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Prescribing Progress:

Transforming Clinical Hospital Pharmacy in Wales for Enhanced Patient Care

An Independent Report Commissioned by the Welsh Government 2023

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Boards are assured that their pharmaceutical care and the pharmacy service is delivered in a way that is safe, timely, effective, efficient, equitable and tailored to patient's needs and wishes.

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Recommendation 36: Electronic medicines management systems must ensure an all-Wales, consistent approach across all settings, with interoperability fundamental to any plans for safe and effective patient care. (p. 79)

Introduction

The practice of clinical pharmacy is commonplace in NHS hospitals, involving pharmacists and, increasingly, pharmacy technicians. Through utilising their unique training, skills and expertise, pharmacy staff ensure the medicines necessary for patients requiring both hospital inpatient and outpatient services are prescribed, optimised and administered, or taken, in a way that maximises their positive outcomes while reducing avoidable harm.

The Royal Pharmaceutical Society (RPS) was commissioned by the Welsh Government to undertake an independent review of the provision of clinical pharmacy services provided in NHS hospitals across Wales; to explore the services provided in Wales, as well as those in other parts of the UK and internationally; and to make recommendations on how services should develop to meet the changing needs of citizens and the NHS.

Hospital services have experienced growing pressure for many years, as clinical teams adapt to meet the changing needs of the NHS; specifically, increased demand as more people are living longer with more complex health needs and increased availability of new and emerging medical technologies. While the COVID-19 pandemic placed unprecedented pressure on the NHS, it was a catalyst for change across healthcare.

During the pandemic, bureaucratic barriers were removed, enabling innovation and redesign to be implemented at pace. Hospital pharmacy teams in Wales adapted quickly; transformation of service delivery was implemented in weeks — or even days — to keep patients, Welsh citizens and our healthcare teams safe. Examples include increased preparation of ready-to-administer medicines, leading roles in the COVID-19 vaccination programme, provision of seven-day pharmacy services, taking lead roles in facilitating access to clinical trials and faster access to innovative therapies, increased collaboration with clinical colleagues and increased autonomy in clinical decision making. Widening access to wellbeing support for pharmacy teams through the Welsh Government was a welcome approach, and changes such as this remain.

As we emerged from the pandemic, and as the breadth of activity in hospitals returned to pre-pandemic levels, the operational, strategic and change management challenges across NHS Wales have never been greater. Workforce shortages are causing increased pressures across all settings, and this is particularly pertinent for many hospital pharmacy teams in Wales.

This independent review recommends actions and changes for organisations and individuals. If implemented, these recommendations will ensure hospital pharmacy clinical services can continue to meet the changing needs of patients and the NHS in Wales.

We would like to thank the hospital workforce in Wales for their extensive engagement with the independent review team, particularly as the majority of data and information gathering for the review took place over the winter months when pressures were already particularly high. We would also like to thank the patients and their representative organisations, and the wider healthcare sector members for their open, honest and supportive engagement.

Scope

The review collates and builds on many examples of good practice that are already happening in hospitals across Wales. It also draws on international best practices to help shape how future services can support the NHS's immediate and long-term priorities. The review considers the opportunities presented by the wider use of technology, the planned deployment of electronic prescribing in each hospital in Wales through the Digital Medicines Transformation Portfolio, and reforms to the training of pharmacists and pharmacy technicians, which will mean all pharmacists registering from 2026 will be prescribers.

It is not just pharmacists who provide clinical pharmacy services: pharmacy technicians play an important role, both in delivering the traditional pharmacy service and increasingly providing clinical services themselves. In turn, other non-registrant roles have developed and are highly valued within pharmacy teams. The review describes changes that will make best use of the skills of all members of the pharmacy team in support of patients.

Recognising their specific clinical expertise and training, it includes a focus on pharmacists as prescribing professionals and as part of a multidisciplinary workforce. The review seeks to demonstrate how transformation in pharmacy can be part of a solution to address the main challenges and priorities that have been identified by the Welsh Government since the COVID-19 pandemic.

As this report is focused on clinical pharmacy services, some other pharmacy roles are outside the scope of this review. These include pharmacy technical services delivered through the Transforming Access to Medicines (TrAMs) programme, the medicines information service, education and training, and medicines logistics and supply. However, some of the recommendations explain how further work in these areas will support pharmacy to achieve the objectives of the review.

Strategic context

'A Healthier Wales: Our Plan for Health and Social Care', published in June 2018, was the Welsh Government's vision for a "whole system approach to health and social care", which focused on health and wellbeing, and preventing physical and mental illness. It also described how using the latest technology and medicines would improve care and outcomes for the people of Wales. It articulated a need to shift from hospital-based services to care closer to home, and supporting people to remain well.

The Welsh Government has published subsequent documents outlining the priorities for NHS Wales, which have all been considered when making recommendations in this review. They include:

- 'The NHS Quality and Safety Framework' (September 2021)
- 'Home First: The Discharge to Recover then Assess model (Wales)' (January 2022)
- 'Our programme for transforming and modernising planned care and reducing waiting lists in Wales' (April 2022).
- 'Six Goals for Urgent and Emergency Care policy handbook' (May 2022)
- 'Building Capacity through Community Care' (June 2022)

The ten-year vision for pharmacy, 'Pharmacy: Delivering a Healthier Wales', published in 2019, set out the long-term goals and principles, as well as short-term actions, required to transform the role and contribution of pharmacy teams across all sectors for the benefit of patients and the wider population. The benefits of integrating the skills of pharmacy teams into the wider multidisciplinary team are being recognised across all care settings and there is an increased need for widening the skill set in primary care, which aligns to the need to shift care closer to home.

Since the 1970s, hospital pharmacy has been at the forefront of innovation in clinical pharmacy practice and excellence in the delivery of pharmaceutical care. Change is needed to ensure hospital pharmacy practice continues to be the catalyst for clinical developments and consistently maximises the unique contribution pharmacists and pharmacy technicians can make to tackling the challenges faced by the NHS, not just in hospitals but across the healthcare system. By enabling hospital pharmacy teams to fully utilise their skills embedded within the multidisciplinary teams across care settings, pharmacy will contribute to a core value of the NHS Wales, that is *"... providing high-value evidence-based care for our patients at all times."*[1]

1 https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf

Background

Medicines are the most common intervention in healthcare[1]. They are used to alleviate symptoms of, prevent and slow the progression of, or even cure, disease. However, it is estimated that 30–50% of medicines prescribed for long-term conditions are not taken as intended[2]. Medicines can cause drug-related harm that may result in admission to hospital, increased length of stay and increased morbidity and mortality. Pharmacy professionals, working as part of the multidisciplinary team (MDT), have a responsibility to optimise patient health outcomes[3] and minimise any risk from medicines.

Within the hospital setting in Wales, the pharmacy departments provide leadership for medicines management across the seven health boards and one NHS trust. They aim to provide a quality service that is safe, effective, person-centred, timely, efficient and equitable[4]. This is complex and multi-dimensional and includes clinical, financial, economic, technical, pharmaceutical, professional, legislative, ethical and regulatory considerations. Ensuring the safe and effective use of medicines is therefore a priority, and must remain a key focus for the pharmacy profession and the NHS.

The General Pharmaceutical Council (GPhC) sets standards for pharmacy professionals, including their initial education and training, and registered pharmacies in Great Britain. These standards help to make sure people using pharmacy services receive safe and effective care[5].

The RPS publishes standards for hospital pharmacy, which describe quality pharmacy services and 'what good looks like'. They provide a broad framework to support pharmacy teams to continually improve services, shape future services and roles, and deliver high- quality care across all settings[6]. There are three overarching domains: the individual's experience; medicines assurance; and delivery of the service, with eight standards in total.

The International Federation of Pharmacists (FIP) launched its Basel Statements in 2008, outlining a vision for hospital pharmacy practice. FIP also developed a strategic plan for hospital pharmacy for 2022–2027[7], aligned to their developmental goals, which encompass: overarching and governance statements; procurement; influences on prescribing; preparation and delivery; administration; monitoring of medicine use; human resources, training and development.

As outlined above, a hospital pharmacy has many different components to its service. These involve clinical pharmacy activities (the focus of this review) and non-clinical activities (see Figure 1).

[1] https://www.nice.org.uk/guidance/ng5/chapter/introduction

[2] World Health Organization's world health report 2003

[3] Hepler CD and Strand LM. Opportunities and responsibilities in pharmaceutical care Am J Hosp Pharm 1990;47:533-43

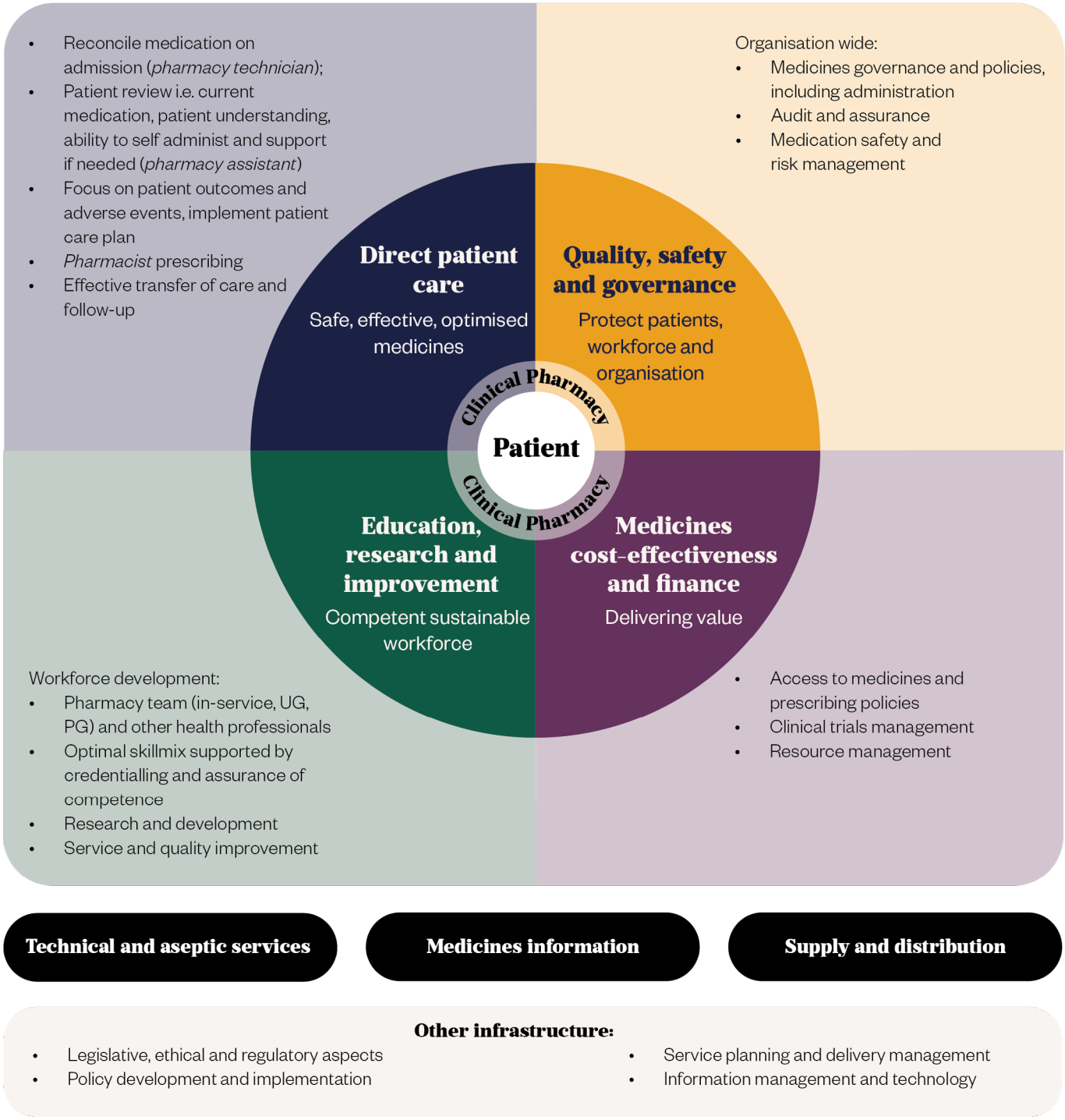
[4] https://www.gov.wales/sites/default/files/publications/2021-09/quality-and-safety-framework-learning-and-improving_0.pdf

[5] www.pharmacyregulation.org/sites/default/files/standards_for_pharmacy_professionals_may_2017_0.pdf

[6] https://www.rpharms.com/recognition/setting-professional-standards/hospital-pharmacy-professional-standards

[7] https://www.fip.org/basel-statements

Figure 1: Overview of Hospital Pharmacy Services



CLINICAL PHARMACY

Clinical pharmacy is one element of medicines management and pharmacy services delivered by the integrated pharmacy teams employed by health boards and trusts in Wales.

It comprises a set of functions that promote the safe, effective and economic use of medicines for individual patients[8].
It also embraces the philosophy of pharmaceutical care and the principles of medicines optimisation, and supports a collaborative approach, with patients and other healthcare professionals, to medicines management[9].

There is considerable variation in clinical pharmacy services between hospitals, including pharmacists' clinical activities, the service specialties provided, workforce structure, management culture and whether pharmacists are managed as part of the clinical service or the pharmacy department.

[8] Whittlesea C and Hodson K. Clinical Pharmacy and Therapeutics. 6th edition. Elsevier 2019

[9] Pharmacy Practice and Res - 2021 - Bunte - Standards of practice for clinical pharmacy services Chapter 16: My Health

Despite these differences, in all hospitals, medicines optimisation is a vital element of all clinical pharmacist roles. Medicines optimisation includes patient and prescription review, prescribing advice, dose adjustment, provision of patient education and, increasingly, prescribing. Hospital pharmacists' other clinical activities include resolving and reporting prescribing and medication errors, training and education of pharmacy and other healthcare staff, managing drug formularies and the entry of new medicines, guideline and protocol writing, clinical audit, advising on or managing themedicines budget, and medicines management[10].

Several significant developments to clinical pharmacy have occurred in Wales within the past 20 years, including:

1 The implementation of the Pharmacist Enabling and Therapeutic Switch Policy (PETS)

Usually, the first activity completed by the pharmacy team for patients admitted to hospital is to reconcile their medication. This activity has been shown to be effective at identifying medicines discrepancies[11,12]. However, studies have also identified that resolution of these discrepancies can be challenging, and may be unresolved 24 hours after admission[13,14].

In order to address this, in 2016, the All-Wales Chief Pharmacists Quality and Patient Safety Delivery Group introduced the PETS policy, which empowers pharmacists to transcribe unintentionally omitted medication on to the medication chart without the need for a prescriber to sign the entry. It also allows pharmacists, working within their competency, to correct doses and dosage frequencies and to substitute medications that are not available or non-formulary.

2 The introduction in 2007 of pharmacist independent prescribing

Although, initially, the uptake of independent prescribing was quite low, the hospital sector identified how it could be used to advance patient care, especially in long-term conditions and outpatient clinics. The number of pharmacists practising as prescribers is increasing and, as of 2022, more than 50% of health board/trust pharmacists across Wales are qualified prescribers.

As of 2026, all newly registered pharmacists will be qualified prescribers, and this will help meet the goal set out in the 'Pharmacy: Delivering a Healthier Wales' strategy that, by 2030, "all patient facing pharmacists are actively prescribing wherever the patient needs them"[15].

3 The introduction of consultant pharmacist roles

First introduced in the NHS in 2005, consultant pharmacists are leaders in the profession, as well as senior clinical experts delivering care and driving change across the healthcare system. Traditionally, the pathway to becoming a consultant pharmacist was based on an individual's personal motivation. However, with patient populations requiring more complex care delivered by multiprofessional teams across community, primary and secondary care settings, revised consultant pharmacist guidance was published, enabling further development of consultant pharmacist posts[16]. Their practice and development is underpinned and assured by the RPS competency-based credentialling framework and the consultant post approval process.

Currently, in Wales, only 13 consultant pharmacist posts are funded, while 8 pharmacists have successfully been credentialed as 'consultant ready'. Health Education and Improvement Wales (HEIW) are committed to agreeing "a strategic plan to support the development of consultant pharmacist posts in Wales"[17].

[10] Stephens M. Hospital Pharmacy. 2nd ed. London: Pharmaceutical Press, 2011

[11] https://pharmaceutical-journal.com/article/news/pharmacists-can-resolve-problems-for-patients-when-undertaking-medicines-reconciliation

[12] Patel 2019 Integr Pharm Res Pract . 2019 Apr 30;8:39-45.

[13] https://research-portal.uea.ac.uk/en/publications/pharmacist-provided-medicines-reconciliation-within-24-hours-of-a

[14] https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/1203516

[15] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Wales/2025%20Goals %20Summary%20Guide_English.pdf?ver=sHndU1E4hzKjrjoh8hqdvQ%3d%3d

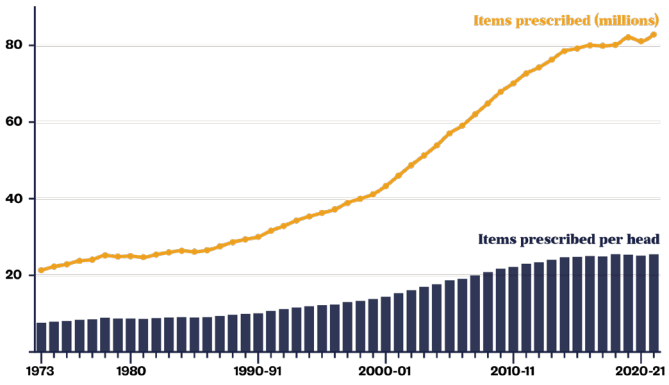
[16] https://www.rpharms.com/development/credentialing/consultant#:~:text=Overview,on%20an%20individual's%20personal%20motivation

[17] https://heiw.nhs.wales/education-and-training/pharmacy/consultant-pharmacists/

MEDICINES SAFETY

Minimising the inherent risk from medicines use through medicines safety activities is a key focus of clinical pharmacy services and the associated medicines governance undertaken by health board and trust pharmacy teams. This area has expanded significantly over the past two decades as the number of medicines developed and prescribed has increased, and those medicines have become more complex. The increasing comorbidity, complexity of care, and potential for medicines-related harm is best illustrated by the number of prescription items per head, which has grown steadily over time (see Figure 2).

Figure 2: Prescription items issued by GPs and dispensed between 1973 and 2021–2022



Source: NHS Wales Shared Service Partnership

The importance of medicines safety was highlighted by the World Health Organization (WHO) in its 2017 publication 'Medicines Without Harm' — its third global patient safety challenge, in which it explained:

> *"Unsafe medication practices and medication errors are a leading cause of avoidable harm in health care systems across the world. The scale and nature of this harm differs between low-, middle- and high-income countries. Globally, the cost associated with medication errors has been estimated at US$42 billion annually."*[18]

The scale of medication harm is difficult to assess, as it is dependent upon how well incidents are reported and coded. One indication in Wales of medicines-related harm is seen in the coding of hospital patient record data. Data from the patient episode database for Wales (PEDW) from 2021–2022, which are available on the Server for Prescribing Information Reporting and Analysis (SPIRA) Medication Safety Dashboard, report:

- 8,245 Finished Consultant Episodes (FCEs) of medicines-related harm resulting in admission to hospital that required treatment or investigation in hospital across Wales.
- 2,716 FCEs of medicines-related harm occurring during hospitalisation that required treatment or investigation whilst patient was in hospital across Wales.

Another method to collect data in this area is the medication error data reporting scheme (DATIX) in health boards/trust. This scheme is reliant on healthcare staff documenting and reporting errors and so again is not a comprehensive account of medicines related errors. The data available from six of the eight health boards/trusts across Wales between April and September 2022, reported on the Once for Wales Concerns Management System, suggests that more than 25,000 medication errors occur in secondary care settings across Wales each year. Of these errors, and where specified, 40% resulted in some degree of harm.

The role pharmacy professionals play, as critical members of the whole healthcare team, in promoting patient safety and advocating a safety culture has been detailed in the FIP document 'Patient safety — pharmacists' role in "Medication without harm"', which provides information on how pharmacists can promote patient safety at an individual patient level, as well as at organisational and policy development levels[19].

In most health boards/trusts, a senior pharmacist undertakes the role of the Medicines Safety Officer (MSO). MSOs were established in NHS organisations across Wales in 2014. Each MSO works with the health board/trust patient safety teams and clinical staff, as well as the MSO network, to action medication safety alerts and notices, conduct investigations into more serious incidents, analyse medicine-related error reports, and educate staff.

A significant proportion of the pharmacy service relates to ensuring there is medicines governance across NHS organisations. Through medicines governance structures, health boards, as integrated organisations, are provided with cross-sector policies, procedures, advice and guidance on the clinical, legal, regulatory, professional and financial aspects of the use of all medicines.

The statutory role of Controlled Drug Accountable Officer is undertaken by the Clinical Director of Pharmacy/Chief Pharmacist. This is health board wide role with responsibility for the management of controlled drugs and related governance issues. The role includes establishing and managing a Controlled Drugs Local Intelligence Network (CDLIN) to share concerns and good practice within their area.

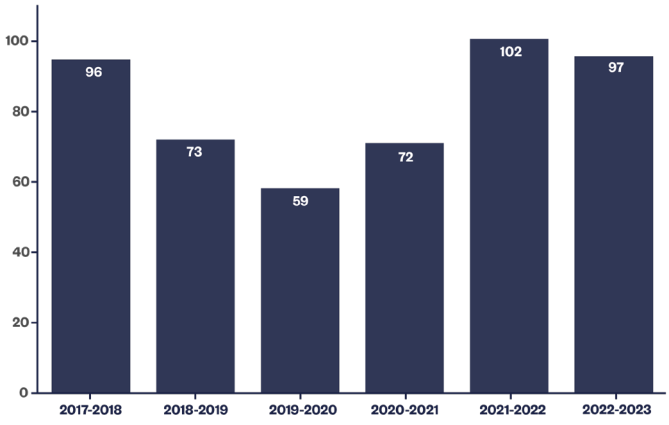
The governance focus has shifted from local medicines formulary management to more safe and equitable access to new and complex medicines. This involves developing cross-sector prescribing policies and guidance to ensure medicines safety and stewardship, and cost-effective medicines use, which meets required regulation and delivers patient outcomes of the highest value.

For example, data from the All Wales Therapeutics and Toxicology Centre (AWTTC) (see Figure 3, overleaf) show that, since 2017, nearly 500 new medicines have been approved for use in NHS Wales. All of these will have required a governance process to support their safe and cost-effective introduction.

[18] https://www.who.int/publications/i/item/WHO-HIS-SDS-2017.6

[19] https://www.fip.org/file/4757

Figure 3: Number of medicines given a positive recommendation by NICE or AWMSG for use in Wales



Source: AWTTC

Medicines account for 9.6% of all healthcare costs in Wales. In 2021–2022, the total expenditure reached just over £1 billion on medicines (acquisition costs only; this amount does not include associated supply infrastructure and patient monitoring costs). Approximately 60% of this is attributable to medicines prescribed and used in primary care and 40% to those prescribed and used within the hospital environment. Over the past five years (2017–2022), there has been a 49% increase in medicines spend in hospitals and a year-on-year increase of 20% between 2020–2021 and 2021–2022.

The medicines governance work of the pharmacy department is a significant function, which is often unseen, undervalued and unrecognised.

WORKFORCE

Pharmacy teams comprise registered healthcare professionals (pharmacists and pharmacy technicians), non-registered pharmacy assistants and support staff. Increasingly, other healthcare professionals and specialist staff may form part of the pharmacy team. Examples include medicine management nurses, dietitians, data analysts and project managers.
Data provided by HEIW from the electronic staff record (ESR) indicate that, in April 2022, there were 1,964 pharmacy employees coded as working in hospital locations, comprising:

- 740 pharmacists;
- 8 consultant pharmacists;
- 669 pharmacy technicians;
- 350 pharmacy assistants;
- 118 foundation pharmacists (undertaking training prior to registration)
- 79 pre-registration pharmacy technicians[20].

[20] Note: these data represent the pharmacy staff employed by NHS Wales with a tertiary area of work reported as 'Pharmacy' — those working in hospital or employed in secondary care — and excludes those coded as working in general practice or primary care

PHARMACY WORKFORCE NUMBERS AND SKILL MIX OVER TIME

Data provided by HEIW show that the headcount for pharmacists, pharmacy technicians and pharmacy assistants in hospitals has increased by 30% between April 2013 and April 2023.

Table 1: Increase in pharmacy workforce in hospitals

	Headcount of pharmacists in hospital	Headcount of pharmacy technicians in hospital	Headcount of pharmacy assistants in hospital	Total headcount
2013 (April)	614	609	179	**1,402**
2014 (April)	618	568	229	**1,415**
2015 (April)	653	565	224	**1,442**
2016 (April)	693	582	236	**1,511**
2017 (April)	755	603	279	**1,637**
2018 (April)	779	638	267	**1,684**
2019 (April)	765	622	302	**1,689**
2020 (April)	783	646	338	**1,767**
2021 (April)	739	661	357	**1,757**
2022 (April)	748	669	350	**1,767**
2023 (April)	752	683	390	**1,825**

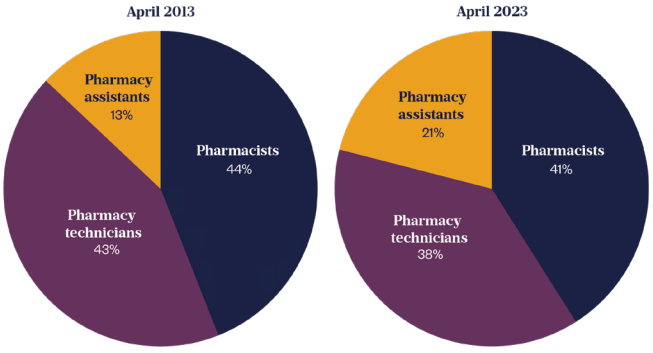
The headcount of pharmacists in hospital has increased by 138 pharmacists between April 2013 and April 2023, equivalent to an increase of 22%.

The headcount of pharmacy technicians in hospitals in Wales has increased by 74 pharmacy technicians in the ten-year period between April 2013 and April 2023. This is a percentage increase of 12%.

The headcount of pharmacy assistants in hospital in Wales has increased by 211 pharmacy assistants between April 2013 and April 2023, equivalent to an increase of 118%.

The change in the makeup and skill mix of the hospital pharmacy workforce over the past ten years can be expressed as proportion of: pharmacists, pharmacy technicians and pharmacy assistants (see Figure 4).

Figure 4: Hospital Pharmacy workforce in Wales — skill mix proportions from 2013 to 2023



Source: HEIW

Over the past ten years there has been a small decrease in the proportion of pharmacists in hospitals (44% to 41%) and a slightly larger decrease in the proportion of pharmacy technicians (43% to 38%); however, there has been an increase in the proportion of pharmacy assistants (13% to 21%) [21].

[21] HEIW data was collected from NHS ESR records as of April 2023, taken as a snapshot each April. Some individuals may be excluded if they worked only between May and February. Hospital employees were filtered by tertiary area of work "Pharmacy" and further filtering was done by occupation code. Values are rounded to zero decimal places.

PHARMACIST NUMBERS OVER TIME

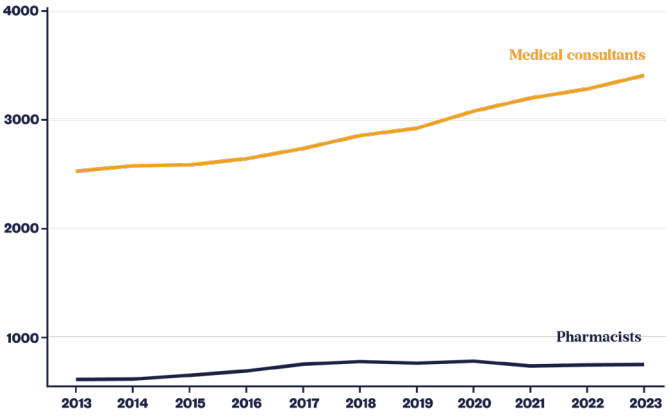
Data from the HEIW Education and Training Plan 2023/24 show that the average increase in the NHS workforce in the past ten years was 26%; however, the Add Prof Scientific and Technical staff group (which includes the pharmacy workforce) only increased by 9%[22].

Data provided by HEIW can be used to compare the rate of increase in full-time equivalent (FTE) pharmacists and Medical Consultants in hospitals in Wales (see Figure 5).

The total number of FTE pharmacists in hospitals has steadily increased over the past ten years, with a noticeable increase (10%) in 2016–2017 but decreases in both 2018/2019 and 2020/2021, most noticeably a 6% decrease between 2019/2020 and 2020/2021. Over the ten year period (2013–2023), the total number of FTE pharmacists in hospitals has increased by 143 (27%).

The total FTE of medical consultants has steadily increased over the past ten years (2013-23), with the most noticeable increase in 2019-2020 of 5%. Over the ten year period (2013-23), the total FTE of Medical Consultants has increased by 746 (31%).

Figure 5: Hospital Workforce in Wales — FTE posts for medical consultants and pharmacists from 2013–2023

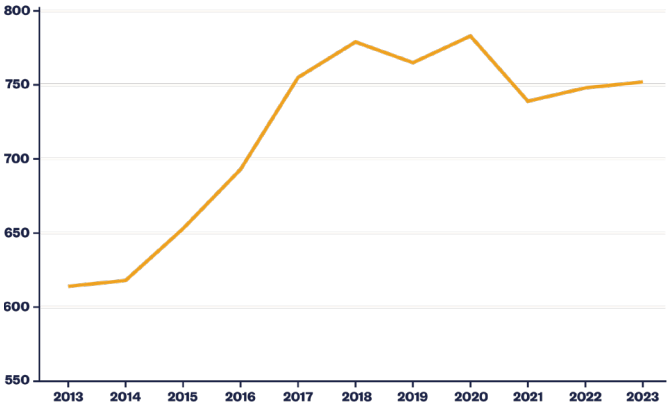


Source: HEIW

Focusing on the past five years: the FTE pharmacists have reduced by 1.3% in contrast to the FTE medical consultants, which have increased by 16%. This now means we have just 1 FTE pharmacist for every 4.6 FTE medical consultants. The widening gap between pharmacists not keeping pace with the increase in medical consultants is making it increasingly challenging to provide routine and consistent pharmacist support and leadership to all MDTs.

The stagnation in growth of the number of FTE pharmacists is shown in more detail in Figure 6[23].

Figure 6: Hospital Pharmacy workforce in Wales — FTE posts for pharmacists from 2013 to 2023



Source: HEIW

VACANCIES AND RECRUITMENT CHALLENGES

The vacancy rate data of the NHS workforce in Wales were recently published[24]. These show the vacancy rates for other professions, but do not detail those specifically for pharmacy professionals. The estimated vacancy rate for FTE by each staff group was:

- Medical and dental staff (excluding trainees) 8.9%;
- Registered nursing, midwifery and health visiting staff 8.9%;
- Nursing, midwifery and health visiting support staff 6.2%;
- Combined groups of 'administration and estates', and 'health care assistants and other support staff' 2.9%;
- Scientific, therapeutic and technical staff group 2.2% (this includes pharmacy workforce);
- Ambulance staff group 3.6%.

It is likely that these statistics underestimate the number of NHS vacancies. Data shared by Chief Pharmacists for their health boards indicate an average vacancy rate for pharmacy of 20% across all pharmacy workforce roles.

[22] https://heiw.nhs.wales/files/heiw-etp-2023-24/

[23] Note: Data collected from NHS ESR records as of April 2023. Medical Consultants were found by filtering the Grade Codes "ZC81, ZM81, ZC83, ZK81, ZM81, ZM82, ZM83" and further filtering by Job Role "Consultant". Pharmacists in hospitals were found by filtering tertiary area of work "Pharmacy" and further filtering by occupation code "S0P, S2P and SAP".

[24] https://www.gov.wales/nhs-vacancy-statistics-31-december-2022

PHARMACY WORKFORCE WELLBEING

An RPS survey on pharmacist workforce wellbeing across all settings in Great Britain, published in January 2022, showed that 88% of respondents are at high risk of burnout, with almost three-quarters of respondents (73%) having considered leaving their role or the profession[25].

The European Association of Hospital Pharmacy (EAHP) recently published its 'Position Paper on the Hospital Pharmacy Workforce'[26]. In the paper, it proposes several short-term actions to manage workload and improve pharmacy staffing and recovery, together with long-term plans for securing an adaptable, versatile and resilient workforce. It urges European governments, hospital administrations, healthcare professional organisations and other decision-makers, including the chambers of pharmacy, to consider the actions and measures put forward by EAHP in the position paper when addressing the grave shortcomings in planning and robustness for the pharmacy workforce.

The Lord Carter of Coles Report, 'Operational productivity and performance in English NHS acute hospitals: Unwarranted variations,' is an independent report for the Department of Health, published in 2016. It recommended:

> *Ensuring that more than 80% of trusts' pharmacist resource is utilised for direct medicines optimisation activities, medicines governance and safety remits while at the same time reviewing the provision of all local infrastructure services, which could be delivered collaboratively with another trust or through a third party provider.*[27]

The clinical pharmacy activities focused on individual patients together with the medicines safety and medicines governance roles focused on establishing the appropriate medicines use infrastructures, add up to significant, valuable and important services for NHS Wales.

Recognising, maximising and sustaining these services is key.

However, the increasing demands and workforce pressures on hospital pharmacists, along with vacancies, limits opportunities for clinical progress and places considerable risks on service delivery and sustainability.

[25] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Workforce%20Wellbeing/Workforce%20and%20Wellbeing%20Survey%202022-120123.pdf

[26] https://www.eahp.eu/sites/default/files/eahp_position_paper_on_the_hospital_pharmacy_workforce_june_2023.pdf

[27] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/499229/Operational_productivity_A.pdf

Methodology

A variety of qualitative research methods were used to gather data to inform the recommendations, actions and the overarching narrative of this review.

An outline of the methods used are described below:

1 Health board/trust Director of Pharmacy survey and interviews

To review and analyse models of organisation infrastructure, leadership arrangements and reporting structures across NHS Wales, the Directors of Pharmacy from each health board and Velindre NHS Trust completed a survey and a subsequent one-to-one semi-structured interview.

2 Workshops

To explore participants' opinions on what hospital pharmacy services could look like in the future, and to identify barriers and enablers to change, 24 workshops were undertaken across Wales to ensure wide representation. Approximately 700 pharmacy staff members attended, either virtually or in person.

