

Measures characterising community pharmacist (risk of) harm in Aotearoa New Zealand

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Disclaimer: Te Pou Whakamana Kaimatū o Aotearoa | The Pharmacy Council of New Zealand (Council) commissioned Andcer Consulting Limited to develop a summary report which describes the magnitude and characteristic of NZ Pharmacist/Pharmacy practice-related harm and benefits with a view to support Council to carry out its functions as outlined in s118 of the Health Competence Assurance Act 2003 : Functions of Authorities. The information contained in the report represents the views and opinions of Andcer Consulting Limited and does not necessarily represent the views or opinions of Council. The Report has been made available for informational purposes. Council does not make any representation or warranties with respect to the accuracy, applicability, fitness or completeness of Report. Council hereby disclaims any and all liability to any part for any direct, indirect, implied, punitive, special, incidental or other consequential damages arising directly from any use of the Report, which is provided as is, and without warranties.

Context

Te Pou Whakamana Kaimatu o Aotearoa's (Pharmacy Council of New Zealand; PCNZ) primary function is to enhance "wellbeing through excellence in pharmacy practice" and in so doing, ensure that pharmacists are competent and fit to practice. This involves promoting good pharmacy practice. Various sources suggest that the quality of care (across its dimensions) provided by pharmacies (and pharmacists) may not be as ideal as they can be (e.g. Medicine Control's [Pharmacy Quality Audits](#), [HDC](#), [HQSC](#) etc.). Further, [institutional racism](#) identified in the pharmacy sector could contribute to [health inequities](#). These messages are not new but actions so far by several groups/ individuals appear to have been ineffective or unsustainable. To better monitor the health and safety of the public from pharmacy practice, the PCNZ is interested in improving its understanding of pharmacy practice-related harms and benefits and how it can be routinely measured.

Aim

Harm can happen by commission as a direct consequence of a mistake that has not been caught, and by omission where, for instance, an inefficient process occurs. This process removes resources that may otherwise be used to lower costs or provide improved product quality. Community pharmacists work closely with the public in their role as medicine dispensers, and in the provision of advice for over-the-counter sales, prescription medicines, and when delivering an increasing range of extended services. Their role within health service delivery is extensive, not only as an individual touch point for patients, but also, as one of many touch points on a patient's health journey. As such, community pharmacy and pharmacists have a major role in optimising medicine-related care, and mitigating the effect of medication-related harm, reducing medication errors, and preventing near-misses. Alongside this, current pharmacy practice also causes harm through medication errors, predominantly through incorrect medicine dispensing.

The following report is set against a background of problematic [Pharmacy Quality Audit](#) results, a constant stream of Health and Disability Commissioner [medication error reports](#), and [Health Quality & Safety Commission](#) (HQSC) publications. The issue faced is not so much that fails (misses) occur but:

1. what learnings are happening from these fails to eliminate future fails within the current funding envelope;
2. is there a better mixture of outputs that can be achieved with the given inputs;
3. with more inputs, is there a more valued mix of outputs, and how much more are stakeholders prepared to pay for a safer service?

Andcer Ltd has been commissioned to examine peer reviewed and grey literature to ascertain indicators of harm that might inform points 1 to 3 above and identify what community pharmacists' contribution is to the current state of harm/ benefit based on this literature. This will help fill a knowledge gap around the characteristics of community pharmacist related harm, and in so doing provide a baseline of how harm is identified in extant literature, and then inform discussions around how to monitor the contribution pharmacists make to health care delivery.

Key takeaways

- There is limited literature quantifying metrics of Aotearoa New Zealand community pharmacist harm/ benefit
- Literature suggests much of the potential harm is by omission, but this could be a characteristic of publication bias – *Absence of evidence is not evidence of absence*
- Competence standards for community pharmacists should consider the tension between clinical practice, public health, business, and community needs
- Pharmacists are working in an increasing range of areas presenting exciting opportunities for the future of the profession.

Search strategy

This report outlines findings from a rapid review of community pharmacy literature published between 1999 and today. Literature was included in this review if it considered aspects of community pharmacy/pharmacist service delivery and was related to New Zealand-based practice. In late August 2021, databases searched include PubMed, Ovid Medline, Embase, CINAHL, ProQuest Medline, the International Pharmaceutical Abstracts, Web of Science, and Google Scholar. Alongside this, grey literature was systematically sourced from the Ministry of Health library, NZResearch.org.nz, and Google.

The following search strings were used: “community pharm*” AND (“New Zealand” OR Aotearoa OR NZ). Where this resulted in an excessively large literature base, the following terms were added harm | benefit | education | training | risk | racism | patient centric (synonyms – person-centred, whanau-centred, consumer) | quality of care | effective | equitable | efficient. When conducting a search for grey literature via Google, owing to the potential expansive literature available, our search was limited to those articles that came from a “.nz” site.

