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# The Joint Commission cracks down on vial misuse in hospitals

*Agency points to evidence linking patient harm with unsafe practices*

Noting that patients are being harmed by the misuse of single-dose/single-use and multiple-dose vials, The Joint Commission (TJC) is sending a strong signal that more needs to be done to improve safety on this issue. The Oakbrook Terrace, IL-based accrediting agency has issued a Sentinel Event Alert, making it clear that health care providers need to redouble their efforts to insure that safe injection practices are being followed, thereby preventing infections from the misuse of vials.

There is clearly ample room for improvement. Citing data from the Centers for Disease Control (CDC) in Atlanta, GA, TJC reports that since 2001, at least 49 outbreaks related to the mishandling of injectable medical products have occurred. Of these, 21 outbreaks involved the transmission of hepatitis B or C and 28 outbreaks involved bacterial

## EXECUTIVE SUMMARY

Unsafe injection practices with respect to the misuse and unsafe use of vials is being targeted by The Joint Commission (TJC). The accrediting agency has issued a Sentinel Event Alert, putting hospitals on notice that they need to take strong steps to insure that health care workers fully understand and are carrying out practices that protect patients from the dangers of vial misuse.

- According to the Centers for Disease Control (CDC) in Atlanta, since 2001, at least 49 outbreaks related to the mishandling of injectable medical products have occurred, and during this time period, more than 150,000 patients have had to be notified to undergo blood-borne pathogen testing because of their potential exposure to unsafe injections.
- TJC cites a survey of 5,446 health care practitioners, which reveals significant gaps in basic infection control practices related to vial use.
- Experts suggest vial misuse is often due to a lack of understanding of how to apply safe injection practices.
- To make improvements, experts recommend that hospital administrators first take steps to observe what is happening in their care environments, and then develop targeted action plans.

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infections. Further, during this time period, more than 150,000 patients have had to be notified to undergo blood-borne pathogen testing because of their potential exposure to unsafe injections.

Such data may only hint at the extent of the problem. The CDC says that adverse events related to the misuse of vials are underreported, and it is difficult to trace the misuse of vials to infections.

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Editor: **Dorothy Brooks** (dobr@bellsouth.net).
Managing Editor: **Leslie Hamlin** (leslie.hamlin@ahcmedia.com).
Executive Editor: **Shelly Morrow Mark** (shelly.mark@ahcmedia.com).
Editorial Director: **Lee Landenberger** (lee.landenberger@ahcmedia.com).



Editorial Questions

For questions or comments, call **Leslie Hamlin**, (404) 262-5416.


Nonetheless, TJC is clearly putting health care providers on notice that the problem requires prompt attention and diligent ongoing oversight.

## Workers lack understanding

The Joint Commission cites research showing that a survey of 5,446 health care practitioners revealed significant gaps in basic infection control practices related to vial use. For example, 6% of respondents admitted to using single-dose/single use vials on multiple patients. Also, 15% reported using the same syringe to re-enter multiple-dose vials for the same patient, and of this 15%, nearly half (6.5%) reported saving vials to use on another patient. Further, of the 51 survey respondents who reported reusing a syringe to extract an additional dose from a multi-dose vial for use on another patient, about half worked in a hospital setting.[1]

While a significant number of infections related to vial misuse occur in pain management and cancer care clinics, many also occur in hospital settings. Oftentimes, such problems can be traced to a poor understanding of safe injection practices, according to **Ruth Carrico**, PhD, RN, FSHEA, CIC, associate professor, Division of Infectious Diseases, University of Louisville School Medicine, Louisville, KY. "I have never met a health care worker who wanted to hurt their patient, so from my perspective, when we have misuse, it is because people don't know what the issues are," she says. "Many times, the problem is that they may conceptually have an understanding, but they don't really know how to apply that concept into practice." *(Also see: Guidance on the safe usage of vials, p. 88.)*

For instance, Carrico notes that a health care worker in the ED may know that with a multi-dose vial you are never supposed to re-enter that vial with the same needle and syringe, but then they may work with a provider who continually re-enters a multi-dose vial for more lidocaine as he is stitching up a patient. "The health care worker may make a mental note to throw away the vial of lidocaine after the procedure, but then when the ED gets busy, he or she may not think about it, or more importantly, there may be an emphasis on cost-containment in the department," she says. "The worker may be thinking that he didn't see any blood in the syringe and conclude [incorrectly] that therefore the vial was not contaminated."

In a busy ED, it is easy to see how an incident of this nature could happen, observes Carrico. "With

the amount of activity that is occurring, people may not feel as though they have the time to do what they know is right, or they may make a judgment call that is based on poor information," she says.