3 Good practice examples

Examples of current 'good practice' in hospitals across Wales were collected using a Microsoft Forms questionnaire. This was disseminated to all pharmacy staff within the hospital setting through Directors of Pharmacy. A link was also available on the RPS website during the review period. More than 140 responses were received and are summarised in the appendices.

4 Survey to identify pharmacy staff views on 'where they add value'

A qualitative survey was distributed by Directors of Pharmacy to all patient-facing pharmacy members of staff. It collected information on where pharmacy staff felt they added value to patient care, any areas where they felt they did not add value and any perceived gaps where pharmacy teams could contribute. The data were analysed by an undergraduate of the Master of Pharmacy programme delivered by the School of Pharmacy and Pharmaceutical Sciences at Cardiff University, and included responses from 120 participants, which were categorised into themes and then quantified.

5 Focus groups on independent prescribing

To identify examples of pharmacists who are currently prescribing, and how prescribing could be further utilised from 2026 — when all new pharmacist registrants will be prescribers at the point of registration — several focus groups were held at each health board and Velindre NHS Trust; more than 150 pharmacists attended these.

6 International Pharmaceutical Federation

To identify international examples of 'good practice', RPS Wales engaged and collaborated with FIP. In addition, as data had been gathered and analysed from the methods previously discussed its collaboration with RPS to host the examples of 'good practice' submitted on a global platform.

7 Think tank

An independent think tank was established to review, inform and challenge the recommendations and thinking of the RPS project team. It consisted of six pharmacy professionals, who are highly respected leaders in pharmacy practice in the UK and internationally.

8 Patient experience focus group

Focus group sessions were held with the Board of Community Health Councils (now Llais) to explore their experiences of pharmacy teams and medicines processes in hospitals.

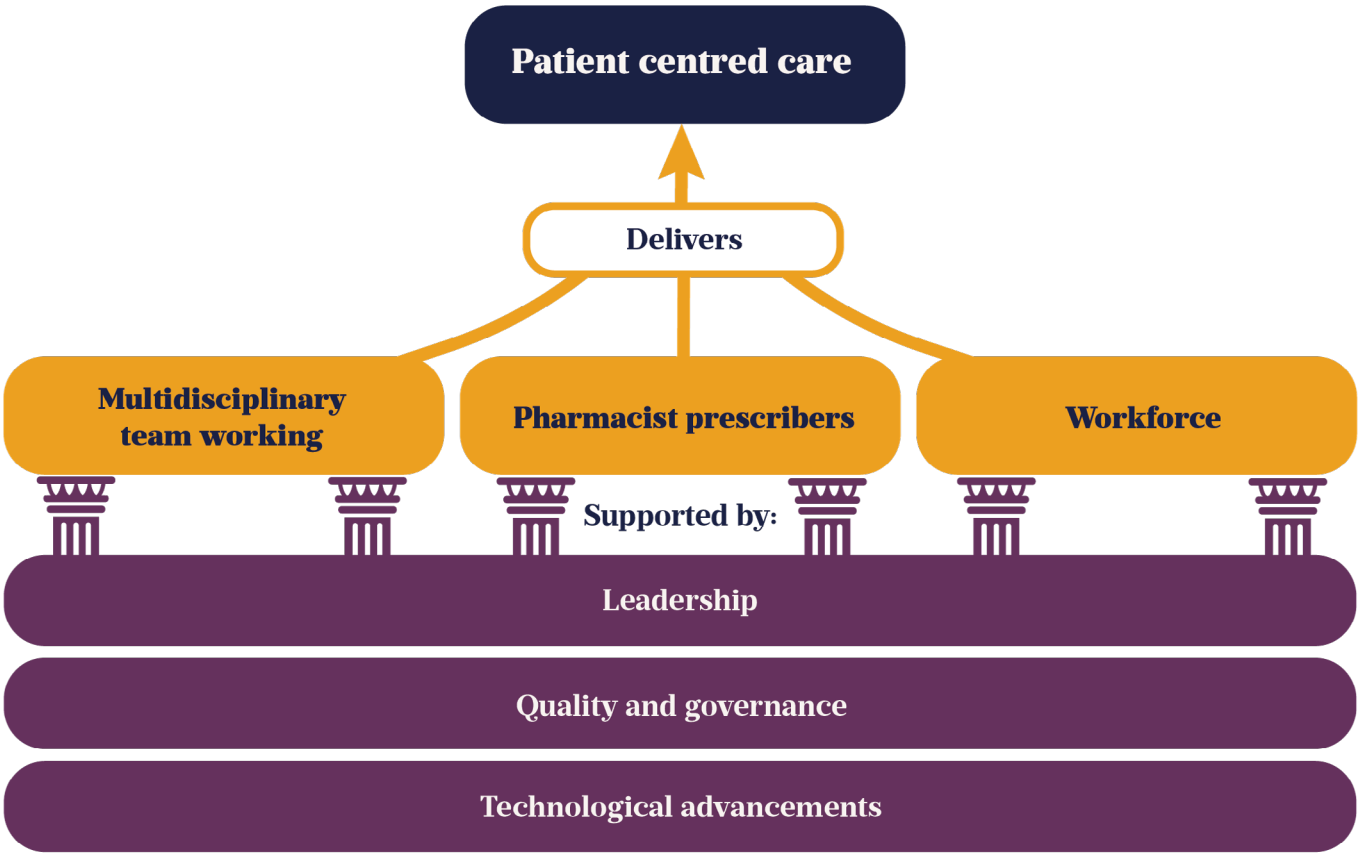
9 Multidisciplinary team workshops

Workshops were held to explore the views of other healthcare professionals on how pharmacy currently adds value to patient care and might be better utilised and developed for the future. The first focus group consisted of representative members of royal colleges and associated professional organisations. The second included clinicians actively working with pharmacy teams as part of an MDT. A third focus group was held with representatives from NHS111.

The RPS review team has worked closely with the hospital pharmacy workforce and has had more than 1,000 interactions with colleagues through workshops, focus group sessions and surveys. In addition, pharmacy colleagues on a global level have engaged through collaboration with the FIP. Other healthcare professionals, patients and patient representative groups have also generously given their time to inform this work. All these voices, as well as written submissions and evidence from the literature, have helped to focus the review on the core themes and recommendations to transform hospital clinical pharmacy services across Wales for the benefit of its citizens, now and for future generations.

Seven main themes have been identified as priority areas (see Figure 7). There is considerable alignment between the themes, and each theme ultimately contributes to enhancing patient centred care. Each theme within the report includes discussion of the main findings and concludes with recommendations and actions, supplemented with case studies to give further context.

Figure 7: Priority areas



Priority areas

Patient-centred care

Patients want to be safe, treated with respect and receive the right care and treatment that provides the best outcomes for them as individuals [1]. Involving patients in the decision-making process about their care, i.e. shared decision-making, has demonstrated better health outcomes[2].

Patient centred care is when:

> *"an individual's specific health needs and desired health outcomes are the driving force behind all health care decisions and quality measurements"* [3].

Through the RPS review team's interactions with the pharmacy workforce, other healthcare professionals and patients, examples of excellent patient-centred care have been shared. Pharmacy teams contribute to patient-centred care by considering each person holistically — not just from a clinical perspective — and by collaborating with patients, families and other healthcare professionals to develop, manage and coordinate a specific care plan for the patient.

The RPS Professional Standards for Hospital Pharmacy Services (V4) have three main domains; the first two domains are based on the person's experience and medicines assurance, which are the most relevant to this review. The first domain relates to patient- centred care and consists of three standards, which are:

1. **Putting People First**: the principle of 'no decision about me, without me' underpins the design and delivery of pharmacy services, ensuring that people using these services can make shared decisions about their treatment and medicines. Appropriate support is provided to people to ensure effective medicines use;
2. **Episode of Care:** people's medicines are reviewed for accurate medication history, experiences of their medication and clinical appropriateness;
3. **Integrated Transfer of Care:** as part of the local health and social care system, the pharmacy team ensure safe and timely transfer of information about the person and their medicines between care settings.

Pharmacy teams explained their patient-facing role as specifically leading on medicines optimisation, which is "the safe and effective use of medicines to enable the best possible outcomes" [4]. They help patients to get the right medicines at the right time, explore the patients' experiences with medicines, implement the latest evidence base, ensure the safety of medicines and support patients to better manage their medicines.

Through our discussions with the pharmacy workforce across Wales and beyond, we identified the key pharmacy/medicines touch points in the patient's hospital journey and how this could look in the future. We also identified barriers and enablers to providing quality patient-centred care that allow individuals to reach their best possible health and wellbeing outcomes.

[1] https://shapingourfuturewellbeing.com/wp-content/uploads/2021/07/Shaping-Our-Future-Clinical-Services-Public-Engagement-Report-FINAL.pdf

[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3005070/

[3] https://catalyst.nejm.org/doi/full/10.1056/CAT.17.0559

[4] https://www.nice.org.uk/guidance/ng5/chapter/introduction

KEY PHARMACY 'TOUCH POINTS' ON THE PATIENT JOURNEY

Patients present to hospital for planned, urgent or emergency care, and for management of long-term conditions. Whichever way they present, most patients will benefit from pharmacy services. This may be from clinical pharmacy services, medicines supply or the medicines governance infrastructure that underpins the safe and appropriate use of medicines.

The services provided by the pharmacy team in a hospital environment will vary depending on the requirements of the patient at that point in their treatment pathway. 'A Healthier Wales' states that higher value in terms of health and social care is "achieving better outcomes and a better experience for people at a reduced cost; it is the care and treatment which is designed to achieve 'what matters' and which is delivered at the right person by the right time. Value is commonly thought of as a ratio of outcomes to cost"[5]. Yet, this can be interpreted variably in practice. Outcomes can be defined in terms of quality, harms or benefits.

Each episode of care for a patient is unique and tailored to their individual need. However, there are common stages throughout most patients' hospital visits where it was agreed in our engagement events that clinical pharmacy services should be provided. Figure 8 outlines these touch points on the patient journey where pharmacy is expected to add value to patient care, although this will not be necessary for all patients.

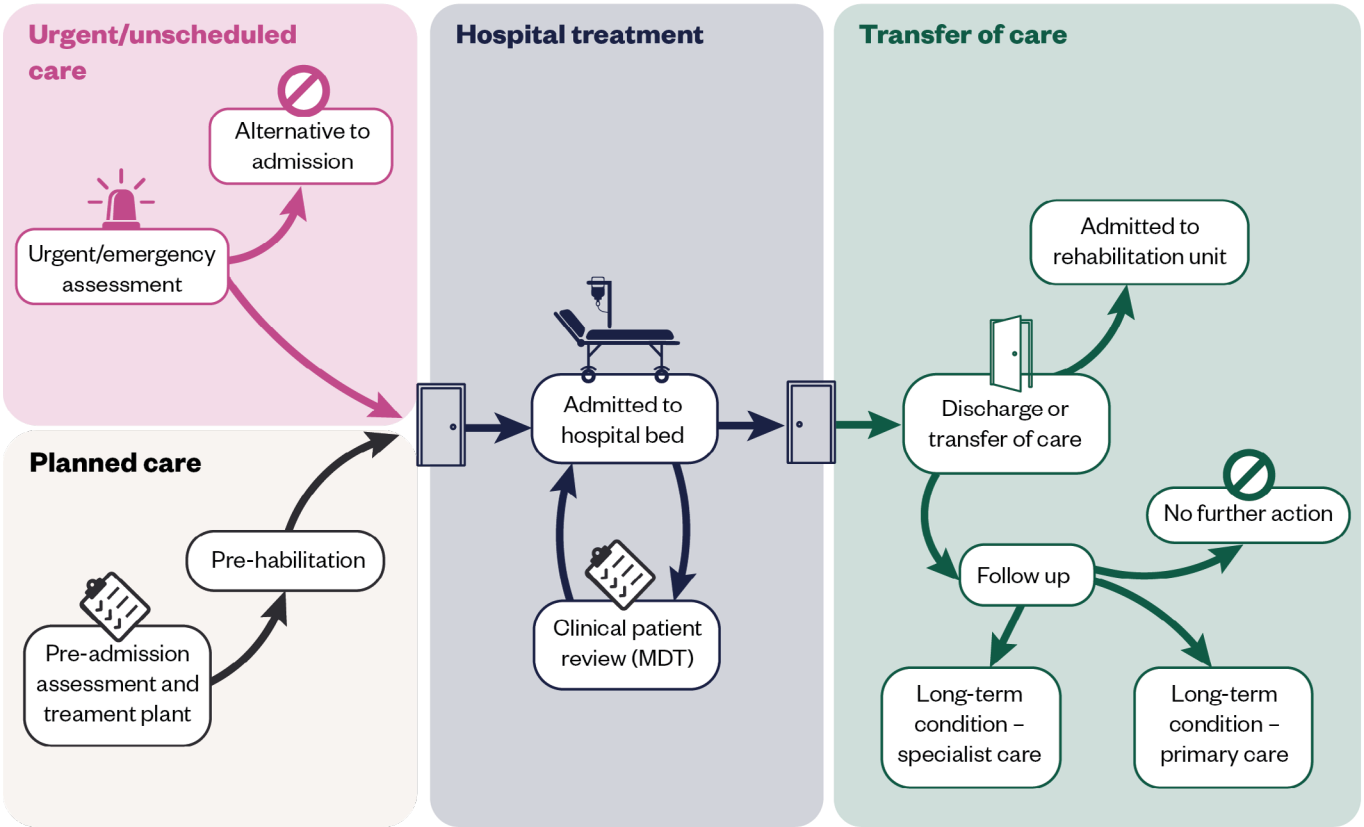
Similarly, not all patient pathways requiring pharmacy input are covered in the diagram.

Through our engagements, it was identified that pharmacist involvement in the MDT was an underpinning enabler to ensure the quality of pharmaceutical care at all key touch points. Patients being actively involved in medicines discussions and decisions contributes to better pharmaceutical care. Pharmacy professionals are the specialists in medicines within the MDT, and many of the teams in our engagement events expressed how a focus on pharmaceutical care must always consider a holistic view of the patient and their needs.

A pharmacy review on first admission was identified as a key enabler to optimal care for patients already taking or being prescribed several medicines.

The majority of patients who attend hospital for unscheduled care (e.g. urgent care centre or emergency department) will be discharged home without needing to be admitted to an inpatient ward. However, roughly one in five patients will be admitted to a ward[6]. Alternative patient pathways to admission may include referral to primary care, referral to a specialist or treatment and immediate discharge home. This aligns with the Discharge to Recover then Assess Model[7], for which the pathway aims to avoid further referral and

Figure 8: Key pharmacy 'touch points' on the patient's hospital journey



[5] https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf

[6] https://www.gov.wales/nhs-activity-and-performance-summary-february-and-march-2023-html

[7] https://www.gov.wales/sites/default/files/publications/2021-08/hospital-to-home-community-of-practice-key-learning-and-practice-examples.pdf

admission, with multidisciplinary teams assessing patients at the 'front door'.

For planned care episodes, there is often attendance at a pre-assessment clinic for a particular procedure or treatment, where discussions at our engagement events demonstrated the benefit of pharmacy input. This may then be followed by a pre-habilitation period before the procedure or treatment.

For the discharge from hospital phase, it is now common practice for pharmacy professionals to facilitate transfer of care, particularly regarding medicines use, whether the patient is admitted to another care setting or if they are discharged home. Pharmacy follow up is often needed for more complex patients; for example, those with long-term conditions requiring multiple medication, though this practice varies significantly between organisations. Some patients receiving specialist treatment in hospital may need to be followed up in outpatient or day treatment units, where again it is beneficial for patients for pharmacy teams to be involved.

URGENT AND EMERGENCY CARE

Research shows that pharmacy input early in the patient's admission reduces medication errors and readmissions[8, 9, 10]. Appropriate input from pharmacy from the outset enables the most appropriate discussions about medicines to be taken at the same time as initial decisions about overall care.

Given that a significant proportion of admissions to emergency departments (ED) relate to medicines, pharmacists are of particular benefit in this setting, given their training in the use of medicines. Data from eight retrospective and four prospective trials retrieved in one systematic search indicated that as many as 28% of all ED visits were drug related. Of these, 70% were preventable, and as many as 24% resulted in hospital inpatient admission. Goal five of the Welsh Government's 'Six goals for urgent and emergency care' policy[11] states that there should be a reconciled list of patient's medication within 24 hours of their admission — pharmacy leadership is key to achieving this goal.

Pharmacy's role within EDs has increased, both nationally and internationally, and there is now considerable evidence supporting these roles[12]. The American College of Medical Toxicology states that clinical pharmacists "are integral to the care and safety of ED patients. EDs pharmacists positively impact time to critical therapies, including antibiotics for sepsis and door-to-balloon time for acute myocardial infarction" and that they also "support 24-hour staffing of EDs with dedicated ED pharmacists"[13].

One systematic review of the literature revealed three key emerging areas of practice for the Emergency Medicine pharmacist that are associated with positive patient outcomes. These included involvement in management of critically ill patients, antimicrobial stewardship roles, and ordering of home medications in the ED. Another systematic review of the evidence of pharmacy teams working in an acute or emergency medicine department in 2022 concluded that the evidence consistently indicates pharmacy services based within these departments in hospitals are associated with fewer medication errors.

There is now evidence supporting the success of training pathways for pharmacists in EDs to work as advanced clinical practitioners in England[14], following a successful pilot project commissioned by NHS England. In 2015, the University of Manchester's School of Pharmacy was commissioned to provide 'Advanced Specialist Training in Emergency Medicine' for pharmacists. The programme aimed to upskill pharmacists to take on a greater role in the ED and thereby supplement a shortage of doctors and nurses. Similar postgraduate training was also offered by other education providers, including Aston University, which led an evaluation of the subsequent national project in England to introduce pharmacists into the ED, looking at 18,613 cases from 49 sites. They concluded that 36% of ED cases could potentially be managed by a pharmacist, with the greatest potential for pharmacist management being general medicine and orthopaedics (usually minor trauma). Their findings support the case for extending the clinical role of pharmacists.

Further work resulting from the programme includes the 'Manchester framework for the evaluation of emergency department pharmacy services', which comprises 153 potential outcome indicators that can be used to support the evaluation of the quality of ED pharmacy services in the UK and internationally. The framework supports system-wide evaluation, with outcome indicators grouped into the 6 Institute of Medicine quality domains (safe (32 indicators), effective (50 indicators), patient centred (18 indicators), timely (24 indicators), efficient (20 indicators) and equitable (9) indicators), and structures and processes that could also be considered to contextualise any outcome indicator measurements.

A further outcome was the role description for an Emergency Department Pharmacist Practitioner (EDPP), which combines traditional clinical pharmacy activities with more hands-on medical practice, including being designated care provider (the ENDPAPER study). The study, which included 20 EDPPs from 15 different NHS hospitals across the UK concluded that "Pharmacists with additional clinical skills can act as designated care provider with overall responsibility for ED patients"[15].

[8] http://pure-oai.bham.ac.uk/ws/portalfiles/portal/56761133/Dawoud_et_al_Effectiveness_and_cost_effectiveness_RSAP_2018.pdf

[9] https://onlinelibrary.wiley.com/doi/full/10.1002/jppr.1761

[10] https://pubmed.ncbi.nlm.nih.gov/26190132/

[11] https://www.gov.wales/six-goals-urgent-and-emergency-care-policy-handbook-2021-2026

[12] https://www.rpharms.com/rps-login?returnurl=%2fresources%2fpharmacy-guides%2fworking-in-urgent-emergency-care-a-guide

[13] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6013729/

[14] https://www.rpharms.com/rps-login?returnurl=%2fresources%2fpharmacy-guides%2fworking-in-urgent-emergency-care-a-guide

[15] https://link.springer.com/article/10.1007/s11096-019-00799-2

WHAT WE HEARD: URGENT AND EMERGENCY CARE

During engagement events across Wales, several different examples were shared of how pharmacy teams are having an increased presence closer to the hospital's front door. These roles enable pharmacy teams to have input in decisions about medicines at an early stage, as part of the initial patient care plan. Pharmacist prescribers are well placed to work at an advanced level in this role and manage their own caseload.

While some health boards have substantive posts in the ED or urgent care centre, pharmacy teams expressed frustration that many did not, particularly given that the evaluation of pilot work on the role of pharmacy teams in EDs, funded by the Welsh Government in 2017, was deemed to be largely positive. Pharmacy teams shared that there were no 24-hour clinical pharmacy services provided to emergency units in Wales, and when ED pharmacists took leave or were unavailable, ED services had to manage without pharmacist input.

A number of pharmacy professionals shared a desire to further embed pharmacy within the ED MDT, and recognised that further alignment to the working hours of the wider team and the needs of the patients was key to this.

> *"Every single ED should have a pharmacist; I feel privileged to have them in my team and they are very much key in decision making" (Consultant in Emergency Medicine)*

It was evident from discussions with ED pharmacists that some are now undertaking Advanced Practitioner training for emergency medicine in Wales, which has the potential to change the role significantly and will have a positive impact on the services provided in the ED.

Realising the potential of Advanced ED pharmacist practitioners will be significant in enabling the NHS to meet three of the Six Goals for Urgent and Emergency Care:

- To enable clinically safe alternatives to admission to hospital;
- Optimal hospital care and discharge practice from the point of admission;
- Home-first approach and reduce the risk of readmission.

Efficient delivery of urgent and emergency services also impacts efficient delivery of planned care services and, as stated in the Welsh Government's report on modernising planned care, "one cannot be achieved without the other"[16].

PLANNED CARE FOR INPATIENT ADMISSION

In April 2022, the Welsh Government published a programme for transforming and modernising planned care and reducing waiting lists[17]. The programme includes transforming the way in which outpatient services are delivered to focus on more efficient and effective services. This includes providing a range of local services and support from healthcare professionals to help people stay well, and to deliver treatments closer to home. Examples of this include creating dedicated surgical facilities at a community level and local access to diagnostic procedures[18].

There is a significant body of evidence supporting the role of pharmacy teams in pre-admission clinics prior to an episode of planned care, most often for surgical procedures. Where pre-operative assessment by a pharmacist takes place, there is an increased likelihood of accurate medication histories and reduced medication errors, leading to improvements in care and outcomes[19, 20, 21].

A randomised controlled trial (n=400) carried out in a tertiary hospital in Brisbane[22] evaluated inpatient medication prescribing by a pharmacist in an elective surgery pre-admission clinic compared to a control involving prescribing by Resident Medical Officers. The results from the study demonstrated fewer clinically significant omissions and prescribing errors with the pharmacist prescribers.

A 2016 project undertaken in Manchester[23] demonstrated improved patient outcomes when pharmacists were involved in surgical enhanced recovery pathways for gastrointestinal surgery. For the intervention arm (50 patients), a pharmacist followed up patients in the pre-admission stage from the time they were listed for surgery. In the first instance, these patients were reviewed by a Medicines Management pharmacy technician and a drug history obtained. They were then referred to a pharmacist, who ascertained — based on the patient's American Society of Anaesthesiologists grading, existing comorbidities and drug history — whether the patient needed to be contacted pre-operatively. For the control arm (51 patients), a member of nursing staff reviewed the patient in the pre-admission clinic, and a pharmacist did not see the patient until the day of admission of surgery. For the intervention group, there was a significant reduction in the median length of stay post-surgery (7.5 days versus 10.5 days).

[16] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming--and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

[17] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming--and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

[18] https://journals.sagepub.com/doi/10.1177/0897190018804961

[19] https://journals.sagepub.com/doi/pdf/10.1177/0310057X1103900613

[20] https://www.nice.org.uk/sharedlearning/impact-of-pharmacist-involvement-in-enhanced-recovery-pathways-in-improving-patient-care-in-those-undergoing-lower-gastrointestinal-surgery

[21] https://www.nice.org.uk/sharedlearning/impact-of-pharmacist-involvement-in-enhanced-recovery-pathways-in-improving-patient-care-in-those-undergoing-lower-gastrointestinal-surgery

[22] https://bmjopen.bmj.com/content/bmjopen/3/7/e003027.full.pdf

[23] https://www.nice.org.uk/sharedlearning/impact-of-pharmacist-involvement-in-enhanced-recovery-pathways-in-improving-patient-care-in-those-undergoing-lower-gastrointestinal-surgery

In addition, there were less complications in the intervention group (75 versus 136). Better pharmacological management of high-output stomas was seen in the intervention group, which potentially led to a reduction in the incidence of dehydration and concomitant acute kidney injury. There were also fewer cases of sepsis. In the control arm, in nearly 70% of patients, there was no documentation of the peri-operative drug advice provided in the nurse led pre-admission clinic. Furthermore, in the control arm, 12% of patients could have benefitted from medicines optimisation.

Similarly, a randomised controlled trial involving 355 patients in 2015[24] in Australia demonstrated how a surgical preadmission clinic pharmacist had a positive impact through improved quality of medication histories and documentation, interventions and medication reconciliation.

WHAT WE HEARD: PLANNED CARE FOR INPATIENT ADMISSION

Examples of pharmacy teams in Wales optimising medicines in advance of planned inpatient episodes were discussed in our engagement events, where there was a particular focus on surgical pre-admission clinics. Pharmacy's role within the MDT centred around managing the patient's medicines and giving lifestyle advice to obtain the best outcome from the planned care episode. Many of the pharmacists working within these clinics are pharmacist prescribers, which enabled them to be more proactive in the management of medicines pre-operatively (for example, by optimising anticoagulant therapy to ensure appropriate thromboprophylaxis for a procedure); these pharmacists were eager to further develop their role by expanding their prescribing scope of practice (for example, in the management of anaemia)[25].

Pharmacy teams across Wales need to consider how they can reconfigure services to further contribute to the programme for planned care through participation in prehabilitation as a priority. Many community pharmacies already provide local public health services, which support prehabilitation; for example, smoking cessation and weight management services. Further collaboration between specialist hospital pharmacists and primary and community colleagues could further enhance the care provided, ensuring medicines are optimised to avoid further delays in treatment and optimising people's health in preparedness for their planned admission.

REVIEW ON INPATIENT WARDS

Clinical pharmacy services have been operating on hospital wards since the 1970s, and a formal acknowledgment of clinical pharmacy in hospitals was made in the 1986 Nuffield foundation report[26]. Clinical pharmacy roles have dramatically expanded since then, and while pharmacy teams provide services to most hospital wards, practice varies considerably, with services provided within organisations often inconsistently delivered. The 2016 Carter report[27] outlined that the primary function of the hospital pharmacy team is to work closely with patients, doctors and nursing staff to choose and prescribe medicines, and monitor clinical outcomes to ensure the optimal use of medicines and that clinical needs are met.

> *"The more time pharmacists spend on clinical services rather than infrastructure or back-office services, the more likely medicines use is optimised" (Carter report, 2016)[28]*

Approximately 1.5 million people in Wales have been diagnosed with a long-term condition (LTC), and people with LTCs occupy approximately 70% of bed days. The 2021 National Overprescribing Review[29] in England identified that 1 in 5 hospital admissions in people aged over 65 years are caused by adverse effects from medicines. It also stated that the more medicines a person takes, the higher the chance of an unwanted or harmful effect. Secondary care adverse drug reactions lead to longer hospital stay; in the UK, this is estimated to cost the NHS £14.8 million annually; causing 85 deaths and contributing to a further 1,081 deaths. Therefore, pharmacy professionals, who are skilled in medicines optimisation, have a critical role on inpatient wards to reduce the substantial risks posed by medicines use in secondary care, ensuring patients benefit from their treatments.

Supporting patient autonomy

The Welsh Government's report 'Delivering Home First'[30], published in 2021, states that a review of medication alongside cognitive, functional and social assessment is an immediate requirement for patients admitted to hospital. This would ensure discharge planning from the point of admission. The subsequent guidance 'Optimising pharmacy services at hospital discharge to improve patient flow'[31] further describes how pharmacy teams should do this, by having conversations about medicines with patients and/or their carers at the earliest possible stage. The report specifically highlights how pharmacy teams should support patients to administer their own medicines during their inpatient stay and engage them in understanding any changes made to the medicines. Goal five of the Six Goals for Urgent and Emergency Care recommends

[24] https://onlinelibrary.wiley.com/doi/abs/10.1002/j.2055-2335.2011.tb00864.x

[25] https://www.nice.org.uk/sharedlearning/impact-of-pharmacist-involvement-in-enhanced-recovery-pathways-in-improving-patient-care-in-those-undergoing-lower-gastrointestinal-surgery

[26] https://www.jstor.org/stable/29522911

[27] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/499229/Operational_productivity_A.pdf

[28] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/216528/dh_134486.pdf

[29] https://www.gov.uk/government/publications/national-overprescribing-review-report

[30] https://www.gov.wales/sites/default/files/publications/2021-08/hospital-to-home-community-of-practice-key-learning-and-practice-examples.pdf

[31] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

having a patient care plan that includes active intervention to avoid deconditioning, maximise recovery and support independence throughout a patient's hospital stay. As outlined by the European Association of Hospital Pharmacists, "policies including patient's own medication should address adherence and medication issues across the primary and secondary care interface" [32]. This is supported by studies across the world demonstrating the benefits of schemes supporting self-administration of medicines for patients in hospital[33–35]. There are a number of small-scale studies demonstrating that patients want to be considered in managing regimens, and that their autonomy should be facilitated and supported[36–38].

A systematic review undertaken in 2015 to understand patient' perspectives on self-care in those with heart failure found that, while patients could often recall self-care advice, they were unable to integrate this knowledge into daily life. It concluded "strategies with patients and family members to promote self-efficacy, learning and adaptation/application of recommendations to daily life" are needed.

Aside from improving self-management and preventing deconditioning, assessing the ability of patients to take their medicines themselves whilst they are in hospital also enables identification of those patients who may require support on discharge, which is discussed later in this chapter.

MDT involvement

A systematic review of the cost effectiveness of pharmacist input at ward level in 2019[39] considered 18 randomised controlled trials (RCTs) and 7 economic studies. Researchers concluded that "pharmacist inclusion in the ward multidisciplinary team improves patient safety and satisfaction and is cost-effective when regularly provided throughout the ward stay".

A 2023 systematic review[40] of in-patient prescribing errors supports this, in which the researchers recommended pharmacists to be more involved in ward rounds when prescribing decisions are made.

Service models

Internationally, several models have been used in the delivery of hospital pharmacy services to ensure prudent practice, but there is a lack of conclusive evidence for a universal, gold-standard approach that enables patient-centred pharmaceutical care.

In the US, a task force on the Acute Care Practice Model of the American College on Clinical Pharmacy compared and contrasted a 'unit-based' or 'service-based' orientation back 2010, where a 'unit' is a location such as a ward, and 'service' refers to the medical team[41]. The unit-based pharmacist often has to react to an established order or decision and is frequently focused on task-oriented clinical services. The service-based clinical pharmacist; however, functions as a member of the interprofessional team. As a team member, the pharmacist proactively contributes to the decision-making process and the development of patient-centred care plans. The task force recommended that "institutions pursue a service-based pharmacy practice model to optimally deploy their clinical pharmacists". The review outlines challenges, such as the need to redesign pharmacist roles, leveraging pharmacy technician resources and navigating regulatory and accreditation barriers, but reinforces that "defaulting to a unit-based model fails to fully leverage the value that clinical pharmacists can contribute to patient care".

These recommendations appear to have been adopted in some areas in the US. A transition to team-based pharmacy practice in 2016 took three years in one multi-hospital academic centre in Kansas, involving 897 beds across 5 hospitals. An evaluation of the service redesign demonstrated improvements in clinical and operational endpoints, and enhanced pharmacist, doctor and nursing satisfaction.

Similarly, in Canada, there has been a push for hospital pharmacists to focus on patient-centred care rather than distributive functions since 2007[42]. In Winnipeg, in 2007, a transformational pharmacy practice model was implemented to further transition the role of the pharmacists from drug distribution activities to direct patient care activities, with one of the objectives being "to develop regional teams of specialized pharmacists aligned with the organisation's clinical program (e.g. medicine, child health)"[43]. A non-pharmacist project manager was employed to help manage the process, which took three years to implement fully. The outcome of the implementation of a new management model included a drug distribution system managed by pharmacy technician managers, which allowed pharmacists and pharmacy managers to focus on the delivery of consistent, high-quality, direct patient care services.

Triaging patients/prioritisation

The FIP's Basel statements on hospital pharmacy say: "Hospital pharmacists should monitor patients taking medicines to assure patient safety, appropriate medicine use, and optimal outcomes for inpatients and outpatients. When resource limitations do not permit pharmacist monitoring of all patients taking medicines, patient-selection criteria should be established to guide pharmacist monitoring."

[32] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

[33] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7457413

[34] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0113912

[35] https://www.sciencedirect.com/science/article/abs/pii/S1551741118306521

[36] https://doi.org/10.1111/j.1365-2648.2003.02979.x

[37] https://doi.org/10.1111/jocn.14084

[38] https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-8-91

[39] https://www.sciencedirect.com/science/article/abs/pii/S1551741118306521

[40] https://bpspubs.onlinelibrary.wiley.com/doi/full/10.1111/bcp.15694

[41] https://accpjournals.onlinelibrary.wiley.com/doi/full/10.1002/PHAR.1042#phar1042-bib-0017

[42] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3477830/#b9-cjhp-65-345

[43] https://www.cjhp-online.ca/index.php/cjhp/article/view/1087/1369

To improve patient equity and quality of care, patients within acute hospital services in NHS Greater Glasgow & Clyde are now triaged as soon as possible after admission, to determine frequency for pharmaceutical follow up, irrespective of subsequent ward location. This is supplemented by a referral system. The roll out of triage and referral has been supported by adaptation and development of technology.

A study at Imperial College NHS Trust in 2012, where pharmacists were told to review inpatients' prescriptions every other day, concluded that this was a practical way to move to a more patient-focused service without affecting the safety of the service provided[44]. A more recent survey exploring approaches to deployment of pharmaceutical care priority tools in acute hospitals in the UK identified that 70 hospitals used a tool or process to prioritise clinical pharmacy services, and that this was useful for prioritising workload and ensuring the right patients are seen at the right time[45]. However, very few hospitals had formally evaluated these tools.

