

## Belief that commonly used means effective

From: [Key Concepts for assessing claims about treatment effects and making well-informed treatment choices \(Version 2022\)](#)

---

### 1.3c Do not assume that a treatment is helpful or safe based on how widely used it is or has been.

---

#### Explanation

Treatments that have not been properly evaluated but are widely used or have been used for a long time are often assumed to work. Sometimes, however, they may be unsafe or of doubtful benefit.

Bloodletting, taking blood from a patient to prevent or cure illness, was the most common procedure performed by physicians and surgeons for almost two thousand years [[Science Museum 2009](#)]. As late as 1923, it was recommended in *Principles and the Practice of Medicine* [[Stewart 2019](#)]. In addition to not being helpful, bloodletting was not safe. People were killed from blood loss, including George Washington, the first president of the U.S. [[Morens 1999](#)]. It could also lead to severe or even fatal infections.

Medicine to reduce heart rhythm abnormalities is a more recent example of a widely-used treatment that was deadly. Because heart rhythm abnormalities are associated with an increased risk of early death after a heart attack, it was believed that medicines that reduced these abnormalities would also reduce early deaths. These medicines were used for many years before it was discovered that they increase the risk of sudden death. It has been estimated that, at the peak of their use in the late 1980s, they may have been killing as many as 70,000 people every year in the U.S. alone [[Moore 1995](#)].

#### Basis for this concept

The reversal of established medical practice is common and occurs across all classes of medical practice. Reviews of fair comparisons published in leading medical journals (JAMA, Lancet, and the New England Journal of Medicine) between 2003 and 2017 identified 542 “medical reversals” – evidence that established practices were ineffective or harmful [[Herrera-Perez 2019 \(SR\)](#), [Prasad 2013 \(SR\)](#)]. Similar studies have found that common practice is commonly shown to be ineffective or harmful in specific areas of practice [[Haslam 2021 \(SR\)](#), [Herrera-Perez 2020 \(SR\)](#)].

It is difficult to estimate how many contemporary medical practices are not any better than or are worse than doing nothing or doing something else that is simpler or less expensive [[Ioannidis 2013](#)]. About a quarter of original articles published in the New England Journal of Medicine evaluated established practices. Of those, about 40% found that established practices were not helpful or not safe and about 40% reaffirmed established practices. It is uncertain how representative these estimates are of evaluations published in other journals or, more importantly, of common practices generally. Nonetheless, many widely-used treatments are not helpful or are not safe [[Luo 2013 \(RS\)](#)]. Estimates of waste due to overtreatment or low-value care in the U.S. healthcare system range from \$75.7 billion to \$101.2 billion per year [[Shrank 2019 \(SR\)](#)].

Complementary and alternative medicine is widely used and has been for a long time [[Ernst 2000 \(SR\)](#), [Frass 2012 \(SR\)](#)]. Because many complementary and alternative treatments are poorly evaluated, it is uncertain whether they are effective or safe. For example, homeopathy has been used for over 200 years, but [systematic reviews](#) of the effects of homeopathy have found no

condition that responds convincingly better to homeopathic treatment than to placebo [Ernst 2002 (SR), Jorgensen 2013 (SR)]. Similarly, herbal remedies are widely used and have been for a long time, but the effectiveness of many herbal remedies is uncertain [Hu 2011 (SR)]. Moreover, some herbal remedies have been found to have adverse effects [Lee 2016 (SR)]. Acupuncture, which has been used for about 3,000 years, has been shown to be effective for some conditions, but not for others [Tait 2002 (SR)]. And although acupuncture is relatively safe, it can have both minor and serious adverse effects. Chiropractic treatments, which have been used for over 100 years, have been shown to be effective for some upper extremity conditions, but not for other conditions [Salehi 2015 (SR)]. Chiropractic treatments can also have both minor and serious adverse effects [Gouveia 2009 (SR)].

## Implications

Do not assume that treatments are beneficial or safe simply because they are widely used or have been used for a long time, unless this has been shown in systematic reviews of fair comparisons of treatments.

