

Flawed Science, Bought Conclusions: The Aluminum Vaccine Study the Media Won't Question By Robert F. Kennedy Jr.

[RFK Jr.'s critique](#) of the [Andersson et al. study](#) on aluminum-containing vaccines is seriously flawed, rhetorically charged, and methodologically inaccurate. While he raises a few partially valid concerns (generalizability to US settings, limitations of the Mitkus study, and lack of raw data sharing), these are overwhelmed by misrepresentations of the study methods, cherry-picking non-significant findings, inflammatory language, unsupported accusations and repeated logical fallacies (Strawman arguments, poisoning the well, ad hominem attacks, false equivalence, and guilt by association, etc.). These are informal logical fallacies and require context in which to interpret their applicability.

Rather than engaging in constructive scientific critique, RFK Jr relies on rhetorical framing to sow distrust in a well-conducted, transparent, peer-reviewed population-based study. He does little to advance meaningful dialogue about vaccine safety and misleads readers about both the findings and the scientific process. This furthers my skepticism about his knowledge and ability to critically appraise the medical literature and communicate the evidence appropriately.

Here is a paragraph-by-paragraph analysis of RFK Jr's analysis of the *Andersson et al* study. It will focus on how reasonable and accurate each claim is from a methodological standpoint and point out any potential logical fallacies.

1st Paragraph:

- *On July 15, an intensely ballyhooed [study](#) by Andersson et al., published in *Annals of Internal Medicine*—a journal of the American College of Physicians, claims to find no association between aluminum-adjuvanted vaccines and chronic childhood disorders in Denmark. The slavish, pharma-funded mainstream media, ever eager to defend industry orthodoxies, have triumphantly hailed this study as proof of aluminum's safety without even a cursory examination of the study's fatal deficiencies or the financial conflicts of its authors. But a closer look reveals a study so deeply flawed it functions not as science but as a deceitful propaganda stunt by the pharmaceutical industry.*

This first paragraph contains multiple rhetorical strategies designed to discredit the study and its proponents without directly engaging with the scientific methods, data, or conclusions. It relies heavily on emotionally charged language and fallacious reasoning to sway the reader, rather than presenting a systematic critique.

“The slavish, pharma-funded mainstream media...”

- This is a classic [ad hominem](#) fallacy, where instead of addressing the arguments or findings of the study itself, the author attacks the character and motivations of

those reporting it, implying bias due to alleged funding. This distracts from the actual content or merits of the scientific study. The truth of a claim is independent of the funding source. While it is good to be skeptical of conflicts of interest, they don't automatically negate the study.

"...published in Annals of Internal Medicine—a journal of the American College of Physicians..."

- While factual, this framing introduces the journal with an implication that it is institutionally biased, which primes the reader to distrust the study before hearing its content ([Poisoning the Well](#)). The "poison" is further introduced by calling it "intensely ballyhooed" and associating it with an allegedly corrupt mainstream and pharma narrative.

"...have triumphantly hailed this study as proof of aluminum's safety..."

- This misrepresents the actual conclusions of the study, which were more conservative and nuanced.
- The actual conclusions from *Andersson et al* were: "This nationwide cohort study did not find evidence supporting an increased risk for autoimmune, atopic or allergic, or neurodevelopmental disorders associated with early childhood exposure to aluminum-adsorbed vaccines. For most outcomes, the findings were inconsistent with moderate to large relative increases in risk, although small relative effects, particularly for some rarer disorders, could not be statistically excluded."
- RFK Jr's statement sets up a simplistic and exaggerated claim ("proof of aluminum's safety") that is easier to attack than what the study argued, thus constructing a [strawman](#).

"...pharma-funded mainstream media... the financial conflicts of its authors..."

- Suggesting the study is flawed solely because of presumed funding sources or potential conflicts of interest (without evidence of how these impacted the methodology or conclusions) is a [genetic fallacy](#). It shifts focus from evaluating the actual evidence to the origins or affiliations of those involved.

"...a study so deeply flawed it functions not as science but as a deceitful propaganda stunt..."

- This statement presumes the conclusion (that the study is propaganda) without demonstrating it through argument or evidence. It assumes what it needs to prove ([Begging the Question](#)).