Analysis

Following abstract review and removal of duplicates, 149 relevant articles were reviewed and stored in EndNote 20 (Clarivate Analytics), abstracts from an additional thirteen articles appeared to fit the review criteria, however, full texts for these articles were not found. Articles were reviewed against their contribution to informing a discussion on harm and benefit of community pharmacist services, they were explored thematically against the Institute of Medicine’s six domains of health care quality framework (STEEEP i.e., safe, timely, effective, efficient, equitable, and patient-centred).

Alongside this report, we include an Excel spreadsheet, which summarises key findings from each relevant article, and provides takeaway points from these articles. These takeaways have been written to highlight pertinent points for the PCNZ to consider when reviewing their competence standards. This spreadsheet is not written with the intent of being published, rather it is a working summary mainly consisting of extracts from the reviewed literature. We have also provided an EndNote file including the 149 relevant peer reviewed articles and 30 grey literature documents.

Factors relating to harm/ risk of harm in peer reviewed literature

The following section outlines harm and benefits from community pharmacist service omission or commission as considered in peer reviewed literature. This section speaks to specific themes/

interesting points, there may be more able to be drawn out of the literature. Where possible, a proposed metric or appropriate control/ response has been provided in square brackets []. Many of these factors are affected by an individual pharmacist's training/ performance but are observable only as pharmacy performance. It was not possible to allocate a size e.g., cost or benefit to all factors below. Without more work and a collaborative effort involving subject matter experts and stakeholders these costs/ benefits cannot be assessed.

The categories in STEEEP overlap, for instance, a factor that was predominately about patient safety may also have effects related to effective, efficient, equitable, and patient-centred care. The following summary is characterised by the element of STEEEP that was seen as the most important. In addition to the STEEEP criteria a 'B' for business has been added. Business is a catchall for aspects of performance that would result in a better run business. This business may then produce surpluses that would either improve the pharmacies profitability or improve the delivery of pharmacy-based services.

Safe

Pharmacy practice in Aotearoa New Zealand is generally safe with a low rate of directly reported harm (1-16). Available literature indicates that some local pharmacy activities, including medicines reconciliation and anticoagulant management services have improved patient safety and health outcomes (17-24). Literature also suggests that pharmacists play a large role in identifying and mitigating problems on prescriptions, although much of these problems relate to supply and funding (25). Improvements can be made in:

1. Health equity and cultural safety given unwarranted variations to patient counselling and medicines use and pronounced health disparities (21, 26-35); and
2. Clinical governance, quality and risk management and improvement given that less than 50% of community pharmacies achieved full compliance to Medsafe's Pharmacy Quality Audits (e.g., controlled drugs, fridge, incident management). There has not been significant or sustainable improvements since 2017 (36). Alongside this, the prevalence of dispensing errors also points to risk management issues:
 - 39% of all medication errors are dispensing-related as identified from complaints received by the Health and Disability Commissioner (HDC) (37)
 - 8% of respondents report receiving the wrong medication or dose in the HQSC's Primary Care Experience survey (15, 38)
 - In the year ending 30 June 2020, 147 concerns were raised with the PCNZ, of which 54 were formal concerns relating to issues such as dispensing errors and poor communication (39)

Themes related to safety included:

- Product and disease-specific knowledge
Pharmacists were unable to advise on the safety of original medication versus generic medication substitutions or on complementary and alternative medicines. Similarly, issues were also reported around the ability to counsel on areas of disease prevention, including alcohol, weight loss, and smoking [percent of substitutions for which appropriate briefing sheets were available in multiple languages; pharmacists have knowledge of complementary and alternative medicines and advise on them according to the possible effects that they might have on patients].

- Integration and collaboration
Several articles describe issues with collaboration between pharmacists and those outside of pharmacy. These include collaborating with individuals in the health sphere, those in holistic care, and those outside health. For example, health food shops have been identified as potentially providing hazardous advice to patients (40); there is room for collaboration with pharmacy to mitigate this issue [legislation should require that health food shops do not offer this advice; each pharmacy should as required make contact with health food shops and provide them with points of contact for medicine-related queries].
- Wellbeing
Literature indicates that pharmacists who are feeling unwell are still likely to go to work (41), this is a risk to the public directly through the transmission of infection and indirectly where the pharmacist is unable to perform their duties properly [pharmacies should establish no-fault systems where there is less pressure on pharmacists to work when unwell. This includes setting up fail-safes where there is always 'cover' in the case of illness].

Timely

Themes related to timeliness include:

- Accessibility
Accessibility was considered in two main ways in the literature. Firstly, literature focussed on being able to receive care when patients would potentially be otherwise unable to access it. For example, in the case of opioid substitution patients, pharmacists see themselves as well placed to monitor patients, but there is an acknowledgement that integration with other health services is limited (42). Secondly, literature suggests a role for pharmacists in the timely management of patient conditions either through providing advice or working through public health initiatives. The knowledge of pharmacists to provide this service is questionable, see for example, Sheridan et al. (43).
This second issue also highlights the role of pharmacists in patient education, for example, in relation to asthma inhalers – pharmacist education around the use of preventers, compared to relievers, may result in improved timely patient health outcomes. [% of preventative medications scripts that are picked up; % of customers not picking up their preventative medications that are followed by the pharmacist]
- Early identification
Pharmacists may by virtue of their role be able to facilitate the early identification of medical issues faced by potential patients, see for example Lawrence et al.'s (2019) work on gout (44).

