



Submission to the Oireachtas Committee on the Future of Healthcare

Pharmaceutical Society of Ireland (PSI), the pharmacy regulator

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Executive Summary

Like most developed countries, patients in Ireland have an escalating need for healthcare. This escalating need reflects the trend of a rapidly ageing population, expanding at approximately 3% annually, with associated increase in the burden of chronic illness. While national policy is focused on preventing illness, it is also focused on transitioning care such that there is a more effective and efficient use of acute and non-acute facilities. Medicines are the most common healthcare intervention within the health system and both the use and complexity of medicines is increasing.

Pharmacists are the healthcare professional with the widest knowledge of medicines and the potential complexities associated with the increasing use of medicines. Therefore, pharmacy as a profession has a critical role to play within the health system to ensure the rational use of medicines by maximising the benefits and minimising the potential for patient harm.

In 2015, the PSI Council commissioned an extensive research project 'Future Pharmacy Practice– Meeting Patients' Needs', which has examined how pharmacy practice in Ireland could in the future be placed to meet patients' needs in an evolved capacity. This work has been undertaken in view of a changing healthcare landscape, demands relating to population and demographics, and giving consideration to the educational and regulatory facilitators that exist to support a greater pharmacist contribution to multi-disciplinary healthcare provision.

The research was carried out with broad consultation with patients, patient advocacy groups, pharmacists (both community and hospital), other healthcare professionals, national healthcare representatives (including the Department of Health and Health Service Executive), regulatory bodies, academics, pharmacy students and other stakeholders. This was supplemented with national and international research on healthcare trends. Fundamentally, the project's focus was on patients, and how the pharmacy sector can continue to contribute in the most effective and efficient way to patient care. The report, which is due to be published in October, provides an evidential base from research within Ireland and other jurisdictions that will offer new ways of working that will, on the one hand, benefit patient care, and on the other, more fully utilise pharmacists' skills, working collaboratively with other healthcare professionals and carers.

With a young demographic, an unequalled reach in terms of patient contact and access through an infrastructure of 1,885 pharmacies, pharmacists, as experts in medicines, are a unique resource to the health system and patients to support enhanced delivery of cost effective improvements to public health and therapeutic management in a variety of settings. Such improvements include:

- Contributing to **health and wellbeing** initiatives through structured population health information, awareness campaigns and preventative medicine to support the maintenance and improvement of the health of the public;
- Providing expertise in assisting patients to manage their **chronic diseases** and medication through structured initiatives and, where appropriate, through supplementary prescribing in collaboration with a patient's GP;
- **Manage medicines throughout the patient care pathway** via structured initiatives such as medication reviews for at-risk and vulnerable patients in the community and local settings e.g. nursing homes; and the greater presence of pharmacy throughout the patient pathway in acute settings, reducing prescribing errors and optimising the impact of medicines for patients.

Central to the pharmacists' role is their contribution to obtaining optimal outcomes from medicines and providing a sustainable approach to clinical care and cost-effectiveness while reducing avoidable adverse events and waste.

The physical settings for services and care delivered by pharmacists are likely to evolve with changing healthcare delivery patterns. International experience has shown an increase in pharmacists successfully working in GP surgeries, in nursing homes and in tandem with domiciliary care.

About the PSI

The Pharmaceutical Society of Ireland (PSI) is the statutory regulator of pharmacists and pharmacies in Ireland, working to protect and promote the health, safety and wellbeing of patients and the public and to ensure compliance with the Pharmacy Act 2007 and other medicines and pharmacy legislation.

The PSI has a range of responsibilities, established in legislation, which together create a regulatory framework that ensures the safety of patients. Our functions include registration of pharmacists, pharmaceutical assistants and pharmacies, setting standards for pharmacists' education and training, and creating the standards and supports to promote good professional practice. We carry out inspections of pharmacies, and we can take action when there is a concern about a pharmacist or a pharmacy, including when we receive a complaint from a member of the public. In addition, the PSI also has a duty to take suitable action to improve the profession of pharmacy.

The PSI is an independent body and an agency of the Department of Health. It is governed by a 21-member Council appointed by the Minister for Health.

Introduction

Since its establishment under the 2007 Pharmacy Act, the PSI Council has put in place mechanisms to oversee the pharmacy profession in delivering high standards of care, professional advice, medicines dispensing and treatment provision. As the health system in Ireland continues to be reformed, policy-makers should give consideration to the role that pharmacists, with their unique expertise in medicines, could play as part of an integrated solution to patient and healthcare demands. In making this submission, we highlight how pharmacists, working with other healthcare professionals, can better contribute to a future, changed model of healthcare in Ireland.

In 2015, the PSI Council commissioned an exploratory research project to examine how pharmacy practice in Ireland can most valuably contribute to and benefit the health and wellbeing of patients and an evolving health system. The outcome of that work is a report to be published in October 2016, 'Future Pharmacy Practice –Meeting Patients' Needs'. The focus of the project is to address the envisaged role that pharmacists should be playing in the context of national health strategy, pharmacists' education, expertise and existing innovations in pharmacy practice internationally and nationally.

The project was overseen by a project Steering Group, chaired by the retired Chief Pharmaceutical Officer from Northern Ireland, and included expertise of representatives from the Department of Health, Health Service Executive, academia, industry, hospital and community pharmacists, patients and health care professionals, and was undertaken in the context of the significant challenges facing Irish healthcare. These challenges include an ageing and changing population, the changing needs of patients who require more support in their homes in the future, the significant growth in the incidence of chronic illnesses, new healthcare technologies, the development of more sophisticated and more individualised medicines, as well as the cost burden of providing a good standard of healthcare to all in the future.

As part of the research element of the project, the project team consulted widely with many people and organisations, including consultations and focus groups with pharmacists, patients and other key stakeholders. The project also involved both national and international research in order to identify current best practice around the world, including the UK, Canada, Australia, the Netherlands, New Zealand and the US.

