Farmaceutski fakultet Univerzitet Crne Gore

Klinička farmacija

Vježba II

Jadranka Orović
Email: jadranka.o94@gmail.com

Greške u medikamentoznoj terapiji

- Svaki dogadjaj koji se može izbjeći, a koji može izazvati neadekvatnu primjenu lijeka i tako ugroziti zdravlje pacijenta, dok je primjena lijeka pod kontrolom zdravstvenih radnika ili pacijenta.

- Ti događaji su povezani sa stručnim radom zdravstvenih profesionalaca, samim proizvodima - ljekovima i nastaju u toku propisivanja lijeka, tokom komunikacije zdravstvenog osoblja sa pacijentom, tokom označavanja pakovanja lijeka, same pripreme, izdavanja i upotrebe lijeka.

Medikamentozne greške

- Pogrešan lijek
- Pravi lijek, sa pogrešnom dozom, načinom uzimanja ili u pogrešno vrijeme
- Pravi lijek, ali koji sa drugim ljekovima ili hranom ima štetne efekte
- Lijek uzrokuje neželjene efekte

J Community Hosp Intern Med Perspect. 2016; 6(4): 10.3402/jchimp.v6.31758. PMCID: PMC5016741
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The alarming reality of medication error: a patient case and review of Pennsylvania and National data

Brianna A. da Silva, MD* and Mahesh Krishnamurthy, MD, FACP, SFHM

Author information ► Article notes ► Copyright and License information ► Disclaimer

- A recently widowed 71-year-old female was hospitalized for uncontrolled hypertension and acute kidney injury. Past medical history was significant for coronary artery disease with bypass grafting, heart failure with preserved ejection fraction, hypertension, and type 2 diabetes mellitus. During the hospitalization, she received temporary hemodialysis, her anti-hypertensive medications were adjusted, and she clinically improved. At the time of discharge, her prescription medications included amlodipine (*Norvasc*) 10 mg twice daily (with two refills), metoprolol 50 mg twice daily, doxazosin 2 mg daily, and torsemide 30 mg daily.
- Over the next 3 months, she experienced worsening fatigue, slow movements, lethargy, personality changes, and a 'stoic' facial expression, as noted in her medical records. Her blood pressure was not optimally controlled. During her admission, she encountered multiple specialists and ancillary staff. As an outpatient, she was seen by her family physician twice. After several weeks, she was eventually diagnosed with anxiety and depression for which she was prescribed citalopram and alprazolam.
- Thereafter, the patient presented for the third time to our emergency room after a fall with light-headedness and poor ambulation. She demonstrated a shuffling gait, blank facies, and bradykinesia. Laboratory work was notable for an elevated creatinine. Admission medication reconciliation (MED REC) revealed that she was taking metoprolol, doxazosin, alprazolam, citalopram, and thiothixene (*Navane*) 10 mg twice daily.
- Upon review of her pill bottles, it was found that her outpatient pharmacy accidentally dispensed *Navane* (an antipsychotic) instead of *Norvasc*, and she dutifully took this medication for 3 months. The written prescription was deemed legible. A diagnosis of thiothixene-related drug-induced Parkinsonism was made. Thiothixene was discontinued and her clinical status improved.

Pravi lijek, sa pogrešnom dozom, načinom uzimanja ili u pogrešno vrijeme

https://www.ncbi.nlm.nih.gov/pubmed/28492168

Arch Pediatr. 2016 Dec;23(12):1251-1253. doi: 10.1016/j.arcped.2016.09.008. Epub 2016 Oct 27.

Accidental intravenous administration of paracetamol syrup in a child.

El Mazloum D[1], Boner A[2], Pietrobelli A[2].

Author information

Abstract

OBJECTIVE AND IMPORTANCE: Medication administration errors occur frequently in clinical practice.

CLINICAL PRESENTATION: An 18-month-old child presented with vomiting and diarrhea. Due to a rise in temperature, paracetamol syrup was prescribed, but a nurse inadvertently administered the drug IV through the peripheral venous access.

INTERVENTION: The child was referred to the pediatric intensive care unit where his clinical condition improved and the risk of peripheral venous and pulmonary embolism was excluded.

CONCLUSION: The use of specific oral syringes should become a standard of practice in every healthcare organization and more supervision of new nurse graduates is necessary. Also, attention to the relationship with parents should be guaranteed because the communication of medical errors is a highly challenging aspect of these errors.

