

Importance of each benefit or harm

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

3.2c Consider how important each advantage and disadvantage is when weighing the pros and cons and making choices.

Explanation

Estimates of benefits and harms depend on how much weight people give to treatment advantages and disadvantages. Different people may value [outcomes](#) differently and sometimes make different choices because of this. In addition, people usually place more value on outcomes that happen soon than on outcomes that happen years into the future. In other words, the further into the future an outcome (for example, reducing the chance of heart disease or cancer after many years) the more people tend to “discount” its value or importance. The balance between the advantages and disadvantages of treatments may also depend on how much costs and events in the future are discounted.

Consider the example of aspirin to prevent cardiovascular disease in someone 60 years old with a low risk. The main advantage is a reduced risk of having a heart attack. The main disadvantage is an increased risk of having a serious gastrointestinal bleed, as shown in the table below [[Vandvik 2012](#)].

Outcome	Relative risk reduction (95% confidence interval)	Risk without aspirin	Risk difference (95% confidence interval)
Heart attacks	23% (14% to 31%)	27 per 1,000	6 fewer per 1,000 (4 to 8 fewer)
Serious gastrointestinal bleeds	54% increase (30% to 82%)	8 per 1,000	4 more per 1,000 (2 to 7 more)

Although aspirin costs very little, for someone with very little money, this might be another important disadvantage. There is also minimal inconvenience – taking a pill every day for 10 years – but for some people this might be enough of a bother to be another disadvantage. Someone who is more averse to having a heart attack than having a serious gastrointestinal bleed and who is not concerned about the cost or the bother, might choose to take aspirin. On the other hand, someone who is more averse to having a serious gastrointestinal bleed and less averse to having a heart attack, might choose not to take aspirin, especially if they were concerned about the cost or the bother.

Basis for this concept

People vary greatly in the importance they attribute to outcomes. A [systematic review](#) of studies that assessed how much people value potential benefits and harms of aspirin and other antithrombotic therapy found 48 studies [[MacLean 2012 \(SR\)](#)]. There were inconsistencies across studies and variation within studies. The authors concluded that, on average, a stroke was two or three times worse than a gastrointestinal bleed and a heart attack was between being about the same and two times worse than a gastrointestinal bleed. Those estimates of the relative importance of these outcomes were very uncertain, and not everyone is “average”. Other systematic reviews

have found similar variation in how much people value potential benefits and harms of treatments, as well as important limitations in studies that have measured people's values [[Etxeandia-Ikobaltzeta 2020 \(SR\)](#), [González-González 2021 \(SR\)](#), [Guerra 2019 \(SR\)](#), [Hansson 2021 \(SR\)](#), [Heen 2021 \(SR\)](#), [Malde 2021 \(SR\)](#), [Mathioudakis 2019 \(SR\)](#), [Muñoz-Velandia 2019 \(SR\)](#), [O'Reilly 2021 \(SR\)](#), [Pillay 2021 \(SR\)](#), [Valli 2019 \(SR\)](#), [Vernooij 2018 \(SR\)](#), [Zeng 2021 \(SR\)](#), [Zhang 2018 \(SR\)](#)].

It is important to consider how long a condition lasts as well as how severe it is. For example, most people consider a severe stroke as being much worse than a heart attack or a gastrointestinal bleed. Some people even consider having a severe stroke to be worse than dying. In addition, disability following a stroke may last for years, whereas most people are able to return to a normal life shortly after having a nonfatal heart attack or gastrointestinal bleed. Because of differences in both the severity and duration of different outcomes, it can be misleading when researchers group together outcomes, such as "cardiovascular events", which can include heart attacks, strokes, deaths, and other outcomes (with different degrees of severity, duration, and occurrence) [[Cordoba 2010 \(SR\)](#), [Freemantle 2003 \(SR\)](#), [Lim 2008 \(SR\)](#), [McGrath 2011 \(RS\)](#)].

Although a majority of people prefer to make decisions together with a health professional, some people prefer to delegate decisions to a health professional [[Chewning 2012 \(SR\)](#)]. Unfortunately, health professionals' perceptions of their patients' desire to be involved in decisions are often inaccurate [[Cox 2007 \(RS\)](#)]. They may be more likely to underestimate the extent to which patients prefer to be involved in decisions. Regardless of who decides, decisions should be consistent with a patient's values. Decision aids can help patients to clarify their values and may help them to make choices that are more consistent with their values compared to choices made without decision aids [[Stacey 2014 \(SR\)](#)]. There is some evidence that patients choose more conservative approaches when they become better informed [[Walsh 2014 \(SR\)](#)].

