✓
Weight management	✓	✓
Cholesterol testing/monitoring	✓	✓
Staged supply	✓	✓
Compounding		✓
Health clinics		✓
Inhaler technique		✓
Coeliac testing		✓
Women's health checks		✓
Wound care		✓
Anaemia testing		✓
DNA testing		✓
Baby clinic		✓
Dietician services		✓
Breast awareness clinic		✓
Nurse consultations		✓
Wellness coaching		✓

[a] CPS reported are those regarded by pharmacist(s) as successful or unsuccessful, that were implemented at present and/or during the 1-year period prior to the survey. Thus, this does not include all CPS.

[b] CPS reported are those most commonly stated in answer to the question "Which services has your pharmacy started to implement?."[27(p30)] Thus, this is not an exhaustive list of CPS being delivered.

3.2 Economic, clinical and/or humanistic outcomes of CPS delivered in community settings: systematic reviews of available published evidence

A literature review conducted in 1996 by Carr and Benrimoj[145] yielded evidence of CPS provision in community pharmacy, in Australia and internationally, that was mainly anecdotal in nature. However, there has since been a plethora of CPS research internationally and subsequent systematic reviews conducted in relation to CPS.

A series of literature reviews have been previously conducted within the Australian context to establish the value of CPS relevant and/or delivered in community settings both nationally and internationally. These include:

1. "The Value of Professional Pharmacist Services", authored by Emerson, Whitehead and Benrimoj, and published in 1998 by The Pharmacy Guild of Australia[146];
2. "The Value of Pharmacist Professional Services in the Community Setting: a systematic review of the literature 1990 – 2002", authored by Roughead, Semple, and Vitry[147] (Table 5); and
3. "The Value of Pharmacist Professional Services in the Community Setting: a systematic review of the literature October 2002 – March 2005", authored by Benrimoj et al.[148] (Table 5)

The following table summarises the findings from the 2 aforementioned substantial reports of systematic reviews of the literature. The Benrimoj et al.[148] systematic review was an update of the systematic review conducted by Roughead, Semple, and Vitry.[147] Similar literature search strategies and inclusion criteria were utilised in both reviews.[148] Collectively, these reviews highlight the diverse number of CPS that have been trialled both nationally and internationally, reinforcing their value and potential for more widespread implementation in community pharmacy settings. The overall findings of Benrimoj et al.[148] were similar to those from the Roughead et al. review. Although limited economic evaluations were conducted, CPS that did lead to decreased costs included "pharmaceutical care and continuity of care for the elderly (different studies gave different cost outcomes for medication reviews in the elderly); pharmaceutical care for patients with asthma;

pharmacist involvement in therapeutic decisions for patients with cardiovascular disease; and medication reviews for patients taking multiple drugs."[148(piii)]

Table 5. Overview of key findings from two seminal reports of systematic reviews conducted on the value of CPS in the community setting

CPS type	Roughead et al.[147] (2003) Relevant key findings (1990 – 2002)		Benrimoj et al.[148] (2005) Relevant key findings (October 2002 – March 2005)	
	Overall	Australia-specific	Overall	Australia-specific
Pharmaceutical care services	• Total of 20 randomised controlled trials (RCTs) included (Level 1 evidence) • Level 1 evidence "suggests pharmaceutical care is effective in improving patient outcomes"[147(p26)]; RCTs specific to asthma and heart failure yielded the strongest evidence • Improved patient outcomes included reduced adverse drug events, improved medication appropriateness, decreased medication-related problems, improved signs and symptoms for asthmatics, improved all-cause mortality and non-fatal events associated with heart failure, and improved clinical biomarkers • No full economic evaluations regarding cost-effectiveness identified	• 4 RCTs were conducted in Australia • Findings also support the effectiveness of pharmaceutical care services	• Total of 9 RCTs included • All RCTs yielded evidence of improvement in patient outcomes associated with pharmaceutical care • Improved outcomes and severity of disease were seen in chronic disease patients (e.g. heart failure, diabetes), and improved compliance, medication knowledge, and decreased 10-year coronary heart disease risk and other risk factors; reduced drug-related problems and health care resource utilisation were also evident • No full economic evaluations identified • Additional pharmacist training not required in 3/9 RCTs; pharmacists underwent training to provide the specific service in 2/9 RCTs; 1 RCT involved pharmacists who had completed relevant training previously	• 2 RCTs were conducted in Australia; 1 RCT relating to CVD and cholesterol levels, 1 RCT relating to T2DM • T2DM RCT yielded significant improvements with intervention compared to control for a number of clinical biomarkers, and saw a decrease in 10-year coronary heart disease risk in intervention group • CVD RCT reported mixed findings; patient satisfaction was high; 80% willing to pay $1-$5 for service

CPS type	Roughead et al.[147] (2003) Relevant key findings (1990 – 2002)		Benrimoj et al.[148] (2005) Relevant key findings (October 2002 – March 2005)	
	Overall	Australia-specific	Overall	Australia-specific
Continuity of care services	• Total of 9 RCTs were included • "Good evidence from level 1- method studies for the effectiveness of continuity of care services when targeted to patients at risk of medication related problems and when the service includes patient follow-up post-discharge"[147(p60)]	• 3 RCTs were conducted in Australia • 2 RCTs supported continuity of care services; improved outcomes included medication-related problems, knowledge, unplanned hospital readmission, drug related problem(s) 90 days post-discharge or medication compliance • 1 RCT found no effect	• Total of 6 RCTs included • "All six studies included suggest[ed] that pharmacist involvement improved patient outcomes, mainly in relation to knowledge and concordance with treatment regimens, and in some instances hospital readmission rates were reduced."[148(p39)]	• 2 RCTs were conducted in Australia • 1 RCT reported significantly lower average Medication Appropriateness Index score for intervention group at follow-up at 8 weeks • 1 RCT reported significant differences in anticoagulation control 8 days post discharge between groups (favouring intervention)
Pharmacist-led clinic services	• Total of 2 RCTs included "provide evidence for the effectiveness of pharmacist-managed hypertension clinics for improving blood pressure measurements (level 2 outcomes) in adult patients with essential hypertension in the USA"[147(p71)] • 1 non-randomised controlled trial examined a pharmacist-led pre-admission service included	• No Australian studies identified	• Total of 2 RCTs included; 1 RCT relevant to an adherence clinic for human immunodeficiency virus (HIV) patients (pilot); 1 RCT based in outpatient clinic • RCT based in outpatient clinic targeted patients susceptible to non-compliance; improved patient compliance, medication knowledge, and decreased ADRs (residual) seen; cost saving seen, calculated from medication changes	• No Australian studies identified

CPS type	Roughead et al.[147] (2003) Relevant key findings (1990 – 2002)		Benrimoj et al.[148] (2005) Relevant key findings (October 2002 – March 2005)	
	Overall	Australia-specific	Overall	Australia-specific
Medication review- repeat prescriptions (repeat prescribing)	• Total of 2 United Kingdom (UK) RCTs included • "Patient outcomes were no different to usual care, when pharmacists reviewed the continuing need for repeat prescriptions which were usually provided by a physician"[147(p83)] • No full economic evaluations identified	• No Australian controlled trial studies identified	• Total of 3 RCTs included • 2/3 RCTs "clearly show that, when added to usual care provided by doctors, review services by pharmacists have no effect on patient and other outcomes"[148(p62)]	• 2 RCTs were conducted in Australia
Medication review- aged care facilities	• Total of 3 RCTs included • Mixed findings reported; 1 RCT reported reduced mortality, another reported no effect; 2 RCTs found medication use changes • No full economic evaluations identified	• 2/3 RCTs included were conducted in Australia	• No relevant studies identified for inclusion	• No relevant studies identified for inclusion
Medication review- outpatient setting	• Total of 2 RCTs included • "Evidence for the effectiveness of medication review (review of medication charts and case notes) is lacking. Only two randomised controlled trials were located, and neither provides evidence for the effectiveness of the service"[147(p97)]	• No Australian controlled trial studies identified	• Total of 1 RCT included • "No significant differences were found between the intervention and control groups in cognitive, affective or physical functioning"[148(p69)]; reduced medicines taken in intervention group, however not all recommendations acted upon	• No Australian RCTs identified
Patient education services	• Total of 16 RCTs included (conducted in Europe and United States); "One-to-one education interventions suggest both single session and multiple session education are effective, with stronger evidence and better outcomes for effectiveness of multiple session education"[147(p104)] • "Level 1+ evidence for the efficacy of multiple session education for improving blood pressure and compliance in patients with hypertension and compliance in renal transplant patients"[147(p104)]	• No Australian controlled trial studies conducted in the community setting identified	• Total of 7 RCTs included • Broadly, findings indicate patient education services can have a positive impact on patient outcomes (2 RCTs did not report significant changes however) • "Some evidence for the effectiveness of multiple-session education in improving patient outcomes. Multiple-education sessions that included active self-monitoring seemed to result in better outcomes than education sessions alone"[148(p79)]	• No relevant Australia studies identified

CPS type	Roughead et al.[147] (2003) Relevant key findings (1990 – 2002)		Benrimoj et al.[148] (2005) Relevant key findings (October 2002 – March 2005)	
	Overall	Australia-specific	Overall	Australia-specific
HCP education services	• Total of 9 RCTs included • HCP education focussed on specific medication classes improved medication use • 2 RCTs evaluated costs; 1 RCT showed that the service reduced medication-related costs	• 2 RCTs conducted in Australia; antibiotic use improved with HCP education services	• Total of 2 RCTs included • Impact of education on prescribing was examined in both studies; 1 RCT also examined patient outcomes • Pharmacist education targeted at HCPs did not have a significant impact in aged-care or community settings	• 1 RCT conducted in Australia
Medicine information services	• No controlled trials were identified that sought to determine effect of medicine information services	• No studies identified	• No RCTs were identified for inclusion	• No studies identified
Therapeutic decision making-pharmacist participation	• Total of 2 RCTs included, both U.S studies • When pharmacists participated in therapeutic decision making with a doctor, improvements in clinical biomarkers (e.g. cholesterol, blood pressure) were achieved	• Findings from some studies reported, but were not included in the review itself to ascertain service effectiveness	• Total of 5 RCTs included (results were unpublished for 1 RCT) • 3 RCTs highlighted "pharmacist involvement in therapeutic decision-making can lead to greater improvements in patient outcomes than usual care, as measured by the surrogate endpoints of adherence to medication regimens, blood pressure control, and the achievement of blood pressure targets, and patient satisfaction"[148(p105)]; 1 RCT found limited impact of pharmacist participation if care and monitoring conducted by the doctor was of high quality	• 1 RCT conducted in Australia (however, findings regarding impact on patient outcomes were unpublished)
Over-the-counter (OTC) medication use	• Total of 1 RCT included related to self-medication for dyspepsia; improvements in health-related quality of life, measured one week post intervention/usual care, seen	• No controlled trial studies identified that were conducted in Australian setting	• No controlled trial studies identified	• No relevant Australian studies identified
Smoking cessation services	• Total of 3 RCTs included (UK and Australia) • 1 UK RCT "demonstrated a causal relationship between the provision of smoking cessation	• 1 RCT conducted in Australia	• 2 RCTs were identified but were previously included in the Roughead et al. review	• No Australian RCTs were identified

CPS type	Roughead et al.[147] (2003) Relevant key findings (1990 – 2002)		Benrimoj et al.[148] (2005) Relevant key findings (October 2002 – March 2005)	
	Overall	Australia-specific	Overall	Australia-specific
	services and patient outcomes (level 2), although this study had significant potential for bias"[147(p156)] • 2 remaining RCTs did not report significant effects which was related to insufficient sample size; however, an indicative trend for smoking cessation rate improvement seen			
Pharmacist-led immunisation services	• No controlled trial studies identified in relation to pharmacist-administered immunisation	• No relevant controlled trial studies identified	• No RCTs were identified for inclusion	• No RCTs were identified for inclusion
Other services	• Total of 2 RCTs included that examined CPS in relation to monitoring of patients; 1 RCT related to coronary artery disease risk, 1 RCT related to blood pressure monitoring • Mixed findings were evident	• No relevant controlled trial studies identified	• Total of 3 RCTs included • 2 RCTs were for BP monitoring services in rural settings- BP monitoring for patients with hypertension led to reduced BP • 1 RCT involved a screening/monitoring service for osteoporosis; no differences were seen between groups except for patient satisfaction with the service "however, it should be noted that the control group was deprived of a service that the authors reported as being 'routinely offered' in many community pharmacies"[148(p128)]	• 1 RCT was conducted in Australia (osteoporosis) • 72% were willing to pay for BMD testing and risk assessment (maximum $30) versus risk assessment alone • Cost-benefit analysis indicated that cost outweighed benefits of service; cost to provide the service was $81.40

From the Roughead et al. and Benrimoj et al. reviews which collectively summarised the CPS literature (RCTs) from 1990-2005, there were no Australian RCTs pertaining to pharmacist-led clinic services, medication review in the outpatient setting, patient education services, OTC medication use, and pharmacist-led immunisation identified for inclusion.[147, 148] Furthermore, the literature reviews encompassed CPS that have been part of trials and may not have necessarily been translated into routine practice. However, this lack of evidence of effectiveness from RCTs does not preclude benefits such services on patient outcomes when implemented in practice. Many of the aspects included in these CPS could be considered part of "usual care" or the current practice of community pharmacists. Similarly, expanded pharmacist roles (e.g. pharmacist-led vaccination now permitted by law, as one example) is expected to yield benefits to patients and the health care system overall. This may be the focus of research conducted since these reviews were published, and/or future research studies which may then in turn provide data directly applicable to the Australian context.

There has been a proliferation of research conducted in the area of CPS over the last 2 decades. In order to help gauge the impact of CPS on economic, clinical and/or humanistic outcomes of CPS, and thus the potential value of the work undertaken by community pharmacists in delivering CPS, a summary of the key findings and considerations from systematic reviews relevant to CPS delivered in community settings are presented in Table 6.

As the core objectives differed between systematic reviews, the identified papers have been grouped under the following broad categories in Table 6:

- Remunerated CPS,
- CPS in low- and middle-income countries,
- Economic outcomes focussed,
- Patient outcomes focussed (clinical and/or humanistic),
- Specific CPS types,
- Medication management (medication review, medication therapy management),
- Adherence, and
- Collaboration and/or co-location of pharmacists with GPs.

Systematic review characteristics

In addition to the Roughead et al. and Benrimoj et al. reports of systematic reviews previously summarised, systematic reviews and/or meta-analyses pertaining to CPS delivered in the community setting have focussed on remunerated CPS (broadly[8, 16] or remunerated medication review specifically[59]), CPS delivered in middle income countries,[149] economic evaluations (cost-effectiveness) of CPS,[150, 151] or impact of CPS in general.[152, 153]

Some systematic reviews focussed on specific CPS types, such as vaccinations,[122] minor ailment schemes,[135] adherence (to chronic medicines[70] or antidepressants[71]), continuity of care,[83] medication management/review,[53, 58-61] clinical pharmacy services,[62] or collaboration/co-location of pharmacists with GPs.[154, 155] A number of systematic reviews also focussed on interventions specific to medical condition(s); for instance screening conducted in community pharmacy settings,[90, 115, 116, 126] tobacco/smoking cessation,[109-113] weight management,[107] interventions related to medicines used in mental health,[71, 129] hypertension/blood pressure,[93-96] coronary heart disease risk factors/cardiovascular disease prevention,[97-99] dyslipidaemia/lipid levels,[100, 101] diabetes,[102, 103] osteoporosis,[104] chronic pain,[105] or COPD.[91] Other systematic reviews examined multiple healthy lifestyle support interventions,[9] or interventions for the prevention or management of more than 1 chronic disease (diabetes and CVD).[92]

Interestingly, approximately half of the included systematic reviews and/or meta-analyses were published in the last few years (2013 to the present),[8, 9, 53, 58, 59, 83, 90, 91, 95, 96, 98, 99, 111-113, 115, 116, 122, 126, 135, 150, 151, 153, 155] which may indicate the growing research interest in CPS and the changing roles or potential changes to pharmacists' roles in community settings. A previous overview of systematic reviews published in 2013 by Mossialos et al.[156] relating to interventions by community pharmacists noted that many reviews provide mixed evidence of the impact of CPS. Although the present review also yielded mixed findings, there are many positive findings that should be highlighted.

Collectively, interventions that were targeted at specific medical conditions tended to include components involving patient education, medication management and/or other assessments conducted as part of intervention. Some systematic reviews also conducted meta-analyses regarding relevant outcome measures, where appropriate data were

available for pooled analysis. Findings demonstrated that pharmacist-delivered interventions have a positive impact for key clinical and/or humanistic outcome measures relevant in chronic disease management in the community setting. Meta-analyses conducted regarding smoking cessation interventions[9, 111] highlighted the effectiveness of community pharmacy-delivered smoking cessation interventions in comparison to usual care. Similarly, findings from meta-analyses in relation to interventions targeting blood pressure control/patients with hypertension also favoured pharmacist intervention for the lowering of both systolic[93-96, 152] and diastolic[94-96, 152] BP.

