



CANADIAN INCIDENT ANALYSIS FRAMEWORK

Case Study – Concise Analysis: Medication Incident

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Full Citation:

Incident Analysis Collaborating Parties. Canadian Incident Analysis Framework. Edmonton, AB: Canadian Patient Safety Institute; 2012. Incident Analysis Collaborating Parties are Canadian Patient Safety Institute (CPSI), Institute for Safe Medication Practices Canada, Saskatchewan Health, Patients for Patient Safety Canada (a patient-led program of CPSI), Paula Beard, Carolyn E. Hoffman and Micheline Ste-Marie.

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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.

Figure K.1: PATIENT SAFETY INCIDENT REPORT

MY COMMUNITY HOME CARE SERVICE

Home Care	Client Identification (Name, Age, Gender) N000321
Date of Event: <i>Any day</i>	<i>John Smith, 76 yrs.</i> <i>77 Anystreet,</i>
Time of Event: <i>1400 hrs</i>	<i>Anytown, Canada</i> <i>Dr. Susan Jones</i>

<p>Event Description: <i>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.</i></p> <p><i>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.</i></p>	<p>Discovered By:</p> <p><input type="checkbox"/> LPN <input type="checkbox"/> RPN <input checked="" type="checkbox"/> RN <input type="checkbox"/> Pharmacist <input type="checkbox"/> Pharmacy Tech <input type="checkbox"/> MD <input type="checkbox"/> Other</p>
<p>Type of Error:</p> <p><input type="checkbox"/> Omission <input checked="" type="checkbox"/> Dosage <input type="checkbox"/> Wrong Conc / Strength <input type="checkbox"/> Wrong patient <input type="checkbox"/> Wrong Rate <input type="checkbox"/> Wrong Drug <input type="checkbox"/> Wrong Route <input type="checkbox"/> Wrong Time <input type="checkbox"/> Technique <input type="checkbox"/> Monitoring Error (e.g. sliding scale, allergy missing) <input type="checkbox"/> Expired <input type="checkbox"/> Narcotic Count Discrepancy</p>	Other type (describe):
<p>Stages Involved:</p> <p><input type="checkbox"/> Physician Ordering <input type="checkbox"/> Transcription <input checked="" type="checkbox"/> Dispensing / Delivery <input checked="" type="checkbox"/> Administration / Documentation <input type="checkbox"/> Monitoring</p>	(Check all that apply)
<p>Name of Drug(s) / Product(s) / Route / Strength:</p> <p>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)</p>	Number of doses involved: 5
<p>Patient - Relevant information or interventions taken for this resident. <input type="checkbox"/> Check none necessary or describe: Client transferred to ED by ambulance. Admitted to Medicine Unit.</p>	
<p>Outcome: <input type="checkbox"/> Good Catch <input type="checkbox"/> No Harm <input checked="" type="checkbox"/> Harm (Required extra monitoring or interventions) <input type="checkbox"/> Harm Major / Sentinel Event (Notify Manager or delegate immediately) <input type="checkbox"/> Death</p>	
<p>Notification Primary Physician notified? <input checked="" type="checkbox"/> Yes Date: _____ Time: 0900 <input type="checkbox"/> Next Visit</p> <p>Patient Informed? <input type="checkbox"/> Yes Date: _____ Time: _____ <input checked="" type="checkbox"/> No</p> <p>Family Notified? <input type="checkbox"/> Yes Date: _____ Time: _____ <input checked="" type="checkbox"/> No</p>	