An example of an internally evaluated prioritisation tool is the Medicines Optimisation Assessment Tool (MOAT), which was developed as a decision aid for use in clinical practice to allocate patients to risk groups[46]. The model was designed to target hospital pharmacists' input to prevent medication-related problems. It has been trialled in two UK hospitals to assess its predictive performance and clinical usefulness. The evaluation concluded that MOAT has the potential to be clinically useful in guiding decision-making at clinically relevant decision thresholds; however, external validation was required.

Pharmacy teams at Wirral University Teaching Hospital NHS Foundation Trust introduced a shared team working model, where work is divided across specialist teams, rather than a single pharmacist seeing all patients on 'their' ward. A prioritisation tool has been adapted to use the patient's acuity to stratify them into three risk categories (low, medium and high), which informs the need for an in-depth review. This categorisation also helps determine whether or not advanced/specialist pharmacist input is required, as well as the frequency of these pharmacist reviews. A total of 125 patients (58 surgical, 67 medical) were seen during this pilot. Using the tool led to a significant shift in more reviews and more senior reviews being undertaken for sicker, higher-acuity patients[47].

WHAT WE HEARD: INPATIENT PHARMACY REVIEW

A strong theme throughout all of our engagement events was the need to prioritise which patients should be seen by pharmacy professionals. We found that for most acute setting pharmacy services, the traditional 'parachute' model of ward pharmacy services exists, which involves pharmacy teams attempting to see every patient on a particular ward, at a particular time, every day. Many participants felt that this traditional approach — which had been in place for over 40 years — was now unrealistic, given the changing nature of demand and the increasing complexity of medicines use. This approach disempowered pharmacy professionals and restricted them from being able to prioritise more time for patients where they could add the most value; for example, those taking high-risk medicines or who had complex polypharmacy needs.

We heard that pharmacy professionals have competing demands on their time and are often pulled in many directions within a hospital setting. They are often required to undertake dispensary duties, supply medicines and provide a pharmacy service to several wards, including providing cover for unfilled posts. Pharmacy professionals believed they needed more time to talk to patients about their medicines, and many were frustrated that they do not have sufficient time to do this. This was also reflected by the patient representatives, who highlighted that medicines were often changed during the inpatient stay and they did not feel these changes were well communicated or agreed with the patient. They commented that this can then result in confusion for patients as to which medicines they are meant to take when they are discharged from hospital.

Patients and pharmacy teams highlighted concerns that patients' own medicines are not used enough in hospital. It was suggested that the campaign for patients to bring their own medicines in to hospital, which was stopped during the COVID-19 pandemic, must now be re-introduced to prevent medicines waste and reduce the time pharmacy teams are spending on medicines supply. The benefits of greater use of patients' own medicines on maintaining independence and improving patient flow are central themes in the Welsh Government's guidance 'Optimising pharmacy services at discharge to improve patient flow'[48]; doing so would release time, which could be used to deliver other services, such as educating patients about their medication.

> *"The medicines are brought in, put in a locker, and don't get touched until you're discharged, at which point you have load of new ones which don't match"*
> *(Patient representative quote, CHC workshop)*

[44] https://link.springer.com/article/10.1007/s11096-012-9650-2

[45] https://ejhp.bmj.com/content/ejhpharm/28/e1/e102.full.pdf

[46] https://qualitysafety.bmj.com/content/qhc/early/2019/03/06/bmjqs-2018-008335.full.pdf

[47] https://pharmaceutical-journal.com/article/letters/assessing-the-use-of-a-clinical-prioritisation-tool-at-wirral-university-hospital-nhs-foundation-trust

[48] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

Further suggestions included more use of patient self-administration schemes, where patients, if capable, can access and take their own medicines during their hospital stay. Whilst there are self-administration policies and schemes already in many hospitals across Wales, they do not seem to be fully or consistently applied.

Many participants commented on the need for pharmacists and pharmacy technicians to be embedded within the MDT. Pharmacy professionals felt very strongly that attending ward rounds allowed them to make a significant contribution to patient care; they felt valued by the team and, importantly, patients saw that they were an integral part of the team caring for them. Unfortunately, many pharmacy professionals explained that they did not have sufficient time to attend ward rounds, although they did previously. They explained that the demands on their time, the number of wards that they covered and the need to prioritise medicines reconciliation, discharges and supply, along with the workforce shortages, were significantly affecting the input they had in patient care.

There was acknowledgement that the traditional clinical pharmacy service, where members of the pharmacy team are allocated a ward or multiple wards needs to be reviewed. Recent changes to working models across Wales include the pharmacy team at the Grange University Hospital, which works for a cluster of wards, with pharmacy technicians reviewing patients and referring to a pharmacist when necessary.

In addition to further exploring this and other models, further work needs to be undertaken on the optimal model for pharmacy clinical services to prioritise patients who would benefit the most from pharmacy's input. Currently there is only 1.0 FTE pharmacist for every 4.6 FTE medical consultants; this gap has widened over the past ten years, making it impossible to embed a pharmacist into every consultant-led team. Providing valuable pharmaceutical care where it is most needed must involve stratification of patients based on their pharmaceutical needs. This can be achieved by optimising skill mix and realising the opportunities presented by advancements in technology.

Other suggestions for optimising pharmacy teams' input in patient-centred care included the need for referral pathways to other professionals and services, including speech and language therapists, sleep clinics or physiotherapy. Other professional groups should also be able to refer patients to pharmacy for review. There were limited examples across Wales where this occurred; for example, referring to a specialist palliative care pharmacist was usually only undertaken through an informal process. The role of specialist pharmacist prescribers needs to be promoted further in each hospital, so that all patients who could benefit from their expertise do so.

TRANSFERS OF CARE

The transfer of care between different healthcare settings has been identified as an area which is often poorly managed, and which can lead to medication errors. Medication Safety in Transitions of Care[49] highlights how this is a priority area for the World Health Organization. In addition, a recent systematic review into the prevalence and nature of medication errors and medication-related harm on discharge identifies how the average rate of medication errors and unintentional medication discrepancies following discharge was 50%. It is therefore a very important area, and one in which pharmacy can have a major impact on patient care.

The Welsh Government highlights the need to start discharge planning from the point of patient admission to hospital in several documents. Optimal hospital care and discharge practice from the point of admission is one of the six policy goals for Urgent and Emergency Care. The Discharge to Recover, then Reassess (D2RA)[50] model is focused on reducing delays in hospital transfers of care for older people. The Bolton report[51] informing the D2RA model highlights that "acute hospitals can be brilliant at interventions and surgery but can be poorer on recovery and rehabilitation". It found that successful discharges from hospital involved a review of long-term needs by social workers around four weeks after discharge to allow patients to have an opportunity to recover. The report refers to 'domiciliary care re-ablement' as one of the main services that should be commissioned to support discharge. Although focused on therapists, the principle must be multidisciplinary and include pharmacy.

An example in which pharmacy assists in this re-ablement is through pharmacy domiciliary visits after the patient has been discharged from hospital. These visits help to address issues which can often lead to readmission. There is, however, significant variation in the delivery and availability of these services across Wales. A standardised approach to domiciliary reviews with specialised pharmacy input is required and collaborative working with social services is essential.

Taking the above into consideration and hearing the practices that already occur in some parts of Wales, it is evident that pharmacy teams must proactively assess how patients use their medicines on admission, or ideally prior to admission for planned care, and continually assess the patient's potential needs on discharge, to ensure a safe transfer of care.

The electronic discharge information system Medicines Transcribing and e-Discharge (MTeD) operates in Wales. The system was developed by Digital Health and Care Wales (DHCW; formerly the NHS Wales Informatics Service) and has been made available to health bodies to allow rapid, accurate transfer of medication information from hospital to primary care upon discharge (Wales Audit Office 2016).

[49] https://www.who.int/publications-detail-redirect/WHO-UHC-SDS-2019.9

[50] https://www.gov.wales/sites/default/files/publications/2021-08/hospital-to-home-community-of-practice-key-learning-and-practice-examples.pdf

[51] https://ipc.brookes.ac.uk/files/publications/Some_key_messages_around_hospital_transfers_of_care.pdf

A national post-discharge medicines support service in Wales, the Discharge Medicines Review (DMR) service, is provided by community pharmacies. The service, introduced in Wales in 2011, requires community pharmacy to reconcile the patient's first prescription post-discharge with the information on the patient's medicines from the discharge advice letter.

Evaluation of the service has demonstrated it allows the identification of medication discrepancies and how patients value the opportunity for a conversation about their medicines. It has also been shown that people who received a DMR were associated with a reduction in the risk of hospital readmission within 40 days[52]. Similar results have been observed in studies of similar services in England[53].

However, it has also been demonstrated that there is under-utilisation of the service, and hospital pharmacy professionals do not always appreciate their important role in referring patients to the service. Referring patients to the DMR service should be integrated into the core clinical pharmacy services and discharge should be seen as:

> *"..... the beginning of something rather than the end [...] it's the beginning of whatever intervention we've done as a hospital for the patient going forward in the community. So, if you think of it that way, it becomes very, very important".*[54]

WHAT WE HEARD: TRANSFER OF CARE

Our discussions with patient representative groups were dominated by their concerns with how they were discharged from hospital — a priority area for the Welsh Government, as per the report on hospital discharge published in June 2022[55]. Patients often perceive that their discharge from hospital can be delayed because of having to wait for their medicines. Pharmacy teams shared their frustration, explaining that patients are often told they are ready for discharge before pharmacy has been made aware of this decision and often before the discharge prescription has been written. The pressure to discharge patients in a timely manner often means that pharmacy teams need to prioritise the supply of discharge medicines over other activities, such as attending ward rounds. The solutions to this will be multifaceted and further exploration within pharmacy and MDTs needs to occur to embed the principle of discharge planning on admission, and to give it the priority that it warrants.

Clinical pharmacy services may include pharmacy professionals being involved in virtual wards or telemedicine, allowing virtual assessment and review of patients. Many virtual wards have focused so far on patients living with frailty, involving primary care, secondary care and voluntary services. Most patients reviewed in these situations will be taking medicines, and therefore pharmacy support is essential from the outset.

MANAGEMENT OF LONG-TERM CONDITIONS IN THE OUTPATIENT SETTING

In addition to ward clinical pharmacy services, specialist pharmacy teams, traditionally based in hospitals, often have a role in keeping people with long-term conditions (LTCs) well. This is to prevent deterioration and ill health, preventing potential admission or readmission. Not all patients requiring treatment for a LTC require hospitalisation, but many who remain under the care of a secondary care consultant or team will require support and/or treatment by hospital-based specialists in the outpatient setting.

The role of specialist pharmacy teams could help meet the targets set out in the Welsh Governments' programme for transforming and modernising planned care and reducing waiting lists[56]. These teams can increase capacity of the MDT and contribute to supporting patients waiting for treatment, either by providing a service closer to home or by providing support to primary care colleagues.

There is an extensive range of studies now supporting pharmacy teams providing clinical services for patients with LTCs in the outpatient setting.

[52] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7045023/

[53] https://academic.oup.com/ijpp/article/29/2/96/6027793

[54] Quote from a hospital pharmacist in 'The Discharge Medicines Review Service in Wales: A Mixed Methods Evaluation'. Robert James, October 2022.

[55] https://senedd.wales/media/f21peeh4/cr-ld15151-e.pdf

[56] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming--and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

A systematic review in 2013[57] of Clinical Pharmacist intervention in secondary prevention of cardiovascular disease, which involved 59 studies, concluded that the involvement of a pharmacist demonstrated an ability to improve cardiovascular disease (CVD) outcomes through providing educational intervention, medicine management intervention, or a combination of both. These interventions resulted in improved CVD risk factors, improved patient outcomes, and reduced number of drug-related problems with a direct effect on CVD control.

A 2021 study[58] evaluated the addition of 13 Clinic Pharmacists to outpatient services in Australia, which investigated the activities undertaken in the roles. The Clinic Pharmacist roles involved pharmacists working in outpatient clinics for four-hour clinic blocks between one and six times per week depending on the service. The outpatient clinics included single or multiple clinics in gastroenterology, ophthalmology, immunology, geriatric, renal, cardiothoracic, back pain, mental health, forensic patient health and brain injuries. The results demonstrate how pharmacists play a vital role for outpatients. A follow-up qualitative study (2022)[59] exploring the impact of the pharmacists concluded that "when pharmacists are integrated into outpatient clinics they and their colleagues believe that they provide benefits to patients and their clinics". Benefits included improved medication management, patient safety, multidisciplinary collaboration and improved workflow/workload management. System-wide support for the pharmacists was noted as one of the contributors to the success of the pharmacists working in clinics.

A 2015 randomised controlled study[60], assessing whether pharmacist interventions improved adherence and patient-related outcomes in 300 patients with depression, showed that after six months, patients in the intervention group had significantly more favourable medication adherence, treatment satisfaction, general overuse beliefs, and specific concern beliefs. However, the groups did not differ in severity of depression or health-related quality of life after six months.

A qualitative exploration of the enablers and barriers[61] to provision of outpatient clinics by hospital pharmacists in Scotland, published in 2022, outlined some key recommendations to release the value that pharmacists can provide to outpatients. Competing workload priorities and a desire for team-level changes in practice were key factors that were highlighted in the report.

WHAT WE HEARD: MANAGING LONG-TERM CONDITIONS IN THE OUTPATIENT SETTING

In Wales, we heard some excellent examples of specialist pharmacy input in outpatient clinics, including in the specialist areas of HIV, liver, heart failure, oncology, mental health and chronic kidney disease. Lead pharmacists working as part of an MDT in these specialties in some health boards/trusts have their own caseloads and are sometimes involved in diagnosis, but often manage conditions in partnership with other clinicians and patients — reassessing patients and their suitability of treatment, providing education, prescribing treatment, and arranging ongoing monitoring and follow up.

Pharmacist prescribers hold outpatient clinics in Community Mental Health Teams, including lithium clinics, ADHD medication titration and review clinics, medication optimisation clinics and physical health review clinics. This enables pharmacists to utilise their consultation and prescribing skills, and releases medical staffing time for new and more complex patients.

There are pharmacist- and pharmacy technician-led oncology clinics across Wales, as well as pharmacist-led rheumatology and anticoagulant clinics.

Clearly, hospital specialist pharmacists can contribute to the programme for transforming and modernising planned care by helping multidisciplinary teams manage non-urgent cases. This can be facilitated through the e-referral and e-advice system that will be introduced to reduce unnecessary referrals into secondary care as outlined in 'Our Programme for Transforming and Modernising Planned Care in Wales'[62].

However, ongoing specialist pharmacy support for LTCs is not in place in every specialty, and is delivered inconsistently within and between health boards/trusts. Given the current demand on specialist services and the lengthy waiting lists for initial assessment, pharmacy teams must consider how they can best utilise their expertise for outpatients for further consideration by health board/trust management.

Job plans that include cross-sector working, and further promotion of the potential pharmacy teams can offer, must be in place to help achieve the Welsh Government's priorities.

[57] https://www.jmcp.org/doi/abs/10.18553/jmcp.2013.19.5.408

[58] https://onlinelibrary.wiley.com/doi/full/10.1002/jppr.1729

[59] https://pubmed.ncbi.nlm.nih.gov/35478521/

[60] https://link.springer.com/article/10.1186/s12888-015-0605-8

[61] https://link.springer.com/article/10.1007/s11096-022-01435-2

[62] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming-and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

Key findings

THE EVIDENCE

- Patients experience less harm and have improved outcomes from their medicines when there is early pharmacy input in their care;
- There is strong evidence to support a pharmacist being a member of every ED team and pharmacy teams assessing patients in pre-admission clinics;
- The evidence strongly supports pharmacists embedded in MDTs;
- Patients who receive a well-managed transfer of care are less likely to be readmitted and experience medicines-related harm;
- Patients manage their medicines better and have reduced harm from medicines when pharmacists are part of the specialist team managing LTCs in all settings.

WHAT PATIENTS TOLD US

- Patients want to be more involved in the decisions made about their medicines;
- Patients want to be informed about any changes in their medicines while they are in hospital, which they feel does not happen.

WORKFORCE ENGAGEMENT EVENTS

- Pharmacy professionals want to spend more time with patients than they are able to;
- Pharmacy teams want to support patients to self-administer medicines during their hospital stay, facilitating their autonomy and independence and improving their ability to maintain independent living on discharge, but this is often not possible;
- Patients with the greatest needs must be prioritised. Currently there is no one system to achieve this;
- Pharmacy professionals are consistently required to undertake tasks related to supply and logistics, which prevents them from being able to use their skills effectively for the benefit of patients.

Goal 1

Patients will benefit from the right member of the pharmacy team adding value and improving quality by providing individual, holistic care in the right place, at the right time. Clinical pharmacy services in hospitals will be redesigned to ensure they are responsive to patient need.

Recommendation 1:
Pharmacy teams must be routinely integrated within every multidisciplinary team

During our engagement events, it was acknowledged, by those within and external to pharmacy, that pharmacy services are generally viewed as being very 'traditional', with the majority working 9am until 5pm, Monday to Friday, and primarily based within the pharmacy department. The current model, whereby services are provided according to the traditional role expectations and service structure, does not enable the majority of pharmacy professionals the flexibility and autonomy to prioritise their clinical work, preventing professional integration into the MDT. We heard that, too often, pharmacy professionals are being pulled back to the pharmacy department for supply and logistics tasks, they are unable to prioritise their patients and there is very limited involvement in research, education and training for the majority.

Patient-centred care, with pharmacy professionals leading on medicines optimisation, must drive the clinical services provided so that value can be maximised. Pharmacy teams need to be embedded in the MDT for this to happen, with the roles of pharmacy professionals being detailed in well-written job plans. A fundamental change is required to allow service models to be built upon the four pillars of professional practice: clinical practice, leadership and management, education, and research.

This recommendation supports the Welsh Governments' Quality and Safety Framework for the NHS, which outlines how:

> *"Quality is everyone's business and needs a multi-disciplinary approach at both a local and national level. This concept needs to be embedded within the culture of our workforce, understanding and improving the quality of care we provide."*

Good practice example 1:

The Renal Medicines service in South West Wales involves a pharmacy-led, professionally integrated team of specialist (including prescribing) pharmacists, pharmacy technicians, anaemia nurse specialists, service coordinators, administrative support staff, programme managers and multimedia developers They share office/work space with the nephrologists, renal nurse specialists, renal IT technicians and administrative staff, which aids communication and strengthens professional relationships.

From a central hub, specialist services provide physical and virtual outreach to satellite units across the region. This enables people with chronic kidney disease (CKD) to access treatment close to home. The service spans the primary and secondary care interface, providing care from early detection of CKD progression to end-stage kidney disease. This involves providing long-term treatments for the complications of CKD, such as anaemia and mineral bone disorder. The team prescribes and coordinates the supply of medication required to enable haemodialysis, and anti-rejection medication for kidney transplant recipients and people with autoimmune kidney disease. These quality improvement initiatives have transformed the renal service, improved access to specialist services and liberated millions of pounds for reinvestment. This model facilitates research and further service improvement initiatives.

Good practice example 2:

The Advanced Respiratory Pharmacist at Cwm Taf Morgannwg University Health Board runs a weekly, pharmacist-led drug monitoring clinic for patients with interstitial lung disease (ILD) alongside the consultant. There is a local MDT meeting to review radiology monthly, as well as a monthly tertiary MDT meeting to discuss complicated patients. This is for all patients with ILD across Cwm Taf North via face-to-face or telephone consultations. The introduction of the pharmacist-led drug monitoring clinic has allowed patients initiated on immunosuppressive agents to be appropriately monitored and optimised, meaning side effects are identified more quickly and changes to therapy made sooner. Patients are followed up regularly between consultant reviews. The clinic has also allowed the consultant to see more patients as appointments are not taken up by patients requiring drug monitoring.

This has a positive effect on waiting times and the availability of the consultant to see more complex cases.

Recommendation 2:
For patients receiving planned hospital care, pharmacy teams must optimise their medication in pre-admission or pre-habilitation services

The Health and Social Care committee's report 'Waiting well? The impact of the waiting times backlog on people in Wales' [62] highlights that one in five people are on a waiting list for diagnosis or treatment. Caring for these individuals is a priority and pharmacists are well placed to help manage medicines through, for example, the 'Living Well' programme. This can provide advice on pain management through medication and health and wellbeing advice, as well as more intensive medication support for those accessing planned care, such as surgery, where their regular medication regimen will be adjusted for the best outcomes. This will help the Welsh Government meet its aim to build sustained, planned care capacity as outlined in 'Our Programme for Transforming and Modernising Planned Care and Reducing Waiting Lists' [63].

This aligns with the 'A Healthier Wales' [64] plan for hospitals to develop a range of services that support communities, delivering services for outpatients, diagnostics and ambulatory care closer to home.

Good practice example:

A pre-operative pharmacy service has operated within Betsi Cadwaladr University Health Board for more than ten years. The pharmacy team undertakes medicines reconciliation for patients on multiple or high-risk drugs. Peri-operative medicines plans are created to ensure appropriate changes are documented, such as dose changes or temporary substitutions. These are also communicated to the patient and written information is provided. This involves anticoagulation plans and management of diabetes perioperatively, and there is a growing focus on elective recovery post COVID. Pharmacists lead on pre-operative anaemia optimisation, and support with other areas where advice pre-operatively can prevent complications in the post-operative period, such as with smoking cessation. Comprehensive medicines plans reduce theatre cancellations and ensure patients are well-informed about what to expect and how to manage their medicines and conditions perioperatively. It is also known that optimising conditions and health pre-operation should reduce post-operative complications; lead to better and quicker recovery, where patients discharge home quicker; and have better post-operative outcomes.

Pharmacy Technicians work in the peri-operative assessment clinic in Wrexham. They train by undertaking an induction, where they go through case studies, observation and a probationary practice period where all work is double checked before being accredited. They are then able to review patients with diabetes who are scheduled for surgery, improving flow through the clinic and ensuring that only those with more complex regimens need to be seen by the pharmacist.

[62] https://senedd.wales/media/dfqbafj1/cr-ld15079-e.pdf

[63] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming--and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

[64] https://www.gov.wales/healthier-wales-long-term-plan-health-and-social-care

Recommendation 3:
Pharmacy teams, including advanced emergency department practitioners, must be available in every emergency department and integrated into the patient assessment process, to ensure good medicines decisions and management at the first opportunity

The benefits of the skill set of pharmacy teams, including pharmacists, pharmacy technicians and pharmacy support staff in emergency departments (EDs) has been articulated. Recent pilots with short-term funding to support the impact of pharmacy in EDs have demonstrated positive results. To support and direct this evolving area of practice, an all-Wales community of practice should be established to share 'good practice', and there should be leadership by the appointment of urgent and unscheduled care consultant pharmacists.

NICE Medicines Optimisation Quality Standards recommend 100% of patients have their medicines reconciled within 24 hours of admission; a national key performance indicator. Pharmacy teams must be integrated into the patient assessment process, to ensure good medicines decisions and management occur upfront and any discrepancies between lists of medication are identified, reducing risks of avoidable harm.

Implementing this recommendation would help to achieve the ambitions set out by the Welsh Government in goal five of the Six Goals for Urgent and Emergency Care, to ensure optimal hospital care and discharge practice from the point of admission[65]. Additionally, the goal includes a specific quality statement that says "people admitted as an emergency to a hospital setting should have a reconciled list of their medications within 24 hours of their admission" – which pharmacy professionals are key to achieving.

Good practice example:

Pilot work has been completed across several emergency departments in Wales. A total of 1,896 interventions were made during an eight-week pilot introducing pharmacy support in Betsi Cadwalader University Health Board IHC Emergency Department — 65% by pharmacists and 35% by medicines management pharmacy technicians. The pharmacy technicians ensured patient safety by referring pharmacists to notable interventions. Interventions were graded using the All Wales Intervention Database methodology to calculate cost-avoidance of £404,954.

The ED pharmacy team more than tripled medicines reconciliation rates for the duration of the project, averaging 64 per week. The majority were done by the ED pharmacy technicians, which released the pharmacists to focus on higher acuity patients and answering queries.

Recommendation 4:
On admission, patients must be triaged to identify and prioritise their pharmaceutical needs. This must be documented as part of their overall treatment plan

Pharmacy professionals do not need to see every patient who comes into hospital. A method of triaging patients is essential to ensure that pharmaceutical care is prioritised for those who need it, in line with the principles of delivering prudent healthcare, and as outlined in the long-term plan 'Pharmacy: A Healthier Wales'[66]. A digital tool may assist with this, and consideration must be given to optimal skill mix, including pharmacy technicians and pharmacy assistants providing pharmaceutical assessment with support from a pharmacist as needed.

This recommendation specifically supports goal three of the five goals for planned care, which is 'Treat accordingly: Access to appropriate care at the right time at the right place', outlined in the Welsh Government's 'Our programme for transforming and modernising planned care and reducing waiting lists in Wales'[67]. This helps to ensure those that most need clinical input form pharmacy receive it from first admission, and throughout their stay.

[65] Right care, right place, first time: Six Goals for Urgent and Emergency Care - A policy handbook 2021-2026

[66] https://www.rpharms.com/wales/pharmacy-delivering-a-healthier-wales

[67] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming--and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

Good practice example:

At the Grange Hospital, cluster ward working has been introduced. Each team of pharmacists and pharmacy technicians cover a cohort of similar wards. This allows specialist pharmacists to see the most complex patients and provides an escalation route and supportive team for more junior members of staff. Clusters coordinate the work to ensure the appropriate staff are in the right place at the right time, thereby prioritising discharges and medicines reconciliation.

Training is more easily supported in this environment. There has been a move away from seeing all patients and instead ensuring that the most appropriate team member reviews each patient. This in turn ensures value in the interaction and that the patient benefits from the most appropriate care. Specialist pharmacists feel that they are able to make valuable inputs into patient care and junior pharmacists have a support system around them.

Recommendation 5:
Patients must be empowered to take responsibility for their medicines and, wherever possible, must be actively involved in decisions about their medicines and care during an inpatient stay. Pharmacy teams must play an active role in preventing the functional deconditioning of patients

It is well established and accepted that empowering patients to have more control over their own health management can lead to better outcomes, but this is not happening on a large enough scale. As per the NHS Wales guidance 'Optimising pharmacy services at hospital discharge to improve patient flow'[68], published in 2022, there is a need to implement and evaluate self-administration policies to enable patients to manage their own medicines whilst they are in hospital. A review of the current system, whereby many patients feel that their medicines get locked away until they are discharged, must urgently be addressed.

Good practice example:

The Antimicrobial Team in Betsi Cadwaladr University Health Board teaches patients how to self-administer intravenous antibiotics, which allows a greater number of patients to be discharged sooner, saving money and freeing up nurse capacity. Patients gain a sense of control over their therapy, and freedom from having to wait in for a nurse all day. The feedback from patients has been excellent.

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Standard one: Putting people first Descriptor 1.1: People, their families, and circles of support are put at the heart of health, care, and wellbeing and care is focused on the needs of the individual

[68] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

Recommendation 6:
Pharmacy teams must be involved in planning for discharge, starting on admission, with the default position being to refer patients for post-discharge medicines support/care unless it is clearly not needed

Our findings support the recommendations set out by the Welsh Government in a number of reports. 'Optimising pharmacy services in hospital discharge to improve patient flow'[69] states that discharge planning must start from the day of admission. Optimal hospital care and discharge practice from the point of admission is one of the six policy goals for urgent and emergency care[70]. The Discharge to Recover, then Reassess (D2RA) Model[71] also focuses on reducing delays in hospital transfers of care for older people.

In addition, pharmacy teams should take responsibility for identifying medicines related support that the patient would benefit from, for example, the Discharge Medication Review service, or domiciliary medication review services, such as Your Medicines At Home, where required. This will ensure further support in the community and help to prevent re-admission. Standardisation of domiciliary medication review services across Wales is needed to enable more tailored support for those who need it most in the period following discharge. Pharmacy leads on this aspect of discharge as part of the MDT, helping to support more efficient discharge and reduced risk of readmission to hospital.

Good practice example:

Cwm Taf Morgannwg University Health Board commenced a project pilot in June 2022 to facilitate the safe and timely discharge of adult patients requiring support to manage their medication at home. New referral pathways were established enabling ward and pharmacy staff to initiate a referral to the Your Medicines @ Home (YM@H) team, where they have any concerns regarding a patient's ability to manage their medication safely following discharge. Referred patients are contacted by a pharmacy technician from the YM@H team shortly after discharge and offered a support visit within a timescale relevant to their medication needs and assessed level of risk, enabling patient-specific and tailored support. This improves patients' ability to manage their medicines at home; supports patients' long-term independence; reduces the commissioning of high cost 'medicines administration at home' care packages (where medication is administered by trained care workers); and reduces the demand for healthcare interventions associated with unintentionally poor medicines concordance (e.g. hospital readmission, GP appointment).

The new referral pathways provide confidence that patients will benefit from an assessment of their support needs in a non-hospital environment, and the provision of appropriate support designed to improve medicines-related outcomes. The YM@H team benefits from an ability to support potentially vulnerable patients at an early stage, and maintain their independence at home through careful assessment and the implementation of tailored solutions to identify issues. Feedback from service users is universally positive, and the role identified as professionally rewarding.

[69] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

[70] https://www.gov.wales/six-goals-urgent-and-emergency-care-policy-handbook-2021-2026

[71] https://www.gov.wales/sites/default/files/publications/2021-08/hospital-to-home-community-of-practice-key-learning-and-practice-examples.pdf

Recommendation 7:
The specialist knowledge and skills of advanced practice and consultant pharmacists must be made available to benefit patients and practitioners in community settings

This recommendation aligns with goal two of the Welsh Government's five goals for planned care, to "develop access to high-quality advice and guidance to enable informed decision making for individuals as well as primary and secondary care clinicians". Pharmacists working at an advanced or consultant level in specialist clinical areas should have time and responsibility for supporting their patients and health and social care colleagues in primary care, increasing integrated working across sectors.

Good practice example 1:

Cardiff and Vale University Health Board runs a tertiary endocrine pharmacy service for children and young people across South and Mid Wales. This involves provision of expert pharmaceutical care to children and young people with endocrine disorders, and optimising formulations and dosing to ensure patients receive cost-effective treatment for their conditions. The team facilitates treatment and access to medicines closer to home, and provides expert advice to patients' local clinical teams. The advanced specialist pharmacist attends clinics in the patients' local hospital alongside a nurse and consultant, where they discuss their medicines and optimise them alongside the consultant paediatrician. Patients frequently contact the team to help with medicines-related issues or queries via phone or email.

Good practice example 2:

The Perinatal Health Pharmacist in Hywel Dda works for patients across the region in all settings. Patients can be referred to the service by any healthcare professional, but the referrals mainly come from midwives, health visitors and doctors.

They support mothers (and sometimes fathers) who are suffering with their mental health during the perinatal period. They also provide advice on the use of medication to other healthcare professionals and patients, providing patients with an opportunity to discuss their medicines and the potential consequences of taking them or not taking them. This empowers patients to decide on whether to take a particular medicine or not after weighing up the risks and benefits. The introduction of the service has also led to an increase in women stopping medication during pregnancy.

Good practice example 3:

An independent prescribing hospital pharmacist took over the responsibility for prescribing hepatitis C treatment in HMP Berwyn in February 2022. Testing is carried out by the prison and any positive patients are referred to the pharmacist by a blood-borne virus nurse within the prison. Blood tests are taken and assessed, and interactions with regular medication are checked. Medication is then prescribed and is often started within a few weeks of patients testing positive. Working in conjunction with the blood-borne virus nurse ensures that patients can be monitored and supported throughout treatment. Pharmacists are now working as part of a multidisciplinary team with the blood-borne virus nurse and Hepatitis C Trust peers. (Specialist pharmacist, Betsi Cadwaladr University Health Board).

Recommendation 8:
An urgent review of the workforce and systems involved in the supply and logistics of medicines in hospitals is needed to release the capacity of pharmacy professionals to deliver patient-centred services

To enable the Welsh Government's goal of 'Optimal hospital care and discharge practice from the point of admission' [72], one of the six policy goals for urgent and emergency care[73], pharmacy professionals need to shift the focus of their roles as part of service redesign to ensure that they are able to maximise their ability to provide excellent patient care. This involves job plans based on the four pillars of professional practice. This can only be effective alongside a full review of 'end to end' supply and logistics of medicines to maximise the opportunities with increased automation and better staffing skill mix.

Good practice example:

At Sunderland Royal Hospital, a robotic dispenser directly linked to electronic prescribing was installed in the main pharmacy. The direct linking of a robotic dispensing machine to electronic prescribing, besides increasing efficiency, offers enhancement of professional aspects of clinical pharmacy. Removing mundane aspects of drug supply and policy enforcement allows greater focus on patient-centred activities and enhances professional relationships at ward level. This might in part relate to removal of 'policing' functions of hospital policies because these are done electronically instead of relying on the ward pharmacist [74].

Action points

- Redesign pharmacy services to ensure pharmacy teams, where appropriate, are embedded in multidisciplinary teams (MDTs);
- Develop workforce plans on a multidisciplinary level to meet patient needs;
- Align the working patterns of pharmacy teams in emergency departments with the MDT and patient need;
- Establish ED pharmacy teams consistently across Wales, including expanding the number of advanced ED pharmacist practitioners;
- Develop job plans for the hospital pharmacy workforce that include outreach services and integrated working across sectors to support community-based practitioners; Develop advanced practice pharmacist roles, which include increased responsibility for managing patient caseloads within MDTs;
- Promoting awareness of advanced pharmacist roles within the MDT is required between and within the MDT and health boards/trusts;
- Adapt care pathways to enable pharmacy professionals to refer patients to other services, such as therapists and social prescribers;
- Renew the messaging for patients to bring in their regular medicines to hospital through a national campaign;
- Implement and evaluate health board/trust self-administration policies to enable patients to manage their own medicines whilst they are in hospital;
- Refer all patients requiring post-discharge support to appropriate services (e.g. DMR, primary care medicines review, or a community-based medicines service);
- Identify digital advancements that will benefit patient care and ensure they are inter-operable, implemented at pace and evaluated (e.g. digital prioritisation tool, effective handover of patients' pharmaceutical care between pharmacy teams and across sectors);
- Record each patient's nominated community pharmacy in their online record (Welsh Clinical Portal/Choose Pharmacy) as routine practice, to facilitate appropriate and timely sharing of information regarding medicines between the hospital and community pharmacy.

