

Arguments from Authority

Why We Trust and When We Shouldn't

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Intro to Logic

Arguments from Authority: Why We Trust and When We Shouldn't

- An **argument from authority** (or **appeal to authority**) occurs when we accept a claim because an expert or authority figure says it's true.
- We encounter these arguments daily: your doctor prescribes medication, a mechanic diagnoses your car, or a professor explains quantum physics.
- While often necessary and reasonable, appeals to authority can lead us astray when misused or when we trust the wrong sources.
- This lecture explores how to distinguish legitimate appeals to authority from fallacious ones, using medical examples throughout history.

Key Question

How do we decide which authorities deserve our trust?

Overview: Medical Examples and Beyond

- We'll examine how medical authorities have both helped and harmed throughout history, from ancient bloodletting to modern social media health influencers.
- You'll learn to identify the structure of arguments from authority and recognize when they're being used appropriately versus misleadingly.
- We'll develop practical tools for evaluating experts, understanding scientific consensus, and navigating conflicting opinions.
- By the end, you'll have a framework for balancing necessary trust in experts with healthy skepticism.

Example

Consider: Why do you believe smoking causes cancer? Most of us haven't conducted the research ourselves—we trust medical authorities.

What Is an Argument from Authority?

- An **argument from authority** has the basic structure: "X is true because authority A says X is true."
- This is an **inductive argument**—even if the premises are true, the conclusion might still be false, but is probably true.
- The argument's strength depends on whether A is genuinely an expert in the relevant field and whether experts in that field generally agree.
- Not all appeals to authority are fallacious—in fact, they're often the most practical way to gain knowledge about complex topics.

Formal Structure

- 1 Authority A claims that X is true.
- 2 A is a legitimate expert on the subject matter of X.
- 3 Therefore, X is (probably) true.

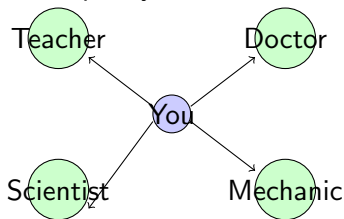
The Structure of Appeals to Authority

- Appeals to authority can be **explicit** ("Dr. Smith says vaccines are safe, so they must be") or **implicit** (accepting information from a textbook without question).
- The strength of the appeal depends on three key factors: the authority's expertise, their reliability, and the consensus within their field.
- **Domain specificity** matters—an expert in one area may not be qualified to speak authoritatively about another.
- Even legitimate authorities can be wrong, which is why these arguments are inductive rather than deductive.

Strong Appeal	Weak Appeal
Relevant expertise	Irrelevant expertise
Current knowledge	Outdated information
Consensus exists	Controversial claim
No conflicts of interest	Clear bias present

Why We Rely on Authorities: The Limits of Personal Knowledge

- No individual can personally verify all the knowledge they need to function in modern society—we must rely on others' expertise.
- The **division of cognitive labor** means specialists develop deep knowledge in narrow fields while we trust their conclusions.
- Consider medicine: you can't personally run clinical trials to verify every treatment, so trusting medical researchers becomes necessary.
- This dependence on authority isn't a weakness—it's what allows human knowledge to accumulate and advance beyond any individual's capacity.



The Necessity of Trust in Modern Life

- Modern life requires constant reliance on authorities: we trust engineers who design bridges, pharmacists who fill prescriptions, and pilots who fly planes.
- **Epistemic dependence** refers to our necessary reliance on others for knowledge—it's not optional in complex societies.
- Without appeals to authority, we'd be paralyzed by the need to personally verify every claim before acting on it.
- The question isn't whether to trust authorities, but rather how to distinguish trustworthy authorities from unreliable ones.

Consider This

Every time you take medication, you're making an implicit argument from authority: "Medical researchers say this is safe and effective, therefore it probably is."

Ancient Medicine: When Bloodletting Was "Expert" Advice

- For over 2,000 years, bloodletting was standard medical practice, endorsed by authorities from Hippocrates to respected 19th-century physicians.
- **Bloodletting** involved deliberately removing blood to cure diseases, based on the theory that illness came from "bad blood" or imbalanced humors.
- This practice persisted not due to evidence but because of **argumentum ad antiquitatem**—the false belief that long-standing practices must be correct.
- George Washington likely died from excessive bloodletting in 1799, showing how even the most respected authorities can be dangerously wrong.