Meta-analyses of studies reporting appropriate HbA1c data favoured intervention for lowering of HbA1c in patients with diabetes.[102, 152] Interventions in patients with dyslipidaemia were favoured in meta-analyses pertaining to outcomes such as total cholesterol,[100, 101] low-density lipoprotein (LDL),[101] and triglyceride levels.[101] Adherence to antidepressants also significantly improved with intervention,[71] with promising findings also evident from a meta-analysis of studies evaluating interventions for chronic pain.[105] A meta-analysis of pharmacist interventions for COPD patients also favoured intervention with respect to improvements in outcomes such as hospital admission rates, compliance to treatment, and costs.[91]

With respect to medication management/review- related interventions, meta-analyses found decreased hospitalisation odds were seen for patients with diabetes[58] and heart failure,[58] as well as improved achievements of target BP[59] and LDL.[59] Overall, findings from the included systematic reviews regarding the positive effects of medication reviews conducted by pharmacists are also reiterated in an overview of systematic reviews conducted by Jokanovic et al.[157] Furthermore, a meta-analysis conducted by Tan et al.[155] found that the co-location of pharmacists in GP practices contributed to significant reductions in mean BP (systolic and diastolic), HbA1c, LDL, total cholesterol, and 10-year Framingham risk scores.[155]

Although pharmacist interventions have been shown to have a positive effect on clinical outcomes in a range of medical conditions, limited evidence was available to support the superiority of pharmacist-led CPS interventions in community settings on quality of life.[58-61, 83, 91, 93, 102, 153]

Considerations regarding the included systematic reviews

The current CPS evidence base presented in the included systematic reviews differs between the various CPS. Some systematic reviews and/or meta-analyses included only certain controlled study types (i.e. RCTs, non-RCTs, and/or controlled before-after),[9, 59, 61, 62, 71, 83, 91, 95, 96, 98, 101, 104, 105, 109, 111, 112, 129, 149, 152, 155] whereas other systematic reviews included a broader range/other study designs and/or did not specify restrictions on study design type for inclusion.[8, 16, 53, 58, 60, 70, 90, 92-94, 97, 99, 100, 102, 103, 107, 110, 113, 115, 116, 122, 126, 135, 153, 154]

In contrast, some systematic reviews that focussed on specific CPS included a fewer number RCTs, for instance in relation to osteoporosis management services (3 RCTs included),[104] sleep apnoea services (7 studies included in total; no high quality RCTs),[126] weight management services (1 RCT included),[107] chronic pain patient education services[105] (4 RCTs included). This likely indicates that limited higher quality evidence to support CPS delivered in community settings by pharmacists is presently available for these condition-specific CPS. Furthermore, there is less evidence from RCTs available for more emerging areas regarding CPS such as community pharmacy-based vaccinations,[122] or specific CPS such as screening interventions in community pharmacy settings (where 42/50 included studies were uncontrolled and deemed to be of poor quality).[116]

In contrast, of the reviews focussing on specific CPS, a larger number of RCTs and/or non-RCTs (10 or more) have been conducted to date in relation to tobacco/smoking cessation,[9, 112] medicines use optimisation in mental illness,[129] interventions targeting blood pressure,[93, 95, 96] interventions targeting dyslipidaemia,[100, 101] CVD prevention/risk factor reduction,[98, 99] diabetes,[102, 103] pharmaceutical care/clinical pharmacy services/medication review/medication therapy management,[58-62] patient adherence interventions,[70] continuity of care,[83] co-location/collaboration of pharmacists with GPs[154, 155] (as per the studies in the systematic reviews included in this literature review). As presented earlier, meta-analyses that were conducted as part of some of these systematic reviews have generally favoured pharmacist interventions regarding a number of patient-related outcomes.

When considering the number of remunerated CPS identified in the systematic reviews conducted by Chan et al.[16] and Houle et al.[8] in comparison to the number of full economic evaluations included in the recently published systematic reviews by Malet-Larrea et al.[150]

and Perraudin et al.,[151] there appears to be a likely gap in full economic evaluations available for CPS broadly implemented in community pharmacy settings at present. Similarly, some of the CPS within the Australian context (as outlined in Table 3) would benefit from further health and economic outcomes evaluation in order to better understand the work value of Australian community pharmacists in particular.

When attempting to contextualise the findings from these systematic reviews in light of CPS provided in the Australian context, a gap between research evidence and knowledge translation is expected i.e. in relation to the broader uptake of CPS. Some CPS offered at present in Australian community pharmacies do not have substantial research evidence that could be adopted in the translation of knowledge into practice. For instance, specific characteristics of CPS implemented in Australian community pharmacy settings could differ from those exhibited in the studies included in the systematic reviews included in Table 6. Furthermore, it should also be acknowledged that despite community pharmacy practice comprising aspects of CPS as part of usual care, some CPS are not currently formally implemented in Australia e.g. minor ailment schemes.[135]

Table 6. Summary of systematic reviews that have addressed CPS relevant to the community setting, and their impact on clinical, humanistic and/or economic outcomes

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Remunerated CPS				
Chan et al.[16] (2008)	Describe **CPS remuneration models** and relevant economic, clinical, humanistic outcomes evaluation studies	• English articles, describing remunerated CPS including large number of pharmacists, and funded by a third party • Database searches included literature up until June 2006; additional searches also conducted • 28 CPS remuneration models were included (remunerating either the pharmacy or pharmacist)	• 12/28 CPS in community pharmacies specifically, 5 for other non-hospital outpatient settings, 4 systems not specific to community or hospital • Community pharmacists delivered CPS funded by government or private third parties; government mainly funded more widely implemented CPS • CPS types mainly included medication therapy management (MTM), disease state management (DSM) (commonly diabetes), or CPS related to medicines • 14 CPS evaluated with respect to economic, clinical or humanistic outcomes; evaluations were heterogeneous • Limited clinical and/or economic outcomes evaluation conducted; positive or neutral impact when evaluated	• CPS remuneration models funded by patients were excluded • Included "remuneration program had to involve a substantial number of pharmacists (e.g., all pharmacies in a region)"[16(p103)]
Houle et al.[8] (2014)	**Update of the Chan et al.[16] review** (2008) (see objectives above)	• English articles that had not been included in previous review, describing CPS remunerated by a third party • Database searches included literature up until December 2012; additional searches also conducted • 60 remunerated CPS from Canada, United States, Europe, Australia and New Zealand were included (from 118 references)	• Range of CPS identified; 38 were CPS related to medication review, with other common remunerated CPS including: communicating with prescribing HCPs regarding medication-related issues, management of minor ailments, smoking cessation, diabetes management, counselling on emergency contraception, inhaler training • Additional training of pharmacists required for 14/60 CPS • Outcomes evaluation undertaken for 16 programs • CPS effective for smoking cessation, identification and resolution of medication-related problems, clinical parameter improvements (cholesterol, blood pressure (BP), glycosylated haemoglobin (HbA1c)) • CPS deemed to have net cost benefit; projected returns on investment for funding body ranged from $1.29 to $2.50 per dollar; high patient satisfaction seen when measured	• CPS funded by patients were excluded • Also excluded were "programs that existed solely within the context of a funded research study or pilot project, or involved fewer than 3 pharmacies"[8(p211)]
CPS in low- and middle-income countries				

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Pande et al.[149] (2013)	"Evaluate the effect of pharmacist-provided non-dispensing services on patient outcomes, health service utilisation and costs in low- and middle-income countries"[149(p6)]	• RCTs, non-RCTs, controlled before-after studies, interrupted time series analyses pertaining to interventions delivered by pharmacists or pharmacies in outpatient settings in low or middle income countries • Outcomes of interest: patient and health care process outcomes • Database searches included literature to 2010; reference list searches also conducted • 12 studies included	• All 12 studies were RCTs (7 studies conducted in lower middle income countries, 5 studies in upper middle income countries) (usual care as control) • 11/12 RCTs were patient-centred interventions primarily involving patient education and counselling, which were focussed on specific medical condition(s) e.g. diabetes, asthma, COPD, hypertension, dyslipidaemia, arthritis (rheumatoid or osteoarthritis); 4 of these studies also included medication therapy management as part of intervention • Relevant, developed written health and/or medicines information was given to patients in 7/11 patient-centred RCTs • Majority of clinical outcomes were improved with pharmacist intervention (not always significant); "Pharmacist-provided services targeted towards the patient point to small improvements in some of the clinical outcomes such as management of high glucose levels among diabetic patients and management of blood-pressure and cholesterol levels. For outcomes such as peak expiratory flow rate and forced vital capacity, we could not rule out the role of chance"[149(p13)] • 7/11 studies measured quality of life, however there was inconsistent reporting which limited the overall conclusion that could be drawn; however, a trend towards possible improved quality of life was associated with pharmacist interventions • 4/11 studies reported health care utilisation and/or cost outcomes; 2 studies reported statistically significant reductions in hospitalisation rates in intervention group compared to control; 1 study noted fluctuations in GP visits required; 1 study reported decreased clinic visits in intervention group, and decreased medication-related costs for asthma/COPD patients • 1 RCT was an intervention delivered to HCPs (GPs) focussed on paediatric asthma via educational outreach; improved asthma score with intervention (0.85, p=0.03)	• An updated review is currently in progress • All included studies were conducted in middle income countries, which may limit the generalisability of the review findings to other contexts, such as low income countries

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Economic outcomes focussed				
Malet-Larrea et al.[150] (2016)	Ascertain **cost-effectiveness of CPS provided in community pharmacies** in relation to clinical and humanistic patient outcomes in relation to usual care as the comparator	• Full economic evaluation studies of RCTs or cluster RCTs on CPS provided in a community pharmacy setting (where economic evaluation definition used was by Drummond) • Database searches included literature from inception to September 2015 • 17 economic evaluation studies for 13 CPS studies included	• The majority of studies conducted economic evaluations from the perspective of the health care system; incremental analysis completed for 9/13 studies where incremental cost effectiveness ratios (ICERs) were calculated; cost-consequence analysis completed for 4/13 studies • 4/13 demonstrated CPS to be less expensive but more effective than usual care (CPS interventions related to promoting adherence to new medicines, COPD inhaler adherence, medication review and follow-up, and asthma) • 7/13 demonstrated higher costs than usual care but were more effective; 2 of these studies were conducted in Australia (Gordois et al. and Krass et al.) • 2 studies were as effective as usual care (1 CPS had higher costs, and 1 CPS had lower costs in comparison to usual care)	• All included studies were published between 2001 and 2015. Economic evaluation of CPS delivered by community pharmacists has emerged in the last 20 years, thus reiterating CPS expansion and subsequent evaluation
Perraudin et al.[151] (2016)	Synthesise studies that have completed **full economic evaluations of the cost-effectiveness of CPS** in a European community setting	• English articles describing full economic evaluation studies (comparison of costs and outcomes of a pharmacist-delivered CPS and a comparator (usual care, comparator service, no intervention) as a minimum) • Database searches included literature from January 2004 • 21 studies included	• 13/21 studies were conducted in the UK • Studies that evaluated pharmaceutical care services, a COPD CPS, or a telephone-based CPS targeted at elderly patients starting a new chronic medicine were deemed cost-effective • Mixed findings were evident for economic evaluations for other CPS that aimed to improve patient outcomes e.g. medication review, medicines management • 4/5 smoking cessation CPS studies were conducted in the UK, and demonstrated cost-effectiveness for the National Health Service (NHS) in the short term • Screening conducted in community pharmacy for chlamydia or sleep apnoea (n=2 studies) were either superior to the comparator or yielded favourable ICERs	• Focus was on European CPS; some overlap between the studies identified in this review and that conducted by Malet-Larrea et al.[150]

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Patient outcomes focussed (clinical and/or humanistic)				
Nkansah et al.[152] (2010)	"Examine the effect of outpatient pharmacists' roles on patient and health professional outcomes"[152(p3)]	• RCTs detailing pharmacist interventions, that were distinct from compounding and dispensing, in community, outpatient, and/or ambulatory settings • Outcome measures that were reported had to be patient outcomes or health care process related • Studies identified and included from previous review versions, in addition to updated EPOC Specialised Register search; updated search in EPOC Specialised Register included literature from January 1966 to March 2007 • Meta-analysis was conducted for similar studies • 43 studies included in this updated review	• 36 RCTs were for patient-centred interventions;11/36 patient-centred intervention studies also had component(s) focussed on HCPs • 42/43 studies compared intervention to usual care as control • Interventions involving patients consisted of various components such as patient education, and medication therapy management and related activities • 27/36 studies on patient-centred interventions included patients with a specific medical condition(s) e.g. diabetes, heart failure, hyperlipidaemia, hypertension, asthma, COPD, and depression • 29/36 reported clinical and humanistic outcomes for patients, where pharmacist intervention was generally favoured in relation to the majority of outcomes (even though statistical significance was not achieved in every instance) • 7 RCTs pertained to interventions related to hypertension; 4 studies were included in meta-analysis; pharmacist intervention was favoured for systolic BP (effect size -6.32 mmHg, 95% CI -8.8 to -3.83, p<0.001) and diastolic BP (effect size -3.12 mmHg, 95% CI -4.57 to -1.67, p<0.001) • 7 RCTs included patients with diabetes; 3/5 studies that reported HbA1c reported significant improvements favouring intervention, 2/3 studies that reported BG levels noted improved BG levels associated with intervention; 2 studies included in meta-analysis relating to HbA1c, which favoured intervention (effect size -0.75%, 95% CI -1.41 to -0.09, p=0.03) • 8/36 studies measured quality of life; 3 of these studies reported min. 3 improved quality of life subdomains • 7 studies were on interventions for HCPs (which involved educational outreach delivered by pharmacists); prescribing changes associated with the intervention focus were a key measure; mixed findings were evident	• This is an updated review (previous version published in 2000) • This review constitutes Phase I of the entire review
Blalock et al.[153] (2013)	"Effectiveness of **direct patient care**	• Empirical research relating to intervention(s) involving direct	• Diabetes and hypertension were commonly the focus of interventions; interventions comprised of mostly disease state	• Only studies conducted in the

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
	services provided by pharmacists in community pharmacy settings in the United States"[153(p237)]	patient care by pharmacists in community pharmacy settings • Articles relevant to the community setting were identified from the Chisholm-Burns et al. review as one part of the search strategy[158] • Database searches performed to identify any recently published research from January 2009 to December 2011; additional searches also conducted • 21 studies included	management or medication management • 134 outcomes were measured in the 21 studies overall; 50/134 outcomes were in favour of the intervention group (statistically significant) • Findings from studies that evaluated medication adherence were mixed, where 6/12 studies reported no statistically significant differences; 13/30 adherence outcomes yielded statistically significant differences in favour of intervention • 2/5 studies that examined medication use appropriateness found no significant differences; significant differences in favour of intervention reported for 7/10 outcomes • 6 studies were on BP interventions; 4/6 reported findings in support of intervention; 9/15 outcomes measured yielded significant differences • 4 studies looked at impact on BG or HbA1c; 6/8 outcomes measured yielded significant differences supporting intervention • 3 studies examined intervention impact on lipid levels; only 1/14 outcomes were statistically significant in favour of intervention • 3 studies measured impact on quality of life; only 1/14 outcomes measured was statistically significant	United States were included • Any economic outcomes from the studies were not reported in the review

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Specific CPS types				
Screening/monitoring activities				
Ayorinde et al.[116] (2013)	Aspects, outcome measures, perspectives, and feasibility of **screening interventions delivered in community pharmacy settings**	• All study designs (RCTs, quasi-experimental, observational) that examined a screening intervention based in community pharmacy seeking to identify at-risk or sufferers of medical conditions (major diseases in Europe) • Database searches included English literature from 1990 to August 2012; reference lists also searched • 51 papers included (detailing 50 studies)	• 1 RCT, 2 cluster RCT, 5 non-randomised, and 42 uncontrolled studies included in review; most of the uncontrolled studies deemed of poor quality • 19 studies screened for CV risk, 16 studies screened for musculoskeletal conditions; 7 related to diabetes, with other conditions including depression, sleep disorders, respiratory disease, and certain cancers (bowel, breast, colon) • 30 studies involved training of staff delivering screening intervention regarding tools utilised or the specific medical condition; 28 studies involved patient education regarding the condition in relation to the screening intervention • Range of 4-89% of participants screened yielded positive screening results; uptake of referrals from pharmacists reported in 11 studies, and ranged from 12.8%-85% • Screening helped to promote awareness of the condition/risk factors and contributed to behavioural changes for some • Limited economic evaluations seen overall; varied economic outcomes reported in only 10 studies • 18 studies evaluated satisfaction with the screening, whereby high satisfaction was reported by participants across the studies	• Limited controlled trial studies on screening interventions in community pharmacy were identified

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Willis et al.[115] (2014)	Systematic review and meta-analysis of effectiveness of **Type 2 diabetes (T2DM) and cardiovascular disease (CVD) screening** in community pharmacy	• Studies that detailed screening for T2DM or CVD • CVD screening= CVD risk calculation, or measurement of BP, lipids or triglycerides • T2DM screening= diabetes risk calculation, and/or pharmacist measurement of blood/plasma glucose levels (fasting/non-fasting) or HbA1c • Database searches included literature from 1950 until April 2012 • 16 studies included; outcomes of interest: proportion referred, referral uptake	• Significant heterogeneity was observed for all outcomes of interest in this review (summary statistics thus not reported) • Proportion of those screened that were referred ranged from approx. 6% to 73% (from the studies that reported this) • Referral uptake ranged between approx. 13% and 92% (from the studies that reported this) • Limited studies reported findings from additional testing done as a result of referral; one study reported 2.1% of screened individuals went on to be diagnosed with impaired glucose regulation or impaired fasting glucose • With respect to CVD: one study reported 17.28% of those screened had elevated total cholesterol levels previously undiagnosed, and another study reported 6% had undiagnosed hypertension	• None of the included studies reported the outcomes of interest specific to this review (proportion referred, referral uptake) as the main outcomes, which may contribute to the heterogeneity in their measurement
Fathima et al.[90] (2013)	Outline community pharmacists' role and impact in **screening of COPD (undiagnosed) and poorly controlled asthma**, and any relevant management	• English full-text articles where the intervention was conducted by community pharmacists • Empirical published studies • Database searches included literature from January 2003 to March 2013 • 17 studies included	• 15 studies related to asthma, 2 studies to COPD • 7/15 studies involved screening for poorly controlled asthma (various screening tools used between studies) and provided management for those deemed to have poor control; community pharmacist training provided in all these 7 studies • Studies that comprised both screening and management improved asthma control in intervention group compared to control group, or demonstrated improvements from baseline, regardless of the nature of the intervention • 2 COPD studies: 1 study was screening only, 1 study involved screening and management; pharmacists were trained in spirometry testing; screening identified 62% of screened participants were deemed at high risk of COPD in one study, with 24% demonstrating airflow limitation via spirometry; lower rates of participants at higher risk of COPD (19%) and who demonstrated obstruction of airflow (9% of those screened) seen in second study	• Despite stating that it was a systematic review in the title, the Methods state that a scoping review methodology was utilised • No specific restrictions on study design for inclusion were in place; thus, not all studies were RCTs
Cawley and	Identify evidence of	• Studies detailing OSA screening	• All included studies published in the last 10 years; 4/7 studies	• Majority of studies

