Assuring Medication Accuracy at Transitions in Care

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▶ STATEMENT OF PROBLEM AND IMPACT:

Errors are common as medications are procured, prescribed, dispensed, administered, and monitored but, they occur most frequently during the prescribing and administering actions (1). The impact is significant, as medication errors harm an estimated 1.5 million people and kill several thousand each year in the United States of America (USA) , costing the nation at least US$ 3.5 billion annually (1). Other industrialized countries around the world have also found that medication adverse events are a leading cause of injury and death within their health-care systems (2,3).

In some countries, up to 67% of patients' prescription medication histories have one or more errors (4), and up to 46% of medication errors occur when new orders are written at patient admission or discharge (5). Medication reconciliation is a process designed to prevent medication errors at patient transition points (6). It includes:

- ► *Creating the most complete and accurate list possible or "Best Possible Medication History" (BPMH) of all medications the patient is currently taking—also called the "home" medication list.*
- ► *Comparing the list against the admission, transfer, and/ or discharge orders when writing medication orders; identifying and bringing any discrepancies to the attention of the prescribing health professional; and, if appropriate, making changes to the orders while ensuring the changes are documented.*
- ► *Updating the list as new orders are written to reflect all of the patient's current medications.*
- ► *Communicating the list to the next provider of care whenever the patient is transferred or discharged and providing the list to the patient at the time of discharge.*

Effectively engaging the patient and family in medication reconciliation is a key strategy for targeting and preventing prescribing and administration errors, and thereby reducing patient harm.

For example, upon implementing a patient-centered medication reconciliation programme, three hospitals in Massachusetts, USA, experienced an average 85% reduction in related medication errors over a 10-month period (7). Hundreds of health-care provider teams are spreading and sustaining the implementation of this strategy by participating in the *100K Lives*, USA (5) and *Safer Healthcare Now!*, Canada (8) campaigns.

▶ ASSOCIATED ISSUES:

There are many challenges to successfully implementing such programmes in all settings where medications are used. Successful implementation requires leadership support; active physician, nursing, and pharmacist involvement; effective implementation teams; and collaborative learning sessions (9). The Massachusetts Coalition for Prevention of Medical Errors, Institute for Healthcare Improvement, and *Safer Healthcare Now!* web sites (listed in the References) now offer sample resources for implementing a medication reconciliation programme. Another critical factor upon which medication reconciliation depends is the appropriateness of the medications prescribed in relation to the patient's illness and underlying conditions. While prescribing practices, including the risks of poly-pharmacy, extend beyond the scope of this solution, the medication reconciliation process provides opportunities to reconsider the appropriateness of a patient's medications over time as the patient's condition may change or as other prescribers become involved.

▶ SUGGESTED ACTIONS

The following strategies should be considered by WHO Member States.

1. Ensure that health-care organizations put in place standardized systems to collect and document information about all current medications

for each patient and provide the resulting medication list to the receiving caregiver(s) at each care transition point (admission, transfer, discharge, outpatient visit). Suggested information to be collected includes:

- *Prescription and non-prescription (over-the-counter) medications, vitamins, nutritional supplements, potentially interactive food items, herbal preparations, and recreational drugs.*
- *The dose, frequency, route, and timing of last dose, as appropriate. Whenever possible, validate the home medication list with the patient and determine the patient's actual level of compliance with prescribed dosing.*
- *The source(s) of the patient's medications. As appropriate, involve the patient's community pharmacist(s) or primary care provider(s) in collecting and validating the home medication information.*

