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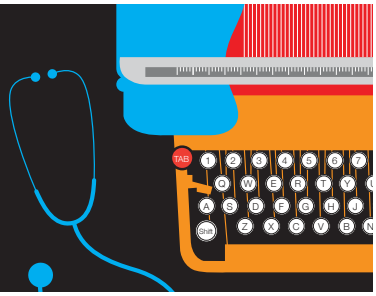
Medicine in the Media

The Challenge of Reporting on Medical Research

Questions to guide your reporting



What is the finding?

What is the distinct exposure – or treatment – in each group?

If it is a lifestyle exposure (diet or exercise), how does it translate into what you have to eat or do?

What is the outcome under consideration?

If the outcome is a surrogate (cholesterol test), is it strongly linked to patient outcomes (heart attack)?

If the outcome is a composite (combining multiple components such as heart attack, stroke, or death), can you learn about the role of each component?

If the outcome is a score, (Hamilton Rating Scale for Depression) can you learn what constitutes a clinically important difference (that patients can notice) and what proportion in each group experienced it?

How big is the finding?

What is the chance of the outcome (over what time period) in each group?

Just knowing the relative risk ("0.75 times the risk") or the relative risk reduction ("25% fewer") without knowing the absolute risk is insufficient. Remember that a relative risk of 0.75 can represent an infinite number of combinations (0.003% vs. 0.004%, 3% vs. 4%, 30% vs. 40%)

Guidelines for presenting absolute risks

- Present absolute risks for each exposure group along with the time frame.
- Consider expressing absolute risks as percents (10%). This format is understandable even for decimal percents (0.5%).
- If expressing absolute risks as frequencies, DON'T use the "1 in X" format which makes comparisons hard (1 in 35 vs 1 in 56).
  Instead use "X in ___" like 2 in 1000.
  For the "in ___" part use multiples of 10, choosing the smallest one which makes "X" a whole number.
  Use the same "in ___" for the whole story.
- Provide context for the absolute risk.
  How dangerous is the disease? Compare absolute risk of getting to dying from disease.
  How does this risk compare to others? Compare absolute risk of dying from cancer to dying from heart disease.

What are the downsides of intervention: life threatening harms, bothersome side effects, inconvenience, costs?

When reporting on a beneficial treatment, make sure you look for associated harms. And report the absolute risks for these harms in the same format, for the same time frame, and the same dose.

Special case: Odds ratios overstate effects when outcomes are common (when the absolute risk is >20%).

Always ask: What are the absolute risks in each exposure group?

What does the finding mean?

How does the finding fit with what is already known about the topic?

Look for a systematic review.

Is the finding clinically meaningful or just "statistically significant" (i.e., $p<0.05$)?

Is the outcome something people directly experience or really care about? Is the effect size big or small?

Avoid the word significant. Consider using "important" for clinically meaningful and "unlikely to be due to chance" for statistical signficance.

Could the finding be wrong?

If an observational study, consider how likely it is that confounding -- differences between the people in the exposure groups — might explain the finding?

How different are the exposure groups in terms of age, sex, income, illness level, behaviors like smoking?

Did the investigators attempt to deal with confounding? How much did adjustment change the finding?

If a negative study (effect size not statistically significant), ask whether the confidence interval includes a clinically meaningful effect?

Special case: 5-year survival and screening

Improved 5-year survival for screened vs unscreened patients tells you nothing about the benefit of screening.

Bottom Line

If you can't get answers, consider skipping the story. Use numbers (and put them in tables) and highlight cautions.

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How to highlight study cautions

Setting	Suggested Language
Preliminary research (unpublished scientific meeting presentations)	These preliminary findings may change because the study has not been independently vetted through peer review [and/or] all the data are not in yet.
Inherently weak designs Animal or lab study	It takes many years to learn if the findings of animal [or lab] studies apply to people. Many promising animal [lab] studies fail to pan out in people.
Cross sectional study	Because all information was collected at the same time, you can't know if [exposure] caused [outcome], or visa versa.
Ecological studies (International comparison of dietary fat consumption vs. colon cancer mortality rate)	The study provides weak evidence connecting [exposure] and [outcome]. It shows that populations with more [exposure] have more/less [outcome]. But the study cannot tell if the people [with exposure] are the ones who actually had the [outcome].
Models (decision analysis)	The findings are based on assumptions including hypothetical relationships which may not exist.
No control group	Because everyone [took the drug / had the exposure], it is extremely hard to know if the [drug/exposure] had anything to do with the outcome.
Small study (less than 30 people)	These findings are based on a small study; larger studies are needed to really understand how much the intervention works.
Surrogate outcomes (lab test or x-ray finding)	This study measured [surrogate outcome] - a lab test/ x-ray finding - that patients do not directly experience. Be cautious about acting on these findings since changes in these kinds of measures do not reliably translate into people feeling better or living longer.
Classic designs Randomized trial	
Extrapolation	The findings may not apply to people who differ from those in the study (people with less severe disease or at lower risk for bad outcomes).
New interventions	The study only lasted a short time - [X days, weeks or months]. The balance of benefits and harms may change over a longer time period. Longer-term studies are needed.
New drugs	[Drug] is new: it was approved in [year]. As with all new drugs, we don't know how its safety record will hold up over time. In general, if there are unforeseen, serious side effects, they emerge after the drug is on the market when a large enough number of people have used the drug.
Observational studies (with a control group)	
Trial <u>not</u> possible (harmful exposure)	Because the study was not a true experiment, the findings may be explained by differences in the people who happened to be [exposed] rather than [drug/exposure].
Trial possible (beneficial exposure)	Because the study was not a true experiment, we cannot know whether changing [exposure] will change [outcome]. The findings may be explained by differences in the people who happened to be [exposed] rather than [drug/exposure]. A randomized trial is needed before widespread adoption of [intervention].
All studies	The benefit of [any action/intervention] should be weighed against the [side effects, inconveniences, costs, etc.].

Bottom Line

Use cautions – all studies have them.
Consider not reporting preliminary or inherently weak research.

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