[72] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

[73] https://www.gov.wales/six-goals-urgent-and-emergency-care-policy-handbook-2021-2026

[74] https://ejhp.bmj.com/content/19/2/137.1

Multidisciplinary team working

A strong message from all the engagement events we held was that pharmacy teams must be embedded in the MDT to provide patient-centred care. This supports the now widely agreed principle that high standards of treatment in the NHS involve cohesive, MDT working. In 'A Healthier Wales'[1] the Welsh Government states:

> *"By 2030, multiprofessional and multi-agency workforce models will be the norm".*

As the demands on all aspects of the NHS intensify and become increasingly complex, it is clear that the future of high-quality patient care rests on utilising the diverse skills and experience of multiple professionals. Medicines are the most common health intervention[1] and pharmacists are the experts in medicines and their use. The 2016 Carter report[2] describes how NHS trusts in England must ensure pharmacists (including pharmacist prescribers) and pharmacy technicians spend more time on clinical activity for improved medicines optimisation within the MDT. Patients must have access to experts in medicines during any visit to hospital. It is therefore essential that pharmacy teams are professionally integrated into MDTs[3].

BENEFITS

The benefits of pharmacists embedded in the MDT are well described in peer-reviewed literature. A 2023 systematic review of factors influencing in-hospital prescribing errors[4] highlighted that a multifaceted approach, where pharmacists are present on ward rounds, embedded in the MDT and part of clinical decision making at an early stage, protects against prescribing errors.

Evidence of the benefit of a pharmacist within the MDT in specific specialities is also published. A systematic review and meta-analysis to assess the effects of including critical care pharmacists in multidisciplinary intensive care unit (ICU) teams on clinical mortality, ICU length of stay and adverse drug events, was published in 2019[5]. The study concluded:

> *"Including critical care pharmacists in the multidisciplinary ICU team improved patient outcomes including mortality, ICU length of stay in mixed ICUs, and preventable/ non- preventable adverse drug events".*

[1] https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf

[2] https://www.nice.org.uk/guidance/ng5

[3] https://www.gov.uk/government/publications/productivity-in-nhs-hospitals

[4] https://bpspubs.onlinelibrary.wiley.com/doi/full/10.1111/bcp.15694

[5] https://journals.lww.com/ccmjournal/Abstract/2019/09000/Impact_on_Patient_Outcomes_of_Pharmacist.11.aspx

A much earlier study, published in 1994, assessing the impact of a clinical pharmacist in a multidisciplinary ICU drew similar conclusions [6]. Its findings highlighted that:

> *"Dedicated ICU pharmacists are crucial healthcare team members in a multidisciplinary ICU. In addition to substantially reducing drug costs, they provide continuity in individualised pharmacotherapeutic care, and serve an important educational function".*

Evidence from other specialities include 'A review of the effectiveness of the pharmacist-involved multidisciplinary management of heart failure (HF) to improve hospitalisations and mortality rates in 4,630 patients', published in 2019[7]. This showed that pharmacist-involved multidisciplinary HF management resulted in a significant reduction in HF hospitalisations (28%) and all-cause hospitalisations (24%). The overall trend was an improvement in patient medication adherence, coupled with evidence to support significant improvements in HF knowledge.

The benefits of the skill set of pharmacy teams embedded in emergency departments has previously been articulated in this review. The importance of a system wide MDT approach to patient care is referenced in the Welsh '"Delivering Home First", the Discharge to Recover then Assess model' [8], which maps out provisional pathways that aim to limit unnecessary time spent in hospital settings. The pathway 'Is the person fit to admit' is designed to provide "MDT assessment within hospital 'front door' units to avoid full admission and to arrange treatment and supported recovery at home whenever it is clinically safe to do so".

A 2007 descriptive study, aimed at assessing staff perceptions of pharmacists embedded in emergency departments [9], utilised a random sample survey approach of medical and nursing staff in an academic medical centre ED. Of those that completed the survey, 99% felt that the pharmacist in the emergency department improved quality of care and 96% felt they were an integral part of the team.

From engagement events, it was evident that there are many examples across Wales where pharmacists are fully embedded within the team, including in renal, HIV, mental health, critical care, oncology and haematology services. However, this is not always consistent and far from routine.

In June 2022, the Senedd's Health and Social Care Committee published its report 'Hospital discharge and its impact on patient flow through hospitals' [10]. Following a short inquiry into all aspects of hospital discharge, barriers were identified in discharge processes, exacerbating delays in the time taken between a patient being clinically ready to go home (or transferred to another care setting) and leaving hospital.

The Committee's report included the following recommendation specifically related to pharmacy services:

> *"The Welsh Government should issue guidance to health boards to highlight the importance of including pharmacy teams as an integral part of the multidisciplinary team as a matter of course."*

Within 'Pharmacy: Delivering a Healthier Wales' [11], the need to integrate fully into MDTs was also identified. It states that:

> *"Pharmacists will be fully integrated into MDTs, with a 24/7 pharmacy operation, reflecting the needs of both patients and the wider multidisciplinary team. Pharmacy teams will lead on all aspects of medicines care from arrival, during in-patient stay, and through to discharge."*

BARRIERS

It is deeply concerning that despite the weight of evidence and previous reports specifically calling for pharmacy professionals to be embedded in MDTs, pharmacy teams are still not routinely considered in service changes or modernisation, or acknowledged for their role within patient care in some policy documents. This was apparent in Health Education and Improvement Wales' (HEIW's) report, 'Informing the Future Workforce for Critical Care Services', published in 2022 [12]. Pharmacy was not referred to in the initial publication, despite a strong evidence base demonstrating their value to patients and the MDT, as well as nationally recognised standards (Guidelines for the provision of intensive care services, July 2022 [13]), with specific guidance for pharmacy stating "there must be a critical care pharmacist for every critical care unit" and "clinical pharmacists' attendance at multidisciplinary ward rounds increases the effectiveness of the team". After concerns were raised from within the profession and directly articulated to HEIW by the RPS, the report has since been refreshed and we are pleased to now see the updated version articulates the key role of pharmacy teams.

The evidence around the barriers and facilitators to pharmacists integrating into the ward-based MDT were identified in a systematic review and meta-synthesis in 2021[14]. The review concluded that "pharmacist integration is facilitated by their knowledge and skills being valued and through demonstrating effective interpersonal skills. Re-structuring pharmacist responsibilities and working patterns to align with those of multidisciplinary team members also promotes integration". Specific barriers to integration identified in the study included: a lack of knowledge of the pharmacist role; healthcare profession-specific goals overshadowing goals of the inter-professional team; and underdeveloped team

[6] https://journals.lww.com/ccmjournal/Abstract/1994/06000/Impact_of_a_clinical_pharmacist_in_a.27.aspx

[7] https://www.sciencedirect.com/science/article/abs/pii/S1071916418310923

[8] https://www.gov.wales/sites/default/files/publications/2021-08/hospital-to-home-community-of-practice-key-learning-and-practice-examples.pdf

[9] https://pubmed.ncbi.nlm.nih.gov/17901274/

[10] https://senedd.wales/media/f21peeh4/cr-ld15151-e.pdf

[11] https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf

[12] http://chrome-extension/efaidnbmnnnibpcajpcglclefindmkaj/https:/heiw.nhs.wales/files/informing-the-future-workforce-for-critical-care-services/

[13] https://heiw.nhs.wales/files/informing-the-future-workforce-for-critical-care-services/

[14] https://www.sciencedirect.com/science/article/abs/pii/S1551741121000668

working skills of pharmacists, all highlighting the need for more effective and efficient MDT working.

In our engagement events, pharmacy teams shared their experiences of new services being introduced in their hospitals where pharmacy input was not considered or costed as a part of the MDT from the outset, yet the introduction of the service had an impact on pharmacy teams and an expectation that pharmacy teams would support the work. The embedding of a pharmacy professional into the MDT often required the determination of that individual in the first instance to 'showcase their worth'. Once embedded, it was evident that there was significant appreciation of the value pharmacy professionals brought to the MDT. Members of the medical team reflected that they had not always realised the full extent of the skills that pharmacy could bring, until a pharmacy professional was part of their team.

Literature from Sweden supports this view; 'Perceived value of ward-based pharmacists from the perspective of physicians and nurses'[15], published in 2012, illustrated the benefits of pharmacists within an MDT environment. Of those surveyed, 95% of doctors and 93% of nurses were very satisfied with their collaboration with ward-based clinical pharmacists. Increased patient safety and improvements in patients' drug therapy were the main advantages stated by respondents.

Within our engagement sessions, pharmacy professionals shared a desire to be fully embedded in the MDT, but described frustration by being 'pulled back' to support medicines supply. This reduced the ability of the pharmacy professional to be fully integrated. Similarly, other members of the MDT saw pharmacy professionals as a valuable addition to their teams, but raised concerns about the capacity for them to be fully released and the lack of succession planning.

A study investigating the level of, and factors that influence, ward round participation by clinical pharmacists in Australia[16], published in 2023, found the level of ward round participation by clinical pharmacists was low, with only 39% of pharmacists who had a ward round in their clinical unit attending a ward round in the previous two weeks. The study found factors that influenced participation included having recognition of the role of the clinical pharmacist within the ward round team, support from pharmacy management and the broader interprofessional team, and having adequate time and expectation from pharmacy management and colleagues to participate in ward rounds.

We heard from pharmacy professionals in our engagement sessions that MDT working and participation on medical ward rounds does not always fit with the traditional working patterns of pharmacy, something again reflected in the literature. The previously highlighted systematic review, 'Barriers and facilitators to pharmacists integrating into the ward-based multidisciplinary team'[17], iterates within its conclusion that re-structuring pharmacist responsibilities and working patterns to align with those of MDT members promotes integration.

The need to review working patterns aligns to the Senedd's 2022 Health and Social Care Committee report, 'Optimising pharmacy services at hospital discharge to improve patient flow'[18], which describes the need for:

> *"Access to seven-day clinical pharmacy services in high admission/discharge areas to prevent delays at weekends."*

[15] https://link.springer.com/article/10.1007/s11096-011-9603-1

[16] https://academic.oup.com/ijpp/advance-article/doi/10.1093/ijpp riad028/7161614?searchresult=1

[17] https://www.sciencedirect.com/science/article/abs/pii/S1551741121000668

[18] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

Key findings

FROM THE EVIDENCE:

- Patient outcomes are improved when pharmacy teams are embedded in MDTs.

WORKFORCE ENGAGEMENT EVENTS:

- We have found there are barriers to embedding pharmacy teams in MDTs despite significant evidence supporting this model;
- Barriers included a lack of time owing to supply and logistics tasks, a lack of alignment with the working patterns of the MDT and a lack of knowledge of the pharmacists' role;
- Business plans for new clinical services do not routinely consider the role of pharmacy;
- This leads to new services having a negative impact on medicines supply and logistics systems. This can be detrimental to the clinical pharmacy services and the ability for pharmacists to be embedded into MDTs.

Goal 2

Patients will benefit from pharmacy teams that are professionally integrated into MDTs to improve patient outcomes, increase value and reduce harm from medicines.

Recommendation 9:
Dedicated pharmacy resource should be integrated in MDTs in clinical priority areas with an ambition to embed pharmacy professionals in every MDT over time

Aligned to the RPS's standards for hospital pharmacy (see box), for pharmacy to be fully integrated into the MDT, workforce planning must ensure consistent provision of pharmacy expertise to allow for annual leave, training time and succession planning. All advanced and consultant pharmacists should be professionally integrated with their MDT colleagues. A mapping exercise should be undertaken to align pharmacists with similar expertise, who could support each other — this should include sharing of expertise across health board boundaries.

Across Wales, there are examples where pharmacy professionals are managed by the clinical service, allowing better integration and recognition of their value within the MDT. A review of the reporting structure of pharmacy team members is needed; however, pharmacy professionals should remain professionally accountable to the Director of Pharmacy.

This recommendation aligns with the 'Pharmacy: Delivering a Healthier Wales'[19], which states that in hospitals by 2030 "pharmacists will be fully integrated into MDTs, reflecting the needs of both patients and the wider MDT".

Good practice example:

At Aneurin Bevan University Health Board, the attendance of a specialist mental health pharmacist at older adult mental health multidisciplinary ward rounds has had a significantly positive impact on MDT decision making and patient care. The majority of medication changes and treatment planning on mental health wards takes place at weekly ward rounds. Having a pharmacist present at the time of decision making offers a huge opportunity for them to have input in prescribing decisions, make safety interventions, ensure monitoring is correct and consider medicines optimisation issues, such as polypharmacy reviews and deprescribing.

Benefits have been recognised by the pharmacist, MDT and patients alike. The team has reported greater job satisfaction through working as a highly valued member of the multidisciplinary ward team, in which views are actively sought and treatment decisions deferred to the pharmacist frequently. The team also reported an improved skill mix of the MDT and an outreach of specialist pharmacist advice to teams that support these patients on discharge[20].

Quotes:

> *"Being part of the MDT clinical decision making with patients is where I feel I add most value, it has taken time to become embedded in that team but, due to workforce pressures, I am constantly pulled back to dispensary for the core supply role" (Hospital pharmacist)*

> *"Having a pharmacist in my team is fantastic, everyone wants one, but we know pharmacy is under pressure and cannot always release people. In addition, there is always a concern if your pharmacist moves to another post, there is not the readily available suitable replacement" (Consultant medic)*

> *"When prescribed new medication during a hospital stay, it is essential as a patient you understand what that medicine is for, how to take it and are able to ask any questions. Wouldn't it be much better if the doctor and pharmacist all came around together as a team and were able to answer your questions and counsel you on the medicine?"*
> *(A patient representative, CHC board, now Llais)*

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Care of the person – Pharmacy team members are integrated into multidisciplinary teams across the organisation and provide person-facing clinical services to ensure safe and appropriate medicines use for all, whatever the setting.

[19] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/Pharmacy%20Vision%20English.pdf

[20] https://senedd.wales/media/f21peeh4/cr-ld15151-e.pdf

Recommendation 10:
The working patterns of pharmacy teams must be more aligned to the needs of patients and the MDT that they support

The evidence for pharmacy teams being integrated into MDTs is compelling. The Carter report: 'Operational productivity and performance in English NHS acute hospitals: Unwarranted variations'[21], 'Pharmacy: Delivering a Healthier Wales'[22], and 'Hospital discharge and its impact on patient flow through hospitals'[23] are examples of several reports that all explicitly reference the importance and rationale for this. The traditional pharmacy working pattern of 9am to 5pm, Monday to Friday, does not always fit with the MDT. The working patterns of the MDT should be based on evidence of patient need rather than simply diluting an already stretched workforce across longer hours as a matter of course.

We heard from pharmacy colleagues who have worked in England where 24/7 working was widely implemented, and they shared the negative impact this had, including less staff available at busy periods; this must be avoided. Colleagues also shared that working patterns of four longer days in a working week during the COVID-19 pandemic worked well for some team members but not for others. Different models should be available, both for patient and MDT benefit, but also giving pharmacy teams more flexibility and better work-life balance.

Implementing this recommendation aligns with the Senedd's 'Optimising pharmacy services at hospital discharge to improve patient flow' report[24], which states:

> *"Access to seven-day clinical pharmacy services in high admission/discharge areas to prevent delays at weekends' is seen as a service important to underpin delivery of the recommendations".*

Recommendation 11:
New service developments or service redesign within hospitals must consider the clinical and technical pharmacy service requirements from the outset, and regularly evaluate and review those requirements

MDT working offers the opportunity to draw on a broader range of skills and competencies across healthcare disciplines for new and emerging models of care. Integration of pharmacists into MDTs has been shown to have a positive effect across clinical, pharmaceutical and financial indicators. The benefits must be recognised by the health board/trust executives and planning teams, and adequately resourced. Where appropriate, extended hours of service may be required.

This recommendation aligns to the strategy described in 'Our programme for transforming and modernising planned care and reducing waiting lists in Wales'[25]. The programme states:

> *"We will develop multidisciplinary 'teams around the patient', ensuring that all members of the team have the support and professional development they need to use their skills and work at the top of their license to deliver their role effectively".*

[21] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/499229/Operational_productivity_A.pdf

[22] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/Pharmacy%20Vision%20English.pdf

[23] https://senedd.wales/media/f21peeh4/cr-ld15151-e.pdf

[24] https://www.gov.wales/sites/default/files/publications/2022-11/optimising-pharmacy-services-at-hospital-discharge-to-improve-patient-flow.pdf

[25] https://www.gov.wales/sites/default/files/publications/2022-04/our-programme-for-transforming--and-modernising-planned-care-and-reducing-waiting-lists-in-wales.pdf

Good practice example:

At Cardiff and Vale University Health Board, the nephrology and transplant pharmacy team have been embedded into the home dialysis MDT over the past couple of years, through attending weekly MDTs, monitoring patients' blood results and leading on the prescribing for renal anaemia, renal bone disease and vancomycin for peritonitis. This has allowed pharmacists to be the centre of medicines optimisation and allows for safe and reliable prescribing with continuous supply.

The embedding of the skills of pharmacy in the MDT has realised benefits for patients. Improved medicines optimisation and organisation of supply, has reduced the long waiting times for patients in pharmacy. Patients are now counselled on any changes to their medication and have a supply ready for them to collect when they attend clinic.

This service has helped release the time of doctors, through pharmacists taking on the majority of the prescribing role. It has also saved nurses time to see patients in the community, as pharmacy now organise appointments for patients to come in for iron or blood tests, a task previously completed by nurses.

Benefits to the pharmacy team have been realised by releasing workload for the main dispensary. By being more proactive with supply and altering doses through the GP, supply workload has been eased on the dispensary. In addition to this, it has allowed the nephrology and transplant team to be more proactive when altering medication, improving patient counselling and understanding and the interface with primary care through information sharing.

Action points

- Issue guidance to health boards/trusts to highlight the importance of including pharmacy teams as an integral part of the multidisciplinary team;
- Consider the implications for pharmacy services for all new developments and in clinical service redesign;
- Ensure the wider NHS leadership understands the potential of the advancements in pharmacy professional education for patient benefit; for example, the changes in pharmacists prescribing;
- Align the working patterns of pharmacy teams to patient need across the healthcare system, including where appropriate extended hours of service provision;
- Review the reporting and management structures of advanced practice and consultant pharmacists, to ensure they are fully embedded within MDTs, whilst remaining professionally accountable to the Director of Pharmacy;
- Create job plans for all members of the pharmacy team, starting with advanced practice pharmacists, to ensure they have the time to embed within the MDT. Where appropriate, include community outreach services, and provide time for leadership, research, and education and training.

Pharmacist prescribers

Legislation allowing pharmacists to become independent prescribers came into force in the UK in 2006. As an independent prescriber, pharmacists use their knowledge and skills to assess, diagnose and make decisions about the clinical management required for a patient, as well as support patients to get the best outcomes from their medicines, with minimal risk.

Through our engagement events with the public and patients, as well as other healthcare professionals, it was evident that the term 'independent', when coupled with prescribing, becomes very confusing, particularly when pharmacy is seeking to be more integrated in the MDT. We therefore recommend that, going forward, Wales adopts the terminology 'prescribing pharmacist' when discussing the role with others, and this will be used in the context of this review.

Following the legislative change, the potential role of prescribing pharmacists was quickly recognised in secondary care, with many of the initial pharmacists undertaking the accredited prescribing programme being those already established within an MDT, often already providing an outpatient clinic[1]. The number of pharmacists who are qualified to prescribe since then has continued to increase, in line with the aims of 'Pharmacy: Delivering a Healthier Wales'[2], which states:

> *"All patient facing pharmacists are actively prescribing wherever the patient needs them. We will increase patient access to pharmacist independent prescribers, ensuring the expertise of PIPs [pharmacist independent prescribers] are fully utilised across all care settings."*

In 2022, just over 50% of employed pharmacists in health boards/trusts across Wales were qualified prescribers; however, it is not known what percentage of these are actually practising as a prescriber. In some of the engagement events, participants mentioned they lacked the opportunity to use the qualification and therefore further work should be undertaken to assess how many pharmacists are not prescribing and what further support and/or training is required to enable these pharmacists to prescribe. This will help to reach the goals described in 'Pharmacy: Delivering a Healthier Wales', providing benefits for the NHS and patient care.

Throughout the review's engagement events, in all hospitals across Wales, we heard of many examples of how prescribing pharmacists were using the qualification. The majority of examples shared were from prescribers working in a specialist area, providing a service in outpatient clinics. There were three types of prescribing roles described:

1. Pharmacist prescribers have their own caseloads, which involve making the diagnosis and prescribing medicines. Examples include heart failure, acne, thrombosis, mental health and hepatitis B.
2. Prescribing medicines after a diagnosis has been made by a doctor. Examples include high-cost medicines, medicines supplied through home delivery arrangements, medicines optimisation and/or symptom management, or a combination of all these.

[1] Hodson KL. 2010. Assessment of a Supplementary Prescribing programme for nurses and pharmacists and its impact in practice. PhD Thesis. Cardiff University.

[2] https://www.rpharms.com/wales/pharmacy-delivering-a-healthier-wales

3. Optimisation of medicines or condition before a procedure; for example, surgical pre-admission clinics where pharmacists make autonomous prescribing decisions. Examples include bridging therapy for anticoagulation, management of anaemia and smoking cessation.

Good practice example 1:
Early heart failure diagnosis ('One Stop' clinic) at Hywel Dda University Health Board

The pharmacist-run diagnostic clinic consists of an echocardiogram heart scan, together with a comprehensive patient assessment and consultation with an Advanced Cardiology Pharmacist. Adults with a suspected diagnosis of heart failure (pro-BNP, B-type natriuretic peptide, level greater than 400) are referred to the clinic (one held weekly at each of the four counties in Hywel Dda University Health board) from primary or secondary care (e.g. from the arrhythmia nurses). They will be seen within 2 weeks if pro-BNP is greater than 2,000, and within 6 weeks if pro-BNP is between 400–2,000. The clinic has resulted in earlier assessment and diagnosis, with improvement in time to optimise medicine. The Welsh Government's targets for referral to treatment are being met and feedback from patients is very positive.

Good practice example 2:
Prescribing Pharmacists at Velindre Cancer Centre

Since the initiation of supplementary (2004) and independent prescribing (2007), the trust has embraced the role of pharmacists as part of the MDT, who assess and review patients on anticancer therapies. The team have trained at least 1 pharmacist each year to become a prescriber. There are currently 10 prescribing pharmacists who undertake 13 pre-chemotherapy assessment outpatient clinics per week, across 7 different cancer types. The pharmacists work in a variety of models, which include joint clinics with nursing colleagues, having their own patient lists or as part of a wider MDT hub. To support holistic patient care, pharmacists are trained to request specialist tests, such as CT scans, to monitor disease response and to "authorise" blood transfusions. Demand for pharmacists within these clinics remains high, as the value of pharmacists, with their expert medicines knowledge, is well recognised within this field.

Good practice example 3:
Pre-Operative Pharmacy Service at Betsi Cadwaladr University Health Board

The pharmacy team undertake medicines reconciliation for patients on multiple or high-risk medicines pre-operatively, create a perioperative medicines plan to ensure any appropriate changes to medicines (withholding certain medicines, dose changes, substituting for new therapy) is documented, is communicated to the patient, and written information provided to patients and clinical staff as required. The role also involves anticoagulation plans and the management of diabetes perioperatively. Pharmacists use their prescribing skills in a number of ways but an evolving area is in the optimisation pre-operatively; for example, leading on pre-operative anaemia optimisation and smoking cessation.

Despite the potential to use prescribing more generally, there were relatively few examples provided at the engagement events where prescribing pharmacists use their qualification day to day in an inpatient or admission setting. Some examples discussed include prescribing pharmacists:

1. Clerking patients, completing medicines reconciliation, charting medicines if unintended medication omissions are identified, and/or deprescribing, within emergency departments or medical admissions.
2. Working as a part of an MDT; for example, in mental health, critical care and antimicrobial pharmacist roles. They discussed how they influence the choice of therapy and/or deprescribing at the point of decision-making, writing or stopping treatment on the in-patient medication chart if needed. Many pharmacist prescribers have patients referred to them for review.
3. Working autonomously on their pharmacy round to review, amend or deprescribe medicines for patients under the care of their MDT.
4. Autonomously leading a specific clinical service, where patients are referred to them to manage the disease/condition; for example, prevention or management of osteoporosis.
5. Leading a service in community hospitals/virtual wards, with referral to GPs, if and when, required.

Good practice example:
Using independent prescribing in a ward environment at Cardiff and Vale University Health Board

From 2017, two clinical pharmacists started prescribing for patients in the Medical Admissions Unit. They have a defined scope of practice, approved by the medical staff on the unit, allowing them to prescribe any unintentionally omitted regular medications or correct discrepancies in doses, adjust doses taking into account renal/hepatic function and weight, adjust doses of new medications based on guidelines and relevant test results, and write a discharge prescription where necessary to facilitate a timely discharge. This ensures that any issues resulting from medicines reconciliation or errors in the prescribing are identified and can be addressed by the pharmacists quickly and effectively, without the need for consultation with a medical prescriber. This should also reduce the number of missed medications and avoid the administration of medicines incorrectly or inappropriately.

This benefits the wider pharmacy team as those patients who are then admitted to a ward within the hospital have fewer outstanding, unresolved issues that may have otherwise needed further discussion or intervention, thereby saving time for the pharmacists on the ward.

From the examples provided, it is evident that those pharmacists utilising their prescribing qualification to the greatest benefit are embedded within an MDT. They talked about the importance of trust between team members, and some discussed the importance of clarifying expectations with consultants, allowing them to fully use the qualification to optimise patient care and clinical outcome(s). A clear message from the discussions held is that the transaction of writing a prescription can improve timely access to medicines but is not the main focus of the prescribing role. The role should be about actively contributing to patient care and may include history taking, patient assessment, decision making, clinical management, writing prescriptions and ensuring appropriate transfer of care.

What was apparent from our discussions was a lack of consistency in approach across Wales to ensure patients and other members of the MDT benefit from prescribing pharmacists within hospitals, particularly within the inpatient setting. There was a lot of discussion and debate in all events about prescribing and how it should be used. The main points raised include:

- The role of prescribing pharmacists in an inpatient setting, considering the availability of other prescribers on the wards (e.g. doctors and advanced nurse practitioners);
- The need to develop this role with the MDT, ensuring all professionals appreciate the added value that a prescribing pharmacist can bring to the team;
- The use of the 'Pharmacist Enabling and Therapeutic Switch' policy or whether all prescribing pharmacists should use their prescribing role to make the changes that the enabling policy permits;
- The governance arrangements for prescribing; for example, whether there is a need for a pharmacist clinical verification and what the requirements for extending a pharmacist's scope of practice should be;
- The need for a clear direction of how newly qualified pharmacists will use their prescribing qualification from day one of being a registered pharmacist;
- How the pharmacy undergraduate programme, including clinical placements, will support the development of competent and confident prescribing pharmacists;
- The funding and resource required to support and provide further continuing professional development for prescribers to fulfil their prescribing role.

Internationally, there are some countries where pharmacists can prescribe; these include the United States, Canada, New Zealand, Singapore, UK and Australia [3, 4].

[3] Emmerton L et al. Pharmacists and Prescribing Rights: Review of International Developments J Pharm Pharmaceut Sci 2005 8(2) 217-225

[4] https://www.moh.gov.sg/docs/librariesprovider4/guidelines/guidelines-for-implementation-of-collaborative-prescribing-services.pdf

Three main types of prescribing are described in the literature, which reflects the examples described above. These are:

1. Independent prescribing, where the pharmacist has the autonomy to assess, diagnose and clinically manage a patient;
2. Collaborative prescribing, where a doctor makes the diagnosis and initial treatment decision, and the pharmacist leads implementation of the medicines management plan for that patient;
3. Dependent prescribing, which includes supplementary prescribing, restricted prescribing based on formularies or protocols and where there is delegation of authority to prescribe from an independent prescribing professional (usually a doctor). This usually involves a formal agreement.

A systematic review[5] of the effects of pharmacist prescribing on patient outcomes in hospital settings was published in 2018. The inclusion criteria were studies comparing pharmacist prescribing to medical prescribing in the hospital setting. Of the 15 studies included, 8 related to prescribing by protocol, 4 related to supplementary prescribing, 2 related to collaborative prescribing and 1 was unclear. No studies on independent prescribing were included. The majority of studies (n=8) related to patients admitted to hospital, 5 were based in outpatient settings and 2 related to pre-operative/pre-admission clinics. Medicines prescribed by the pharmacists were: anticoagulants, antihypertensives, antidiabetic medications and medication for hypercholesterolaemia. In three studies, the pharmacist's prescribing was unrestricted. In most studies, guidelines or dosing nomograms were available to guide prescribing. Evidence from these studies demonstrated that pharmacist prescribers managed the different conditions at least as well as doctors. In the 3 studies that looked at errors, pharmacists made significantly fewer prescribing errors than doctors, and in the 4 papers (3 studies) that reviewed medication omissions, pharmacist prescribing resulted in fewer medication omissions compared to doctors.

The lower error rate by pharmacist prescribers was also identified in a 2015 study by Baqir *et al.*[6], where researchers reviewed inpatient pharmacist prescribing in three hospitals in North West England. They identified that the majority (68.1%) of prescribing by pharmacists was undertaken at medicines reconciliation. The remaining prescribing was for new medicines started (18.7%), correcting incorrectly prescribed medicines (7.5%), stopping medicines (2.9%), dose change (1.5%) and rewriting medicines to ensure clarity (1.3%). The error rate for pharmacist prescribing was 0.3%.

With the advent of all new pharmacist registrants being a prescriber from 2026 in the UK, it is important to consider how pharmacist prescribing is used within the hospital setting across Wales. The undergraduate programme must be designed to develop the knowledge and skills required for prescribing pharmacists. In our engagement events, many pharmacists mentioned the need to develop less risk-averse pharmacists and their diagnostic, consultation, decision-making and safety-netting skills. In addition to universities ensuring these skills are developed, it is equally imperative that the students see pharmacists using prescribing when they attend their placements within the hospital sector. How prescribing is used day to day needs to be further explored, alongside ensuring that those with the prescribing qualification are actually using it. The latter may require pharmacists to undertake further continual professional development to extend or change their scope of practice to meet the needs of the service. The RPS has produced guidance to help prescribing pharmacists achieve this[7].

A national approach to prescribing within a hospital setting must be developed. This should take into consideration any national guidance, such as the British Oncology Pharmacy Association guidelines on non-medical prescribing[8], and the RPS's curricula, where prescribing activity is described as follows:

- Post Registration Foundation: becoming a prescriber;
- Core Advanced (entry-level to advanced): managing episodes of complex care autonomously using prescribing;
- Consultant (entry-level): leading prescribing across systems.

The approach (see Figure 9) should be based on patient needs, where prescribing pharmacists will bring the most value and the pharmacist's prescribing competencies — not their years of experience.

Taking into consideration the patient's pathway in secondary care feedback at engagement events and the benefits of multidisciplinary working, three phases of pharmacist prescribing are suggested for further discussion:

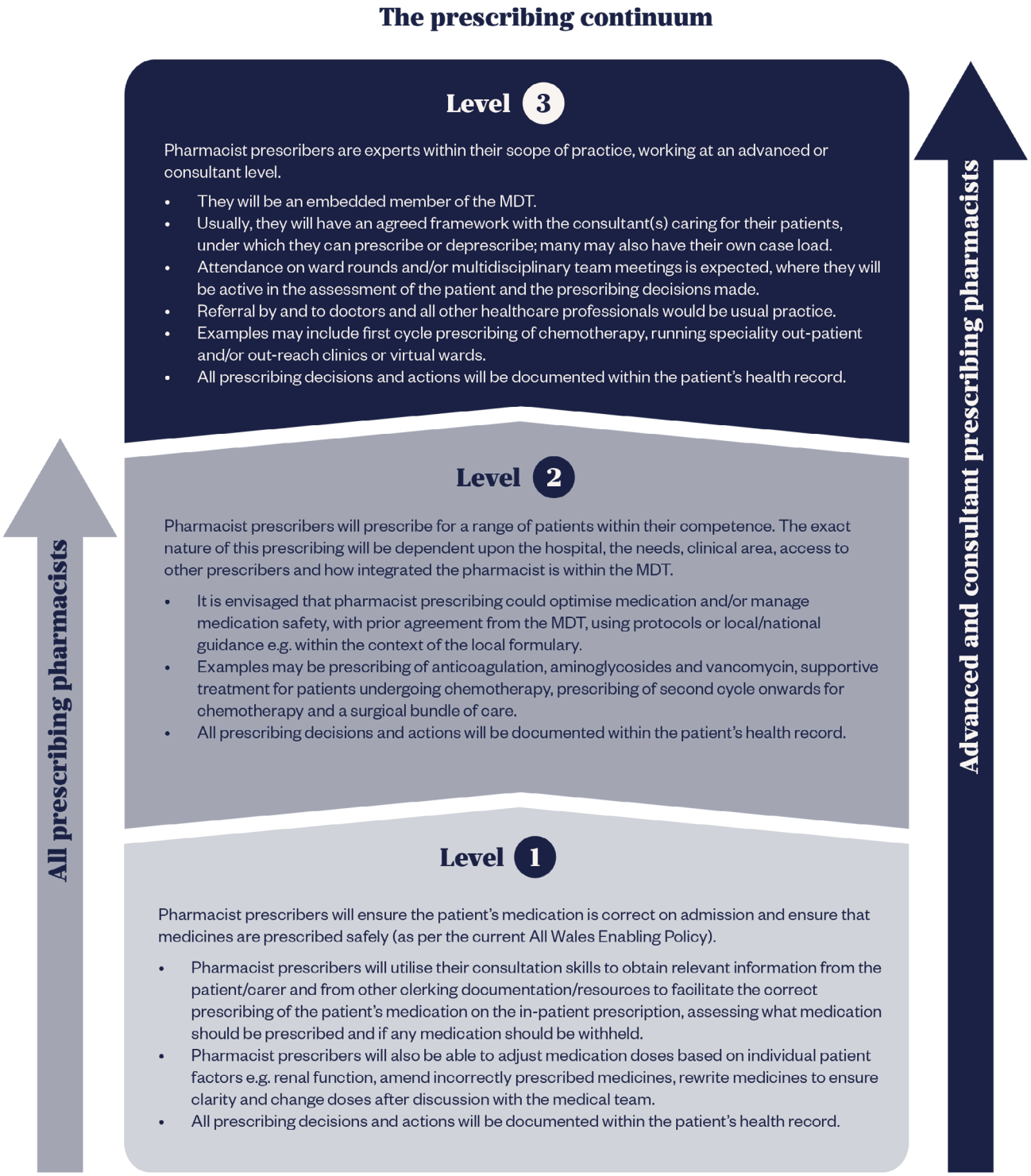
[5] https://pubmed.ncbi.nlm.nih.gov/30204671/

[6] https://ejhp.bmj.com/content/ejhpharm/22/2/79.full.pdf

[7] https://www.rpharms.com/resources/frameworks/prescribing-competency-framework/supporting-tools/expanding-prescribing-scope-of-practice#:~:text=Contributors-,Introduction,document%20the%20process%20and%20outcome.

