

Some Liquid Medications May Be Unsuitable for Administration by Enteral Tube

Medications provided by the pharmacy in a ready-to-use liquid form (e.g., a suspension) may seem suitable for administration through enteral tubes, such as nasogastric tubes, gastric tubes (G-tubes), or jejunal tubes. However, it should NEVER be assumed that a medication in liquid form represents the best formulation for enteral administration in a patient with one of these tubes.

Incident Example

ISMP Canada received the following report from a community healthcare practitioner:

A child who relied on a G-tube for feeding developed an infection, for which clarithromycin (e.g., Biaxin) was ordered. A suspension of clarithromycin was prepared and dispensed by a community pharmacy, with instructions to administer the medication through the G-tube and to flush the tube well. After 2 days of administration of the antibiotic, the G-tube became completely occluded. The child had to be admitted to hospital for tube replacement. The clarithromycin was discontinued, and a different antibiotic was ordered in its place.

Background Information

For about 15% of patients with enteral feeding tubes, medications administered through the feeding tube

cause occlusion.¹ Various factors affect the risk of feeding tube occlusion, including the following:

- characteristics of the tube itself (e.g., composition and lumen or bore size)¹⁻⁴
- administration technique (e.g., flushing of tube with water before and after administration of the medication; dilution of the medication before administration, if warranted)¹⁻⁵
- characteristics of the medication (e.g., presence of granules, viscosity)^{3,4}

There is evidence that certain liquid medications, such as clarithromycin suspension, readily occlude feeding tubes, especially pediatric enteral tubes.^{1,2,4,5} Alternative modes of administration for these drugs may include crushing tablets to a fine powder (if this can be done safely*) and then admixing the powder with a sufficient quantity of water or using an alternative ready-to-use formulation that does not promote occlusion.^{1,2,4,5}

Recommendations

For Healthcare Practitioners

- Contact your drug information provider if you are unsure about the appropriateness of any medication that is ordered for administration through an enteral tube. Product monographs may not have information about administration of drugs through

* Medications that should not be crushed include those with special (e.g., extended or delayed) release properties, those that could be irritating to mucous membranes, and those with an enteric coating (as the coating may clog the tube).^{1,5,6}

an enteral tube (e.g., to identify the occlusion potential of a particular medication or formulation), as many medications have not been studied under these conditions.

- Be aware of any special precautions required for medications that are to be administered through an enteral tube. If there is a risk of medication-related occlusion of the tube, consider factors such as the following when determining if the benefits of using the medication outweigh the risks:
 - ease of replacing an occluded tube (e.g., will admission to hospital be required?)
 - patient's reliance on the tube (e.g., for feeds or other medications)

For Healthcare Facilities, Community Agencies, and Community Pharmacies

- Review available information from facilities (such as regional pediatric hospitals), or drug information centres, that have addressed the issue of medication administration through enteral tubes to identify medications that may increase the risk of enteral tube occlusion and the potential interventions.

- Consider how this information can be integrated with currently available technologies such as the order entry system. In particular, consider how constraints or forcing functions⁷ can be applied throughout the medication-use process (e.g., prescribing, dispensing) to prevent an oral liquid medication from being selected for a situation where such a formulation is contraindicated. For example, consider the possibility of building a mechanism into the order entry system to convey the occlusion risk of clarithromycin suspension administered through an enteral tube. Also convey the options available, such as an alternate formulation for clarithromycin for pediatric patients, or dilution of the suspension in adult patients (for example, those with large-bore enteral tubes) to reduce the risk of occlusion.³ Notes about administration technique, such as proper flushing of the enteral tube might also be integrated into the computer system (e.g. labelling information).
- If patients and/or caregivers are expected to administer medications by an enteral route, set up a process to ensure that they receive appropriate information and education.

VIDEO NOW AVAILABLE: Consumers Can Help Prevent Harm from Opioid Use

ISMP Canada is pleased to announce the launch of a patient safety initiative to educate consumers about the safe use of opioids. Opioids are commonly involved in incidents associated with harm that have been voluntarily reported to ISMP Canada. As well, recent work with the offices of chief coroners and chief medical examiners in Canada has determined that opioids, specifically HYDROMORPHONE, have often been involved in medication errors that resulted in death. Many of these errors occurred at home.

In an effort to reduce harms associated with opioids, ISMP Canada has developed a video to educate consumers about the safe use of these medications. The video emphasizes that opioids are safe and effective when they are used properly, but they can cause serious harm if used incorrectly. The video provides information about the steps consumers can take to avoid being harmed by an error with opioids. It also educates consumers about how to recognize signs of opioid overdose and the actions to take if an overdose is suspected.

You can help to prevent harm from errors with opioids by disseminating the video to others who could benefit from this information. Please share these video links widely, including posting them on your own institutional website and playing them in patient waiting areas:

English version: <http://youtu.be/9tfgw3W6ZnQ>

French version: <http://youtu.be/Uf960ark4s4>

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The Canadian Medication Incident Reporting and Prevention System (CMIRPS) is a collaborative pan-Canadian program of Health Canada, the Canadian Institute for Health Information (CIHI), the Institute for Safe Medication Practices Canada (ISMP Canada) and the Canadian Patient Safety Institute (CPSI). The goal of CMIRPS is to reduce and prevent harmful medication incidents in Canada.



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The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national not-for-profit organization committed to the advancement of medication safety in all healthcare settings. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

Report Medication Incidents

(Including near misses)

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Phone: 1-866-544-7672

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