2. Ensure that health-care organizations have clear policies and procedures in place that require:

- *That the patient's current medication list be displayed in a consistent, highly visible location (for example, the patient's chart) so that it is easily accessible to clinicians who are writing drug orders.*
- *The use of the home medication list as a reference when ordering medications at the time of treatment in a clinic or emergency unit or upon admission to an inpatient service.*
- *The reconciliation of medications (i.e. comparison of the patient's medication list with the medications being ordered to identify omissions, duplications, inconsistencies between the patient's medications and clinical conditions, dosing errors, and potential interactions) within specified time frames (e.g. within 24 hours of admission; shorter time frames for high-risk drugs, potentially serious dosage variances, and/or upcoming administration times).*
- *A process for updating the list, as new orders are written, to reflect all of the patient's current medications, including any self-administered medications brought into the organization by the patient.*
- *A process for ensuring that, at discharge, the patient's medication list is updated to include all medications the patient is to be taking following discharge, including new and continuing medications, and previously discontinued "home" medications that are to be resumed. The list should be communicated to the next provider(s) of care and also be provided to the patient as part of the discharge instructions. Medications not to be continued should ideally be discarded by patients.*
- *Clear assignment of roles and responsibilities for all steps in the medication reconciliation process to qualified individuals, within a context of shared accountability. Those may include the patient's pri-*

mary care provider, other physicians, nurses, pharmacists, and other clinicians. The qualifications of the responsible individuals should be determined by the health-care organization within the limits of applicable law and regulation.

- *Access to relevant information and to pharmacist advice at each step in the reconciliation process, to the extent available.*

3. Incorporate training on procedures for reconciling medications into the educational curricula, orientation, and continuing professional development for health-care professionals.

▶ LOOKING FORWARD

1. Develop a standardized card/form for the patient to carry that details the patient's current list of medications.
2. Consider use of technological support and electronic medical records to facilitate the medication reconciliation process.

▶ STRENGTH OF EVIDENCE:

- Multiple uncontrolled comparison studies report decreased medication error rates after successfully implementing medication reconciliation programmes (10-12).

▶ APPLICABILITY:

- All types of health-care organizations.

▶ OPPORTUNITIES FOR PATIENT AND FAMILY INVOLVEMENT:

- To be optimally effective, the medication reconciliation process must involve patients and their families—encourage patients to participate and provide them with the tools to do so.
- Educate patients about safe medication use and provide access to reliable, relevant, and understandable information about their medications.
- The patient is in the best position to be aware of all the medications prescribed by multiple caregivers. Consider asking patients to put all their medications in a bag and bring it with them whenever going to the hospital or a doctor visit.
- Encourage patients, family, and caregivers to keep and maintain an accurate list of all medications, including prescription and nonprescription medications, herbal and nutritional supplements, immunization history, and any allergic or adverse medication reactions. These medication lists should be updated and reviewed with the patient/family/caregiver at each care encounter.
- Teach patients about the risks of medications, both individually and in combination, with particular attention to patients on multiple medications prescribed by multiple caregivers.