Example

Medical authorities bled patients for conditions including:

- Pneumonia
- Fevers
- Back pain
- Mental illness

The Four Humors: 2,000 Years of Medical Consensus

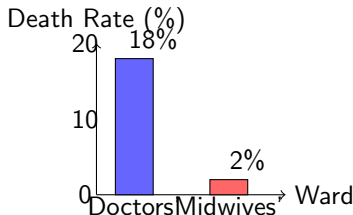
- The **theory of the four humors** dominated medical thinking from ancient Greece through the 18th century, claiming health depended on balancing blood, phlegm, yellow bile, and black bile.
- This theory enjoyed near-universal **expert consensus** for millennia—virtually every medical authority from Hippocrates to Galen endorsed it.
- Treatments based on humoral theory included bloodletting, purging, and inducing vomiting—all aimed at "rebalancing" the body's fluids.
- The longevity of this false consensus shows that even widespread agreement among authorities can persist for centuries without empirical support.

The Four Humors

Blood	Associated with air, spring, courage
Phlegm	Associated with water, winter, calm
Yellow bile	Associated with fire, summer, anger
Black bile	Associated with earth, autumn, melancholy

Ignaz Semmelweis: When Authorities Rejected Handwashing

- In 1847, **Ignaz Semmelweis** discovered that handwashing with chlorinated lime dramatically reduced deaths from childbed fever in maternity wards.
- Despite clear statistical evidence—mortality rates dropped from 18% to less than 2%—the medical establishment rejected his findings.
- Authorities dismissed Semmelweis because his theory contradicted established beliefs and seemed to blame doctors for patient deaths.
- Semmelweis was eventually fired and suffered a mental breakdown; handwashing wasn't widely accepted until decades after his death, costing countless lives.



The Radium Girls: When Experts Said It Was Safe

- In the 1920s, young women painted watch dials with radium-based paint, instructed by supervisors to lick their brushes to create fine points.
- Company experts and doctors assured workers that radium was safe—even beneficial—despite management knowing about radiation dangers.
- The "**Radium Girls**" developed severe radiation poisoning: their bones crumbled, jaws rotted away, and many died agonizing deaths.
- This case illustrates how **conflicts of interest** can corrupt expert testimony—company-paid doctors denied obvious connections between radium and illness.

Key Lesson

When evaluating expert claims, always consider who pays the expert and what interests they might serve.

Thalidomide: FDA Approval and Devastating Consequences

- **Thalidomide** was marketed in the late 1950s as a safe sedative for pregnant women, approved by health authorities in over 40 countries.
- Medical experts promoted it as "completely safe" with "no side effects"—it was even sold over-the-counter in some countries.
- The drug caused severe birth defects in over 10,000 children worldwide before being withdrawn in 1961-62.
- One FDA reviewer, Frances Kelsey, prevented U.S. approval by demanding more safety data—showing how a single skeptical authority can be right against consensus.

Example

This tragedy led to major reforms:

- Stricter drug testing requirements
- Mandatory clinical trials for pregnant women
- Enhanced FDA regulatory powers

Lobotomies: Nobel Prize-Winning Medical Malpractice

- The **prefrontal lobotomy**, a procedure that severed connections in the brain's frontal lobe, was performed on over 40,000 Americans between 1936 and 1970.
- António Egas Moniz won the 1949 Nobel Prize in Medicine for developing this procedure, giving it the highest possible medical authority endorsement.
- Patients often became emotionally blunted, childlike, or severely disabled—yet authorities promoted it as a miracle cure for mental illness.
- The lobotomy's acceptance shows how even Nobel Prize-level recognition doesn't guarantee a treatment is beneficial or ethical.

Walter Freeman's "Ice Pick" Method

Dr. Freeman performed over 3,500 lobotomies, including the transorbital technique—inserting an ice pick through the eye socket to damage the brain.

Authority in Modern Medicine and Science

- As the examples in the previous slides show, medical authorities have made mistakes. This is true of all authorities (and is an inherent feature of this way of reasoning)!
- Modern medicine (and science) has changed in response to these problems – though the use of **randomized control trials**, **meta-analyses** of many studies, **open data** standards and more stringent ethical guidelines on clinical trials and treatment.
- Since about 1930 or so, "listening to your doctor" (e.g., getting vaccines, taking antibiotics) has, on average, been good for people's health.
- Debates over who is (and isn't) a medical authority have continued to rage, sometimes with disastrous results for people's health.

