Case Study – Concise Analysis: Medication Incident
K. CASE STUDY - CONCISE ANALYSIS: MEDICATION INCIDENT

Background
The scenario takes place in a community with a hospital and busy home care service. The hospital faxes new and updated home care referrals to a central fax line. The referral form provides demographic patient information, diagnosis, a list of discharge medications and physician orders for home care. Monday to Friday during business hours, a home care coordinator reviews the faxed document and accesses the Home Care Central Record for any existing clients. The coordinator then reviews the information in the documents and schedules the applicable home care visits. After business hours and on weekends, the home care nursing staff periodically check the faxes, and sort them by ongoing clients or new clients. Referrals updating the status of ongoing clients are given directly to one of the nurses responsible for that geographic area of the community.

Pharmacists and technicians dispense medications from the drug stores in the community. Technicians are responsible for processing prescriptions in the computer and preparing and labelling medications as well as inventory management functions. Pharmacists are responsible for reviewing the patient medication profile and completing the final check of the medications before they are dispensed for pick-up or home delivery.

Some attending physicians at the community hospital fax prescriptions to patients’ drug store so that patients and families can easily pick-up any needed medications on the way home.

Incident
The incident (Figure K1) involves a 76-year-old male home care client receiving a leg ulcer dressing change every five to seven days. The patient is obese and has a history of angina, high blood pressure and deep vein thrombosis. He has limited mobility and was in hospital for eight days with a diagnosis of community-acquired pneumonia. The patient was discharged on a Saturday with a referral sent through the home care fax line to advise of his return home. His list of medications were noted on the form as: Nifedipine 10 mg TID (calcium channel blocker), Atenolol 50 mg BID (beta blocker), Coumadin 2 mg OD (anticoagulant), ASA 81 mg OD (antiplatelet), doxycycline 100mg OD x 6 days (antibiotic), nitrospray prn and DuoDERM® dressing to leg ulcer weekly.

Additional background information: patient was weak and slightly short of breath at discharge.

Analysis process – What happened
Based on the incident report (Figure K1), a review of the home care record, hospital chart and referral form, the facilitator responsible to conduct this concise analysis started to draft a timeline of the incident (Figure K2). The interviews conducted with the client, pharmacist and RNs, together with an examination of the drugs involved in the incident, helped confirm and expand the timeline.
# Patient Safety Incident Report

**Home Care**

**Date of Event:**
Any day

**Time of Event:**
1400 hrs

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**Event Description:**
Client was found in bathroom by RN on arrival at 0900 for dressing change. Moderate amount of bright red blood in toilet and floor. Ambulance called and transferred to Emergency Dept.

Reporter just called ED and spoke with Charge Nurse. Patient's INR 5.8. Upon review of medication bottles it was determined that patient was unintentionally taking 5 mg of Warfarin daily as he did not know that Coumadin was the same medication as Warfarin so took "previously" ordered dose of 3 mg (Warfarin) and "newly" prescribed dose of 2 mg (Coumadin) as well.

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**Discovered By:**
- LPN
- RPN
- RN
- Pharmacist
- Pharmacy Tech
- MD
- Other

**Type of Error:**
- Omission
- Dosage
- Wrong Conc / Strength
- Wrong patient
- Wrong Rate
- Wrong Drug
- Wrong Route
- Wrong Time
- Technique
- Monitoring Error (e.g. sliding scale, allergy missing)
- Expired
- Narcotic Count Discrepancy

**Other type (describe):**

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**Stages Involved:**
- Physician Ordering
- Transcription
- Dispensing / Delivery
- Administration / Documentation
- Monitoring

**Name of Drug(s) / Product(s) / Route / Strength:**
Drug ordered: Coumadin 2 mg OD
Drug received: Warfarin/Coumadin 5 mg OD due to error in taking medications from two bottles (Coumadin and Warfarin)

**Number of doses involved:** 5

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**Patient - Relevant information or interventions taken for this resident.**
Client transferred to ED by ambulance. Admitted to Medicine Unit.

