

Acute Care

ISMP Medication Safety Alert!®

Educating the Healthcare Community About Safe Medication Practices

Explore our updated *ConsumerMedSafety.org* website



We are delighted to announce the official launch of our newly updated consumer website, ConsumerMedSafety.org. In 2009, we initially launched *ConsumerMedSafety.org* as the only website designed by a nonprofit organization exclusively to bring the message of medication error prevention directly to the consumer. Our updated website (**Figure 1**) demonstrates our commitment to providing the most up-to-date information about medication safety to consumers in a way that is easy to navigate.

ConsumerMedSafety.org has a newly branded logo (**Figure 1**). The updated website has a modern and clean look, and it remains advertisement free. Consumers can easily access, view, and use the website, which includes the following key features:

Scrolling marquee. The first feature that consumers will notice on the website is a scrolling marquee. The scrolling marquee provides vital and newly posted content, including the latest medication safety warnings and advice from experts. Current examples include a feature on how to avoid confusing “concentrated ibuprofen infant drops” with “children’s ibuprofen,” and a warning for consumers to use caution when taking medications that are packaged with desiccants.

Search feature. Consumers can use the search feature, located directly above the scrolling marquee, to find medication safety articles by entering a keyword. A robust search engine drives the search function to help consumers easily locate safety topics of interest. Consumers can also click the “browse all safety articles” button to scroll through hundreds of medication safety topics and breaking news about medication safety-related issues. Current examples include preventing mistakes with your pet’s medications, tips for starting and stopping antidepressants safely, and clues that a pharmacist has forgotten to reconstitute a powdered medication.

Error-reporting feature. We invite consumers to share their stories about errors or other medication safety issues by clicking on the red button that says, **Report a Medication Error**. This button is prominently located above the scrolling marquee, and **Reporting Medication Errors** is also in the toolbar at the top of the webpage. Clicking the red button or top-screen navigation tool takes consumers to a webpage that describes the importance of reporting medication errors and walks them through a user-friendly online reporting form. Or, consumers can always submit a report by calling ISMP directly at 215-947-7797. When consumers report errors to ISMP, it allows us to identify ways to improve medication safety. Staff at ISMP review all error reports and inform the US Food and Drug Administration (FDA) of the error. Additionally, ISMP notifies drug companies when the medication labeling or packaging requires changes.



Figure 1. *ConsumerMedSafety.org* has a fresh look, and consumers can access the site via the internet on any computer, tablet, or smartphone.

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Message in our Mailbox



Barcode scanning by anesthesia providers in the OR. In our August 11, 2022 newsletter (www.ismp.org/node/33905), we published an interview with a pharmacist who successfully implemented barcode scanning technology in their perioperative and procedural settings. ISMP recommended barcode scanning technology in perioperative and procedural areas in our recently released *ISMP Guidelines for Safe Medication Use in Perioperative and Procedural Settings* (www.ismp.org/node/31601) and in our *Targeted Medication Safety Best Practices for Hospitals* (www.ismp.org/node/160). Since publishing our August newsletter article, ISMP received an email message from **Ludwik Fedorko, MD, DPhil, FRCPC**, from the University Health Network (UHN) Toronto General Hospital. Dr. Fedorko wanted to share important and timely information about how anesthesia providers can adopt barcode scanning technology in the operating room (OR) in almost any hospital in the United States and Canada that has an Epic anesthesia installation. He wrote:

I am pleased to inform you that we have implemented an electronic anesthesia medication safety system (digital record, in conjunction with a label printer which linked the two pieces together) by optimizing how single-step medications (medications prescribed and administered by anesthesia providers) are entered into the medical record. Many OR locations already have the hardware in place to adopt barcode scanning, but until now, Epic and other major electronic health record (EHR) providers (e.g., Cerner, MEDITECH) allowed only one drug at a time to be scanned into the record and administered from a bar-coded syringe. This workflow may not be appropriate in anesthesia practice and may be the reason anesthesia providers have not adopted barcode scanning technology. During practice, anesthesia providers often

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However, we keep all information about the consumer and the location where the event occurred confidential. We may then share some errors as anonymous stories in our newsletters, on our [ConsumerMedSafety.org](https://www.consumermedsafety.org) website, and/or on our professional website (www.ismp.org). These error examples often contain recommendations to prevent medication errors for consumers, healthcare providers, regulators, standards organizations, and drug companies.