Effective

Much of the reviewed literature focussed on the effectiveness of care being delivered. This includes in relation to anticoagulant monitoring (19), asthma management (45), gout management (21), medicines user reviews (46, 47), medication adherence in long-term care patients (although also a higher ambulatory sensitive hospitalisation rate (48)), and in treating sprains and strains (49). In addition, literature also suggested issues with the effectiveness of written medicines information provided to patients (50, 51). Themes related to effectiveness also included:

- Public health
Several articles focussed on the effectiveness of pharmacists in public health type roles. Often concluding that pharmacists need additional knowledge to deliver in this area. As part of this, one article (based on doctoral research)(52) also focussed on the role of pharmacies in the disposal of expired or returned medications (53). Currently, many drugs are disposed of using the sewerage system. Sewerage after removal of dissolved and suspended organic material; and pathogenic bacteria is discharged into rivers and the ocean. Flushing drugs in the sewer system will eventually contaminate the environment [% of drugs by volume that are disposed without polluting the environment].
- Disaster support
Pharmacists have a unique skill set and abilities that are valuable at a time of community crisis (54). These abilities range from determining safe drinking water, first aid, and provision of pharmaceuticals. At a time of emergency these skills are very important. At other times e.g., flooding, pharmacy is a valuable community asset and may require assistance from civil defence [liaison with each local council's civil defence controller].

Efficient

There was very limited literature exploring efficiency from a cost/ waste avoidance perspective. One cost benefit analysis of the CPAMS programme suggests cost savings (55), while there is an acknowledgement in other literature that the cost of using new technologies, such as robotics, in the New Zealand workplace may be prohibitive (56), and that there is currently significant wastage from unused medications (57). Pharmacists who have reported drug seekers to the Police have often received no acknowledgement. Without this acknowledgement, the pharmacists may not in future commit time to advising the Police [% of advice to the police that are acknowledged].

Equitable

Several articles commented on areas where the principles of equity can be examined. Issues with equity are largely related to (1) making people aware of the services that pharmacy offers, and (2) delivering them in a responsive manner. This includes consideration of the appropriateness of the shop layout, and how services are offered. This has been especially relevant to Māori (58-60), Pacific people (59, 60), youth (61), men (59), and new immigrants/ non-English speaking patients (62, 63) [marketing plans can be developed to specifically address this gap]. Hikaka and colleagues note how to incorporate te Tiriti into service development (64) as part of this they lay out potential metrics for designing medicine review interventions for Māori older adults.

Patient-centred

Pharmacist relationship management is a key part of ensuring patient-centred care delivery (65). Alongside this, is a recognition of the needs of different populations, see equity section above, but also consider young people (66), and older people (67). There were also a few papers that focussed on ways to assess the patient-centredness of care delivery using mystery shoppers (60, 68) [count of issues raised by the mystery shopper; percent of issues raised by the mystery shopper that are resolved in a month].

Business

In creating synergy between business and clinical interests, there is a need to consider the development of:

- common easily understood high-quality medicine flyers and a similarly supporting comprehensive website. [provide the flyer along with appropriate discussions on renewal especially for Māori and for older people, and advertise the existence of this website]
- business continuity plans – a pharmacy is a valued business, it has records that are required for its ongoing operation [are business and patient records appropriately backed up so they would be available if the original records were unavailable?]
- agreed protocol with general practitioners so that when questions are raised concerning their prescriptions timely responses occur.

Other issues

Assessing the contribution of pharmacists to harm management/ minimisation is difficult owing to changes in three main areas:

1. the clinical roles pharmacists occupy, their clinical/ professional capabilities, and their role as part of care teams,
2. the pharmacy business model and alignment with clinical practice, and
3. the ability of policy/ legislation/ data access to keep pace with changing interests.

Tensions exist between these three areas. The pharmacist's role is also changing; there are progressively more pharmacists working outside community pharmacy and an increasing number of diverse patient-centred/ patient-facing services. As such, while outside of the scope of a STEEEP evaluation, the following considerations are also noteworthy.

Understanding of the pharmacist's role

Common issues identified in the review included a frequent lack of public understanding of the pharmacist's/ pharmacy's role in service delivery. Such an issue may result in harm from omitted services and raises the question of whether pharmacists should be providing more proactive services. Alongside this, there is an acknowledgement, particularly in recent research by Abdul Aziz and colleagues (69-71), that a large portion of pharmacist's workload involves the provision of "free" advice/ services. At present, literature on harm does not tend to involve an evaluation of the efficacy of these services. There remains a need to reflect on pharmacist's core function and whether the delivery of such services represents the 'best' use of pharmacy resources [capture information about these "free" services and validate their affordability and the requirement to provide these services; perhaps discontinue these free services if they do not add value to the pharmacy].