There is no question that the chronic drug shortages health care organizations have been dealing with in recent years are exacerbating the problem of vial misuse, says Carrico. "There is a push to be aware of costs, but at the same time, health care organizations don't want [staff] to be sacrificing patient safety," she says. "Under these circumstances, people will make decisions that they think make sense."

It is well understood, for example, that there is always a little bit of over-fill in single-dose vials. "If you are supposed to give 0.5 mLs of a particular medication, in that single vial there is 0.55 or even 0.6 of medicine," explains Carrico. "People learn that and think if they are supposed to give this medicine to 10 different people, they can save 0.1 mLs from each of the vials, mix them together, and then they will have an additional dose."

People who engage in this type of unsafe practice think they are doing what they are supposed to do because they are saving money for the hospital, says Carrico. "They're trying to make sure that their technique is good with each one of those vials, but we know that all it takes is one misstep," she says.

The Joint Commission reports that such efforts to prevent waste and save money can easily backfire, resulting in adverse events that significantly drive up health care expenditures, harm patients, and generate litigation.

Public pressure to eliminate preservatives from injectable products has also contributed to the problem, says Carrico. "Unfortunately we have given weight to something where we have no data, and don't give weight to issues where we do have data. We don't have data about the harm of preservatives, but we do have data about the harm of contamination," she says.

## Observe practice first

What steps can hospital administrators take to eliminate the misuse of vials? First, you have to know what the actual practices are in your department, advises Carrico. "I would want to observe staff to see what people are actually doing," she says. "They may say that, yes, they understand [safe injection practices], and that they are doing things right all the time. In their minds, they may be, but I would want to see firsthand what the actual practices are."

Carrico recalls how simply observing how people practice in one health care setting enabled her to identify a major safety problem. "They would use a syringe on only one patient, but they would give the patient multiple injections with the same syringe," she says, explaining that this typically occurred in cases in which patients required regular injections of pain medication. "After a first injection, you should consider a syringe to be contaminated as well as the needle, but from their perspective, they were using it on the same patient … and they were saving money so everything was right."

It was clear from her observations that these health care workers needed to have a better understanding of what contamination is, and what appropriate technique is, explains Carrico. "You've got to be watching and observing … and then you develop your plan of action," she says. "Part of it is going to be driven by what people are actually doing, so know what the actual practice is and then learn about the culture within that setting."

Unsafe injection behaviors often seep into practice over time, explains Carrico. "A lot of nursing education occurs by what I call urban legend," she says. A nurse will explain to another nurse how she was taught, and then that nurse will tweak the practice a little bit to make it relevant, she says. "After a couple of generations of this, the message has changed."

It is a sign of the times that accrediting agencies like TJC continue to see problems with injection techniques, says Carrico. "It used to be that 80% of care was in a hospital. Now probably 20% of care is in the hospital, and we see that hospitals are purchasing management arrangements with group practices, and they have arrangements with long-term care facilities," she explains. "The oversight and responsibility for accredited facilities is expanding; therefore, the responsibilities they have and the interventions they develop need to be commensurate with those responsibilities."

The Sentinel Event Alert is just recognizing the expansion of services that is under the umbrella of an accredited facility, says Carrico. But it is also a wake-up call that the status quo will not suffice. "Despite everything we have been doing, we still keep getting examples of unsafe injection practices," she says. "We should know better, but somehow [unsafe behaviors] make their way into routine practice." ■

REFERENCE
1. Pugliese G, et al. Injection practices among clinicians in United States health care settings. *American Journal of Infection Control* 2010;38(10):789-797.

## SOURCES

• **Ruth Carrico**, PhD, RN, FSHEA, CIC, Associate Professor, Division of Infectious Diseases, University of Louisville School Medicine, Louisville, KY. E-mail: ruth.carrico@louisville.edu.

# Guidance on the safe use of vials

The Joint Commission (TJC) is calling on health care organizations to develop and implement policies and procedures to prevent the misuse of vials. The accrediting agency notes that such policies should address the following practices:

**Single-dose/single-use vials**

• Single-dose/single-use vials should be used on one patient during a single procedure and then discarded.

• In instances in which a single-dose/single-use vial must be entered into a single patient more than one time to achieve accurate titration, a new needle and syringe should be used.

• Leftover contents from single-dose/single-use vials should never be combined or pooled for later use.

• Unopened single-dose/single-use vials may be re-packaged into multiple syringes. These should be properly labeled with expiration dates and beyond-use dates. Such re-packaging should only be done by qualified personnel in appropriate air conditions.

• Vials should be stored according to manufacturer recommendations.

**Multiple-use vials**

• Only vials that are labeled by the manufacturer for multiple-dose use can be used more than a single time.

• Multiple-dose vials should only be used on a single patient to reduce the risk of contamination.

• When used more than one time, a new syringe and a new needle should be used for each entry.