The recommendations from the report fall into five broad categories:

- Health system reform
- Pharmacy supporting health and wellbeing
- Supporting and improving the health of patients with chronic disease
- Managing medicines through the patient pathway
- Enabling future pharmacy practice

The research and recommendations of the report provide the basis of the PSI's submission to this consultation. We have focused on some of the key findings which identify where pharmacists might play a greater part in a multi-disciplinary approach to healthcare delivery at all levels, whether in primary care or within more acute settings. Our submission also highlights barriers and enablers to change so that in examining future models of healthcare, the realities of the pharmacy landscape and priorities can be adequately assessed.

Pharmacy in Ireland

The Future Pharmacy Practice report recognises the rapid and significant growth in patient demand for healthcare in Ireland. The only affordable solution to meeting this demand is through a multi-disciplinary approach to deliver the highest quality of care, as close to a patient's home as possible.

It is useful to contextualise the current pharmacy landscape before envisaging those changes that might facilitate a better future. The pharmacy profession represents a cohort of highly skilled individuals with a high level of clinical governance and regulatory structures. As a profession, it has changed and evolved in recent years, with community pharmacies providing patient consultation rooms, supporting health information campaigns and successfully delivering public health initiatives such as vaccination programmes. In hospitals, pharmacists have successfully contributed to antimicrobial stewardship and infectious disease care and emerging advanced practice in multidisciplinary teams.

A regulatory framework has been established by the PSI, under the Pharmacy Act 2007, that facilitates and supports good professional standards, which recognises the weight of responsibility on pharmacists, and creates a system of accountability. By operating this regulatory framework in an efficient and effective manner, the PSI is also serving the broad public interest by facilitating expanded roles for pharmacists and pharmacy practice where there is patient need. The regulatory framework includes ensuring that adequate training and guidance is available for pharmacists in their delivery of new services, and that the level of their delivery is subject to review. The PSI will continue to provide this oversight as health strategy and policy evolves.

The PSI tries to anticipate developments in the pharmacy profession having regard to the healthcare needs of patients, and in the context of Government health policy and strategy. The introduction in September 2015 of the new five-year Masters in pharmacy in the three Irish universities is designed to equip new pharmacists with many of the skills required for modern practice, including greater interaction with other healthcare professionals and more hands-on learning experiences. The Irish Institute of Pharmacy (IIOP), established by the PSI to oversee pharmacist engagement with mandatory continuing professional development (CPD), also supports national health policy by providing or accrediting training that is necessary for pharmacists to provide particular services in the public interest. CPD will become an increasingly critical component in maintaining and enhancing professional standards, and will be a strong enabler of future practice pharmacy as it continues to evolve.

Key areas of healthcare and patient need that can be addressed by pharmacist contributions

The PSI's remit is focussed on the provision of care by pharmacists, ensuring that it is delivered in a competent, professional and ethical manner and in an appropriate environment, to the highest standards of quality care and best practice. With that vision, the research from the Future Pharmacy Practice report demonstrates particular areas in which pharmacists' contribution can allow for enhanced delivery of cost effective improvements to public health and therapeutic management in a variety of settings. The broad recommendations of the report are items for consideration for a new State healthcare model.

Three core strategic areas emerged as central to the evolving role of pharmacy in meeting patients' needs:

1. **Improving health and wellbeing of the public** –making every contact count. A recent survey confirmed that there are about 2 million visits by the public to the community pharmacy each month.

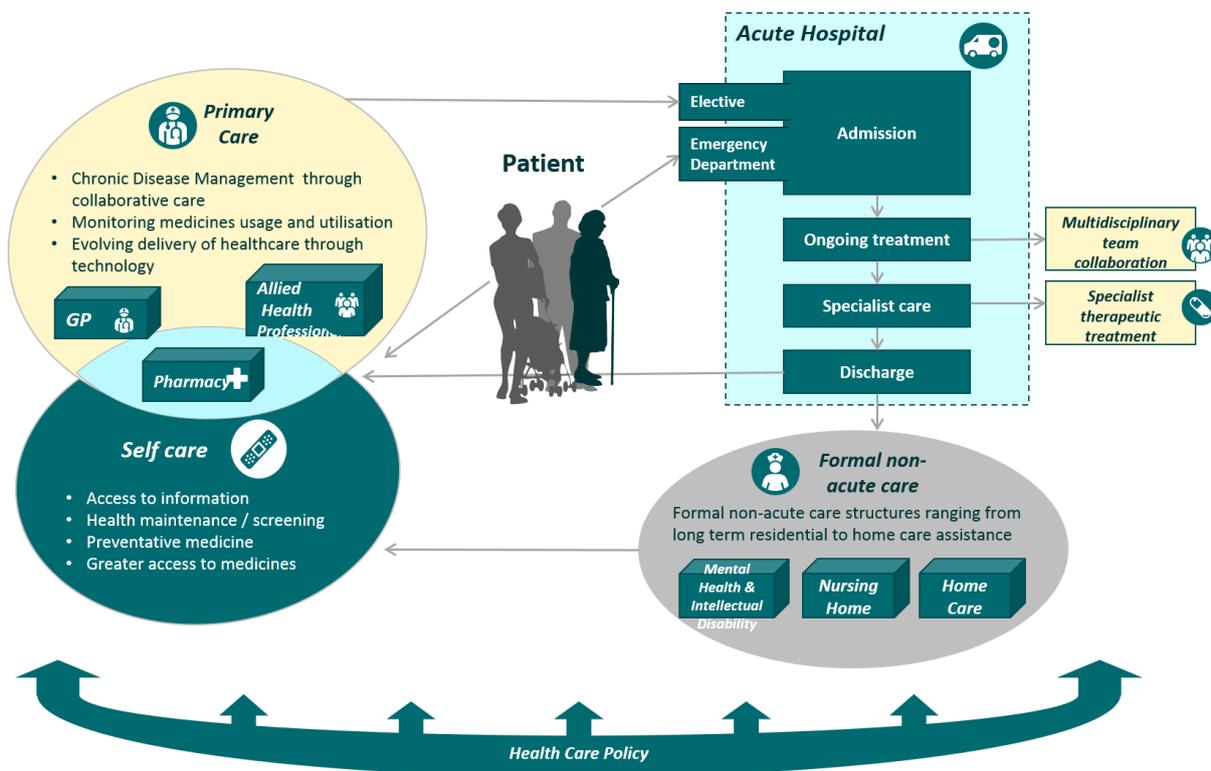
2. **Supporting and improving the health of at-risk patients with chronic disease** – acting as partners in care, implementing National Clinical Effectiveness initiatives, such as Asthma Care, Diabetes and Cardiovascular Care.
3. **Management of medicines throughout the patient pathway** – in the future patients will be managed at home or closer to home. Pharmacists as medicines managers have an important role in supporting patients in their medicine use to ensure maximum benefit and minimum risk to the patient. This needs to happen in all care settings – self-care, primary care, residential/formal care and acute hospital care.