- Encourage patients and families to use a single pharmacy, not only as the provider of medications but as a source of information about the medications.
- Consider community support systems to assist patients in verifying medication lists in the home.
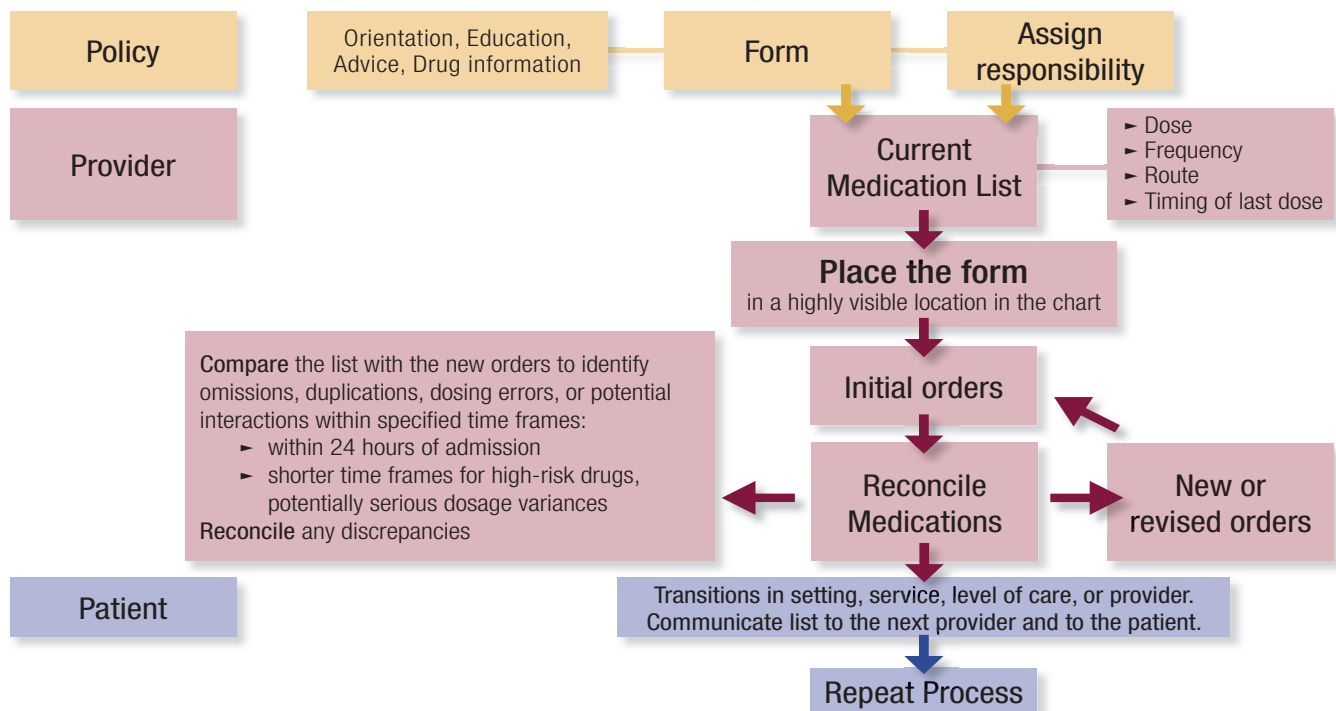
▶ POTENTIAL BARRIERS:
- Time commitment for policy development, staff education, and form development.
- Insufficient staffing and perception of insufficient staffing.
- Inefficient implementation by adding duties rather than redesigning workflow patterns.
- Assigning duties to individuals who have not been determined competent for those duties.
- Time commitment for reconciling medications at each patient encounter. After training, estimates are: 10 minutes on admission, 30–45 minutes on transfer from the coronary care unit, and 10 minutes at discharge (10).

- Lack of health-care professional buy-in including physicians, nurses, and pharmacists.
- Lack of leadership buy-in and support.
- Lack of understanding of the complexity.
- Lack of availability of electronic health records in most countries.
- Limitations imposed by third party payers on availability and reimbursement for medications.
- Insufficient generally accepted research, data, and economic rationale regarding cost-benefit analysis or return on investment (ROI) for implementing these recommendations.

▶ RISKS FOR UNINTENDED CONSEQUENCES:
- Additional time at each patient encounter for medication reconciliation.
- Incorrect prescription of medications resulting from potentially inaccurate list provided by patient.

EXAMPLE OF
Assuring Medication Accuracy at Transitions in Care

Policy

Orientation, Education, Advice, Drug information — Form — Assign responsibility

Provider

Current Medication List
- ▶ Dose
- ▶ Frequency
- ▶ Route
- ▶ Timing of last dose

Place the form
in a highly visible location in the chart

Compare the list with the new orders to identify omissions, duplications, dosing errors, or potential interactions within specified time frames:
- ▶ within 24 hours of admission
- ▶ shorter time frames for high-risk drugs, potentially serious dosage variances
Reconcile any discrepancies

Initial orders

Reconcile Medications → New or revised orders

Patient

Transitions in setting, service, level of care, or provider. Communicate list to the next provider and to the patient.

Repeat Process

This example is not necessarily appropriate for all health-care settings.

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