Job satisfaction

Literature focussed on areas of practice that are not directly relevant to harm but point to the need to consider the wellbeing of pharmacists. This includes consideration of business practice and organisational culture, financial considerations (such as those governing the current evergreen contracts), job satisfaction/ burnout, and wider pharmacy leadership/ direction setting. There remain several interdependencies that mean ownership of these areas is needed. For example, if (aspects of) the pharmacy profession is not financially viable, then pharmacists attempting to operate within their available means may not provide correct and full services. Based on the

available literature, pharmacy does not appear to be a ‘learning industry’ – there is room to enhance quality assurance and business management process.

Training and assessment

In reviewing this literature, it became apparent that in addition to prescribing areas of competence, there are other means to assess safety of community pharmacists and to enhance the practice of community pharmacy. These include encouraging training in business management and quality assurance; evaluating the cost-effectiveness of quality improvement initiatives/ new services; conducting mystery shopper studies to assess pharmacist and shop staff practice; and including further training in health promotion/ disease prevention and treatment with complementary and alternative medicines. Specifically, literature suggests pharmacists lack confidence in educating patients on areas including, but not necessarily limited to, complementary and alternate medicines, alcohol consumption, weight management, and mental illness.

Workload and patient characteristics

Community pharmacy is facing an increasing prescription ‘burden’ as patients live longer with multiple comorbidities. This means that dispensing and clinical practice has become an increasingly complex process. To help mitigate this issue, there remains the need to consider whether there should be regulated minimum critical number of pharmacists and technicians per prescription dispensed or per pharmacy.

Learning organisations and performance

Based on our review, we note a paucity of New Zealand literature exploring the “root causes” of pharmacist misses and near misses. In many cases, these are attributed to heavy workloads or lack of staff, but without a credible plan to either accept these issues or eliminate them. Such plans may include the need for more support roles, quality assurance champions, and non-clinical business improvement staff. In any process misses can occur, however, in identifying root causes, organisational learning may reduce these fails. Other organisations have adopted methods such as Lean Six Sigma to improve workplace performance within learning organisations. There is room for pharmacy to consider training in these sorts of methods to encourage pharmacists to improve performance and identify where performance losses or opportunities occur.

Limitations

When conducting our review of Aotearoa New Zealand pharmacy literature, seven main limitations became apparent:

1. The material on which this report is based has been sourced mostly from peer reviewed literature. This literature has been published since 1999 and may not reflect current community pharmacy practice.
2. Much of this literature does not provide metrics/ indicators of harm/ benefit, rather the literature focusses on evaluating areas of changing practice, such as the introduction of gout management in community pharmacy. We have chosen to include this literature in our review as new competence standards need to be future-focussed and include consideration of new areas of practice. While these articles do not specifically identify metrics, they do highlight where metrics should be created.

In addition, where metrics exist, these are often disease-based metrics, such as those derived from the Asthma Quality of Life Questionnaire, meaning that they are not directly applicable to the creation of a competence framework. Nonetheless, these sorts of disease-specific metrics

do support the formations of metrics around the recording of clinical outcomes and pharmacists' contribution to positive health outcomes.

3. New Zealand-based peer reviewed literature largely does not evaluate the dispensing role of pharmacists. As such, the ability to identify metrics of harm/ benefit in this area is limited.
4. Much of the literature examines small geographically similar populations or are small case studies that may not be generalisable to the wider Aotearoa New Zealand community pharmacy population.
5. Community pharmacy clinical practice in Aotearoa New Zealand is closely linked to pharmacy business practice. This means that metrics/ indicators will also need to enable the monitoring of good business practice and clinical practice. Alongside this, there is overlap in metrics around the community pharmacy and the community pharmacist, meaning that it is not entirely clear whether responsibility to champion these metrics should lie with the PCNZ or with Medsafe.
6. Grey literature focusses on metrics/ indicators at the system level. These are not directly relevant to an individual community pharmacist's area of practice but are relevant when considering the contribution of pharmacists to patient-centred care.
7. Much of the peer reviewed literature focuses on areas of practice omission – that is, areas where community pharmacists can expand the services they deliver or areas where they can improve their practice. There remains a likely publication bias where harm caused by service commission have not been reported.
8. This review is the product of roughly 3 and a half week's work. It is possible that literature was unintentionally omitted. However, given the number of peer reviewed databases accessed and the level of duplication, it is likely that all relevant key literature was found.

The literature review has revealed many factors that by omission or commission can cause harm. The list will doubtless not be complete.

Illustrative indicators

The New Zealand Health Strategy (2016) has identified five strategic themes related to delivery of health care in New Zealand. These themes are:

1. people-powered,
2. closer to home,
3. value and high performance,
4. one team, and
5. smart system.

