

The Prudent Prescriber

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September 2019

Updated Beers Criteria and Growing Polypharmacy

The American Geriatric Society (AGS) has released an update of their Beers Criteria. Although the Criteria are intended to provide guidance for prescribing for patients over 65, the 2019 version offers some prudent prescribing advice for all.

- Add glimepiride to glyburide as medications to avoid. Both are associated with severe and prolonged hypoglycemia.
- Trimethoprim-sulfamethoxazole should be used with caution when combined with angiotensin-converting enzyme inhibitors or angiotensin-receptor blockers in patients with decreased creatinine clearance due to an increased risk of hyperkalemia.
- Avoid prescribing warfarin with the antibiotics ciprofloxacin, macrolides, (except azithromycin) or trimethoprim-sulfamethoxazole whenever possible due to an increased bleeding risk.
- The side effects of daily use of low dose aspirin for primary prevention of cardiovascular disease have been shown to outweigh the benefits in most patients of all ages. Use with caution in those over age 65.
- Tramadol was added to the list to use with caution due an increased risk of hyponatremia or syndrome of inappropriate antidiuretic hormone secretion (SIADH).
- SNRIs (duloxetine, etc.) join SSRIs and tricyclics as increasing fall risks in patients with a history of falls or fractures. Use if warranted, but look for opportunities to de-prescribe other meds associated with falls (opioids, Z-sleeping meds and benzodiazepines).

Pharm Reps ≠ Rational Prescribing

(PR)



(RP)

**Antibiotics do
NOT**

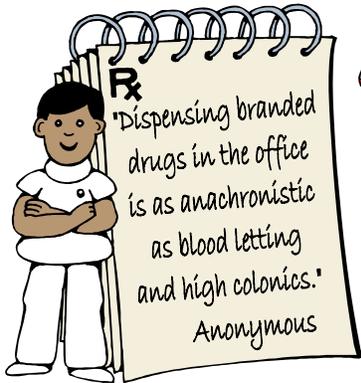


**help
acute bronchitis**

**β-blockers in
post-MI
save
lives**



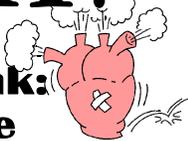
**Pill splitters save
BIG**



CHE!

Think:

**Ace
Aldactone
B-blocker
Dig
Diuretic**



**Avoid these expensive
"me-too" drugs:**

**Intermezzo
Vimovo
Livalo
Gralise
Viibryd
Edarbi
Daliresp**



**Treat patients
> 60 years to 150/90**



**NOW AVAILABLE
ON THE
GENERIC MARQUEE**

**Advair → fluticasone/salmeterol
or Wixela Inhub
Viagra → sildenafil
Uceris → budesonide ER
Suboxone → buprenorphine/naloxone**

- Opioids have updated warnings regarding concerns for sedation and overdose when used with benzos and gabapentin-like drugs.
- Avoid muscle relaxants (carisoprodol) in the elderly and everyone younger.

In practice, I often felt like the Beers Criteria were oppressive and not very thoughtful. In reviewing this update, I changed my mind. It appears that the authors reviewed more than 1400 clinical trials and actually removed some drugs from the list. H2-receptor antagonists [Pepcid/Zantac] were removed from the list because evidence did not support continued inclusion for dementia. Stimulants (amphetamines/Provigil) and oral decongestants (Sudafed) were removed because the insomnia side effects are not unique to older adults.

Medications noted as potentially inappropriate in the Beers Criteria are just that—potentially inappropriate. They merit scrutiny, but should not be construed as universally unacceptable in all cases or for all people.

The CDC data below are worrisome. In the 30 year period from 1988 to 2014, the percentage of patients over 65 taking five or more prescription drugs rose from less than 15% to over 40%. One recent study suggests that approximately 50% of ambulatory older adults takes 5 or more medications. Now over two-thirds of those over 65 are taking three or more prescription drugs. A higher medication burden is often associated with a higher risk of adverse effects and drug interactions and potentially a problematic prescribing cascade.

Recall Sir William Osler’s thoughts,

"...the desire to take medicine is one feature which distinguishes man, the animal, from his fellow creatures."

"The person who takes medicine must recover twice, once from the disease and once from the medicine."