Each of the three areas are elaborated on with recommendations below.

The Patient Care Journey

Patients and the population receive healthcare in various settings across the health system and at different stages in their lives. The patient care journey is illustrated below to demonstrate how pharmacy is well placed in each setting to address patient need. Medicines are the most common healthcare intervention within the health system and both the use and complexity of medicines is increasing.

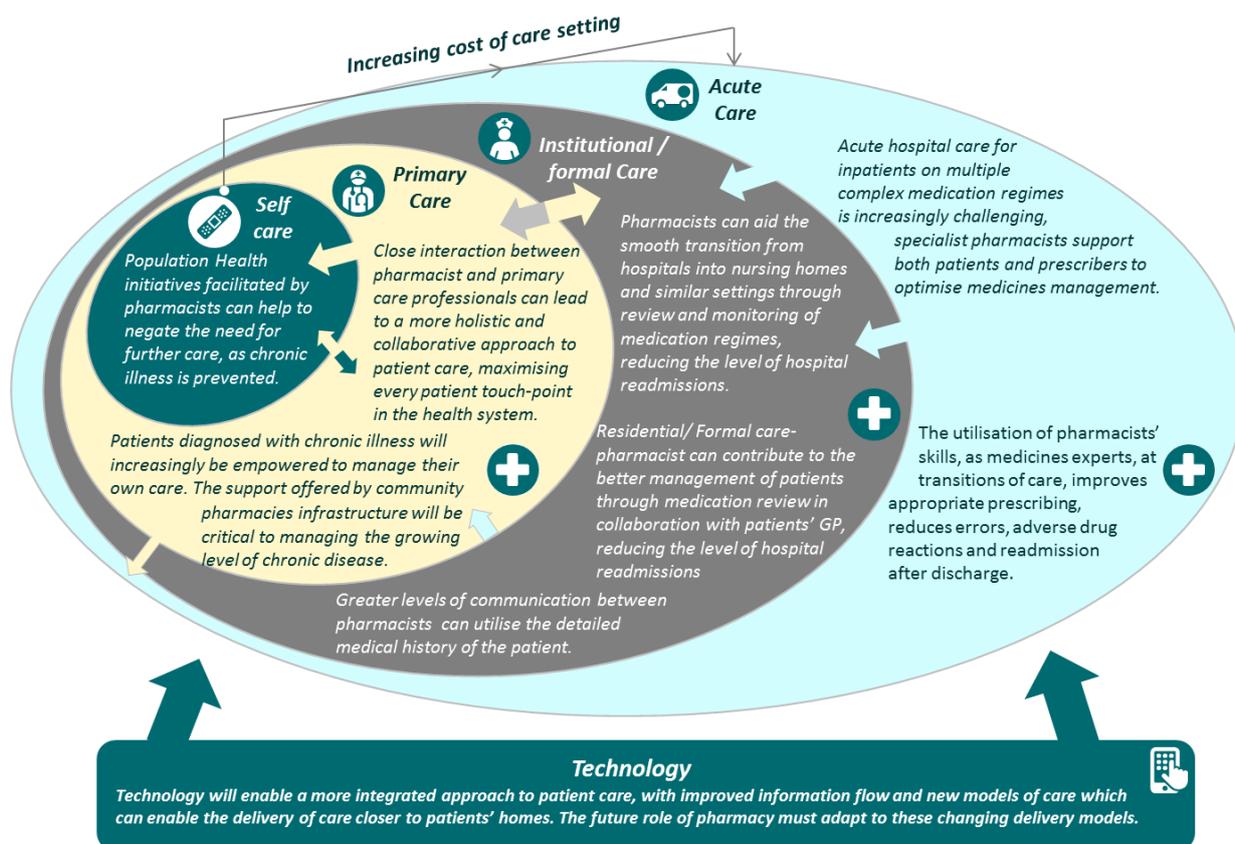
Figure 1. Outline of the patient care journey and touch points with pharmacy



Potential role of pharmacy in patient care across Irish healthcare settings

Figure 2 demonstrates the potential role of pharmacy, as a strategic part of Irish healthcare, with the skills of the profession utilised in collaboration with other healthcare professions to enhance patient care and experience, increasingly empowering patients so they can be treated as close to their own home as possible. As the health system undergoes reform, policy makers should consider the greater, or more effective, integration of pharmacists' expertise in an integrated solution to patient and health sector demands. The resource that pharmacists in hospital and community care settings can provide should be considered for the enhancement of patient care.