Our review identified limited specific indicators but did suggest areas where indicators could be created. These indicators, below, have been associated with one or more of the themes in the New Zealand Health Strategy and can help initiate a discussion on the contribution of pharmacists to health service delivery. We recognised that not all these indicators are in scope for the PCNZ and that they will need to be workshopped with the wider sector to strengthen and finalise them. We also recognise that these are not all possible indicators, rather they are key areas where indicators may have value. As the health system currently functions, we also acknowledge that not all these indicators are currently available. Where literature offers metrics around specific populations/ services (e.g., gout management, reporting to Police), we have broadened these to instead make general statements that could be applied to a wide range of services (e.g., clinical measures, integration with non-health sector).

People-powered

The New Zealand Health Strategy (2016)'s illustrative definition of this theme includes:¹

- making New Zealanders 'health smart'; that is, *they can get and understand the information they need to manage their care*
- enabling *individuals to make choices* about the care or support they receive
- understanding *people's needs and preferences* and partnering with them to design services to meet these
- communicating well and supporting *people's navigation of the system*, including through the use of accessible technology such as mobile phones and the internet.

Proposed indicators:

Indicator 1: outreach - we will contact you (multiple measure)

Rationale	Appropriate engagement techniques are required for people who consume services differently; proactive care with outreach is necessary to facilitate access for those who seldom engage.
Numerator	By each access channel (physical visit, phone, email) how many outreaches have been performed in a particular time.
Denominator	Total number of permanent patients (omit patients who might be viewed on as casual "walk-ins").
Other possible measures	Involvement of patients in service codesign. Pharmacists undertake situational analyses of their workplace, including population demographics and manage treatment accordingly. Pharmacists provide evidence-based advice on social media, they undertake training on how to improve patient health literacy.

Indicator 2: management of high need patients or groups of patients (multiple measure)

Rationale	Patients do not all have the same requirements, if patients are to be managed the requirements either individually or as groups have to be catered for.	
Numerator	By each of a number of illnesses (e.g. gout, CVD, ...) Number of high need patients with individual (or group) care plans.	Number of interventions
Denominator	Total number of high need patients	Total number of LTC patients

¹ Ministry of Health (2016). New Zealand Health Strategy - Future direction. Ministry of Health. (emphasis italics have been added)

Indicator 3: focused on the individual, their needs, and their health care experience

Rationale	If an individual's needs for communication are not met, then ultimately their health care experience will be lessened. Communication should not be provided on a one size fits all bases. Pharmacy services will need to be refugee-friendly, mental health-friendly, and responsive to needs of specific groups, particularly tangata whenua.
Numerator	Is the pharmacy (pharmacist and other staff) regularly trained on appropriate cultural communications for each of the consumer groups that they work with. Is care provided that is respectful of and responsive to, individual patient preferences, needs and values. This includes recognising that culture is not limited to ethnicity. Have pharmacists participated in cultural safety training and undertaken workplace planning to make the pharmacy disability friendly. Have they considered their practice as it relates to te Tiriti?
Denominator	There is no denominator.

Indicator 4: patient-centred care

Rationale	Delivering the best health outcome regardless of gender, race, ethnicity, religion, geographical location or socioeconomic status will help patients achieve, at least in part, equality.
Numerator	Yearly count of staff briefings/ training sessions where the requirements of different customer cohorts are discussed, and an appropriate intervention is agreed.
Denominator	There is no denominator.

Indicator 5: health literacy

Rationale	Pharmacy is an essential part of the healthcare system in New Zealand, with the ultimate concern of ensuring that people receive the appropriate medicines and benefits from the proper use of these.
Discussion	As a health profession focused on medicine management, actively support the community to achieve medicine literacy and medicine adherence. Pharmacists seek to provide information to patients in a variety of ways, including written information that is explained and at an appropriate level for the patient to understand.

Indicator 6: code of rights and code of ethics

Rationale	Pharmacists must practice in such a way to enhance the mana of their patients.
Discussion	Pharmacists comply with obligations under the code of ethics and practice in such a way as to enhance patient's rights under the Code of Health and Disability Service Consumers' Rights. This includes being proactive, rather than reactive, service providers.

Indicator 7: te Tiriti

Rationale	Pharmacists must practice in such a way to recognise te Tiriti.
Discussion	Pharmacists recognise the differing health status of Māori and non-Māori and incorporate strategies to address these, including strategies relevant to health literacy, patient and whānau empowerment, health promotion, and disease prevention.

Indicator 8: health promotion

Rationale	Being an easily accessible source of health information and often the first point of contact for patients, pharmacists have a responsibility to provide health advice that contributes to community overall improved health and wellbeing.
Discussion	Pharmacists support health promotion activities, including key national and regional initiatives they respond by aligning practice with the requirements of these activities.

Closer to home

The New Zealand Health Strategy illustrative definition of this theme includes:²

- *providing care closer* to where people live, learn, work and play, especially for managing long-term conditions
- *integrating health services* and making better connections with wider public services
- *promoting wellness and preventing long-term conditions* through both population-based and targeted initiatives
- *investing in health and wellbeing early in life* and focusing on children, young people, families and whānau.

