

Serious Medication Mistakes Happening at Home—The Why Depends on The Who



By *Jamie Wells, M.D.* — July 17, 2017



Credit: Wikipedia [1]

Medication mistakes outside of a health care facility are on the rise and resulting in serious outcomes—with home locations leading the pack. According to a [new study](#) [2] that tracked unintentional therapeutic pharmaceutical errors and focused on those causing profound impairment, disability and death, there was a 100% rate increase from 2000 to 2012.

All age groups reflected such an increase, except those under six years of age—this trajectory most likely is attributed to the FDA’s 2007 restriction of cold and cough suppressant sales to children under six due to their lack of proven efficacy and their ability to do harm. Shortly, I will address the respective, unique challenges to proper medication use in an effort to direct prevention strategies.

This work did not include illicit substances or household cleaning products, cases of minor adverse effects or those injuries not reported to the various Poison Control Centers (PCC) throughout the United States, to name a few. Therefore, the likelihood of underestimation of bad outcome and frequency of untoward event is highly probable. Calling a physician instead of a PCC or being lost to follow-up, in general, pose additional challenges to data collection.

Of the errors, taking the wrong medication, the incorrect dose and accidentally taking the same medication twice were the more common occurrences. The drugs most associated with serious problems, include, cardiovascular medicines (20.6%—especially beta blockers, calcium channel blockers etc.), pain relievers (12.0%— most often opioids and acetaminophen, by itself or in combination), hormones or their antagonists (11.0%—primarily insulin or oral hypoglycemics like sulfonylurea which are used for diabetes as well), sedative/hypnotics/antipsychotics (9.6%) and

antidepressants (8.6%).

What are the challenges to proper use?

In general, people rarely retain what the doctor tells them in the office for a multitude of reasons, including they are actively sick during the visit, it can be a high stress environment, they could have just been given an upsetting diagnosis and find it hard to focus or are given new or changed prescriptions in conjunction with testing and discussion of results. The litany is long and dynamic (no matter how many times directions are repeated).

Questions arise after the visit as certain concepts settle in and symptoms might change. A patient can be on multiple medications with frequent adjustments in dosages. Pharmacists can substitute brand drugs for what is on a particular insurance companies' formulary which might add to confusion—since the last time a script was filled, the pills looked different and had another name. These types of insurance related changes can occur quite often.

Package inserts can be confusing and scary to read given the emphasis on adverse effects. Some medicines have multiple uses, hence varying dosages dependent upon which disease it is treating. Knowing why you are on a medicine is critical to taking it properly and being certain a covering or other health professional prescribes it correctly-- as well as ensures a pharmacist fills it appropriately. Excellent communication between you and your doctor along with your doctor, their team members and other health professionals, including the pharmacist, is also key to avoiding issues.

These challenges are nuanced further based on age, life stage...

Also, [this study](#) [2] found the frequency of exposures higher in males less than 6 years old and in the 6-12 years category (57.1% and 67.4%, respectively). Error rates for females were higher in the teen (ages 13-19 years) and over 20 age groups (53.3% and 62.2%, respectively). Children under 6 and adults were less likely to be treated and released, for instance. See study [here](#) [2].

In kids under 6...

In pediatrics, the standard, busy practice is a loud, controlled but chaotic one. It can be tough for parents to follow instructions since screaming children and chasing toddlers is standard fare. For pediatricians, this becomes ambient noise. For visitors, it is often a great distraction. With young children—and depending on how many, whether there is chronic disease and so forth, comes much sleep deprivation which can readily impair memory and decision-making.

There are routinely multiple care givers, so if suboptimal communication of medication administration occurs then the possibility of double dosing rises.

Cold and cough suppressants contributed significant problems in this population, especially, which is why the FDA intervened restricting their use in this age group. These medications routinely share ingredients, so kids were getting repetitive doses that were hazardous. Polypharmacy was commonplace—despite warnings. In addition, these medications are ineffective and some contain substances that raise blood pressure, heart rate and can cause hallucinations to name a few (See [Suppressing Coughs at Tonight's Presidential Debate](#) ^[3]).

All medications in pediatrics are based on weight-adjusted doses whereas in adults there is usually an *adult* dose that gets altered in cases of severe kidney or liver disease, for example. So, it is not unheard of for a family to have many sick kids at once and all on different doses of the same or unique medications. Breastfeeding adds another tricky factor at times when mom ingests a medication that is contraindicated for the baby— what mom ingests, baby ingests (see [Opioid-Addicted Babies On The Rise](#) ^[4]). Ten-fold dosing errors were significant in this population. Given how liquid formulations get reconstituted is by variable concentration, the dose determined could be in decimal point units which can add to confusion -- as do the nonuniform dispensers.