Medication Safety Tips. In the toolbar at the top of the website, the first navigation drop-down menu, **Medication Safety Tips (Figure 2)**, includes three sections: *Safety with Medicines*, *Safety by Location*, and *Safety by Population*. Each section features articles and/or tools that are specific for certain topics or situations. For example, under the *Safety with Medicines* section, consumers will find teaching brochures on various high-alert medications, as well as safety information on over-the-counter (OTC) medications, vaccines, medication patches, and eye and ear drops. The *Safety by Location* section provides safety tips that are useful while consumers are at home or at the hospital, doctor's office, pharmacy, school, or on the go (traveling). Finally, the *Safety by Population* provides safety tips for various age groups, such as older adults, infants and children, and even has information about medication safety with pets.

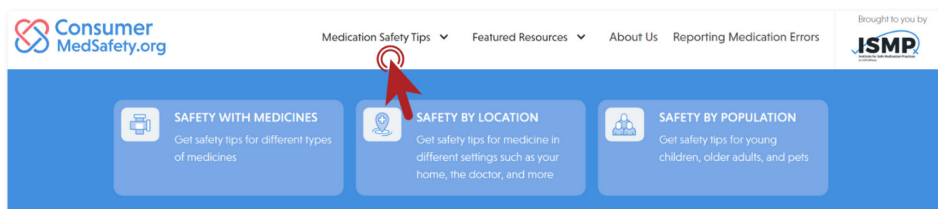


Figure 2. Navigation to **Medication Safety Tips** provides safety information for different types of medications, locations of care, and at-risk populations (older adults, children, pets).

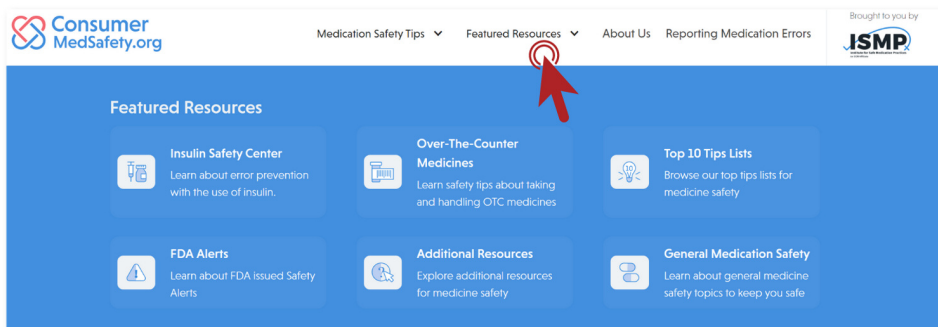


Figure 3. The **Featured Resources** section provides information grouped into six categories that can be selected from the drop-down menu.

Featured Resources. In the toolbar at the top of the website, the next navigation button, **Featured Resources (Figure 3)**, has a drop-down menu that lists six sections:

- **The Insulin Safety Center** provides tips for preventing mistakes with insulin, a high-alert medication frequently involved in harmful errors. This section offers consumers basic information about insulin, the typical errors that happen when using insulin, and the steps to prevent these errors. For example, this section provides detailed safety tips for using an insulin pen correctly.
- **The Over-The-Counter (OTC) Medicines** section is where consumers can navigate through 10 different topics related to medications that can be purchased without a prescription. In this section, consumers can find important safety tips about OTC medications, including medication storage and disposal;

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administer multiple medications and multiple doses of the same medication during various stages of anesthesia care. But nobody has time to go back to the computer to chart one medication dose at a time.