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Warning II[126] (2016)	**obstructive sleep apnoea (OSA) services** provided by pharmacists in community pharmacy setting(s)	services conducted by pharmacists involving use of validated questionnaire or sleep polysomnography device • RCTs, retrospective, prospective cohort or cross-sectional studies included • Database searches included literature until January 2015 • 7 studies included	conducted in Australia • 4/7 studies were deemed to provide Level 2A evidence; 3/7 provided Level 2B evidence (according to strength of recommendations taxonomy) • 5/7 screened for sleeping disorders; 2 studies were OSA-specific; 6/7 studies employed a validated method for OSA screening • Training provided to pharmacists varied from basic to comprehensive instruction (classified by review authors) • Pharmacists identified 21-67% patients at risk of OSA or needed to be referred for additional testing; the pharmacists who identified 67% at risk patients received comprehensive training	included in the review were conducted in Australia, thus evidence will be of particular use to consider regarding the Australian context • Further research needed in OSA CPS
Healthy lifestyle support (e.g. smoking cessation, weight management, reduction in alcohol consumption)				
Sinclair et al.[109] (2008)	To examine the effect of **interventions aimed at promoting smoking cessation, delivered by community pharmacy staff**	• RCTs pertaining to smoking cessation interventions conducted by either pharmacist(s) and/or pharmacy staff members in a community pharmacy setting (usual care or "less intensive programme"[109(p3)] as control) • Primary outcome measure: abstinence rate min. 6 months post intervention initiation • Cochrane Tobacco Addiction Group trials register searched in October 2007 • 2 studies included	• Both RCTs conducted in UK (1 was a cluster RCT) comparing an intervention to usual care • Training delivered to pharmacists and/or pharmacy staff centred on Stages of Change model • Interventions comprised counselling and the maintaining of records • Continuous absence was the primary outcome; at the follow-up endpoint, one study reported 14.3% versus 2.7% ($p<0.001$) (favouring intervention, with follow-up endpoint of 12 months), and the second study reported 12.0% versus 7.4% ($p=0.09$) (follow-up endpoint of 9 months)	• This is updated review, with the initial review having been published in 2004 • Only 2 studies were included

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Dent et al.[110] (2007)	Review studies on **tobacco cessation services delivered by pharmacists**	• English articles detailing controlled and uncontrolled tobacco cessation interventions delivered by pharmacists, that reported data pertaining to quit rates • PubMed search included literature from 1980 to 2006 • 15 studies included	• 5 controlled studies, 10 uncontrolled studies included; 14/15 were regarding smoking cessation interventions, 1/15 focussed on chewed tobacco • 3/5 controlled studies reported statistically significant differences in quit rates between intervention and control groups, favouring pharmacist-led tobacco cessation interventions; most interventions included an element of counselling conducted by pharmacists, with or without follow-up • 10 uncontrolled studies reported intention-to-treat quit rates ranging between approx. 5% and 36%	• Only PubMed was searched
Saba et al.[111] (2014)	Evaluate effectiveness of **smoking cessation interventions delivered by community pharmacists** (meta-analysis)	• RCTs, non-RCTs, controlled before-after studies pertaining to smoking cessation intervention conducted by community pharmacist(s) or in a community pharmacy setting, with abstinence as the outcome • Database searches included literature from inception to May 2013 • 5 studies included (detailing 6 unique interventions)	• 3 RCTs, 2 controlled before-after studies included • Training completed by intervention pharmacists in all studies • Interventions included patient education/counselling (individual or group); nicotine patches also provided in one study • Of the 6 unique interventions, the effects of 5 interventions favoured over usual care, with 3 reporting statistically significant effect • Meta-analysis findings highlighted that community-pharmacist led smoking cessation interventions were more effective than control (usual care) with respect to abstinence rates (relative risk (RR) 2.17, 95% CI 1.43-3.31)	• Has included fewer studies in the meta-analysis in comparison to Brown et al.[9] (2016)

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Mdege et al.[112] (2014)	"Identify, describe and synthesize currently available evidence from randomized and non-randomized controlled studies on the effectiveness of **tobacco use cessation interventions delivered by pharmacy personnel**"[112(p22)]	• Controlled clinical trials, RCTs (including cluster RCTs) that compared intervention for tobacco cessation to either usual care, other treatment, or no treatment included • Had to have abstinence or relapse as outcome measure(s) • Database searches included literature until May 2012 • 10 studies included	• 6/10 studies were of non-pharmacological interventions; findings from studies of non-pharmacological interventions were mixed, where some noted no statistically significant benefits at follow-up whereas other CPS studies reported that the intervention was more effective than control (abstinence/quit rate as primary outcome) • 2/10 detailed intervention with both a pharmacological and non-pharmacological aspect; mixed results evident • Training of personnel delivering intervention was clearly reported in 6 studies; non-pharmacological interventions were varied in their delivery, consisting of various aspects and wide range of follow-up periods	•
Peletidi et al.[113] (2016)	Assess "training, interventions, outcomes, and cost-effectiveness of **pharmacy-led smoking cessation services within the UK**"[113(p8)]	• English articles on RCTs or observational studies on smoking cessation CPS delivered in community pharmacy setting • Database searches included UK literature from 1990 to 2014 • 6 studies included	• The 6 studies comprised 4 RCTs and 2 observational studies • Pharmacy smoking cessation CPS involved aspects such as individually tailored support in combination with nicotine replacement therapy with regular follow-up at varied intervals; findings show some positive impact on abstinence/quit rates although differences between groups were not always significant • One study reported that those who received training (a 5 day workshop) compared to untrained pharmacists demonstrated increased time spent with the pseudo-patient in consultation, and a higher proportion appropriately referring on • One study noted that incremental cost amount for a community pharmacy smoking cessation CPS was lower than for a service involving group therapy not undertaken in a pharmacy (£772 (incremental cost for pharmacy CPS) versus £1612 (supplementary cost of cessation for group therapy service)) • A further study also evaluating 2 intervention types noted that the community pharmacy CPS had an incremental cost per QALY of £2600 versus £4800 for the group therapy-oriented service	• This review only focussed on smoking cessation CPS in the UK
Brown et al.[9] (2016)	Systematic review of "effectiveness of **community**	• RCTs, non-RCTs, controlled before/after studies, interrupted time series, or	• Alcohol reduction interventions (n=2) did not yield significantly decreased alcohol scores in comparison to control; cost-effectiveness unable to be determined	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
	pharmacy-delivered interventions for alcohol reduction, smoking cessation and weight management"[9(p1)]; meta-analysis for smoking cessation	repeated measures studies interventions for alcohol reduction, smoking cessation, or weight management delivered in community pharmacy; no restrictions on "control" arm type • Database searches included literature from inception to May 2014; additional searches also conducted • 19 studies included (detailed in 23 articles)	• Of included smoking cessation interventions (n=12), 5/12 were effective in comparison to controls; pooled OR 2.56, 95% CI 1.45-4.53 (smoking cessation intervention compared to usual care) • 4/12 smoking cessation studies evaluated cost-effectiveness, and demonstrated that the intervention was cost-effective e.g. ICERs were reported between £79 and £509 per extra quitter in relation to behavioural support provided by pharmacists in conjunction with nicotine replacement therapy • Weight management interventions in community pharmacy (n=5) did not yield significant differences in comparison to other interventions; 2 studies detailed costs associated with the intervention, where costs to deliver the intervention in the community pharmacy setting were similar to GP setting	
Gordon et al.[107] (2011)	"Identify evidence of the **effectiveness and cost-effectiveness of weight management interventions in the community pharmacy setting**"[107(p898)]	• Studies on weight management interventions in community pharmacy • No restrictions on study design • Database searches included literature from January 1999 to June 2009; additional searches also conducted • 10 studies included	• 1 RCT, 1 controlled pre/post study and 8 single group pre/post studies • Interventions involved different aspects pertaining to diet and/or lifestyle; majority of studies had min. 1 pharmacist delivering intervention • Majority of studies reported training was provided to those delivering the service, ranging from 5 hours to 2 days • 3 uncontrolled studies reported 1.1-4.1kg weight loss (at 1 year); weight loss at 6 months ranged between 0.5-5.6kg (similar range for studies that reported weight loss at 3 months) • 5 studies reported BP as secondary outcome; RCT yielded no statistical difference between groups (both for BP and lipids); significantly lower BP compared to baseline noted in 2 studies • No economic evaluations conducted in any study	• Limited number of controlled trial studies regarding weight management interventions delivered in community pharmacy settings

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Vaccination				
Burson et al.[122] (2016)	To determine the acceptability, feasibility, and effectiveness of **community-pharmacy based vaccination services** for adults	• Original research conducted in the United States on community-pharmacy based adult vaccination • Database searches included literature from 1992 to June 2016; Google Scholar searches also conducted • 47 studies included	• Community pharmacies as vaccination sites were seen by patients as convenient and accessible, with the majority of patients comfortable with pharmacists vaccinating • 20 studies reported vaccination rates as the primary outcome measure; 5 studies evaluated cost-effectiveness • A broad increase in the number of vaccinations has been seen with the provision of community pharmacy-based vaccination services and their expansion • Pharmacy vaccination services helped increase influenza vaccination rates in those not vaccinated last year or would not have been vaccinated against influenza otherwise • Pharmacy vaccination services for influenza and herpes zoster vaccinations were deemed cost-effective overall	• Studies were excluded if they were not conducted in the United States • Trained pharmacists in Australia have only been able to provide vaccinations starting from this year. Thus, benefits may correspond to those seen in the United States
Advice on minor ailments				
Paudyal et al.[135] (2013)	Explore impact of **pharmacy minor ailment schemes** on patient and economic outcomes, and impact on the demand for higher cost services	• Studies involving minor ailment schemes based in community pharmacy that offered services for at least 2 minor ailments were included • No restrictions on study design; included evaluation of health and economic outcomes • Database searches included literature from 2001 to 2011; additional searches also conducted • 31 studies included	• 4 studies reported proportions of patients whose minor ailments were completely resolved that ranged between 68% and 94% • Most remuneration models for pharmacy minor ailment schemes were fee-for-service, which ranged between £1.50 and £7.85 • One study reported a projected £112 million saving for the NHS if all minor ailments were managed via pharmacy minor ailment schemes rather than in general practices • The majority of studies reported at least 90% of those who had used the service(s) offered as part of pharmacy minor ailment scheme(s) would re-use them, and were satisfied with the service(s) overall	• All studies evaluating pharmacy minor ailment schemes were from the UK • Limited complete economic evaluation studies were identified

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Mental health				
Bell et al.[129] (2005)	"Evaluate the impact of **pharmacist delivered community-based services to optimise the use of medications for mental illness**"[129(p3)]	• Randomised and non-randomised controlled trial studies on CPS provided by pharmacists in community and residential aged care facilities • Database searches included literature until April 2005; additional reference list searching conducted • 22 articles included	• 10/22 articles outlined CPS delivered to consumers; 12/22 were targeted towards other HCPs • Interventions involved counselling, education, and monitoring of patients by pharmacists; CPS targeted towards other HCPs (to improve prescribing) included medication reviews and education • 5 studies detailed CPS that involved patient education and monitoring; 3/5 studies led to improved patient adherence and/or use of medicines (intention to treat analysis employed); 1 study demonstrated improved adherence with CPS involving counselling by pharmacists among those who did not drop out • 4 studies involving medication reviews by pharmacists noted that they can contribute to improved quality use of medicines • 2 cluster RCTs in residential aged care facilities noted decreased in number of medicines and their cost due to medication reviews; 1 study noted statistically significant decrease in mortality but also saw worsened cognitive function and behavioural disturbance	• 15/22 studies were published in the 6 years prior to review, highlighting the emergence of CPS research pertaining to mental illness in particular in recent years
Rubio-Valera et al.[71] (2011)	Systematic review of RCTs on **interventions by pharmacists relating to antidepressant adherence** (used in depressive disorders) in outpatients (meta-analysis also conducted)	• RCTs conducted (antidepressant use in ambulatory patients), where intervention could involve patient education, counselling, monitoring, dosage adjustment, and side effects management • Database searches included literature from inception to April 2010; additional searches of citations and reference lists also conducted • 6 studies included	• 4/6 studies conducted in the United States, 1 in Australia and 1 in the Netherlands • Community pharmacists delivered intervention in 3 studies, with the remaining 3 studies reporting the intervention to be delivered by pharmacists working in other primary care settings • Patient education and monitoring were components of all interventions; other aspects included in some studies were monitoring of side effects and management, encouragement of adherence, and information provision (written/visual) • Pooled odds ratio (OR) 1.639 (95% confidence interval (CI) 1.236-2.174, $p < 0.001$) highlighted that pharmacist interventions significantly improved adherence to antidepressant medicines	• Small number of studies included in the meta-analysis

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Chronic disease management (e.g. hypertension, diabetes, cardiovascular disease/coronary heart disease, and/or related risk factors)				
Machado et al.[93] (2007)	"Identify and evaluate outcomes that can be positively impacted by **pharmacists' interventions in the management of patients diagnosed with essential hypertension**"[93(p1770)] (meta-analysis also conducted)	• English, French, German, Portuguese, or Spanish articles describing studies with patients with diagnosed hypertension, evaluating pharmacist interventions • Outcomes of interest: systolic BP, diastolic BP, lipid levels, medication adherence, patient knowledge about the medical condition, and quality of life • Database searches included literature from inception to end of December 2006; reference lists also searched • Meta-analysis conducted on controlled clinical trials (usual care as control) pertaining to systolic and diastolic BP outcomes • 28 studies included in review	• 18 RCTs, 5 clinical trials (single arm), 4 non-randomised comparative trials, and 1 database study included • Interventions primarily consisted of medication management and/or patient education • 39/68 outcomes measured in the 28 studies were ascertained to be sensitive to the intervention by the pharmacist (57%) (considering statistical significance of differences and clinical relevance) • 26 studies measured systolic BP; 13 controlled trials included in meta-analysis; meta-analytic means difference (baseline and follow-up endpoint) between intervention and control groups was -6.9 ± 12.0 mm Hg (p=0.047), favouring intervention • 13 studies included in meta-analysis conducted in relation to diastolic BP; no statistically significant differences were evident between mean meta-analytic difference (baseline and follow-up endpoint) between intervention and control groups • 5/13 studies that measured adherence found adherence being sensitive to pharmacist intervention • 8 studies evaluated quality of life; 1/8 studies found that quality of life was sensitive to pharmacist intervention	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Morgado et al.[94] (2011)	Systematic review and evaluation of effect of **pharmacist interventions on adherence to antihypertensive medication in patients with hypertension, and the impact on blood pressure control** (meta-analysis conducted)	• English, French, Spanish, German, Portuguese, or Italian articles • Studies evaluating pharmacist interventions targeted at improvement of BP control and medication adherence, conducted with adults with essential hypertension currently taking anti-hypertensive medication (in primary care, outpatient or community setting) • Outcomes: adherence, and BP related outcomes (mean systolic BP, mean diastolic BP, or BP control) • Database searches included literature from January 1999 to June 2009; reference lists also searched • 15 studies included (detailing 16 interventions)	• Interventions most commonly comprised of patient education, medication management, and/or increased follow-up • All studies measured adherence and BP, with 6/15 studies also measuring quality of life • Different measures were used to evaluate medication adherence, thus meta-analysis not conducted; 7/16 interventions were associated with statistically significant increase in medication adherence when comparing intervention to control groups • 8 controlled studies included in the meta-analysis for systolic BP; meta-analytic mean difference (baseline and follow-up endpoint) between intervention and control groups was -4.9 ± 0.9 mm Hg ($p<0.001$), favouring intervention • 7 studies included in the meta-analysis for diastolic BP; meta-analytic mean difference (baseline and follow-up endpoint) between intervention and control groups was -2.6 ± 0.9 mm Hg ($p<0.001$), favouring intervention	• This meta-analysis differed slightly from that conducted earlier in 2007 by Machado et al.[93]

