American Journal of Emergency Medicine 37 (2019) 2111–2117

Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/ajem

Correspondence

Ultrasonography utilization in forearm fractures at the emergency department

Dear editor,

We have read the article by Auten et al. [1] published in American Journal of Emergency Medicine. In this article, it is concluded that ultrasonography accurately predicts adequacy of reduction with a high concordance between emergency medicine and radiology interpretations of post-reduction images.

In our experience, ultrasonography is a reliable method to determinate fracture focus location and ease the administration of local anesthesia. We have also utilized this technique for fracture post-reduction control. However, due to interobserver variability, its application in clinical routine in the emergency department may be initially limited. Due to this, we believe that not only the availability of both diagnostic tests must be taken into account, but also the existence of trained personnel on its utilization. Otherwise, extrapolation of the results obtained in this study may be limited when trying to establish this diagnostic-therapeutic protocol in all emergency services.

Even so, we totally agree with the authors that the implementation of ultrasonography utilization can be useful in cases in which fluoroscopy is not available, or even relegating fluoroscopy to a second plane, with the aim of reducing X-ray irradiation to the patient and the health-care personnel.

Funding

Authors disclose no funding.

Declaration of Competing Interest

Authors declare no conflict of interest.

References

[1] Auten JD, Naheedy JH, Hurst ND, Pennock AT, Hollenbach KA, Kanegaye JT. Comparison of pediatric post-reduction fluoroscopic- and ultrasound forearm fracture images. Am J Emerg Med 2019 May;37(5):832–8.

Alberto Sánchez-García MD
Plastic and Reconstructive Surgery Department, University and Polytechnic Hospital La Fe. Avenida Fernando Abril Martorell, 106, 46026 Valencia, Spain
Corresponding author at: Antonio Sacramento 11. Valencia, Comunidad Valenciana 46013, Spain.
E-mail address: asgarcia1992@hotmail.com

Enrique Salmerón-González MD
Elena García-Vilariño MD
Nieves Vanaclocha MD

Plastic and Reconstructive Surgery Department, University and Polytechnic Hospital La Fe. Avenida Fernando Abril Martorell, 106, 46026 Valencia, Spain

Alfonso Valverde-Navarro Ph.D
Department of Human Anatomy and Embriology, University of Valencia, Valencia. Avenida Blasco Ibáñez, 13, 46010 Valencia, Spain

4 May 2019

https://doi.org/10.1016/j.ajem.2019.06.016

What do I do with this stuff now? Drug retention and disposal practices among ED patients

Misuse of opioids (e.g., the “opioid epidemic”) and antibiotics (e.g., the “antibiotic resistance crisis”) has become priority public health concerns. Opioid overdose has increased approximately three fold since 2000 [1]. Many opioid prescriptions are not being used as directed and proper disposal methods are frequently not being used, resulting in patient and household risk [2]. With regard to antibiotics, the CDC approximates that 2 million people/year become sick with antibiotic resistant ailments in the U.S. [3]. Like opioids, antibiotics are often used improperly by patients who have stored the “excess” medication and are self-medicating a subsequent illness. Disposal of antibiotics has also become of concern, as flushing down the toilet (a popular disposal technique) results in antibiotics in water supplies and the development of antibiotic resistant bacteria [4,5]. Identification of patients likely to store prescriptions after their needed use or improperly dispose of medications is imperative for subsequent intervention.

The study was approved by the Research Subjects Review Board at the University of Rochester Medical Center. A convenience sample of adults 18–89 years old who presented to the ED at University of Rochester Medical Center from 11/18 to 12/18 was enrolled. Patients were excluded if 1) in the psychiatric ED; 2) presenting with chief complaints of intoxication, suicide, mental health arrest or overdose; 3) in the critical care bay or; 4) failed to demonstrate decisional capacity. Eligible patients were approached by a member of the University of Rochester Medical Center Emergency Department Research Associates program who administered consent and a self-report questionnaire including demographics and information on drug disposal and holding patterns [6].

A total of 178 patients (55% Men; 74% White, 20% Black; 7% Hispanic; 64% > High School degree; 55% private insurance, 29% Medicaid, 27% Medicare) were surveyed. The average patient age was 50 years (SD = 19).

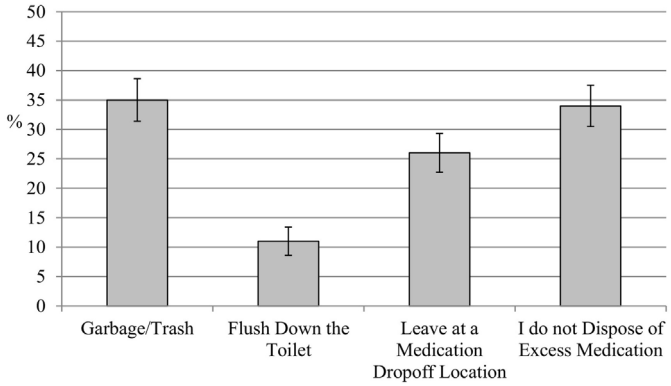

Fig. 1. Methods of medication disposal (N = 178).Error bars represent one standard error above and below observed percentage.