During the last 24 months, I have been collaborating with an Epic team to transfer a majority of our in-house-built EHR safety features into Epic, and we are finally live on Epic's EHR and have implemented barcode scanning in the OR. Among other anesthesia enhancements, we have successfully implemented the following:

- 1) *Queueing multiple medication scans into the Epic OpTime record by scanning the syringe labels immediately prior to administration*
- 2) *Enabling seamless entry of these queued scans into our electronic anesthesia record*
- 3) *Introducing generated audio messages confirming in a clear, audible human voice, the identity of the scanned medication, so if a mistake occurs, the anesthesia provider can abort administration (verbal communication of the medications administered by anesthesia providers also increases the surgical and nursing team's awareness of all the medications administered to the patient in the OR)*

These features are now fully functional in our Epic release at UHN, and the Epic team told me that many of these features are available through Epic's quarterly releases. This is HUGE. For the first time, any anesthesia provider will be able to benefit from these features. This is the time to advertise to all Epic customers that they, too, can improve medication safety in the perioperative and procedural settings based on this work.

Editor's note: If you use Epic as your EHR vendor and would like to learn more about this barcode-aided medication process in the OR and what needs to be done (e.g., set up of your point-of-care printers, existing hardware) to take advantage of the capabilities, please contact Epic at: Anesthesia@epic.com. Dr. Fedorko's long-range goal is to make anesthesia practices safer across the United States and Canada. We thank him for providing this information!

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interactions, reactions, and allergies; multi-symptom and combination products; medications for children; measuring the dose of liquid medications; herbals, vitamins, and homeopathic products; OTC pain relievers; and OTC drug abuse.

- The section called **Top 10 Tips Lists** features various medication safety lists. For example, one list describes the *Top 10 Steps Parents Should Take to Prevent Medicine Mishaps* when giving a child medicine. Other examples include the *Top 10 Reasons to Suspect a Pharmacy Error*, the *Top 10 Ways to Prevent Drug Name Mix-ups*; the top 10 safety tips when using medicines that are applied to the skin, when traveling with medicines, and when measuring liquid medicine doses; the *Top 10 Over-The-Counter Medicines Abused by Teens*; and much more.
- **FDA Alerts** is a special section dedicated to delivering the latest updates on medications and products regulated by FDA, such as “Do not make or feed home-made infant formula to babies.” This section also provides links to information on recent drug recalls, drug shortages, and *Medication Guides*.
- The **Additional Resources** section features specific topics related to general safety with medications. Here consumers can find information about how to read a prescription, keeping track of home medications, preparing for a disaster, how to measure liquid medications, a list of medications not to crush or chew, and much more.
- The **General Medication Safety** section provides general advice, such as what consumers can do to prevent medication errors at home, while in the hospital, and while at an appointment with your doctor. This resource is also available in a PDF format to print.

The website also includes information about ISMP and our mission, and why consumers can trust the information on [ConsumerMedSafety.org](https://www.consumermedsafety.org).

Learning about safe medication practices and being involved in care decisions is an excellent way for consumers to help prevent a medication error from happening. We hope hospitals and health systems will share [ConsumerMedSafety.org](https://www.consumermedsafety.org) with their staff and patients, and help distribute this valuable medication safety information. If your organization would like to link to [ConsumerMedSafety.org](https://www.consumermedsafety.org) on your website, please go ahead and do so! Placement on the patient-facing portal section of your site is an ideal location for this information. Also, please consider making a charitable donation to ISMP (www.ismp.org/support/donate). With your help, we will be able to continue our work to keep consumers safe and to lead efforts to improve the medication-use process.

Trend shows increased nursing workload to address smart pump alerts for HYDROmorphine and fentaNYL infusions

PROBLEM: After reviewing 2019-2021 smart infusion pump data from 20 health systems, Bainbridge Health identified a dramatic increase in the smart infusion pump alerts associated with both fentaNYL and HYDROmorphine infusions due to higher dosing requirements for patients during the coronavirus disease 2019 (COVID-19) pandemic. Palliative care infusions, when able to be identified (e.g., by care area), were excluded from the analysis. Because the increase in utilization and doses for these opioids has resulted in a significant number of infusion pump alerts, an analysis of the data is provided below to increase your awareness of the issue, prompt the review of your smart pump data for similar trends, and ensure your smart infusion pump alerts align with clinical practice to avoid alert fatigue.