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Cheema et al.[95] (2014)	Systematic review and meta-analysis of RCTs of **interventions by community pharmacists for patients with hypertension** (to examine impact on control of blood pressure)	• English articles detailing RCTs or systematic reviews of RCTs that investigated impact of community pharmacist interventions on patients with hypertension (systematic reviews then reviewed to identify RCTs) • Database searches included literature to November 2013; additional searches also conducted • 16 studies included in systematic review; 11 studies included in meta-analysis	• Interventions comprised of patient education, antihypertensive medication management, and/or lifestyle advice- usual care acted as the control • From the meta-analysis, community pharmacist interventions improved blood pressure control; using a random-effect model, pooled effects highlighted that interventions lowered systolic blood pressure by 6.1mmHg (95% CI -3.8 to -8.4mmHg, P<0.00001) and diastolic pressure by 2.5mmHg (95% CI -1.5 to -3.4mmHg, P<0.00001) • 5 studies reported medication-related problems were noted by the pharmacists; 822 problems were noted for 337 patients, where specifically 205/539 medication-related problems were resolved by pharmacists for the intervention group participants • Medication adherence was also more likely to be improved among those with poor adherence in intervention groups compared to control (OR 12.1, 95% CI 4.2-34.6, P<0.001)	•
Santschi et al.[96] (2014)	Evaluate effect of **BP interventions delivered by pharmacists to outpatients** (via the compilation and update of 2 previous systematic reviews) (meta-analysis)	• 2 previous systematic reviews included RCTs that evaluated pharmacist interventions (including those delivered in collaboration) for modifiable CVD risk factors in adult outpatients (hypertension, smoking, obesity, diabetes, or dyslipidaemia), with usual care as the control; meta-analysis conducted regarding blood pressure (systolic and diastolic-weighted mean differences) • Updated searches of the 2 systematic reviews completed in September 2013 • 39 RCTs included	• Pharmacist-led interventions were evaluated in 23/39 studies; 16/39 involved collaboration with other HCPs • Interventions most frequently involved patient education on medicines and lifestyle (35/39 studies), communication with other treating HCP(s) regarding issues and recommendations, for example (35/39), and medication management (34/39) • Pharmacist interventions favoured, with lowering of systolic (-7.6 mmHg, 95% CI -9.0 to -6.3 mmHg) and diastolic (-3.9 mmHg, 95% CI -5.1 to -2.8 mmHg) BP • Pharmacist-led interventions also demonstrated a larger effect in comparison to those that involved collaboration (significant) • Marginally improved intervention effect observed If delivered in community pharmacy settings (not statistically significant) • Frequent intervention/follow-up (at least monthly) was also shown to be beneficial for effect compared to less frequent intervention (not statistically significant)	• This review and meta-analysis combined and consolidated the findings from 2 previous systematic reviews[159, 160]; thus, only this review has been tabulated in detail
Blenkinsopp	Review and evaluate	• Database searches included	In relation to the RCTs:	• There is some

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
et al.[97] (2003)	evidence for interventions to **minimise risk factors associated with coronary heart disease (CHD)**	literature from January 1990 to February 2001; additional searches also conducted of specific journals and conference abstracts • 4 RCTs included (2 regarding smoking cessation and 2 for lipid management); other non-randomised studies also included (see review considerations)	• Of the 2 smoking cessation RCTs, 1 yielded non-significant differences in abstinence rates between intervention and control, second RCT reported 14.3% abstinence rate in intervention versus 2.7% control at 1 year point (significant) • Of the 2 lipid management RCTs, 1 study reported 32% vs 15% achieved target lipid levels between intervention and control groups, respectively; second RCT reported that 58% versus 30% attained the primary endpoint (lipid profile, initiation or change in medicine to lower lipid levels) between intervention and control (statistically significant difference), respectively • Training was undertaken by pharmacists delivering the interventions in all studies included in the review • Interventions involved components such as patient education/counselling (e.g. regarding medication, lifestyle, or risk factors and/or follow-up for lipid management RCTs); tailored and/or structured counselling and/or follow-up during a defined period (smoking cessation RCTs)	confusion when reading this review, as there are discrepancies between the non-randomised studies tabulated and those referred to in the main body of text • This review was published over 10 years ago, for which there has been a large number of studies conducted since in this area
Machado et al.[100] (2008)	Examine effect of **pharmacist interventions (involving patients with hyperlipidaemia)** on lipid levels, patient medication adherence, and quality of life (meta-analysis also conducted)	• English, French, Spanish, German, Portuguese, or Italian articles reporting studies pertaining to pharmacist interventions for patients with hyperlipidaemia • Outcomes of interest: lipid profile, medication adherence (lipid-lowering medicine), quality of life (studies must have reported min. 1 of these outcomes) • Database searches included literature from inception to July 2007 • 23 studies included	• 9 RCTs, 5 non-randomised comparative trials, 5 clinical trials (single arm), 2 studies involving review of charts, 1 prospective cohort study, 1 retrospective cohort study included • Interventions mainly comprised of patient education and/or medication management • 31/71 outcomes measured in the studies overall were determined to be sensitive to pharmacist intervention (considering statistical significance of differences and clinical relevance (designated as 10% improvement between baseline and endpoint)) • 19 studies measured total cholesterol; 11 studies included in meta-analysis; meta-analytic mean difference (baseline and endpoint) between intervention and control groups was -22.0 ± 10.4 mg/dL (p=0.034), favouring intervention • 9/18 studies that measured low-density lipoprotein (LDL) included in meta-analysis; meta-analytic mean difference (baseline and endpoint) between intervention and control groups	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
			was deemed clinically relevant but was a non-significant difference (-17.5 ± 10.9 mg/dL (p=0.109)) • 7/16 studies reporting high-density lipoprotein (HDL) data were included in meta-analysis; no clinical or statistically significant differences between intervention and control groups • 9/17 studies reporting triglyceride levels were included in meta-analysis; meta-analytic mean difference (baseline and endpoint) between intervention and control groups was deemed clinically relevant but was a non-significant difference (-21.8 ± 24.2 mg/dL (p=0.368)) • Adherence was measured in 9 studies; meta-analysis was not possible due to different methods used to measure adherence • Only 2 studies evaluated quality of life, with a trend seen towards improved quality of life post pharmacist intervention	
Charrois et al.[101] (2012)	Evaluate impact of **pharmacist intervention for patients with dyslipidaemia** (inclusive of both screening and management) (meta-analysis also conducted)	• RCTs (usual care as control) evaluating pharmacist interventions • Outcomes of interest: total cholesterol, LDL, HDL, triglyceride levels, and/or proportion attaining target lipid level, initiated on medication or dosage increased or adherence • Database searches included literature from inception until February 2010; additional searches also conducted • 21 studies included	• Interventions were delivered in different outpatient settings; 11/21 were interventions involving inter-professional collaboration, 10/21 studies were pharmacist-led interventions • Interventions routinely included patient education (n=21), medication-related recommendations (n=16), and assessment of adherence (n=15) • 9/21 studies reported difference between follow-up endpoint for LDL levels between groups; weighted mean difference between intervention and control groups was -10.7 mg/dL (95% CI -16.9 to -4.6), favouring intervention • 10/21 studies reported difference for total cholesterol between groups; weighted mean difference between intervention and control groups was -15.2 (95% CI -24.0 to -6.4), favouring intervention (however, high heterogeneity observed) • 9/21 studies reported triglyceride levels; weighted mean differences between intervention and control groups was -23.0 (95% CI -37.2 to -8.9), favouring intervention • No statistically significant differences were seen regarding differences in HDL levels between groups • Target lipid level attainment favoured pharmacist intervention	• More searches were conducted in this review, which led to more studies being included in comparison with Machado et al.[100]

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
			(OR 2.46, 95% CI 1.43-4.25) (8 studies included in analysis)	
Sabater-Hernández et al.[98] (2016)	Identification and detailing of **evidence-based CPS for the prevention of CVD**, delivered in community pharmacy	• Search conducted in Descriptive Elements of Pharmacist Intervention Characterization Tool (DEPICT) Project database; studies detailing CPS conducted in community pharmacy identified for screening • 131 articles screened for CPS for the prevention of CVD • Full texts evaluated to identify evidence-based CPS (had to be evaluated via min. 1 RCT of high quality, and more effective than usual care) • 14 CPS included (detailed in 16 articles)	• 8 CPS aimed to improve control of a factor contributing to cardiovascular risk (5 CPS addressed diabetes, 3 CPS addressed hypertension); 1 CPS aimed to improve blood pressure and total cholesterol in moderate/high CVD risk patients • 3 CPS targeted patient adherence to medication • 1 CPS pertaining to smoking cessation; 1 CPS targeted dyslipidaemia management • 13/14 CPS involved counselling delivered by pharmacists to individual patients regarding their health and/or medicines; some of these CPS also involved reinforcement of knowledge, attitudes or behaviours • 7 CPS involved provision of written information • 7 CPS involved patients receiving "support material to facilitate behavioural changes (e.g., monitoring devices, adherence-aid devices, and patient diary)"[98(p704)] • 5 CPS involved discussion of testing results performed during CPS delivery; 5 CPS involved goal setting or treatment plan development • 12 CPS assessed clinical/health outcomes; 12 CPS looked at patient behaviours	• Only RCTs included in DEPICT database included; more recently published RCTs may not be included • Does not report detailed information regarding the impact of each CPS on outcome measures • Only high quality RCTs included in this review, which therefore may not capture other CPS that are currently implemented in community pharmacy settings

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Chiazor et al.[99] (2015)	Systematic review of literature to evaluate effectiveness of **community pharmacist interventions to decrease major CVD risk factors**	• No restrictions on study design • English articles evaluating interventions by pharmacists in community pharmacy aimed at CVD incidence or risk reduction • Database searches included literature from January 2000 to June 2013 (search inclusion end-date specified for Medline search); additional searches also conducted • 27 studies included	• 8 RCTs, 5 cluster RCTs, 2 randomised before-after studies, 5 non-randomised controlled before-after studies, 7 uncontrolled before-after studies included • Interventions studied were focussed on diabetes, hypertension, dyslipidaemia, or smoking cessation; components included patient education, follow-up, and/or medication review and resultant recommendations) • 20/27 studies yielded findings that favoured intervention • 13 studies reported findings for min. 1 humanistic outcome; 5 studies noted significantly improved patient knowledge; 4 studies found significantly improved quality of life (related to health)	• Review authors noted that the quality of the studies was "generally poor"[99(p20)]; the lack of restrictions on study design incorporated into study inclusion criteria may have been a contributing factor
Evans et al.[92] (2011)	Systematic review of interventions conducted by community pharmacists for the **prevention or management of diabetes and/or CVD** (including major risk factors)	• Articles published in English or French with no restrictions on study design • Database searches included literature until February 2011; additional searches also conducted • 40 studies included	• Of the 40 studies, 11 were RCTs and 4 were cluster RCTs • On the whole, the quality of studies was deemed poor • 38/40 studies involved interventions consisting of patient follow-up on a regular basis or education (e.g. on the medical condition, diet and lifestyle, adherence); intervention efforts that were aimed at doctors involved identifying medication regimen issues and subsequent recommendations made • 31/40 studies yielded findings that favoured the intervention(s); however, "none of the studies demonstrated any benefits to major health outcomes and were mainly restricted to relatively small differences in drug utilization, laboratory outcomes, or medication adherence"[92(p623)]	• Most studies were published after 1999

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Machado et al.[102] (2007)	Systematic review of **pharmacist interventions for patients with diabetes** to determine their impact on patient-related outcomes (meta-analysis also conducted)	• English, French, German, Portuguese, or Spanish articles detailing studies on pharmacist interventions focussed on diabetes • Outcomes of interest: HbA1c, plasma glucose (fasting), systolic BP, lipid levels, adherence, knowledge about medicines, and quality of life • Database searches included literature from inception to the end of 2006; reference lists also searched • Meta-analysis conducted with studies reporting HbA1c • 36 studies included	• 18 RCTs, 9 non-RCTs, 2 pre-post observation cohort studies, 1 controlled retrospective cohort study, 6 uncontrolled retrospective cohort studies • Interventions commonly comprised patient education and/or medication management • 51/74 outcomes measured in the studies overall were determined to be sensitive to pharmacist intervention (considering statistical significance of differences and clinical relevance (designated as at least 10% improvement from baseline to endpoint)) • Of 30 studies that reported HbA1c data, 16 studies included in meta-analysis; meta-analytic difference in HbA1c levels from baseline to follow-up endpoint between intervention and control groups was -0.62% ± 0.29% (p=0.030), favouring intervention • 7 studies reported plasma glucose levels (fasting); findings from 6/7 studies favoured intervention • 8/14 studies that measured BP as an outcome reported a statistically significant decrease in BP favouring intervention • 10 studies reported total cholesterol, with 7 of these studies conducting statistical analyses of findings; total cholesterol was deemed as sensitive to pharmacist intervention in 4 studies • None of the 6 studies that measured adherence were categorised to denote adherence as sensitive to pharmacist intervention • 5 studies reported data on patient knowledge (regarding medicines); findings were mixed • Only 4 studies measured quality of life; findings were mixed, but a trend towards minimal difference was seen	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Wubben et al.[103] (2008)	Evaluate impact of **pharmacist-led interventions for diabetes in outpatient settings**	• Controlled trials and cohort studies involving adult participants, with control groups • Database searches included literature until August 2007; additional searches also conducted • 21 studies included (detailed in 23 articles)	• 9 RCTs, 1 controlled trial, and 11 cohort studies (prospective or retrospective) included • Interventions comprised of one-on-one consultations with patients, and either medication review, patient education, and/or case management; pharmacists reviewed patient records of home blood glucose monitoring in 12/21 studies • 19/21 studies reported HbA1c as the key outcome measure; changes in HbA1c ranged from a 0.2% increase to 2.1% decrease • 11/21 studies reported BP as secondary outcome; although lowered BP reported in many studies, 3 studies reported statistically significant differences favouring intervention for systolic and/or diastolic BP (p values were not always reported) • 2 studies reported economic evaluations; 1 study reported costs of intervention, and the second study (conducted in Australia) reported that the intervention cost $383 (Australian dollars) to achieve a 0.43% decrease in HbA1c	• The majority of included studies were conducted in the United States (with 5/21 Australian studies)
Elias et al.[104] (2011)	Examine impact of **interventions led by pharmacists in the management of osteoporosis** (RCT data used to examine whether interventions can assist in successful screening and improve medication adherence)	• Studies published in English detailing osteoporosis management interventions conducted by pharmacists • Database searches included literature from inception to April 2010; additional searches also conducted • 25 studies identified; 3 RCTs included	• RCTs were conducted in Australia, United States and Canada • 2/3 were cluster RCTs; Australian and United States RCTs ascertained to have high risk of bias • Pharmacists received training to administer the osteoporosis management intervention in all 3 RCTs; all interventions involved a patient counselling component • Australian RCT reported minimal differences between groups (BMD testing or no BMD testing) in relation to follow-up with doctor or calcium/Vitamin D intake; however patients were significantly more satisfied if BMD testing was conducted • United States RCT which focussed on glucocorticoid induced osteoporosis reported statistically significant improvements in calcium supplementation for intervention group • Canadian RCT noted intervention significantly improved proportions who completed dual-energy X-ray absorptiometry testing and/or taking calcium (compared to control group), as determined at 4-month follow up	• The Australian RCT[161] was funded by the Australian Government under the 3CPA[162]
Bennett et	"Systematic review to	• RCTs of patient education	• 4 RCTs included interventions that comprised of pharmacist-	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
al.[105] (2011)	determine the 'proof of concept' that **pharmacist-delivered educational interventions to patients with chronic pain** might warrant further research"[105(p624)] (meta-analysis also conducted)	interventions involving adults with chronic pain, where the control group was usual care; studies had to report pain and related outcome measures • Database searches included literature from inception to December 2009; additional searches also conducted • 4 studies included	patient consultations/counselling/education (either individual or group sessions) with follow-up; follow-up period = 8 days for 1 study; remaining 3/4 studies had a 3-4 month follow-up interval • Mean baseline pain intensity scores exceeded 5/10 in all studies (measured using Brief Pain Inventory); lower mean pain intensity scores reported in all studies when measured at follow-up • Meta-analysis: mean pain intensity score (measured at follow-up) was lower in intervention group compared to control by 0.5 (weighted mean difference 0.49, 95% CI -0.79 to -0.20) • 2 studies reported medication side effects as outcome measure; both favoured intervention (RR 0.38, 95% 0.24-0.62), with mean number of side effects experienced lower in intervention (1.63 versus 4.63 side effects; mean difference 3, 95% CI 0.72-5.28) • No statistically significant differences reported with respect to impact of pain on daily life and self-efficacy, when measured	