CDC data on Average Prescription Drugs by Age

Polypharmacy defined as daily taking 5 or more prescription drugs

Sex, race and Hispanic origin, ¹ and age	At least one prescription drug in past 30 days				Three or more prescription drugs in past 30 days				Five or more prescription drugs in past 30 days			
	1988–1994	1999–2002	2007–2010	2011–2014	1988–1994	1999–2002	2007–2010	2011–2014	1988–1994	1999–2002	2007–2010	2011–2014
Both sexes												
Percent of population												
Under 18 years	20.5	23.8	24.0	21.5	2.4	4.1	3.8	3.9	*	*0.8	0.8	0.8
18–44 years	31.3	35.9	38.7	37.1	5.7	8.4	9.7	10.1	1.2	2.3	3.1	3.9
45–64 years	54.8	64.1	66.2	69.0	20.0	30.8	34.4	36.4	7.4	13.3	16.8	18.3
65 years and over	73.6	84.7	89.7	90.6	35.3	51.8	66.6	66.8	13.8	27.1	39.7	40.7

Sunscreens Unsafe for Coral How about Humans?

Hawaii has banned the sunscreens, oxybenzone and octinoxate starting in 2021. There is significant evidence that these ingredients are associated with damaging and bleaching sea coral and altering sex hormones of ocean wildlife.

But what about human beings?

Before the modern era of drug evaluation, sunscreens were initially approved as over-the-counter medications, indicated for the prevention of sunburn. Current understanding of ultraviolet– related carcinogenesis supports the additional indication regarding use of sunscreen for the prevention of skin cancer. In 1997, Hayden et al. (*Lancet*.1997: 350 (9081): 863-864) demonstrated the systemic absorption of sunscreen after topical application. In 2008, the CDC demonstrated the presence of the common sunscreen ingredient oxybenzone in 97% of the urine samples collected as part of the National Health and Nutrition Examination Survey. Despite multiple efforts by the

FDA (remember who they are sleeping with) to persuade sunscreen manufactures to conduct safety studies, the manufacturers have failed to produce such data.

Matta Study

In June 2019, Matta and colleagues from the FDA itself published (JAMA, June 4, 2019) a phase 1 RCT enrolling 24 healthy adult volunteers. Participants were randomized to 1 of 4 sunscreens: spray 1 (n=6), spray 2 (n= 6), a lotion (n=6), and a cream (n=6). Two mg of sunscreen per cm³ was applied to 75% of body surface area of the participants 4 times a day for four days. Thirty blood samples were collected over seven days from each participant. The primary outcome was the maximum plasma concentration of avobenzone. Secondary outcomes were the maximum plasma concentrations of oxybenzone, octocrylene and ecamsule.

Results: Systemic concentrations greater than 0.5ng/ml (the threshold established by the FDA to avoid doing non-clinical testing) were reached for all 4 products after 4 applications on day 1.

Geometric Mean Maximum Plasma Concentration, ng/ml

Product	avobenzone	oxybenzone	octocrylene	ecamsule
Spray 1	4.0	209.6	2.9	N.A.
Spray 2	3.4	194.9	7.8	N.A.
Lotion	4.3	169.3	5.7	N.A.
Cream	1.8	N.A.	5.7	1.5

Adapted from Matta. JAMA. June 4, 2019

My Take:

- The demonstration of systemic absorption well above the FDA guideline (in the case of oxybenzone in sprays 1 and 2 ~400 times the limit) **does not** mean these ingredients are unsafe, but it does raise questions:
 - Is there a health threat? In older studies oxybenzone has been found in amniotic fluid, urine and blood (Fed Regist. 2019; 84 (38): 6204-6275) and octocrylene has been detected in breast milk (Chemosphere 2010; 81(10): 1171-1183).
 - What effect does formulation of the sunscreen products, skin type (58% of participants in this study were black or African American), and exposure to sun and water have on systemic sunscreen levels?
 - What about kids who have different ratios of body surface to mass than adults?
- There are piddly safety data from sunscreen manufacturers. Will the FDA follow up on this, their own study, to pursue the clinical concerns outlined above or will the American people get burned again? The FDA has promised a Sunscreen Monograph, updating the newest science later this year.
- Avoidance of the sunscreen ingredients studied in this trial or sunscreen altogether could lead to some very negative public health outcomes.
- Physicians should continue to recommend skin protection. Reasonable alternatives today are “mineral” or physical screens that contain zinc oxide or titanium dioxide that are not linked to environmental concerns. Neither of these products are absorbed topically, even the nanoparticle preparations.

You may access previous issues at <https://www.rmhp.org/i-am-a-provider/provider-resources/publications-for-providers>.

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