

Medical Mythology

LONG-HELD BELIEFS NOT SUPPORTED BY LITERATURE

MISSOURI ACP, FALL 2020

DOUG COCHRAN

UMKC SOM

Announcements

I have no disclosures

I am not endorsing any product discussed in this presentation

I understand how long held beliefs are the hardest to revise

Health Myths from the Public Sector BBC's Reality Check Website

<https://www.bbc.com/news/av/52093412/coronavirus-more-health-myths-to-ignore>



Health myths busted

Lemon juice and other misleading health advice being shared online.

🕒 2 April 2020

f 📧 🐦 ✉️ Share

Objectives

Create new insights on commonly held clinical myths about

- Vaccinations
- Iron supplementation
- Stool softeners
- Drug Expiration Dates

Medical Myths

6580 Pubmed citations

Doug Paauw piqued my interest in this topic in several interesting publications

Diana Herrera-Perez has redefined my view of paradigm shifts

Coronavirus publications provide ongoing reinforcement of this concept as illustrated in the title

Asymptomatic carrier state, acute respiratory disease, and pneumonia due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Facts and myths

Vaccination Mythology

<https://www.publichealth.org/public-awareness/understanding-vaccines/vaccine-myths-debunked/>

<https://www.rush.edu/health-wellness/discover-health/7-vaccine-myths>

<https://www.sciencemag.org/news/2017/04/four-vaccine-myths-and-where-they-came>

<https://www.aaaai.org/conditions-and-treatments/library/allergy-library/vaccine-myth-fact>

Public health organizations, universities, science news, and professional societies all address myths of vaccination

Should you avoid influenza vaccination in patients with egg allergies?

www.slnh.org (Pennsylvania)

Questions about Universal Influenza Vaccination:

Can I receive the flu vaccine if I have an egg allergy?

People who have ever had a severe allergic reaction to eggs (i.e. hives, swelling of the lips or tongue, or difficulty breathing) may be advised not to **get vaccinated**. People who have had a mild reaction to egg (i.e. mild gastrointestinal symptoms) may receive a flu shot with additional precautions. People who can tolerate eating food prepared with eggs, such as baked goods, can generally tolerate the influenza vaccine. Most, but not all, types of flu vaccine contain small amounts of egg. If you have an egg allergy, you should see your doctor to discuss whether it is safe to receive the vaccine.

SLHS Reference Documents

Influenza Vaccination Policy

<https://www.khconline.org/files/Immunization/Anderson-StLukes-influenza-vac-policy-and-mgmt.pdf>

- Medical or religious exemption definitions

Influenza Vaccine Medical Exemption Form

- Includes egg allergy

Expert Reviews in Vaccines 2014

In 28 studies of 4315 patients with egg allergies (including 656 with a history of anaphylaxis), NO patients developed a serious reaction after receiving an egg based vaccine

Expert Rev Vaccines. 2014 Aug;13(8):1049-57.

Administering influenza vaccine to egg-allergic persons.

Kelso JM.

Division of Allergy, Asthma and Immunology, Scripps Clinic, San Diego, CA, USA.

The most serious form of type I or IgE-mediated hypersensitivity reaction is anaphylaxis. A standardized case definition of anaphylaxis as an adverse event after immunization has been developed. Such reactions to vaccines, including influenza vaccine, are rare but potentially life-threatening. Until recently, all influenza vaccines were manufactured in eggs. Residual egg protein in the vaccines was thought to pose a risk to egg-allergic vaccine recipients. However, **a large number of recent studies have demonstrated that egg-allergic recipients are no more likely than those without egg allergy to suffer such reactions. Published guidelines have been updated to recommend that patients with egg allergy receive annual influenza vaccination.** Any patient who has an anaphylactic reaction to influenza vaccine should be carefully evaluated by an allergist for guidance on subsequent immunization.

American Academy of Allergy, Asthma, and Immunology Guideline

The Joint Task Force on Practice Parameters of the American Academy of Allergy Asthma and Immunology and the American College of Allergy Asthma and Immunology as well as the American Academy of Pediatrics state that **no special precautions are required for the administration of influenza vaccine to egg-allergic patients no matter how severe the egg allergy. In fact , guidelines now state that it is not necessary to ask about egg allergy prior to the administration of any influenza vaccine, including on screening forms.** Patients and parents should tell providers if they or their child have had an adverse reaction to a prior dose of influenza vaccine itself. The normal precautions for giving any vaccine to any patient should be followed, namely recognizing that about one in a million doses of any vaccine results in a serious allergic reaction, and vaccine providers should be prepared to recognize and treat such reactions.

<https://www.aaaai.org/conditions-and-treatments/library/allergy-library/egg-allergy-and-the-flu-vaccine>

The real challenge is how to change practice

But I have an egg allergy....

