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Direct Oral Anticoagulant Medication Incidents: A Multi-incident Analysis

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CMIRPS
Canadian Medication Incident
Reporting and Prevention System

SCDPIM
Système canadien de déclaration et de
prévention des incidents médicamenteux



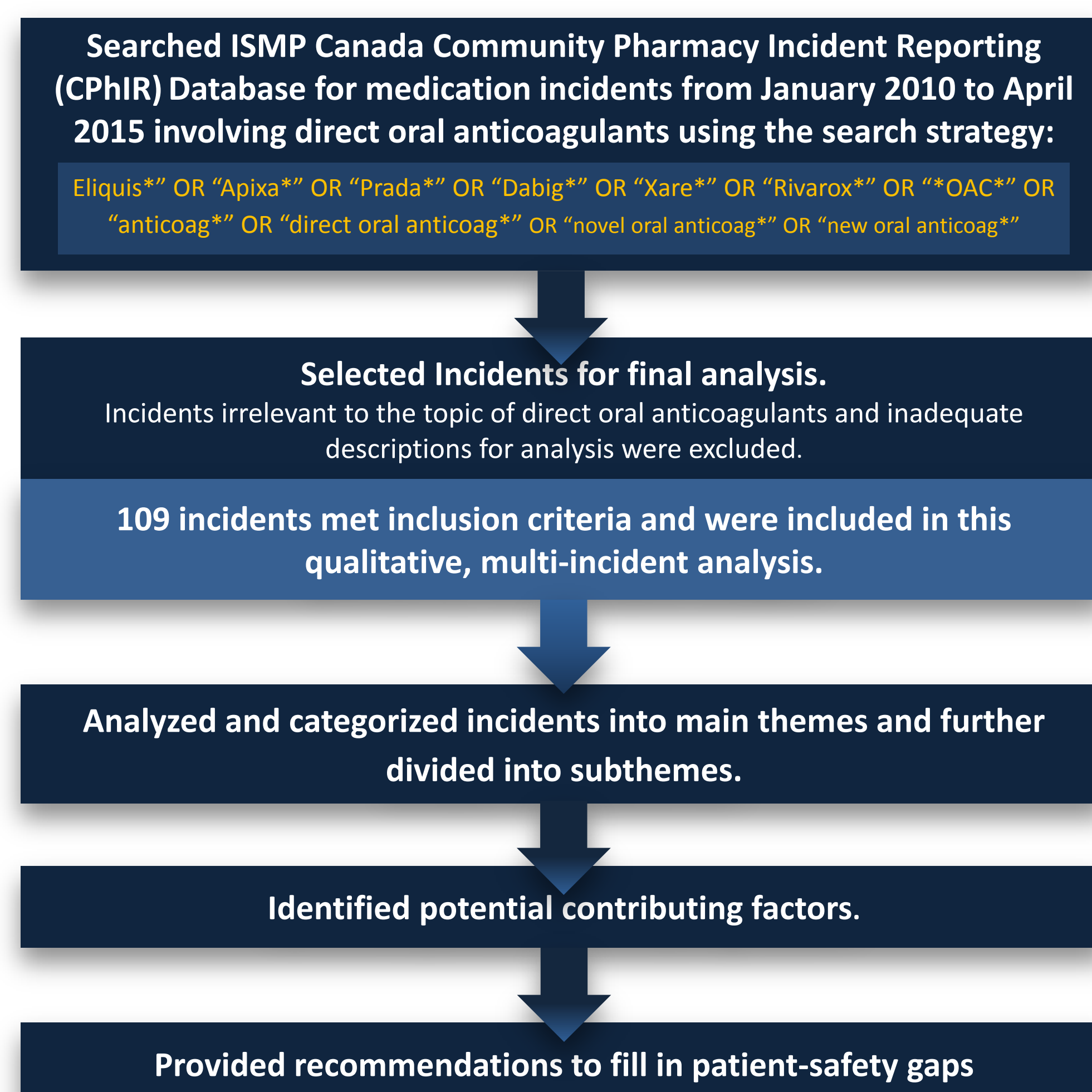
INTRODUCTION

- Since the entry of direct oral anticoagulants (DOACs) into the drug market, namely dabigatran (*Pradaxa*®), rivaroxaban (*Xarelto*®) and apixaban (*Eliquis*®), the use of this class has risen due to their ease-of-dosing and convenience factors especially in regards to monitoring therapy.
- However, unintentional misuse of DOACs may cause serious medication errors, putting patients at risk of unnecessary harm; and in severe cases, life-threatening conditions.

OBJECTIVE(S)

- To recognize and understand the unique properties of DOACs and how they contribute to medication incidents.
- To identify contributing factors and recommendations and help prevent medication incidents related to the DOACs.

