ARTICLE

Medicines stewardship

Elizabeth Su
Senior project officer, Medicines Optimisation Service, and Senior pharmacist[1]

David FL Liew
Project lead, Medicines Optimisation Service, and Clinical pharmacologist and Rheumatologist[1]
PhD candidate[2]

Jane Donnelly
Former national coordinator[3]

Rohan A Elliott
Senior pharmacist, Pharmacy Department[1]
Adjunct associate professor[4]

[1] Austin Health, Melbourne
[2] Department of Medicine, University of Melbourne
[3] Council of Australian Therapeutic Advisory Groups
[4] Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Melbourne

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SUMMARY

Medicines stewardship refers to coordinated strategies and interventions to optimise medicines use, usually within a specific therapeutic area. Medicines stewardship programs can reduce variations in practice and improve patient outcomes.

Therapeutic domains for medicines stewardship are chosen to address frequently used drug classes associated with a high risk of adverse outcomes. Some examples include antimicrobial, opioid analgesic, anticoagulation and psychotropic stewardship. Common elements of successful stewardship programs include multidisciplinary leadership, stakeholder engagement, tailored communication strategies, behavioural changes, implementation science methodologies, and ongoing program monitoring, evaluation and reporting.

Medicines stewardship is a continual quality improvement process that requires ongoing support and resources, as well as clinician and consumer engagement, to remain sustainable. It is critical for hospital-based medicines stewardship programs to consider impacts on care in the community when making and communicating changes to patient therapy. This ensures that stewardship efforts are sustained across transitions of care.

Introduction

Medicines stewardship is a continuous improvement approach within the quality use of medicines which has continued to expand in recent years. Stewards are responsible for managing activities in a structured way, and therefore stewardship in the context of medical policy broadly refers to a structured program of strategies and interventions that address challenges within a specific therapeutic area, and ensure appropriate and efficient use of resources.[1-3] Medicines stewardship refers to programs to improve medicines use where there is a high risk of inappropriate prescribing or adverse outcomes.

While the definitions and structure vary, medicines stewardship programs focus on improving prescribing and medication management at individual and population levels to ensure consistent, appropriate care. Stewardship uses a strategic approach to support governance, interventions, and tools that guide and optimise practice.

Medicines stewardship is often needed because of variations in clinical practice. Clinical decisions might vary from recommendations in guidelines, which are often designed to consider impacts beyond the immediate context. Although some clinical actions appear beneficial to individual patients in the immediate context of the decision, they may lead or contribute to poorer outcomes for the patient or the community. Stewardship programs therefore incorporate a broader perspective, aligning with the quality use of medicines and ethical principles. They provide mechanisms to ensure accountability for medicines use and outcomes.

Outside of formal stewardship programs, strategies and interventions in specific therapeutic areas may be implemented to improve medicines use, but these typically focus on specific clinical interactions in isolation. While these may lead to incremental benefits in that context, they do not necessarily support a broader strategy of whole-system improvement. For example, guidelines or strategies (e.g. default quantities in prescribing software) recommending specific opioid quantities are of limited effectiveness without tools to support clinicians to better assess and treat patients' pain with appropriate alternatives.[4] Strategic planning and structures that support holistic delivery and monitoring of health care are needed, and stewardship is a key method of achieving this.

Stewardship has been adopted in many therapeutic domains. Antimicrobial stewardship is mandated in hospitals and is now being adopted by community providers, including residential care facilities. Similar programs have subsequently targeted opioid analgesics, anticoagulants and antipsychotics, with an interest in other therapeutic areas as well. Until recently, the absence of a readily applicable framework has resulted in programs inappropriately adopting a stewardship label. The principles of stewardship should be the same, regardless of the therapeutic area.

The commonalities between stewardship programs are often greater than the commonalities between

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therapeutic areas. Specific approaches and skills are necessary to build effective interventions for a broader stewardship plan across multiple therapeutic domains. Therapeutic-agnostic approaches that reflect fundamental principles of quality use of medicines rather than simply disease-specific therapeutic considerations should be incorporated. These may be developed through the cross-disciplinary pollination of ideas or engaging teams dedicated to program development (usually within quality improvement or medicines optimisation services). This ensures that these actions have the best chance of improving the function of the whole system to benefit practitioners in hospitals and the community across the whole patient journey.