And you always used to ask me about it

AND I DID NOT HAVE TO GET THE VACCINE

AND NOW IT IS MANDATORY HOSPITAL POLICY

I DON'T THINK I SHOULD GET VACCINATED

WILL ANOTHER STUDY OF 4315 PATIENTS CHANGE DOGMA?



Should you avoid Influenza Vaccination due to Risk of Guillain Barre Syndrome Relapse?

Concern in Influenza and possibly other vaccines causing and increased risk of relapse

Became wide spread practice in 1976 in the wake of multiple Swine Flu adverse events

Fact Sheet on Guillain-Barre syndrome (GBS) - CDC H1N1 Flu

- https://www.cdc.gov/h1n1flu/vaccination/factsheet_gbs
- **Dec 15, 2009** - Guillain-Barré syndrome (GBS) is a rare disorder in which a ... GBS can cause symptoms that last for as little as a few weeks, or go on for several months. ... **Except for the swine flu vaccine used in 1976, no other flu vaccines ...**

GBS and the link to flu vaccine

<https://www.cdc.gov/vaccinesafety/concerns/guillain-barre-syndrome.html>

In 1976, there was a small increased risk of GBS after swine flu vaccination, which was a special flu vaccine for a potential pandemic strain of flu virus. The National Academy of Medicine, formerly known as Institute of Medicine, conducted a scientific review of this issue in 2003 and found that people who received the 1976 swine flu vaccine had an increased risk for developing GBS. The increased risk was approximately one additional case of GBS for every 100,000 people who got the swine flu vaccine. Scientists have several theories about the cause, but the exact reason for this link remains unknown.

There have been several studies of the risk of GBS after flu vaccine and CDC monitors for GBS during each flu season. The data on an association between seasonal influenza vaccine and GBS have been variable from season-to-season. When there has been an increased risk, it has consistently been in the range of 1-2 additional GBS cases per million flu vaccine doses administered.

Studies suggest that it is more likely that a person will get GBS after getting the flu than after vaccination. It is important to keep in mind that severe illness and death are associated with flu, and getting vaccinated is the best way to prevent flu infection and its complications.

Clinical Infectious Disease, March 2012

Recurrent Guillain-Barré Syndrome Following Vaccination

Roger Baxter, Ned Lewis, Nandini Bakshi, Claudia Vellozzi, Nicola P. Klein, the CISA Network

Clinical Infectious Diseases, Volume 54, Issue 6, 15 March 2012, Pages 800–804,
<https://doi.org/10.1093/cid/cir960>

Published: 19 January 2012

Recurrent Guillain-Barré Syndrome Following Vaccination

Background. Guillain-Barré syndrome (GBS) is an acute polyradiculopathy, thought to be autoimmune, which has been reported following vaccinations. The Advisory Committee on Immunization Practices recommends not administering influenza vaccine to individuals who have had a history of GBS within 6 weeks of a prior influenza vaccination if they are not at high risk of severe complications from influenza illness.

Methods. We identified GBS cases from the Kaiser Permanente Northern California databases from 1995 into 2006 using hospital discharge codes; each medical record was neurologist-reviewed and only GBS-confirmed cases were included for follow-up. We followed confirmed cases through 2008 for vaccinations and recurrent GBS.

Results. We identified **550 cases of GBS over 33 million person-years**. Following their GBS diagnoses, 989 vaccines were given to 279 of these individuals, including 405 trivalent inactivated influenza vaccines (TIV) administered to 107 individuals with a prior diagnosis of GBS. Among the 550 total cases of GBS, 18 initially had onset within 6 weeks of TIV; of these, 2 were revaccinated with TIV without a recurrence of GBS. Only 6 individuals of 550 (1.1%) had a second (recurrent) diagnosis of GBS. Among these 6 individuals, none had any vaccine exposure at all in the 2 months prior to the second onset of GBS.

Conclusions. **In our population of over 3 million members, during an 11-year period, risk of GBS recurrence was low. There were no cases of recurrent GBS after influenza vaccination and none within 6 weeks after any vaccine.**

<https://www.cdc.gov/vaccinesafety/concerns/guillain-barre-syndrome.html>

Related Scientific Articles

Kawai AT, Li L, Kulldorff M, Vellozzi C, et al. **Absence of associations between influenza vaccines and increased risks of seizures, Guillain-Barré syndrome, encephalitis, or anaphylaxis in the 2012-2013.** *Pharmacoepidemiol Drug Saf.* 2014 May;23(5):548-53.