Figure 2. Potential role of pharmacy in patient care across Irish healthcare settings





1. Improving health and wellbeing

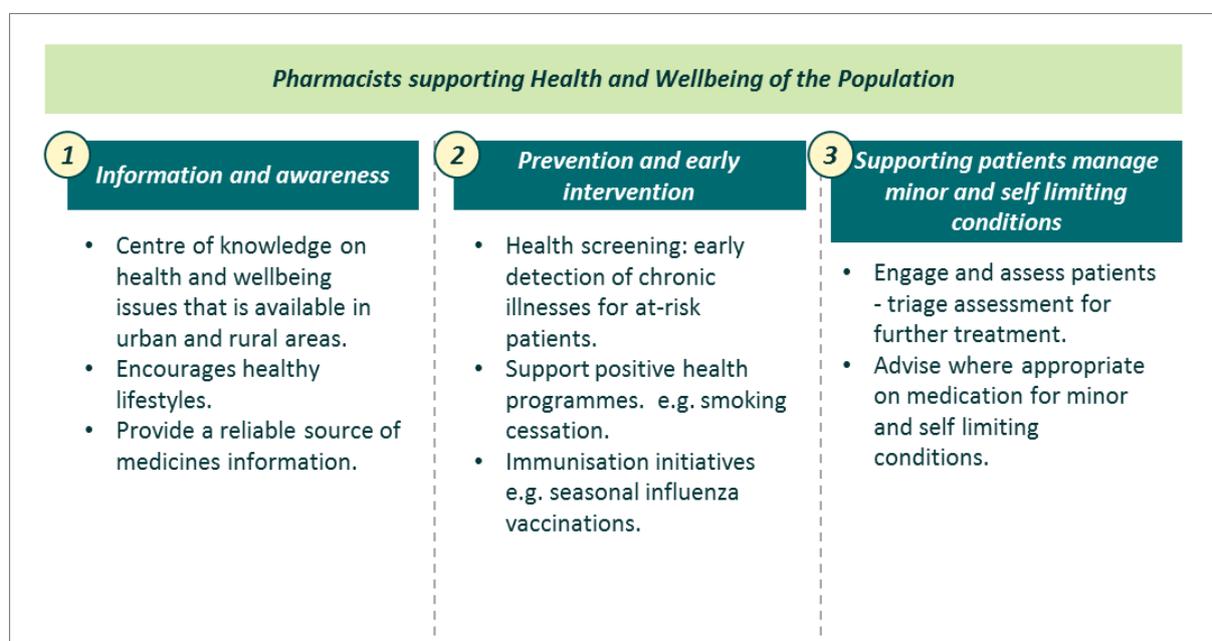
Elaborating on that patient journey, statistics (figure 3) from the HSE indicate the extent of patient contacts throughout the health service in one year. This includes the dispensing of 20 million prescriptions demonstrating a significant contact point between the public and pharmacists. In a public survey conducted by the PSI in March 2016, 58% of 1000 respondents said they visit a pharmacy at least once a month or more frequently, and 89% were found to support expanded health services and promotion from community pharmacies.

Promoting and supporting wellness as well as assisting those with ill health is a recognised public health initiative as we increasingly battle rising levels of chronic conditions. Preventative healthcare has the potential for enhancement through promotion of self-care and health behaviour change by pharmacists, given the already high level of contact between patients and pharmacists. *Healthy Ireland* recognises that a partnership, cross-sectoral approach is required to have an impact on the many health determinants and inequalities, and to enable people to look after their own health. Figure 4 demonstrates the role that pharmacists could play in supporting the health and wellbeing of the population.

From the health system perspective, it makes sense that pharmacists be included in training and developments on health and wellbeing interventions, and as a potential provider of suitable national screening services.

Figure 3. Average number of health service contacts in a year (HSE)

Figure 4. Overview of pharmacy role supporting health and wellbeing of the population



2. Supporting and improving the health of at-risk patients with chronic disease

Our research also confirmed the rising levels of chronic disease expected in the future (figure 5). Considering the frequency of attendance by patients with chronic diseases, community pharmacists should be considered well placed to support patients living with chronic conditions, in improving the ongoing management of a condition and in order to remove repetitious visits to GPs or hospital clinics, where these might not always be necessary. There is scope for pharmacists to be integrated into a system of structured patient education and adherence in the monitoring of a condition. Collaborative working with a GP in many of these cases should be explored. This could include supplementary prescribing by pharmacists in line with agreed protocols. Figure 6 demonstrates the role that pharmacists could play in supporting patients in the prevention and management of chronic disease conditions.

Figure 5. Chronic disease statistics in Ireland

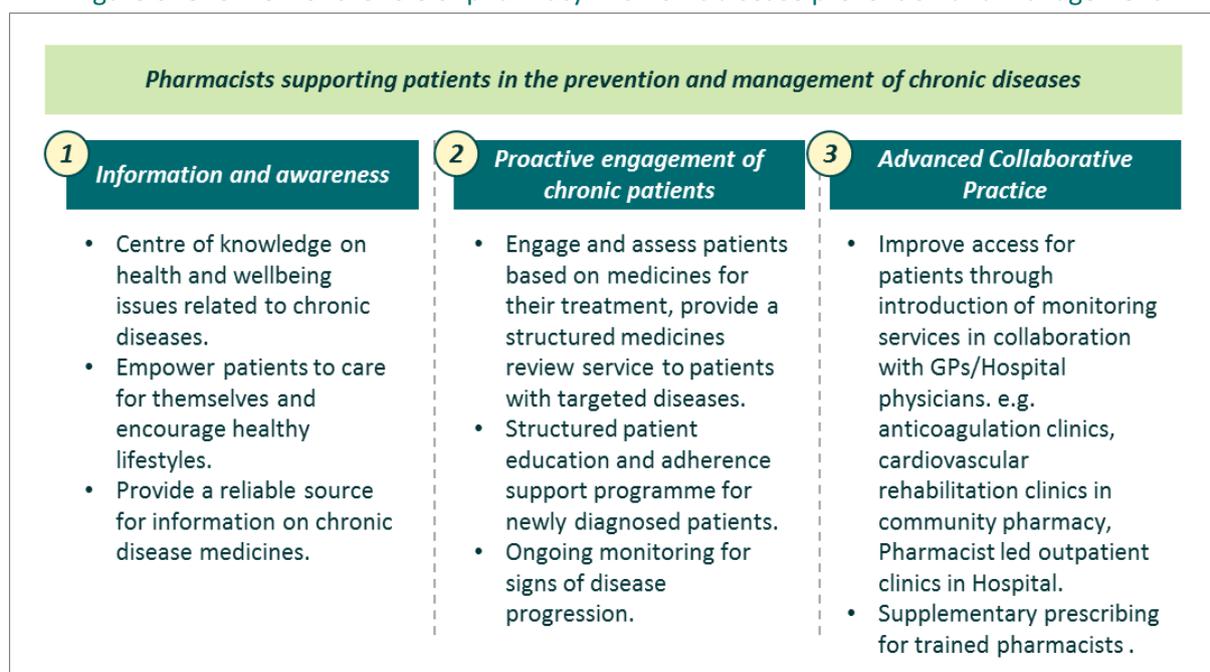
Chronic Disease	Population	Estimated Cost	Annual Growth
Coronary Heart Disease	182,000	€2.3 billion	3.75%
COPD	110,000	€0.4 billion	2.3%
Diabetes	225,000	€1.3 billion	3%
Asthma	450,000	€0.5 billion	N/A
Cancer	129,000	€1.5 billion	6.5%