Elements of successful medicines stewardship programs

Successful medicines stewardship programs are underpinned by aims that align with the quality use of medicines. This means that programs aim to enable clinicians and consumers to select and use treatment options wisely, safely and effectively. While medicines stewardship programs may differ in size, scope and therapeutic targets, they share common fundamental elements (Table).[5-8]

Antimicrobial stewardship programs

Antimicrobial stewardship programs emerged in the late 1990s and were the earliest coordinated programs to steward the use of a specific class of high-risk medicines. Antimicrobial stewardship programs are now well established in Australian health care and promote the judicious use of antimicrobials to improve patient care while also reducing the risk of antimicrobial resistance and healthcare-associated infections. In hospital settings, these programs have been shown to reduce antimicrobial resistance by 34%, reduce mortality by 35% through adherence to treatment guidelines, and improve patient safety by avoiding drug-related adverse events.[5] Accordingly, antimicrobial stewardship programs are a required standard for all Australian health service organisations.[9] Established antimicrobial stewardship programs have demonstrated better concordance with prescribing guidelines compared to when antimicrobial stewardship programs were in their infancy.[10]

Opioid analgesic stewardship programs

Stewardship programs for other high-risk medicines emulate the antimicrobial stewardship model and are becoming more common in Australian hospitals. Opioid analgesic stewardship programs aim to prevent excessive or inappropriate opioid prescribing to reduce the risk of opioid-related harm, such as opioid-induced ventilatory impairment, persistent opioid use, and diversion.[11,12] This is supported by the Opioid Analgesic Stewardship in Acute Pain Clinical Care Standard, which particularly targets opioid prescribing in emergency departments and for postoperative pain.[12] Interventions can include patient education, opioid prescribing guidelines, prescriber education or feedback, pharmacist-assisted prescribing, leveraging reporting and decision support in electronic prescribing systems, and improvements in discharge communication.[6,13-16] Opioid analgesic stewardship interventions can reduce the dose, number of prescriptions, or number of days of opioid supply, and decrease the proportion of patients receiving chronic opioid therapy.[17] However, more research is required to directly measure the effect of opioid analgesic stewardship programs on preventing adverse outcomes such as opioid addiction, overdose or mortality.[17]

Anticoagulation stewardship programs

Anticoagulation stewardship programs aim to prevent adverse patient outcomes due to over- or under-anticoagulation. Venous thromboembolism is a common preventable cause of in-hospital death and accounts for an estimated 7% of all deaths in Australian hospitals.[18] Interventions can include implementing anticoagulation or thromboprophylaxis guidelines, education for prescribers and patients to optimise the use of anticoagulants or reversal agents, and oversight of the management of heparin-induced thrombocytopaenia.[6,19,20] One Australian program described a 33% reduction in hospital-acquired venous thromboembolism and a 20% reduction in anticoagulant-related bleeds after program implementation.[6]

Psychotropic stewardship programs

Psychotropic stewardship programs are emerging and target inappropriate psychotropic prescribing and administration to reduce adverse effects and persistent use. This is particularly pertinent for older people and people with disabilities, for whom antipsychotics or benzodiazepines may be misused or overused as chemical restraints.[21] Interventions include strategies to support the monitoring, review and deprescribing of psychotropic medicines, and reinforcing the non-pharmacological management of agitation in delirium.[22,23]

Transitions of care

Care across a patient's whole therapeutic journey is critical to their long-term benefit. While notable events may occur during episodes managed by hospitals or other institutions, patients' needs rarely end before the responsibility for their care

Table **Fundamental elements and principles of successful medicines stewardship programs** [5-8]

Fundamental elements of successful medicines stewardship	Underlying principle	Practical implications
Multidisciplinary leadership team	Stewardship programs are often administered by a dedicated stewardship lead or officer. However, support from a multidisciplinary leadership team is essential to provide a holistic system perspective that helps ensure the program achieves its intended aims and can be implemented sustainably.	• Leadership team members should be chosen to represent the specialties and patient population that the specific stewardship program is trying to address, and reflect the expertise and skills required to support program functions. • Essential skills and knowledge for team members include clinical experience and expertise, clinical governance, medication safety and quality use of medicines principles, and accreditation processes. • The leadership team should ideally include core representation from the organisation's executive, medical, nursing, pharmacy and consumer groups.
Stakeholder engagement	Medicines stewardship programs should be designed with the whole system of care in mind and should traverse transitions of care. Engagement of relevant organisational stakeholders and external partners is essential in understanding how to design or adapt a stewardship model for successful implementation within the local context.	• Stakeholder mapping and analysis help identify key players who hold interest and influence over the program's success and inform how the program is communicated and reported. • Stewardship program stakeholders may include clinicians, managers, administrative staff and consumers. Engagement of relevant external stakeholders is essential to ensure the continuity of stewardship changes and outcomes.
Tailored communication strategy	Stewardship programs require a tailored communication strategy to provide timely, effective and appropriate information to support program functions.	• Methods of communication are tailored to fit the specific purpose (e.g. to raise awareness, promote specific initiatives, issue program updates or provide feedback about successes and failures), as well as the intended audience. • A communication strategy should leverage existing organisational structures and networks.
Proven methodologies in behavioural change and implementation science	Successful stewardship programs adopt proven methodologies in behavioural change and implementation science to achieve clinical practice improvement.	Examples include: • using education strategies that are tailored to the target audience, incorporate competency standards, include evaluations of education activities and report feedback about successes and failures • developing clearly defined interventions that are trialled and optimised in one or a few selected settings, and then replicated systematically in other settings with local tailoring • selecting clinical champions to act as a knowledge and skill resource to peers and to provide motivation and advocacy to facilitate the adoption of stewardship interventions.
Ongoing monitoring, evaluation and reporting	Ongoing monitoring and reporting of defined measures or quality indicators are critical for evaluating the effectiveness of stewardship strategies and identifying opportunities for improvement. Medicines stewardship should evaluate clinical processes as well as consumer outcomes.	A combination of measures should be used, such as: • structural measures – governance structures, drug formularies or guidelines • process measures – compliance with prescribing guidelines, or drug utilisation data • outcome measures – mortality, readmission rates, or patient experience reports • balancing measures – adverse events due to an intervention.