Medikamentozne greške - ljekar

- dupliranje ljekova
- neprecizna uputstva o načinu uzimanja lijeka- neadekvatno uzeta anamneza o ljekovima koje bolesnik uzima ili je uzimao
- neadekvatno doziranje s obzirom na starost
- nedostatak plana nadziranja terapije

Dupliranje ljekova

Drug Saf Case Rep. 2015 Dec; 2(1): 5.
Published online 2015 Jun 9. doi: 10.1007/s40800-015-0007-3
PMCID: PMC5005698
PMID: 27747717

Warfarin and Rivaroxaban Duplication: A Case Report and Medication Error Analysis

Julie A. Fusco,[1] Eric J. Paulus,[2] Alexandra R. Shubat,[3] and Sharminara Miah[3]

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- **Warfarin and Xarelto duplication[5]**
  Coumadin (warfarin) and Xarelto (rivaroxaban) are anticoagulants used to reduce the risk of stroke and embolism in patients with atrial fibrillation and for prophylaxis of deep vein thrombosis (DVT). A case report was recently published documenting a patient who unintentionally received both medications concurrently.

  The case involves a 62-year-old man who was referred to a pharmacist-managed anticoagulation clinic for follow-up post bilateral pulmonary embolism. The patient was advised to continue on the warfarin he initiated in the hospital at a dose of 5 mg daily and return the following week for a repeat INR test. At next visit, his INR was revealed to be over 8.0. He denied taking any extra warfarin doses, recent alcohol intake, or new prescription medications. No symptoms of bruising or bleeding were noted. Upon further questioning, the patient reported starting a new medication 5 days earlier from his retail pharmacy which the clinic determined to be Xarelto 20 mg.

  Investigation into the issue revealed that a prescription for Xarelto had been sent to his retail pharmacy to inquire about the cost of the medication with his insurance plan. The retail pharmacy then placed the medication on hold rather than discontinue the order entirely like the clinic staff had requested. When he visited his retail pharmacy the next day, they filled and dispensed the medication. The patient had not been counseled and assumed it was a new medication for his neuropathy. The Xarelto was subsequently discontinued and the warfarin dose was gradually reduced until the INR was within range. The case shows the importance of counseling patients on new medications and inquiring about potential duplicate therapies.

Sprečavanje posledica

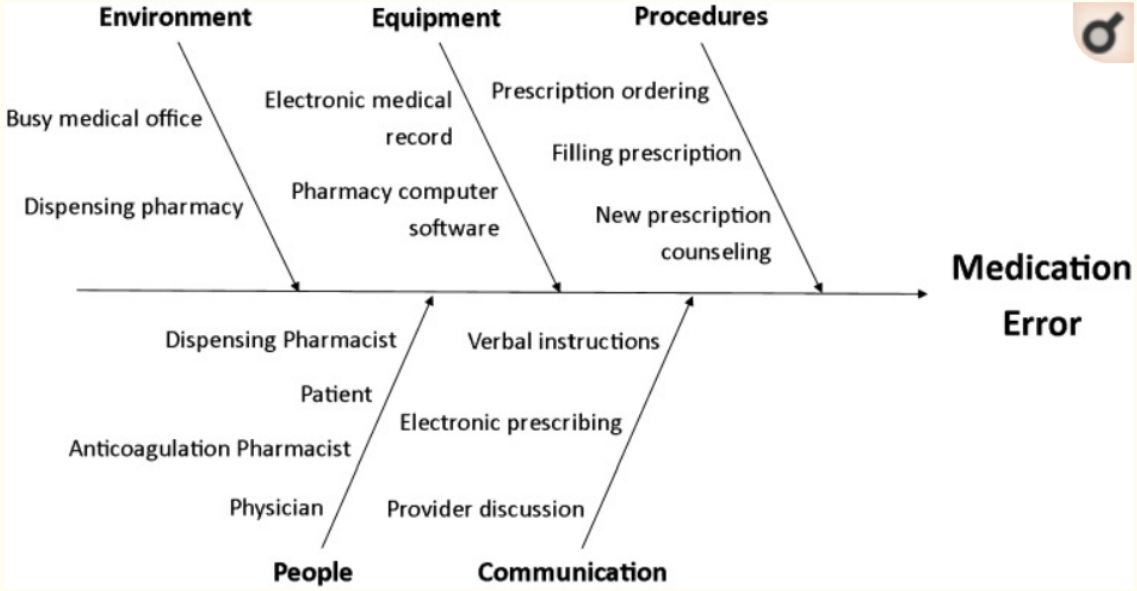

Fig. 1

Analysis of the medication error using an Ishikawa cause-and-effect diagram

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5005698/

Neprecizna uputstva o načinu uzimanja lijeka/ nedostatak plana nadziranja terapije

Rythmol (propafenone) is a class 1C antiarrhythmic drug that was FDA approved in 1989. In 2010, a case report was published documenting a medication error involving a handwritten prescription for Rythmol.