Followed by 15 citations back to the original 1976 association

But I had GBS and I don't want to chance it

The best evidence would be to avoid the vaccination associated with the initial symptoms within 6 weeks of influenza vaccination administration

In a review of over 3 million members, during an 11-year period, risk of GBS recurrence was low. There were no cases of recurrent GBS after influenza vaccination and none within 6 weeks after any vaccine.

Who are you to tell me this is a myth?

Members of the **GBS|CIDP Foundation Global Medical Advisory Board** have deliberated on the safety of immunizations for former GBS patients and offer the following guidelines: **For the rare person who developed GBS within four to six weeks of receiving an immunization, it seems prudent to avoid that vaccination in the future. For those whose GBS did not follow soon after a vaccination, there is no reliable data to indicate the risk of developing GBS after a vaccination.**

<https://www.gbs-cidp.org/support/resources/flu-shots-and-vaccinations/>

Covid Vaccination

There is no data, just conjecture

150 vaccines in development worldwide

27 human clinical trials as of July 2020

Phase III trials will continue for 12 months

Efficacy and long term adverse events will not be known for years

Of the vaccines in the clinical trial stages, several invoke novel vaccine strategies that have never been used in humans before.

<https://westerntoday.wwu.edu/features/the-coronavirus-vaccine-myths-and-realities-with-wwu-s-gerry-prody>

Godzilla of Myths – Thimerosal and Autism

Scientific research does not show a connection between thimerosal and autism.

Research does not show any link between thimerosal in vaccines and autism, a neurodevelopmental disorder. Many well conducted studies have concluded that thimerosal in vaccines does not contribute to the development of autism. Even after thimerosal was removed from almost all childhood vaccines, autism rates continued to increase, which is the opposite of what would be expected if thimerosal caused autism.

Thimerosal was taken out of childhood vaccines in the United States in 2001.

Measles, mumps, and rubella (MMR) vaccines do not and never did contain thimerosal. Varicella (chickenpox), inactivated polio (IPV), and pneumococcal conjugate vaccines have also never contained thimerosal.

Influenza (flu) vaccines are currently available in both thimerosal-containing (for multi-dose vaccine vials) and thimerosal-free versions.

<https://www.cdc.gov/vaccinesafety/concerns/thimerosal/index.html>



Do Sinus Headaches Require Antibiotic?

I have this same thing about twice a year and I always get better with antibiotics

I am congested and I have sinus pain

Last time you said not to take antibiotics I was sick until I went to the Minute Clinic/ER and they gave me antibiotics

Journal of Headache and Pain 2013

Migraine misdiagnosis as a sinusitis, a delay that can last for many years

Jasem Y Al-Hashel, Samar Farouk Ahmed, Raed Alroughani & Peter J Goadsby

The Journal of Headache and Pain volume 14, Article number: 97 (2013)

Sinusitis is the most frequent misdiagnosis given to patients with migraine.

We decided to estimate the frequency of misdiagnosis of sinusitis among migraine patients.

The study included migraine patients with a past history of sinusitis. All included cases fulfilled the International Classification of Headache Disorders, 3rd edition (ICHD-III- beta) criteria. We excluded patients with evidence of sinusitis within the past 6 months of evaluation. Demographic data, headache history, medical consultation, and medication intake for headache and effectiveness of therapy before and after diagnosis were collected.

A total of 130 migraine patients were recruited. Of these patients 106 (81.5%) were misdiagnosed as sinusitis. The mean time delay of migraine diagnosis was (7.75 ± 6.29 , range 1 to 38 years). Chronic migraine was significantly higher ($p < 0.02$) in misdiagnosed patients than in patients with proper diagnosis. Medication overuse headache (MOH) was reported only in patients misdiagnosed as sinusitis. The misdiagnosed patients were treated either medically 87.7%, or surgically 12.3% without relieve of their symptoms in 84.9% and 76.9% respectively. However, migraine headache improved in 68.9% after proper diagnosis and treatment.

Many migraine patients were misdiagnosed as sinusitis. Strict adherence to the diagnostic criteria will prevent the delay in migraine diagnosis and help to prevent chronification of the headache and possible MOH.

How about other evidence?

Each year, millions of people use antibiotic drugs to treat sinus problems. However, they usually do not need antibiotics.

Choosing Wisely – Promoting conversations between providers and patients



An initiative of the ABIM Foundation

Take home message on Sinus Headaches

Recurrent headaches should be evaluated as potential migraines

Patients should be advised that with or without antibiotics and decongestants, the symptoms will resolve in 12-48 hours

Possibly treating the headache with medications effective for acute vascular headaches makes the most sense

Avoid chronic medications for pain and the potential for medication overuse headaches



Is Antimicrobial prophylaxis required for dental work in patients with joint replacements?