[8] https://www.bopa.org.uk/wp-content/uploads/2019/07/BOPA-Non-Medical-Prescribing-Guidelines-4.1-August-2018-1.pdf

Figure 9: Suggested Approach for Pharmacist Prescribing within Hospital Setting



This suggested approach is based on the discussions held within the engagement events and the literature. More debate on the suggestion and the need for clinical supervision is required both within and outside of the profession. Further consultation and engagement are urgently required with health boards/trusts and the medical profession to help increase prescribing capacity and capability, and to fully realise the benefit of this opportunity for patient care.

Key findings

FROM THE EVIDENCE:

- Pharmacist prescribers manage different conditions, with a low rate of prescribing errors.

WORKFORCE ENGAGEMENT EVENTS:

- Pharmacists have been successfully prescribing within hospitals since 2007;
- The majority of prescribing pharmacists practise in an outpatient setting;
- Patients are not currently fully benefiting from the skills of prescribing pharmacists;
- There are limited examples of prescribing pharmacists practising on wards and no national approach.

Goal 3

Patients will benefit from access to pharmacist prescribers who are empowered and confident to prescribe in accordance with patients' needs.

Recommendation 12:
Pharmacists working within MDTs should be prescribers and be actively prescribing to meet the needs of their MDT and the patients they care for

The examples provided where pharmacists were using their prescribing qualification all discussed how they were embedded within the MDT. Those who were not using the qualification often stated barriers to prescribing included not being embedded within an MDT, not attending ward rounds where prescribing decisions are made and feeling they were not 'authorised' by the team to prescribe.

The professional relationship between the pharmacist and the MDT is crucial to facilitate pharmacist prescribing and there is a need to educate the medical profession and others about the changes within the profession and the opportunities that this brings to optimise patient care. The role of the MDT in clinical supervision needs to be explored.

Good practice example:

A pharmacist in Betsi Cadwaladr University Health Board prescribes for HIV, gastroenterology, hepatitis and alcohol dependence. He prescribes within these areas in the outpatient setting, where he has his own case load, attends the MDT meetings and has administrative support. On the ward, the MDT uses his expertise in the assessment of patients and decision-making to optimise outcomes from patients' medications and, if appropriate, deprescribe. He attends the ward rounds and presents at the hospital's Grand Rounds. Consultants from his and other MDTs refer patients to him for review.

Recommendation 13:
Pharmacists must embrace and promote their role as prescribers and accept the associated autonomy, responsibility and accountability

There were some discussions with pharmacists who had not used their prescribing or had not had the opportunity to do so, and expressed hesitancy and/or could not envisage how prescribing could be used when there are other prescribing professions available within hospitals. This was particularly related to prescribing within the ward environment rather than outpatients. As all pharmacists registering from 2026 will be prescribers, it is imperative that hospital pharmacy has a strategy for how prescribing will be used within the sector. This will require everyone to embrace this development and opportunities for those pharmacists needing or wanting to upskill their prescribing competencies, and/or extend their scope of practice. Education on the potential role of prescribing pharmacists is needed for chief executives and senior management teams within the hospital and other healthcare professions.

Recommendation 14:
Appropriate governance frameworks and organisational structures are in place for pharmacist (and other non-medical) prescribers to maintain and expand their scope of practice

From the engagement events, it was evident that some participants felt that the governance arrangements for prescribing within their hospitals needed to be reviewed. Participants discussed the need for a supportive infrastructure, including mentoring and clinical supervision, which would help enable and empower prescribers to use their prescribing competencies and appropriately expand their scope of practice. Any changes to the governance around prescribing must consider pharmacists and other non-medical prescribers who work within the hospital sector.

Good practice example:

A pharmacist in Cwm Taf Morgannwg University Health Board has extended their scope of practice by spending time in clinic, with the consultant initially observing consultations, progressing to reviewing patients independently and discussing treatment plans with a senior colleague. As part of the extended scope of practice, they completed a number of clinical logs that included reflections, feedback on observed practice and cased- based discussions. They are now completing a diploma in respiratory medicine and hope to expand the role of this clinic further.

Recommendation 15:
Clinical placements must be available for undergraduate pharmacy students, both in sufficient numbers and at the appropriate level, to prepare students for practice as prescribing pharmacists. MDT experiences should be core to this approach

Within the engagement events, there was much discussion on the changes to the initial education and training of pharmacists. It is important that the development of pharmacists is seen as a partnership between universities and practice. More communication on these developments to the profession and others within the hospital setting is needed. Practice needs to work with universities to ensure that the development of prescribing skills within the undergraduate programme is consolidated on their clinical placements. It is imperative that they observe pharmacist prescribers 'in action', and that they have appropriate role models and the opportunity to reflect upon their experiences.

Action points

- Review and build upon the suggested approach for how pharmacist prescribing can be utilised within the hospital setting;
- Identify and promote where pharmacist prescribers can add most value to patient care in collaboration with MDTs and ensure it is incorporated into short and long-term workforce plans;
- Create and implement referral pathways between pharmacist prescribers and other healthcare professionals and/or services;
- Ensure health boards/trusts support, train, mentor and supervise all pharmacist prescribers, through formal and informal opportunities, developing their confidence to prescribe and extend their scope of practice for patient benefit; The scale of this support and its implementation must be recognised and should be a core component of prescribing pharmacists' roles;
- Review the clinical governance framework for all prescribers, signposting to guidance and facilitating prescribers to expand their scope of practice;
- Ensure undergraduate pharmacy students have sufficient opportunities to develop their prescribing skills and learn from prescribing pharmacists in a hospital setting. This must be facilitated by leaders responsible for education within health boards/trusts working in partnership with universities and HEIW.

Workforce

Health and care is fundamentally a people business, delivered by people, for people. The people who work across health and care are its greatest asset and are key to delivering high-quality care [1].

In 'A Healthier Wales: Our Workforce Strategy for Health and Social Care', the Welsh Government [2] states:

> *"We will have a workforce with the right values, behaviours, knowledge, skills and confidence to deliver evidence-based care, and support people's wellbeing as close to home as possible; We will have a workforce that feels valued and is valued."*

The current workforce pressures within the NHS are well described and pharmacy teams, in common with other healthcare teams, are under immense pressure. Staffing and recruitment and retention challenges, alongside the increased demand for services, exacerbates pressures, which impacts the wellbeing of the workforce.

As the NHS deals with the recovery from the COVID-19 pandemic and what seems to be a continuous cycle of further unprecedented challenges, the pharmacy profession continues to report widespread workforce pressures. These have a detrimental effect on both the individuals and the ability of the profession to maintain consistency of service and standards of care.

Workforce wellbeing surveys, including the most recently published annual RPS report [3], paint a picture of a profession with a high risk of burnout. Following a review of data from its salary and job satisfaction survey, *The Pharmaceutical Journal* published an article — 'Work-related stress: the hidden pandemic in pharmacy' — that highlighted a disturbing picture of a profession drowning in rising demand, staff shortages and shifting expectations [4].

Another article, published in *The Pharmaceutical Journal* in 2022 by Paul Forsyth and Andrew Radley — 'Stepping back from crisis: delivering a future workforce vision for pharmacy' [5] — states:

> *"There is a window of opportunity to build a happier pharmacy workforce, with roles that are effective, responsive, fulfilling and sustainable. But it will take a complete rethink of pharmacists' and pharmacy technicians' skills and responsibilities to be successful."*

Long-term workforce planning with an integrated and funded workforce plan is essential to delivering workforce development, and achieving the recommendations set out in this report. Clinical services must identify and recognise the pharmacy workforce requirement for their MDTs.

[1] 'The health and care workforce: planning for a sustainable future, The King's Fund', published in November 2022

[2] https://socialcare.wales/cms-assets/documents/Workforce-strategy-ENG-March-2021.pdf

[3] https://www.rpharms.com/about-us/news/details/rps-workforce-wellbeing-survey-results-highlight-pharmacy-pressures

[4] https://pharmaceutical-journal.com/article/feature/work-related-stress-the-hidden-pandemic-in-pharmacy

[5] https://pharmaceutical-journal.com/article/opinion/stepping-back-from-crisis-delivering-a-future-workforce-vision-for-pharmacy

The launch of the 'HEIW Strategic Pharmacy Workforce Plan'[6] and the subsequent steps taken to implement the plan will be crucial in helping to shape a sustainable workforce for the future. The success of the plan will rely on a collaborative approach across the whole profession, with the NHS, wider employers and, crucially, the profession itself all committed to its implementation. This provides the perfect opportunity for the development of an agile, digitally-enabled workforce with the right behaviours, skill mix and leadership capability for now and the future.

The workforce must be designed around the needs of patients, wherever and whenever that is needed, with patient safety remaining paramount. Pharmacy professionals' ability to deliver more complex, clinical care to patients must be assured through post-registration credentialing.

The Prudent Principle of "only do what only you can do" must be further applied within pharmacy teams to empower colleagues at every level and release the clinical capacity of registered pharmacy professionals.

Job planning must be considered as a key enabler to delivering high standards of care and professionalism, and is a potential opportunity to grow portfolio careers and cross-sector working. Guidance on this has recently been published by NHS England[7]. Job planning is an excellent opportunity to ensure that the four pillars of professional practice: clinical practice; leadership and management; education; and research are integrated into everyone's roles in the future. It can also ensure appropriate, planned time for developing essential clinical and non-clinical capabilities in the workforce. From our engagement it is apparent that the use of job planning and session-based working for pharmacy professionals is not consistent and not apparent for the pharmacy workforce across NHS Wales.

The importance of protected learning time embedded in job plans for pharmacy professionals cannot be understated. In line with the RPS Protected Learning Time policy[8], protected learning time should be seen as time to develop yourself, time to develop others and time to develop services/ undertake research. This time will enable engagement in professional development aligned to RPS post-registration curricula for all pharmacists, leading to greater assurance of post-registration professional capability for patient safety and improved patient care. Promoting a positive impact on mental health and wellbeing, and being able to develop in all areas of professional development will ensure a collaborative workforce, as outlined in the Collaborative care model[9].

Work–life balance, flexible working, where appropriate, and supporting the wellbeing of our staff must be fundamental principles to ensure we maintain a motivated, engaged workforce to care for our patients.

It was evident from our engagement sessions that the current workforce is a highly skilled one that demonstrates exceptional patient care, safe and effective medicines management, medicines governance and service delivery daily. However, it was clear that teams feel they have more to offer, in terms of their clinical and technical skills, to gain maximum impact for patient outcomes.

WELLBEING

The latest RPS pharmacist workforce wellbeing survey showed that 88% of respondents are at high risk of burnout, with almost three-quarters of respondents (73%) having considered leaving their role or the profession[10].

A recurring theme in the report was concern that the underlying factors contributing to poor mental health and wellbeing are not being addressed. Factors highlighted were inadequate staffing, lack of protected learning time, lack of colleague or senior support, long working hours and lack of rest breaks.

These concerns align with discussions in our engagement events across Wales. There was a concern about the number of pharmacy professionals who have left their roles for other opportunities where there is a perceived better work–life balance. More flexibility and variety in working patterns is essential to ensure recruitment and retention of a high-performing and sustainable workforce.

It is essential that pharmacy teams continue to have equitable access to free and confidential mental health support from the NHS. Traditionally, pharmacy teams were unable to access such support through the NHS. This was enabled during the COVID-19 pandemic and it is fundamental that access to this support remains in place — support is currently provided via the Canopi platform.

INCLUSION AND DIVERSITY

Results from the RPS workforce wellbeing survey[11] demonstrate a workplace culture that needs to be conducive to positive mental health and wellbeing. All working environments must adopt a culture of belonging, so that all team members feel recognised and valued, and draw strength from staff's diversity.

Around 66% of respondents of the profession-wide survey felt there were barriers to working in the profession. The survey flagged disability as the area needing the most support and improvement, followed closely by age and race. Disability was also perceived to be the biggest barrier to working in pharmacy. Other barriers were age, pregnancy and maternity status. It is essential that we celebrate the diversity within our

[6] https://heiw.nhs.wales/files/strategic-pharmacy-workforce-plan/

[7] https://www.england.nhs.uk/long-read/e-job-planning-for-pharmacists-and-pharmacy-technicians-a-good-practice-guide/

[8] https://www.rpharms.com/recognition/all-our-campaigns/policy-a-z/protected-learning-time

[9] https://philarchive.org/archive/MAGTCC-4

[10] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Workforce%20Wellbeing/Workforce%20and%20Wellbeing%20Survey%202022-120123.pdf

[11] https://www.rpharms.com/recognition/all-our-campaigns/workforce-wellbeing

profession and ensure we are proactively creating a sense of belonging, ensuring all members of the pharmacy team feel they are fully included and able to contribute to the workforce and decision making; their views must be fully represented. We need to make a concerted effort to remove barriers and create equitable working environments, ensuring the needs of individuals are considered.

Legislation and policy in Wales as well as initiatives such as 'More than just words'[12] make sure the language needs of Welsh speakers are met; this is important for staff as well as patients and the public. Individuals who do not feel as though they belong will have poorer mental health and wellbeing and are more likely to leave the profession.

Pharmacy working environments must have a culture of belonging that is inclusive, respectful, safe, celebrates diversity and supports wellbeing.

PHARMACISTS

Following the publication of the General Pharmaceutical Council's (GPhC) updated initial education and training standards for pharmacists[13], we have seen significant changes to undergraduate training programmes. The standards incorporate the skills, knowledge and attributes required for prescribing, to enable pharmacists who register from 2026 to independently prescribe from the point of registration.

The full implementation of the standards will transform the skills and competencies of the pharmacist workforce, so that they are able to play a greater role in providing clinical care to patients and the public from the earliest point in their professional careers. A supportive infrastructure will be necessary to provide the assurance and confidence for new registrants to fully employ their prescribing skills. It is imperative that their scope of practice is developed to meet these service demands and, therefore, appropriate training and resources will need to be available.

Hospital pharmacy provides an attractive training proposition for foundation pharmacists and post-registration pharmacists alike. The potential diversity of the roles, the traditional clinical nature and complexity of patients, coupled with the inter-professional learning and working opportunities with the wider MDT, all provide an exciting experience. Hospital pharmacy is well placed to benefit and provide a supportive environment for foundation and post- registration pharmacists to develop and flourish, with both intra- and inter-professional opportunities to learn, which are not always as easy to attain in other settings. Across Wales, foundation pharmacist training is multi-sector, and the subsequent post- registration pharmacist training programme, through implementation of the RPS curriculum for this group, provides a continuum of practice for new registrants.

The further development of the foundation programme will be an evolving process, which will provide the educational infrastructure to support newly registered pharmacy prescribers, supporting them as novice prescribers, as well as beginning to develop their non-clinical capabilities for advanced practice. It is crucial that practising pharmacy teams are engaged in the process of any changes made to the foundation and post-registration foundation training programmes for this support to be realised in practice.

Our engagement with pharmacy teams identified a lack of understanding in changes to undergraduate training and subsequent clarity of how future pharmacy services will look. The significant changes in the landscape of education and training, and the benefits this will bring to future services, must be understood and embraced by all pharmacists and the wider healthcare team in order to drive improvement in service delivery for patients.

There is evidence to suggest that 'credentialed' practitioners deliver improved quality of care, clinical outcomes and better patient safety as compared with non-credentialed practitioners[14, 15]. There are also benefits for employers, including commissioners of clinical services, in being able to more accurately match candidates with staff positions and healthcare provision, so long as the workforce is flexible and adaptable. Workforce development can be taken towards a more useful policy-driven mapping and planning activity. In addition, patients will have assurances of quality of practitioner services. A recent literature review into credentialing in medical careers indicated that credentialed individuals deliver improved quality of care and clinical outcomes and better patient safety[16].

There has been significant progress on the credentialing requirements for advanced pharmacists to progress to consultant level. However, the four pillars of practice are yet to be embedded throughout the pharmacist workforce. For example, very few pharmacists are directly involved in research, leadership and management. Education and training can also be seen as an extra duty for many, rather than an integral part of their role. In the absence of a more formal career pathway and consistently applied job planning — with the four pillars of practice embedded — there is a risk these will not be viewed as integral to career development.

We have seen within medicine that, whilst fundamentally important, medical knowledge and skills are not viewed as enough on their own to deliver fulfilling careers and the

[12] https://www.gov.wales/sites/default/files/publications/2022-07/more-than-just-words-action-plan-2022-2027.pdf

[13] https://www.pharmacyregulation.org/sites/default/files/document/standards-for-the-initial-education-and-training-of-pharmacists-january-2021_final-v1.3.pdf

[14] Galt, KA. (2004). Credentialing and Privileging for Pharmacists. American Journal of Health-System Pharmacy. Vol 61: 661- 670

[15] Giberson, S., Yoder, S., Lee, MP. (2011). Improving Patient and Health System Outcomes through Advanced Pharmacy Practice. A Report to the U.S. Surgeon General. Office of the Chief Pharmacist. U.S. Public Health Service

[16] Department of Health (DoH). (2010). Literature review relating to credentialing in medical training. London: MACE 17

balanced workforce skills that are needed. All doctors are empowered to practice, lead, educate and undertake research[17].

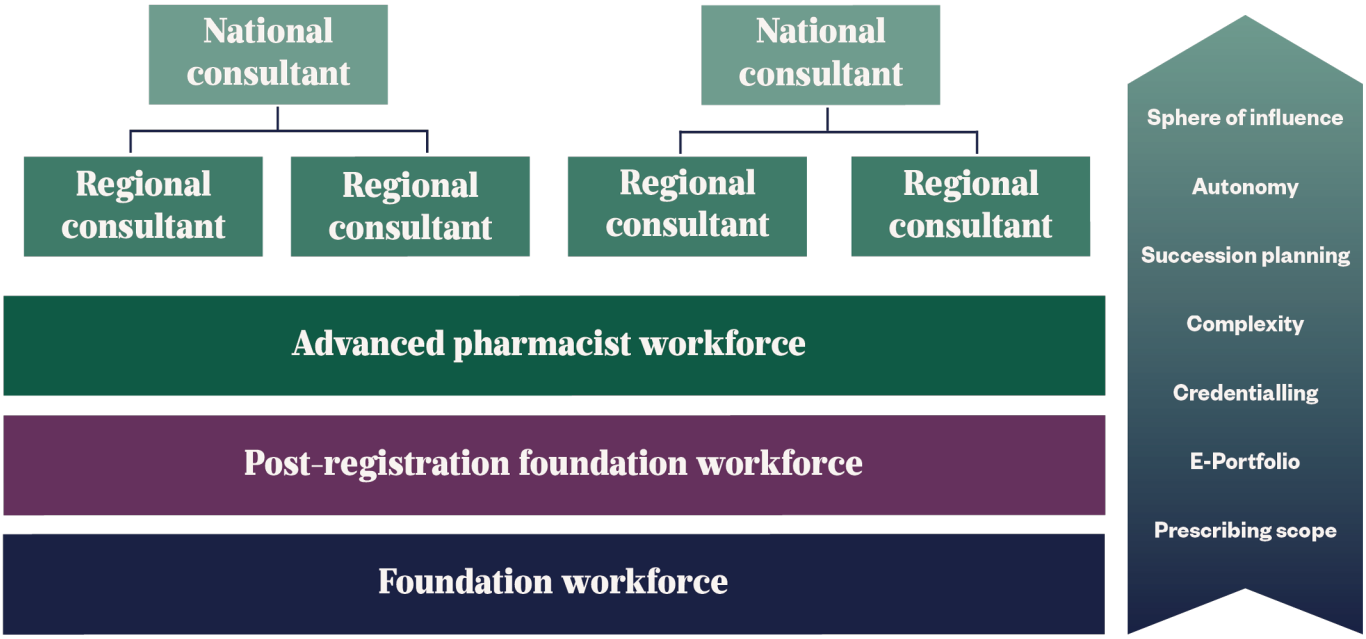
The Royal College of Nursing embeds the four pillars of practice in the standards that registered nurses working at advanced level must meet[18].

Within our pharmacy professions, we commonly segregate roles by these skills, where practitioners practice, leaders lead, educators educate, and researchers innovate[19].

The integration of the four pillars of practice into all pharmacist roles in the future is needed. A tiered workforce approach of advancing practice, through credentialing assessment aligned to the four pillars of practice within the RPS pharmacist post-registration curricula is essential.

Figure 10 below sets out a simple view of how this could look in practice, with succession planning a thread running through the tiered approach.

Figure 10: A tiered workforce of advancing practice



[17] https://www.gmc-uk.org/-/media/documents/Outcomes_for_graduates_Jul_15_1216.pdf_61408029.pdf

[18] https://www.rcn.org.uk/-/media/royal-college-of-nursing/documents/publications/2018/july/pdf-006894.pdf

[19] https://pharmaceutical-journal.com/article/opinion/stepping-back-from-crisis-delivering-a-future-workforce-vision-for-pharmacy

PHARMACY TECHNICIANS

> *"Pharmacists and pharmacy technicians have complementary roles in improving medicines related outcomes for patients. Pharmacists will be primarily focused on the clinical and therapeutic interventions, whilst pharmacy technicians improve medicines outcomes with practical advice on the use and management of medicines. Working together they ensure optimisation of the patient's medicines" – Pharmacy: Delivering a Healthier Wales*[20]

> *"Pharmacists and pharmacy technicians must now primarily work as advocates for the benefit of their patients and their colleagues. To truly deliver this, we need to move from a state of isolation (i.e. where we often practice without needing or accepting help or resources from others) to a state of collaborative professional autonomy (i.e. where we have free will and together we each practice according to our skills and healthcare values). This will require us to become more dependent on each other, where pharmacists and technicians rely on and trust each other, where healthcare organisations rely on the work of regulators and professional bodies to assure competence, where all professionals teach the next generation, where healthcare organisations work across boundaries for the betterment of population health, and where individual professionals are trusted to deliver their remit in accordance with their skills, values, and professionalism."*[21]

For pharmacy technicians, there has been a transition from traditional, vocational education to the modernised GPhC 2017 initial education and training standards (GPhC, new standards for the initial education and training of pharmacy technicians, 2017)[22].

As the role of registered pharmacy technicians has evolved, we have several examples of pharmacy technicians leading services and taking on greater patient-facing roles. The evolution of pharmacy technician training supports these increasing clinical and technical lead roles, and it is essential that these skills are optimised.

Currently, there is no clarity or formalised process for what advanced practice looks like for pharmacy technicians. Similar to pharmacists, a tiered pharmacy technician workforce approach of advancing practice, through credentialing assessment aligned to the four pillars of practice within the RPS pharmacist post-registration curricula, is needed. This will ensure pharmacy technicians have the capabilities and competencies to practice at an advanced level, developing a workforce to meet future patient and service needs. Within our engagement sessions with the workforce, we heard that, sometimes, pharmacy technicians felt they needed to gain the trust of the pharmacist before completing certain tasks and, likewise, pharmacists needed assurance of, and trust in, the pharmacy technician's ability. A post-registration development pathway for pharmacy technicians, supported by curricula and milestone assurance assessments that create a tiered workforce of advancing practitioners, would help to address this, with credentialing acting as a marker of competence.

Good practice example:
Pharmacy technician-led clozapine clinics

At Ty Derbyn in Wrexham Maelor Hospital (Betsi Cadwaladr University Health Board), pharmacy technicians, in collaboration with the nursing team, lead a weekly clozapine clinic, where they are responsible for running blood samples through a point-of-care haematology (PocHi) analyser. The analyser provides a result within minutes, which (providing the result is within range) allows the team to issue the clozapine to patients at their appointments. The pharmacy technicians lead on counselling patients on their medication, perform medication reviews, and ask them about side effects and signs of toxicity. A holistic approach is taken to give guidance on sleep hygiene, caffeine intake and smoking. Working closely with the nurses in the clinics also allows the pharmacy technicians to ensure annual physical health monitoring and clozapine assays are carried out, as well as prompt any blood tests that are due.

At Cefn Coed Hospital (Swansea Bay University Health Board), pharmacy technicians have regular input into clozapine clinics and lead on counselling patients on smoking status, adherence and side effects. A pharmacist is available on site to refer to if there are any clinical queries requiring input. Pharmacist time has been released and pharmacy technicians have increased responsibility, which is welcomed. It is felt this has raised the profile of pharmacy within the community mental health teams.

Senior leadership and management pharmacy technician roles are currently very limited in pharmacy structures in Wales. More focus and support are required to identify potential senior roles for pharmacy technicians in the hierarchy of the pharmacy management structure and in the more specialist areas of the pharmacy service. The perceived barriers in workforce frameworks, such as Agenda for Change national profiles, must be addressed.

There must also be support to develop a more inclusive and supportive culture where roles are working across traditional, professional boundaries.

[20] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/Pharmacy%20Vision%20English.pdf?ver=2019-05-21-152234-477

[21] https://pharmaceutical-journal.com/article/opinion/stepping-back-from-crisis-delivering-a-future-workforce-vision-for-pharmacy

[22] https://www.pharmacyregulation.org/sites/default/files/standards_for_the_initial_education_and_training_of_pharmacy_technicians_october_2017.pdf

It was evident in our engagement sessions that pharmacy colleagues at all levels want the opportunity to advance their practice; however, many shared that they often felt apprehensive about committing to courses over an extended period of time. A preferred option for many would be a flexible, modular training approach, where learning is tailored to their needs and aligned to the national professional leadership body post-registration curricula. This would allow pharmacy professionals to demonstrate learning and competence through credentialing and, if relevant, accumulate academic credits for potential higher awards. This also has an added benefit of allowing more people to access resources for such training, using the same funding envelope rather than investing in long-term alternative qualifications. In addition, this training would help to promote a culture of continuous learning and development.

> *"Learning against professional curricula should be innovative, diverse, and outcome-based, flexing to the needs and context of each individual. Education and training provision could be experiential, vocational and/or academic and should not be stifled by burdensome accreditation processes or limited to certain providers. Quality management of training will be provided by commissioners and assured by RPS's independent end-point assessments, delivered in collaboration with the wider profession."*[23]

NON GPHC-REGISTERED PHARMACY STAFF

Releasing the clinical capacity of pharmacists and pharmacy technicians to operate at a more advanced level needs to be facilitated by the upskilling of all members of the pharmacy team. Support staff must be empowered to take on greater levels of responsibility with the appropriate training and approval. Applying Prudent health principles requires a correct balance of skill mix within teams to ensure "all people working for the NHS in Wales operate at the top of their clinical competence" [24].

The GPhC set out requirements in 2020 for the education and training of pharmacy support staff to ensure they have the necessary knowledge, skills, attitudes and behaviours to provide safe and effective care and to ensure patient safety [25].

Since then, pharmacy assistants have increasingly taking on patient-facing roles. Within our engagement sessions, we heard of some examples of non-registered staff supporting clinical and patient-facing pharmacy teams.

Career progression for these team members is crucial, and a development framework must be developed and implemented. Pharmacy support staff are a vital component of the workforce in secondary care and an essential pipeline to the pharmacy technician workforce of the future.

> *"We will ensure that all pharmacy support staff are given appropriate training and development pathways in order to maximise their skills and competencies for patient benefit."*[26]

NON-PHARMACY EXPERTISE

Most of the pharmacy and medicines management structures are composed of pharmacy professionals and administrative staff. Digital, secretarial and business management roles are increasingly being adopted within pharmacy departments.

There are currently limited examples of specialist roles being undertaken by non-pharmacy professionals.

Service leads need appropriate specialist support roles to ensure their focus is on what only they can deliver. The following should be considered in diversifying structures:

- Project managers;
- Data analysts;
- ICT leads;
- Business/finance support;
- General/directorate management;
- HR management;
- Quality improvement.

[23] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20Leadership/Our%20vision%20for%20the%20future%20of%20pharmacy%20professional%20leadership.pdf

[24] https://vbhc.nhs.wales/images/helpful-materials/bevan-commission-prudent-health

[25] https://www.pharmacyregulation.org/sites/default/files/document/gphcrequirements-for-the-education-and-training-of-pharmacy-support-staff-effective-october-2020_0.pdf

[26] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/Pharmacy%20Vision%20English.pdf

Key findings

FROM THE EVIDENCE:

- A high proportion of pharmacists are at risk of burn out and are considering leaving the profession;
- Chief pharmacists have told us health board vacancy rates in pharmacy staffing are running at around 20%;
- Job planning is a key enabler to delivering high standards of care and professionalism;
- Credentialed practitioners deliver improved quality of care, clinical outcomes and better patient safety;
- Continuing professional development, including protected learning time, is an essential component for all pharmacy professionals throughout their career.

WORKFORCE ENGAGEMENT EVENTS:

- Job planning occurs infrequently across the pharmacy workforce in Wales;
- Optimal skill mix and prudent healthcare principles are not fully embraced for the pharmacy workforce in Wales;
- Awareness of the changes to initial education and training of pharmacy professionals and their impact are limited;
- There is no clarity or formalised process for what advanced practice looks like for pharmacy technicians.

Goal 4

A credentialed workforce, confident to work at advanced levels, in which pharmacy professionals have the time and opportunities to develop and advance their practice throughout their careers, to meet the needs of patients.

A workforce that feels supported and valued to achieve a sense of purpose, wellbeing, belonging and motivation.

Recommendation 16:
The skill mix of pharmacy teams must reflect the prudent healthcare principle of "only do what only you can do" to maximise the opportunities that all roles can deliver

Prudent healthcare principles require all team members to operate at the top of their clinical competence, embracing the mantra of "only do what only you can do". To release the clinical capacity of pharmacy professionals, the skills of the non-registered members of the team must be fully utilised. This is essential if pharmacy staff are to not only provide patients with the highest quality care, but also enjoy fulfilling and sustaining careers.

The principle of ensuring the workforce is operating at the top of its competence underpins much of the Welsh Government's strategies; specifically, this recommendation will help to contribute to delivery of the aims of 'A Healthier Wales'[27]. The strategy acknowledges the need for "enabling staff to work at the top of their skill set and across professional boundaries, in line with the philosophy of prudent healthcare"[28].

Good practice example:

At Morriston Hospital in Swansea Bay University Health Board, a pharmacy-led venous thromboembolism (VTE) treatment service was established in 2014. The service has evolved considerably; pharmacists now initiate anticoagulant therapy, request and interpret all relevant investigations (e.g. echocardiogram, thrombophilia screening), undertake follow-up review with patients, including assessing symptomatic recovery from their thrombotic event and deciding on a long-term management plan for their VTE.

All patients with a diagnosis of VTE can access the service and referrals are accepted from across the health board.

Pharmacy technicians play a pivotal role in the service, undertaking consultations and providing advice to patients. The primary benefit has been the upskilling of pharmacists and pharmacy technicians to support the service. The pharmacists delivering the service are largely based in the unit, which is considered their working base. As such, they are considered a member of the same-day emergency care team. This has raised the profile of pharmacy, not just within that area, but across the health board, given the breadth of healthcare professionals who refer to the service. The upskilling of pharmacy technicians to undertake consultations has been invaluable to support the service.

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Workforce Quality Assurance: Operational policies, procedures, and plans are in place to ensure that the pharmacy workforce is managed and appropriately resourced to support service quality, productivity, and safety.

[27] https://www.gov.wales/healthier-wales-long-term-plan-health-and-social-care

[28] https://www.gov.wales/prudent-healthcare

Recommendation 17:
Pharmacists must demonstrate their competency through credentialing in order to progress their careers, including through to advanced and consultant roles, across all settings

In line with medical colleagues, a tiered workforce of advancing practice, through credentialing assessment aligned to the four pillars of practice within the RPS pharmacist post-registration curricula, is needed.

Credentialing provides quality assurance to both the public and health boards/trusts of the attainment of the necessary knowledge, skills and attributes of a health professional at a particular level. The credentialing process must recognise that competencies attained in one setting are transferable to another, facilitating a fluid, agile workforce, entrusted to deliver care across settings.

A similar approach is necessary for pharmacy technicians, once a career framework has been established.

Good practice example:

At Aneurin Bevan University Health Board, a consultant pharmacist-led antimicrobial pharmacy team is responsible for leading antimicrobial stewardship (AMS) and delivering tier 1 Welsh Government targets for the organisation.

The antimicrobial stewardship service supports the clinical pharmacy team and wider healthcare disciplines to deliver AMS, through provision of education, guidelines and ready access to antimicrobial stewardship expertise.

In just over 2 years, over 1,800 patients have been reviewed, and more than 2,400 interventions made to optimise antimicrobial therapy, including stopping treatment in 21% of patients. In response to wider, sustained AMS work there has been a minimum 10% reduction in the use of 'watch' and 'reserve' antibiotics at each site, which are antibiotics with a higher risk for resistance and other adverse effects, including *C. difficile* diarrhoea.

In addition to patient-facing activities, the team, under the guidance of the consultant pharmacist, lead and deliver a programme of work across the organisation, including provision of surveillance data, development of relevant guidelines and policies, working with other infection-related groups, and providing AMS education, consistently reaching in excess of 1,000 multidisciplinary healthcare professionals every year.

Recommendation 18:
Pharmacy technician roles must have a post-registration development structure that supports their progression and defines and assures their advancing levels of practice

Credentialing within the pharmacy setting can be described as the process of defining and assuring post-registration standards of patient-focused pharmacy practice. Similar to advancing pharmacist practice, to assure pharmacy technicians have the capabilities and competencies to practice at an advanced level, a credentialed post-registration development pathway is needed. This provides assurance for patients that they receive the best possible care from professionals that have undergone stringent scrutiny in the area of practice. Similarly, it demonstrates a level of competency to other healthcare professionals to aid trust and inter-professional working.

This recommendation aligns to the goals and principles within 'Pharmacy: delivering a healthier Wales', where the vision describes there will be "clear development pathways for pharmacists and pharmacy technicians from pre-foundation training through to advanced practice"[29].