Economists use quality-adjusted life-years (QALYs) as a measure that captures both the severity and duration of a condition and allows for comparisons across different conditions. However, QALYs reflect, at best, average values. The values attached to different conditions are often uncertain and individuals can have very different values. Thus, although QALYs can help, if used judiciously, to inform decisions about how healthcare resources are spent, they are unlikely to be helpful for patients and clinicians making decisions for individuals [[Franklin 2019 \(RS\)](#), [Rand 2021 \(SR\)](#)].

When decisions are made for a group of people rather than for individuals, it is important to consider how much the people affected by the decision value the benefits and harms, whether there is important uncertainty about this, and whether there is important variability in how much people value the benefits and harms [[Moberg 2018](#)].

Implications

Consider how important each treatment advantage and disadvantage is when choosing a treatment.

References

Systematic reviews

- Chewning B, Bylund CL, Shah B, Arora NK, Gueguen JA, Makoul G. Patient preferences for shared decisions: a systematic review. *Patient Educ Couns*. 2012;86(1):9-18. <https://doi.org/10.1016/j.pec.2011.02.004>
- Cordoba G, Schwartz L, Woloshin S, Bae H, Gøtzsche PC. Definition, reporting, and interpretation of composite outcomes in clinical trials: systematic review. *BMJ*. 2010;341:c3920. <https://doi.org/10.1136/bmj.c3920>
- Etxeandia-Ikobaltzeta I, Zhang Y, Brundisini F, Florez ID, Wiercioch W, Nieuwlaat R, et al. Patient values and preferences regarding VTE disease: a systematic review to inform American Society of Hematology guidelines. *Blood Adv*. 2020;4(5):953-68. <https://doi.org/10.1182/bloodadvances.2019000462>

- Freemantle N, Calvert M, Wood J, Eastaugh J, Griffin C. Composite outcomes in randomized trials: greater precision but with greater uncertainty? *JAMA*. 2003;289(19):2554-9. <https://doi.org/10.1001/jama.289.19.2554>
- González-González JG, Díaz González-Colmenero A, Millán-Alanís JM, Lytvyn L, Solis RC, Mustafa RA, et al. Values, preferences and burden of treatment for the initiation of GLP-1 receptor agonists and SGLT-2 inhibitors in adult patients with type 2 diabetes: a systematic review. *BMJ Open*. 2021;11(7):e049130. <https://doi.org/10.1136/bmjopen-2021-049130>
- Guerra RL, Castaneda L, de Albuquerque RCR, Ferreira CBT, Corrêa FM, Fernandes RRA, et al. Patient preferences for breast cancer treatment interventions: a systematic review of discrete choice experiments. *Patient*. 2019;12(6):559-69. <https://doi.org/10.1007/s40271-019-00375-w>
- Hansson E, Sandman L, Davidson T. A systematic review of direct preference measurements in health states treated with plastic surgery. *J Plast Surg Hand Surg*. 2021:1-11. <https://doi.org/10.1080/2000656x.2021.1953039>
- Heen AF, Lytvyn L, Shapiro M, Guyatt GH, Siemieniuk RAC, Zhang Y, et al. Patient values and preferences on valve replacement for aortic stenosis: a systematic review. *Heart*. 2021;107(16):1289-95. <https://doi.org/10.1136/heartjnl-2020-318334>
- Lim E, Brown A, Helmy A, Mussa S, Altman DG. Composite outcomes in cardiovascular research: a survey of randomized trials. *Ann Intern Med*. 2008;149(9):612-7. <https://doi.org/10.7326/0003-4819-149-9-200811040-00004>
- MacLean S, Mulla S, Akl EA, Jankowski M, Vandvik PO, Ebrahim S, et al. Patient values and preferences in decision making for antithrombotic therapy: a systematic review: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 Suppl):e1S-e23S. <https://doi.org/10.1378/chest.11-2290>
- Malde S, Umbach R, Wheeler JR, Lytvyn L, Cornu JN, Gacci M, et al. A systematic review of patients' values, preferences, and expectations for the diagnosis and treatment of male lower urinary tract symptoms. *Eur Urol*. 2021;79(6):796-809. <https://doi.org/10.1016/j.eururo.2020.12.019>
- Mathioudakis AG, Salakari M, Pylkkanen L, Saz-Parkinson Z, Bramesfeld A, Deandrea S, et al. Systematic review on women's values and preferences concerning breast cancer screening and diagnostic services. *Psychooncology*. 2019;28(5):939-47. <https://doi.org/10.1002/pon.5041>
- Muñoz-Velandia O, Guyatt G, Devji T, Zhang Y, Li SA, Alexander PE, et al. Patient values and preferences regarding continuous subcutaneous insulin infusion and artificial pancreas in adults with type 1 diabetes: a systematic review of quantitative and qualitative data. *Diabetes Technol Ther*. 2019;21(4):183-200. <https://doi.org/10.1089/dia.2018.0346>
- O'Reilly R, Yokoyama S, Boyle J, Kwong JC, McGeer A, To T, et al. The impact of acute pneumococcal disease on health state utility values: a systematic review. *Qual Life Res*. 2021. <https://doi.org/10.1007/s11136-021-02941-y>
- Pillay J, Wingert A, MacGregor T, Gates M, Vandermeer B, Hartling L. Screening for chlamydia and/or gonorrhoea in primary health care: systematic reviews on effectiveness and patient preferences. *Syst Rev*. 2021;10(1):118. <https://doi.org/10.1186/s13643-021-01658-w>
- Rand LZ, Kesselheim AS. Controversy over using quality-adjusted life-years in cost-effectiveness analyses: a systematic literature review. *Health Aff*. 2021;40(9):1402-10. <https://doi.org/10.1377/hlthaff.2021.00343>
- Stacey D, Légaré F, Col NF, Bennett CL, Barry MJ, Eden KB, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev*. 2014(1):Cd001431. <https://doi.org/10.1002/14651858.cd001431.pub4>
- Valli C, Rabassa M, Johnston BC, Kuijpers R, Prokop-Dorner A, Zajac J, et al. Health-related values and preferences regarding meat consumption: a mixed-methods systematic review. *Ann Intern Med*. 2019;171(10):742-55. <https://doi.org/10.7326/m19-1326>
- Vernooij RWM, Lytvyn L, Pardo-Hernandez H, Albarqouni L, Canelo-Aybar C, Campbell K, et al. Values and preferences of men for undergoing prostate-specific antigen screening for prostate cancer: a systematic review. *BMJ Open*. 2018;8(9):e025470. <https://doi.org/10.1136/bmjopen-2018-025470>
- Walsh T, Barr PJ, Thompson R, Ozanne E, O'Neill C, Elwyn G. Undetermined impact of patient decision support interventions on healthcare costs and savings: systematic review. *BMJ*. 2014;348:g188. <https://doi.org/10.1136/bmj.g188>
- Zeng L, Lytvyn L, Wang X, Kithulegoda N, Agterberg S, Shergill Y, et al. Values and preferences towards medical cannabis among people living with chronic pain: a mixed-methods systematic review. *BMJ Open*. 2021;11(9):e050831. <https://doi.org/10.1136/bmjopen-2021-050831>