Sixty patients reported they do not dispose of excess medication (see Fig. 1). The most common disposal method was throwing away, with 26% of these individuals reporting they placed medications in ground coffee beans or kitty litter prior to throwing away (recommended for many medications by the FDA). The majority of patients (115; 65%) did not know where the nearest drug drop off location was, though most were willing to use one of these locations (99; 68%). Willingness was a function of distance though, as 57% would travel ≤5 miles and only 14% would travel >10 miles.

More than 1 in 3 reported not finishing an opioid prescription as intended (n = 61), and 1 in 5 currently had excess opioids in the home (n = 34). Of those with excess opioids, 38% report retention for later use. More than 1 in 4 patients reported not finishing an antibiotic prescription as intended (n = 48), and 1 in 7 currently had excess antibiotics in the home (n = 25). Among individuals with excess antibiotics, 40% report retention for later use. A total of 39 patients (23%) flushed antibiotics down the toilet. Rates of medication use for a reason other than prescribed were higher for antibiotics (13%) than for opioids (8%).

Individuals on Medicare were more likely to flush medications ($r = 0.19$, $p = 0.014$), particularly antibiotics ($r = 0.25$, $p = 0.001$). Individuals without insurance were more likely to retain medications than insured individuals ($r = 0.18$, $p = 0.014$). White and older patients were more likely to have excess opioids than non-White and younger individuals ($r = 0.26$, $p = 0.001$; $r = 0.26$, $p < 0.001$).

This study demonstrated significant excess medication retention and improper disposal among ED patients. Proper medication disposal techniques are available (detailed by the FDA [7]), but ED patients are often unaware of these techniques, use techniques with potential negative outcomes, and/or retain unused medications. Retention holds particular risk, as medications can be misused by others in the house (e.g., partners, children) or, in the case of antibiotics, used later ineffectively, leading to antibiotic resistance. Our study, importantly, shows ED patients are willing to use proper disposal techniques, but many lack the requisite knowledge.

Potential avenues for intervention include editing ED after-visit summaries to discuss what to do with excess medication, whether due to non-adherence or by design. Many of these documents are lengthy and actionable information can be difficult to identify by ED patients [8]. More user-friendly after-visit summaries may decrease the problem of improper retention and disposal.

There are some limitations to this work. The current study did not ask about how often patients had been prescribed opioids and/or antibiotics. This study also excluded subsets of the ED population for whom medication retention and disposal practices may be particularly relevant (e.g., presenting for intoxication, suicide, or overdose).

In summary, ED providers represent prominent opioid and antibiotic stewards, and multiple approaches to limiting misuse are necessary to ensure patient medication safety and effectiveness. Our study highlights deficiencies that exist among ED patients with regard to appropriate disposal of excess medication that can be addressed in subsequent interventions. Successful ED efforts could be adopted across inpatient, outpatient, and pharmacy units.

Declaration of Competing Interest

AH, CCA, MK, KC, BA report no conflicts of interest.

Ashley Holub MA
University of Rochester Medical Center, 265 Crittenden Blvd, Box 655c, Rochester, NY 14620, United States of America

Caitlin C. Abar PhD
The College at Brockport, Department of Psychology, 350 New Campus Dr., Brockport, NY 14420, United States of America

Michael Kamali MD
Kenneth Conner PsyD, MPH
Beau Abar PhD *
University of Rochester Medical Center, 265 Crittenden Blvd, Box 655c, Rochester, NY 14620, United States of America
* Corresponding author at: University of Rochester Medical Center, 265 Crittenden Blvd, Box 655C, Rochester, NY 14620, United States of America.
E-mail address: beau_abar@urmc.rochester.edu (B. Abar)

24 July 2018

https://doi.org/10.1016/j.ajem.2019.06.030

References

[1] Rudd RA, Aleshire N, Zibbell JE, Matthew Gladden R. Increases in drug and opioid overdose deaths—United States, 2000–2014. Am J Transplant 2016;16(4):1323–7.
[2] Reddy A, de la Cruz M, Rodriguez EM, et al. Patterns of storage, use, and disposal of opioids among cancer outpatients. Oncologist 2014;19(7):780–5.
[3] Hampton T. Report reveals scope of US antibiotic resistance threat. Jama 2013;310(16):1661–3.
[4] Law AV, Sakharkar P, Zargarzadeh A, et al. Taking stock of medication wastage: unused medications in US households. Res Social Adm Pharm 2015;11(4):571–8.
[5] Kotchen M, Kallaos J, Wheeler K, Wong C, Zahller M. Pharmaceuticals in wastewater: behavior, preferences, and willingness to pay for a disposal program. J Environ Manage 2009;90(3):1476–82.
[6] Al-Shareef F, El-Asrar SA, Al-Bakr L, et al. Investigating the disposal of expired and unused medication in Riyadh, Saudi Arabia: a cross-sectional study. Int J Clin Pharmacol 2016;38(4):822–8.
[7] U.S. Department of Health and Human Services FaDA. Disposal of unused medicines: what you should know, https://www.fda.gov/drugs/resourcesforyou/consumers/buyingusingmedicinesafely/ensuringsafeuseofmedicine/safedisposalofmedicines/ucm186187.htm, ; 2018.
[8] Engel KG, Heisler M, Smith DM, Robinson CH, Forman JH, Ubel PA. Patient comprehension of emergency department care and instructions: are patients aware of when they do not understand? Ann Emerg Med 2009;53(4):454–61 [e415].