[29] https://www.rpharms.com/wales/pharmacy-delivering-a-healthier-wales

Recommendation 19:
A culture of continual professional development, quality improvement, service evaluation and research must be further embedded within the pharmacy team. Education providers must design flexible training around the workforce needs

Acquiring, developing and maintaining professional competence throughout a professional career, during which new and challenging professional responsibilities and changing healthcare situations will be encountered, is a fundamental professional and ethical requirement for all health professionals, including pharmacists[30].

Pharmacy professionals must have access to protected time for learning, quality improvement and research and development to help facilitate this, and it must be allied to their professional responsibility, where additional personal time for learning may also be required to maintain competence.

Learning must be flexible to the needs of the individual, using a mixed approach of experiential, vocational and academic learning, aligned to the national professional leadership body post-registration curricula.

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Workforce development: the pharmacy team is supported to develop new skills and attributes to meet the needs of people using services, their families, and circles of support across the health and social care system.

Recommendation 20:
The education and training of pharmacy teams, including undergraduate placements, must be further integrated in wider healthcare training, to allow multiprofessional training and embed pharmacy as an essential component of the MDT

Despite evidence of the benefits of multiprofessional training and the complementing of skill sets[31], there is still much progress to be made to ensure multiprofessional training becomes the norm and pharmacy professionals not only learn from others, but are also able to impart their skill set. The appreciation of different healthcare disciplines aids the formation of MDTs, in turn improving patient care and job satisfaction, and helping to develop relationships between colleagues.

A Healthier Wales[32] says that "for the workforce themselves, the strategy will mean they feel valued and supported at all stages of their career, supported by access to refocused education and training as well as ongoing development offers. It will open up opportunities to flexible career pathways and maximise opportunities for multiprofessional learning". This recommendation will help the Welsh Government deliver on multiprofessional training and learning.

Good practice example:

A programme to host undergraduate pharmacy student placements at scale is being delivered in Cwm Taf Morgannwg University Health Board, involving multiple stakeholders and multiple staff groups in support of the transformation of education and training of pharmacists, which is mandated by the updated GPhC standards. An initial pilot commissioned by HEIW has seen 25 students hosted for one or two weeks each in the first half of 2022/2023. This is planned to be escalated to over 300 placement weeks for 2023/2024.

Students are integrated into MDTs and are supported to reach their Entrustable Professional Activities competencies in medication history taking, providing lifestyle advice and therapeutic drug monitoring, among others.

The project has been enabled and driven by the close working relationship between the pharmacy team and the clinical education team in the health board. The result of an increased number of well-planned and high-quality experiential placements will have a beneficial impact on the workforce and put the health board in a great position for the recruitment of students later in their careers. It promotes the culture of learning and will ensure that the students of today are fit for the pharmacist role and the service demands of the future.

[30] https://www.fip.org/file/5241

[31] https://www.sciencedirect.com/science/article/pii/S2405452618302222

[32] https://www.rpharms.com/wales/pharmacy-delivering-a-healthier-wales

Recommendation 21:
All registered pharmacy professionals must have a job plan that integrates the four pillars of professional practice: clinical practice, leadership and management, education and research in a way that is appropriate to each stage of their career

To ensure enough clinical capacity, aid service recovery and staff wellbeing, whilst protecting appropriate time for the continuous professional development needs of pharmacy professionals, job planning is essential. NHS England has already published guidance on this [33] and this approach must be adopted in Wales. Through adopting the four pillars of professional practice into all roles, we can help to implement the tiered workforce of advancing practice across NHS Wales.

> *"I believe job planning within the cancer centre has made a difference to my role, as I can now plan when I have time to set up meetings around my clinical duties. Unless there is a significant staff shortage due to illness etc., where I would need to cover the rota at late notice, I can plan my allocated time to develop guidelines and work on projects that I am involved in in a manageable way. I believe this makes me more productive within my role and lets me feel less snowed under!"*
> *— VCC Trust Pharmacist*

Recommendation 22:
Pharmacy workforce plans should be developed at both local and national levels, developed collaboratively with the MDT and aligned to Welsh Government and NHS priorities

Workforce planning must be informed by robust data that take into account factors such as whether people are working across different settings, or working part time, for example. For many national clinical priority areas, strategies that include coordination of services across the whole of Wales should be considered, with accompanying consultant posts.

Trends in patient data; for example, the anticipated increase in the number of patients requiring care for a long-term condition should also be taken into account, as well as the number of healthcare professionals training for or currently working in the specialty.

Good practice example:

Prior to the opening of the Grange Hospital in 2021, Aneurin Bevan University Health Board developed 'Clinical Futures', a plan for a sustainable healthcare system for all NHS settings across the region. To support this, the health board ran a monthly workforce planning meeting, where workforce leads from each of the professional groups, including pharmacy, were required to submit and present their plan. Workforce plans included workforce data, such as the ageing population of pharmacy technicians across the health board, and included hospital, primary care and community. This encouraged multidisciplinary working and a more comprehensive approach to ensure the needs of patients could be met across the disciplines in advance of the new hospital opening.

Recommendation 23:
The pharmacy and medicines management service must diversify their structures to include more non-pharmacy expertise; for example, clinical informaticists, project managers and data analysts

We have heard of very few examples of non-pharmacy professionals working within pharmacy teams. The benefits of non- pharmacy professionals as part of pharmacy teams have been described, such as: digital and animation expertise in helping to develop tools that ensure care is developed with patients for patients.

Advancements in healthcare technology and the complexity of medicines will continue to grow and develop at pace over the next 10 years. Pharmacy teams will need to collaborate and embed their skills within MDTs that may include professions that they have not traditionally worked with in clinical practice; for example, data scientists, engineers and bioinformaticians [34, 35].

[33] https://www.england.nhs.uk/long-read/e-job-planning-for-pharmacists-and-pharmacy-technicians-a-good-practice-guide/

[34] https://ec.europa.eu/ health/human-use/advanced-therapies_en

[35] https://www.rpharms.com/wales/pharmacy-delivering-a-healthier-wales

Action points

- Embed post-registration credentialling and competency pathways for all pharmacy professionals in clinical roles, empowering individuals to take on greater clinical responsibility and engendering trust and assurance in their competence from within pharmacy and the wider MDT;
- Adopt a post-registration career framework for all pharmacists working in hospitals and primary care roles in the NHS.
- Refresh the Pharmacy Research Strategy to recognise quality improvement and the NHS priorities to inform the research plans for Wales;
- Develop a national workforce plan, informed by strategic and operational plans from each health board/trust and commission appropriate workforce development opportunities;
- Create and maintain local pharmacy workforce plans;
- Develop a pharmacy technician post-registration development framework, in line with the recognised four pillars of practice;
- Develop job description templates and profiles for both pharmacists and pharmacy technician roles, to inform and update Agenda for Change national profiles;
- Develop and deliver flexible units of learning to address specific workforce needs, with the potential to accumulate academic credits. For pharmacists, these should be aligned to the RPS post-registration curricula;
- Utilise a multiprofessional training approach, where appropriate, especially in early career development;
- Create health board/trust-wide multidisciplinary education and training structures that include the expertise of pharmacy training leads;
- Develop and implement national templates for job planning, with sessions allocated for leadership and management, research and education (of self and others). Job planning should consider community outreach services;
- Develop and utilise accurate and timely workforce datasets from job planning and resource mapping tools;
- Identify and resource research mentors for pharmacy professionals to facilitate research and innovation;
- Continually appraise workforce needs as new technologies are embedded into practice;
- Identify and support potential for advanced and consultant pharmacist practice within workforce plans, following the RPS credentialing and post-approval processes;
- Employ diverse skills into the workforce; for example, project managers, data analysts, ICT leads, business/finance support, directorate and HR management, and service and quality improvement;
- Build capacity within the hospital service, to plan, deliver and evaluate undergraduate clinical placements through long-term resource mapping.

Leadership

Strong, effective and compassionate leadership across pharmacy teams and services is essential to:

- Improve patient outcomes through safe and effective medicines use;
- Continually improve the quality of patient care and medicines safety;
- Transform pharmacy services to better meet the changing needs of patients and the NHS and;
- Harness new technologies and ensure equitable access to new medicines.

'Pharmacy: Delivering a Healthier Wales'[1] includes several leadership goals within the long-term goals and short-to-medium term actions required to transform the role and contribution of pharmacy teams to the benefit of patients and the wider population. It states:

> *"The expectation and desire of pharmacists and pharmacy technicians to take on more responsibility must be realised and strategically led within all sectors. There must be leadership skills and training embedded throughout every step of the pharmacy career pathway, starting at undergraduate and pre-registration levels"*

The Welsh Government workforce strategy recognises effective leadership as a key requirement in delivering their strategy: "By 2030, leaders in the health and social care system will display collective and compassionate leadership"[2]. Leadership is also ingrained within a number of standards for pharmacy professionals, including GPhC regulatory standards[3] and the RPS's 'Professional Standards for Hospital Pharmacy Services', published in 2022[4], which state: "The pharmacy team are recognised as leaders on medicines, medicines use, and innovations in medicines technology both within the organisation and across the health system."

On a global level, the FIP Development Workforce Element stresses the need for strategies and programmes to be in place that develop professional leadership skills (including clinical and executive leadership) for all stages of career development, including pharmaceutical sciences and initial education and training[5].

Following the call for good practice examples in the evidence-gathering stage of the review, more than 140 examples were submitted. They demonstrate excellent examples of pharmacy professionals leading a clinical service and highlight how pharmacy leadership is delivering improved patient outcomes, service improvement and transformational change. However, the roll out and uptake of best practice across all health boards/trust appears slow. There needs to be a thriving culture of learning from others and appropriate

[1] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Wales/Pharmacy%20Delivering%20A%20Healthier%20Wales%20Summary%20Guide.pdf

[2] https://www.gov.wales/healthier-wales-long-term-plan-health-and-social-care

[3] https://www.pharmacyregulation.org/sites/default/files/standards_for_pharmacy_professionals_may_2017_0.pdf

[4] https://www.rpharms.com/recognition/setting-professional-standards/hospital-pharmacy-professional-standards

[5] https://developmentgoals.fip.org/dg6/

forums, in the form of a community of practice, to share and spread best practice at pace.

Senior leadership must embrace a culture of celebrating best practice in their teams and, importantly, other teams, which would contribute to our vision for Wales to be a global exemplar of best pharmacy practice. The work environment must encourage and support innovation from all members of pharmacy teams, allowing ideas to be tested and shared.

In response to the COVID-19 pandemic, pharmacy services in the acute sector demonstrated innovation, implemented significant changes to their service delivery and supported other clinical services to change and innovate. The key enablers and barriers have been captured in the 'NHS Wales COVID-19 Innovation and Transformation Study'[6]. This report provides recommendations for how decision-makers and practitioners across NHS Wales can sustain the innovative and transformative ways of working that have emerged from the pandemic.

It was evident that pharmacy professionals in Wales have excellent knowledge and skills, and work in a culture that allows the delivery of high-quality, safe and compassionate healthcare services. However, our engagement events showed that pharmacy teams are keen to have more ownership over their working practices within a more cohesive vision. Pharmacy professionals need to be more confident and empowered to lead at all levels within their teams and the healthcare system.

Clinical leadership from pharmacy professionals should be more apparent, supported and developed throughout the clinical system and tiered pharmacy workforce. As leadership and management is one of the RPS four pillars of practice for advanced and consultant-level pharmacists, it is essential that development opportunities are established by the service and supporting organisations, such as HEIW.

The development of pharmacy technicians to fully realise their leadership and management potential must be supported, reinforcing the need for formal post-registration development structures.

Appropriate and timely leadership development at all career stages underpins effective succession planning for key senior leadership positions. A clear plan must be in place for the development of leadership and management competencies throughout the career pathways of pharmacy professionals in Wales. This must include succession planning and talent management frameworks.

A report on senior leadership development in pharmacy has recently been commissioned by HEIW. It has been developed in tandem with this review and will provide potential actions, frameworks and support to improve and progress leadership development and succession planning within all pharmacy roles. It is recommended that this report is adopted and implemented when it is made available to the service.

CONSULTANT PHARMACISTS

A consultant pharmacist is a clinical expert working at a senior level, delivering care and driving change across the healthcare system. The individual will have completed a credentialing process and have demonstrated that they have the level of competence expected of consultant practice. A parallel process is in place for the RPS, as the professional body to review and approve a consultant pharmacist post[7].

There is a recognised need for increased clinical pharmacy and medicines-focused leadership across healthcare systems. Consultant pharmacists have the expertise, knowledge and skills to support this, which would produce better outcomes for those with the most complex needs as well as the wider population.

Consultant pharmacists are ideally placed to lead across the interface of primary and secondary care, establishing a framework for clinical specialist pharmacy teams supporting those with complex and specialist medicines needs to live safely at home. This supports, and is consistent with, the goal described in 'Pharmacy: Delivering a Healthier Wales'[1] to develop an integrated community care system for Wales.

The strategic development of consultant pharmacists and associated posts will provide the workforce with expert practitioners and clinical leaders to shape and lead pharmacy practice for the benefit of the patients, the NHS and the profession.

Consultant pharmacist roles are apparent in most but not all of the health boards/trusts in Wales. Their development appears to be driven by the personal clinical specialty and interest of the individual pharmacist concerned, in the absence of a clear, national strategic approach, which would better support the pharmacy profession to meet the needs of the NHS and patients.

There are increasing numbers of pharmacists in Wales, who are either credentialed or undergoing credentialing with the RPS. Many of these pharmacists are being supported by HEIW's Consultant Pharmacist Community of Practice with investment from Welsh Government. However, it remains the case that there is not an overall consultant pharmacist workforce plan in Wales that aligns with NHS priorities or patient need.

[6] https://www.nhsconfed.org/publications/nhs-wales-covid-19-innovation-and-transformation-study

[7] https://www.hee.nhs.uk/sites/default/files/documents/Consultant%20Pharmacist%20Guidance%20Final%20Jan2020.pdf

SENIOR LEADERSHIP

Pharmacy executives provide strategy for essential decisions related to medication-use systems, prioritising tasks, developing workgroups, and eliminating barriers, allowing pharmacy teams to deliver care to patients[8].

Delivering aspirational, ambitious and transformational plans for patient-centred care in the acute setting requires excellent leadership from Directors of Pharmacy and their teams. Pharmacy teams, in turn, need support and resources from health boards/trusts and Welsh Government, and sufficient, ringfenced time to deliver, operationalise and embed the plans.

Where there are pharmacy executives in place, within health boards/trusts, they have been shown to positively contribute to the priorities of the whole organisation: Pharmacy executives are ideally equipped to be active participants in designing a strategy for promoting health systems that are successful and dynamic, to meet and exceed the expectations of an evolving future of healthcare delivery[9].

Feedback from Directors of Pharmacy indicates that leadership and management structures of pharmacy and medicines management services differ between health boards/trusts, with different lines and tiers of reporting. NHS organisations in Wales need senior leadership from within the pharmacy profession to promote and ensure the optimisation and management of medicines and medicines safety and governance. This is currently not the case in the majority of NHS organisations in Wales. There is no mandate for pharmacy to have a presence or be directly represented at board level or in senior leadership teams. Individual health board/trust processes, particularly quality, safety and service planning, must be improved to ensure board members (executive and non-executive) understand the key risks and issues for medicines use and pharmacy service delivery across their organisation.

The inconsistencies were reinforced by the numerous titles used for the most senior pharmacist in each health board/trust, which included the 'Head of Pharmacy and Medicines Management Services', 'Director of Pharmacy and Medicines Management', and 'Chief Pharmacist'. In particular, the term 'Chief Pharmacist' has taken on a statutory meaning since the Pharmacy (Preparation and Dispensing Errors – Hospital and Other Pharmacy Services) Order came into effect in 2022. This relates specifically to the role of the senior pharmacist in a hospital and does not necessarily reflect the wider-system role they have in integrated health boards.

Our engagement identified frustration within the pharmacy service that the planning of other clinical services often does not include pharmacy or medicines management, and that there is a constant feeling of being on the 'back foot' and fighting for recognition and resources. Safe and appropriate staffing levels, operational impacts of prescribing and the governance of medicines must be considered in all clinical service planning. This also applies to clinics, virtual wards and homecare services.

The pharmacy senior leadership in Wales has a good track record of collaboration and, through a network of specialist pharmacy leadership groups, has achieved a consolidated and standardised approach in several clinical and medicines safety areas. This has delivered an All-Wales Medicines Reconciliation Policy, All Wales Pharmacist Enabling Guidelines, a Welsh inpatient medicines prescribing and administration record chart, with supporting Welsh Prescribing Standards (winner of the 2004 UK Clinical Pharmacy Association Pfizer Medicines Safety Award), and a Welsh electronic discharge advice letter (working with Digital Healthcare Wales).

Cohesive, strategic pharmacy leadership has been provided by the Directors of Pharmacy Peer Group in Wales. Working with the All-Wales Medicines Strategy Group (through the All-Wales Therapeutics and Toxicology Centre) the Directors of Pharmacy Peer Group also supported National Prescribing Indicators to ensure safe and cost-effective use of anticoagulants, antimicrobials and biosimilar medicines, implemented through specialist pharmacy teams locally. The group also collaborated to develop a pharmacy workforce resource-mapping process, which was used to support workforce planning.

Recent changes resulting from newly appointed Directors of Pharmacy may mean a review of the peer group's scope and purpose is required, with support needed for it to function at pace as a high-value, creating team. Successful, high-value, creating teams look at outcomes, impact and the value the team creates for others, both now and in the future. Its aim is to create success for the whole organisation. The peer group must, therefore, be more outward-looking and consider what other teams and systems need from their services.
This is an ideal time and opportunity for the peer group to refresh their connections and engage with all key colleagues, patients and organisations in NHS Wales. There is a need for a cohesive and consistent steer to health boards/trusts on the Wales-wide vision or direction for pharmacy and medicines management. This can be provided by the peer group developing an overall strategic framework or direction for pharmacy services in Wales This must be supported by HEIW's development of a pharmacy workforce plan for Wales.
There is also a need for robust succession planning and career development to ensure senior pharmacy professionals, consultant and specialty lead pharmacists are seamlessly recruited to in future years.

[8] https://academic.oup.com/ajhp/article/79/6/405/6422614

[9] https://academic.oup.com/ajhp/article-abstract/79/6/405/6422614

Key findings

FROM THE EVIDENCE:

- Leadership is a key pillar for professional development at all levels;
- Patients benefit from consultant pharmacist expertise, knowledge and skills.

WORKFORCE ENGAGEMENT EVENTS:

- Patients have benefitted from strong, collaborative senior pharmacy leadership in Wales; however, those benefits are generally limited to the core role of pharmacy teams and not their wider impact on systems;
- Pharmacists are not a member of the executive board in any health board or trust;
- Innovative and transformative ways of working through strong leadership were demonstrated during the COVID-19 pandemic by pharmacy teams;
- There is currently limited succession planning and talent management processes in place for the pharmacy workforce;
- Consultant pharmacist roles are apparent in most but not all of the health boards/trusts in Wales.

Goal 5

All pharmacy professionals demonstrate strong, effective and compassionate leadership appropriate to their role and are developing as leaders throughout their career stages.

Recommendation 24:
Pharmacy must consistently embrace the four pillars of advanced practice — i.e. clinical practice, leadership and management, education and research — to drive models of excellence

Just as professional development is not static, neither is leadership development. The RPS Leadership Development Framework[10] and advanced practice frameworks[11] recognises that professionals should "create a culture for collective leadership, for their own personal and professional development, for the enhanced care and health outcomes of patients and public and to demonstrate clearly the benefits and values of the profession".

The RPS has embedded leadership competencies in the professional frameworks for foundation and advanced pharmacy practice and in consultant pharmacist curricula.

The four pillars of advanced practice are a consistent framework for all pharmacy professionals to develop, recognise and apply their leadership skills and behaviours throughout their career stages.

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Personal and Professional Leadership: The pharmacy team take responsibility for their work, recognising they have a duty of care to people and to act in their best interests. They are supported to achieve this by the senior leadership team.

Recommendation 25:
Leadership and management knowledge and skills must be developed and supported for all pharmacy professionals throughout their career

A structured development framework with effective appraisal and development planning that includes leadership development is essential. The Chartered Institute of Personnel and Development says every pharmacy professional is a potential leader with latent behaviours that can be "nourished, recognised and released in daily interactions and ways of 'being' and of doing things together. Engagement is the key to exploiting this resource"[12].

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Clinical Leadership: The pharmacy team are recognised as leaders on medicines, medicines use and innovations in medicines technology, both within the organisation and across the health system.

[10] https://www.rpharms.com/resources/frameworks/leadership-development-framework
[11] https://www.rpharms.com/resources/frameworks/advanced-pharmacy-framework-apf
[12] https://engageforsuccess.org/wp-content/uploads/2015/10/Shaping-the-Future-Engaging_Leadership-Creating-Orgs-that-Maximise-the-Potential-of-their-People.pdf

Recommendation 26:
A strategy must be developed in Wales for advanced and consultant pharmacist roles at a local, regional and national level. Talent management and succession planning must be in place for advanced practice and consultant roles

The strategic development of consultant pharmacists and associated posts will provide the expert practitioners and clinical leaders to shape and lead pharmacy practice for the benefit of patients, the NHS and the profession.

Consultant pharmacists have demonstrated cross-sector, integrated leadership with improved patient outcomes and benefits to the NHS.

Good practice example:

A consultant pharmacist-led antimicrobial team was established at Aneurin Bevan University Health Board in 2018/2019, responsible for leading antimicrobial stewardship (AMS) and delivering tier 1 Welsh Government targets for the organisation.

Weekly antimicrobial ward rounds were introduced at each site in December 2020 in conjunction with microbiology, to review patients' referrals from the medical or pharmacy team. In just over 2 years, over 1,800 patients have been reviewed, and more than 2,400 interventions made to optimise antimicrobial therapy, including stopping treatment in 21% of patients.

In response to wider, sustained AMS work there has been a minimum 10% reduction in the use of 'watch' and 'reserve' antibiotics at each site, which are higher risk for resistance and other adverse effects, including C. difficile diarrhoea.

Recommendation 27:
Pharmacy must be better represented within the health board and trust senior leadership teams, and improving the quality of medicines use should figure more prominently in discussions at board and board committee levels

Pharmacy executives are ideally equipped to be active participants in designing a strategy for promoting health systems that are successful and dynamic in meeting and exceeding the expectations of an evolving future of healthcare delivery[13].

Pharmacy services and medicines use must be considered in all clinical plans and developments from the outset and pharmacy leaders must get on the front foot. Directors of Pharmacy should be members of the executive board or report directly to an Executive Director.

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Clinical Leadership: The pharmacy senior leadership team ensures that the organisation maintains a clear vision for pharmacy services, ensuring timely access to medicines as well as their optimal use across the organisation and wider healthcare system.

[13] https://academic.oup.com/ajhp/article-abstract/79/6/405/6422614

Recommendation 28:
Strategic leadership for pharmacy in Wales must be collaborative across pharmacy and the wider healthcare system. It must also be more cohesive, outward-facing and ambitious

The NHS Wales Planning Framework 2020/2023[14] states:

> *"The NHS in Wales must ensure equity and improved access to services, whether at local community level or in acute hospital settings. Organisations must utilise the improvement opportunities offered by the national programmes, for example planned care, unscheduled care, endoscopy, mental health, primary care, value and efficiency etc. These national programmes provide tools and advice to embed preventative and sustainable approaches into operational delivery".*

Cohesive, strategic pharmacy leadership can and has been provided by the Directors of Pharmacy Peer Group in Wales. This peer group is ideally placed to identify and progress the opportunities offered by the national programmes. The opportunities may not always be obvious for pharmacy and will require a more outward looking, collaborative approach to consider what other teams and systems need from their services.

Action points

- Develop communities of practice, with consultant pharmacist leadership, to share and spread best practice at pace across Wales;
- Implement the actions and frameworks identified in the HEIW 'Senior Leadership Development in Pharmacy' report (when available);
- Develop a consultant pharmacist strategy and implementation plan;
- Develop a succession plan for specialist and consultant pharmacist roles within workforce plans. This must include the leadership and management capabilities of the advanced practice workforce;
- Consider mandating either that the head of the pharmacy profession and accountable officer for medicines management and optimisation in each health board/trust has a seat on the executive boards OR that there is a professional route to being a member of the executive board; for example, pharmacy is included in an Executive Director title and responsibility, such as Director of Pharmacy, Therapies and Medical Scientists;
- Provide system-wide leadership to develop and publicise a cohesive, strategic framework and vision for pharmacy and medicines management for health board/trusts in Wales through the Directors of Pharmacy Peer Group;
- Develop a strategic plan for the pharmacy service and the management of medicines to align with the health boards/ trusts Integrated medium Term Plan, IMTP cycle.

[14] https://www.gov.wales/sites/default/files/publications/2019-09/nhs-wales-planning-framework-2020-to-2023.pdf

Quality and governance

Quality is more than just meeting service standards; it entails a system-wide way of working. Quality means safe, timely, effective, efficient, equitable and person-centred healthcare, which is embedded within a culture of continuous learning and improvement[1].

"Putting quality and safety above all else", is one of the core values that underpins the NHS in Wales, supporting good governance and helping to ensure the achievement of the highest standards[2]. The importance of understanding the components of quality is fundamental to addressing improvements in healthcare delivery. These are detailed by the Institute of Medicine[3] as safety, timeliness, effectiveness, efficient, equitable and person-centred; providing a valuable framework to evaluate and advance quality of care.

Clinical governance is the system through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care, by creating an environment in which clinical excellence will flourish (Department of Health).

The RPS Professional Standards for Hospital Pharmacy Services[4], published in 2022, describe quality pharmacy services (or 'what good looks like'). The standards provide a broad framework that will support pharmacists and their teams to continually improve services, shape future services and roles, and deliver high-quality patient care across all settings and sectors.

The GPhC[5] sets standards for pharmacy professionals, including their initial education and training, and registered pharmacies in Great Britain. These standards help to make sure people using pharmacy services receive safe and effective care.

Through new legislative orders, the GPhC will strengthen governance in hospital pharmacy with powers to set professional standards for Chief Pharmacists. Draft standards are expected to be published for consultation in autumn 2023.

Governance is ensuring "systems of work are established that are safe, productive, support continuous quality improvement, are regularly audited and comply with relevant regulations"[6].

Patients must experience and have assurance that their hospital pharmacy services are delivering quality care, operating to professional and service standards of best practice and held to account by an appropriate authority.

[1] https://www.gov.wales/sites/default/files/consultations/2022-10/the-duty-of-quality-statutory-guidance-2023-and-quality-standards-2023.pdf

[2] https://nwssp.nhs.wales/a-wp/governance-e-manual/living-public-service-values/values-and-standards-of-behaviour-framework

[3] https://pubmed.ncbi.nlm.nih.gov/25057539/

[4] https://www.rpharms.com/recognition/setting-professional-standards/hospital-pharmacy-professional-standards

[5] www.pharmacyregulation.org/sites/default/files/standards_for_pharmacy_professionals_may_2017_0.pdf

[6] https://www.rpharms.com/recognition/setting-professional-standards/hospital-pharmacy-professional-standards

The pharmacy team support all health and social care staff who are prescribing, handling, administering, or monitoring the effects of medicines. They ensure access to relevant, up-to-date evidence-based information, policies, and pharmaceutical expertise[7].

The integrated quality systems and governance for managing and optimising medicines use is predominantly developed, implemented and policed by the pharmacy and medicines management service. However, we learned at our engagement events that this key function is often not recognised or valued by health boards. Whilst there are medicines and therapeutics, or similar, committees in all health boards, they are often not fully supported by the other professions. The RPS standards recognise the importance of multiprofessional engagement and involvement in medicines quality and governance.

Audit and research are key drivers for quality improvement and good clinical governance within healthcare. A significant number of audit and service improvement projects were submitted as part of our request for good practice examples for this review. The importance of this area is recognised by Welsh Government in the report 'Diagnostics Recovery and Transformation Strategy for Wales 2023 – 2025': "Creating an environment where research and innovation improves outcomes, experiences and success is scaled"[8].

However, there is much less evidence of service evaluation, practice research, or research in general being undertaken by pharmacy professionals. The importance of this, through embedding in job plans and aligning to the four pillars of practice, has already been highlighted in this review.

The quality and standards of pharmaceutical care and management or optimisation of medicines is rarely part of the formal inspection of health boards/trusts by Health Inspectorate Wales and, as most health boards/trust pharmacies are not registered with the GPhC, the pharmacy regulator does not have an obligation to inspect them.

In England, the Care Quality Commission (CQC) implements a regulation on safe care and treatment, which includes the use and management of medicines. In addition, CQC-employed pharmacy professionals are involved in inspections of trusts. The Welsh Government needs to consider how it can be assured of the quality and standards of pharmacy services, and medicines management and use within health boards/trusts.

The GPhC intends to strengthen governance in hospital pharmacy through the new regulation Order[9]. The purpose of the Order is to extend the defences that already apply to registered pharmacy professionals working in registered pharmacies, to registered pharmacy professionals working in hospitals. To benefit from the defences, the hospital must have a Chief Pharmacist.

Under this Order, the GPhC will be able to set professional standards for Chief Pharmacists, including a description of their professional responsibilities. While some of the requirements of the role of CPs are specified in the Pharmacy Order 2010, amendments will be made to this to allow the GPhC to describe Chief Pharmacists' responsibilities and set standards of conduct and performance in relation to them.

As pharmacy roles and reporting structures diversify and become more clinically based, there must be regular and apparent assurance to the directors of pharmacy and the executive board on the standards of care and professionalism for all pharmacy professionals working within the organisation. Where pharmacy professionals are directly managed in structures outside of the pharmacy service, our engagement found that professional support and governance are evident. However, there is no blueprint or guidance on what this professional support and governance should look like, the required outcomes or how it is reported and monitored.

The structure of hospital pharmacy services will need to include Chief Pharmacist roles, as a protected title, with defined and designated responsibilities for the delivery of core hospital pharmacy services. In more diverse and clinically based structures, there is also a need for Clinical Director roles as part of the assurance for pharmacy clinical practice, professional quality of care and professional development.

There is currently no specific structure recommended for pharmacy services in hospitals; however, with the requirements of the Chief Pharmacist role now set out in statute and the embedding of pharmacy teams in more clinical structures, there is an opportunity to restructure to reflect the core service function responsibilities (Chief Pharmacist), the clinical service responsibilities (Clinical Director) and the overarching medicines optimisation and governance and pharmacy professional responsibilities (Director of Pharmacy). There are currently different titles used for the Head of Pharmacy and Medicines Management Services; for example, Director of Pharmacy and Medicines Management or Chief Pharmacist, and also no consensus on pharmacist or technician titles. The re-structuring opportunity must include standardisation of role titles, which reflect the level of responsibility and role purpose not only at very senior levels but across the entire pharmacy workforce. It is recommended that this structure form part of a pharmacy professional assurance framework.

From our engagement with the Directors of Pharmacy in considering strategic leadership and governance, we heard that health boards/trust executive boards do not uniformly receive regular quality assurance and update reports on pharmacy and medicines management included within their reporting cycle. Reports are provided in some health boards/

[7] ibid.

[8] https://www.gov.wales/sites/default/files/publications/2023-04/diagnostics-recovery-and-transformation-strategy-for-wales-2023-to-2025_0.pdf

[9] https://www.legislation.gov.uk/uksi/2022/851/contents/made

trusts but seem to be, at best, an annual event and otherwise are ad hoc and sporadic. All Directors of Pharmacy contribute to the health board/trust integrated medium term plan IMTP and have an annual delivery plan.

Boards need regular assurance, greater awareness of the clinical and professional quality, financial governance, statutory and regulatory responsibilities, and accountabilities of the Director of Pharmacy. Directors of Pharmacy need clear lines of accountability to a member of the Board achieved through direct reporting to an Executive Director.

Key findings

FROM THE EVIDENCE:

- Pharmacy teams are key in managing and optimising medicines use to improve patient outcomes and develop, implement and police the medicines management governance infrastructure to protect patients, the workforce and the organisation.

WORKFORCE ENGAGEMENT EVENTS:

- Explicit pharmacy and medicines management professional and assurance frameworks, and associated accountabilities are not visible within health board/trust quality and safety reporting systems;
- Patients and the public currently have limited assurance of the safety and quality of pharmacy services in hospital due to the lack of an independent external inspector;
- There are multiple pharmacy structures with no consensus on role titles.

Goal 6

Boards are assured that their pharmaceutical care and the pharmacy service is delivered in a way that is safe, timely, effective, efficient, equitable and tailored to patient's needs and wishes.

Recommendation 29:
A pharmacy professional assurance and governance framework must be in place in all NHS Wales organisations that employ pharmacy professionals

Pharmacy professionals working in NHS Wales will increasingly perform their clinical roles in a diverse range of settings, which can be across sectors of healthcare. As a result, lines of accountability could become more convoluted as professionals are embedded in, and managed by, different clinical teams.

A professional and assurance framework will demonstrate how Directors of Pharmacy will provide assurance to the NHS Board on the quality and professionalism of pharmacy services. It should include details of lines of accountability and the reporting and management structure of pharmacy professionals and services, as well as the responsibilities of the Chief Pharmacist to meet the new GPhC requirements, the Pharmacy Clinical Directors' responsibilities and how each line of accountability provides assurance to the Director of Pharmacy and to the board. Professional practice will be assured through competency frameworks, credentialing and job plans, while standards of clinical services will be assured through the use of RPS and GPhC standards. There are currently examples for nursing and midwifery services, which may be a useful template[10].

Recommendation 30:
Boards must have systems to provide assurance that their hospital pharmacy services are operating to a high standard that is consistent with best practice, in addition to holding pharmacy services to account

A pharmacy and medicines management quality and governance framework for Wales will provide regular and consistent assurance reports through the NHS Wales quality and governance systems in health boards/trusts. In its key lines of enquiry, the CQC includes prompts and ratings characteristics for healthcare services in a section entitled 'How does the provider ensure the proper and safe use of medicines, where the service is responsible?'[11]

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Operational Leadership: Pharmacy services are safe, effective, and efficiently delivered in line with organisational, regional, and national priorities and performance indicators, and the range and level of healthcare commissioned/purchased.

Recommendation 31:
The quality systems and governance of medicines management and optimising medicines use must be better established and incorporated within health board/trust governance structures and processes

Alignment to RPS Professional Standards for Hospital Pharmacy Services:
Systems Governance: Systems of work are established that are accountable, safe, regularly audited and comply with relevant regulations.