Figure K.2: WHAT HAPPENED: MEDICATION INCIDENT - FINAL TIMELINE

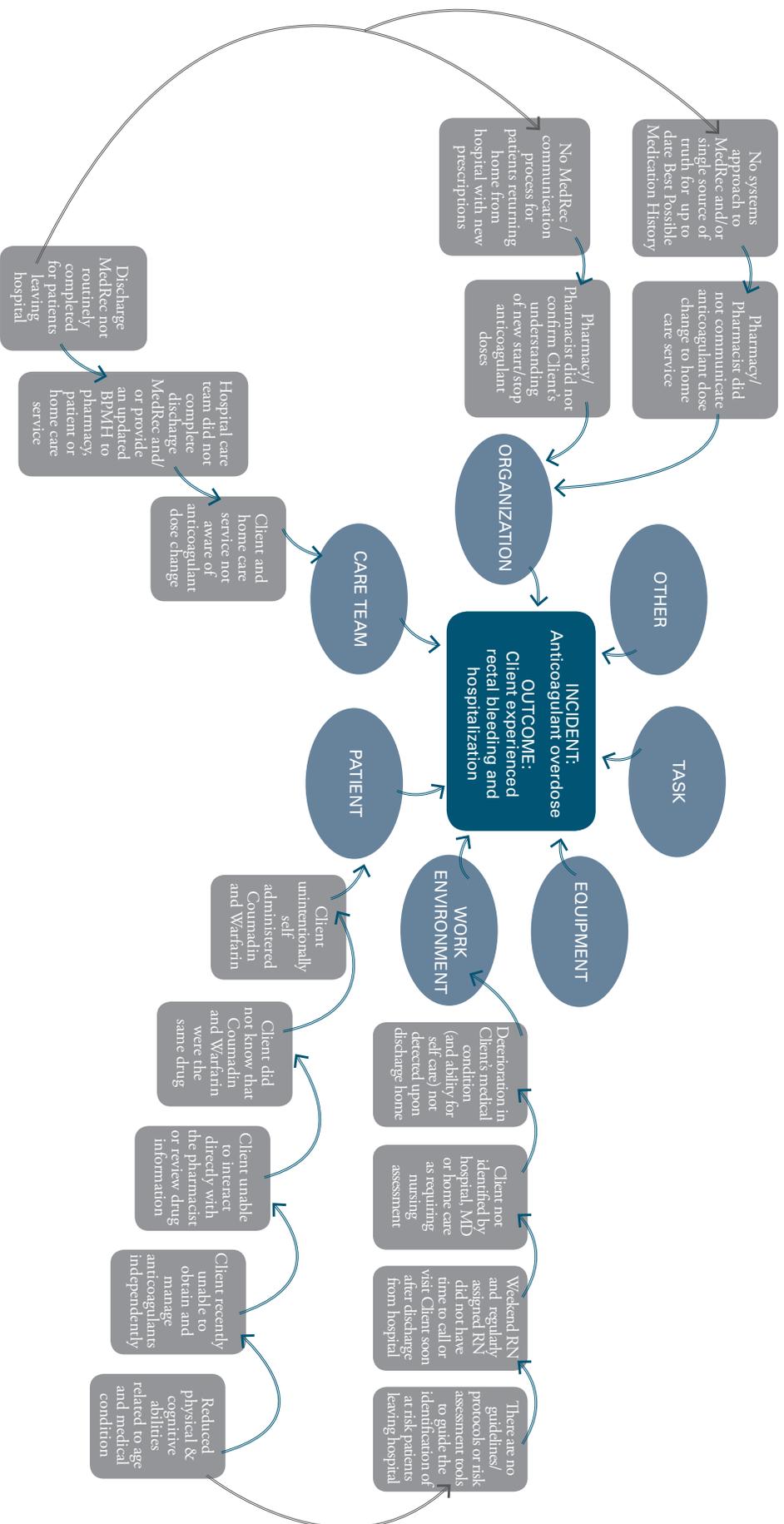
DATE/TIME	ITEM	COMMENT/SOURCE
History	Client receiving weekly home care visit by RN for leg ulcer dressing change every five to seven days for approximately six weeks. Occasionally forgetful about caring for dressing and short-term memory mildly impaired, however able to manage own medications.	
Friday - 14 days prior to event	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.	Home care record
5 days prior to event	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.	Hospital chart and referral form RN interview (regularly scheduled in the area)
5 days prior to event	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.	Client interview

DATE/TIME	ITEM	COMMENT/SOURCE
5 days prior to event criteria for reportable incidents	At the drug store: <ul style="list-style-type: none"> Pharmacy technician processes filling the prescription in computer. Pharmacist notes the change in Warfarin/Coumadin dose from 3mg OD to 2mg OD so ensures that new bottle of tablets provided for ease of self-administration. All medications are filled for dispensing to ensure that patient has sufficient supply for upcoming month. Pharmacist attempts to explain dosing information to neighbour. Highlights the dose change on the patient information sheets as well as the potential of increased anticoagulant effect with the combination of Doxycycline and Warfarin. 	Pharmacist interview
4 days prior to event	Client continues to feel tired and not eating or drinking very much. Spends much of the day resting in bed or watching TV.	Client interview
2 days prior to the event	Client indicates he felt weak and was also a bit concerned about the colour of his urine. He was also a bit embarrassed about seeing some blood on the toilet paper after he moved his bowels. He assumed it was his haemorrhoids giving him trouble again.	Client interview
2 days prior to the event	Client feeling weaker and more concerned about colour of urine and more blood in stool. Doesn't want to bother neighbour so decides to wait until nurse visits in two days for dressing change.	Client interview
1 day prior to the event	Slept in bed most of day and doesn't recall many other details.	Client interview
Day of event at 0900 hrs	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.	RN interview
Day of event 1400 hrs	RN 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 3mg and newly prescribed dose of 2 mg as well.	RN interview
2 days after event	Client remains in hospital but is recovering and should be ready to return home soon.	Hospital chart

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.

CONSTELLATION DIAGRAM OF CONTRIBUTING FACTORS



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

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

Follow-through

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

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