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Zhong et al.[91] (2014)	Examine impact of **pharmacist interventions for patients with COPD** with respect to health outcomes, humanistic outcomes, and utilisation of health care (meta-analyses also conducted)	• RCTs conducted with adult COPD outpatients involving pharmacist intervention • Outcomes of interest: quality of life, hospital admissions, emergency department visits, lung function (forced expiratory volume in 1 second (FEV1)), medication compliance, patient satisfaction, and costs • Database searches included literature until January 2014; additional searches also conducted • 8 RCTs included (detailed in 14 articles)	• Interventions were either primarily delivered by the pharmacist or in collaboration with others, and involved: patient education (8 studies), medication management/medication review (7 studies), telephone calls to patients or visits to patient's home (5 studies), smoking cessation intervention (3 studies), and communication with other health care professionals (regarding medication-related problems) (1 study) • 8 studies reported quality of life outcomes; meta-analysis pertaining to quality of life could only be performed including 4 of the 8 studies; pharmacist intervention was favoured (standardised mean difference of -0.36, 95% CI -0.54 to -0.18), however 3 studies not included in this meta-analysis did not find statistically significant differences between groups • 6 studies reported hospital admissions data; when results pooled, this yielded a RR of 0.5 (95% CI 0.39-0.64, P<0.05), favouring intervention • 5 studies reported emergency department visits data; meta-analysis yielded no statistically significant difference between groups observed (in terms of RR) • 5 studies reported FEV1-related data; meta-analysis (4 studies reported similar FEV1 outcome measure) yielded no statistically significant difference between intervention and control groups • 4 studies measured medication compliance; meta-analysis findings favoured intervention, with improved medication compliance compared to control (RR 1.23, 95% CI 1.11-1.36) • 3 studies reported patient satisfaction using different scales; trend towards patient satisfaction with intervention seen across the studies • 4 studies reported costs; standardised mean difference from meta-analysis of 3 studies was -0.37 (95% CI -0.59 to -0.15), signifying pharmacist intervention was associated with lower costs (significant)	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Medication management (medication review, medication therapy management, pharmaceutical care)				
Viswanathan et al.[58] (2015)	Systematic review and meta-analysis to evaluate impact of **MTM** for patients with chronic medical conditions in outpatient settings, in comparison to usual care (meta-analysis also conducted)	• Randomised controlled trials (RCTs), non-RCTs, cohort studies, case-control studies • MTM interventions defined as "comprehensive (rather than condition-specific) medication review, patient-directed education, care coordination, and opportunity for follow-up"[58(p77)] • Database searches included literature, published in English involving humans, until January 09 2014; additional searches supplemented database searches • 44 studies included (detailed in 61 articles)	• 21 RCTs, 4 non-RCTs, and 19 cohort studies were included • Pharmacists provided MTM in all included studies • Inadequate evidence was identified to ascertain the impact of MTM on the majority of outcome measures (economic, clinical, humanistic) • Low strength of evidence was available that demonstrated the impact of MTM significantly improved general medication appropriateness, medication adherence (determined via specific measures only), and number of medication doses • MTM did not lead to improved quality of life (health-related; low strength of evidence); meta-analysis demonstrated no significant benefits from MTM in relation to general health-related quality of life • MTM did not significantly improve patient satisfaction (low strength of evidence) • Medication expenses to health plans were improved by MTM-wide CI were reported • Lower odds of hospitalisation were associated with MTM for diabetic patients (OR range 0.91-0.93) and patients suffering from heart failure (adjusted hazard rate 0.55, 95% CI 0.39-0.77) • Low strength of evidence suggested MTM contributed to lower costs of hospitalisation in diabetic patients	• Usual care may still encompass elements of MTM CPS, as delivered by the patients' HCPs • "Clinically effective MTM can either increase or decrease health care use and expenditures based on the needs of the patient."[58(p84)]

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Jokanovic et al.[53] (2016)	Conduct systematic review of **clinical medication review** (CMR) processes and outcomes in Australia within the community setting	• Primary studies conducted in Australia reporting processes or economic, clinical, or humanistic outcomes of CMR • No restrictions on study design • Database searches included literature from 2000 to February 2015; additional searches supplemented database searches • 63 studies included	• 9 controlled studies, 34 observational/uncontrolled studies, 11 qualitative studies, and 9 studies involving surveys were included • An average of 3.6 medication-related problems (MRPs) per CMR were identified from 15 included studies that evaluated MRPs • CMRs led to decreased hospitalisations (45-79%), decreased mean number of prescribed medicines, decreased possible inappropriate prescribing • Adherence improved with CMR compared with no medication review • Economic evaluation of HMRs was conducted in 8 studies; 2/8 evaluated cost and effectiveness (with one included study reporting the value of HMRs conducted in 2008 having an ICER of $64,949 AUD per QALY), 6/8 evaluated cost alone • The majority of economic evaluations reported savings in relation to medication-related costs and/or health care resources used	• This review is particularly relevant to the work value of pharmacists engaged in providing medication reviews in the Australian context • "Pharmacist-led adherence focused medication reviews (e.g. MedsCheck) were not considered as CMR in this review"[53(p386)]
Hatah et al.[59] (2014)	Evaluate impact of **remunerated medication review** conducted by pharmacists on patient outcomes (primary: clinical, secondary: economic and humanistic); meta-analysis (primary outcomes)	• RCTs and non-RCTs (control= usual care) on remunerated medication review conducted by pharmacists for adult patients in the community setting, and reported primary and/or secondary patient outcomes • Database searches included literature until February 2011 • 36 studies included (21 reported primary outcomes, 32 reported secondary outcomes)	• In the meta-analysis, medication review conducted by pharmacists was shown to contribute to statistically significant improvement in the achievements of target blood pressure (OR 3.50, 95% CI 1.58-7.75, P = 0.002) and low density lipoprotein (OR 2.35, 95% CI 1.17-4.72, P = 0.02) • No statistically significant differences were seen between groups receiving either medication review or usual care on hospitalisation or mortality • Of the 19 studies that reported adherence as an outcome measure, 11 noted significantly improved medication adherence with medication reviews • 16 studies reported quality of life as an outcome; 8 studies did not find any statistically significant differences • 9 studies reported economic outcomes; few studies reported results statistically in favour of medication reviews	•

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Tully et al.[60] (2000)	Systematic review of **pharmacist review and monitoring of prescribed medicines in ambulatory or community settings**	• Randomised, non-randomised controlled trial studies, before-after studies • Database searches included literature up to 1998; additional searches also conducted • 55 papers detailing 50 studies were included	• 13 RCTs, 18 non-randomised clinical trials, and 19 before-after studies were included in the review • Medication reviews were conducted in all studies, along with recommendations for the patient's treatment regimen, and subsequent monitoring of the patients by pharmacists; patient education was also provided in many instances or adherence was monitored • 9 studies conducted in community pharmacies, where interventions were noted to lead to improved clinical outcomes in the majority of these studies; however, there was minimal improvement noted for quality of life • 31 studies completed in outpatient clinic settings, of which 21 reported clinical outcomes; pharmacist interventions had a positive impact on many of the various clinical outcomes • Economic findings were mixed across the studies	• Older systematic review which includes studies published prior to 1996- would be useful to compare these findings to more recent systematic reviews which may capture more recent evidence of impact of pharmacists' medication review and monitoring efforts
Roughead et al.[61] (2005)	Systematic review of **pharmaceutical care services** and their impact on patient outcomes in community and outpatient settings	• RCTs pertaining to pharmaceutical care conducted in community and outpatient settings that measured min. 1 patient outcome • Database searches included literature from 1990 to November 2003; reference lists also searched • 22 studies included	• 10 RCTs included patients in general population who may be susceptible to drug-related problems, 8 RCTs were focussed on specific medical conditions, 5 RCTs involved management of risk factors • 11/16 RCTs that measured quality of life noted no statistically significant differences between intervention and control groups • Outcome measures varied between studies; however, RCTs noted improvements in asthma symptoms, control of blood pressure, lipids, and HbA1c (>9% initially) • See Table 5 (findings similar)	• This review appears to be an update of the systematic review of the literature within the broader systematic review published in 2003,[147] specific to pharmaceutical care (see Table 5)

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Hanlon et al.[62] (2004)	Review RCTs to examine the impact of clinical pharmacy services on DRPs and health outcomes for elderly patients in community settings	• RCTs conducted with elderly patients in community settings that utilised at least 1 DRP process measure and measured at least 1 health outcome • Database searches included literature until March 2003; reference lists also searched • 16 articles detailing 14 RCTs included	• Usual care was the control in all included studies • The interventions in studies conducted in the home (n=5) included elements of patient counselling and/or medication review; 2/5 studies reported significantly fewer outpatient visits; 2/5 studies reported statistically significant improved compliance with intervention; 2/5 studies reported significant differences in DRP resolution and/or medication appropriateness; 2 studies reported non-significant impact on utilisation of health care services; mixed findings were seen in relation to medication knowledge and other outcomes • 3 were studies initiated in association with discharge from hospital and involved follow-up post discharge (counselling); 2/3 studies reported significantly improve compliance with intervention; 1 study reported improved outcomes with respect to medication appropriateness/regimen complexity; mixed findings reported re utilisation of health care services • 3 were studies conducted in clinics; all interventions had a medication review component; a trend was seen towards more appropriate medication prescribing/use for intervention(s); mixed findings were reported regarding costs of health care and/or medicines • 1 study was conducted in community pharmacy settings in 7 European countries; primary outcome measures were health-related quality of life, hospitalisation and related costs; no differences were observed for these outcomes • 2 studies were conducted in aged care facilities; both interventions involved an educational component targeted at HCPs; both studies reported decreased medication use in intervention groups; both studies reported no significant differences in hospitalisations or mortality/survival	• Heterogeneity among studies led to the inability to conduct a meta-analysis

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Adherence				
Van Wijk et al.[70] (2005)	Systematic review of the literature on **patient adherence interventions (chronic medicines) delivered by community pharmacists**	• Controlled, uncontrolled, prospective, retrospective, randomised, and non-randomised studies published in English or German, with adherence as a primary or secondary outcome measure • Medline search included literature from 1966 to November 2003; reference lists were also searched • 18 papers included	• 12 RCTs and 6 non-crossover single-group trials included; 15 studies were conducted in the United States; 14 of the included studies were published in the previous 10 years • Interventions were targeted for chronic medicines overall, hypertension, diabetes, respiratory disease, hyperlipidaemia, and other cardiovascular conditions • Interventions mostly comprised patient education, monitoring and counselling, which was compared to usual care • 8 studies found significantly improved adherence with intervention (5 RCTs); however, some studies only demonstrated significant effects at specific follow-up points	• No comprehensive economic evaluations were completed by the studies • Only 1 database was searched • Recency of publications in this area may be reflective of the emergence of pharmaceutical care
Continuity of care				
Nazar et al.[83] (2015)	Impact of **community pharmacy interventions on patients transitioning from secondary to primary care** (i.e. discharged from hospital)	• Studies of interventions in community pharmacy setting delivered post hospital discharge (randomised and non-randomised), in all patient populations • Database searches conducted; additional searches also undertaken • Search filters: "randomized controlled trials, controlled clinical trials, random allocation, single-blind method, clinical trials, crossover trials and placebos"[83(p937)] • 14 studies included	• 10/14 were RCTs, 4/14 studies were conducted in Australia; 2 Australian studies that involved HMR accredited pharmacists required intervention pharmacists to complete further training on warfarin and patient education; other studies also required additional training to be completed • 4 studies demonstrated statistically significant differences favouring intervention regarding the identification and resolution of drug-related problems • Statistically significant differences were not seen, or there were disparities among the trial findings, between intervention and control groups regarding key outcome measures e.g. hospital readmissions, mortality, medication adherence, quality of life, patient satisfaction	• It is unclear when the database searches were conducted (although it is stated that publication date was not a factor considered for exclusion)

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
Collaboration and/or co-location of pharmacists with GPs				
Geurts et al.[154] (2012)	Systematic review to ascertain effect of **pharmacist and GP collaboration on** patient outcomes	• English and Dutch articles (no specific study design inclusion criteria specified) • Database searches included literature until June 2011 • 83 articles included (detailing 77 studies)	• Of the 77 studies included, 26 studies detailed additional training provided (undertaken primarily by pharmacists) (it should be noted that 12 studies in which further training was not provided included accredited pharmacists and/or pharmacists with experience) • Data regarding hospital admissions were reported in 9 studies; 3/9 reported statistically significant decreases in hospital admissions and/or readmissions, 1/9 noted an increase • "Significant results found were decreases in number of drug-related problems, improved prescribing of medication improved quality of life scores, improved medication appropriateness index scores, increased compliance and patient knowledge, and improved clinical values"[154(p19)]	• Only PubMed and Embase databases were searched • Large number of studies included, which may reflect absence of detailed inclusion/exclusion criteria (Methods section was significantly less detailed than other systematic reviews)
Tan et al.[155] (2014)	"Evaluate the role of **pharmacists co-located with GPs and other health professionals within primary care general practice clinics**"[155(p609)] (meta-analysis also conducted)	• RCTs involving interventions by pharmacists (non-dispensing) in general practices that sought to improve prescribing and/or use of medicines among patients • Database searches included literature until May 2013; reference list searches also conducted • Meta-analysis also conducted where a min. of 2 studies had similar primary outcome measure(s) • 38 studies included in systematic review; 15 studies included in meta-analysis	• Medication review was the primary component of the Intervention by pharmacists; other components of interventions included medication management (prescribing, changes to treatment, or administration), patient education, adherence assessment, lifestyle advice, assessment, and/or monitoring (combination of components varied between studies) • 19/38 studies favoured pharmacist intervention, 13/38 studies reported no statistically significant differences between groups, and 6/38 studies reported mixed findings • Meta-analysis for studies reporting BP conducted for 11 studies; pharmacist interventions were associated with statistically significant lowering of mean blood pressure (systolic BP -5.72 mmHg (95% CI -7.05 to -4.39, P<0.001); diastolic BP -3.47 mmHg (95% CI, -4.35 to -2.58, P<0.001)) • Meta-analysis for studies reporting HbA1c conducted for 5 studies; pharmacist intervention favoured, with HbA1c reductions seen (mean difference of -0.88%, 95% CI -1.15 to -0.62, P<0.001) • Meta-analysis for studies reporting cholesterol conducted for 3 studies; pharmacist intervention favoured, with lowered LDL (-	• Particularly relevant to Australian context as there has been increasing interest among those in the profession in expanding the co-location of pharmacists within general practices

Review	Objective(s)/focus	Studies included	Relevant key findings	Review considerations
			18.72 mg/dL, 95% CI -34.10 to -3.36, P<0.017) and total cholesterol (-32 mg/dL, 95% CI -54.86 to -9.14, P<0.006) seen • Meta-analysis for studies reporting 10-year Framingham risk score conducted for 2 studies; intervention favoured (-1.83%, 95% CI -3.66 to 0.00, P=0.05)	

Overall review limitations and considerations

This review has some limitations. The conclusions that can be drawn from this review are dependent upon the available identified published evidence included in this review. Although the literature searches were conducted systematically, it should be noted that this is not a systematic review of the literature. Selected databases were searched, where only systematic reviews that focussed on CPS provided in the community setting were included. Thus, broader systematic reviews that examined the role of pharmacists regardless of the setting in which the CPS were conducted have not been reported. Some findings unique to the community settings which have been included in such reviews may not be encompassed in this review. Similarly, some other systematic reviews not identified in the specific database searches conducted may have been missed.

In addition, by examining evidence generated from systematic reviews of the literature, depending on their scope, they may include studies on CPS that are not widely implemented. Thus, this is a caveat which should support the need for further research to be undertaken on actual CPS that are being delivered in community pharmacy settings, in particular within the Australian context. This will help to ensure that real world evidence is generated to highlight the effectiveness and room for improvement inherent in current CPS initiatives.

When focussing on the Australian context, the components of CPS currently provided in community pharmacies in Australia that are not remunerated via established systems such as the CPA (i.e. CPS paid for by consumers utilising the service) may vary between pharmacies. Further still, for any CPS initiated by individual community pharmacists or a small number of community pharmacies alone, the nature of such service(s) may vary. There may be limited guidelines and streamlined CPS requirements and implementation, in addition to limited published evidence that demonstrate their effectiveness and impact on economic, clinical and/or humanistic outcomes. Thus, future studies evaluating the impact of the breadth of CPS provided in community settings which is currently expanding are much needed to provide ongoing, updated evidence for their impact on economic, clinical and humanistic outcomes. This will also help to highlight the critical role that pharmacists play in the provision of primary care services and facilitating QUM.

Promisingly, embedded within the 6CPA is a new clause which states that all CPS funded under the CPA will undergo cost-effectiveness analyses, which was not routine previously. Clause 6.1.3 states:

> *"The Community Pharmacy Programmes set out in Appendix B will continue from 1 July 2015 until the Minister determines otherwise and will be subject to a cost-effectiveness assessment by an independent health technology assessment body (such as the Medical Services Advisory Committee or the PBAC) as determined by the Minister."*[11(p15)]

Thus, new emerging evidence in relation to the work value of community pharmacists is expected in the near future that is specific to CPS provided in the Australian context.

A further point for consideration is that components of CPS may also overlap with usual care and thus, the effect or work value of pharmacists working in the community setting on economic, clinical and humanistic outcomes may not be fully represented in previously conducted studies.

Conclusion

The roles and responsibilities of community pharmacists have expanded over the last 20 years, with a movement away from dispensing-oriented roles to increasing CPS provision in community settings. Fundamental responsibilities related to the dispensing and provision of therapeutic goods have provided a foundation upon which CPS can be expanded. Changes to legislation and funding in Australia have aided the facilitation of CPS provision and accessibility of these services to consumers in community settings. Pharmacists are now being remunerated for services for which funding was not previously available. Funding arrangements under the CPAs have formalised and refined pharmacists' skills into distinct, targeted CPS, for instance with the emergence of MedsCheck. Furthermore, each community pharmacist will likely provide multiple CPS as part of their practice of the profession and thus, increasing their work value (when considering that the evidence available for individual CPS to date is promising in terms of various different factors). In many instances, additional training is required to be completed by pharmacists in order to provide specific CPS interventions e.g. HMR accreditation, training to administer vaccinations, and other associated training to ensure professional standards and guidelines are met.

With an ageing population and thus, potentially more complex medication regimens, medical conditions and potential disease burdens among the patient population, pharmacists' diverse roles can help address the breadth of health and medication-related issues experienced. There has been an increasing number of studies that have explored CPS provided in community pharmacies, community settings, and in particular, delivered by community pharmacists. Each CPS provided by community pharmacists and/or in the community setting potentially contributes to improved patient health outcomes and/or economic outcomes for the health care system. Evidence from the literature also highlights the positive impact of CPS on clinical outcomes. There is also evidence to suggest that CPS provision are inclined to be cost-effective in many instances, which can yield savings from both the health care system and for patients as well. However, further research is still required to better ascertain the cost-effectiveness of CPS provided by community pharmacies from the perspectives of the health care system, patients, and also from the service providers where possible. In particular, to better determine the impact of currently implemented

CPS within the Australian context, further Australian health and economic outcomes evaluations are necessary to more adequately determine the current work value of Australian pharmacists based in community settings. This will help to ensure that cost savings to the health care system are being appropriately invested back into remunerating pharmacists who provide these valuable services. Similarly, additional full economic evaluations are required within the Australian context to establish the extent of cost saving that CPS provide to the health care system. Evidence from the systematic reviews included in this review provide evidence to support the expanding role of community pharmacists and reinforces the need to ensure the implementation and expansion of evidence-based, value-added CPS.