Academy of Orthopedic Surgeons position statement 2009

Clinicians should consider antibiotic prophylaxis prior to any invasive procedure performed on all patients with total knee or hip replacements.

Left the prior ADA position of 1997 saying this was not necessary

Both cite the same paper as evidence?

2019 ADA Position Statement

In patients with prosthetic joint implants, a January 2015 ADA clinical practice guideline, based on a 2014 systematic review states, **“In general, for patients with prosthetic joint implants, prophylactic antibiotics are not recommended prior to dental procedures to prevent prosthetic joint infection.**”

<https://www.ada.org/en/member-center/oral-health-topics/antibiotic-prophylaxis>

Infect Control Hosp Epidemiol. 2017 Feb;38(2):154-161.

Infect Control Hosp Epidemiol. 2017 Feb;38(2):154-161.

doi: 10.1017/ice.2016.248. Epub 2016 Nov 9.

Prosthetic Joint Infection Following Invasive Dental Procedures and Antibiotic Prophylaxis in Patients With Hip or Knee Arthroplasty.

Kao FC1, Hsu YC2, Chen WH2, Lin JN3, Lo YY4, Tu YK1.

Dept. of Orthopedics, E-Da Hospital, Kaohsiung, Taiwan.

School of Medicine for International Students, I-Shou University, Kaohsiung, Taiwan.

.

Infect Control Hosp Epidemiol. 2017;38:154-161.

OBJECTIVES We aimed to clarify whether invasive dental treatment is associated with increased risk of prosthetic joint infection (PJI) and whether prophylactic antibiotics may lower the infection risk remain unclear. **DESIGN** Retrospective cohort study. **PARTICIPANTS** All Taiwanese residents (N=255,568) who underwent total knee or hip arthroplasty between January 1, 1997, and November 30, 2009, were screened. **METHODS** The dental cohort consisted of 57,066 patients who received dental treatment and were individually matched 1:1 with the nondental cohort by age, sex, propensity score, and index date. The dental cohort was further divided by the use or nonuse of prophylactic antibiotics. The **antibiotic and nonantibiotic subcohorts comprised 6,513 matched pairs**. **RESULTS** PJI occurred in 328 patients (0.57%) in the dental subcohort and 348 patients (0.61%) in the nondental subcohort, with no between-cohort difference in the 1-year cumulative incidence (0.6% in both, P=.3). Multivariate-adjusted Cox regression revealed no association between dental procedures and PJI. Furthermore, PJI occurred in 13 patients (0.2%) in the antibiotic subcohort and 12 patients (0.18%) in the nonantibiotic subcohorts (P=.8). **Multivariate-adjusted analyses confirmed that there was no association between the incidence of PJI and prophylactic antibiotics.** **CONCLUSIONS** The risk of PJI is not increased following dental procedure in patients with hip or knee replacement and is unaffected by antibiotic prophylaxis.

How do you rebut the mythology?

Fax correct recommendation evidence to the Orthopedist and Dentist and avoid sending antibiotics to the pharmacy.

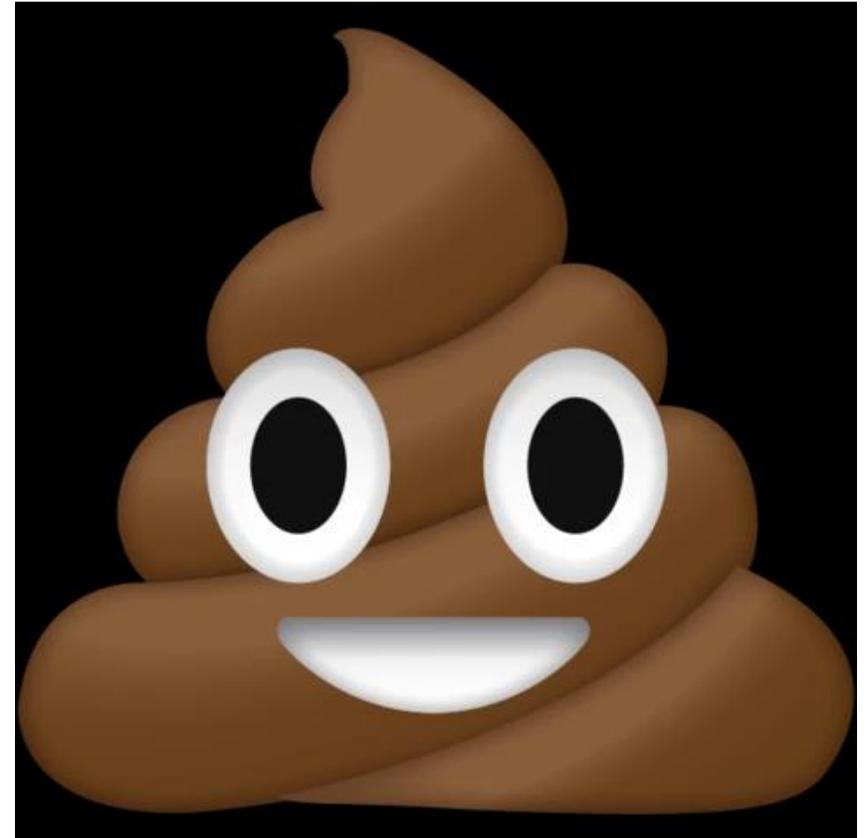
Try to educate the patient?