Legitimate vs. Illegitimate Appeals to Authority

- A **legitimate appeal to authority** occurs when the cited expert has genuine expertise in the relevant field and represents mainstream scientific opinion.
- An **illegitimate appeal** (the fallacy of false authority) happens when someone lacks relevant expertise or makes claims outside their field.
- The difference often depends on context: a physicist discussing quantum mechanics is legitimate; the same physicist endorsing a diet plan is not.
- Remember that even legitimate appeals are defeasible—new evidence can overturn expert consensus.

Legitimate	Illegitimate
Cardiologist on heart disease Climate scientist on global warming Historian on ancient Rome Pharmacist on drug interactions	Celebrity on vaccines Politician on evolution Engineer on psychology YouTuber on cancer cures

Direct Expertise vs. Adjacent Fields

- **Direct expertise** means having specialized training and experience in the exact area under discussion.
- **Adjacent field expertise** occurs when someone knowledgeable in a related but distinct area comments outside their specialty.
- The closer the fields, the more weight we might give to adjacent expertise—but critical differences can make such appeals unreliable.
- Many false appeals to authority exploit our difficulty in distinguishing genuine expertise from adjacent or irrelevant credentials.

Example

A neurosurgeon (brain surgery expert) commenting on:

- Brain tumor treatment → Direct expertise
- General neurology → Adjacent field (somewhat reliable)
- Psychiatry → More distant field (less reliable)
- Nutrition → Unrelated field (not reliable)

Individual Experts vs. Institutional Authority

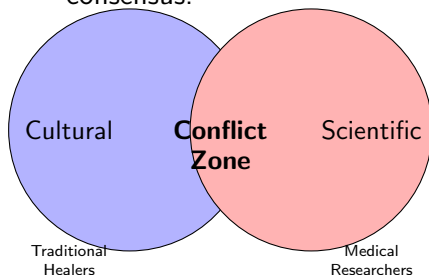
- **Individual experts** offer personal judgment based on their training and experience, but may have biases or make errors.
- **Institutional authorities** like the CDC, WHO, or medical associations represent collective expertise and undergo peer review processes.
- Institutions can provide more reliable guidance through systematic review processes, but can also suffer from groupthink or bureaucratic inertia.
- The strongest appeals to authority often combine both: individual experts whose views align with institutional consensus.

Hierarchy of Medical Authority

- 1 Systematic reviews and meta-analyses
- 2 Professional medical associations' guidelines
- 3 Peer-reviewed research by multiple teams
- 4 Individual expert opinions
- 5 Single studies or anecdotal evidence

Cultural Authority vs. Scientific Authority

- **Cultural authorities** derive their credibility from tradition, religious position, or social status within a community.
- **Scientific authorities** base their expertise on empirical research, peer review, and the scientific method.
- These two types of authority can conflict, especially in areas like medicine where traditional practices meet modern science.
- Understanding this distinction helps explain why some communities reject vaccines or climate science despite overwhelming scientific consensus.



Dr. Oz and TV Medical Advice: Entertainment or Expertise?

- Dr. Mehmet Oz began as a respected cardiac surgeon but transformed into a television personality offering daily medical advice.
- A 2014 study found that **40% of Dr. Oz's medical recommendations contradicted available scientific evidence** or lacked any supporting research.
- The "**Dr. Oz Effect**" demonstrates how media platforms can amplify questionable medical claims by mixing entertainment with expertise.
- His case illustrates the danger when legitimate credentials are used to promote products and treatments outside one's expertise or without scientific support.

Senate Hearing (2014)

Dr. Oz was called before Congress to explain his promotion of "miracle" weight loss products that research showed were ineffective.

Social Media Health Influencers: The New "Authorities"

- **Health influencers** on Instagram, TikTok, and YouTube often present themselves as authorities despite lacking medical training or credentials.
- Many followers treat these influencers as experts based solely on personal transformation stories, attractive presentations, or follower counts.
- The **parasocial relationships** formed online can make followers trust influencers more than their own doctors.
- This phenomenon bypasses traditional gatekeeping mechanisms like peer review, licensing boards, and professional accountability.

Example

Common Red Flags in Health Influencer Content:

- "Doctors don't want you to know..."
- Selling expensive supplements or programs
- Claiming one solution fixes everything
- Rejecting all mainstream medicine

Celebrity Endorsements: When Fame Becomes "Expertise"

- **Celebrity medical advocacy** occurs when famous individuals promote health claims based on personal experience rather than scientific evidence.
- The **halo effect** causes people to assume that success in one area (acting, sports) translates to credibility in health matters.
- Celebrities often share compelling personal stories that feel more relatable than statistics, making their false authority particularly persuasive.
- This becomes dangerous when celebrities contradict medical consensus on issues like vaccines, cancer treatment, or mental health.