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Appendix 1. Database search strategies

Medline

1. pharmaceutical services.mp. or exp *Pharmaceutical Services/

2. exp *Preventive Health Services/ or preventative health services.mp.

3. community pharmacy services.mp. or exp *Community Pharmacy Services/

4. exp *Counseling/ or counseling.mp.

5. patient care.mp. or exp *Patient Care/

6. patient care management.mp. or exp *Patient Care Management/

7. health care quality.mp. or exp *"Quality of Health Care"/

8. economics pharmaceutical.mp. or exp *Economics, Pharmaceutical/

9. patient education.mp. or exp *Patient Education as Topic/

10. fee-for-service.mp. or exp *Fee-for-Service Plans/

11. reimbursement.mp. or exp *Reimbursement, Incentive/

12. patient compliance.mp. or exp *Patient Compliance/

13. medication adherence.mp. or exp *Medication Adherence/

14. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13

15. pharmacist.mp. or exp *Pharmacists/

16. community pharmacy.mp.

17. pharmaceutical care.mp.

18. direct patient care.mp.

19. cognitive pharmaceutical service.mp.

20. clinical pharmacy.mp.

21. clinical service.mp.

22. clinical care.mp.

23. clinical intervention.mp.

24. adherence service.mp.

25. medication review.mp.

26. fees.mp.

27. remuneration.mp. or exp *Remuneration/

28. value.mp.

29. exp *Cost-Benefit Analysis/ or willingness to pay.mp.

30. cost effectiveness.mp.

31. user payer.mp.

32. discrete choice experiment.mp.

33. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32

34. diabetes.mp.

35. blood pressure monitoring.mp.

36. exp *Immunization Programs/ or immunisation.mp. or exp *Vaccination/

37. exp *Vaccination/ or vaccination.mp.

38. asthma.mp. or exp *Asthma/

39. exp *Sleep Apnea, Obstructive/ or sleep apnoea.mp.

40. smoking cessation.mp. or exp *Smoking Cessation/

41. cardiovascular.mp.

42. weight management.mp.

43. 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42

44. 14 or 33 or 43

45. 15 and 44

46. 3 and 45

47. limit 46 to yr="1996 - current"

48. limit 47 to english

49. limit 48 to systematic reviews

PubMed

1. pharmaceutical services[tiab] OR Pharmaceutical Services[mh]

2. Preventive Health Services[mh] OR preventative health services[tiab]

3. community pharmacy services[tiab] OR Community Pharmacy Services[mh]

4. Counseling[mh] OR counseling[tiab]

5. patient care[tiab] OR Patient Care[mh]

6. patient care management[tiab] OR Patient Care Management[mh]

7. health care quality[tiab] OR Quality of Health Care[mh]

8. economics pharmaceutical[tiab] OR Economics, Pharmaceutical[mh]

9. patient education[tiab] OR Patient Education as Topic[mh]

10. fee-for-service[tiab] OR Fee-for-Service Plans[mh]

11. reimbursement[tiab] OR Reimbursement, Incentive[mh]

12. patient compliance[tiab] OR Patient Compliance[mh]

13. medication adherence[tiab] OR Medication Adherence[mh]

14. #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13

15. pharmacist[tiab] OR Pharmacists[mh]

16. community pharmacy[tiab]

17. pharmaceutical care[tiab]

18. direct patient care[tiab]

19. cognitive pharmaceutical service[tiab]

20. clinical pharmacy[tiab]

21. clinical service[tiab]

22. clinical care[tiab]

23. clinical intervention[tiab]

24. adherence service[tiab]

25. medication review[tiab]

26. fees[tiab]

27. remuneration[tiab] OR Remuneration[mh]

28. value[tiab]

29. Cost-Benefit Analysis[mh] OR willingness to pay[tiab]

30. cost effectiveness[tiab]

31. user payer[tiab]

32. discrete choice experiment[tiab]

33. #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32

34. diabetes[tiab]

35. blood pressure monitoring[tiab]

36. Immunization Programs[mh] OR immunisation[tiab] OR Vaccination[mh]

37. Vaccination[mh] OR vaccination[tiab]

38. asthma[tiab] OR Asthma[mh]

39. Sleep Apnea, Obstructive[mh] OR sleep apnoea[tiab]

40. smoking cessation[tiab] OR Smoking Cessation[mh]

41. cardiovascular[tiab]

42. weight management[tiab]

43. #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42

44. #14 OR #33 OR #43

45. #15 AND #44

46. #3 AND #45

47. systematic review[tiab]

48. #46 AND #47

Cochrane Database of Systematic Reviews

1. pharmaceutical services.mp. [mp=title, abstract, full text, keywords, caption text]

2. community pharmacy.mp. [mp=title, abstract, full text, keywords, caption text]

3. pharmaceutical care.mp. [mp=title, abstract, full text, keywords, caption text]

4. pharmacist.mp. [mp=title, abstract, full text, keywords, caption text]

5. cognitive pharmaceutical service.mp. [mp=title, abstract, full text, keywords, caption text]

6. cognitive service.mp. [mp=title, abstract, full text, keywords, caption text]

7. medication therapy management.mp. [mp=title, abstract, full text, keywords, caption text]

8. professional pharmacy service.mp. [mp=title, short title, abstract, full text, keywords, caption text]

9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8

International Pharmaceutical Abstracts

1. community pharmacy.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

2. pharmaceutical services.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

3. preventative health services.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

4. professional pharmacy services.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

5. counseling.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

6. patient care.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

7. patient education.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

8. fee-for-service.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

9. reimbursement.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

10. patient compliance.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

11. medication adherence.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

12. pharmaceutical care.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

13. direct patient care.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

14. cognitive pharmaceutical service.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

15. clinical pharmacy.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

16. clinical service.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

17. remuneration.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

18. cost effectiveness.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

19. user payer.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

20. diabetes.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

21. blood pressure monitoring.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

22. immunisation.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

23. vaccination.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

24. asthma.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

25. sleep apnoea.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

26. smoking cessation.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

27. weight management.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

28. counselling.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

29. immunization.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

30. sleep apnea.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

31. systematic review.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

32. meta-analysis.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

33. pharmacist.mp. [mp=title, subject heading word, registry word, abstract, trade name/generic name]

34. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30

35. 31 or 32

36. 33 and 34

37. 35 and 36

‘Annexure G’

Index to Documents provided by the Pharmaceutical Society of Australia (PSA) as a result of Order to Produce issued by the commission on 8th March 2017[6]

Note: These documents can be viewed by appointment at the Registry of the Fair Work Commission

Appendix 1

1. All National Competency Standards Framework for Pharmacists in Australia produced by the PSA since July 1998 including:
    a. Competency Standards for Pharmacists in Australia (2001)
    b. Competency Standards for Pharmacists in Australia (2003) including final project report
    c. National Competency Standards Framework for Pharmacists in Australia (2010)
    d. Professional Practice Profile for initial registration as a pharmacist (2011)
    e. An Advanced Pharmacy Practice Framework for Australia (2012)
    f. Mapping of pharmacists’ competency standards for the administration of vaccines (2013)
    g. National Competency Standards Framework for Pharmacists in Australia (2016) {Draft at 15 March 2017}
2. All Professional Practice Standards produced by the PSA since July 1998 including any current draft versions of these standards
    a. Professional Practice Standards – Evaluation report (1999)
    b. Professional Practice Standards Version 2 (2002)
    c. Professional Practice Standards Version 3 (2006)
    d. Professional Practice Standards Version 4 – (2010)
    e. Professional practice Standards Version 5 (2017) {Draft at 15 March 2017}
3. All Professional Practice Notes produced by the PSA since July 1998
    a. PSA does not produce any Professional Practice Notes
4. All accreditation and registration requirements for pharmacists produced by PSA since July 1998

[6] https://www.fwc.gov.au/documents/sites/awardsmodernfouryr/am2014209-order-080317.pdf

a. PSA does not produce documentation relating to accreditation and registration requirements for Pharmacists

5. All Professional Guidelines and tools, included but not limited to CPA Guidelines, Pharmacist Only medicine (S3) guidelines, produced by the PSA since July 1998
    a. Guidelines for the Continued Dispensing of eligible prescribed medicines by pharmacists (2012)
    b. Guidelines for pharmacists providing Home Medicine Reviews (HMR) services (2011)
    c. Guidelines for pharmacists providing medicines use review (Medscheck) and diabetes medicine medication management (Diabetes Medscheck) services (20112)
    d. Standards and guidelines for pharmacists performing clinical interventions (2011)
    e. Guidance for the Provision of Pharmacist Only Medicine – emergency Contraception (2017, 2015, 2008, 2003)
    f. Guidance for the provision of Pharmacist Only Medicine – Naloxone (2016)
    g. Guidance for the provision of Pharmacist Only Medicine – Famciclovir (2015, 2012)
    h. Guidance for the provision of Pharmacist Only Medicine – short acting beta-agonists (2015, 2011)
    i. Guidance for the provision of Pharmacist Only Medicine – Chloramphenicol for ophthalmic use (2015, 2010)
    j. Guidance for the provision of Pharmacist Only Medicine – Combination analgesics containing codeine (2015, 2011)
    k. Guidance for the provision of Pharmacist Only Medicine – Fluconazole (2015, 2011, 2005)
    l. Guidance for the provision of Pharmacist Only Medicine – Orlistat (2015, 2011, 2005
    m. Guidance for the provision of Pharmacist Only Medicine – Proton Pump Inhibitors (2015, 2011, 2008 {Pantoprazole only})
    n. Guidance for the provision of Pharmacist Only Medicine – Prochlorperazine (2015, 2011)
    o. Practice Guidelines for the Provision of Immunisation services within Pharmacy (2014, 2013)
    p. Community pharmacy and HIV (2015)
    q. Guidance for Di-gesic and Doloxene dispensing (2014)
    r. Guidelines for pharmacists issuing certificates for absence from work (2010)
    s. Consumer Medicines Information and the pharmacist (2007)
    t. Guidelines for pharmacists on providing medicines information to patients (2000)

u. Guidelines for pharmacists on PBS brand substitution (2004)
v. Guidelines to employment of other health practitioners in pharmacy (2000)
w. Guidelines for Managing Pharmacy Systems for quality and Safety (2002)
x. Guidelines for pharmacists providing services to people with impaired vision (2000)
y. Guidelines for pharmacists providing opioid pharmacotherapy services (2004)
z. Guidelines for pharmacists' relationships with the pharmaceutical industry (2002)
aa. Guide to providing pharmacy services to Aboriginal and Torres Strait Islander people (2014)
bb. Practice guidelines for the provision of sleep apnoea services within pharmacy (2015)
cc. National eHealth record system – guidelines for pharmacy (2013)
dd. Australians stay healthier – PSA's call to action on chronic disease
ee. Mental Health care project – a framework for pharmacists as partners in mental health care (2013)
ff. Guidelines for Dose Administration Aids services (2007)
gg. The provision of Pharmacy services to Residential Aged Care Facilities (2001)

6. All documents, including notes and emails, relating o any proposed new or changed National Competency Standards Framework for Pharmacists in Australia, Professional Practice Notes, accreditation and registration requirements for pharmacists and Professional Practice Guidelines and Tools
    a. *Competency Standards* (2016)
        i. Pharmacy standards review project – final report for the Pharmacy Practitioner Development committee (2015)
    b. *Advanced Practice Framework*
        i. Extended? Advanced? What's the Difference? Australian Pharmacist 2015
    c. Understanding advanced and extended professional practice Australian Pharmacist 2015
        i. *Dose Administration Guidelines*
    d. Revised Draft at 15 March 2017
        i. *Guidelines for the provision of Pharmacists only medicines*
    e. Revised drafts as at 15 March 2015
7. The version of the Pharmacist Code of Ethics applicable in July 1998 and any other versions of the Pharmacist code of Ethics produced by the PSA since July 1998
    a. Code of Ethics for Pharmacists (1998)
    b. Code of Ethics for Pharmacists (2011)
    c. Code of Ethics for Pharmacists (2016)

8. The current Curriculum Vitae of Dr Lance Emerson

‘Annexure H’

Professional Pharmacists Australia

Research Brief

Instigator

Professional Pharmacists Australia (PPA) is a Division of Professionals Australia.

Professionals Australia (PA) is an organisation registered as the Association of Professional Engineers, Scientists and Managers Australia under the *Fair Work (Registered Organisations) Act 2009*. We represent a network of over 25,000 professionals including non owner pharmacists who work in community pharmacies right across Australia.

We advocate strongly for our members to help create a better future for their profession. We want to make sure Australian professionals get the respect, recognition and reward they deserve.

Research proposal

To investigate and report on the financial status of community pharmacies with emphasis on whether a work value increase proposed by PPA in the minimum rates of pay specified in the Pharmacy Industry Award 2010 would have a significant negative impact on the financial sustainability of community pharmacies.

Background

The Fair Work Commission (FWC) is a national independent tribunal established by the Federal government under the *Fair Work Act 2009*. The FWC’s role is to set minimum award pay rates and conditions; to prevent and resolve disputes between employees and employers; and to assist and help employers and employees work towards cooperative and productive workplace relations.

The FWC is currently conducting a four yearly review of all modern awards as is required by the *Fair Work Act 2009*. This review is an extensive review aimed at ensuring that all modern awards meet the requirements of the *Fair Work Act 2009*. This means they must ensure that modern awards provide a fair and relevant minimum safety net of terms and conditions of employment. In doing this the FWC must take into account:

(a) relative living standards and the needs of the low paid; and
(b) the need to encourage collective bargaining; and
(c) the need to promote social inclusion through increased workforce participation; and

(d) the need to promote flexible modern work practices and the efficient and productive performance of work; and
(e) the principle of equal remuneration for work of equal or comparable value; and
(f) the likely impact of any exercise of modern award powers on business, including on productivity, employment costs and the regulatory burden; and
(g) the need to ensure a simple, easy to understand, stable and sustainable modern award system for Australia that avoids unnecessary overlap of modern awards; and
(h) the likely impact of any exercise of modern award powers on employment growth, inflation and the sustainability, performance and competitiveness of the national economy.

Under this review the FWC may also vary award minimum wages only if it is satisfied that the variation of modern award minimum wages is justified by work value reasons.

> ***Work value reasons*** are reasons justifying the amount that employees should be paid for doing a particular kind of work, being reasons related to any of the following:
>
> (a) the nature of the work;
> (b) the level of skill or responsibility involved in doing the work;
> (c) the conditions under which the work is done.

We understand that the last time the FWC considered the value of the work performed by pharmacists working in community pharmacies was in 1998. PPA has lodged a claim seeking a review and increases in the award rates of pay for employee pharmacists working in community pharmacies.

A Table containing the current minimum rates of pay and the proposed rates of pay is attached at 'Annexure A'. Also attached is a copy of the most recent PPA survey report on pharmacists' actual rates of pay. This Report is attached at 'Annexure B'.

The Brief

PPA is seeking an academic with extensive knowledge of community pharmacy industry to provide a report on the current financial status of the community pharmacy industry. This report should cover:

- changes in the income received from government by community pharmacies since the late 1990s;
- any increases or reductions in remuneration received and the reasons for these changes;
- the profitability, or otherwise, of community pharmacies within Australia and an analysis of the reasons for their profitability;
- whether a work value increase in the minimum rates of pay specified in the Pharmacy Industry Award 2010 as proposed by PPA in Annexure A would have a significant negative impact on the financial sustainability of community pharmacies.

This research will be used as evidence to support PPAs claim that the minimum rates of pay for employee pharmacists covered by the Pharmacy Industry Award be increased to take account of work value changes since 1998.

The writer of this Report will be required to provide a written report to PPA on the outcome of their research by no later than 21 March 2017.

The writer of the Report will be providing this evidence to the Fair Work Commission as an independent expert. In this regard, please see attached at 'Annexure C' the Federal Court's Expert Evidence Practice Note. Please ensure that the Report conforms with the Practice Note.

It will also be necessary for the writer of the Report to make him/herself available to attend a FWC hearing to give evidence regarding the research if required.

Contacts

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Mr Matt Harris

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Email: mharris@professionalsaustralia.org.au

Annexure A

Current and Proposed Pharmacist Minimum Rates of Pau Pharmacy Industry Award 2010

Current Award Minimum rates of Pay

Employee Classification	Minimum Weekly Rate	Minimum Hourly rate	Minimum Casual Hourly Rate
Pharmacy intern			
1st half of training	$826.20	$21.74	$27.18
2nd half of training	$854.40	$22.48	$28.10
Pharmacist	$966.60	$25.44	$31.80
Experienced pharmacist	$1,058.60	$27.86	$34.83
Pharmacist in charge	$1,083.40	$28.51	$35.64
Pharmacist manager	$1,207.40	$31.77	$39.71

PPA Proposed Minimum Rates of Pay

Employee classification	Minimum weekly rate	Minimum hourly rate	Minimum Casual hourly rate
Pharmacy Interns			
First Half of Training	994.37	26.17	32.71
Second half of training	1013.49	26.67	33.34
Pharmacist	1032.61	27.17	33.97
Experienced Pharmacist	1147.35	30.19	37.74
Pharmacist in Charge	1376.82	36.23	45.29
Accredited Pharmacist*	1606.29	42.27	52.84
Pharmacist Manager	1606.29	42.27	52.84

* New Classification proposed by PPA – Not currently contained in the current Award

Annexure B

PPA Market Rates Survey

Annexure C

FEDERAL COURT OF AUSTRALIA

EXPERT EVIDENCE PRACTICE NOTES (GPN-EXPT)
General Practice Note

1. INTRODUCTION

1.1 This practice note, including the *Harmonised Expert Witness Code of Conduct* ("**Code**") (see **Annexure A**) and the *Concurrent Expert Evidence Guidelines* ("**Concurrent Evidence Guidelines**") (see **Annexure B**), applies to any proceeding involving the use of expert evidence and must be read together with:

(a) the Central Practice Note (CPN-1), which sets out the fundamental principles concerning the National Court Framework ("**NCF**") of the Federal Court and key principles of case management procedure;

(b) the Federal Court of Australia Act 1976 (Cth) ("**Federal Court Act**");

(c) the Evidence Act 1995 (Cth) ("**Evidence Act**"**),** including Part 3.3 of the Evidence Act;

(d) Part 23 of the Federal Court Rules 2011 (Cth) ("**Federal Court Rules**"**)**; and

(e) where applicable, the Survey Evidence Practice Note (GPN-SURV).