transitions to another provider.[24,25] Reducing harm from high-risk medicines and improving medication safety at transitions of care are flagship priorities of Australia's response to the latest World Health Organization Global Patient Safety Challenge – *Medication without harm*.[26]

Hospital-based stewardship programs and prescribing decisions must include both communicating across transitions of care and facilitating ongoing care in the community. This requires communication with general practitioners, community pharmacists and community or aged-care nurses.

Clear explanation of the intent and rationale for plans, tools and decisions initiated by stewardship programs helps ensure they can be properly understood and implemented by care providers and patients across transitions of care.[27,28] Such communication must work within existing information systems. The linkage of electronic data sources will assist, but other technological solutions are often necessary.

When the communication of decisions initiated by hospital stewardship programs is not strategically planned and implemented, benefits from therapeutic decisions made in hospitals might be lost or unintended consequences might occur.[29] Such consequences may become evident to care providers only after an irreversible impact (such as intracranial bleeding following the inappropriate continuation of anticoagulation) or may be hidden from care providers altogether (such as consumers substituting illicit opioids in the absence of licit opioid analgesics).

Medication errors and adverse events are common following hospital discharge and involve medicines beyond those targeted by specific stewardship programs.[28,30] Clinical handover of medication information is suboptimal,[31] and few patients receive early post-discharge medication review despite guidelines and protocols supporting these.[32] Improving transitions of care is a priority for medication safety policy, and applying medicines stewardship principles (Table) to transitions of care is recommended.[32]

Sustainability of medicines stewardship

Medicines stewardship is a continual quality improvement process and therefore requires ongoing support and resources to be sustainable. Stewardship programs must be built into existing organisational clinical and medicines governance systems, with executive and clinical oversight and support.

Embedding medicines stewardship programs into organisational safety and quality systems helps to ensure ongoing accountability for program objectives. These structures must include defined operational and reporting pathways, for example to medication safety committees, drug and therapeutics committees, medication advisory committees or executive administrators. This ensures that programs receive support from the institution to implement required interventions, are provided with sufficient resources and time to enact changes, and are accountable for achieving defined outcomes and managing potential risks. Embedding programs into safety and quality improvement frameworks and engaging frontline clinicians also help to ensure that stewardship is a part of routine care.

The level of resources required depends on the aims and size of the individual program and health service, but may include:

- a dedicated stewardship program lead, manager or officer to drive the program
- clinical stewards (e.g. dedicated stewardship pharmacists) or clinical champions (e.g. designated nurse champions) to liaise with stakeholders, provide education, contribute to the development of guidelines and other resources, and implement interventions
- allocating time and resources for clinicians to attend and contribute to specific meetings, and to develop complementary skills, such as implementation science and informatics capability.

Medicines stewardship in community settings

In community settings, individual healthcare providers are less likely to have the resources, staff or networks necessary to develop comprehensive practice guidelines, educational resources and health promotion tools to support medicines stewardship. This highlights the important role of independent services such as the Australian Commission on Safety and Quality in Health Care or the former NPS MedicineWise in developing evidence-based, consumer-centred programs to steward the quality use of medicines.

Conclusion

Medicines stewardship is a proven approach to improving the quality use of medicines. Successful stewardship programs use strategic health design to support actions that benefit individual patients and the broader population. The programs work best when their design considers key elements (Table) and they receive sustained support. Considering how decisions or actions are implemented and communicated across the transition of care is critical to delivering real benefits to patients. Further research is needed to measure the impact of emerging stewardship models in Australian health care. ◁

Conflicts of interest: David Liew is a member of the Drug Utilisation Subcommittee of the Pharmaceutical Benefits Advisory Committee.

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