Proposed indicators:

Indicator 9: diagnostic tests available (multiple measure)

Rationale	Individuals can source diagnostic tests from the local GP alternatively they may be accessible from the local pharmacist.
Numerator	A regularly reported list of all the diagnostic tests/services that the public is advised that are available through the pharmacy and that are performed by a pharmacist. This may include but not necessary be limited to blood pressure monitoring, peak flow monitoring, weight monitoring, blood glucose testing, pregnancy testing, smoking cessation, and alcohol impact management. Pharmacists can provide advice on interpreting these tests.
Denominator	There is no denominator.

Indicator 10: home visits

Rationale	Some patients, perhaps due to factors completely beyond their control are not mobile and cannot visit the local pharmacy. This indicator is a measure of the mobility of pharmacy services.
Numerator	Count of the number of home/ or out of pharmacy visits.
Denominator	Number of days in the period.

² Ministry of Health (2016). New Zealand Health Strategy - Future direction. Ministry of Health. (emphasis italics have been added)

Indicator 11: health navigation and social support

Rationale	Literature indicates a role for pharmacists in health navigation and linkage with other social support and pharmacy organisations.
Numerator	Count, in a given period, of LTC interventions that involved a health navigation role where individuals are informed or advised about relevant programmes relating to health, disease prevention, and medicines.
Denominator	There is no denominator.

Value and high performance

The New Zealand Health Strategy (2016)³'s illustrative definition of this theme includes:

- delivering better outcomes relating to people's experience of care, health status and *best-value use of resources*
- striving for *equitable health outcomes* for all New Zealand population groups
- *measuring performance well* and using information openly to drive learning and decision-making that will lead to better performance
- building a *culture of performance and quality improvement* that values the different contributions the public and health workforce can make to improving services and systems
- having an *integrated operating model that makes responsibilities* clear across the system
- using *investment approaches* to address complex health and social issues.

Proposed indicators:

Indicator 12: Patients lost to follow-up

Rationale	Patients on long term medication who cannot be contacted are potentially at risk. This would also include patients who have not picked up their long-term medicines.
Numerator	Count of LTC patients in a given period on a particular medicine who have not been contacted within one week of an agreed follow-up date.
Denominator	Total number of patients on this medicine.

Indicator 13: Polypharmacy – risks associated with a high count of medication

Rationale	Polypharmacy provides the possibility that individuals may be on unnecessary or even unhealthy combinations and volumes of medications.
Numerator	Count of patients aged 65 years and over that have been dispensed 11 or more distinct medicines in an agreed period.
Denominator	Count of the local population aged 65 years and over

³ Ministry of Health (2016). New Zealand Health Strategy - Future direction. Ministry of Health. (emphasis italics have been added)

Indicator 14: Adverse drug reaction- a product has been dispensed following all the recognised protocols and there has been an adverse response

Rationale	When an adverse response has occurred after a product has been correctly dispensed, then it is important that an understanding is generated and recorded as to why this adverse response has occurred. The root cause of this event needs to be determined.
Numerator	Number of adverse responses for which a root cause has been determined. [The pharmacy is also undertaking appropriate ADR reporting processes. Contributes to pharmacovigilance, identifying, recording and reporting suspected or confirmed adverse drug reactions, sensitivities, or allergies (including updating patient information to reflect these updates.)]
Denominator	Total number of adverse responses in a given period.

Indicator 15: Major Misses - a product has been dispensed that if consumed would have a major effect on a patient's life (hospitalisation, death etc.)

Rationale	Pharmacies dispense and provide advice to patients, a major miss would mean that advice or product had been incorrectly dispensed and that if taken/ consumed would have a major effect on a person's life
Numerator	Number of major misses.
Denominator	Total volume of product/advice dispensed in a given period.

Indicator 16: Major Near Miss - a product has been stopped that if consumed would have a major effect on a patient's life

Rationale	Pharmacies dispense and provide advice to patients; a minor miss would mean that advice or product had been incorrectly dispensed and that if acted on/consumed would have a major effect on a person's life. Near misses are important because this uncontrolled event could have been a major miss.
Numerator	Number of major near misses.
Denominator	Total volume of product/advice dispensed in a given period.
Other measures	Pharmacists conduct up to date incident analysis on near misses, report findings to those they work with, and adapt practice in light of this analysis.

Indicator 17: Major Miss - root cause analysis

Rationale	A miss is a symptom of what might be a bigger problem. Rather than focus on the symptom a root cause analysis is looking at the why a problem occurred. This knowledge may then be used to reduce the root cause.
Numerator	Number of major misses for which a root cause analysis has been completed
Denominator	Total number of major misses in the period

Indicator 18: Major Near Miss - root cause analysis

Rationale	A miss is a symptom of what might be a bigger problem. Rather than focus on the symptom a root cause analysis is looking at the why a problem occurred. This knowledge may then be used to reduce the root cause.
Numerator	Number of major near misses for which a root cause analysis has been completed
Denominator	Total number of major near misses in the period

Indicator 19: advocates, interpreters, and other support

Rationale	Patients' understanding of the services and products available through a pharmacy are key to their ability to gain support from the health system.
Numerator	Count of the number of patients who were not able to gain support as they had inadequate advocates or interpreters or other support.
Denominator	Number of days over which the metric is measured.