“intensely ballyhooed,” “slavish,” “ever eager,” “deceitful propaganda stunt...”

- The use of emotionally charged and biased language seeks to influence the reader’s perception without relying on logical reasoning or evidence. This is a classic sign of rhetorical manipulation rather than objective critique.

“... stunt by the pharmaceutical industry.”

- The claim that the study is a “stunt by the pharmaceutical industry” implies guilt solely due to association, regardless of the independence of the researchers or the journal. This fallacy avoids evaluating the actual content and quality of the research.

2nd Paragraph:

- “The architects of this [study](#) meticulously designed it not to find harm. From the outset, Andersson et al. excluded the very children most likely to reveal injuries associated with high exposures to aluminum adjuvants in childhood vaccines. The exclusion included all children who died before age two, those diagnosed early with respiratory conditions, and an astonishing 34,547 children — 2.8% of the study population — whose vaccination records showed the highest aluminum exposure levels.”

This paragraph is not a fair or reasonable evaluation of the *Andersson et al.* study. It mischaracterizes the study design, misrepresents the reasons for exclusions, and asserts intent and causality without evidence. It is filled with logical fallacies and lacks the rigorous methodological critique expected in good-faith scientific discourse.

“The architects of this study meticulously designed it not to find harm.”

- This assumes what it must prove. Specifically, the authors intentionally biased the study to avoid finding harm (begging the question). Accuses the authors of dishonesty or bias without providing concrete evidence (ad hominem/[Appeal to Motive](#)). Claims to know the intent of the authors without direct evidence of that intent ([Mind Reading Fallacy](#)).
- There is no evidence in the publication to suggest the study was designed to avoid detecting harm. The methodology was transparently reported, and the authors discussed both strengths and limitations, including potential residual confounding.

“Andersson et al. excluded the very children most likely to reveal injuries associated with high exposures to aluminum adjuvants in childhood vaccines.”

- The claim implies that the children excluded would have revealed harm, without showing evidence that this subgroup indeed had higher rates of aluminum-related conditions ([Unfalsifiable Assertion/Speculative Fallacy](#)). Suggesting that exclusion led to a falsely negative outcome, without proving causality or showing that the exclusions would have altered results.
- The exclusion criteria were clearly defined and methodologically justified. Children who died or emigrated before age 2 could not contribute follow-up data on incident chronic disease outcomes beyond age 2. This is a standard epidemiological approach. Those with respiratory or congenital conditions were excluded because such conditions can confound both vaccination schedules and outcome risk. Extreme vaccination records (n = 34,547) likely represented data entry errors, implausible vaccine counts, or outliers with uncertain validity.
- The study retained over 1.2 million children, and such exclusions were necessary for internal validity and minimizing bias, not evidence of misconduct.

“An astonishing 34,547 children — 2.8% of the study population — whose vaccination records showed the highest aluminum exposure levels.”

- Presenting the number without context can be considered misleading/[cherry-picking](#) data. The study excluded those with implausible vaccine records, not just “high exposure” levels. RFK Jr implies that these children were excluded because of their high aluminum exposure, when the exclusion was based on data irregularities, not outcome-driven selection ([False Cause](#)).
- *Andersson et al* note that the exclusion of children “who received an implausible number of vaccines” (not “the highest exposure levels”). There's no evidence that these exclusions systematically biased the results. Importantly, the highest valid aluminum exposure category (up to 4.5 mg) was included in the analysis.

3rd Paragraph:

- *“These choices suggest an intention to exclude the children at highest risk of harm. The authors, without explanation, deemed these high exposures “implausible,” even though those implausibly high exposures are routine for American children who follow the recommended immunization schedule. At very least, the study findings therefore cannot be generalized to children in the U.S. By systematically stripping the dataset of high-risk individuals, the researchers leave behind a survivor cohort to analyze. The name for this logical fallacy is “healthy subject bias.”*

This paragraph by RFK Jr. raises a potentially valid concern: [healthy user bias](#). However, he misapplies it in a misleading and logically flawed way. Healthy user (or healthy subject) bias occurs when individuals who engage in a preventive behaviour (like getting

vaccinated) are inherently healthier or have different health-seeking behaviours than those who don't. This is a well-known, potentially confounding aspect of observational study results. But healthy user bias becomes less relevant in high-coverage, population-wide vaccine settings.