Endorse the antibiotic use as the path of least resistance to the desired procedure.



Is Docusate is the go-to treatment of Constipation?

Docusate global production increases to 55344 Kg in 2016



CHOOSING WISELY: THINGS WE DO FOR NO REASON

Things We Do for No Reason: Prescribing Docusate for Constipation in Hospitalized Adults

J. Hosp. Med. 2019 February;14(2):110-113

By: Robert J Fakheri, MD , Frank M Volpicelli, MD

<https://www.journalofhospitalmedicine.com/jhospmed/article/193136/hospital-medicine/things-we-do-no-reason-prescribing-docusate-constipation>

Missed Opportunity to Deprescribe: Docusate for Constipation in Medical Inpatients

Docusate was frequently prescribed to medical inpatients despite its known ineffectiveness, with low deprescription and high numbers of new prescriptions. Docusate use was common even among patients at high risk of constipation. One third of patients not receiving docusate before admission were prescribed docusate on discharge, potentially exacerbating polypharmacy. Among patients already receiving docusate, 80% had it continued on discharge, indicating significant missed opportunities for deprescribing. Given the availability of effective alternatives, our results suggest that quality-improvement initiatives are needed to promote evidence-based laxative use in hospitalized patients.

[https://www.amjmed.com/article/S0002-9343\(16\)30446-6/fulltext](https://www.amjmed.com/article/S0002-9343(16)30446-6/fulltext)

Recommendations for Constipation

Melissa Latorre MD

PEG

Hydration

From below, the induction phase can include manual maneuvers and suppositories. “Glycerin may help to soften the stool and bisacodyl may help with rectal motility,” she said. “After the first bowel movement, I get them some enemas to help clean more proximally—mineral oil or tap water.”

<https://acphospitalist.org/archives/2018/12/approach-constipation-aggressively.htm>

Things We Do for No Reason: Prescribing Docusate for Constipation in Hospitalized Adults

RECOMMENDATIONS

In patients with constipation or at risk for constipation, use laxatives with proven efficacy (such as polyethylene glycol, lactulose, psyllium, or sennosides) for treatment or prophylaxis of constipation instead of using docusate.

Discuss de-prescription for patients using docusate prior to admission.

Remove docusate from your hospital formulary.

CONCLUSION

Docusate is commonly used for the treatment and prevention of constipation in hospitalized patients, with significant associated costs. **This common practice continues despite little evidence supporting its efficacy and many trials failing to show benefits over placebo. Decreased utilization of ineffective therapies such as docusate is recommended.** Instead of docusate, consider polyethylene glycol, lactulose, psyllium, or sennosides, which have better evidence supporting their use.

J. Hosp. Med. 2019 February;14(2):110-113 | DOI 10.12788/jhm.3124



Is it true that Metronidazole and Alcohol don't mix?

A disulfiram-like reaction occurs when alcohol interacts similarly with a drug other than disulfiram, such as Flagyl.

disulfiram-like reaction may be mild to moderate and include:

- nausea
- vomiting
- a rapid heartbeat
- low blood pressure
- headaches
- flushing of the face

Authors of a 1996 case study report the death of a 31-year-old woman who consumed alcohol while taking metronidazole.

Reactions do not occur in all people. This may suggest that the risk of developing a disulfiram-like reaction to Flagyl and alcohol varies from person to person.

<https://www.medicalnewstoday.com/articles/325012.php>

Tried and True Evolution of Evidence

Dogma – somebody convincing/empowered said so

Case Reports

Rat Studies

Medical Student Studies

RCT

Lack of Disulfiram-Like Reaction with Metronidazole and Ethanol

Lack of Disulfiram-Like Reaction with Metronidazole and Ethanol

Jukka-Pekka Visapää, Jyrki S Tillonen

Jyrki S Tillonen MD PhD, Researcher, Research Unit of Substance Abuse Medicine, Helsinki University Central Hospital

Annals of Pharmacotherapy 2002

<https://doi.org/10.1345/aph.1A066>

RCT of 12 Finnish Medical Students – 2 Beers

Of 12 healthy male volunteers in this double-blind study, one-half received metronidazole for 5 days and the other half received placebo. All volunteers received ethanol 0.4 g/kg at the beginning of the study. Repeated blood samples were taken every 20 minutes for 4 hours, and blood acetaldehyde and ethanol concentrations were determined. Blood pressure, heart rate, and skin temperature were also measured every 20 minutes for objective signs of a possible disulfiram-like reaction. Volunteers also completed a questionnaire focusing on the subjective signs of disulfiram-like reaction.