## References

### Systematic reviews

- Ernst E. Prevalence of use of complementary/alternative medicine: a systematic review. *Bull World Health Organ.* 2000;78(2):252-7. <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc2560678/>
- Frass M, Strassl RP, Friehs H, Müllner M, Kundi M, Kaye AD. Use and acceptance of complementary and alternative medicine among the general population and medical personnel: a systematic review. *Ochsner J.* 2012;12(1):45-56. <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc3307506/>
- Gouveia LO, Castanho P, Ferreira JJ. Safety of chiropractic interventions: a systematic review. *Spine (Phila Pa 1976).* 2009;34(11):E405-13. <https://doi.org/10.1097/brs.0b013e3181a16d63>
- Haslam A, Gill J, Crain T, Herrera-Perez D, Chen EY, Hilal T, et al. The frequency of medical reversals in a cross-sectional analysis of high-impact oncology journals, 2009-2018. *BMC Cancer.* 2021;21(1):889. <https://doi.org/10.1186/s12885-021-08632-8>
- Herrera-Perez D, Fox-Lee R, Bien J, Prasad V. Frequency of medical reversal among published randomized controlled trials assessing cardiopulmonary resuscitation (CPR). *Mayo Clin Proc.* 2020;95(5):889-910. <https://doi.org/10.1016/j.mayocp.2020.01.036>
- Herrera-Perez D, Haslam A, Crain T, Gill J, Livingston C, Kaestner V, et al. A comprehensive review of randomized clinical trials in three medical journals reveals 396 medical reversals. *eLife.* 2019;8:e45183. <https://doi.org/10.7554/eLife.45183>
- Hu J, Zhang J, Zhao W, Zhang Y, Zhang L, Shang H. Cochrane systematic reviews of Chinese herbal medicines: an overview. *PLoS One.* 2011;6(12):e28696. <https://doi.org/10.1371/journal.pone.0028696>
- Prasad V, Vandross A, Toomey C, Cheung M, Rho J, Quinn S, et al. A decade of reversal: an analysis of 146 contradicted medical practices. *Mayo Clin Proc.* 2013;88(8):790-8. <https://doi.org/10.1016/j.mayocp.2013.05.012>
- Salehi A, Hashemi N, Imanieh MH, Saber M. Chiropractic: is it efficient in treatment of diseases? Review of systematic reviews. *Int J Community Based Nurs Midwifery.* 2015;3(4):244-54. <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc4591574/>
- Shrank WH, Rogstad TL, Parekh N. Waste in the US health care system: estimated costs and potential for savings. *JAMA.* 2019;322(15):1501-9. <https://doi.org/10.1001/jama.2019.13978>
- Tait PL, Brooks LJ, Harstall C. *Acupuncture: evidence from systematic reviews and meta-analyses: Alberta Heritage Foundation for Medical Research Edmonton, Alberta, Canada; 2002.*

### Research studies

- Luo XM, Tang JL, Hu YH, Li LM, Wang YL, Wang WZ, et al. How often are ineffective interventions still used in clinical practice? A cross-sectional survey of 6,272 clinicians in China. *PLoS One.* 2013;8(3):e52159. <https://doi.org/10.1371/journal.pone.0052159>

## Other references

Ioannidis JP. How many contemporary medical practices are worse than doing nothing or doing less? Mayo

Clin Proc. 2013;88(8):779-81. <https://doi.org/10.1016/j.mayocp.2013.05.010>

Moore TJ. Deadly Medicine: Why Tens of Thousands of Heart Patients Died in America's Worst Drug Disaster.

New York: Simon & Schuster; 1995.

Morens DM. Death of a president. N Engl J Med. 1999;341(24):1845-9.

<https://doi.org/10.1056/nejm199912093412413>

Science Museum. Bloodletting, 2009.

<http://www.sciencemuseum.org.uk/broughttolife/techniques/bloodletting.aspx>

Stewart O. Bloodletting: a brief historical perspective and modern medical applications. Clinical Correlations,

October. 2019;31. [https://www.clinicalcorrelations.org/2019/10/31/bloodletting-a-brief-historical-](https://www.clinicalcorrelations.org/2019/10/31/bloodletting-a-brief-historical-perspective-and-modern-medical-applications/)

[perspective-and-modern-medical-applications/](https://www.clinicalcorrelations.org/2019/10/31/bloodletting-a-brief-historical-perspective-and-modern-medical-applications/)