1.2 This practice note takes effect from the date it is issued and, to the extent practicable, applies to proceedings whether filed before, or after, the date of issuing.

2. APPROACH TO EXPERT EVIDENCE

2.1 An expert witness may be retained to give opinion evidence in the proceeding, or, in certain circumstances, to express an opinion that may be relied upon in alternative dispute resolution procedures such as mediation or a conference of experts. In some circumstances an expert may be appointed as an independent adviser to the Court.

2.2 The purpose of the use of expert evidence in proceedings, often in relation to complex subject matter, is for the Court to receive the benefit of the objective and impartial assessment of an issue from a witness with specialised knowledge (based on training, study or experience - see generally s 79 of the Evidence Act).

2.3 However, the use or admissibility of expert evidence remains subject to the overriding requirements that:

(a) to be admissible in a proceeding, any such evidence must be relevant (s 56 of the Evidence Act); and

(b) even if relevant, any such evidence, may be refused to be admitted by the Court if its probative value is outweighed by other considerations such as the evidence being unfairly prejudicial, misleading or will result in an undue waste of time (s 135 of the Evidence Act).

2.4 An expert witness' opinion evidence may have little or no value unless the assumptions adopted by the expert (ie. the facts or grounds relied upon) and his or her reasoning are expressly stated in any written report or oral evidence given.

2.5 The Court will ensure that, in the interests of justice, parties are given a reasonable opportunity to adduce and test relevant expert opinion evidence. However, the Court expects parties and any legal representatives acting on their behalf, when dealing with expert witnesses and expert evidence, to at all times comply with their duties associated with the overarching purpose in the Federal Court Act (see ss 37M and 37N).

3. INTERACTION WITH EXPERT WITNESSES

3.1 Parties and their legal representatives should never view an expert witness retained (or partly retained) by them as that party's advocate or "hired gun". Equally, they should never attempt to pressure or influence an expert into conforming his or her views with the party's interests.

3.2 A party or legal representative should be cautious not to have inappropriate communications when retaining or instructing an independent expert, or assisting an independent expert in the preparation of his or her evidence. However, it is important to note that there is no principle of law or practice and there is nothing in this practice note that obliges a party to embark on the costly task of engaging a "consulting expert" in order to avoid "contamination" of the expert who will give evidence. Indeed the Court would generally discourage such costly duplication.

3.3 Any witness retained by a party for the purpose of preparing a report or giving evidence in a proceeding as to an opinion held by the witness that is wholly or substantially based in the specialised knowledge of the witness[7] should, at the earliest opportunity, be provided with:

(a) a copy of this practice note, including the Code (see Annexure A); and

(b) all relevant information (whether helpful or harmful to that party's case) so as to enable the expert to prepare a report of a truly independent nature.

3.4 Any questions or assumptions provided to an expert should be provided in an unbiased manner and in such a way that the expert is not confined to addressing selective, irrelevant or immaterial issues.

[7] Such a witness includes a "Court expert" as defined in r 23.01 of the Federal Court Rules. For the definition of "expert", "expert evidence" and "expert report" see the Dictionary, in Schedule 1 of the Federal Court Rules.

4. ROLE AND DUTIES OF THE EXPERT WITNESS

4.1 The role of the expert witness is to provide relevant and impartial evidence in his or her area of expertise. An expert should never mislead the Court or become an advocate for the cause of the party that has retained the expert.

4.2 It should be emphasised that there is nothing inherently wrong with experts disagreeing or failing to reach the same conclusion. The Court will, with the assistance of the evidence of the experts, reach its own conclusion.

4.3 However, experts should willingly be prepared to change their opinion or make concessions when it is necessary or appropriate to do so, even if doing so would be contrary to any previously held or expressed view of that expert.

Harmonised Expert Witness Code of Conduct

4.4 Every expert witness giving evidence in this Court must read the *Harmonised Expert Witness Code of Conduct* (attached in Annexure A) and agree to be bound by it.

4.5 The Code is not intended to address all aspects of an expert witness' duties, but is intended to facilitate the admission of opinion evidence, and to assist experts to understand in general terms what the Court expects of them. Additionally, it is expected that compliance with the Code will assist individual expert witnesses to avoid criticism (rightly or wrongly) that they lack objectivity or are partisan.

5. CONTENTS OF AN EXPERT'S REPORT AND RELATED MATERIAL

5.1 The contents of an expert's report must conform with the requirements set out in the Code (including clauses 3 to 5 of the Code).

5.2 In addition, the contents of such a report must also comply with r 23.13 of the Federal Court Rules. Given that the requirements of that rule significantly overlap with the requirements in the Code, an expert, unless otherwise directed by the Court, will be taken to have complied with the requirements of r 23.13 if that expert has complied with the requirements in the Code and has complied with the additional following requirements. The expert shall:

(a) acknowledge in the report that:

(i) the expert has read and complied with this practice note and agrees to be bound by it; and

(ii) the expert's opinions are based wholly or substantially on specialised knowledge arising from the expert's training, study or experience;

(b) identify in the report the questions that the expert was asked to address;

(c) sign the report and attach or exhibit to it copies of:

(i) documents that record any instructions given to the expert; and

(ii) documents and other materials that the expert has been instructed to consider.

5.3 Where an expert's report refers to photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter, these must be provided to the other parties at the same time as the expert's report.

6. CASE MANAGEMENT CONSIDERATIONS

6.1 Parties intending to rely on expert evidence at trial are expected to consider between them and inform the Court at the earliest opportunity of their views on the following:

(a) whether a party should adduce evidence from more than one expert in any single discipline;

(b) whether a common expert is appropriate for all or any part of the evidence;

(c) the nature and extent of expert reports, including any in reply;

(d) the identity of each expert witness that a party intends to call, their area(s) of expertise and availability during the proposed hearing;

(e) the issues that it is proposed each expert will address;

(f) the arrangements for a conference of experts to prepare a joint-report (see Part 7 of this practice note);

(g) whether the evidence is to be given concurrently and, if so, how (see Part 8 of this practice note); and

(h) whether any of the evidence in chief can be given orally.

6.2 It will often be desirable, before any expert is retained, for the parties to attempt to agree on the question or questions proposed to be the subject of expert evidence as well as the relevant facts and assumptions. The Court may make orders to that effect where it considers it appropriate to do so.

7. CONFERENCE OF EXPERTS AND JOINT-REPORT

7.1 Parties, their legal representatives and experts should be familiar with aspects of the Code relating to conferences of experts and joint-reports (see clauses 6 and 7 of the Code attached in Annexure A).

7.2 In order to facilitate the proper understanding of issues arising in expert evidence and to manage expert evidence in accordance with the overarching purpose, the Court may require experts who are to give evidence or who have produced reports to meet for the purpose of identifying and addressing the issues not agreed between them with a view to reaching agreement where this is possible ("**conference of experts**"). In an appropriate case, the Court may appoint a registrar of the Court or some other suitably qualified person ("**Conference Facilitator**") to act as a facilitator at the conference of experts.

7.3 It is expected that where expert evidence may be relied on in any proceeding, at the earliest opportunity, parties will discuss and then inform the Court whether a conference of experts and/or a joint-report by the experts may be desirable to assist with or simplify the giving of expert evidence in the proceeding. The parties should discuss the necessary arrangements for any conference and/or joint-report. The arrangements discussed between the parties should address:

(a) who should prepare any joint-report;

(b) whether a list of issues is needed to assist the experts in the conference and, if so, whether the Court, the parties o r the experts should assist in preparing such a list;

(c) **t**he agenda for the conference of experts; and

(d) arrangements for the provision, to the parties and the Court, of any joint-report or any other report as to the outcomes of the conference ("**conference report**").

Conference of Experts

7.4 The purpose of the conference of experts is for the experts to have a comprehensive discussion of issues relating to their field of expertise, with a view to identifying matters and issues in a proceeding about which the experts agree, partly agree or disagree and why. For this reason the conference is attended only by the experts and any Conference Facilitator. Unless the Court orders otherwise, the parties' lawyers will not attend the conference but will be provided with a copy of any conference report.

7.5 The Court may order that a conference of experts occur in a variety of circumstances, depending on the views of the judge and the parties and the needs of the case, including:

(a) while a case is in mediation. When this occurs the Court may also order that the outcome of the conference or any document disclosing or summarising the experts' opinions be confidential to the parties while the mediation is occurring;

(b) before the experts have reached a final opinion on a relevant question or the facts involved in a case. When this occurs the Court may order that the parties exchange draft expert reports and that a conference report be prepared for the use of the experts in finalising their reports;

(c) after the experts' reports have been provided to the Court but before the hearing of the experts' evidence. When this occurs the Court may also order that a conference report be prepared (jointly or otherwise) to ensure the efficient hearing of the experts' evidence.

7.6 Subject to any other order or direction of the Court, the parties and their lawyers must not involve themselves in the conference of experts process. In particular, they must not seek to encourage an expert not to agree with another expert or otherwise seek to influence the outcome of the conference of experts. The experts should raise any queries they may have in relation to the process with the Conference Facilitator (if one has been appointed) or in accordance with a protocol agreed between the lawyers prior to the conference of experts taking place (if no Conference Facilitator has been appointed).

7.7 Any list of issues prepared for the consideration of the experts as part of the conference of experts process should be prepared using non-tendentious language.

7.8 The timing and location of the conference of experts will be decided by the judge or a registrar who will take into account the location and availability of the experts and the Court's case management timetable. The conference may take place at the Court and will usually be conducted in-person. However, if not considered a hindrance to the process, the conference may also be conducted with the assistance of visual or audio technology (such as via the internet, video link and/or by telephone).

7.9 Experts should prepare for a conference of experts by ensuring that they are familiar with all of the material upon which they base their opinions. Where expert reports in draft or final form have been exchanged prior to the conference, experts should attend the conference familiar with the reports of the other experts. Prior to the conference, experts should also consider where they believe the differences of opinion lie between them and what processes and discussions may assist to identify and refine those areas of difference.

Joint-report

7.10 At the conclusion of the conference of experts, unless the Court considers it unnecessary to do so, it is expected that the experts will have narrowed the issues in respect of which they agree, partly agree or disagree in a joint-report. The joint-report should be clear, plain and concise and should summarise the views of the experts on the identified issues, including a succinct explanation for any differences of opinion, and otherwise be structured in the manner requested by the judge or registrar.

7.11 In some cases (and most particularly in some native title cases), depending on the nature, volume and complexity of the expert evidence a judge may direct a registrar to draft part, or all, of a conference report. If so, the registrar will usually provide the draft conference report to the relevant experts and seek their confirmation that the conference report accurately reflects the opinions of the experts expressed at the conference. Once that confirmation has been received the registrar will finalise the conference report and provide it to the intended recipient(s).

8. CONCURRENT EXPERT EVIDENCE

8.1 The Court may determine that it is appropriate, depending on the nature of the expert evidence and the proceeding generally, for experts to give some or all of their evidence concurrently at the final (or other) hearing.

8.2 Parties should familiarise themselves with the *Concurrent Expert Evidence Guidelines* (attached in Annexure B). The Concurrent Evidence Guidelines are not intended to be exhaustive but indicate the circumstances when the Court might consider it appropriate for concurrent expert evidence to take place, outline how that process may be undertaken, and assist experts to understand in general terms what the Court expects of them.

8.3 If an order is made for concurrent expert evidence to be given at a hearing, any expert to give such evidence should be provided with the Concurrent Evidence Guidelines well in advance of the hearing and should be familiar with those guidelines before giving evidence.

9. FURTHER PRACTICE INFORMATION AND RESOURCES

9.1 Further information regarding Expert Evidence and Expert Witnesses is available on the Court's website.

9.2 Further information to assist litigants, including a range of helpful guides, is also available on the Court's website. This information may be particularly helpful for litigants who are representing themselves.

J L B ALLSOP
Chief Justice
25 October 2016

Annexure A

HARMONISED EXPERT WITNESS CODE OF CONDUCT[8]

APPLICATION OF CODE

1. This Code of Conduct applies to any expert witness engaged or appointed:

   (a) to provide an expert's report for use as evidence in proceedings or proposed proceedings; or

   (b) to give opinion evidence in proceedings or proposed proceedings.

GENERAL DUTIES TO THE COURT

2. An expert witness is not an advocate for a party and has a paramount duty, overriding any duty to the party to the proceedings or other person retaining the expert witness, to assist the Court impartially on matters relevant to the area of expertise of the witness.

CONTENT OF REPORT

3. Every report prepared by an expert witness for use in Court shall clearly state the opinion or opinions of the expert and shall state, specify or provide:

   (a) the name and address of the expert;

   (b) an acknowledgment that the expert has read this code and agrees to be bound by it;

   (c) the qualifications of the expert to prepare the report;

   (d) the assumptions and material facts on which each opinion expressed in the report is based [a letter of instructions may be annexed];

   (e) the reasons for and any literature or other materials utilised in support of such opinion;

   (f) (if applicable) that a particular question, issue or matter falls outside the expert's field of expertise;

   (g) any examinations, tests or other investigations on which the expert has relied, identifying the person who carried them out and that person's qualifications;

   (h) the extent to which any opinion which the expert has expressed involves the acceptance of another person's opinion, the identification of that other person and the opinion expressed by that other person;

   (i) a declaration that the expert has made all the inquiries which the expert believes are desirable and appropriate (save for any matters identified explicitly in the report), and that no matters of significance which the expert regards as relevant have, to the knowledge of the expert, been withheld from the Court;

   (j) any qualifications on an opinion expressed in the report without which the report is or may be incomplete or inaccurate;

[8] Approved by the Council of Chief Justices' Rules Harmonisation Committee

(k) whether any opinion expressed in the report is not a concluded opinion because of insufficient research or insufficient data or for any other reason; and

(l) where the report is lengthy or complex, a brief summary of the report at the beginning of the report.

SUPPLEMENTARY REPORT FOLLOWING CHANGE OF OPINION

4. Where an expert witness has provided to a party (or that party's legal representative) a report for use in Court, and the expert thereafter changes his or her opinion on a material matter, the expert shall forthwith provide to the party (or that party's legal representative) a supplementary report which shall state, specify or provide the information referred to in paragraphs (a), (d), (e), (g), (h), (i), (j), (k) and (l) of clause 3 of this code and, if applicable, paragraph (f) of that clause.

5. In any subsequent report (whether prepared in accordance with clause 4 or not) the expert may refer to material contained in the earlier report without repeating it.

DUTY TO COMPLY WITH THE COURT'S DIRECTIONS

6. If directed to do so by the Court, an expert witness shall:

(a) confer with any other expert witness;

(b) provide the Court with a joint-report specifying (as the case requires) matters agreed and matters not agreed and the reasons for the experts not agreeing; and

(c) abide in a timely way by any direction of the Court.

CONFERENCE OF EXPERTS

7. Each expert witness shall:

(a) exercise his or her independent judgment in relation to every conference in which the expert participates pursuant to a direction of the Court and in relation to each report thereafter provided, and shall not act on any instruction or request to withhold or avoid agreement; and

(b) endeavour to reach agreement with the other expert witness (or witnesses) on any issue in dispute between them, or failing agreement, endeavour to identify and clarify the basis of disagreement on the issues which are in dispute.

ANNEXURE B

CONCURRENT EXPERT EVIDENCE GUIDELINES

APPLICATION OF THE COURT'S GUIDELINES

1. The Court's Concurrent Expert Evidence Guidelines ("**Concurrent Evidence Guidelines**") are intended to inform parties, practitioners and experts of the Court's general approach to concurrent expert evidence, the circumstances in which the Court might consider expert witnesses giving evidence concurrently and, if so, the procedures by which their evidence may be taken.

OBJECTIVES OF CONCURRENT EXPERT EVIDENCE TECHNIQUE

2. The use of concurrent evidence for the giving of expert evidence at hearings as a case management technique[9] will be utilised by the Court in appropriate circumstances (see r 23.15 of the Federal Court Rules 2011 (Cth)). Not all cases will suit the process. For instance, in some patent cases, where the entire case revolves around conflicts within fields of expertise, concurrent evidence may not assist a judge. However, patent cases should not be excluded from concurrent expert evidence processes.

3. In many cases the use of concurrent expert evidence is a technique that can reduce the partisan or confrontational nature of conventional hearing processes and minimises the risk that experts become "opposing experts" rather than independent experts assisting the Court. It can elicit more precise and accurate expert evidence with greater input and assistance from the experts themselves.