Case Study: Jenny McCarthy

Background:	Actress and model
Claimed Authority:	"Mother's intuition" about vaccines
Impact:	Influenced vaccine hesitancy movement
Problem:	No medical or scientific training

Financial Gurus: When "Experts" Sell Hope

- **Financial influencers** often present themselves as authorities based on personal wealth stories rather than financial expertise or fiduciary responsibility.
- The **survivorship bias** means we hear from those who got lucky, not the thousands who failed using identical strategies.
- Many "gurus" profit from selling courses and seminars, not from the investment strategies they promote—a clear conflict of interest.
- Legitimate financial authorities have certifications (CFP, CFA), fiduciary duties, and don't promise unrealistic returns.

Red Flags in Financial Advice

- "I made millions with this ONE trick..."
- "Guaranteed 50% returns!"
- Expensive courses teaching "secrets"
- No mention of risk or downside

Crime Statistics: How Politicians and Media Misuse Authority

- Politicians and media outlets often cite **crime statistics** selectively, presenting themselves as authorities on public safety trends.
- The **availability heuristic** makes vivid individual cases seem representative, even when statistics show crime decreasing overall.
- Different authorities (FBI, local police, advocacy groups) use different methodologies, enabling cherry-picking of supportive data.
- Understanding base rates, per capita calculations, and trend lines is crucial for evaluating claims about crime.

Example

Same Data, Different Claims:

- "Murders increased 30%!" (True: from 10 to 13 in small town)
- "City is safer than ever!" (Also true: overall crime down 15%)
- "Violence is exploding!" (Misleading: one category up, most down)

Parenting Advice: When Everyone Knows Best

- **Parenting authorities** range from pediatricians and child psychologists to mommy bloggers and family members—all claiming expertise.
- The **naturalistic fallacy** leads many to assume traditional or "natural" parenting methods are automatically superior to evidence-based approaches.
- Social media creates echo chambers where dangerous practices (like avoiding vaccines) seem normal because "everyone" in the group agrees.
- Legitimate child development expertise requires understanding research methods, not just having successfully raised children.

The "Mom Group" Problem

Online parenting groups often elevate personal anecdotes over pediatric consensus, creating alternative "authorities" that contradict medical advice on sleep, feeding, and safety.

AI Medical Chatbots: Can Algorithms Be Authorities?

- **AI medical systems** like ChatGPT, Claude, and specialized medical chatbots are increasingly consulted for health information and advice.
- These systems can access vast medical databases but lack clinical experience, medical training, and the ability to physically examine patients.
- The **automation bias** leads people to trust AI recommendations simply because they come from a computer, assuming objectivity.
- AI presents unique challenges: it can sound authoritative while "hallucinating" false information or missing critical context about individual cases.

Key Limitation

AI systems explicitly state they cannot provide medical advice, yet users often treat their responses as authoritative medical guidance.

WebMD Syndrome: Self-Diagnosis in the Information Age

- **"WebMD Syndrome"** or **cyberchondria** occurs when people self-diagnose serious conditions based on internet searches of common symptoms.
- Search engines and medical websites become de facto authorities, but they lack the clinical judgment to weigh symptom probability and context.
- The availability of medical information creates an illusion of expertise—people feel qualified to challenge their doctors' diagnoses.
- This phenomenon shows how access to information without proper training can lead to misuse of legitimate medical resources.

Example

Common WebMD Progression:

- 1 Symptom: "Headache"
- 2 Search results include: Brain tumor, aneurysm, meningitis
- 3 Anxiety increases symptoms
- 4 Demands unnecessary tests from doctor

Anti-Vaccine Movements: Competing Claims to Authority

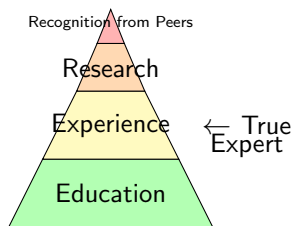
- Modern **anti-vaccine movements** create alternative authority structures that compete with mainstream medical consensus.
- These movements often cite discredited studies, minority medical opinions, or non-experts presented as whistleblowers against "Big Pharma."
- The **false balance** in media coverage gives equal weight to scientific consensus and fringe theories, confusing public understanding.
- Social media echo chambers allow these alternative authorities to seem more credible through repetition and community reinforcement.