• A vial's rubber septum should be disinfected with an approved antiseptic swab prior to piercing. Allow the septum to dry before inserting a needle or other device.

• Once a multiple-dose vial is punctured, assign a beyond-use date. For vials with antimicrobial preservatives, this should be 28 days unless otherwise specified by the manufacturer.

• Multiple-dose vials should be stored outside patient treatment areas, according to manufacturer recommendations.

**All vials**

• Dispose of any vials when sterility has been compromised or questioned. This includes unopened or unused vials.

• In purchasing and treatment decisions, select the smallest vial necessary to reduce waste.

• Call on manufacturers to produce appropriate-sized vials.

• Do regular quality checks to look for open vials. ■

**ADDITIONAL RESOURCES ON SAFE INJECTION PRACTICES**

• A position paper on safe injection practices by the Association for Professionals in Infection Control and Epidemiology: http://www.apic.org/Resource_/TinyMceFileManager/Position_Statements/AJIC_Safe_Injection0310.pdf.

• Guidance from the CDC on injection safety: www.cdc.gov/injectionsafety.

# Tele-mental health brings expert input to EPs, speeds treatment

*ED leverages existing tele-health infrastructure to help with influx of mental health patients*

Like many hospitals around the country, Mercy San Juan Medical Center in Carmichael, CA, has seen a steady increase in patients presenting to the ED with mental health problems. Officials attribute the problem to dwindling resources for mental health care and, in particular, the closing of an inpatient psychiatric unit in the region in 2009. Many of the patients who previously would have been stabilized in the inpatient unit are now showing up in the ED.

Until recently, these mental health patients would often sit and wait in the ED for as long as a week, in some cases, to receive definitive care. However, tak-

ing a page from the hospital's neurology department, which leverages telemedicine to bring expert guidance from a neurologist's home directly into the ED, many of these mental health patients are now being quickly linked to a psychiatrist who beams in from a remote location to speak with the patient and, when needed, to advise their emergency providers on appropriate treatment. The technology required for the remote sessions is contained on robots that can move from room to room in the ED.

Thus far, the approach has been well-received by patients, and providers welcome the expert input when they have patients with mental health problems. "We get to have physician-to-physician conversations immediately [after the patient encounter]," explains **Seth Thomas**, MD, FACEP, medical director of the ED. "I don't remember ever having that available to me at any other facility I have ever worked, so it is truly remarkable and it makes us feel a lot better about the care we are providing."

## Consider patient, ED needs

The ED at Mercy San Juan Medical Center sees about 73,000 patients per year, but it has been significantly impacted in recent years by an influx of patients requiring mental health care. "Our ED, at any given moment, could have 10 to 15 or more mental health patients on a hold in our department, and we saw no other way to give them definitive care except to wait," says Thomas. "We said that is unacceptable and we need to look at other ways of evaluating these patients and potentially starting treatment on them while they are in the department. We felt it was cruel and unusual to keep them in the department [for such long periods of time]."

With the technological capabilities already in place to carry out telemedicine visits, it made sense to apply the approach to psychiatry, given the needs of both patients and the ED. "This is a county that is extraordinarily impacted by the volume of mental health patients and the lack of resources," says Thomas. Consequently, in October of 2013, the ED began using what Thomas refers to as tele-mental health as an evaluation tool.

The hospital's partner in this approach is Aligned TeleHealth, an Agoura, CA-based company that specializes in linking hospitals and EDs to psychiatrists who are available on a 24/7 basis. The Dignity Health Telemedicine Network contracts with Aligned TeleHealth to make the psychiatrists available to Mercy San Juan Medical Center, which is one of the hospitals under the San Francisco, CA-based Dignity Health umbrella.

## Decide how to use the approach

The ED primarily uses tele-mental health with two groups of patients, explains Thomas. The biggest group is comprised of patients who present to the ED with a mental health complaint in which the physicians themselves don't feel comfortable initiating treatment without having the patient evaluated by a psychiatrist. Further, these patients may not meet the criteria for an inpatient stay.

For instance, Thomas explains that patients who come in saying they feel anxious or depressed, but are not suicidal, are the type of patients who stand to benefit from a tele-mental health visit because they can get started on a treatment and then pursue outpatient follow-up.

The second group targeted for tele-mental health visits includes patients who have been in the ED for an extended period of time, and it is clear that they will not be transported to an inpatient psychiatric facility any time soon, says Thomas.

## EXECUTIVE SUMMARY

Faced with rising demand from patients with mental health problems, Mercy San Juan Medical Center in Carmichael, CA, is using telemedicine to connect many of these patients with psychiatrists. With input from the psychiatrists, emergency physicians feel more comfortable initiating treatment for these patients, many of whom can then be discharged with instructions to pursue outpatient follow-up. Further, the expert consults help physicians determine whether patients who have been placed on involuntary holds require inpatient treatment or can be safely treated and discharged.