Indicator 20: business continuity plan

Rationale	A pharmacy may be a key or perhaps the only way that the local community can gain pharmaceutical support. It is important that the pharmacy's operation can survive and operate during major incidents such as nonavailability of telecommunication services, earthquakes, floods, fires. A pharmacy should have in place a tested business continuity plan.
Numerator	Has the business continuity plan been reviewed in the last two years? As an essential service has the business continuity plan been discussed with the local Civil Defence and/or emergency organisations? Pharmacists are up to date with their role in disaster preparedness, including managing stock levels, sourcing replacement cover, PPE etc. Pharmacists are also cognisant of principles of good health system stewardship, including taking steps to evaluate and review the (economic) efficiency of services they provide.
Denominator	There is no denominator

Indicator 21: a continually learning organisation (multiple measure)

Rationale	Organisations experience many events. An organisation such as a pharmacy that learns from each of these events, and also from events that happen to other pharmacies is going to be more robust and able to provide better performance to its various patients and other stakeholders.
Numerator	Is there a quality improvement system in place that includes audit and evaluation of services, waste associated with the services, legal compliance, and the costs of providing the individual services? Are pharmacists applying a formalised system for performance management/improvement. This system would include measures of clinical success (e.g., changes in cardiovascular risk attributed to pharmacist intervention) and of patient-centred success (e.g., intervention engagement).
Denominator	There is no denominator

Indicator 22: medicine supply chain: storage and disposal (multiple measure)

Rationale	Pharmacists are responsible for the appropriate storage and disposal of medicines. This means, for example, ensuring appropriate cold chain management. Pharmacists regularly dispose of two forms of waste, they are sharps and chemical waste. Chemical waste, including antimicrobials and cytotoxic medicines, can take the form of expired pharmaceutical products or pharmaceutical products that have been returned by patients. Either one of these classes, if inappropriately disposed of, can become an environmental hazard. For environmental reasons it is important that these waste products are disposed of safely.
Numerator	For each of the classes (sharps and chemical) the count of objects that are disposed of correctly.
Denominator	The total count of objects by the classes that are disposed of in a given period.
Other measures	Standard operating procedures are up to date, known, and in place to manage the storage and disposal of medicines. Pharmacists take steps to become antimicrobial stewardship champions.

Indicator 23: supervising, monitoring, educating, and improving the performance of non-pharmacist staff

Rationale	Recognising the increasing use of new roles in community pharmacy (e.g., the PACT role) and the importance of good relationship management with patients, pharmacists have a responsibility to ensure that non-pharmacist staff provide appropriate health services.
Discussion	Pharmacies put in place education programmes for all new staff orientating them to their role and ensuring consistency in service provision. Pharmacists mentor members of their team.

Indicator 24: documentation

Rationale	Appropriate documentation processes are needed to measure improvements in performance and to therefore, identify the contribution pharmacists make to health care delivery.
Discussion	Creates continuity of care through accurate, timely, and consistent documentation of clinical and professional interventions, outcomes, and recommendations using agreed processes. These processes are regularly reviewed. Pharmacists seek out relevant information from other care providers and include this in their own record keeping around patients.

Indicator 25: self-care

Rationale	The pharmacy profession is currently under strain, with recent research suggesting that young pharmacists are unsatisfied, and that there is a risk of burnout within the profession.
Discussion	Pharmacists recognise when they and their colleagues face burnout and put steps in place within their own professional practice to mitigate this. Survey of pharmacist's self-characterised satisfaction and burnout.

Indicator 26: labelling and written information

Rationale	Patient health information is not always delivered in a clear, understandable, or complete. Pharmacists have a responsibility to ensure that their services are provided in a manner where patients can make fully informed choices.
Numerator	The number of dispensed medicines with written and verbal advice provided by the pharmacist.
Denominator	Total number of dispensings.
Other measure	Pharmacists should adapt up to date written and oral communication to the needs of their patients, synthesising information from multiple sources.

Indicator 27: research

Rationale	At present, the research agenda of pharmacy in New Zealand is not entirely clear. There is room for community pharmacists to support the creation of this agenda and to support evidence-informed pharmacy practice.
Numerator	Pharmacists actively contribute to research.
Denominator	There is no denominator.

One team

New Zealand health strategy illustrative definition of this theme:⁴

- operating as *a team in a high-trust system* that works together with the person and their family and whānau at the centre of care
- using our health and disability workforce in the most effective and most flexible way
- developing *leadership, talent and workforce skills* throughout the system
- strengthening the roles of people, families, whānau and communities as carers
- the *Ministry of Health leading the system effectively*
- collaborating with researchers.

