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Patient Safety Tip of the Week

August 15, 2023

Problems with Newer Diabetes Drugs

Many patient safety issues in diabetic patients involve insulin. Moreover, some of the most serious patient outcomes stem from incidents involving insulin. But over the past several years we've been inundated by a variety of new drugs for treating diabetic patients, including both oral agents and injectable agents. So, it should be no surprise that we are beginning to see medication errors involving these newer diabetes drugs.

ISMP Canada recently published a safety alert about incidents with such drugs (ISMP Canada 2023). ISMP Canada found 441 reports of incidents involving these drugs. The majority of incidents were reported as near misses or as having resulted in no harm. As opposed to incidents involving insulin, only a small proportion (3.6%) of the incidents with the newer diabetes drugs were reported as having caused harm to the patient.

They found 3 main themes in these incidents:

- Complex medication regimens
- Look-alike/Sound-alike (LASA) issues
- Product packaging and storing issues

Frequent adjustments of diabetes drugs are common. These may include dose modifications, addition of an agent from a different medication class, or a switch in medications. This is where the "copy and paste" issue becomes problematic. A pharmacist or a prescriber may copy a prior order, intending to alter the dose after pasting into a new order but then forgetting to make that change. ISMP Canada therefore recommends limiting the "copy" function to prescriptions that are **unchanged** from the previous prescriptions. It also recommends encouraging prescribers to prominently indicate medication and dose changes on the prescription (e.g., STOP [previous medication]; INCREASE dose).

Another problem is **complex dose titrations**. In such cases, ISMP Canada suggests inputting each step in the titration as a separate prescription (instead of inputting the multi-step titration on one prescription and refilling this prescription). Note that this

necessitates patient counselling with each step. If a refill approach is used, they recommend incorporating a flag in the system to ensure the pharmacist speaks with the patient at each dose change. Another suggestion is to number each step in the titration (i.e., Step 1, Step 2) for clarity. Another tip is to provide a personalized calendar to support the patient's understanding of the dosing titration (and scan a copy of the calendar into the prescription file).

Certain products are available in **different pack sizes**, with capability of delivering different doses, which may lead to the dispensing of incorrect quantities. ISMP Canada therefore recommends:

- Incorporate an independent double check into the dispensing process to confirm calculations for the dose and quantity to dispense.
- Develop educational materials to inform staff about these product pack sizes and dose delivery options, and to provide a quick reference in the pharmacy.

Unfortunately, those are 2 interventions we always include lower in our hierarchy of effective interventions. But we don't have any better recommendations.

LASA issues could involve other diabetes drugs or drugs used for other indications. Sometimes the brand names may sound alike (e.g., **Jan**umet, **Jan**uvia, and **Jar**diance). In other cases, the generic names may sound alike (e.g., cana**gliflozin**, dapa**gliflozin**, and empa**gliflozin**). Therefore, ISMP Canada recommends that prescribers be encouraged to **include both the brand and generic names** in electronic and written prescriptions.

And it's not just diabetes drugs being confused with each other. Synjardy (empagliflozin/metformin) has also been confused with Synthroid (levothyroxine). We don't know of a safe TALLman lettering format to help with that one, but **including the indication** for the drug would go a long way to avoid that error.

The availability of multiple strengths and/or concentrations (e.g., Jardiance (empagliflozin) as 10 mg and 25 mg doses), combination products (sitagliptin alone [Januvia] vs. sitagliptin/metformin [Janumet]), and modified formulations (e.g., Janumet and Janumet XR) all have led to confusion. ISMP Canada recommends emphasizing key points of product distinction on the hard copy during verification (e.g., Janumet XR). They also recommend working IT vendors to give prominence to key information in pharmacy software (e.g., Janumet XR [sitagliptin/metformin, modified release]).

Moreover, **packages may look alike**, particularly packages of different doses of the same drug. Regarding look-alike packaging, ISMP Canada recommends:

- Incorporate barcode scanning into pharmacy processes, including inventory management and dispensing.
- Separate look-alike medication packages using a shelf divider or individual bins.