- The technology required for the remote sessions is contained on robots that can move from room to room in the ED.
- The ED targets two groups of patients for tele-mental health visits: patients who present with concerns that the emergency physicians do not feel comfortable treating without input from psychiatrists, and patients who have been in the ED for an extended period of time, and it is clear that they will not be transported to an inpatient psychiatric facility any time soon.
- Currently, 25%-30% of the mental health patients who present to the ED are being touched by the remote psychiatrists; however, administrators are looking to increase that percentage to 50%-75%. They are also interested in potentially conducting regular rounds of the mental health patients with the remote psychiatrists.

"We want to start treatment on them, so we will look to the [remote] psychiatrists to give us advice on what to start, and to do a formal consultation," he says. "They can then also do follow-up consultations [while the patients are still in the ED] to assess if the treatment is working, and whether the patients still meet the criteria for inpatient psychiatric consultation."

After a day or two of treatment, some of the patients improve to the point at which they can be released, adds Thomas. "That is a huge benefit to this. We are really reserving inpatient beds for those who really need them, as opposed to those who could be managed as well, if not better, in their home environment with outpatient visits to a psychiatrist or counselor," he says. "We are initiating care much sooner based on [the remote psychiatrist's] recommendations."

The need for psychiatric input has increased, in part, because more and more patients are being placed on involuntary holds, explains **Pei-Huey Nie**, MD, the regional medical director at Aligned TeleHealth. "Since the 1960s, with the whole deinstitutionalization of psychiatric patients and psychiatric facilities being closed, a lot of patients with chronic mental illness have been becoming homeless, put in jail, or they have come to the ED," says Nie. "I have been told that a major part of a hospital's budget is just holding these patients while they wait for a psychiatric bed, and that is extremely costly to the ED."

Nie adds that involuntary holds are often placed on patients by police officers. "Police do their best, but they are not mental health providers, so what happens is emergency physicians will ask us to weigh in," she says. "By state law [in California], a physician appointed by the hospital can discontinue these holds."

With expert guidance from the remote psychiatrists, emergency physicians can not only initiate appropriate treatment, but also direct patients to appropriate care more expeditiously, explains Nie. "The ED physicians can ask us at any time to [evaluate] a patient and see if we really need to maintain the involuntary hold and wait for an inpatient hospital bed," she says. "Emergency physicians like to have the backing of a psychiatrist, so we will beam in, we will assess the situation, someone will read the 'hold' to us, and then we will advise that yes, we think the patient should be hospitalized, or no, this patient does not meet the criteria, which suggests follow-up in a clinic or [a disposition of that nature]."

## Establish a comfort level

While the hospital has not yet tabulated specific results from the intervention, Thomas believes that the length-of-stay (LOS) for patients who undergo tele-mental health evaluations and are released has decreased. "Every time I have used tele-mental health I know the LOS of those patients, particularly if they are discharged, is much improved," he says.

Unfortunately, since Mercy San Juan Medical Center began offering the tele-mental health visits, the number of mental health patients presenting to the ED for care has continued to increase. "I don't know if that is because we are offering the service or if it is related to county-wide issues and resources becoming scarcer, but I suspect it is the latter," says Thomas.

However, Thomas says the ED is providing better care with treatment for mental health patients being initiated earlier and earlier. "Probably the biggest benefit of all of this is that we are allowing individuals who may not have mental health disorders or complaints to receive treatment more quickly," he says. "We are really trying to better utilize our resources here."

At first, Thomas acknowledges that there was some pushback to the intervention from nurses who were concerned that a mental evaluation via a remote psychiatrist would not be effective, especially in cases in which a patient was psychotic, but she says such concerns have mostly gone by the wayside as both clinicians and patients have gotten comfortable with the technology. "Patients interact with [the computer screen] as well, if not better than an in-person individual," notes Thomas. "I have not yet had a patient who refuses to talk to the robot. It is actually very personal, and there is a phone handset on it for privacy so [others] cannot hear any of the conversation at all."

Nie acknowledges that she has encountered a handful of patients who do not respond well to communicating via video screen. "In these cases, I invite them to use the telephone … and I think that makes people feel a little bit more comfortable," she says. "Usually the people who are uncomfortable are older in age or paranoid, but there are some good stories too. Pediatric patients — patients as young as 8 — I have found do extremely well with it."

Nie stresses that both the provider and the patient need to be comfortable communicating remotely for the visits to be successful. "If the pro-

vider, like myself, is comfortable interacting in this way, that will translate across the screen, and if the patient is comfortable engaging in this way, and willing to open up to someone on the screen, it can work perfectly. It is really just a matter of getting both parties interested and comfortable with it."