Metronidazole did not raise blood acetaldehyde or have any objective or subjective adverse effects when used together with ethanol.

This study shows that metronidazole does not have an effect on blood acetaldehyde concentrations when ingested with ethanol and does not have any objective or subjective disulfiram-like properties. However, it is possible that disulfiram-like reaction can occur in some subgroups and by other mechanisms than the inhibition of hepatic ALDH.



Should Iron Be Dosed Multiple Times a Day to Treat IDA?

Time Honored approach FeSO₄ 325mg TID

Paauw Observational trial of a rounding team – dropout order

Intern – 1 day

Smart Medical Student -2 days

Resident and Attending – 3 days

Gunning for Honors Medical Student – 5 days

New Data for Iron? The Lancet Hematology 2017

Iron absorption from oral iron supplements given on consecutive versus alternate days and as single morning doses versus twice-daily split dosing in iron-depleted women: two open-label, randomized controlled trials

In iron-depleted women, providing iron supplements daily as divided doses increases serum hepcidin and reduces iron absorption. Providing iron supplements on **alternate days and in single doses** optimizes iron absorption and might be a preferable dosing regimen. These findings **should be confirmed in iron-deficient anemic patients.**

ClinTrials Registry of 2019 ongoing study

Daily vs. Every Other Day Oral Iron Supplementation in Patients With Absolute Iron Deficiency Anemia (DEODO)

Best Iron Dose was less and less often

60 mg of iron every other day is best tolerated dose

The equivalent of 60 mg of elemental iron is 300 mg ferrous sulfate heptahydrate, 180 mg ferrous fumarate, or 500 mg of ferrous gluconate.

Equally effective in correcting ferritin

More effective if you consider dropout rate in usual dose

Associated Myth of Special Iron Preparations

Ferrous salts (ferrous fumarate, ferrous sulfate, and ferrous gluconate) are the **best absorbed iron supplements and are often considered the standard** compared with other iron salts. Iron supplements are available in immediate- and controlled-release formulations in tablets and caplets, in enteric form to decrease gastric irritation, and in chewable and liquid formulations. Ferrous salt formulations may be administered with **ascorbic acid** to improve absorption. Some clinicians may advise patients to take iron supplements with fruit juices high in ascorbic acid to improve absorption. Some combination products contain iron and ascorbic acid, such as Vitron-C (Insight Pharmaceuticals), which is formulated to help the body absorb iron more effectively and to cause less constipation.

Associated Myth of Special Iron Preparations

For the best absorption, iron supplements should be taken on an empty stomach; however, to avoid stomach irritation, many iron supplement manufacturers recommend that these supplements be taken with meals. However, foods and beverages such as cereals, milk, tea, and coffee may decrease iron absorption. Because iron may interfere with the absorption of antibiotics such as tetracyclines and fluoroquinolones, iron supplements and antibiotics should be taken at least 2 hours apart.

<https://www.pharmacytimes.com/publications/issue/2014/june2014/iron-supplements-treating-iron-deficiency-anemia>



Are you suffering from
Iron Deficiency Anemia?

Nearly **1 in 2** women have **IDA**.

It's under-diagnosed,
misunderstood and **DEADLY**.

Don't wait any longer to

GET YOUR IRON UP.

Ronnetta Griffin

Founder, Get Your Iron Up / Mrs. South Carolina 2015 / Miss South Carolina 1991

Are B12 Injections necessary to treat Pernicious Anemia?

Special circumstances should necessitate injections

- Gastrectomy
- Ileocecal Resection
- Lack of IF

Oral vitamin B12 compared with intramuscular vitamin B12 for vitamin B12 deficiency

Cochrane Review

Two studies used 1000 µg/day oral vitamin B12 and showed no relevant difference to intramuscularly applied vitamin B12 with regard to vitamin B12 blood levels. One trial used 2000 µg/day vitamin B12 and showed higher vitamin B12 blood levels in favor of oral vitamin B12. Two studies reported side effects. One study stated that no treatment-related side effects were seen in both the oral and intramuscular vitamin B12 groups. One study reported that 2 of 30 participants in the oral vitamin B12 group left the trial early due to side effects. Orally taken vitamin B12 showed lower treatment-associated costs than intramuscular vitamin B12 in one trial. No study reported on clinical signs and symptoms of vitamin B12 deficiency (e.g. fatigue, depression, neurological complications), health-related quality of life, or acceptability of the treatment scheme.

