Key Concepts for Informed Choices

A framework for taking decisions based on thinking critically about claims and comparisons. (*from* Nature, 2019)

Claims

Claims about effects should be supported by evidence from fair comparisons. Other claims are not necessarily wrong, but there is an insufficient basis for believing them.

Claims should not assume that interventions are safe, effective, or certain.

- Interventions can cause harms as well as benefits.
- Large, dramatic effects are rare.
- We can rarely, if ever, be certain about the effects of interventions.

Seemingly logical assumptions are not a sufficient basis for claims.

- Beliefs alone about how interventions work are not reliable predictors of the presence or size of effects.
- An outcome may be associated with an intervention but not caused by it.
- More data is not necessarily better data.
- The results of one study considered in isolation can be misleading.
- Widely used interventions or those that have been used for decades are not necessarily beneficial or safe.
- Interventions that are new or technologically impressive may not be better than available alternatives.
- Increasing the amount of an intervention does not necessarily increase its benefits and may cause harm.

Trust in a source alone is not a sufficient basis for believing a claim.

- Competing interests may result in misleading claims.
- Personal experiences or anecdotes alone are an unreliable basis for most claims.
- Opinions of experts, authorities, celebrities, or other respected individuals are not alone a reliable basis for claims.
- Peer review and publication by a journal do not guarantee that comparisons have been fair.

Comparisons

Studies should make fair comparisons, designed to minimize the risk of systematic errors (biases) and random errors (the play of chance).

Comparisons of interventions should be fair.

- Comparison groups and conditions should be as similar as possible.
- Indirect comparisons of interventions across different studies can be misleading.
- The people, groups or conditions being compared should be treated similarly, apart from the interventions being studied.
- Outcomes should be assessed in the same way in the groups or conditions being compared.
- Outcomes should be assessed using methods that have been shown to be reliable.
- It is important to assess outcomes in all (or nearly all) the people or subjects in a study.
- When random allocation is used, people's or subjects' outcomes should be counted in the group to which they were allocated.

Syntheses of studies should be reliable.

- Reviews of studies comparing interventions should use systematic methods.
- Failure to consider unpublished results of fair comparisons may bias estimates of effects.
- Comparisons of interventions may be sensitive to underlying assumptions.

Descriptions should clearly reflect the size of effects and the risk of being misled by the play of chance.

- Verbal descriptions of the size of effects alone can be misleading.
- Small studies may be misleading.
- Confidence intervals should be reported for estimates of effects.
- Deeming results to be "statistically significant" or "nonsignificant" can be misleading.
- Lack of evidence of a difference is not the same as evidence of "no difference".

Choices

What to do depends on judgements about the problem, the relevance (applicability or transferability) of the evidence available, and the balance of expected benefits, harms and costs.

Problems, goals and options should be defined.

- The problem should be diagnosed or described correctly.
- The goals and options should be acceptable and feasible.

Available evidence should be relevant.

- Attention should focus on important, not surrogate, outcomes of interventions.
- There should not be important differences between the people or subjects in studies and those to whom the study results will be applied.
- The interventions compared should be similar to those of interest.
- The circumstances in which the interventions were compared should be similar to those of interest.

Expected pros should outweigh cons.

- Weigh the benefits and savings against the harms and costs of acting or not.
- Consider how these are valued, their certainty, and how they are distributed.
- Important uncertainties about the effects of interventions should be reduced by further fair comparisons.

How this framework was developed