### Look at costs, benefits

Thomas believes a tele-mental health solution could fit many EDs that are struggling with an influx of patients with mental health needs, but there are many factors to consider. "Look at your needs first and determine if this is an area where you feel you are struggling to care for these patients," he says. "What is your LOS and what is your volume?"

Administrators should also look at what resources they already have available to them, adds Thomas. "Do you have psychiatrists on the medical staff? Do you have social workers or trained mental health workers who can assess these patients and help you with your needs?" he says. "If you feel as though those internal resources are not enough, then this could be a definite possibility."

However, organizations also need to take a close look at whether this type of intervention is going to be a cost-saving measure or not. "By initiating the tele-mental health coverage, we are finding that the cost has actually decreased," says Thomas. "We have mental health workers who come from the county to assess patients, but the cost of those individuals is relatively high compared to tele-mental health consultations by psychiatrists, so that is one benefit. But we also find that when we decrease the LOS of these individuals, we are opening up resources and utilizing nurses and security guards for other purposes."

When calculating costs, be sure to consider what the expenditures associated with boarding mental health patients in your department are, and whether such practices are preventing other patients from coming into the ED, advises Thomas. Also, consider what providers in your region offer tele-mental health, what credentialing would be involved, and what the technology requirements would be, he says.

Mercy San Juan Medical Center is part of Dignity Health's telehealth network, so there was already an infrastructure in place to manage the tele-mental health visits, but the technical hurdles for some organizations could be much higher.

Nie adds that ED administrators who are considering the use of tele-mental health should identify a private space they can use for the patient-psychiatrist encounters. "Emergency departments can be very tight on space, but if this is something administrators are considering, a dedicated corner or room would be very helpful logistically," she says. "There should be privacy."

The approach has worked well enough at Mercy San Juan Medical Center that Thomas is interested in further ramping up the use of tele-mental health in the ED. "Right now, 25%-30% of our mental health patients are being touched by the tele-mental health psychiatrists," he says. "Maybe we need to look at [using tele-mental health with] 50% or 75% of those patients, and potentially doing regular rounds."

For instance, once a day, or perhaps on days when the ED is particularly impacted by mental health patients, Thomas envisions going through all of the mental health patients with the remote psychiatrists to evaluate whether there are opportunities to discharge some of the patients, or perhaps alter treatment or arrange follow-up. "I think the psychiatrists would be very receptive to that, and I would be interested in seeing how that could help us in the long run," says Thomas. "That might be our next big step." ■

## SOURCES


• **Pei-Huey Nie**, MD, Regional Medical Director, Aligned TeleHealth, Agoura, CA. Phone: 844-496-9160.
• **Seth Thomas**, MD, FACEP, ED Medical Director, Mercy San Juan Medical Center, Carmichael, CA. E-mail: seththomas@cep.com.


# ED-based pharmacists make a big dent in medication errors

*Gather data to make the case for on-site pharmacists, guide program development*

Medication errors have long been one of the more difficult safety challenges facing hospitals, but they are particularly vexing in young patients. "You would think that you would order a medication as a physician and the risks of you making a mistake would be fairly low, but in

pediatrics it is fairly complex because every child weighs a different amount, and all of the 12-hour medications are based upon [a child's] weight," explains **Rustin Morse**, MD, the chief quality officer and vice president of quality at Children's Medical Center (CMC) in Dallas, TX. Morse, who is also a practicing emergency physician at CMC, adds that prescribing becomes even more complex when young patients have multiple underlying diseases and are taking multiple medications.

The result of all these factors combined is that hospital-based medication errors are three times more likely to occur in pediatric patients than in adult patients, according to research.[1] And the emergency setting is hardly immune to such problems, with its fast pace and pressure-cooker atmosphere. However, hospital administrators do not need to settle for such dismal statistics. For instance, by integrating specially trained pharmacists into the workflow of the ED, CMC has been able to bring medication errors from an average of 8% down to less than 1%.

In fact, the intervention works so well that today CMC has 10 full-time pharmacists working in the ED. The pharmacists are available to providers 24/7, and they review every medication ordered in real time to ensure that errors are caught before a medication reaches a patient. And hospital administrators see no reason why such an approach can't work equally well for other large pediatric EDs.

## EXECUTIVE SUMMARY

When Children's Medical Center in Dallas, TX, decided to place specially trained pharmacists on site in the ED around the clock, medication errors went from 8% to less than 1%. The pharmacists review every order that is written before a medication ever reaches a patient, and they are on hand to provide guidance to physicians, nurses, and patients in real time. Their input is clearly valued: Administrators estimate that when pharmacists suggest a change to a provider's medication decision, that suggestion is adopted 75%-90% of the time.