The overall quality of the evidence was low or very low, mainly due to the small number of included studies and the low numbers of participants in these studies.

Mass Action is the transport mechanism of oral B12

Cost, convenience and efficacy make this trial a no brainer

\$16 for 300 tablets



Do beta blockers cause depression?

Current Psychiatry. 2010 May;9(5):50-55

By Andrew J. Muzyk, PharmD

Evidence supports beta-blocker use in coronary artery disease and congestive heart failure. Although patients with these conditions are at increased risk for developing depression, there is little evidence that their risk will be further increased by adding beta blockers (Table), **Although patients taking beta blockers report a higher incidence of fatigue and sexual side effects—which could be interpreted as related to depression—studies do not support an association between these medications and depression.**

Initiation of Beta-Blocker Therapy and Depression After Acute Myocardial Infarction

Am Heart J. 2016 Apr; 174: 37–42.

Published online 2015 Dec 17. doi: 10.1016/j.ahj.2015.11.018

Initiation of Beta-Blocker Therapy and Depression After Acute Myocardial Infarction

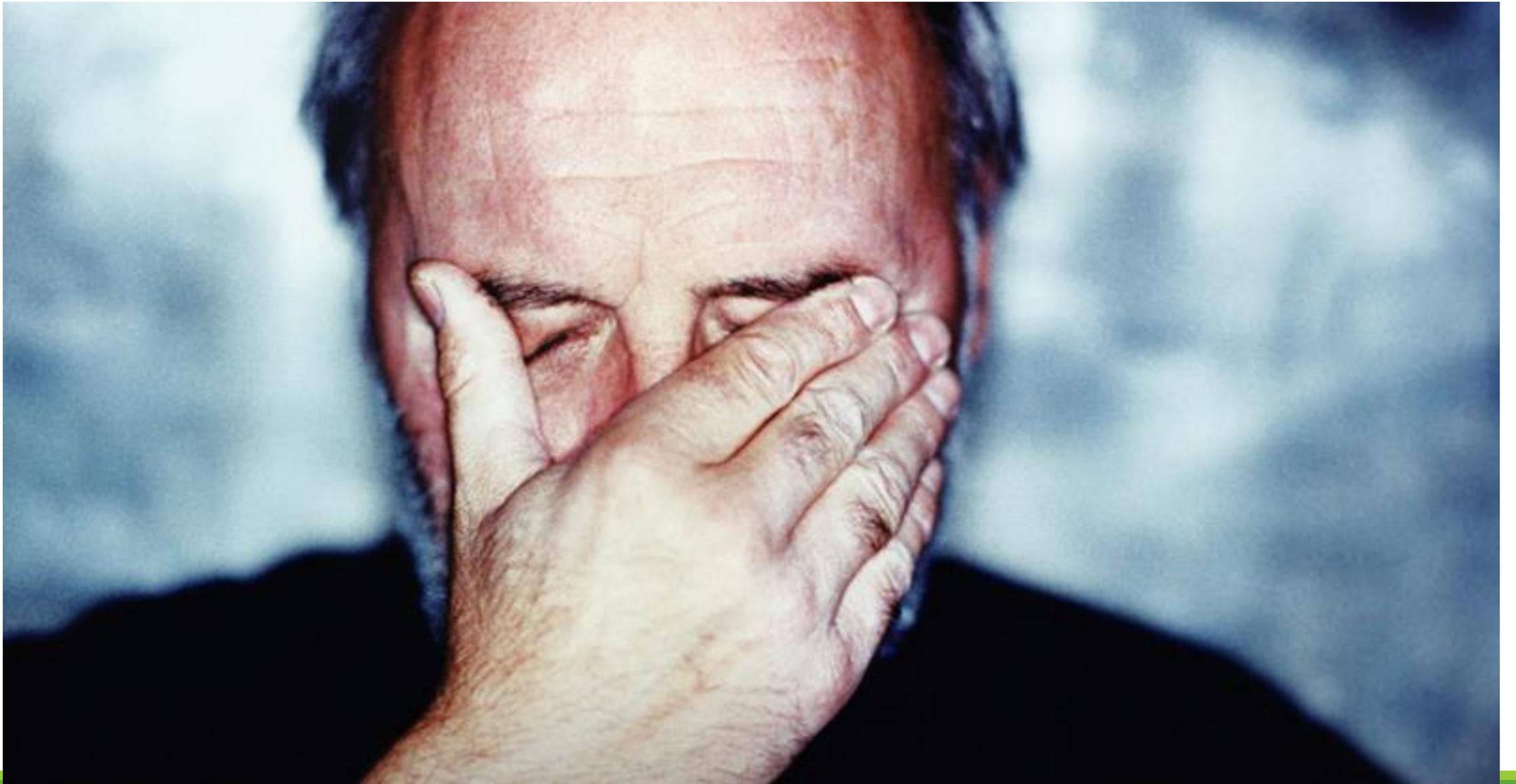
Anil M. Ranchord, MD,* John A. Spertus, MD, MPH,*† Donna M. Buchanan, PHD,*† Kensey L. Gosch, MS,* and Paul S. Chan, MD, MSc*†