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SAFETY brief



Scan before you flush. Due to drug shortages, organizations have sometimes been purchasing products in short supply from different, unfamiliar manufacturers. One organization reported purchasing 0.9% sodium chloride (10 mL in a 12 mL syringe) and heparin flush solution (500 units/5 mL in a 12 mL syringe) in 0.9% sodium chloride from Medefil that looked nearly identical. The heparin flush syringes have yellow syringe caps and labels while the sodium chloride flush syringes have peach (but may appear yellow to practitioners) syringe caps and labels. Also, both state “0.9% sodium chloride” in similar positions, and they are both packaged in 12 mL syringes (**Figure 1**). One organization told us that the heparin flush syringes were accidentally placed in a bin intended for saline syringes. Fortunately, this mix-up was caught prior to administration by a visual check and barcode scanning.



Figure 1. Heparin 500 units/5 mL (top) and 0.9% sodium chloride (bottom) flush syringes by Medefil look similar. Both use shades of yellow (or peach) for the syringe labels and caps, and are in 12 mL syringes.

Other organizations reported concerns due to the similarity between the Medefil heparin flush syringe (500 units/5 mL) and the 10% calcium chloride (1,000 mg/10 mL) syringe, also packaged in a 12 mL syringe by Medefil (**Figure 2**). Out of the overwrap, these syringes are hard to tell apart visually and are likely to be confused with one another. In these cases, practitioners were able to

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Figure 2. Heparin flush 500 units/5 mL (top) and 10% calcium chloride (1,000 mg/10 mL) syringes by Medefil look similar, as both have yellow labeling.

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Increase in Utilization

Fenta**NYL** is an essential medication for analgesia and sedation in critically ill patients,¹ as it acts quickly, has no active metabolites, and does not trigger the release of histamine. But during intermittent fenta**NYL** shortages, shifts in prescribed therapy may have resulted in an increase in **HYDRO**morphone infusions to sedate ventilator-dependent patients, especially during the COVID-19 pandemic. The data show a dramatic increase in **HYDRO**morphone infusions, from 2,024 in 2019, peaking to more than 20,000 in 2020, and remaining elevated at eight times higher than the baseline at 16,309 in 2021 (**Figure 1**). Despite fluctuations in fenta**NYL** availability, there was also a substantial increase in the use of fenta**NYL** infusions, which more than doubled between 2019 and 2021.

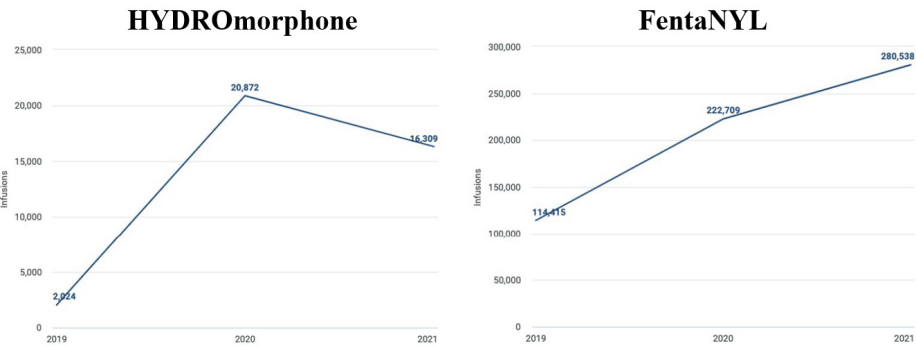


Figure 1. The frequency of both **HYDRO**morphone and fenta**NYL** infusions increased between 2019 and 2021

Increase in Doses

In addition to an increase in use, doses for **HYDRO**morphone and fenta**NYL** infusions have trended higher for both the mean and maximum (**Figures 2 and 3**) programmed doses in the same timeframe. For example, the average maximum dose for **HYDRO**morphone infusions rose from 2.7 mg/hour to 3.9 mg/hour, and for fenta**NYL** infusions, the average maximum dose rose from 146 mcg/hour in 2019 to 165 mcg/hour in 2021 during the 3-year period. These findings are not surprising given that the literature suggests ventilator-dependent COVID-19 patients might require higher doses of sedation.²