Case Study: Diabetes in Ireland

Between 2010 and 2020 the number of adults with diabetes is expected to rise by 30%. This means the number of adults aged 45+ years with diabetes is expected to rise by an additional 40,000 people in ten years.

The cost of treating diabetes in Ireland has been estimated to be approximately €1.3bn, with 57% of all amputations (nominally costing €30,000 in inpatient care) being attributable to diabetes – 80% of which could have been avoided with earlier diagnosis and treatment.

Figure 6. Overview of the role of pharmacy in chronic disease prevention and management



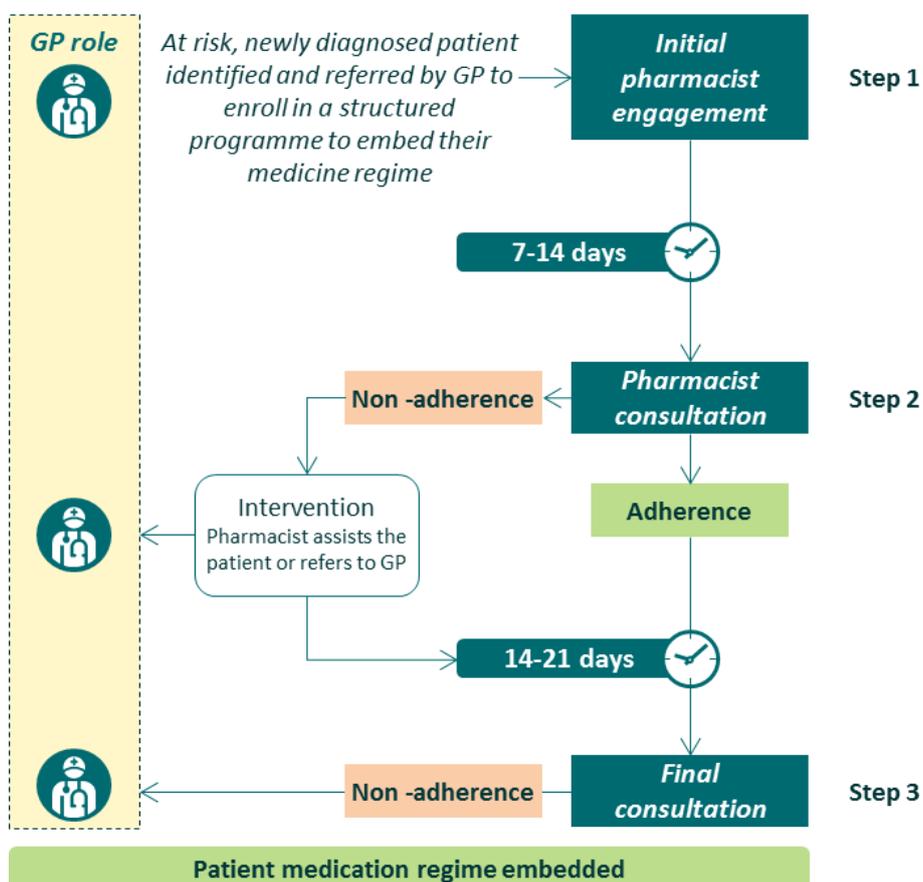
International and national research produced case studies that can be relied upon to demonstrate the value to patients and the health system where pharmacists can contribute to the better management of chronic disease patients in the community.

Case Study 1: UK New Medicine Service

Newly diagnosed patients with a chronic disease received structured support by a pharmacist to increase adherence and optimise therapy

Chronic illness patients in England who are initiated on medication can avail of a structured patient education and adherence programme called the New Medicines Service. This service involves three consultations with the patient where the pharmacist answers any questions regarding their medicines along with other educational aspects such as lifestyle choices. The purpose of this service is to reduce the levels of non-adherence, which, for conditions such as diabetes, can be as high as 78%¹. Research indicates that this service in England increased adherence in patients by 10% with long-term analysis showing positive patient outcomes for the NHS, with a cost-effectiveness of £20,000 per QALY (quality-adjusted life-year). The openness and collaboration in these services regarding the patient and their pharmacist also fosters an improved relationship between the parties, promotes medication safety, partnership in their healthcare, and gives the patient confidence in the self-management of their condition.

Figure 7. Outline of the process for structured introduction to medicine



Case Study 2: Collaborative Drug Therapy Management (CDTM) for chronic disease patients in Arizona

El Rio, a health centre in Arizona, serves a large Hispanic and Native American patient population, many with diabetes. In 2011, they saw 76,190 patients, over 56% from public healthcare (Medicaid and Medicare), 13% had private insurance and 28% were uninsured patients. In 2012, approximately 800 patients received Collaborative Drug Therapy Management (CDTM) services, mostly for diabetes. The CDTM protocols also cover hypertension, hyperlipidaemia, asthma, and other conditions. Collaborative Practice Agreements (CPAs) authorize pharmacists to assess patients, review medication regimens, adjust medications in approved drug classes, and perform specified examinations (e.g. foot examinations) as well as patient drug reviews for medications that require monitoring, such as anticoagulation therapy. The service is reimbursable by public healthcare and private insurers.