[10] www.nhsshetland.scot/directory-record/363/nursing-and-midwifery-professional-assurance-framework

[11] https://www.cqc.org.uk/guidance-providers/healthcare/medicines-management-healthcare-services

Action points

- Develop and implement a pharmacy professional assurance/accountability framework across NHS Wales to provide independent audit data for health board/trust and Welsh Government on pharmacy professionals and services, medicines governance and safety, and standards of pharmaceutical care;
- Review pharmacy senior leadership and management arrangements to ensure they meet the new GPhC regulatory requirements and the needs of increasing clinical roles;
- Standardise role titles throughout the pharmacy workforce in hospitals across Wales;
- Work with Health Inspectorate Wales to develop a new approach for the assurance of medicines use across the NHS, taking into account the changing nature of pharmacy services and the increasing complexity of medicines;
- Agree consistent reporting systems for assurance of medicine and pharmacy issues to boards or relevant sub-committees;
- Require Directors of Pharmacy to establish robust governance arrangements to support the quality of medicines use in hospitals and the wider healthcare system.

Technological advancements

The Welsh Government's workforce strategy for health and Social care 'Pharmacy: A Healthier Wales'[1] states that:

> *"By 2030, the digital and technological capabilities of the workforce will be well developed and in widespread use to optimise the way we work, to help us deliver the best possible care for people."*

The Topol review, published in 2019[2], outlines several recommendations to enable digital healthcare technologies to be embraced and implemented throughout the NHS, which would likely prevent diseases and their complications, and produce an overall improvement in health outcomes. The report states that:

> *"For clinicians to benefit fully from AI [artificial intelligence] and robotics technologies, four conditions have to be met: time and willingness to adopt new technology; an understanding of the technology; well-designed technology meeting user need; and workplace support to maximise the potential of the technology."*

A report from the FIP Technology Advisory Group, published in 2023[3], concludes that:

> *"Technological advancements have the potential to revolutionise hospital pharmacy by streamlining processes, improving medication safety and enhancing patient care. As technology continues to evolve, its impact on hospital pharmacy will only grow, paving the way for a more efficient and effective healthcare system.'*

The advancement of technology over recent years has made huge changes to the way in which care is provided. Digital capabilities and capacity were expedited during the COVID-19 pandemic, which demonstrated how changes to whole systems and ways of working could be made at pace.

The Digital Medicines Transformation Portfolio has been established by Digital Health Care Wales (DHCW) to deliver the benefits of a fully digital prescribing approach in all care settings in Wales. This includes increasing patient access to medicines information through the NHS Wales App, a shared medicines record, and implementation in secondary care of an electronic prescribing and medicines administration (EPMA) system. These programmes will have a significant effect on the working practices of pharmacy and other healthcare professionals in all settings.

The priority areas for hospital pharmacy teams are outlined below, although this is not a comprehensive list, given the benefits that continue to be offered in an ever-expanding digital arena.

1 https://socialcare.wales/cms-assets/documents/Workforce-strategy-ENG-March-2021.pdf

2 https://topol.hee.nhs.uk/

3 https://www.fip.org/file/5528

MEDICINES MANAGEMENT SYSTEMS

A significant body of evidence now demonstrates the benefits of EPMA systems for patient safety and efficiency. Figures from NHSX cited in a Medscape [4] article in February 2022 showed that around 50% of trusts in England were using EPMA systems at the time, with a further 25–30% funded for go-live dates planned for the following 12–18 months. Worldwide, there is evidence of rollout of electronic prescribing across the world; examples include Saudi Arabia (2019[5]), Pakistan (201[6]), Canada (2014[7]), Finland (2018[8]), Germany (2021[9]), and across the USA (2006[10]), and there is evidence of the use of electronic prescribing in secondary care starting in 1998.

The need for EPMA in Wales has been recognised for many years and the progress being made by the Digital Medicines Transformation Portfolio towards implementation is to be welcomed. The lack of EPMA systems in Wales compared to other nations in the UK is notable; progress in Wales is needed at pace.

Recognised problems introducing EPMA systems are that organisations:

> *"Work in silos, repeating the same mistakes made by others while battling away, heads down, to get their systems up and running. This lack of connectedness and sharing of experiences is hampering efforts."*[11]

For NHS Wales, to fully realise the benefits for both patients and the workforce, organisations must learn from others' experiences and address any concerns of the workforce. Good planning, implementation, change management and ongoing support are essential.

LOGISTICS AND SUPPLY

Supply of medicines is a fundamental component of patient care in hospitals. Automation, using robotic equipment for selecting and issuing stock for dispensing, has been in use in all district general hospitals in Wales for many years, releasing pharmacists and pharmacy technicians to deliver pharmaceutical care. Adopting new technological solutions into the supply process is key to achieving further efficiencies and creating new opportunities for the pharmacy workforce to expand clinical activity.

Frequent topics of discussion in our engagement events involved pharmacists, pharmacy technicians and support staff telling us how they are often pulled away from patient-facing clinical pharmacy activity to complete more manual, technical roles, such as supply and dispensing. Logistics and supply are outside the scope of this review; however, both will impact on how the review recommendations can be implemented.

Further work is required in this area and we recommend prioritising a separate independent review focused on medicines logistics and supply, as noted in recommendation 8.

INFORMATION SHARING

The introduction of 'Choose Pharmacy', the IT platform that underpins the delivery of a number of services in community pharmacies, in Wales has been shown to facilitate safer and more efficient transfer of patients between care settings. The IT platform links to the Welsh Demographic Service, Welsh GP record (WGPR) and Medicines Transcribing and e-Discharge (MTeD). The interoperability of the system and its link to the MTeD system, which generates an electronic discharge advice letter, allows community pharmacies to carry out Discharge Medication Reviews (DMR). A retrospective cohort study of the service found that a DMR performed after a hospital discharge is associated with a reduction in risk of hospital readmission within 40 days [12].

Interoperability is a key principle that the work of DHCW has adopted and is fundamental in allowing health professionals to access up-to-date medical information, enhancing shared decision making and reducing errors at transitions of care across settings. As systems are developed and innovated, it is crucial that this principle is upheld.

The NHS Wales App, currently in the testing stage, will allow patients to access up-to-date information regarding their medicines and care. Understanding and utilising the full potential of digital information sharing for patients to get the best use of their medicines is key for pharmacy teams in all settings.

[4] https://www.medscape.co.uk/viewarticle/new-era-pros-and-cons-epma-systems-practice-nhs-2022a1000d1q

[5] https://academic.oup.com/ijpp article/27/6/578/6099860?login=false

[6] https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2702.2011.03714.x

[7] https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/2046-4053-3-56

[8] https://www.researchgate.net/publication/325655367_Physicians'_Estimates_of_Electronic_Prescribing's_Impact_on_Patient_Safety_and_Quality_of_Care

[9] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8641789/

[10] https://www.acpjournals.org/doi/full/10.7326/0003-4819-144-10-200605160-00125

[11] https://pharmaceutical-journal.com/article/feature/a-blessing-and-a-curse-the-struggle-to-introduce-e-prescribing

[12] https://bmjopen.bmj.com/content/10/2/e033551

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is now proving applicable to all areas of life. Embracing its potential and harnessing the opportunities to improve patient care is as important to pharmacists as it is to informatic analysts.

Significant research on AI is being undertaken in many areas of healthcare; however, companies and organisations are already using it in a variety of ways across the world. Uses of AI in medicine include remote monitoring to enable remote patient care; personalised medicine, which allows treatment plans to be developed based on individual characteristics, such as genetics, medical history and lifestyle; and predictive analytics, which allows clinicians and policy makers to make decisions on patients and public health based on wide datasets.

Predictive analytics include risk stratification tools. Such systems allow risk stratification of patients and have the potential to allow prioritisation of patient care in hospitals. Primary care pharmacists have been using software systems for several years to do this already. Any prioritisation tool would need to integrate with the EPMA system.

In Wales, patients at Velindre Cancer Centre[13] can now receive tailored information from AI through the use of a chatbot, which is designed to answer queries relating to their hospital visit. This is currently in development and its potential is expanding from basic information to cover more detailed responses to patient queries. A pharmacist in Cardiff and Vale University Health Board has led a Bevan project exploring how to use similar AI software for delivering patient education to patients with porphyria in Welsh and English[14], but wider roll-out and further evaluation has been inhibited by resources.

The use of chatbots has the potential to offer an efficient and convenient way to deliver patient-specific education to individuals.

The Medicines Homecare team at Swansea Bay University Health Board has developed an AI system in partnership with a private company to automate the review and validation of rheumatology prescriptions[15]. This is a good example of where there is an innovative system that has potential be scaled up and spread to other areas; however, from our engagement, the infrastructure and support to do this is not apparent to pharmacy teams in Wales.

PRECISION MEDICINE

Precision medicine is a rapidly developing area that has huge potential to improve patient outcomes by using an individual's genetic profile to guide decisions about the prevention, diagnosis and treatment of disease. Genomics Partnership Wales (GPW) leads primarily on the platforms and advances needed in genomics and related bioinformatics to underpin precision medicine[16]. Advanced Therapies Wales (ATW)[17], a programme that aims "to provide patients with equitable access to emerging Advanced Therapies Medicinal Products (ATMPs) to improve health, wellbeing and prosperity for the people of Wales" was launched in 2020.

As part of these programmes, there is an expectation for an increased use of pharmacogenomics for patients in Wales. Pharmacogenomics is where a genomic test can help predict how an individual will respond to a particular treatment. Pharmacy professionals can significantly contribute to the impact of genomics on healthcare delivery (RPS Position Statement).

The 'Genomics Delivery Plan for Wales'[18] says:

> *"Our ambition is to support and drive the further development of pharmacogenomics, by developing services that provide timely information relevant to prescribers. Specifically, the availability of pharmacogenomics information that is important for optimising many commonly prescribed medicines will lead to improved health outcomes for patients."*

Innovative pharmacogenomic therapies are increasingly being introduced across the UK and beyond, with pharmacy professionals helping to embed this into routine practice.

Evidence of implementation of pharmacogenomics across the world includes studies in Canada[19, 20], Europe[21] and Asia[22], with significant evidence of routine practice of pharmacogenetic testing for many areas in the United States[23, 24, 25]. An example of pharmacogenetic testing in Wales is DPYD screening for some patients taking fluoropyrimidines. This screening identifies the patient's risk of severe side effects and allows dosing regimens to be tailored to the patient.

Following recommendations from the Topol review[26], Genomic Medicine Service Alliances were set up across England, to help embed genomics into patient care pathways. Pharmacogenomics Advanced Pharmacist posts have been

[13] https://velindre.nhs.wales/about-us/research-development-and-innovation/innovation/rita/

[14] https://www.bevancommission.org/projects/mavis-lets-talk-about-porphyria/

[15] https://pharmaceutical-journal.com/article/news/automation-pilot-cuts-prescription-checking-time-by-two-thirds

[16] https://advancedtherapies.wales/resources/precision-medicine/

[17] https://lshubwales.com/news/advanced-therapies-wales-programme-launch-harnessing-potential-precision-medicine-wales

[18] https://genomicspartnership.wales/the-genomics-delivery-plan-for-wales-2022-2025/

[19] https://www.mdpi.com/2226-4787/8/2/55

[20] https://www.sciencedirect.com/science/article/abs/pii/S0022395617302881

[21] https://ascpt.onlinelibrary.wiley.com/doi/abs/10.1002/cpt.602

[22] https://synapse.koreamed.org/upload/synapsedata/pdfdata/3039alm/alm-37-180.pdf

[23] https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2017.1564

[24] https://www.nature.com/articles/s41436-020-0788-3

[25] https://www.nature.com/articles/s41436-021-01269-9

[26] https://topol.hee.nhs.uk/

commissioned in England in each of these Alliances. However, no such posts are in place in Wales.

From our engagement events, for most pharmacy professionals in Wales, increasing access to ATMPs does not appear to be seen as part of their current role. From discussions with the wider MDT, it was evident that pharmacogenomics is an area that pharmacy is expected to take a lead on; therefore, leadership in this area from the pharmacy profession at national level is an urgent priority.

VIRTUAL WARDS

The emerging area of telemedicine and virtual wards has been key in the Welsh Government's long-term plan [27] to deliver care closer to home, allowing early identification and to prevent deterioration of health problems that lead to patients being admitted to hospital.

Through virtual wards, patients receive a high-quality level of care facilitated by technology, including face-to-face contact with healthcare staff, as an alternative to NHS bedded care. This is a rapidly growing area as the benefits of virtual wards become evident with increasing technological capacity. Pharmacy professionals are working within MDTs to deliver care via virtual wards. An example of this is in Swansea Bay University Health Board, which launched its virtual ward in November 2021.

> *"The pharmacy role within this service is diverse. From high-level polypharmacy medication reviews with a focus on deprescribing, carrying out basic observations (BP/pulse/gait), patient/family education with compliance assessments and various clinical assessments, such as pain reviews, osteoporosis assessment, medication and falls assessment, anticoagulations reviews/assessments and a lot of networking between many services that branch both primary and secondary care." (Clinical Pharmacist, Swansea Bay University Health Board)*

As set out in the 'Getting It Right First Time' guidance [28] for clinicians to maximise the use of virtual wards, successful virtual wards, including frailty and acute respiratory infection wards, are integrated with pharmacy. It is crucial that pharmacy professionals are part of the MDT delivering care in the virtual ward [29].

From our engagement events it is evident that pharmacy professionals are embracing technology in several areas. Examples include the use of automated dispensing systems on wards to help facilitate discharges, AI to provide patient education, and the use of various applications in assisting patient reviews through a virtual ward system. However, challenges were highlighted in the introduction of new digital platforms, which must be addressed to prevent a lack of ownership of the implementation process, a potential for disengagement, and missed opportunities for benefit realisation. Pharmacy teams need resources and encouragement to further embrace and implement emerging technologies. This is essential to maximise communication, and allow pharmacy professionals to use their skillsets effectively to manage increasing demand and improve patient outcomes.

[27] https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf

[28] https://gettingitrightfirsttime.co.uk/wp-content/uploads/2023/05/Making-the-most-of-virtual-wards-guide-FINAL-V1-May-2023.pdf

[29] https://www.hee.nhs.uk/sites/default/files/documents/Guidance%20on%20Pharmacy%20Services%20and%20Medicines%20Use%20within%20Virtual%20Wards%20_including%20Hospital%20at%20Home%20%281%29.pdf

Key findings

- Hospital pharmacy in Wales is at risk of being left behind from the wave of digital advancements happening elsewhere across the world;
- Technological advancements have the potential to revolutionise hospital pharmacy by streamlining processes, improving medication safety and enhancing patient care;
- There are examples of innovation and implementation of new therapeutic advancements in Wales. However, patients are not benefiting from their implementation at scale;
- Interoperability of systems is a key principle and fundamental for quality, efficiency and safety of patient care;
- Effective and safe use of new technology is dependent upon clinical leadership and workforce training.

Goal 7

Patients will benefit from digitalised medicines management systems and pharmacy will drive the implementation of advancements in technology to deliver pharmaceutical care.

Recommendation 32:
Hospital pharmacy services must support innovation and lead the implementation of new therapeutic technologies relating to their specialism; for example, in pharmacogenomics

Pharmacists' unique training in science and clinical practice means they are well placed to take a leading role in the MDT in implementing and conveying information to patients on the benefits of new therapeutic technologies and treatments. Their role will be central to NHS Wales meeting the objectives of the Welsh Government's 'Pharmacy: A Healthier Wales'[30] strategy to deliver Wales' full potential in the international and UK development of ATMPs, as well as the programme of work assigned to Genomics Partnership Wales (GPW) and Advanced Therapies Wales (ATW)[31].

Good practice example:

During the summer of 2020, a new therapy for the treatment of cystic fibrosis (CF), was granted its European marketing authorisation, and was made available in Wales for all eligible patients. An additional specialist pharmacist joined the team at the All Wales Adult Cystic Fibrosis Centre (AWACFC), based within Cardiff and Vale University Health Board, with the aim of establishing all eligible patients who were suitable for the treatment. The cystic fibrosis pharmacists worked alongside the rest of the team (doctors, specialist nurses, dieticians, physiotherapists and psychologists) to review all patients in clinic, undertake the necessary baseline assessments and provide information and advice on the new therapy.

Recommendation 33:
There must be adequate investment in hardware, software and the pharmacy informatics workforce to fully realise the benefits of digital advancements. Systems must be accessible, user friendly, inter-operable and their benefits must be evaluated

Having the right digital infrastructure in place underpins several of the recommendations made in this report. This investment is essential to ensure that Wales' public services infrastructure in pharmaceuticals meets the Welsh Government's aim in its Digital Strategy for Wales (2021)[32] to experience modern and efficient public services.

Recommendation 34:
Pharmacy professionals must develop and maintain competence in the technological advancements that will transform their roles over the next ten years

This recommendation meets one of the core missions in the Welsh Government's digital strategy to create a workforce that has the digital skills, capability and confidence to excel in the workplace. Competence in the use of digital systems requires a lead role for each clinical system to develop, implement and ensure appropriate training. Some health board/trust staff have undertaken the Digital Transformation for Health and Care Professions course; this, or an equivalent course, needs to be accessible for all pharmacy staff involved in the development of digital systems.

[30] https://www.rpharms.com/wales/pharmacy-delivering-a-healthier-wales

[31] https://lshubwales.com/news/advanced-therapies-wales-programme-launch-harnessing-potential-precision-medicine-wales

[32] https://www.gov.wales/sites/default/files/pdf-versions/2022/3/4/1646322827/digital-strategy-wales.pdf

Recommendation 35:
Health boards and Velindre University NHS Trust must have clinical informatics pharmacy professional(s) to lead and support safe digital developments to improve patient care, workforce efficiencies and Prudent healthcare principles. These organisations will work closely with Digital Health and Care Wales to implement national strategy

Helping bridge the gap between the pharmacy developments led by DHCW and implementation on the front line, these roles would help meet the aims of DHCW to support frontline staff with modern systems and deliver new digital solutions to update hospital pharmacy, prescribing and community care.

They will be crucial to ensuring an optimal user experience in an increasingly digitalised healthcare system, and that development and implementation allows the maximal advantages of any new system.

Recommendation 36:
Electronic medicines management systems must ensure an all-Wales, consistent approach across all settings, with interoperability fundamental to any plans for safe and effective patient care

This recommendation meets the Welsh Government's 'Programme for Government' commitment to introduce e-prescribing, as per Informed Health and Care; A Digital Health and Social Care Strategy for Wales[33], published in 2015. There are multiple clinical care systems used in hospitals, which are variable in their functions and capacities. These must be able to integrate with e-prescribing to enable efficient workflow; therefore, interoperability of systems within health boards and across Wales is essential.

Good practice example:

University Hospitals of Leicester has co-developed and deployed a novel Electronic Prescribing and Medicines Administration (EPMA) application as part of the trust electronic patient record (EPR) programme that meets the NHS's specific clinical demands and interoperability standards, despite clinical pressures from the COVID-19 pandemic. An agile approach to project management was taken, with frontline engagement from pharmacists, nurses and doctors through input in board meetings chaired by the IT department and vendor representatives.

After extensive technical and clinical testing, in September 2019, a pilot of the EPMA application started at one site within the renal unit. This pilot was very successful and used as a test bed for wider trust deployment methodology[34]. Wider trust deployment of the EPMA module was completed in June 2021, despite pressures from the COVID-19 pandemic, by a conservative number of transition staff using a remote transition process.

An iterative, well-governed approach, led by a combination of IT and clinical staff with a responsive vendor, enabled a new and complex EPMA system in a large acute NHS trust to be deployed with limited resources despite the ongoing pandemic. Sustainability of the project was also ensured through a clear, clinically-led governance structure to manage risk quickly and carry lessons learnt onto new developments.

[33] https://www.gov.wales/sites/default/files/publications/2019-03/informed-health-and-care-a-digital-health-and-social-care-strategy-for-wales.pdf

[34] https://bmjopenquality.bmj.com/content/11/4/e001743#ref-3

Action points

- Prioritise research and use of new and emerging digital and technological solutions to manage medicines and improve patient care;
- Develop Advanced and Consultant Pharmacist roles for pharmacogenomics to lead on a medicines' genomics plan;
- Design and implement a pharmacy and medicines management model to support new ways of working with virtual wards;
- Ensure adequate investment in IT hardware to support and sustain the safe and timely operational use of digital clinical systems;
- Identify a responsible person for implementation of digital medicines management and pharmacy systems to ensure the benefits presented by those systems are realised;
- Include digital and technological competencies within pharmacy workforce training, reflecting systems used in practice;
- Develop the role of the clinical informatics pharmacy professional;
- Enable more pharmacy professionals to access the Digital Transformation for Health and Care Professions course or equivalent;
- Raise awareness of NHS pharmacy teams about technological advancements that affect them and their patients;
- Implement EPMA systems across NHS Wales as a priority. Clinically evaluate the benefits and risks and develop business continuity processes.

Conclusion

Conclusion

> *"Our vision is a world where everyone benefits from access to safe, effective, quality and affordable medicines and health technologies, as well as from pharmaceutical care services provided by pharmacists, in collaboration with other healthcare professionals. Our mission is to support global health by enabling the advancement of pharmaceutical practice, sciences and education."*
>
> *– FIP Mission statement*

It is clear that pharmacy teams within hospitals strive to provide high-quality care to patients through safe and effective medicines management, medicines governance and clinical pharmacy service delivery. However, they face significant challenges set against a backdrop of rapid and widespread change across healthcare services and ever-increasing demand, coupled with workforce pressure. As a result, there is an urgent need for pharmacy teams to transform the way they deliver patient care.

Whilst there are many challenges, there are opportunities for service redesign to benefit patients, the pharmacy workforce and the wider health service. There are good examples of pharmacy professionals making the types of contributions the NHS needs to support urgent and emergency care, planned care and quality improvement, but these are inconsistently available and increasingly under pressure, meaning they risk withdrawal in favour of traditional pharmacy roles, which may add less value.

As new clinical roles develop and best practice is spread between hospitals, medicines safety remains paramount. Although pharmacists and their teams work tirelessly to minimise medicines-related harm, errors and patient harm still occur too frequently in Wales' hospitals. The pharmacy service provides a "safety net" within hospitals and any changes to service provision and practice must not destabilise this core role.

This review has identified the following key principles, which, if followed, will underpin the transformational change required:

- Prescribing pharmacists applying their unique knowledge and skills, adding value and improving patient outcomes;
- Pharmacy teams practicing in a MDT model;
- Specialist pharmacy services being available wherever and whenever there is patient need, including in primary and community settings;
- Professional development embedded in job plans for pharmacy professionals at all stages of their career, based on the four pillars of clinical practice, leadership and management, education and research;
- A formal career framework supporting a tiered, credentialed pharmacy workforce, confident to practice with a sense of purpose, wellbeing, belonging and motivation;
- Innovation and leadership driving continuous improvement of pharmacy services;
- Professional practice standards developing and improving to support changing patient and service needs, assured through a robust professional and governance framework with clear accountability to boards.

Key learnings

- Patients experience less harm and have improved outcomes from their medicines when there is early pharmacy input to their care;
- There is strong evidence to support a pharmacist being a member of every ED team and for pharmacy teams to assess patients in pre-admission clinics;
- The evidence strongly supports pharmacists embedded in MDTs. This leads to improved patient outcomes;
- Patients want to be more involved in the decisions made about their medicines, and pharmacy professionals want to spend more time with patients;
- Pharmacy teams support patients to self-administer medicines during their hospital stay, facilitating their autonomy and independence and improving their ability to maintain independent living on discharge;
- Patients who receive a well-managed transfer of care are less likely to be readmitted to hospital and experience medicines-related harm;
- Patients manage their medicines better and have reduced harm from medicines when pharmacists are part of the specialist team managing LTCs in all settings;
- Pharmacists have been successfully prescribing within hospitals since 2007;
- Job planning is a key enabler to delivering high standards of care and professionalism;
- Credentialed practitioners deliver improved quality of care, clinical outcomes and better patient safety;
- Patients have benefitted from strong, collaborative senior pharmacy leadership in Wales;
- Innovative and transformative ways of working through strong leadership were demonstrated during the COVID-19 pandemic by pharmacy teams;
- Patients benefit from Consultant Pharmacist expertise, knowledge and skills;
- Pharmacy teams are key in managing and optimising medicines use to improve patient outcomes and develop, implement and police the medicines management governance infrastructure in place to protect patients, workforce and the organisation;
- Technological advancements have the potential to revolutionise hospital pharmacy by streamlining processes, improving medication safety and enhancing patient care.

However, there is a clear opportunity for pharmacists to enhance safety by moving from a reactive position of post-prescribing intervention to a position of proactive responsibility for medicines and their use through autonomous prescribing and advising and influencing at the point of clinical decision making as a core member of multidisciplinary clinical teams.

There is a continuing and increasingly important need for pharmacy technicians to move into those roles currently undertaken by pharmacists, taking responsibility for the supply and management of medicines. Their role in supporting patients to get the most value out of their medicines must be enhanced, identifying patients who would benefit from more information on their medicines and how to take them or referring to community support on discharge are key. Pharmacy technicians must also develop their distinct clinical role, and opportunities to support medicines use should be enhanced as anticipated changes to legislation make it easier for them to make an even greater contribution.

Service redesign and restructuring the pharmacy operating model will be required to release and realign pharmacy professionals from core pharmacy tasks to clinical roles. The current medicines supply model is frustrating the workforce and posing a barrier to change and to recruitment and retention of valuable staff. Although this is outside of the review scope, it is imperative that this service area is reviewed to enable the transformational clinical changes to progress.

The potential for advanced practice and consultant pharmacists to manage their own patient cohort or caseload must be fully realised across all health boards/trusts.

Pharmacists working across sectors are becoming increasingly common, supported by Wales' innovative approach to cross-sector education, but they can be further embedded through advanced practitioner and consultant pharmacist leadership. As more care is delivered in the community, the principles described in this review must be applied to support pharmacists and pharmacy technicians to move to where their skills and expertise are most needed.

The wellbeing and investment in the development of the pharmacy team must be paramount. Consistent with the quadruple aim described in 'Pharmacy: A Healthier Wales', steps must be taken to ensure hospitals retain a motivated and sustainable workforce. Now is the time to ensure the environment and culture enable and encourage pharmacy teams to provide leadership, which will help teams develop and continually improve the quality of care. The hospital pharmacy workforce needs to be more flexible and agile to meet the demands of patients and the wider NHS. In return, the NHS must provide pharmacy teams with professionally fulfilling roles that enable development, clear purpose and autonomy.

A vision of NHS Wales pharmacy services as a global good practice exemplar is achievable with the right workforce

cultures, good leadership and NHS Wales recognition and support.

This independent review has been prepared for Welsh Government; however, the recommendations and actions identified have been developed to instigate action at national and local levels to ensure the citizens of Wales get the most benefit from pharmacy teams. Collective action will be required by organisations and individuals across all levels within NHS Wales.

The RPS is committed to working with Welsh Government, the NHS and its other partners to drive this important agenda forward and to evaluate its effectiveness in improving patient care.

> *"Reflecting on the work of this review, it is clear that a flexible, agile pharmacy workforce is essential for the future. Globally, we appreciate the need to meet the demands of patients, whilst also providing pharmacy teams with professionally fulfilling roles that enable development, clear purpose and autonomy. Hospital pharmacy teams must manage their own working patterns for the benefit of patients, for greater professional integration into their multidisciplinary teams, and for their own benefit with better work-life balance and wellbeing.*
>
> *"FIP is delighted to support and showcase the work submitted by pharmacy colleagues in Wales through RPS Wales in this endeavour as we learn and share ways to build the hospital pharmacy workforce for the future and learn lessons to advance pharmacy worldwide."*
>
> *– Catherine Duggan, chief executive officer of FIP*

Appendices

Glossary of terms

Advanced Therapy Medicinal Product (ATMP) – An ATMP is defined as a medicinal product which is either: a gene therapy, a somatic cell therapy or a tissue engineered product (see also 'Precision medicine'). Gene therapy medicinal products make use of genetic material to treat or prevent diseases; one example is a product that uses viruses to deliver healthy genes into cells in order to correct a defective gene. Cell therapy medicinal products make use of living cells to treat or prevent diseases; one example is a product that uses stem cells to repair damaged tissue. Tissue engineering products make use of artificial or natural materials to replace or support damaged tissue; one example is a product that uses a collagen scaffold to repair a torn ligament.

Artificial Intelligence (AI) – The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

All Wales Intervention Database (AWID) was developed by NHS Wales Informatics Service (now DHCW) to support the recording and analysis of patient-related clinical interventions made in hospital pharmacy practice.

Controlled Drug Accountable Officer (CDAO) – All organisations within a health region are required to report controlled drug incidents and concerns to the CDAO. The Lead CDAOs are required to set up Controlled Drugs Local Intelligence Networks (CD LINs) to share concerns and good practice within their area.

Clinical leadership includes formal leadership roles and everyday leadership where clinical health professionals lead in their day-to-day practice. It is a responsibility to contribute to the effective running of the organisation in which they work and to its future direction.

Clinical pharmacy is the branch of pharmacy in which clinical pharmacists provide direct patient care that optimises the use of medication and promotes health, wellness and disease prevention.

A **Community of Practice** is a group of individuals who come together to share ideas, develop expertise and solve problems around a topic of interest. Communities of practice can be made up of people across the NHS and beyond, so that knowledge is shared and re-used widely.

Credential – Documented evidence of professional qualification, competence, or authority issued to an individual by an organisation with authority to grant the credential.

Discharge to Recover then Assess (D2RA) is a model that encompasses "home first", "discharge to assess" and "hospital at home", with the aim of achieving the best outcomes for the individual.

Deconditioning is the decline in functional ability of the body as a result of physical inactivity and/or bedrest or an extremely sedentary lifestyle. It is a complex process of physiological change resulting in functional losses in such

areas as movement, mental status, degree of continence and ability to accomplish activities of daily living.

Electronic staff record (ESR) is part of the Workforce Services Directorate within the NHS Business Services Authority. ESR is led by the NHS ESR Central Team which works in partnership with IBM to oversee its operational delivery. ESR is developed by the NHS for the NHS in England and Wales as an integrated hire to retire workforce management solution.

Emergency Department (ED) is for serious injuries and life-threatening health emergencies or serious conditions, such as a suspected heart attack, stroke, sepsis (blood poisoning) or major bleeding. It is also known as A&E (accident and emergency) or casualty.

Finished Consultant Episode (FCE) is the time a patient spends in the care of one consultant in one healthcare provider. If a patient is transferred to a different hospital provider or a different consultant within the same hospital, a new episode begins.

High-Risk Medicines are medicines with potential side effects that require appropriate blood monitoring and careful dose adjustment; e.g. lithium, methotrexate, amiodarone, warfarin and anticoagulants.

Interoperability is the ability of different systems, devices, applications or products to connect and communicate in a coordinated way, without effort from the end user. Some synonyms for interoperability include compatibility, integration, exchangeability, and interconnectivity. Connectivity refers specifically to the ability for devices or systems to connect to one another, while compatibility describes the ability for different systems to work together without issues.

Medicine Safety Officer (MSO) is the named individual within an organisation responsible for encouraging medication incident reporting and learning.

Medicines Governance is the framework through which healthcare organisations are accountable for continuously improving the quality of their medicines-related services and safeguarding high quality of care.

Medicines Logistics is related to the handling, transport and supply chain management of multiple and varied medicinal products.

Medicines Optimisation is about ensuring that the right patients get the right choice of medicine, at the right time. Medicines optimisation aims to support patients to take their medicines correctly; avoid taking unnecessary medicines; reduce wastage of medicines; and improve medicines safety.

Medicines Reconciliation is the process of identifying an accurate list of a patient's current medicines (including over-the-counter and complementary medicines) and carrying out a comparison of these with the current list in use, recognising any discrepancies, and documenting any changes.

Multidisciplinary Team (MDT) is a group of health and care staff who are members of different organisations and professions (e.g. hospital specialists, GPs, social workers, nurses), that work together to make decisions regarding the treatment of individual patients and service users. MDTs are used in both health and care settings.

Patient Autonomy is the right of competent adults to make informed decisions about their own medical care.

Patient Flow – In healthcare, flow is the movement of patients (or information or equipment) between departments, staff groups or organisations as part of their care pathway. Ideally they should move from one step in their care to the next without delay.

Pharmacist Enabling and Therapeutic Switch (PETS) Policy – This policy provides guidance on what amendments a pharmacist can make to a medication chart or discharge prescription without authorisation from the prescribing doctor. The ability to make such clarifications on prescriptions reduces the chance of medication errors reaching the patient. A version has been approved for use across NHS Wales.

Pharmaceutical Care is the direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient's quality of life, originally defined by Hepler and Strand in 1990.

Pharmacogenomics aims to tailor medical treatment to each person or to a group of people. Pharmacogenomics looks at how your DNA affects the way you respond to drugs. It is a type of Precision medicine (see below).

Polypharmacy means "many medications" and has often been defined to be present when a patient takes five or more medications. Polypharmacy is not necessarily a bad thing; it can be both rational and required. However, it is important to distinguish appropriate from inappropriate polypharmacy.

Precision Medicine, sometimes known as "personalised medicine", is an innovative approach to tailoring disease prevention and treatment that takes into account differences in people's genes, environments, and lifestyles.

Pre-habilitation is a strategy to begin the rehabilitation process before surgery, and an opportunity to tackle the management of a number of risk factors such as anaemia and malnutrition which may have an adverse effect on functional capacity and ultimately on postoperative outcomes, including recovery.

Scope of Practice describes the procedures, actions, and processes that a healthcare practitioner is permitted to undertake in keeping with the terms of their professional license. The scope of practice is limited to that which the law allows for specific education and experience, and specific demonstrated competency.

Shared Decision Making – Where healthcare decisions are made with the person or carer and the healthcare professional.

Succession Planning is the process of identifying the critical positions within your organisation and developing action plans to grow the talent to fill those positions.

Talent Management is about considering everyone as an individual and the development that is right for them and making them feel rewarded and able to do a good job within the NHS.

Telemedicine is the distribution of health-related services and information via electronic information and telecommunication technologies. It allows long-distance patient and clinician contact, care, advice, reminders, education, intervention, monitoring, and remote admissions e.g. via a virtual ward.

The Transforming Access to Medicines (TrAMs) project in Wales is a five-year plan to deliver the sterile preparation of medicines also known as aseptic services, a speciality area within hospital pharmacy services.