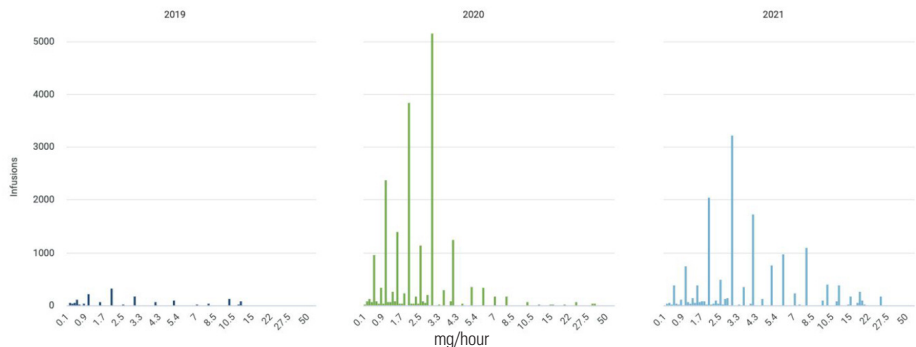


Figure 2. **HYDRO**morphone maximum infusion dose distribution (mg/hour) between 2019 and 2021

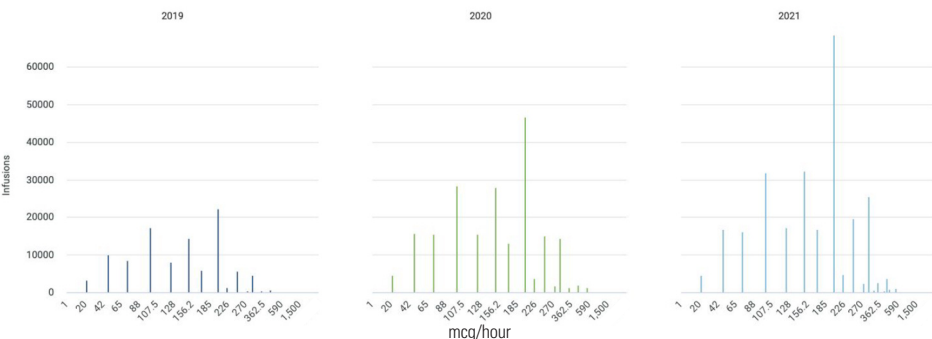


Figure 3. Fenta**NYL** maximum infusion dose distribution (mcg/hour) between 2019 and 2021

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purchase the calcium chloride syringes from a different manufacturer due to concerns with stocking these syringes in code carts.

To detect wrong product selection, require practitioners to scan all flushes prior to dispensing, when refilling stock, and prior to administration. We also recommend a proactive review of the packaging and labeling of products when purchased, especially during drug shortages when products could be changing rapidly. If look-alike products must be purchased, implement strategies (e.g., auxiliary labels, circling important information) to call out their differences. Make practitioners aware of new products that pose look-alike issues, and emphasize the importance of barcode scanning, including flush syringes. FDA and Medefil have been notified of these concerns, and Medefil told us they are in the process of changing the syringe colors.

Your Reports at Work



Important safety news for pets! Thanks to your reports, topical fluorouracil (**CARAC, EFUDEX, TOLAK**) labeling is being updated to warn

patients about accidental exposure to pets, which can lead to severe toxicity and death (www.ismp.org/ext/980). These products are often used to treat actinic or solar keratosis or basal cell carcinomas. All too often, prescribers are unaware that fluorouracil is extremely toxic to dogs and cats if ingested, so they do not provide patients with warnings. Tragedy can happen when a pet licks

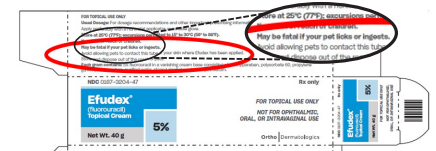


Figure 1. Efidex and other fluorouracil topicals now have warnings regarding toxicity to pets.

the owner's skin where the medication has been applied, or chews the fluorouracil container. Even small amounts of fluorouracil can be toxic to dogs and cats. As noted in a December 3, 2020 **SAFETY brief**, ISMP was contacted by a concerned veterinarian about fatal exposures in pets. We brought the issue to the attention of USP and the US Food and Drug Administration (FDA).

