Challenges in Pediatric Pharmacy Practice and Opportunities for Improvement

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Presenter(s)

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Her twenty year career as a pharmacist includes, pharmacy manufacturing, home health care, and where she is currently serving as a pharmacist at the Naval Medical Center in Portsmouth, VA.

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Learning Objectives

At the conclusion of this activity, participants will be able to:

1. Review Joint Commission recommendations for preventing pediatric medication errors.
2. Discuss current studies related to pediatric medication errors.
3. Identify ethical issues related to medication use and errors in pediatric patients.

"Take one pill twice a day hidden in some cheese."

My story…

- This is how I became interested in patient safety and risk management.

Preventing Pediatric Medication Errors

- The Joint Commission released a Sentinel Event Alert on April 11, 2008 pertaining to medication errors in Pediatric Patients
- Research had shown that pediatric patients have a higher rate of adverse effects and medication errors when compared with adult patients.
- Many of the adverse reactions/ medication errors were preventable or should have been caught earlier.
- 2006-2007 Error data from MEDMARX showed harm occurred in 2.5% of recorded pediatric medication errors

Why were there more errors with harm in Peds?

- Most medications were made in adult doses/ formulations only.
- Staff needed better training and resources to treat pediatric patients including protocols; especially emergency rooms
- Pediatric patients are less able to physiologically tolerate medication errors
- Children are less able or unable to communicate

Joint Commission Risk Reduction Strategies

- Create and use a pediatric formulary
- Standardize days in protocols (Is the start day, Day 0 or 1?)
- Limit high alert medication dosage strengths/concentrations to minimum needed for safe care
- Patients admitted that are on home TPN and compounded medications should receive equivalent doses
- Oral syringes should be used to administer oral meds

Risk Reduction Strategies (cont.)

- All medication management committees should have a pediatric trained practitioner
- Have pediatric- specific information readily accessible for all hospital staff
- Orient all pharmacy staff to your specialized pediatric pharmacies
- Provide dosage calculation sheets for critical care pediatric patient
- Develop standardized clinical pathways, protocols, medication order forms
- Create pediatric pharmacy satellites

Risk Reduction Strategies (Cont.)

- Ensure accuracy of IV infusion pumps/ syringe pumps
- Have technology provide alerts for potentially incorrect doses based on dosage calculations
- Review and limit medications in automated dispensing cabinets that are available before or without pharmacist review
- Educate nurses and pharmacists about the use and limits of the smart pump
- Standardize pediatric sedation procedures and use pediatric equipment
- Bar-coding with pediatric capability

Other Joint Commission suggestions

- Weigh all pediatric patients and record in kg
- High risk meds should not be dispensed without weight
- Orders should have both the dose and the dose determination (Ex. 40mg (10mg/kg/dose)
- Use commercially available pediatric formulations when available. Use oral syringes to ensure accurate doses
- Separate adult and pediatric medication storage

Other suggestions (cont.)

- Training for all staff in pediatric care including continuing education on pediatric mediations
- Communicate medication information to the parents and child verbally and in writing
- A pediatric pharmacist should be available on on-call at all times
- Medication procedures should include pediatric prescribing and administration

Other Suggestions (cont.)

- Encouraged manufacturers to develop pediatric-specific formulations
- Research interventions to reduce pediatric medication errors focusing on the emergency department, ambulatory clinics, and in the home

Current Studies

- The Joint Commission Sentinel Event Alert unfortunately did not correct pediatric medical errors.
- Research continues to look at root causes of errors and systems that can be improved.
- There are so many studies because errors, including errors with harm, continue to occur.
- A review article in 2014 (Rinke) concluded that, “Pediatric errors can be reduced, although our understanding of optimal interventions remain hampered.”

Current Studies

- A comparative study of pediatricians versus non-pediatric providers showed that pediatricians are more likely to adhere to pediatric guidelines for acute respiratory infections. This study shows the need to do pediatric antibiotic stewardship not only with pediatricians but also with non-pediatricians that will see pediatric patients. (Frost)
- In a study of 3 institutions, weight based dosing errors in the emergency department consisted mainly from using pound weight as the weight in kg and decimal point errors. (Hirata)

Current Studies

- A randomized controlled study was done comparing the use of an app or not using the app during simulated Pediatric CPR. The app was designed to reduce time to medication delivery and to reduce medication errors during CPR. Using the app reduced time to drug delivery. It also reduced medication errors to zero%. (Siebert)

Ethical Issues

- Off- label use of medications in Pediatric patients
  - American Academy of Pediatrics (AAP) released a policy statement in 2014
  - Even after Best Pharmaceuticals for Children Act (BCPA) and Pediatric Research Equality Act (PREA) many drugs used in pediatric patients do not have a pediatric indication in the package insert
  - The AAP also said in the policy statement the “off-label does not imply improper, illegal, contraindicated, or investigational use”
  - Off-label use should benefit the patient and the practitioner can use their clinical judgement to determine if use is warranted

Ethical Issues

- Using children as human subjects
  - Informed consent of child
  - Rights of child versus wishes of parent
- Using neonates as human subjects
  - Informed consent versus parental permission
  - Possibly very sick patients
  - Poor prognosis just from being premature

Ethical Issues

- How do you handle medical mistakes?
  - ❑ Informing and apologizing to parents and patients
  - ❑ Helping staff involved in error
  - ❑ Look for system fixes

Key Takeaways

- Children are not just small adults. Neonates are not just small children. They have different body water composition and pharmacokinetics than adults. Medication dosing takes calculations and usually manipulation of an adult product.
- Mistakes are made more often in pediatrics and mistakes in pediatrics cause more harm than in adults.
- In order to have safe medications for children, children must be considered as drug study subjects, and consent from both the parent and child, as able, needs to be obtained.

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