- According to research, hospital medication errors are three times more likely to occur in pediatric populations than adults.
- Children's Medical Center employs 10 on-site pharmacists in the ED with 24/7 coverage.
- Pharmacists are part of the care team for all of the critical care patients who come through the ED, and they are available to provide guidance to providers and nurses on medication-related issues.
- At times, nurses call on the pharmacists to speak with patients or families about their medications — especially in cases with complicated medication regimens.

## Investigate errors

The idea of having pharmacists present in the ED was first seriously considered at CMC in 2001, explains **Brenda Darling**, RpH, PharmD, the organization's clinical pharmacy manager. "At the time, Children's had a lot of pharmacists in other areas of the hospital like the NICU [neonatal intensive care unit] and all the different specialty floors … but we did not have any pharmacy presence at all in the ED," she says.

The problem with this arrangement was that by the time medication orders made it from the ED to the hospital's central pharmacy for review, it was often too late to prevent an error from reaching a patient. "The nurse would have already pulled the drug [from an automatic dispenser] and given it to the patient prior to the order being reviewed by a pharmacist," explains Darling.

Recognizing that there were opportunities for improvement in the medication error rate, investigators from the pharmacy department spent some time in the ED observing medication orders and noting the different types of errors that would occur. "We brought the information back and presented it to both the pharmacy department and the emergency management department … and it was determined that yes, a pharmacy presence was needed in the ED." *(Also see: "Study: Emergency providers still prescribing codeine for children, despite evidence of potentially harmful effects," p. 94.)*

At this point, pharmacy representatives huddled with ED leaders to map out how to add pharmacists into the workflow of the ED. "From the beginning, our service was designed to be purely clinical, very hands on, and very integrated," says Darling. "It was not pharmacy-driven. It was truly the medical director of the ED who presented the idea to the board and said that we needed pharmacists in the ED 24 hours a day, seven days a week."

## Make pharmacists part of the team

With the model now fully implemented, the pharmacist is engaged right from the inception of a case, notes Darling. "If we get a telephone call, indicating that we have a critical care patient coming, then the pharmacist will get information on the mechanism of the injury, the estimated age of the patient, and then [he or she] will start thinking what medications are needed back in the critical care room," she says.

While pharmacists are part of the care team

for all of the critical care patients who come through the ED, the ED-based pharmacists are also available to provide guidance to providers on medication issues, and, at times, nurses call on the pharmacists to speak with patients or families about their medications, especially in cases in which a complicated regimen is involved, observes Darling. "We also make recommendations to providers when they are looking at treatment options or when they are looking at what labs need to be ordered on a patient," says Darling

In addition to these responsibilities, Darling notes that a pharmacist reviews all medications ordered in the ED and all prescriptions written as part of a discharge instruction from the ED.

## Don't tolerate pushback

The pharmacist's active role in caring for patients in the ED takes some providers who are not used to this type of model by surprise, at least initially. "I came from an organization that did not have robust pharmacy involvement in the ED … so it was an eye-opening experience to come to Children's here in Dallas and see how this interaction plays out. It was incredibly comforting as well," recalls Morse, who has been working at CMC for two years.

"We are a large academic medical center, so we have residents who provide care, and sometimes residents make mistakes when they are prescribing medicines, either as a prescription or internally here in the hospital," adds Morse. "And frankly, despite practicing for well over 15 years, I too make errors in ordering medications, so the benefit of having a pharmacist review every single order in real time, and every prescription before it leaves our organization is tremendously helpful from a patient safety standpoint."

Further, Morse stresses that on-site pharmacists do much more than just review medication orders. "They are actually reviewing patient charts, reviewing their past histories, and reviewing medications patients have received in the past, as well as their allergies," he says. "They are a fundamental and integral part of our team where they fully know the patient's history as well as any other provider on the team, and they are playing a role in looking at [the case] from the perspective of the medications and interactions."

**Stephanie Weightman**, RpH, PharmD, BCPS, an emergency services clinical pharmacist, observes that while she hasn't experienced any pushback from providers, she acknowledges that it is not unusual for new residents to be caught slightly off-guard when she approaches them and starts asking questions about a case. "Throughout the rotation, they start to realize how valuable we can be and how we are here to help," she says. "By the end of their rotation … they are always very grateful, and it is a really nice transition to see."

Morse adds that pushback would never be tolerated by the organization. "From an ED perspective, patient safety is our top priority, and health care is a team sport," he says. "If someone ever has a concern about the safety of a patient and is performing their role to intervene to make sure we are providing high quality, safe care, that is fully supported by the organization."

In Morse's experience, input from the on-site pharmacists has not only always been welcome, but also generally acted upon. "I would say probably 75%-90% of the time, their intervention results in a change in the medication order," he says.

