Ontario
CRITICAL Incident Learning
Improving quality in patient safety

Issue 6
November 2013

Distributed to:

- Chief executive officers
- Chiefs of staff
- Board chairs
- Quality/patient safety leads
- Directors of pharmacy

Suggested action items:

- Circulate bulletin to front-line staff and physicians
- Refer bulletin to pharmacy and therapeutics committee, nursing leadership committees, and laboratory leadership to encourage collaborative evaluation of institution's anticoagulation practices, identification of target performance measures, and auditing of activities to ensure targets are being met
- Use bulletin as an educational resource in your hospital's safety huddles or rounds

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Monitoring Processes Contribute to Safe Use of Warfarin

Warfarin is an effective, widely used anticoagulant that requires monitoring and dose titration. Monitoring involves a blood test that measures coagulation status in terms of the international normalized ratio (INR). A person's INR can change frequently and rapidly, particularly with initiation of treatment or in response to interactions with other medications or changes in diet or health. The need for monitoring and the variability in dosing contribute to warfarin's status as 1 of the top 10 medications involved in incidents leading to harm or death that have been voluntarily reported to ISMP Canada.[1] Although it is widely acknowledged that the safe use of warfarin requires timely INR monitoring and dose adjustment, the complexities and tightly coupled nature of the processes involved may not be widely appreciated.[2] Having systems in place to effectively identify, test, and treat patients who are receiving warfarin is an important method of improving patient safety.[3]

Call to Action for Hospitals

Make drug safety a strategic priority:

- Ensure that staff members are aware of warfarin as a high-alert medication[4] that requires heightened vigilance.
- Recognize that the use of warfarin therapy necessitates routine monitoring.

Make system-based changes to support the safe use of warfarin:

- Institute a method to ensure that patients who are receiving warfarin are clearly identified as requiring routine monitoring.
- To ensure prompt action when INR results fall outside the target range, create standardized protocols that specify:
  - frequency of monitoring
  - notification requirements
- Develop protocols for warfarin use that include guidelines for:
  - consideration of patient's warfarin dose history and expected trajectory of the INR
  - review of potential interactions with new medications or supplements
  - management of delayed or missed doses and associated lab work

Sustain high-quality practice:

- Develop procedures to confirm the patient's warfarin use history by consulting community pharmacies, online repositories of health information (e.g., Ontario Drug Profile Viewer), and community physicians and provide appropriate resources to support these activities.
- Use the ISMP Canada Hospital Self-Assessment for Anticoagulant Safety, available from https://mssa.ismp-canada.org/hsasas, to obtain guidance on the safe use of warfarin and other anticoagulants.

Case Summary

Warfarin was started for a patient in an acute care facility who had suffered a stroke. The patient was transferred to a rehabilitation facility the day after the first dose of warfarin and was maintained on the same dosage of the drug after the transfer. Blood testing on admission to the rehabilitation facility revealed an INR value of 2.95, which was within the target range of 2–3; no dose adjustments were made. The next INR test was scheduled for 3 days after the admission, but because of an inadvertent delay, it was not performed until the following day. At that time, the INR was over 5. The patient suffered bleeding into the brain, which resulted in significant impairment.

Learning from Analysis

Transitions in care, such as the transition from acute care to rehabilitative care, can result in errors in warfarin therapy and poor INR control. The documentation for this patient suggested that warfarin had been initiated only recently, meaning that fluctuations both in INR and dose requirements could be expected. However, the initial dosage of the drug was maintained, with a decision being made to monitor the INR with twice-weekly laboratory tests.

At this institution, the need for nurses to complete manual requisitions for each lab test and an ineffective reminder system contributed to the omission of testing that might have exposed the problem sooner. The organization also identified significant variability in dosing and monitoring practices among prescribers within the rehabilitation facility.

The facility has since instituted a standardized protocol whereby any newly admitted patient who is taking warfarin will have a series of INR tests during the first days of admission to determine whether the INR is stable or changing and thus to determine appropriate dosing. In addition, nursing staff now confirm that required blood tests are performed on the correct day, and the organization has implemented a computerized ordering system to eliminate the need for manual requisitions.

Conclusion

The safe use of warfarin requires timely monitoring and dose adjustment. Effective systems that ensure identification, monitoring, and appropriate dose adjustments for patients taking warfarin are important methods to improve safety. Individual practitioners and administrators in Ontario healthcare facilities are encouraged to closely examine existing processes associated with warfarin therapy and to make changes to ensure safe and effective care within their organizations.

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We gratefully acknowledge the review of this bulletin by the facility where the incident described took place.

[1] Top 10 drugs reported as causing harm through medication error. ISMP Can Saf Bull. 2006 [cited 2013 Sep 9];6(1):1-2. Available from: http://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2006-01Top10.pdf

[2] Medication incidents occurring in long-term care. ISMP Can Saf Bull. 2010 [cited 2013 Nov 11];10(9):1-3. Available from: http://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2010-09-MedIncidentsLTC.pdf

[3] Sentinel event alert, issue 41: Preventing errors relating to commonly used anticoagulants. Oakbrook Terrace (IL): Joint Commission; 2008 [cited 2013 Sep 9]. Available from: http://www.jointcommission.org/sentinel_event_alert_issue_41_preventing_errors_relating_to_commonly_used_anticoagulants/

[4] ISMP's list of high-alert medications. Horsham (PA): Institute for Safe Medication Practices (ISMP); 2012 [cited 2013 Sep 9]. Available from: https://www.ismp.org/tools/institutionalhighAlert.asp

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