3. Management of medicines throughout the patient pathway

Pharmacists are the healthcare professional with the widest knowledge of medicines and the potential complexities associated with the increasing use of medicines. Therefore, pharmacy as a profession has a critical role to play within the health system to ensure the rational use of medicines by maximising the benefits and minimising the potential for patient harm. Figure 7 shows the extent of medicines use and adverse effects or error.

Our research has found that polypharmacy (the use of five or more medicines daily) has increased in recent years, particularly for older people. The prescription error rate, especially for hospital discharge prescriptions is high, and can continue unchecked post discharge often due to communication issues.

More than 8% of all emergency admissions to Irish hospitals are medicines related. At least 23% of pre-admission medicines are omitted or incorrect for patients in our hospitals. We also found a continued variation in clinical pharmacy staffing levels and services provided for pharmacist review of prescriptions for hospital patients. Figure 8 demonstrates the role that pharmacists could play in supporting the management of patients' medicines throughout the care pathway.

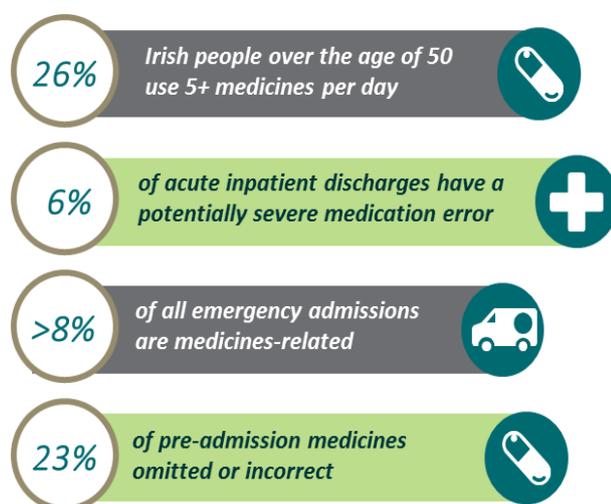
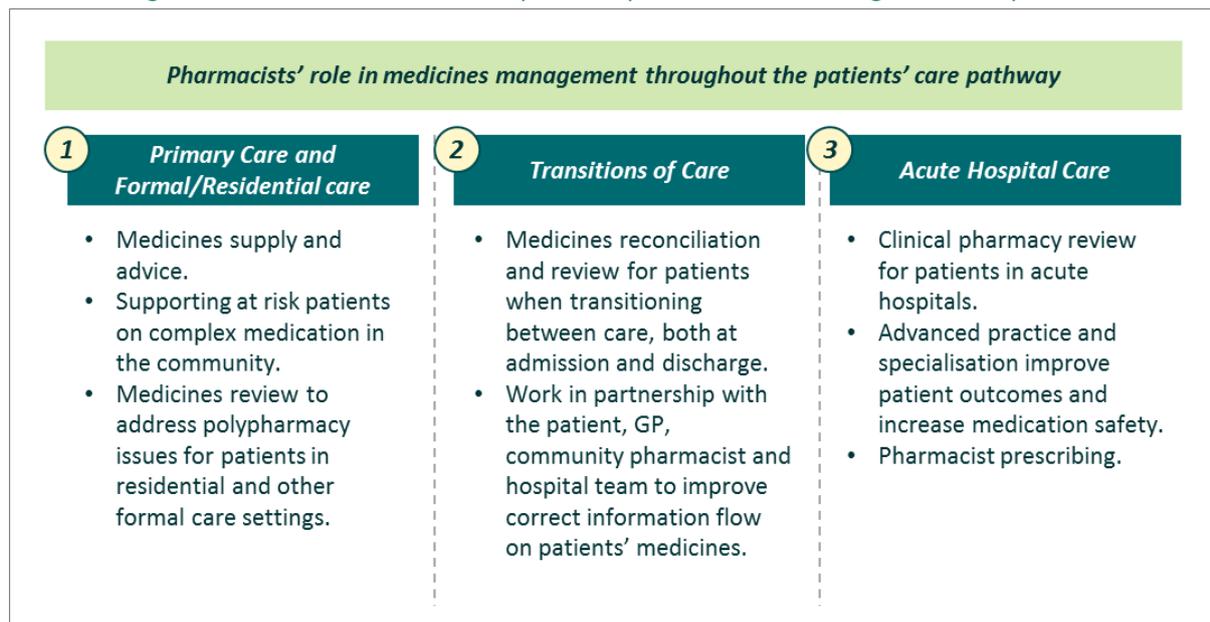


Figure 7. Medication related risks

Figure 8. Overview of the role of pharmacy in medicines management for patients



In the UK, clinical pharmacy services improve the quality of care for patients, particularly allied to the safe and effective use of medicines. It also attains significant cost savings for the health system. International research showed that a core set of clinical pharmacy services is associated with favourable outcomes such as decreased mortality rates, reduced length of stay, and avoidance of adverse events for the patient. Structured pharmacist interventions were found to improve both the appropriateness and accuracy of medication regimes and the prevention of adverse drug reactions of older hospitalised in-patients. Many of the medication related admissions to hospital have been shown to be avoidable. One study in Cork found that 8.8% of all admissions to an Irish hospital were medication related, with over half of these being avoidable. The cost associated with these admissions are also considerable, with average costs of over €6,000 for one potentially preventable, medication-related hospital admission.

The below two case studies demonstrate the effective implementation of a clinical pharmacist in review of patients' medication regime, resulting in increased effectiveness and safety and cost savings.

Case Study 3: Northern Ireland Integrated Medicines Management Programme

In Northern Ireland, the Integrated Medicines Management Programme introduced in 2000 has demonstrated the use of comprehensive pharmacy teams involved at admission, inpatient stay and discharge, incorporating communication at intersector transitions at admission and discharge where most medicines-related problems occur. This medicines optimisation programme resulted in reduced length of stay for patients by 2 days, decreased re-admission rates post discharge, has had a positive impact on risk adjusted mortality index, improved communication across transitions of care and a return on investment of £5 to £8 for every £1 invested.