Aseptic Services are responsible for the development, preparation and supply of unique patient-centred medicines, including the preparation of injectable systemic anticancer therapy (SACT), preparation of parenteral (intravenous) nutrition for people whose medical condition means they are unable to absorb nutrients from the food they eat, and radiopharmaceuticals used in diagnosis and treatment of cancers.

Transitions of Care – When a patient in receipt of care moves from one setting to another, for example from a hospital to home or to a care home, or vice versa.

Vacancy Rate is a calculation of the full-time equivalent (FTE) number of vacancies as a percentage of planned (or establishment) FTE workforce levels.

Value = QUALITY/COST (QUALITY is usually made up of Experience + Clinical Outcomes + Safety). Outcomes are optimised when balance is achieved between the clinical aspects of care, attention to the patient's perceptions of the care, and partnership between the care providers and the patient.

Alignment of the Recommendations to FIP Development Goals

Themes	Recommendation	FIP Development Goals alignment
Patient-Centred Care	**Recommendation 1 –** Pharmacy teams must be routinely integrated within every multidisciplinary team	DG8 – Working with others
	Recommendation 2 – For patients receiving planned hospital care, pharmacy teams must optimise their medication in pre-admission or pre-habilitation services	DG15 – People-centred care D19 – Patient safety
	Recommendation 3 – Pharmacy teams, including advanced emergency department practitioners, must be available in every emergency department and integrated into the patient assessment process, to ensure good medicines decisions and management at the first opportunity	DG15 – People-centred care D19 – Patient safety
	Recommendation 4 – On admission, patients must be triaged to identify and prioritise their pharmaceutical needs. This must be documented as part of their overall treatment plan	DG15 – People-centred care D19 – Patient Safety
	Recommendation 5 – Patients must be empowered to take responsibility for their medicines and, wherever possible, must be actively involved in decisions about their medicines and care during an inpatient stay. Pharmacy teams must play an active role in preventing the functional deconditioning of patients	DG15 – People-centred care D19 – Patient safety DG8 – Working with others
	Recommendation 6 – Pharmacy teams must be involved in planning for discharge, starting on admission, with the default position being to refer patients for post-discharge medicines support/care unless it is clearly not needed	DG7 – Advancing Integrated Services DG5 – Competency development
	Recommendation 7 – The specialist knowledge and skills of advanced practice and consultant pharmacists must be made available to benefit patients and practitioners in community settings	DG8- Working with others DG14 – Medicines expertise DG4 - Advanced and specialist development
	Recommendation 8 – An urgent review of the workforce and systems involved in the supply and logistics of medicines in hospitals is needed in order to release the capacity of pharmacy professionals to deliver patient centred services	DG18 – Access to medicines, devices and services

Themes	Recommendation	FIP Development Goals alignment
Multidisciplinary Working	**Recommendation 9 –** Dedicated pharmacy resource should be integrated into multidisciplinary teams in clinical priority areas, with an ambition to embed pharmacy professionals in every multidisciplinary team over time	DG8 – Working with others
	Recommendation 10 – The working patterns of pharmacy teams must be more aligned to the needs of patients and the multidisciplinary team that they support	DG8 – Working with others
	Recommendation 11 – New service developments or service redesign within hospitals must consider the clinical and technical pharmacy service requirements from the outset, and regularly evaluate and review those requirements	DG8 – Working with others
Pharmacist Prescribers	**Recommendation 12 –** Pharmacists working within multidisciplinary teams should be prescribers and be actively prescribing to meet the needs of their multidisciplinary team and the patients they care for	DG8 – Working with others DG4 - Advanced and specialist development
	Recommendation 13 – Pharmacists must embrace and promote their role as prescribers, and accept the associated autonomy, responsibility and accountability	DG4 – Advanced and specialist development
	Recommendation 14 – Appropriate governance frameworks and organisational structures are in place for pharmacist (and other non-medical) prescribers to maintain and expand their scope of practice	DG13 – Policy development
	Recommendation 15 – Clinical placements must be available for undergraduate pharmacy students, both in sufficient numbers and at the appropriate level to prepare students for practice as prescribing pharmacists. Multidisciplinary team experiences should be core to this approach	DG1 – Academic capacity DG8 – Working with others
Workforce	**Recommendation 16 –** The skill mix of pharmacy teams must reflect the Prudent Healthcare Principle of "only do what only you can do" to maximise the opportunities that all roles can deliver	DG5 – Competency development
	Recommendation 17 – Pharmacists must demonstrate their competency, through credentialing, in order to progress their careers, including through to advanced and consultant roles, across all settings	DG4 – Advanced and specialist development DG5 – Competency development
	Recommendation 18 – Pharmacy technician roles must have a post-registration development structure that supports their progression and defines and assures their advancing levels of practice	DG4 – Advanced and specialist development
	Recommendation 19 – A culture of continual professional development, quality improvement, service evaluation and research must be further embedded within the pharmacy team. Education providers must design flexible training around the workforce needs	DG9 – Continuing professional development strategies

Themes	Recommendation	FIP Development Goals alignment
	Recommendation 20 – The education and training of pharmacy teams, including undergraduate placements, must be further integrated in wider healthcare training, to allow multiprofessional training and embedding pharmacy as an essential component of the multidisciplinary team	DG1 – Academic capacity DG2 – Early-career training strategies DG8 – Working with others
	Recommendation 21 – All registered pharmacy professionals must have a job plan, which integrates the four pillars of professional practice: clinical practice, leadership and management, education, and research, in a way that is appropriate to each stage of their career	DG5 – Competency development DG6 – Leadership development
	Recommendation 22 – Pharmacy workforce plans should be developed at both local and national levels, developed collaboratively with the multidisciplinary team and aligned to Welsh Government and NHS priorities	DG7 – Advancing integrated services DG8 – Working with others
	Recommendation 23 – The pharmacy and medicine management service must diversify their structures to include more specialist roles	DG4 – Advanced and specialist development
Leadership	**Recommendation 24 –** Pharmacy must consistently embrace the four pillars of advanced practice, i.e. clinical practice, leadership and management, education and research, to drive models of excellence	DG5 – Competency development DG6 – Leadership development
	Recommendation 25 – Leadership and management knowledge and skills must be developed and supported for all pharmacy professionals throughout their career	DG6 – Leadership development
	Recommendation 26 – A strategy must be developed in Wales for Advanced and Consultant Pharmacist roles at a local, regional and national level. Talent management and succession planning must be in place for advanced practice and consultant roles	DG4 – Advanced and specialist development
	Recommendation 27 – Pharmacy must be better represented within the health board and trust senior leadership teams, and improving the quality of medicines use should figure more prominently in discussions at Board and Board Committee levels	DG6 – Leadership development
	Recommendation 28 – Strategic leadership for pharmacy in Wales must be collaborative across pharmacy and the wider healthcare system. It must also be more cohesive, outward facing and ambitious	DG6 – Leadership development

Themes	Recommendation	FIP Development Goals alignment
Quality and Governance	**Recommendation 29 –** A pharmacy professional assurance and governance framework must be in place in all NHS Wales organisations that employ pharmacy professionals	DG13 – Policy development
	Recommendation 30 – Boards must have systems to provide assurance that their hospital pharmacy services are operating to a high quality and at standards consistent with best practice and hold pharmacy services to account	DG3 – Quality assurance
	Recommendation 31 – The quality systems and governance of medicines management and optimising medicines use must be better established and incorporated within health board/trust governance structures and processes	DG3 – Quality assurance
Digital and Technology	**Recommendation 32 –** Hospital pharmacy services must support innovation and lead the implementation of new therapeutic technologies relating to their specialism; for example, pharmacogenomics	DG 20 – Digital health
	Recommendation 33 – There must be adequate investment in hardware, software and the pharmacy informatics workforce to fully realise the benefits of digital advancements. Systems must be accessible, user friendly, inter-operable and their benefits evaluated	DG 20 – Digital health
	Recommendation 34 – Pharmacy professionals must develop and maintain competence in the technological advancements that will transform their roles over the next ten years	DG 20 – Digital health
	Recommendation 35 – Health boards and Velindre University NHS Trust must have clinical informatics pharmacy professional(s) to lead and support safe digital developments to improve patient care, workforce efficiencies and prudent healthcare. These will work closely with Digital Health and Care Wales to implement national strategy	DG 20 – Digital health
	Recommendation 36 – Electronic medicines management systems must ensure an all-Wales consistent approach across all settings with interoperability fundamental to any plans for safe and effective patient care	DG 20 – Digital health

Good practice example submissions

Contributor name	Contributor job title	Place of work	Brief description of service
Amy Harris	HIV and Sexual Health Directorate Pharmacist	Royal Gwent Hospital, Aneurin Bevan University Health Board	HIV and sexual health clinical pharmacy service
			Pharmacist-run HIV clinic, including the use of a satellite pharmacy which includes pharmacy technicians for dispensing HIV medicines
Jane Hoidn	Principal Pharmacist Patient Services/Pharmacy Manager GUH	Grange University Hospital, Aneurin Bevan University Health Board	Cluster ward working that involves a team of pharmacists and technicians covering a cohort of similar wards, which allows specialist pharmacists to see the most complex patients and provides an escalation route and supportive team for more junior members of staff
Lisa Drew	Specialist Clinical Pharmacist, Elderly Frailty Unit	Royal Gwent Hospital, Aneurin Bevan University Health Board	A pharmacy service within the Elderly Frailty Unit that aims to identify and resolve reasons for admission, discharge within 72 hours and prevent readmission
Joanna Peacock	Divisional Pharmacist — Mental Health	Aneurin Bevan University Health Board	Specialist mental health pharmacist attendance at older adult mental health multidisciplinary ward rounds
James Van Gemeren	Programme Divisional Pharmacist — Scheduled Care	Royal Gwent Hospital, Aneurin Bevan University Health Board	Establishment of a new post to promote cost-effective use of medicines and develop pathways which encourage this
Ceri Phillips	Consultant Pharmacist — Antimicrobials	Aneurin Bevan University Health Board	A consultant-led antimicrobial pharmacy team responsible for leading antimicrobial stewardship

Contributor name	Contributor job title	Place of work	Brief description of service
John Glover	Senior Procurement Technician	Royal Gwent Hospital, Aneurin Bevan University Health Board	Use of a Supply Shortage Dashboard that provides a one-stop solution for all medicine shortages that affect the health board
Rowena White	Principal Pharmacist	Aneurin Bevan University Health Board	Use of a project manager to identify the gap in staffing that is needed to run a clinical service using the Stoke workforce calculator and national staff ratio documents
Cerys Ridley	Divisional Pharmacist Unscheduled Care	Neville Hall Hospital, Aneurin Bevan University Health Board	Improving ways of working and support at discharge
Josh Marchant	Principal Pharmacy Technician — System Manager	Aneurin Bevan University Health Board	Implementation of omnicell cabinets in all inpatient wards leading to stock optimisation, accurate monitoring of levels and expiry status, optimisation of nursing time and reduction in drug costs to the ward
Phil White	Principal Pharmacist — Homecare and Prescribing Support	Aneurin Bevan University Health Board	Development of a process to mitigate risks [by providing] up-to-date information on all medicines prescribed for chronic disease patients when moving between primary care and specialist centres
Amanda Powell	Lead Pharmacist — Community Resource Teams and Frailty	Aneurin Bevan University Health Board	Pharmacy team support within the wider Community Falls Service, with particular emphasis on a clinical pharmacy technician role within the team
			Development of a pharmacy technician-led pilot service on a rehabilitation ward designed to rehabilitate patients with their medicines taking prior to discharge
Victoria Richards-Green	Clinical Informatics Lead Pharmacist / Respiratory Directorate Pharmacist	Royal Gwent Hospital, Aneurin Bevan University Health Board	Respiratory pharmacist providing one-to-one face-to-face inhaler reviews, with all patients attending pulmonary rehabilitation facilitating inhaler optimisation

Contributor name	Contributor job title	Place of work	Brief description of service
Victoria Richards-Green	Clinical Informatics Lead Pharmacist	Royal Gwent Hospital, Aneurin Bevan University Health Board	Electronic-based handovers as Excel-based sheets to allow a transition of working practise from having to see every patient every day, to planning and prioritising patients
Lorraine Pietrzak	Divisional Pharmacist Urgent Care	The Grange University Hospital, Aneurin Bevan University Health Board	Benefits of pharmacists' skills in emergency departments
Lisa Forey	Head of Pharmacy — Operational Services	Aneurin Bevan University Health Board	Closed outpatient department dispensaries utilising WP10HPs as a supply route, ensuring patients can pick their medication up at a local chemist at their own convenience. Releasing pharmacy staff to be utilised at ward level, improving discharge time, patient counselling and overall flow
Akwasi Mintah	Specialist Pharmacist — Gastroenterology/HIV	Ysbyty Glan Clwyd, Betsi Cadwaladr University Health Board	Pharmacist-led chronic hepatitis B clinic
Charlotte Hay	Medicines Advice Pharmacist	Betsi Cadwaladr University Health Board	Telephony technology to increase the accessibility of the Medicines Advice team within the health board
Charlotte Hay	Medicines Advice Pharmacist/Drug Library Manager	Betsi Cadwaladr University Health Board	Review of current drug libraries for IV infusion devices and transition to newer pump versions
Iain Dawson	Pharmacist	Glan Clwyd Hospital, Betsi Cadwaladr University Health Board	Clozapine community initiation
			Discharge medication review follow up with community pharmacist
Sian Roberts	Lead Mental Health Pharmacist	Ysbyty Glan Clwyd, Betsi Cadwaladr University Health Board	Pharmacy input into community mental health team, bringing new expertise and releasing capacity
Chloe Turner	Community Mental Health Pharmacist	Ty Derbyn, Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Seven-day follow up service for mental health patients discharged from acute mental health wards

Contributor name	Contributor job title	Place of work	Brief description of service
Suhail Sarwar	Lead Antimicrobial Pharmacist	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board East	Pharmacist-led antimicrobial interventions to ensure patients are on the correct antibiotics
Amy Jones	Senior Pharmacy Technician	HMP Berwyn, Betsi Cadwaladr University Health Board	Pharmacy technicians taking a leading role in administration of medicines to the population within a prison setting
Emma Jones	Pharmacist	Wrexham, Betsi Cadwaladr University Health Board	Introduction of alert system for clozapine patients as new admissions, ensuring an early review
Geraint Young	Senior Pharmacy Technician	Betsi Cadwaladr University Health Board, East Primary Care Medicines Management Team	Pharmacy technician support of patients in the community with complex care needs, helping to keep patients well at home and avoiding hospital admissions
Jaime Valentim	Deputy Head of Pharmacy — Primary Care	Primary care, Betsi Cadwaladr University Health Board East	Establishing a single point of access medication review referral service used by healthcare professionals to refer high-risk patients for review by a primary care pharmacy team in the community
			Care home pharmacy technician-led intervention list to support medicines optimisation for residents
Rebecca Parr	Pharmacy Technician	Glan Clwyd Hospital, Betsi Cadwaladr University Health Board	A service that ensures best practice for long-term repeats for paediatric patients that are on complex medicines
Sarah Jones, Sarah Leech	Primary Care Medicines Management Team Pharmacy Technicians	Preswylfa South Flintshire GP Collaborative, Betsi Cadwaladr University Health Board	Pharmacy technician-led medication review service to encourage medication compliance, synchronisation and safe use of medicines
Sue Coppack, Matt Ingman	Pharmacy Technicians	Ty Derbyn, Wrexham Community Mental Health Team, Betsi Cadwaladr University Health Board	Pharmacy technician- and nurse-led weekly clozapine clinic
Claire Frank	Pre-operative Assessment Pharmacist	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Pharmacy team service in pre-operative assessment clinics

Contributor name	Contributor job title	Place of work	Brief description of service
Ffion Hughes	Deputy Head of Primary Care Pharmacy	Medicines Management Pharmacy Betsi Cadwaladr University Health Board East	Introduction of an inpatient ordering medicine for community hospitals that removes the risk of transcription error
			Pharmacist-led care home medication review service
Victoria Fulton	Medicines Management Technician	Glan Clwyd Hospital and Romano Centre, Wrexham, Betsi Cadwaladr University Health Board	Pharmacist-led community service aiming to treat and eradicate longer-term hepatitis C in the community
Angela Fuller	Senior Pharmacy Technician	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Pharmacy technicians working in pre-operative assessment clinic
			Pharmacy technician-led assessment of patients in POAC with diabetic medication
Jillian Simpson	Medical Education and Specialist Dermatology Pharmacist	Glan Clwyd Hospital, Betsi Cadwaladr University Health Board	Pharmacy-led prescribing competency programme for doctors on induction with one-to-one feedback with new FY1 doctors
Karen Pritchard	Patient Safety Lead Pharmacist	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	NEWT guidance advising on the safe administration of medicines for patients who receive their medicines via enteral tubes or have swallowing difficulties
Elizabeth Bond	Consultant Mental Health Pharmacist	Betsi Cadwaladr University Health Board	Pharmacist-led adult ADHD clinic
			Pharmacist-led medication review service as part of multidisciplinary team within community mental health services team
Sarah Hulse, Elizabeth Hurry	Lead BBV Pharmacist, Gastroenterology Pharmacist	Betsi Cadwaladr University Health Board/Wrexham Maelor Hospital	Hepatitis C rapid test and treat community outreach service
Rebecca Houston	Specialist Pharmacist Dermatology and Rheumatology	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Pharmacist-led theumatology outpatient clinic focusing on biologic treatments

Contributor name	Contributor job title	Place of work	Brief description of service
Jonathan Walker	Heart Failure Pharmacist	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Prescribing pharmacist integrated into the multidisciplinary heart failure team
Suhail Sarwar	Lead Antimicrobial Pharmacist	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Narrow therapeutic index drug charts
Leyla Ustay	Senior Pharmacy Technician	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Pharmacy technician medicines management service in the emergency department
			Dedicated pharmacy assistant service in the emergency department
Catherine Pollard	Pharmacist Team Leader Unscheduled Care	Glan Clwyd, Betsi Cadwaladr University Health Board	Prioritisation of patients at the 'front door' via symphony and email alerts
			Introduction of an automated controlled drug machine in the emergency department
			Introduction of an automated medicine cabinet enabling staff to access medication when the pharmacy department is closed
Glesni Pritchard	Cancer Services Pharmacist	Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board	Pharmacist prescriber-led myeloproliferative neoplasm clinic
Yasmina Hamdaoui	Pharmacist (Pre-operative Assessment Pharmacy Lead, Ysbyty Gwynedd)	Ysbyty Gwynedd, Betsi Cadwaladr University Health Board	Benefits of pre-operative pharmacy service
Beth Shaw	Advanced Clinical Pharmacist/Practitioner	Community Mental Health Teams, Betsi Cadwaladr University Health Board	Benefits of pharmacy involvement in community mental health teams
Janet Thomas	Patient Safety Pharmacist	Betsi Cadwaladr University Health Board East	Development of a patient safety programme to address the NHS pharmacovigilance needs

Contributor name	Contributor job title	Place of work	Brief description of service
Alyssa Smee	Senior Pharmacy Technician	Community Mental Health Teams, Central Betsi Cadwaladr University Health Board	Pharmacy technician placed into Community Mental Health Teams to streamline Medicines Management services and improve patient's experiences around medication.
Alyssa Smee	Senior Pharmacy Technician	Community Mental Health Teams, Central Betsi Cadwaladr University Health Board	Pharmacy Technician working as part of the Mental Health Home Treatment team.
Hannah Greaves (on behalf of the Pharmacy Governance team)	High-cost Drug Pharmacist Lead	Pharmacy Governance Team [Missing health board?]	Establishing a team to deliver a new service at pace to provide new treatments for non-hospitalised patients with COVID-19
Uttam Chouhan	Pharmacist	Ysbyty Glan Clwyd, Betsi Cadwaladr University Health Board	Optimising disease-modifying treatments in acute decompensated heart failure patients with reduced ejection fraction while in hospital
Rhys Oakley	Infectious Disease Pharmacist	University Hospital of Wales, Cardiff and Vale University Health Board	Establishing a new infectious disease clinic in primary care to review new entrants into the country with an infectious disease
Rhian Jones	Directorate Pharmacist — Emergency and Acute Medicine	University Hospital of Wales, Cardiff and Vale University Health Board	Prescribing pharmacists' role in medical admissions unit
Angela Andrews	Lead Neurosciences Pharmacist	Cardiff and Vale University Health Board	Pharmacist- and physiotherapist-led clinic to assess and monitor patients with multiple sclerosis for fampridine therapy
Susan Mellor	Advanced Pharmacist — Training and Development	University Hospital of Wales, Cardiff and Vale University Health Board	Introduction of a structured training programme for the secondary care aspect of the foundation pharmacist multisector training programme
Katie Evans	Specialist Mental Health Pharmacist	Hafan Y Coed, Cardiff and Vale University Health Board	Inclusion of prescribing mental health pharmacist in addictions department and clinic
			Prescribing pharmacist support to a community forensic mental health team

Contributor name	Contributor job title	Place of work	Brief description of service
Eurig Jenkins	Lead Pharmacist, Paediatric Oncology	Children's Hospital for Wales, Cardiff and Vale University Health Board	Pharmacist-led chemocare electronic prescribing system used for prescribing of oral, parenteral and intrathecal chemotherapy for children and young adults
Gareth Bryant	Nephrology and Transplant Pharmacist	Cardiff and Vale University Health Board	Nephrology and transplant pharmacy team embedded into the home dialysis multidisciplinary team (MDT) by attending weekly MDTs meetings, monitoring patients' blood results and leading on the prescribing for renal anaemia, renal bone disease and vancomycin for peritonitis.
Ruth McAleer	Lead Antimicrobial Pharmacist	University Hospital Wales,Cardiff and Vale University Health Board	Joint antimicrobial stewardship ward round with antimicrobial pharmacist and microbiologist
Ross Burrows	Senior Pharmacist Paediatric Endocrinology	Cardiff and Vale University Health Board	Tertiary paediatric endocrine pharmacy service for children and young people.
Robert Bradley	Consultant Pharmacist for Nephrology and Transplantation	University Hospital Wales, Cardiff and Vale University Health Board	Nephrology and Transplant Pharmacy Team as a key component of the Transplant Virology multidisciplinary team
Thomas Robinson	Clinical Pharmacist Neurosciences	University Hospital of Wales, Cardiff and Vale University Health Board	Pharmacist-led support for patients who have undergone microvascular decompression surgery post discharge to discuss a safe and slow medication taper
Jade Chan	Specialist IBD Pharmacist	Llandough Hospital, Cardiff and Vale University Health Board	Introduction of IBD pharmacist role to adhere to IBD UK standards
Rhys Oakley	Infectious Diseases Specialist Pharmacist	Cardiff and Vale University Health Board	Introduction of a new Diploma Clinical Clerkship in Infectious Diseases for Band 6 Diploma Pharmacists
Fiona Clark, Elizabeth Hughes, Sian Heaton	Infectious Diseases Pharmacist, Principal Pharmacist (Training and Workforce Development), Senior Pharmacist (Training and Development)	Cardiff and Vale University Health Board	Introduction of a new Diploma Clinical Clerkship in Infectious Diseases for Band 6 Diploma Pharmacists

Contributor name	Contributor job title	Place of work	Brief description of service
Gemma Henry	Rotational Clinical Pharmacist	University Hospital for Wales, Cardiff and Vale University Health Board	Quality improvement project to reduce the wastage of and expenditure on insulin
Amy Sheppard	Specialist Mental Health Pharmacist	Hafan y Coed Mental Health Unit, University Hospital Llandough, Cardiff and Vale University Health Board	Specialist medication advice to women with mental health conditions who are planning a pregnancy, pregnant or postnatal (including breastfeeding)
Thomas Wyllie	Specialist Pharmacist, Neonates and Metabolic Disease	University Hospital Wales, Cardiff and Vale University Health Board	Pharmacist-led weekly multidisciplinary medication safety huddle allowing for rapid feedback and discussion of errors or near-misses, a short 'hot topic' on medication safety or pharmacology, and good examples of prescribing
Mari Lea-Davies	Lead Pharmacist — Adult Cystic Fibrosis	Llandough Hospital, Cardiff and Vale University Health Board	Specialist pharmacist working within the multidisciplinary team, establishing all eligible patients on a newly introduced treatment for cystic fibrosis
Sarah Irwin	Lead Pharmacist — Advanced Therapy Medicinal Products	Cardiff and Vale University Health Board	Introduction of a pharmacogenomic test into the patient pathway for all patients diagnosed with acute lymphocytic leukaemia
Sarah Gage	COVID-19/Pandemic Lead Pharmacist	University Hospital of Wales, Cardiff and Vale University Health Board	Ambulatory deployment of neutralising monoclonal antibodies for symptomatic patients who fit the criteria for cohorts at 'highest risk' from COVID-19 infection
Bethan Davis	Pharmacist	Cardiff and Vale University Health Board	Reducing ward expenditure on over-labelled medicines by 50%
Victoria Gimson, Amy Sheppard, Elizabeth Hughes, Sian Heaton	Clinical Board Pharmacist (Mental Health), Specialist Pharmacist (Mental Health), Principal Pharmacist (Training and Workforce), Senior Pharmacist (Training and Development)	Cardiff and Vale UHB	Diploma in clinical pharmacy mental health module shifting from a from a standard ward-based clerkship to expand multidisciplinary team and clinic-based learning

Contributor name	Contributor job title	Place of work	Brief description of service
Sue Wooller	Team Leader — Anticoagulation and Clinical Services	Royal Glamorgan Hospital, Cwm Taf Morgannwg University Health Board	Pharmacy-led anticoagulation service
Nadia Higgi	Advanced Pharmacist — Respiratory	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	Pharmacist-led drug monitoring clinic alongside a consultant
Melissa Siew	Advanced Pharmacist — Rheumatology	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	A pharmacist-led rheumatology biologics clinic where patients are seen by a pharmacist independent prescriber in rheumatology
Amy John	Pharmacy Technician	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	Pharmacy technician-led support and training on antimicrobial stewardship to relevant healthcare professionals and providing education in schools
Charlotte Curliss	Advanced Pharmacist in Emergency Medicine	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	Pharmacist role within A&E following successful pilots
Emma Williams	Chief Pharmacist — Primary Care and Medicines Optimisation	Cwm Taf Morgannwg University Health Board	Facilitating the safe and timely discharge of adult patients requiring support to manage their medication at home
Patryk Poniatowski	Advanced Clinical Pharmacist — Frail, Elderly and Vulnerable Adults	Ysbyty Cwm Rhondda, Cwm Taf Morgannwg University Health Board	Development of a new service that uses pharmacists' skills to support patients with neurological movement disorders
Sarah Griffiths	Pharmacist Team Leader for Scheduled Care	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	Improving practice related discharge advice letters through an independent prescribing pharmacist input
Hannah Lee on behalf of Prince Charles Hospital	Senior Pharmacy Technician	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	Advancing and supporting pharmacy support staff to work at ward level, releasing clinical capacity of pharmacy technicians and pharmacists

Contributor name	Contributor job title	Place of work	Brief description of service
Amanda Halloway	Advanced Pharmacist — Trauma and Orthopaedics	Prince Charles Hospital, Cwm Taf Morgannwg University Health Board	Trial of pharmacist and pharmacy technician input as early as possible in the inpatient stay, at the 'front door' to ensure appropriate medicines reconciliation and improvement in medication errors
Rhys Williams	Specialist Cardiology Pharmacist	Princess of Wales Hospital, Cwm Taf Morgannwg University Health Board	Pharmacist-led heart failure clinics
Alice Evans	Perinatal Mental Health Pharmacist	Glangwili Hospital, Hywel Dda University Health Board	Perinatal mental health service
Gwenllian Hughes	Lead Mental Health Pharmacist	Glangwili Hospital, Hywel Dda University Health Board	Pharmacist-led mental health and learning development medicines service
Nia Smith	Band 5 Mental Health Pharmacy Technician	Glangwili Hospital, Hywel Dda University Health Board	Pharmacy-led clozapine clinic
			Pharmacy technician checks of community mental health clinics to ensure patients' online medical notes are updated correctly, and to return excess stock from the clinics
Rachel Davies	Rheumatology Pharmacist	Prince Philip Hospital, Hywel Dda University Health Board	Rheumatology follow-up clinics that involve reviewing patients' disease activity and treatment and stepping treatment up or down as appropriate
Joanna Israel	Pharmacy Technician	Prince Philip Hospital, Hywel Dda University Health Board	Pharmacy technician-led medicines administration to inpatients — reducing both administration errors and nurse workload
Jessica Cassinelli	Advanced Pharmacist	Prince Philip Hospital, Hywel Dda University Health Board	Pharmacist-led interstitial lung disease drug counselling and monitoring clinic
Cerys Sessini	Chief Pharmacy Technician/ Medicines Management Technician	Withybush and Glangwili Hospitals, Hywel Dda University Health Board	Roll out of a clinical technician at ward level
Emma Graham	Chief Pharmacy Technician for Patient Services	Prince Philip Hospital, Hywel Dda University Health Board	Establishing a seven-day pharmacy service, 8am to 7pm, by amending working patterns, facilitating patient flow and discharge

Contributor name	Contributor job title	Place of work	Brief description of service
Angharad Thomas	Cardiology Advanced Heart Failure Pharmacist	Previously Cwm Taf Morgannwg University Health Board, now Hywel Dda University Health Board	Introduction of a specialist heart failure pharmacist into a heart failure diagnostic clinic to facilitate earlier diagnosis
Joanna Israel	Pharmacy Technician	Prince Philip Hospital, Hywel Dda University Health Board	Trial of pharmacy technician role to help facilitate switching respiratory patients to dry powder inhalers
Nathan Skyrme	Specialist Mental Health Pharmacist	Prince Philip Hospital, Hywel Dda University Health Board	Supporting mental health services in the community and inpatient wards
Jayne Price	Head of Community Services Pharmacy	Powys Teaching Health Board	Assessment of requirements and direct referral by the pharmacy team for discharge medication support to domiciliary care and reablement teams
Rafael Baptista	Clinical Pharmacist	Powys Teaching Health Board	Implementation of a pharmacy intervention toolkit that offers opportunities to improve prescribing, service planning and clinical learning, and unidentified pharmacy interventions that would lead to significant and serious harm
Rebeca Davies	Senior Pharmacist for Patient Services	Morriston Hospital, Swansea Bay University Health Board	Development of ward-based working to allow the pharmacy team to be front facing and present for all clinical checks
Kaylee Gorman	Senior Pharmacy Technician in Dispensary and Digital Services	Morriston Hospital, Swansea Bay University Health Board	Introducing a prescription tracking system to allow monitoring and review of all items that are processed within the main dispensary
Gareth Chapple	Advanced Pharmacist for Cardiac Services	Morriston Hospital, Swansea Bay University Health Board	Creation of a bespoke pharmacy hub room for a tertiary cardiac centre

Contributor name	Contributor job title	Place of work	Brief description of service
Marianna Handzusova-Howley	Chief Pharmacy Technician	Swansea Bay University Health Board	Pharmacy technician-led education and counselling of patients helping them to make informed decisions about the gabapentinoids currently prescribed. Analysing the suitability of prescribing gabapentinoids in patients with chronic non-malignant pain
Owain Brooks, Christopher Brown, Lee White	Renal Pharmacists	Department of Nephrology, Morriston Hospital	Pharmacist-led, specialist care for patients with kidney disease, professionally integrated within the multidisciplinary team
Kieron Power	Lead Pharmacist —Thrombosis and Anticoagulation	Morriston Hospital, Swansea Bay University Health Board	Pharmacy-led venous thromboembolism treatment service
Eleanor Lau	Pharmacist	Singleton Hospital, Swansea Bay University Health Board	Pharmacist led capecitabine clinic.
Grant Pearce	Medicines Homecare Manager	Swansea Bay University Health Board	Delivery of medicines to patients receiving ongoing therapy directly to their homes
Bethan Mortley	Advanced Oncology Pharmacist	Singleton Hospital, Swansea Bay University Health Board	Switching of the choice of granulocyte colony stimulating factor to a medication easier for patients to administer and more cost-effective than the previous alternative
Stuart John Evans	Oncology Pharmacist	Singleton Hospital, Swansea Bay University Health Board	Outpatient oncology clinic led by non-medical prescribing pharmacists and facilitating home delivery of medicines
Mo Ajam	Advanced Clinical Pharmacist	Neath Port Talbot Hospital, Swansea Bay University Health Board	Pharmacist-led prehabilitation service for urgent suspected cancer patients attending a rapid diagnostic centre
Rebecca Gillman	Pharmacy Technician	Primary care, Swansea Bay University Health Board	Pharmacist-led inhaler clinic (with aim to evolve into a technician-led role)

Contributor name	Contributor job title	Place of work	Brief description of service
Lorna Collins	Clinical Pharmacist	Primary care, Swansea Bay University Health Board	Diverse pharmacy clinical roles in Virtual Wards embedded within the MDT.
Olivia Rees, Ceri Morcom	Lead Pharmacist (Acute Medicine), Pharmacy Technician	Singleton Hospital, Swansea Bay University Health Board	Streamlining the ordering and supply of biologic medication
Jonathan Harris	Clinical Education Lead and Speciality Pharmacist	Swansea Bay University Health Board	Health board-wide virtual learning programme
Sue Jones	Lead Pharmacist Mental Health and Learning disabilities	Cefn Coed Hospital, Swansea Bay University Health Board	Pharmacist prescriber-led outpatient clinics as part of community mental health teams
Claire Teesdale	Pharmacy Technician, Mental Health and Learning Disabilities	Cefn Coed Hospital, Swansea Bay University Health Board	Pharmacy technician input into clozapine clinics
Kerys Thomas	Advanced Heart Failure Pharmacist	Swansea Bay University Health Board	Potassium-binder clinic that aims to improve access to potassium-binder therapy for patients who meet the National Institute for Health and Care Excellence criteria for treatment
Rebeca Davies	Senior Pharmacist for Patient Services	Morriston Hospital, Swansea Bay University Health Board	Development of ward-based working to allow the pharmacy team to be front facing and be present for all clinical checks
Christie James	Lead Critical Care Pharmacist	Aneurin Bevan University Health Board	Introduction of an Assistant Technical Officer and Medicines Management Technician Service to critical care.
			Assistant technical officer and medicines management technician service to critical care

Acknowledgements and contributors

RPS Project team

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- Rachel Taylor — *NHS Executive*
- James Van Gemeren — *Aneurin Bevan University Health Board*
- Judith Vincent — *Swansea Bay University Health Board*
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