Initiation of Beta-Blocker Therapy and Depression After Acute Myocardial Infarction

Of 3470 AMI patients who were β -blocker naïve on admission, 3190 (91.9%) were initiated on a β -blocker and 280 (8.1%) were not. Baseline PHQ-8 scores were higher in patients not initiated on a β -blocker (mean 5.78 ± 5.45 vs. 4.88 ± 5.11 , $P=0.005$). PHQ-8 scores were progressively lower at 1, 6 and 12 months in both the β -blocker (mean decrease at 12 months, 1.16; $p<0.0001$) and no β -blocker groups (mean decrease, 1.71; $p<0.0001$). After propensity matching 201 untreated patients with 567 treated patients, initiation of β -blocker therapy was not associated with a difference in mean change in PHQ-8 scores at 1, 6 or 12 months after AMI (absolute mean difference with β -blocker initiation at 12 months of 0.08, 95% CI: -0.81 to 0.96, $P=0.86$).

Initiation of β -blocker therapy after AMI was not associated with an increase in depressive symptoms. Restricting β -blocker use because of concerns about depression appears unwarranted and may lead to under-treatment of AMI patients.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4802859/>



Are Medications are no good after the Expiration Date?

Stability of Active Ingredients in Long-Expired Prescription Medications

Eight long-expired medications with 15 different active ingredients were discovered in a retail pharmacy in their original, unopened containers. All had expired 28 to 40 years prior to analysis. Three tablets or capsules of each medication were analyzed, with each sample tested 3 times for each labeled active ingredient. No analytical standard for homatropine could be found, so that ingredient was not tested.

What to you think?

Stability of Active Ingredients in Long-Expired Prescription Medications

JAMA Internal Medicine, Nov 26, 2012

Lee Cantrell, PharmD; Jeffrey R. Suchard, MD; Alan Wu, PhD; et al

Twelve of the 14 drug compounds tested (86%) were present in concentrations at least 90% of the labeled amounts, the generally recognized minimum acceptable potency. Three of these compounds were present at greater than 110% of the labeled content.

Two compounds (aspirin and amphetamine) were present in amounts of less than 90% of labeled content. **One compound (phenacetin) was present at greater than 90% of labeled amounts from 1 medication tested, but less than 90% in another medication that contained that drug (Table).**

Journal of Pharmaceutical Sciences

Stability profiles of drug products extended beyond labeled expiration dates

Robbe C. Lyon Jeb S. Taylor Donna A. Porter Hullahalli R. Prasanna Ajaz S. Hussain

First published: 23 May 2006 <https://doi.org/10.1002/jps.20636>

Stability profiles of drug products extended beyond labeled expiration dates

The American Medical Association has questioned whether expiration dating markedly underestimates the actual shelf life of drug products. Results from the **shelf life extension program (SLEP)** have been evaluated to provide extensive data to address this issue. The SLEP has been administered by the Food and Drug Administration for the United States **Department of Defense (DOD)** for 20 years. This program probably contains the most extensive source of pharmaceutical stability data extant. This report summarizes extended stability profiles for 122 different drug products (3005 different lots). The drug products were categorized into five groups based on incidence of initial extension failures and termination failures (extended lot eventually failed upon re-testing). Based on testing and stability assessment, **88% of the lots were extended at least 1 year beyond their original expiration date for an average extension of 66 months**, but the additional stability period was highly variable. **The SLEP data supports the assertion that many drug products, if properly stored, can be extended past the expiration date.** Due to the lot-to-lot variability, the stability and quality of extended drug products can only be assured by periodic testing and systematic evaluation of each lot.

Myth Busting redefined: Medical Reversals

Meta-Research: A comprehensive review of randomized clinical trials in three medical journals reveals 396 medical reversals

Diana Herrera-Perez, Alyson Haslam, Tyler Crain, Jennifer Gill, Catherine Livingston, Victoria Kaestner, Michael Hayes, Dan Morgan, Adam S Cifu see all

Oregon Health & Science University, United States; University of Maryland School of Medicine, United States; University of Chicago, United States