Competing Authority Claims

Scientific Consensus	Anti-Vaccine Claims
Thousands of studies	One retracted study
Medical associations	"Brave" individual doctors
Peer review process	Parent testimonials
Global health data	Anecdotal evidence

What Makes Someone a Genuine Expert?

- **Genuine expertise** requires formal education, practical experience, and ongoing engagement with current research in a specific field.
- True experts acknowledge uncertainty, cite sources, and change positions when presented with new evidence.
- **Metacognitive awareness**—knowing the limits of one's knowledge—distinguishes real experts from false authorities.
- Genuine experts participate in professional communities where their work undergoes scrutiny and peer review.



Credentials, Experience, and Peer Recognition

- **Credentials** include degrees, licenses, and certifications from accredited institutions—but these alone don't guarantee current expertise.
- **Relevant experience** means actually working in the field, treating patients, conducting research, or solving real problems over time.
- **Peer recognition** appears through citations, invited lectures, leadership positions, and awards from professional communities.
- The strongest authorities combine all three: proper credentials, extensive experience, and recognition from other experts in their field.

Example	Credentials	Experience	Peer Recognition
New MD graduate	Yes	No	No
Veteran doctor	Yes	Yes	Varies
Nobel laureate	Yes	Yes	Yes
"TV doctor"	Yes	Limited	No

Understanding Scientific Consensus

- **Scientific consensus** emerges when the vast majority of experts in a field agree based on accumulated evidence.
- Consensus doesn't mean unanimous agreement—there are almost always some dissenters, but we must evaluate their credibility and motivations.
- Strong consensus develops through multiple independent studies, replication of results, and rigorous peer review over time.
- The strength of consensus varies: climate change (97%+ agreement) represents stronger consensus than optimal nutrition guidelines (more debate).

Markers of Strong Consensus

- Multiple professional organizations agree
- Reproduced across different countries/labs
- Decades of consistent findings
- Dissenters can't publish in best peer-reviewed journals
- Predictions based on consensus prove accurate

When Experts Disagree: Navigating Conflicting Opinions

- Expert disagreement is normal in emerging fields, complex questions, or areas with limited data.
- When experts disagree, examine whether it's about **fundamental facts** (rare) or **interpretation and application** (common).
- Consider the proportion of experts on each side—is it 50/50 or 95/5? The latter suggests examining minority views skeptically.
- In cases of genuine expert disagreement, reasonable people should acknowledge uncertainty rather than choosing sides prematurely.

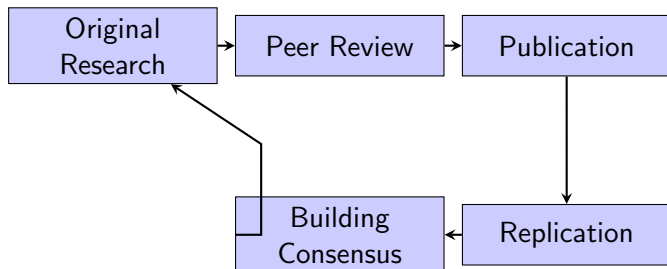
Example

COVID-19 mask recommendations in early 2020:

- Initial disagreement due to limited data
- Experts revised positions as evidence emerged
- Consensus developed around indoor masking
- Legitimate debate continued on outdoor requirements

The Role of Peer Review and Replication

- **Peer review** acts as quality control, where other experts evaluate research methods, logic, and conclusions before publication.
- **Replication** means other researchers repeat experiments to verify results—crucial for establishing reliable knowledge.
- The **replication crisis** revealed that many published findings, especially in psychology and medicine, couldn't be reproduced.
- These mechanisms aren't perfect but provide essential checks against individual bias, fraud, and honest errors.



Identifying Conflicts of Interest

- A **conflict of interest** occurs when an expert has financial, personal, or professional incentives that might bias their judgment.
- Common conflicts include funding from pharmaceutical companies, personal investments in recommended treatments, or career advancement tied to specific outcomes.
- Conflicts don't automatically invalidate expertise, but they require extra scrutiny—especially when recommendations benefit the expert financially.
- Reputable experts disclose conflicts openly; be suspicious of those who hide financial relationships or claim complete objectivity.