**Outcome:**
- Good Catch
- No Harm
- X Harm (Required extra monitoring or interventions)
- Harm Major / Sentinel Event (Notify Manager or delegate immediately)
- Death

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**Notification Primary**
Physician notified?
- Yes Date: Date discovered Time: 0900
- Next Visit

Patient Informed?
- Yes Date: Time: X No

Family Notified?
- Yes Date: Time: X No
<table>
<thead>
<tr>
<th>DATE/TIME</th>
<th>ITEM</th>
<th>COMMENT/SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>Client receiving weekly home care visit by RN for leg ulcer dressing change every five to seven days for approximately six weeks. Occasionally forgetful about caring for dressing and short-term memory mildly impaired, however able to manage own medications.</td>
<td></td>
</tr>
<tr>
<td>Friday - 14 days prior to event</td>
<td>RN makes home visit to change client’s leg dressing. She notes that he is feverish and short of breath with congested cough. RN contacts client’s family physician and transfer to hospital is arranged. Patient is admitted with community-acquired pneumonia.</td>
<td>Home care record</td>
</tr>
<tr>
<td>5 days prior to event</td>
<td>Patient is discharged from hospital and returns to apartment. INR testing during hospital stay resulted in Warfarin dose being reduced to 2 mg OD. Physician referral lists medications Nifedipine 10 mg TID (calcium channel blocker), Atenolol 50 mg BID (beta blocker), Coumadin 2 mg OD (anticoagulant), ASA 81 mg OD (antiplatelet), Doxycycline 100mg OD x 6 days (antibiotic), Nitrospray prn and DuoDERM® dressing to leg ulcer weekly and request to resume dressing change schedule as well as request for assistance with weekly bath. Referral received by fax on Saturday. RN responsible for that area of the community on the weekend does not know the client however she reviewed referral and home care record. Minimal changes noted so slotted for RN visit for dressing change in five days (Thursday) and home care aide booked to make home visit for assistance with bath in six days (Friday). She leaves a voice mail for the regularly scheduled RN in the area to advise her of the client’s return home however that RN is off work for several days before receiving the message. She has significant backlog of messages and workload so does not take any action with this information.</td>
<td>Hospital chart and referral form</td>
</tr>
<tr>
<td></td>
<td>Neighbour picked up client to bring him home. She agreed to pick up the new prescription when getting groceries later that day. The pharmacist at the drug store gave a patient information sheet with the new prescription. The neighbour provided this to the client. Client exhausted on the day he returned home from hospital. Grateful to neighbour for ride home and getting his prescription as well as groceries. He does recall the neighbour saying to read the information sheets but couldn’t find his glasses and was too tired. He noted the two “new pills” and daily dose directions. He added them to his medication regimen until the one pill bottle was empty.</td>
<td>Client interview</td>
</tr>
</tbody>
</table>
### Analysis process – How and why it happened

The facilitator created a constellation diagram (Figure K3) to visualize and better understand the factors that contributed to the incident and their interconnections. The factors were confirmed by consultation with those engaged in the incident and operational and/or medical leaders. This step was very helpful in summarizing the findings and developing recommended actions.
Anticoagulant overdose

Client experienced rectal bleeding and hospitalization

Deterioration in Client’s medical condition (and ability for self care) not detected upon discharge home

Client unintentionally self administered Coumadin and Warfarin

Client and home care service not aware of anticoagulant dose change

Pharmacy/Pharmacist did not confirm Client’s understanding of new start/stop anticoagulant doses

Pharmacy/Pharmacist did not communicate anticoagulant dose change to home care service

No systems approach to MedRec and/or single source of truth for up to date Best Possible Medication History

No MedRec/communication process for patients returning home from hospital with new prescriptions

Discharge MedRec not routinely completed for patients leaving hospital

Hospital care team did not complete discharge MedRec and/or provide an updated BPMH to pharmacy, patient or home care service

Client did not know that Coumadin and Warfarin were the same drug

Client unable to interact directly with the pharmacist or review drug information

Client recently unable to obtain and manage anticoagulants independently

Reduced physical & cognitive abilities related to age and medical condition

Client not identified by hospital, MD or home care as requiring nursing assessment

Weekend RN and regularly assigned RN did not have time to call or visit Client soon after discharge from hospital

There are no guidelines/protocols or risk assessment tools to guide the identification of at risk patients leaving hospital

CONSTITUTION DIAGRAM OF CONTRIBUTING FACTORS

HOW AND WHY IT HAPPENED

Figure K.3: HOW AND WHY IT HAPPENED

Canadian Incident Analysis Framework
Summarize findings

Task
• No key findings

Equipment
• No key findings

Work environment
• The lack of a standardized home care risk assessment tool or protocol increased the likelihood that clients discharged from hospital back to the community would not be accurately triaged to ensure appropriate and timely home care services are provided.

Patient
• The deterioration in the client’s physical and cognitive abilities increased the likelihood of a medication error in his self medication management.