Newer antidiabetic medications for injection (eg. semaglutide [Ozempic], liraglutide [Victoza], and dulaglutide [Trulicity]) are **stored in the refrigerator**. We all know about the risks of taking the wrong medication from refrigerators. It's not different with these

injectable diabetes drugs. ISMP Canada recommends the following regarding those medications requiring storage in refrigerators:

- Organize filled, refrigerated prescriptions alphabetically by patient surname.
- Position filled products in the refrigerator in a way that makes the label with the patient's name visible.

Issues with new diabetes drugs are not only causing concern for pharmacists and ordering physicians. There are issues raised by anesthesiologists given the tsunami of patients taking semaglutide (Ozempic). In particular, there is considerable confusion about what to do with this drug prior to anesthesia. The key issue is that semaglutide and other glucagon-like peptide-1 (GLP-1) receptor agonists can **reduce gastric emptying**, possibly increasing **the risk for aspiration**.

The ASA has just released its "American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists" (Joshi 2023). It applies to patients taking medications like Ozempic® (semaglutide), Trulicity® (dulaglutide), and other glucagon-like peptide-1 (GLP-1) receptor agonists. The guidance reads:

"ASA's Task Force on Preoperative Fasting suggests the following for patients taking GLP-1 agonists for type 2 diabetes or weight loss who are having elective procedures. It is also calling for further research to be done regarding GLP-1 agonist medications and anesthesia.

The evidence to provide guidance for preoperative management of these drugs to prevent regurgitation and pulmonary aspiration of gastric contents is sparse limited only to several case reports. Nevertheless, given the concerns of GLP-1 agonists-induced delayed gastric emptying and associated high risk of regurgitation and aspiration of gastric contents, the task force suggests the following for elective procedures. For patients requiring urgent or emergent procedures, proceed and treat the patient as 'full stomach' and manage accordingly.

For patients scheduled for elective procedures consider the following:

Day(s) Prior to the Procedure:

- For patients on daily dosing consider holding GLP-1 agonists on the day of the procedure/surgery. For patients on weekly dosing consider holding GLP-1 agonists a week prior to the procedure/surgery.
- This suggestion is irrespective of the indication (type 2 diabetes mellitus or weight loss), dose, or the type of procedure/surgery.
- If GLP-1 agonists prescribed for diabetes management are held for longer than the dosing schedule, consider consulting an endocrinologist for bridging the antidiabetic therapy to avoid hyperglycemia.

Day of the Procedure:

- If gastrointestinal (GI) symptoms such as severe nausea/vomiting/retching, abdominal bloating, or abdominal pain are present, consider delaying elective procedure, and discuss the concerns of potential risk of regurgitation and pulmonary aspiration of gastric contents with the proceduralist/surgeon and the patient.
- If the patient has no GI symptoms, and the GLP-1 agonists have been held as advised, proceed as usual.
- If the patient has no GI symptoms, but the GLP-1 agonists were not held as advised, proceed with 'full stomach' precautions or consider evaluating gastric volume by ultrasound, if possible and if proficient with the technique. If the stomach is empty, proceed as usual. If the stomach is full or if gastric ultrasound inconclusive or not possible, consider delaying the procedure or treat the patient as 'full stomach' and manage accordingly. Discuss the concerns of potential risk of regurgitation and pulmonary aspiration of gastric contents with the proceduralist/surgeon and the patient.
- There is no evidence to suggest the optimal duration of fasting for patients on GLP-1 agonists. Therefore, until we have adequate evidence, we suggest following the current ASA fasting guideline

Yes, the plethora of new drugs is good for diabetes management but, at the same time, brings with it a variety of potential patient safety issues.

References:

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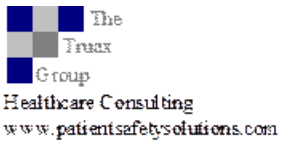

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