Zhang Y, Morgan RL, Alonso-Coello P, Wiercioch W, Bała MM, Jaeschke RR, et al. A systematic review of how patients value COPD outcomes. *Eur Respir J*. 2018;52(1). <https://doi.org/10.1183/13993003.00222-2018>

Research studies

Cox K, Britten N, Hooper R, White P. Patients' involvement in decisions about medicines: GPs' perceptions of their preferences. *Br J Gen Pract*. 2007;57(543):777-84.

<http://www.ncbi.nlm.nih.gov/pmc/articles/pmc2151809/>

Franklin EF, Nichols HM, Charap E, Buzaglo JS, Zaleta AK, House L. Perspectives of patients with cancer on the quality-adjusted life year as a measure of value in healthcare. *Value Health*. 2019;22(4):474-81.

<https://doi.org/10.1016/j.jval.2018.09.2844>

McGrath E, O'Conghaile A, Eikelboom JW, Dinneen SF, Oczkowski C, O'Donnell MJ. Validity of composite outcomes in meta-analyses of stroke prevention trials: the case of aspirin. *Cerebrovasc Dis*. 2011;32(1):22-

7. <https://doi.org/10.1159/000324629>

Other references

Moberg J, Oxman AD, Rosenbaum S, Schunemann HJ, Guyatt G, Flottorp S, et al. The GRADE Evidence to Decision (EtD) framework for health system and public health decisions. *Health Res Policy Syst*.

2018;16(1):45. <https://doi.org/10.1186/s12961-018-0320-2>

Vandvik PO, Lincoff AM, Gore JM, Gutterman DD, Sonnenberg FA, Alonso-Coello P, et al. Primary and secondary prevention of cardiovascular disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*.

2012;141(2 Suppl):e637S-e68S. <https://doi.org/10.1378/chest.11-2306>