Case Study 4: Collaborative Pharmaceutical Care in Tallaght Hospital (PACT)

Traditionally, clinical pharmacists are ward-based, contributing to medication history taking and prescription review, but not involved at discharge. The innovative PACT intervention involved clinical pharmacists being team-based, leading admission and discharge medication reconciliation and undertaking prescription review.

The PACT intervention allowed for the clinical pharmacist, in consultation with the medical team to make major and minor changes to the patient's drug chart or patient's discharge medication list. These activities are consistent with the notion of collaborative prescribing. There is evidence that collaborative prescribing reduces the prevalence of medication error and unintentional discrepancies in emergency department and perioperative settings. This is consistent with the study finding that PACT patients experience more clinical pharmacist recommendations that are accepted more frequently and earlier in the hospital episode than standard care.

The initiative was found to protect against severe medication errors in acute medical patients and improved prescribing quality in older patients. Cost effectiveness research work is currently being undertaken for the PACT model of care.

Funding: Potential Cost Reduction Opportunities

Part of the Future Pharmacy Practice project was to analyse the potential cost reduction opportunities associated with the introduction or expansion of pharmacists' clinical activities. The project was to review three potential new services available in other jurisdictions. The analysis was to assess the benefit to the patient and the wider health service. The Project Steering Group agreed three case studies for analysis:

1. Medicines Management in a Hospital Setting – Clinical Pharmacy Services
2. Medicines Optimisation Services – Newly Diagnosed Asthma patients, with structured support to optimise therapy
3. Medicines Optimisation by a pharmacist in a nursing home setting, in collaboration with the nursing staff, patient and the patient's GP.

A summary of the services and benefits are outlined below:

	<i>Summary of service</i>	<i>Benefit to patient</i>	<i>National cost impact</i>
1. Medicines Management in a Hospital Setting- Clinical Pharmacy Services	Clinical Pharmacy Services extended to all hospitals in Ireland, to include 1) Clinical pharmacist intervention at the point of admission; 2) pharmacist-led patients chart review; 3) pharmacist reviews conducted at the request of another health professional.	Improved patient outcomes through the reduction in adverse drug events and deterioration of their illness due to omission of medicines.	<ul style="list-style-type: none"> • Net cost avoidance associated with potential additional treatment as a result of adverse drug events of €19.7m in smaller Irish hospitals, creating a nationwide cost avoidance of €40.1m in all Irish hospitals • Potential additional reduced cost due to a reduction in the volume and value of drugs prescribed and the use of therapeutic substitutes, preferred formulations and biosimilars.
2. Medicines Optimisation Services- Newly Diagnosed Asthma patients, with structured support to optimise therapy	A structured introduction to medicine regimes for chronic illnesses via three structured consultations with the pharmacist in the first three weeks of the regime. Non-adherence is intervened through a collaborative approach between the pharmacist, the GP and other healthcare professionals.	An increase in the probability of adherence to the medication regime and thus better disease control.	<ul style="list-style-type: none"> • A cost reduction of €1,466 over the lifetime of each patient. • Nationwide implementation over a five year period would achieve a net cost reduction of €2.3m
3. Medicines Optimisation by a pharmacist in a nursing home setting, in collaboration with the nursing staff, patient and the patient's GP.	An annual multidisciplinary structured medicines review for older residents of Long Term Residential Care who are prescribed 5 medicines or more to identify and reduce inappropriate prescribing and limit associated potential Adverse Drug Events.	Improved health outcomes in terms of a reduced likelihood of adverse drug events and associated hospitalisation.	A potential reduction in cost associated with hospitalisations resulting from inappropriate polypharmacy of €2.74m per year.

Challenges and enablers to support the recommendations

Challenges and enablers to change have been identified in the PSI Future Pharmacy Practice report. These are particularly relevant to the future models of healthcare currently under examination by the Committee, along with awareness of legislative barriers that require addressing if some of these proposals, for example pharmacist prescribing, were to be considered.

Facilitating and encouraging **integrated and collaborative care** requires commencement of shared **education and learning** opportunities amongst trainee health care professionals from undergraduate years through to practice, and consultation and communication with all relevant parties, including through the integrated clinical care programmes. Collaborative working of health and social care professionals is vital so that service users benefit from unified but individual skills and expertise.

Pharmacy resourcing both in hospitals and community pharmacies, and reimbursement for service, are substantial enablers to the advancement of clinical pharmacy activities. Due consideration to effective

deployment of the pharmacy workforce and adequate resourcing of a new model of healthcare will prove beneficial in the longer term.

Leadership is critical at all levels of care provision to optimise pharmacists' inclusion in a multidisciplinary model of healthcare. At a time of proposed developments in the health service, the role of Chief Pharmacist in the Department of Health would provide suitably positioned leadership, legislative, policy and strategic guidance at national level to guide healthcare workforce planning alongside counterparts in medicine and nursing. The Chief Pharmacist role has ensured that the requisite medicines and pharmacist expertise is available to support government, and that structures are in place to oversee legislative and policy development for the safeguarding of access to and use of medicines, medical devices and pharmacy services.

Greater consideration is being given to the role of **technology** in modern care settings. Technology should be used to enable shared patient care and information, realise work efficiencies and facilitate safe transitions of care. Digital solutions that will allow greater cohesion amongst all those providing health supports is a vital resource for effective collaborative care. To fully implement and support medicines management throughout the patient pathway, electronic patient medication records need to be accessible to all healthcare providers. This would help to resolve current communication failings at the point of transitioning care. The development of national IT systems should explore how best to incorporate the pharmacist input and retrieval of data.

Advancing practice and the implementation of certain technologies, may warrant the examination of current **legislation** and payment structures, which may not allow for, facilitate or encourage the immediate delivery of a changed care model. Current payment systems and structures of access may need to be examined to ensure that exchequer funds are being spent most effectively. The Future Pharmacy Practice report will outline particular cost benefits of pharmacist provision or contribution to patient care should they form part of interventions at an earlier stage in the community and at the point of transitioning care.

A robust **regulatory system** is essential for the continued development and advancement of the profession, including pharmacist prescribing. As pharmacists take on increased patient care activities, they must also take on the increased responsibility and accountability that comes with these enhanced roles. As the professional regulator, the PSI, has a responsibility to ensure that registered pharmacists are fulfilling their professional obligations in respect of the services they provide and holding them accountable for doing so.