Care team and organization
• The lack of a formalized, system-wide and communicated Discharge Medication Reconciliation process (including an updated Best Possible Medication History) decreased the likelihood that the client would receive the appropriate and timely support required for safe medication management.
• No other factors identified

Analysis process – What can be done to reduce the risk of recurrence and make care safer

Work environment (W)
• W1: Establish a standardized home care risk assessment tool for screening patients that are transitioning back to the community from hospital. Consider the feasibility and effectiveness of the regularly assigned home care nurse beginning the screening process with a call from the acute care nurse planning for the patient discharge then completing the assessment with a telephone or in-person client assessment.

Care team and organization (CO)
• CO 1: Develop, implement and evaluate a system-wide Discharge Medication Reconciliation Process. Consider using a pilot test approach initially to determine a successful strategy for spread.
## Prioritize actions

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>RISK (severity assessment)</th>
<th>HIERARCHY OF EFFECTIVENESS (high, medium, low leverage)</th>
<th>PREDICTORS OF SUCCESS (alignment, existing mechanisms, quick wins)</th>
<th>SYSTEM LEVEL TARGETED (micro, meso, macro, mega)</th>
<th>NOTE IF EVIDENCE IS AVAILABLE, AND WHAT TYPE</th>
<th>CONFIRM VALIDITY, FEASIBILITY</th>
<th>ORDER OF PRIORITY OR TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1: Develop, implement and evaluate a standardized home care risk assessment tool for screening patients that are transitioning back to the community from hospital</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Micro, Meso, Macro</td>
<td>Expert opinion, related risk assessment tools validated in peer reviewed literature</td>
<td>Medium</td>
<td>Within 3 months</td>
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<tr>
<td>CO 1: Develop, implement and evaluate a Discharge Medication Reconciliation Process Pilot</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Micro, Meso, Macro, Mega</td>
<td>Yes, peer reviewed research and expert opinion</td>
<td>Medium</td>
<td>Within 6 months</td>
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</table>

## Follow-through

An evaluation was completed by the QI Director one year after the incident analysis was completed:

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>SOURCE AND ID#</th>
<th>DATE ENTERED</th>
<th>PROGRESS STATUS</th>
<th>TIMEFRAME (end date)</th>
<th>TARGET AREA</th>
<th>RISK LEVEL</th>
<th>INDIVIDUAL RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1.1. Develop standardized home care risk assessment tool</td>
<td>IA # 1A</td>
<td>Jun. 5</td>
<td>Implemented as presented</td>
<td>Developed and approved Aug. 30</td>
<td>Home care</td>
<td>Medium</td>
<td>Home Care Executive Director</td>
</tr>
<tr>
<td>W1.2. Implement standardized home care risk assessment tool</td>
<td>IA # 1B</td>
<td>Jun. 5</td>
<td>Implemented as presented</td>
<td>Implemented Oct. 30</td>
<td>All current and new staff</td>
<td>Medium</td>
<td>Home Care Executive Director</td>
</tr>
<tr>
<td>W1.3 Evaluate standardized home care risk assessment tool</td>
<td>IA # 1C</td>
<td>Jun. 5</td>
<td>Steps toward implementation</td>
<td>In progress</td>
<td>Chart audit – home care</td>
<td>Medium</td>
<td>QI Director</td>
</tr>
<tr>
<td>CO 1.1. Develop MedRec Pilot</td>
<td>IA # 1D</td>
<td>Jun. 5</td>
<td>Implemented as presented</td>
<td>Developed and approved Oct. 1</td>
<td>Home care</td>
<td>Medium</td>
<td>QI Director</td>
</tr>
<tr>
<td>CO 1.2. Implement MedRec Pilot</td>
<td>IA # 1E</td>
<td>Jun. 5</td>
<td>Implemented as presented</td>
<td>Implemented Nov.1</td>
<td>Medical Director for Home Care</td>
<td>Medical Director for Home Care</td>
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<tr>
<td>CO 1.3 Evaluate MedRec Pilot</td>
<td>IA # 1F</td>
<td>Jun. 5</td>
<td>Steps toward implementation</td>
<td>In progress</td>
<td>Medical Director for Home Care</td>
<td>Medical Director for Home Care</td>
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</tr>
<tr>
<td>CO 1.4 Share MedRec evaluation with organizational decision makers for decision regarding spread to system-wide implementation</td>
<td>IA # 1G</td>
<td>Jun. 5</td>
<td>Not implemented</td>
<td></td>
<td>Medical Director for Home Care</td>
<td>Medical Director for Home Care</td>
<td></td>
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</tbody>
</table>