Then, there is the access issue. As infants develop into toddlers and young children, it is natural for them to become increasingly curious about their environment and easily stimulated by the scents, textures and sounds. They become explorers. This is problematic when grandma leaves her heart medication fully accessible on the coffee table, for example. Childproofing and proper supervision are essential to avoidance of such medical errors.

Ages 6-12...

In this age range approaching adolescence, kids might be encouraged to have more autonomy and self-administer medications—often without supervision. This is where problems arise as the wrong medication or dose can be consumed among other issues. The doses are still weight-adjusted, but kids are transitioning out of liquid drugs to pill or capsule forms that have specific doses for weight ranges— so, they are much less precise measures, in particular, for those who fall on the ends of the weight spectrum. For those capable of swallowing pills and due to increasing weights, liquid formulations can become so voluminous that getting a child to take a medicine multiple times a day is unrealistic. Also, due to weight increases, dispensing several bottles of liquid versions can become costly.

With a few siblings and others in the house, a child can have access to many medicines if poorly stored.

Teens (13-19)...

Stimulants are problematic in older children and teens when it comes to errors. Their increased autonomy contributes to further problems as well. This is when accidental use of another family members' medicine comes into the mix.

There is complexity to this cohort given the developmental phase of wanting to test limits and experiment. For those with chronic disease, this is often a time when wanting to be like their peers supersedes a desire to be compliant. Add to that the feelings of invincibility adolescents experience.

Over 20...

This category more often had exposures from multiple substances. For a few reasons, multiple medication use is more common due to conditions like high blood pressure, diabetes and high cholesterol running together. As we age, we are more likely to have more health conditions. So, sometimes adults require a bunch of prescriptions. Consider all of the anti-rejection drugs of a transplant recipient to that of a cancer patient or one with metabolic disease. Though children can have these issues, the frequency is higher the older we get.

Those with chronic illnesses often use pill boxes and take medications out of their original container. A spouse might do this as well. Hence, an opportunity for mistakes to arise.

In the study period, serious medication errors caused by heart drugs exponentially increased by 177% with the authors speculating the greater medication use, in general, is linked to the increase in the population of those with heart disease. Again, a number of factors influence the potential. The make up of the drugs and their side effect severity plays a vital role. For example, anticoagulants have narrow therapeutic windows so errors can do more harm in this scenario than another medication with a less risky profile.

How can medication errors be prevented?

The good news is most of these errors can be prevented. Being proactive is crucial to reducing the possibility.

- Review [this study](#) [2]. It provides good information on what medications caused the most severe outcomes. The specific medication determines the level of risk when misused, along with what other drugs in combination are being actively taken--as well as an individual's underlying disease and clinical status.
- Bring an objective third party to the office visit when possible.
- Ask your physician to write everything down with specific instructions.
- If you are having a tough time while in the office, ask your doctor to call you later in the day when you can focus better.
- Have one location where it is recorded when a medication was given and what medicine it was. This benefits all age groups and situations of multiple care givers.
- Childproofing needs to be a continual event with frequent adjustments based on new, changing developmental phases. What a child can get into last month is vastly different than this month. In early childhood, in particular, kids go through developmental explosions.
- Putting medications from one container into another can be a source of error.
- Design a system—especially if many members of a household are on medicines—that avoids co-mingling of drugs.
- To empower yourself as a patient—with the ever fragmenting nature of health care—it is essential to be your own advocate. Know what the name (and dose) of the drug you were

prescribed was and why. Check before you leave the pharmacy that what was prescribed was what was dispensed. Saying it was the “blue pill” will not help you avoid errors, it is in your best interest to know specifics.

- Don't be afraid to call your doctor if you are at all confused. We are used to repeating ourselves and, fundamentally, we want to be a resource to help you get well. Following instructions effectively is an ideal way to achieve that and the only way to foster a successful, therapeutic doctor-patient relationship.

Note(s):

To empower yourself in your health care, see [10 Ways to Save Your Life and The Life of A Loved One](#) [5].

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Links

[1] https://en.m.wikipedia.org/wiki/Health_literacy

[2] <http://www.tandfonline.com/doi/abs/10.1080/15563650.2017.1337908?needAccess=true&>

[3] <http://www.acsh.org/news/2016/09/26/suppressing-coughs-tonights-presidential-debate-10215>

[4] <http://www.acsh.org/news/2016/12/13/opioid-addicted-babies-rise-10586>

[5] http://www.huffingtonpost.com/jamie-leigh-wells-md-faap/10-ways-to-save-your-life_b_9824018.html