Red Flag Examples

- Doctor selling their own supplement brand
- Researcher funded solely by industry
- Expert witness paid by one side
- Study author owns patents on findings

False Authority: When Expertise Doesn't Transfer

- The **false authority fallacy** occurs when someone's expertise in one area is wrongly assumed to apply in unrelated fields.
- This fallacy exploits our tendency to view intelligence and competence as general rather than domain-specific traits.
- Even brilliant experts become laypeople outside their specialties—a Nobel physicist has no special insight into nutrition or politics.
- Media often amplifies this fallacy by seeking opinions from famous experts on topics beyond their expertise.

Example

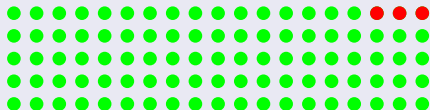
Classic Examples of Non-Transferable Expertise:

- Linus Pauling (Chemistry Nobel) promoting vitamin C megadoses
- Dr. Ben Carson (neurosurgeon) on archaeological theories
- Richard Dawkins (biologist) on philosophy of religion

Cherry-Picking Experts: Finding the One Who Agrees

- **Cherry-picking experts** means searching until you find the rare authority who supports your predetermined position.
- With thousands of experts worldwide, you can almost always find someone with credentials who holds any position, no matter how fringe.
- This tactic creates false equivalence—presenting one dissenting expert as equal to hundreds who disagree.
- Media often enables cherry-picking through "both sides" coverage that elevates minority positions to seem equally valid.

The 97% Problem



97 experts agree
Media quotes the 3 who don't

Outdated Authority: When Knowledge Evolves

- **Outdated authority** occurs when we rely on experts whose knowledge hasn't kept pace with new discoveries and evolving consensus.
- Medical knowledge has a "half-life"—studies suggest about 50% of medical knowledge becomes outdated within 10-15 years.
- Retired experts may cling to theories from their training, unaware of subsequent research that disproved their beliefs.
- This problem intensifies in rapidly advancing fields like genetics, neuroscience, and technology-related health issues.

Field	Old Authority	Current Understanding
Nutrition	Fats are always bad	Some fats essential
Psychology	Refrigerator mothers	Autism is genetic
Ulcers	Caused by stress	H. pylori bacteria
Brain	No new neurons	Neurogenesis occurs

Anonymous Authority: "Studies Show" and "Experts Say"

- **Anonymous authority** appeals cite unnamed experts or unspecified research to create an illusion of scientific support.
- Phrases like "studies show," "scientists say," or "research proves" without citations are red flags for weak or fabricated authority.
- Legitimate experts name their sources, cite specific studies, and provide enough information for verification.
- This tactic is especially common in advertising, social media health claims, and politically motivated arguments.

Warning Phrases

- "9 out of 10 doctors recommend..." (Which doctors? Selected how?)
- "Research has shown..." (What research? By whom?)
- "Experts agree..." (Which experts? In what field?)
- "Clinical studies prove..." (Published where? Peer reviewed?)

Questions to Ask Before Accepting Expert Opinion

- Before accepting an expert's claim, systematically evaluate both the expert and their specific assertion.
- These questions help distinguish legitimate authority from false or misleading appeals.
- The more important the decision, the more rigorously you should apply these criteria.
- Remember: even good experts can be wrong, but following this process reduces your risk of being misled.

Essential Questions Checklist

- 1 Is this person actually an expert in THIS specific topic?
- 2 What are their relevant credentials and experience?
- 3 Do other experts in the field agree or disagree?
- 4 Are there any conflicts of interest?
- 5 Is the claim within scientific consensus?
- 6 How recent is their expertise?
- 7 Can I verify their sources?

Finding and Evaluating Primary Sources

- **Primary sources** in medicine include peer-reviewed research papers, clinical trial data, and systematic reviews—not news articles about them.
- Learning to read scientific abstracts helps you verify whether experts accurately represent research findings.
- Tools like PubMed, Google Scholar, and Cochrane Reviews provide access to legitimate medical literature.
- When experts disagree, examining primary sources reveals whether disagreement stems from different interpretations of the same data.

Example

Hierarchy of Medical Evidence:

- ① Systematic reviews and meta-analyses
- ② Randomized controlled trials (RCTs)
- ③ Cohort studies
- ④ Case-control studies
- ⑤ Expert opinion and case reports

Always prefer sources higher on this list!

Building a Network of Trusted Sources

- Develop a personal network of reliable sources for different domains—specific experts, institutions, and publications you've learned to trust.
- Verify new claims by checking whether your trusted sources have addressed them and what positions they take.
- Update your network as you discover errors—no source is infallible, but some consistently prove more reliable than others.
- Building information literacy is a lifelong process that protects against misinformation while keeping you open to new knowledge.