METHOD(S)



RESULT(S)

Look-alike & Sound-alike

Example: Physician wrote *Pradaxa*® 75 once daily, but should have been *Plavix*® 75 once daily, confirmed drug with patient before leaving the pharmacy.

Contributing factor 1: Confirmation bias

Safety Recommendations:

- Provide indications and both brand names and generic names on the prescription.¹

Contributing factor 2: Look-alike / sound-alike (LASA) medications and similar dosing

Safety Recommendations:

- Implement alert systems for LASA pairs.
- Configure computerized systems to prevent LASA pairs from appearing consecutively.²
- Tallman lettering in the pharmacy inventory area and application of auxiliary labels on the bottle of LASA drugs can help distinguish them.³

Drug-Drug Interactions

Example: DUE (Drug Utilization Evaluation) indicated a contraindication for a warfarin and *Xarelto*® prescription. A pharmacist reviewed the interaction, noted that warfarin was to be discontinued, but did not deactivate it on the patient's profile. The patient received both medications.

Contributing factor 1: Failure to discontinue inactivated medication from patient's profile

Safety Recommendation: Configure computerized systems to identify and alert user of potential inactive medications in patient profiles.

Contributing factor 2: No indication provided by the prescriber on the prescription

Safety Recommendation: Integrate pre-defined order sets and protocols with indication provided, when possible, into computerized physician order entry (CPOE) and pharmacy information systems.⁴

Contributing factor 3: Lack of drug-drug interaction checker during prescribing process

Safety Recommendation: Implementation of drug-drug interaction checker and alerts in CPOE system will prompt clinicians to recognize and verify any severe drug-drug interaction.⁵

Contributing factor 4: Comprehensive medication list not gathered

Safety Recommendations:

- Implementation of electronic health records to make list of patient's active medications available.⁶
- Health care providers should request or conduct comprehensive medication reviews with patients.
- Patients should carry an up-to-date medication list on hand.

Transitions

Example: A new nursing home patient was admitted, however the new medications were not added to PACMED when the order was received. The patient missed the doses.

Contributing factor 1: A disconnect between the patient's discharged notes and pharmacy computer system

Safety Recommendation: Consider establishing a direct interface between the prescribing and pharmacy information system to display medication changes and to make adjustments accordingly.⁶

Contributing factor 2: Lack of communication to patients, families, and healthcare providers

Safety Recommendation: Establish a policy for health care practitioners to conduct a best possible medication history (BPMH) with patients during admission / re-admission / transfer / discharge.

Intricacies in Dosing and Frequencies

Subtheme: Dosing Errors due to Patient Specific Factors

Example: A patient on *Pradaxa*® 150 mg requested his physician to reduce his dose after reading that patients above 80 years old should only be on 110 mg twice daily. His physician said no, but later agreed after referring the physician to his pharmacist.

Contributing factor 1: Clinician's lack of experience and knowledge

Safety Recommendation:

- Consider using pre-printed order forms that include considerations for creatinine clearance, age, and dose adjustments.⁴
- Prescribing and pharmacy systems should review indication, dosing, and frequency of medications.⁴

Subtheme: Dosing Errors due to Drug Specific Factors

Example: A patient, currently on warfarin and compliance packaging, was started on *Pradaxa*®. The pharmacy failed to inactivate the warfarin and thus her blister packs were prepared with both medications. The pharmacist caught the error and resolved the issue.

Contributing factor 1: Lack of visibility of critical information on blister packaging

Safety recommendation: Applying auxiliary labels on the blister pack to alert critical information.⁷

Contributing factor 2: Confusion due to standard dosing vs. unique dosing depending on the indication

Safety Recommendation: Have access to policies, procedures, and guidelines on the use of DOACs.⁴

Contributing factor 3: Lack of experience with switching from warfarin to DOACs

Safety Recommendation: Use a standard protocol supported by guidelines for switching to DOACs.

*Medication incidents related to pharmacy operations were not further analyzed in this study due to lack of relevance to the topic at discussion.

CONCLUSION(S)

- DOACs are a relatively new class of anticoagulants that provide exceptional benefits to patients when used appropriately.
- Open communication and dialogue between patients and healthcare professionals should always be encouraged.
- Continuous professional development for prescribers and pharmacists on new approaches to medication therapy management and the practice of Best Possible Medication History at the transition points of care are critical for patient-centered care.
- A blame-free patient safety culture together with regular reporting and analysis of medication incidents will help address systematic vulnerabilities and further improve the safe use of DOACs in all healthcare settings.

ACKNOWLEDGEMENTS

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