In addition, in the roll out of any pharmacy service identified, good **governance** of the service is considered essential to ensure the service operates in the manner intended. The design and management of the service should be underpinned by principles of quality and risk management and incorporate a system of audit and review in order to ensure that the delivery of the desired patient outcomes are achieved.

Conclusion

Patient demand for healthcare in Ireland is growing at a rapid rate in terms of volume, cost and complexity. The only affordable solution to meeting this demand is through a multi-disciplinary approach to healthcare to deliver the highest quality of care, as close to the patient's home as possible. Pharmacists are one of the key healthcare professionals to support patients in optimising their medicines, and in so doing, their health.

Central to the pharmacists' role is their contribution to obtaining optimal outcomes from medicines and providing a sustainable approach to clinical care and cost-effectiveness while reducing avoidable adverse events and waste.

This submission demonstrates where the pharmacy profession, within the context of Government strategy, could add more value and highlights that healthcare reform should provide for multidisciplinary team working and a more integrated approach to managing the care of patients and the public in Ireland.

The recommendations outlined as to where pharmacists might contribute to health system and patient need are presented so as to provide realistic and workable examples of how pharmacists' skills and expertise might be used differently or more effectively within an integrated and regulated structure. The Future Pharmacy Practice Report contains significant research and evidence as to what patients want from a health service and how pharmacists, due to their accessibility and expert knowledge can meet patient needs and play a vital role as part of any future model of health care in Ireland. We will be happy to share the full evidence-based report with the Committee.

Bibliography

Ahern F, Sahm LJ, Lynch D, McCarthy S. Determining the frequency and preventability of adverse drug reaction-related admissions to an Irish University Hospital: a cross-sectional study. *Emergency Medicine Journal*. 2014 Jan 1;31(1):24-9.

Asthma Society of Ireland. Pre budget Submission 2015, July 2014. Dublin [Online]. Available at https://www.asthma.ie/sites/default/files/files/document_bank/2014/Aug/Pre-Budget%20Submissions%202015.pdf

Bond, C.A. and Raehl, C.L., 2007. Clinical pharmacy services, pharmacy staffing, and hospital mortality rates. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*, 27(4), pp.481-493.

Bond CA, Raehl. Clinical pharmacy services, pharmacy staffing and adverse drug reactions in united states hospitals. *Pharmacotherapy* 2006;26(6):735-747.

Carter, L. C. "Operational Productivity and Performance in English NHS Acute Hospitals: Unwarranted Variations, An Independent Report for the Department of Health by Lord Carter of Coles." (2016).

Elliott R, Boyd M, Waring J et al. Understanding and appraising the new medicines service in the NHS in England Nottingham.ac.uk. (2016). New Medicines Report. [online] Available at: <http://www.nottingham.ac.uk/~pazmjb/nms/downloads/report/files/assets/basic-html/index.html>

Elliott RA, Boyd MJ, Waring J, Barber N, Mehta R, Chuter A, Avery AJ, Tanajewski L, Davies J, Salema N, Latif A. Department of health policy and research programme project: understanding and appraising the new medicines service in the NHS in England (029/0124). England: Nottingham University School of Pharmacy. 2014:1-20.

Hamilton H, Gallagher P, Ryan C, Byrne S, O'Mahony D. Potentially inappropriate medications defined by STOPP criteria and the risk of adverse drug events in older hospitalized patients. *Archives of internal medicine*. 2011 Jun 13;171(11):1013-9.

HSE. Introduction to Chronic obstructive pulmonary disease. [Online]. Available at: <http://www.hse.ie/portal/eng/health/az/C/COPD/>

HSE. National Clinical Programmes: Asthma Programme -Asthma in Ireland [Online]. Available at <http://www.hse.ie/eng/about/Who/clinical/natclinprog/asthma/asthmaireland>

Irish Heart Foundation. Reducing obesity and future health costs- a proposal for health related taxes. Irish Heart Foundation and Social Justice Ireland, May 2015. [Online]. Available at: http://www.irishheart.ie/media/pub/advocacy/final__reducing_obesity_and_future_health_costs__ihf_and__sji_2015.pdf

Keaver L, Webber L, Dee A, Shiely F, Marsh T, Balanda K, Perry I. Application of the UK foresight obesity model in Ireland: the health and economic consequences of projected obesity trends in Ireland. *PLoS One*. 2013 Nov 13; 8(11):e79827. [Online]. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3827424/table/pone-0079827-t002/>

Leendertse AJ, Van Den Bemt PM, Poolman JB, Stoker LJ, Egberts AC, Postma MJ. Preventable hospital admissions related to medication (HARM): cost analysis of the HARM study. *Value in Health*. 2011 Feb 28;14(1):34-40.

National Cancer Registry Ireland. Cancer Factsheet – Overview and most common cancers. [Online]. Available at: http://www.ncri.ie/sites/ncri/files/factsheets/FACTSHEET_all%20cancers.pdf

O’Sullivan D, O’Mahony D, O’Connor MN, Gallagher P, Cullinan S et al. Prevention of adverse drug reactions in hospitalised older patients using software supported pharmacist interventions. *Drugs and Aging* DOI 10.1007/s40266-015-0329-y, Nov 2015.

Pharmaceutical Society of Ireland, Behaviour & Attitudes. Pharmacy usage and attitudes report 2016. [Online]. Available at: <http://thepsi.ie/tns/news/latest-news/AttitudestoPharmacyinIreland.aspx>

Royal College of Physicians in Ireland. Statistics of COPD in Ireland. [Online]. Available at: http://www.rcpi.ie/content/docs/000001/2081_5_media.pdf?1410795330

Scott MG, Scullin C, Hogg A, Fleming GF, McElnay JC. Integrated medicines management to medicines optimisation in Northern Ireland (2000–2014): a review. *European Journal of Hospital Pharmacy*. 2015 Apr 13: ejhpharm-2014.