Proposed indicators:

Indicator 28: comprehensive team-based support/ care

Rationale	Health outcomes are provided through a team effort; unless the team is working well the outcomes will be suboptimal. Pharmacists recognise that the ‘team’ includes those outside the walls of the community pharmacy and those working daily alongside them.
Numerator	Number of meetings with non-pharmacy members of the MDT to discuss specific patients and/or wider proactive aspects of health service delivery.
Denominator	Number of days in the period.

⁴ Ministry of Health (2016). New Zealand Health Strategy - Future direction. Ministry of Health. (emphasis italics have been added)

Indicator 29: drug seeking behaviour hand offs

Rationale	Drug seeking behaviour can manifest itself as a risk to the population of New Zealand and also for the drug seeker. Pharmacists have previously advised the Police of drug seeking behaviour and have had no feedback showing that this information had been used.
Numerator	Count of patient-related discussions around drug seeking behaviour. Such measures can be applied more widely to non-drug seeking interactions.
Denominator	Number of days in the period

Indicator 30: drug seeking behaviour hand offs acknowledgements

Rationale	Drug seeking behaviour can manifest itself as a risk to the population of New Zealand and also for the drug seeker. Pharmacists have previously advised the Police of drug seeking behaviour and have had no acknowledgement showing that this information had been used.
Numerator	Count of advice to the relevant organisation on drug seeking behaviour that has been acknowledged. Such measures can be applied more widely to non-drug seeking interactions.
Denominator	Total count of advice in a given period on drug seeking behaviour.

Indicator 31: health service integration

Rationale	Increased integration with local GPs and other healthcare providers will lead to an improved end-to-end health service provision.
Numerator	Number of meetings with local GPs and other health care providers.
Denominator	Total number of days in the period.

Indicator 32: leadership and marketing

Rationale	The health system is rapidly changing, changes are also occurring in the pharmacy profession. Given this change, there is a need for pharmacists to promote their contribution to health care delivery and inspire confidence in their practice. Research suggests that patients may not always be aware of the potential contribution pharmacists/ the pharmacy can make to service delivery.
Discussion	Monitor professional landscapes for trends and changes in practice, leads change, and promotes the role of pharmacists in care delivery. This includes ensuring that patients are aware of the services offered and that they are relevant to the demographic needs of the patient population.

Smart system

The New Zealand Health Strategy illustrative definition of this theme is:⁵

- discovering, developing and sharing *effective innovations* across the system
- taking advantage of opportunities offered by *new and emerging technologies*
- having *data and smart information systems* that improve evidence-based decisions, management reporting and clinical audit
- having *reliable, accurate information that is available at the point of care*
- providing individual *online health records* that people are able to access and contribute to
- using *standardised technology* that allows us to make changes easily and efficiently

Proposed indicators:

Indicator 33: percent of medicines dispensed that are recorded on a national real-time electronic platform

Rationale	A national record by patients of their medicines consumption will allow overview of drug seeking behaviour, but more importantly it will allow improved management by all elements of the health sector of each patient's incidents need. This is beyond the scope of the PCNZ and not currently possible.
Numerator	Number of medicines dispensed that are recorded on a centralised national real-time electronic platform.
Denominator	Total number of medicines dispensed.

Indicator 34: access to centralised records holding patient information

Rationale	Centralised information will ensure that each health service provider has the same core of information for each patient. This common understanding will help each service provider perform their role. This is beyond the scope of the PCNZ and not currently possible.
Numerator	Count of medicines use reviews, medicine therapy assessments, and other interventions performed by pharmacists logged in a centralised information hub. This also include counts of dispensary and patient-facing services.
Denominator	Total count in a given period of medicines reviews that have occurred.

Indicator 35: clinical governance (multiple measures)

Rationale	To manage the risk of harm and improve the management of errors of omission and commission, effective clinical governance processes are necessary. This creates a sense of responsibility and fosters a sense of shared decision-making and encourages effective and appropriate health care delivery.
Discussion	Pharmacists set up processes to embed clinical governance into their pharmacies, peer groups, and everyday practice. In so doing, they contribute to quality improvement for their organisation and for the wider health care team. This also includes creating measures of transparency of relevant clinical outcomes.

⁵ Ministry of Health (2016). New Zealand Health Strategy - Future direction. Ministry of Health. (emphasis italics have been added)

Indicator 36: review and evaluation

Rationale	Processes are often included within systems, but they are not often reviewed, monitored, or evaluated in a timely and thorough manner. This can create redundancies and gaps in systems.
Discussion	Pharmacists take steps to review quality improvement plans, how they collect and report on information, gaps in patient hand over, etc. and in so doing, take steps to improve the quality of reporting.

Conclusion

This rapid review of New Zealand-based community pharmacy literature has identified both measures of success/ harm attributed to the community pharmacist and areas where measures should be developed. In general, extant literature suggests that harm occurs largely due to acts of service omission. However, it is highly likely that there are several other areas of practice not documented in the literature where harm could occur (absence of evidence is not evidence of absence).

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