## Nurture a trusting relationship

The on-site pharmacists can, in fact, add value in a multitude of ways. For instance, Morse recalls one recent discussion with Darling about intravenous fluids he had ordered for a patient. "She asked if I was sure that I wanted the IV fluids, and did it have to be the [specific IV fluids] that I ordered," he says, noting that he gave her a puzzled look at the question. Darling then explained that there was a national shortage of the IV fluids, and suggested an alternative that would be equally efficacious for the patient, notes Morse.

In another case, Morse recalls that a pharmacist asked whether he would like to order a pain medication for a critically ill patient who was being sedated for a procedure. "He thought it might be a good idea to have a pain medication on board, and frankly, I had not thought of it from that perspective. It was an excellent suggestion, and I added a pain medication for that patient," says Morse.

In other cases, pharmacists have pointed out cases in which medications can be given orally rather than via IV, resulting in less expense without compromising efficacy, and they have commonly recommended dosing strategies for antibiotics that are more palatable for patients, but still effective, adds Morse.

"We also sometimes suggest better or more narrow antibiotic therapies to help maintain antimicrobial stewardship, and to help decrease potential resistance out in the community," says Weightman.

"We have helped to tailor medications to optimize intubation in critically ill patients, and also to optimize vasopressure therapy for patients who may have low blood pressure."

For pediatrics, being on site in the ED offers important advantages, stresses Darling. "When we look at a medication order, we consider a patient's age, their gender, and we also look at the weight," she says. However, in cases in which pharmacists may question a patient's weight, they have the ability walk right over to the patient's room and physically look at the patient and have a discussion in real time with the patient's providers. "[The model] ED enables us to have very open dialog and trust with the providers and our nursing staff," adds Darling.

Morse concurs, noting that it makes a difference that the pharmacists are working side-by-side with the providers every day. Further, he states that while there is a cost to staffing an ED with specially trained pharmacists around the clock, the gains in patient safety are very important.

"I would much rather have a pediatric pharmacist who only specializes in looking at pediatric medications review my prescriptions prior to discharge than hope that a pharmacist at a local pharmacy will be familiar with how we dose immunosuppressants in a child with cancer," says Morse. "The safety aspects of this far outweigh the costs, and, therefore, it gives us great comfort in knowing that we are doing everything we can to keep our patients safe."

### Visit other programs

For others interested in implementing a pharmacy program similar to what CMC has in place in the ED, Darling stresses that it is important to first gather data regarding when and why medication errors occur so you can effectively make your case to higher-ups. "You really need to be aware of the needs of your department before you can design your program, and it needs to be multidisciplinary because medicine is multidisciplinary," she says. "You can't forget that your customer is not only the patient, but also [medical professionals from] the other departments that you work with."

Darling also advises ED and pharmacy leaders to visit hospitals that already have on-site pharmacists in the ED. "We have spoken with pharmacists who work in the ED at a lot of other hospitals, and we have also had them come visit us to observe how we do our practice," she says. "We are very open to answering questions, sharing what has worked well for us, and what has not worked well." ■

REFERENCE
1. Kaushal R, et al. Medication errors and adverse drug events in pediatric inpatients. *JAMA* 2001;285:2114-2120.

## SOURCES

• **Brenda Darling**, RpH, PharmD, Clinical Pharmacy Manager, Children's Medical Center, Dallas, TX. Phone: 214-456-2879.
• **Rustin Morse**, MD, Chief Quality Officer, Vice President of Quality, and Emergency Physician, Children's Medical Center, Dallas, TX. E-mail: rustin.morse@utsouthwestern.edu.
• **Stephanie Weightman**, RpH, PharmD, BCPS, Clinical Pharmacist, Emergency Services, Children's Medical Center, Dallas, TX. E-mail: stephanie.weightman@childrens.com.

# Kids still getting codeine despite harmful effects

Even though research suggests that codeine should generally not be given to children, plenty of emergency providers are still prescribing the drug to pediatric patients, according to a new study in the journal *Pediatrics*.[1] According to a serial cross-sectional analysis of ED visits for children aged 3 to 17, culled from the National Hospital and Ambulatory Medical Care Survey, prescriptions for codeine declined only slightly, from 3.7% to 2.9%, between 2001 and 2010. This is despite recommendations by several national and international organizations advising providers to opt for safer alternatives rather than codeine in children.

### COMING IN FUTURE MONTHS

- An early report card on the ACA, impact on emergency care
- Identifying delirium in the ED
- ED-based end-of-life care discussions
- A lean-transformation in emergency care

For instance, the American Academy of Pediatrics issued guidelines in 1997 and 2006 warning of potentially harmful effects from codeine in children. The guidelines also pointed out the drug's lack of documented effectiveness in treating coughs and colds in young people. Similarly, the American College of Chest Physicians released guidelines in 2006, advising against the use of codeine in children.