The case tells the story a 73-year-old man with a history of cardiac arrhythmia who presented to the clinic for a routine follow-up visit. After being evaluated by his physician, the patient received a handwritten prescription for Rythmol 150 mg, which he had been taking for the previous 3 years. He filled this prescription with the clinic pharmacy and subsequently started to experience nausea, sweating, and an irregular heartbeat. After 2 weeks of symptoms, he called his physician for an appointment, noting that his Rythmol tablets looked different than last time.

Upon evaluation, the physician discovered that the patient incorrectly received Synthroid (levothyroxine) 150 mcg from the pharmacy instead of the prescribed Rythmol 150 mg. The pharmacist who filled the prescription attributed the error to unclear handwriting on the prescription copy. The patient's symptoms were believed to be caused by both abrupt discontinuation of Rythmol and unnecessary use of Synthroid at a high initial dose. Once the error was corrected, the patient's symptoms gradually resolved.

The authors explain that this error demonstrates the importance of pharmacists clarifying with physicians on prescriptions with sloppy or illegible handwriting and appropriately counseling patients on new medication therapy.

https://psnet.ahrq.gov/webmm/case/215/bad-writing-wrong-medication

Medikamentozne greške - farmaceut

- automatsko izdavanje
- prodaja lijeka
- pogrešno izdat lijek
- nedovoljno informisanje bolesnika o lijeku koji je dobio

Medikamentozne greške - pacijent

- pogrešan izbor ljekova koje bolesnik kupuje bez recepta
- neadekvatno data anamneza ljekaru o ljekovima koje uzima
- konzumacija alkohola, nepravilna ishrana
- nepravilno uzimanje lijeka
- nekontrolisano uzimanje više ljekova

Komplijansa

- Nepoznavanje važnosti pravilnog i preporučenog uzimanja lijeka
- Strah i nepovjerenje
- Samoinicijativno uzimanje ljekova i nepoznavanje interakcija
- Polipragmazija i višedozno administriranje lijeka

Statistika

- Korišćenje ljekova koji se propišu je treći razlog smrtnosti u SAD
- Svake godine 1.3 miliona pacijenata su žrtve grešaka vezanih za primjenu ljekova **!!!**
- Procijena je da greške u medikamentoznoj terapiji povećavaju troškove liječenja na globanom nivou za 21 milijardu dolara
- Najčešće medikamentozne greške 1993-1998 god.

  41% - pogrešna doza

  16% - pogrešan lijek ili pogrešan put primjene

Preko 50 % grešaka – pacijenti stariji od 50god!

Kako izbjeći greške?

SAVJETI ZA PACIJENTE:

- Prije nego što Vam ljekar propiše lijek recite mu za sve ljekove ili dijetetske suplemente koje koristite ili ste koristili u poslednje vrijeme,
- Pitajte ljekara ime lijeka, tačnu dozu i za koju indikaciju (bolest) je lijek namijenjen,
- Pitajte za ime i svrhu lijeka koji Vam zdravstveni radnik izdaje.

Medicina zasnovana na dokazima (evidence based medicine)

- Savjesno, eksplicitno i razložno korišćenje najboljih postojećih dokaza za donošenje odluka o liječenju pojedinačnih pacijenata.
- EBM podrazumeva integraciju individualne kliničke ekspertize sa najboljim raspoloživim činjenicama iz istraživanja

Koraci u MZD

- Formulisanje kliničkog pitanja na koje treba odgovoriti
- Pretraživanje literature
- Klinička procjena dokaza (validnost i klinička primjenjivost)
- Integrisanje dobijenih rezultata u kliničku odluku u zdravstvenoj zaštiti
- Evaluacija krajnjeg ishoda

Pouzdanost dokaza

Gdje tražiti ?

PubMed

- *www.pubmed.gov*

Cohrane

- *www.cochrane.org*

Evidence based medicine, časopis

- *http://ebm.bmj.com/*

Zlatni standard BNF: British National Formulary

Udruženo izdanje:

- Britanske medicinske asocijacije
- Kraljevskog farmaceutskog društva
- Prvi BNF : 1949.god; on line od 2000.god
- Osmišljen kao brza referenca, dokazi iz različitih izvora!

www.bnf.org

Svrha EBM

- Budu u toku sa novim dostignućima
- Uštede vrijeme
- Spasu što više ljudskih života
- Dopune svoje kliničko rasuđivanje koje koriste pri donošenju odluka o načinu liječenja svakog pojedinačnog pacijenata

Zadatak:

- Pronaći neki od radova o greškama u medikamentoznoj terapiji (medication errors) i izvući zaključke
- Pronaći radove iz kojih se mogu videti kako su rađena istraživanja
- Uočiti koji od dizajna kliničkih ispitivanja se najčešće primenjuje i kako se to sprovodi, koliki je broj ispitanika, dobrovoljci, pacijenti, istog pola...?

RAD

Da Silva BA, Krishnamurthy M.

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5016741/

Hvala na pažnji!!!