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Increase in Smart Pump Alerts

HYDROmorphone and fenta**NYL** contribute to a significant number of smart infusion pump alerts. Together, they accounted for 5.4% of the alerts for all continuous infusions programmed into smart infusion pumps in 2019, but the alerts rose to more than 16% in 2021 (Table 1). While the percentage of alerts for these medications increased and stayed higher than baseline during the 3-year review period, alerts for **HYDRO**morphone showed a dramatic spike from 2019 to 2020, followed by a decrease in alerts during 2021. This may be explained by an intentional focus on reducing clinically insignificant **HYDRO**morphone alerts during 2020 in the health systems providing data. Fenta**NYL** alerts continued to rise during the 3-year period.

Table 1. Percent of smart infusion pump alerts from **HYDRO**morphone and fenta**NYL**

Year	Continuous Infusion Alerts		All Alerts (including bolus dose alerts)	
	% from HYDRO morphone	% from fenta NYL	% from HYDRO morphone	% from fenta NYL
2019	1.1%	4.3%	2.5%	1.7%
2020	8.4%	10%	5.7%	4.7%
2021	4.4%	12.3%	4%	6.1%

SAFE PRACTICE RECOMMENDATIONS: Has your organization experienced similar increases in **HYDRO**morphone and fenta**NYL** infusion use/dosing and associated smart pump alerts as a result of clinical practice changes associated with treating patients with COVID-19? We suggest that you review your smart pump data and evaluate the trends in **HYDRO**morphone and fenta**NYL** infusion utilization, dosing, and alerts. A comprehensive medication-use evaluation (MUE) for each medication infusion may be needed to better understand the impact. Share and discuss the pump data analysis and MUE results with your medication safety committee to determine whether modifications to protocols, order sets, and smart pump libraries are warranted.

Maximum dose limit alerts from smart infusion pumps that do not align with current clinical practices are likely to lead to alert fatigue, overridden alerts, and potential patient harm. However, before increasing the maximum dose limit thresholds for fenta**NYL** and **HYDRO**morphone infusions, review the literature and your data to ensure your clinical decision support parameters are safe. For example, increasing the dose limit for fenta**NYL** infusions to 500 mcg/hour may lead to 10-fold dosing errors for patients who should receive 50 mcg/hour. Also, if your organization does not have a separate care profile in the drug library for palliative care and/or end-of-life care, consider adding one to avoid nuisance alerts while sustaining safe limits for all patient populations.

ISMP thanks Sean O'Neill, PharmD, and Joanne Hatfield, PharmD, BCPS, at Bainbridge Health (www.bainbridgehealth.com) for providing data for this article.

References

- 1) Devlin JW, Skrobik Y, Gélinas C, et al. Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. *Crit Care Med.* 2018;46(9):e825-73.
- 2) Hanidziar D, Bittner EA. Sedation of mechanically ventilated COVID-19 patients: challenges and special considerations. *Anesth Analg.* 2020;131(1):e40-1.

Your Reports at Work

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FDA is now requiring topical fluorouracil manufacturers to revise their prescribing information, carton labeling, and container labels to warn about accidental pet exposures. For example, Bausch Health has updated the Efudex solution and cream packaging to state that the product may be fatal if a pet licks or ingests fluorouracil (Figure 1, page 4). The label will now warn to avoid the pet's contact with the tube or the patient's skin, and to store and dispose of the product out of the reach of pets. Prescribers who order topical fluorouracil and pharmacists who dispense these products should advise patients to take care to prevent exposing pets to the medication.

Special Announcements

Medication safety certificate program updated

Pharmacy professionals, physicians, nurses, and pharmacy technicians can earn a medication safety certificate by completing a self-guided, online course (41 continuing education [CE] hours) developed by ISMP and the American Society of Health-System Pharmacists. The program provides participants with the knowledge and skills necessary to minimize medication errors. For information, visit: www.ismp.org/node/770.



Celebrate World Patient Safety Day

This year's **World Patient Safety Day** theme is "Medication Safety," and the slogan is "Medication Without Harm." The campaign calls on stakeholders to prioritize and take early action in key areas associated with significant patient harm due to unsafe medication practices (www.ismp.org/ext/979).

If you would like to subscribe to this newsletter, visit: www.ismp.org/node/10



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