4. When properly and flexibly applied, with efficiency and discipline during the hearing process, the technique may also allow the experts to more effectively focus on the critical points of disagreement between them, identify or resolve those issues more quickly, and narrow the issues in dispute. This can also allow for the key evidence to be given at the same time (rather than being spread across many days of hearing); permit the judge to assess an expert more readily, whilst allowing each party a genuine opportunity to put and test expert evidence. This can reduce the chance of the experts, lawyers and the judge misunderstanding the opinions being expressed by the experts.

5. It is essential that such a process has the full cooperation and support of all of the individuals involved, including the experts and counsel involved in the questioning process. Without that cooperation and support the process may fail in its objectives and even hinder the case management process.

[9] Also known as the "hot tub" or as "expert panels".

CASE MANAGEMENT

6. Parties should expect that, the Court will give careful consideration to whether concurrent evidence is appropriate in circumstances where there is more than one expert witness having the same expertise who is to give evidence on the same or related topics. Whether experts should give evidence concurrently is a matter for the Court, and will depend on the circumstances of each individual case, including the character of the proceeding, the nature of the expert evidence, and the views of the parties.

7. Although this consideration may take place at any time, including the commencement of the hearing, if not raised earlier, parties should raise the issue of concurrent evidence at the first appropriate case management hearing, and no later than any pre-trial case management hearing, so that orders can be made in advance, if necessary. To that end, prior to the hearing at which expert evidence may be given concurrently, parties and their lawyers should confer and give general consideration as to:

   (a) the agenda;

   (b) the order and manner in which questions will be asked; and

   (c) whether cross-examination will take place within the context of the concurrent evidence or after its conclusion.

8. At the same time, and before any hearing date is fixed, the identity of all experts proposed to be called and their areas of expertise is to be notified to the Court by all parties.

9. The lack of any concurrent evidence orders does not mean that the Court will not consider using concurrent evidence without prior notice to the parties, if appropriate.

CONFERENCE OF EXPERTS & JOINT-REPORT OR LIST OF ISSUES

10. The process of giving concurrent evidence at hearings may be assisted by the preparation of a joint-report or list of issues prepared as part of a conference of experts.

11. Parties should expect that, where concurrent evidence is appropriate, the Court may make orders requiring a conference of experts to take place or for documents such as a joint-report to be prepared to facilitate the concurrent expert evidence process at a hearing (see Part 7 of the Expert Evidence Practice Note).

PROCEDURE AT HEARING

12. Concurrent expert evidence may be taken at any convenient time during the hearing, although it will often occur at the conclusion of both parties' lay evidence.

13. At the hearing itself, the way in which concurrent expert evidence is taken must be applied flexibly and having regard to the characteristics of the case and the nature of

the evidence to be given.

14. Without intending to be prescriptive of the procedure, parties should expect that, when evidence is given by experts in concurrent session:

    (a) the judge will explain to the experts the procedure that will be followed and that the nature of the process may be different to their previous experiences of giving expert evidence;

    (b) the experts will be grouped and called to give evidence together in their respective fields of expertise;

    (c) the experts will take the oath or affirmation together, as appropriate;

    (d) the experts will sit together with convenient access to their materials for their ease of reference, either in the witness box or in some other location in the courtroom, including (if necessary) at the bar table;

    (e) each expert may be given the opportunity to provide a summary overview of their current opinions and explain what they consider to be the principal issues of disagreement between the experts, as they see them, in their own words;

    (f) the judge will guide the process by which evidence is given, including, where appropriate:

        (i) using any joint-report or list of issues as a guide for all the experts to be asked questions by the judge and counsel, about each issue on an issue-by-issue basis;

        (ii) ensuring that each expert is given an adequate opportunity to deal with each issue and the exposition given by other experts including, where considered appropriate, each expert asking questions of other experts or supplementing the evidence given by other experts;

        (iii) inviting legal representatives to identify the topics upon which they will cross-examine;

        (iv) ensuring that legal representatives have an adequate opportunity to ask all experts questions about each issue. Legal representatives may also seek responses or contributions from one or more experts in response to the evidence given by a different expert; and

        (v) allowing the experts an opportunity to summarise their views at the end of the process where opinions may have been changed or clarifications are needed.

15. The fact that the experts may have been provided with a list of issues for consideration does not confine the scope of any cross-examination of any expert. The process of cross-examination remains subject to the overall control of the judge.

16. The concurrent session should allow for a sensible and orderly series of exchanges between expert and expert, and between expert and lawyer. Where appropriate, the judge may allow for more traditional cross-examination to be pursued by a legal representative on a particular issue exclusively with one expert. Where that occurs, other experts may be asked to comment on the evidence given.

17. Where any issue involves only one expert, the party wishing to ask questions about that issue should let the judge know in advance so that consideration can be given to whether arrangements should be made for that issue to be dealt with after the completion of the concurrent session. Otherwise, as far as practicable, questions (including in the form of cross-examination) will usually be dealt with in the concurrent session.

18. Throughout the concurrent evidence process the judge will ensure that the process is fair and effective (for the parties and the experts), balanced (including not permitting one expert to overwhelm or overshadow any other expert), and does not become a protracted or inefficient process.

‘Annexure I’

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Please see next Page

Report prepared for Professional Pharmacists Australia providing data and information on aspects of pharmacy ownership, pharmacy revenues and business sale prices

4 April 2017

Purpose

This brief report has been produced by Professor Philip Clarke, Centre for Health Policy University of Melbourne at the request of Professional Pharmacists Australia. It provide an overview of several aspects of community pharmacy that is relevant decision of Fair Work Commission (FWC) regarding setting award rates of pay for those working in this sector. The report draws on past research of Professor Clarke and provides new information and data from publicly available sources. It represents independent research by Professor Clarke. Neither he, nor the University of Melbourne received any form of payment, or remuneration for the preparation of this report.

Background

Australian pharmacies are currently protected from competition by two sets of government regulations that form part of what is known as the Community Pharmacy Agreement.[1] This agreement is negotiated every five years between the Federal Government and Pharmacy Guild of Australia, and regulates most aspects of the pharmacy sector, from remuneration for supplying government-subsidised drugs to rules about the ownership and location of pharmacies.

Ownership rules disallow non-pharmacists from owning a pharmacy.[2] So they effectively keep supermarkets and large international pharmacy chains, such as the UK's Boots, from owning pharmacies in Australia. The ownership rules have been in force in Australia for many decades.

The location rules[3] were introduced as part of the first pharmacy agreement in the early 1990s. The rules restrict the establishment of new pharmacies within regulated distances from existing pharmacies (typically a kilometre and a half from an existing pharmacy).

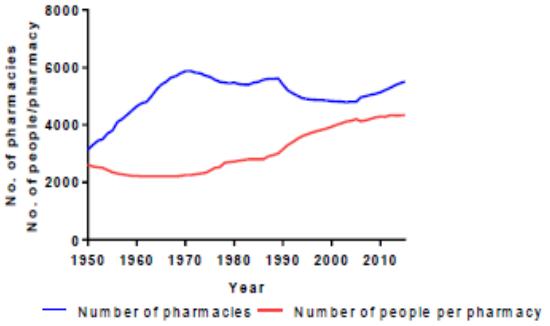
Historical trends

The ownership and more recently the location rule restrictions have prevented new entrants into the sector and so the number of pharmacies has remained relatively static for almost 50 years. As Figure 1 below illustrates, between1965-75 there were between 5,500 and 6000 pharmacies approved to supply Pharmaceutical Benefits Scheme drugs in Australia. In 2014there were around 5,500 pharmacies in Australia. By comparison the number of medical

[1] The Honourable Sussan Ley MP, Minister for Health and Minister for Sport on behalf of the Commonwealth of Australia and The Pharmacy Guild of Australia Sixth Community Pharmacy Agreement May 2015.
[2] Hattingh HL The regulation of pharmacy ownership in Australia: the potential impact of changes to the health landscape.*J Law Med*. 2011 Sep;19(1):147-54.
[3] http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pbs-general-pharmacy-acpa-location-rules-news.htm

practitioners has more than doubled over a similar period.[4] Given the overall growth in the Australian population, the ratio of the number of persons per pharmacy has increased from around 2000 to 4000.

1. Number of pharmacies approved to supply Pharmaceutical Benefits Scheme medicines and the ratio of people per pharmacy 1950-2014.

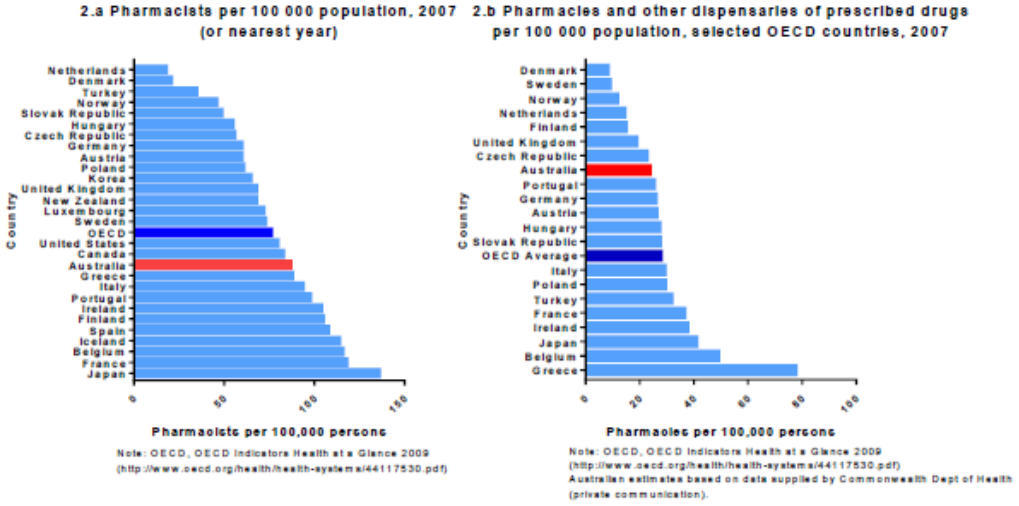


Source: Australian Institute of Health and Welfare (AIHW) 1998. Pharmacy labour force 1995. AIHW cat. no. HWL 9. Canberra: AIHW (National Health Labour Force Series no. 12). supplmeneted with Commonwealth Dept of Health data (private communication)

How does this compare internationally? Figure 2a present estimates of number of pharmacists per 100,000 persons for Australia and other OECD countries based on the most recently reported information.[5] There is considerable international variation, ranging from 136 pharmacists per 100,000 in Japan to 18 pharmacists per 100,000 in the Netherlands. Australia is above the OECD average with around 87 pharmacists per 100,000 persons. In terms of the number of pharmacies per 100,000, Australia sits at 23.9, which is below OECD average of around 28 (see Figure 2b).

[4] Australian Bureau of Statistics, 4102.0 - Australian Social Trends, 2003

[5] Notes: OECD, OECD Indicators Health at a Glance 2009 (http://www.oecd.org/health/health-systems/44117530.pdf)

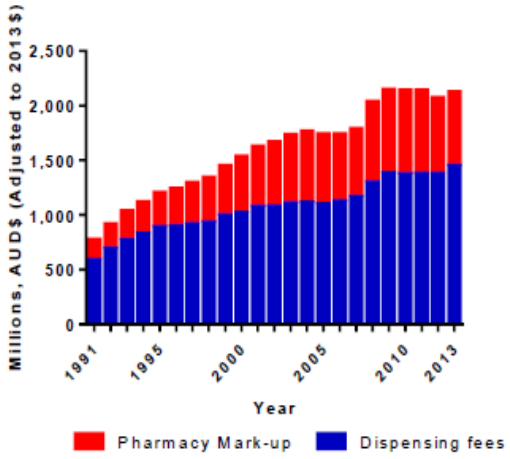


Pharmacy revenues

The Australian National Audit Office (ANAO) has conducted a performance audit of the administration of the Fifth Community Pharmacy Agreement (ending June 2015).[6] The ANAO report quantified the remuneration pharmacies have received from the Government since the early 1990s, when the first Community Pharmacy Agreement was put in place. The figure below shows payments pharmacies receive for dispensing and mark-ups (the amount of money added to the price of drugs to cover overheads and profit) have tripled from around $750 million in 1991 to over $2 billion by 2013 – even after adjusting for inflation (see Figure 3).This growth is due to much higher volumes of dispensing due to a combination of population increase, ageing, and expanded prescribing from newer classes of drugs, such statins. In addition to the increase in amounts paid to pharmacies each time a drug is dispensed (i.e. dispensing fee), government payments are now around 20% higher in real terms than in the early 1990s, due largely to greater pharmacy remuneration from mark-ups.

[6] https://www.anao.gov.au/work/performance-audit/administration-fifth-community-pharmacy-agreement

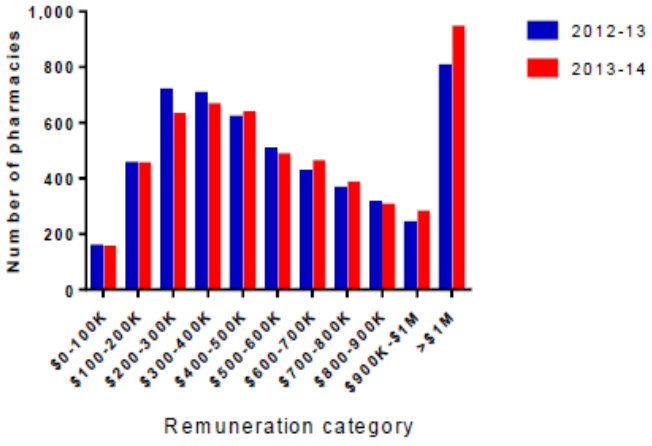
3. Total remuneration to pharmacies from markup and disensing fees over time



Note: Based on information provided in Appendix 10 of Australian National Audit Office, *Administration of the Fifth Community Pharmacy Agreement*, ANAO Report No.25 2014–15.

The ANAO report also provides a distribution breakdown of this remuneration across different types of pharmacies. As the graph below shows (Figure 4), more than 800 pharmacies (around 18%) receive more than $1 million in remuneration from dispensing drugs listed on the Pharmaceutical Benefits Scheme. A comparison of the 2012 and 2013 financial years indicates a further 140 pharmacies moved into this top-earning bracket.

4. Distribution of both under and over co-payment remuneration for dispensing



Note: Based on Figure 3.6 from from Australian National Audit Office, *Administration of the Fifth Community Pharmacy Agreement*, ANAO Report No.25 2014–15

Impact of the ownership & location rules on pharmacy sale prices

The high profitability of established pharmacies mean business sale prices for inner city and suburban pharmacies can run into the millions of dollars. For example, businesses that specialise in pharmacies in Australia lists several currently for sale in Victoria ranging between $1 and $2 million (see appendix)

The high purchase price of many pharmacies locks out many pharmacy graduates from ever owning their own business. It also means new entrants are saddled with levels of debt that turn what should be profitable business into marginal ones.

All this creates what one could term a cycle of rent-seeking: while the ownership and location rules protect existing owners, the next generation of pharmacy owners will have to buy their businesses at inflated prices. This makes new owners seek ever more protection from competition to make their business profitable and, in some cases, viable.

Appendix: Verbatim copy of information on Pharmacy Business Sales Website
(http://www.pharmacysales.com.au/forsale/vic) (accessed on 4 March 2017)

Melbourne's western growth corridor has two pharmacies in excellent centre.

In the western growth corridor is these two pharmacies.
One pharmacy with busy medical centre situated on 400sqm of prime retail space near major supermarket.
No homes and no methadone!
The other pharmacy relocated next to the other major supermarket as an independent pharmacy on 300sqm of space and a brand new shop fit.
The combined opportunity price is below however, they can be sold separately
Goodwill $2,950,000
Fittings $400,000
Stock $550,000
Total $3,900,000
Contact John King on 0418383664 or john.king@pharmacysales.com.au

Compounding pharmacy

If you are looking for a different pharmacy not subject to Governments influence on the PBS and want to make a lot of money, then think about this!
Huge profits above $2,400,000+ per annum yes per annum!
Huge potential to continue the grow with owner able to offer slow exit if required
Huge GP with little competition in this space with established clients!
Excellent management and team with 80% approx. mail order customers
Only apply if you are a qualified pharmacist and or representing an organization and have substantial capital or assets to support a purchase based on an asking price of $7,500,000m (25%ROI)
Please note the pharmacy must be purchased by a pharmacist only!
Contact John King at john.king@pharmacysales.com.au or 0418383664

One Pharmacy Town with a big future

This pharmacy is on the beautiful Mornington Peninsula providing a great business and future growth.
Well supported by doctors that are currently moving next door to the pharmacy and the local community.
Sales around $950k and rent only $22k make this for a profitable pharmacy.
Supported by strong MPS nursing home contracts that are 5-year agreement.
Lifestyle and great income provide a great combination.
Asking $1.2m including $50k stock and $10k fittings.
Contact John.king@pharmacysales.com.au or 0418383664

Footscray - Relocated pharmacy - Brownfield site

In the heart of Footscray is the Town Square development with retail shops and a multi-level 125 carpark that is to be completed very soon. The Saigon Night Market (on Leeds Street) will also attract people to the Heart of Footscray.
A local pharmacy has secured the right to a new and highly sort after Lease for 10 years. The pharmacy has enjoyed sales of $1.2m and an additional $1.2m of overseas sales. We are selling this opportunity based on the follows:
All from existing business

- A new Lease of 84sqm in the heart of Footscray surrounded by Doctors Clinics (8) and Dentists (5).
- Rental $42,000 and outgoings $10,800 plus GST
- A brand new shop fit out ready to operate. (Some input if you like)
- Relocated PBS number from 10 meters away
- New Stock of $80,000
- Total price is only $1,300,000 with expected occupancy and settlement 1 July 2017.
- An ideal opportunity for a Vietnamese or Chinese buyer.

john.king@pharmacysales.com.au or 0418383664