Interestingly, while prescriptions for codeine in children declined slightly during the study period, they did not decline for use in the case of cough or upper respiratory infections. The authors, led by **Sunitha Kaiser**, MD, an assistant clinical professor of pediatrics at the University of California, San Francisco, Benioff Children's Hospital, say the findings underscore the need for solutions to change provider prescription behaviors. They suggest alternatives to codeine, such as ibuprofen and hydrocodone, are better options for children who present with a cough or cold.

The problem with codeine is that because of variability in the way children process the drug, roughly one-third receive no benefit from the drug. Further, a small percentage of children taking codeine can accumulate toxic amounts of the drug, causing their breathing to slow down, and potentially causing serious consequences, including death.

In their analysis of the data, the authors found that codeine prescriptions tended to be higher in children aged 8 to 12, and in regions outside of the Northeast. Prescriptions of the drug were lower for non-Hispanic black children and for children on Medicaid. The authors suggest more research is needed to figure out the reasons behind these figures so that codeine prescriptions can be further reduced in children.

In response to the guidance against the use of codeine in children, some pediatric hospitals have removed the drug from their formularies while others have taken strong steps to curb its use. For instance, ED-based clinical pharmacists at Children's Medical Center (CMC) in Dallas, TX, speak with any provider in the department who writes a prescription for codeine. "We let them know about the potential risks and benefits and suggest another alternative therapy that may be just as efficacious for pain control, but has a better safety profile for the patient," explains **Stephanie Weightman**, RpH, PharmD, BCPS, a clinical pharmacist in the ED. "Most of the time we are able to make that appropriate switch in therapy for the patient."

Study authors note hospital administrators might also want to consider beefing up decision support mechanisms within their electronic medical records so that prescribers are alerted to the potential risks associated with codeine in children, and they would also like to see insurance companies change their reimbursement policies with respect to codeine. ■


REFERENCE

1. Kaiser S, Asteria-Penaloza R, Vittinghoff E, et al. National patterns of codeine prescriptions for children in the emergency department. *Pediatrics* 2014;133:e1139-e1147.


## CNE/CME INSTRUCTIONS

**HERE ARE THE STEPS YOU NEED TO TAKE TO EARN CREDIT FOR THIS ACTIVITY:**

1. Read and study the activity, using the provided references for further research.
2. Scan the QR code below, or log on to **www.cmecity.com** to take a post-test; tests can be taken after each issue or collectively at the end of the semester. *First-time users will have to register on the site using the 8-digit subscriber number printed on their mailing label, invoice, or renewal notice.*
3. Pass the online tests with a score of 100%; you will be allowed to answer the questions as many times as needed to achieve a score of 100%.
4. After successfully completing the last test of the semester, your browser will be automatically directed to the activity evaluation form, which you will submit online.
5. Once the evaluation is received, a credit letter will be sent to you. ■

## CNE/CME OBJECTIVES

1. Apply new information about various approaches to ED management.
2. Discuss how developments in the regulatory arena apply to the ED setting.
3. Implement managerial procedures suggested by your peers in the publication. ■

# CNE/CME QUESTIONS

1. **Ruth Carrico**, PhD, RN, FSHEA, CIC, states that vial misuse can often be traced to:
A. a poor understanding of safe injection practices
B. faulty technique
C. inadequate staffing
D. poorly written policies

2. Carrico also states that exacerbating the problem of vial misuse are:
A. staff vacancies
B. hospital bureaucracies
C. chronic drug shortages
D. unclear regulations

3. **Seth Thomas**, MD, FACEP, states that the ED primarily uses tele-mental health with respect to two groups of patients: patients with a mental health complaint that physicians don't feel comfortable treating without psychiatric input and:
A. schizophrenic patients
B. patients who have been in the ED for an extended period of time and will not soon be transported to an inpatient facility
C. patients with addiction problems
D. patients with symptoms of anxiety and/or depression

4. According to **Pei-Huey Nie**, MD, the need for psychiatric input in the ED has increased, in part, because more and more patients:
A. are being placed on involuntary holds
B. have psychological problems
C. have complicated needs
D. use the ED for primary care

5. **Rustin Morse**, MD, estimates that when an on-site pharmacist in the ED makes a recommendation to a provider, that recommendation results in a change in the provider's medication order what percentage of the time?
A. 10% to 20%
B. 25% to 30%
C. 50% to 60%
D. 75% to 90%

6. **Brenda Darling**, RpH, PharmD, advises other hospitals interested in establishing on-site pharmacists in their ED to:
A. establish a team to investigate the intervention
B. consider whether such an intervention would be well-received by emergency providers
C. visit other hospitals with ED-based pharmacy programs
D. make a list of pros and cons