“These choices suggest an intention to exclude the children at highest risk of harm.”

- This sentence assumes intentional manipulation without evidence (Begging the Question/Appeal to Motive). The use of the word “*intention*” from routine methodological decisions is also speculation framed as fact.
- Children were excluded for reasons standard in cohort studies. One reason was death/emigration before the age of two years. This is because no follow-up would be possible for chronic disorders post-age two. Also, children with certain preexisting conditions because it can bias both exposure and outcomes. Excluding implausible vaccine records indicates data quality issues, not high aluminum exposure per se.

“The authors, without explanation, deemed these high exposures ‘implausible’...”

- This is another example of RFK Jr misrepresenting the study (Strawman). The authors excluded children with an implausible number of vaccines, not “*high exposure*” levels that were valid and verifiable. Claiming that the lack of a detailed explanation implies wrongdoing could be considered an [appeal to ignorance](#).
- The study explicitly retained children with valid aluminum exposure up to 4.5 mg, which corresponds to the full Danish immunization schedule (and approximates aluminum exposure in other countries). There's no indication that routine, high-but-valid aluminum exposure groups were removed.

“...those implausibly high exposures are routine for American children...”

- The US and Danish vaccine schedules are not perfectly interchangeable. RFK Jr. assumes without data that excluded Danish children had exposures comparable to US children, when the study included exposures up to 4.5 mg. This level is within the expected US cumulative range by 2 years. No source is given to confirm that the excluded Danish children had exposure levels typical of American children. This line of argument could represent a [false equivalence fallacy](#).

“At very least, the study findings therefore cannot be generalized to children in the U.S.”

- External validity (generalizability) can indeed be limited when comparing different countries' populations, vaccine schedules, and health systems. This is a reasonable concern put forth by RFK Jr. However, Denmark has >90% vaccination

coverage, and the study used nationwide registries and included over 98% of children alive at age 2. In 2023, the Danish childhood vaccination coverage was 94–97% for key vaccines in the first 2 years. Therefore, [selection bias](#) and healthy user bias are minimal, and generalizability to countries with similar health care access (like the US) is not inherently invalid, but it does introduce some uncertainty.

“The name for this logical fallacy is ‘healthy subject bias.’”

- This is factually incorrect. Healthy user bias is not a logical fallacy, but rather it’s an epidemiological bias. Misusing the term to imply deceit frames a methodological issue as a logical failure, which can misinform readers.
- Healthy user bias is a real concern in studies where vaccinated and unvaccinated groups differ systematically. But in this study, over 98% of children were included, and >98% were vaccinated. The near-universal coverage makes this bias unlikely to meaningfully skew results away from the truth. Truth is defined as the best point estimate of the observed effect size with a confidence interval around the point estimate.

4th Paragraph:

- *“Furthermore, the authors inappropriately treated general practitioner visits before age two as a confounder, without assessing whether these GP visits reflected early aluminum-related illness or were predictive of later diagnoses. This introduced “collider bias” — a distortion that can suppress real associations even to the extent of making aluminum appear protective. It’s like studying whether smoking causes lung cancer while adjusting for coughing or for yellowed fingers — symptoms associated with smoking.”*

Like the last paragraph, RFK Jr. raises a legitimate methodological concern in epidemiology ([collider bias](#)). Collider bias happens when both the exposure and the outcome affect a third variable, and that third variable is mistakenly adjusted for in the study design or analysis. This creates a false or distorted association between exposure and outcome. However, in the context of the *Andersson et al.* study, it turns out the argument is largely flawed, both factually and logically.

“The authors inappropriately treated general practitioner visits before age two as a confounder... This introduced ‘collider bias’...”

- The study included several general practitioner (GP) visits before age 2 as an *a priori*-defined confounder and adjusted for it in their Cox regression models. GP visits can be a proxy for underlying health status, health-seeking behaviour, and potential for diagnostic surveillance ([detection bias](#)). This is a standard adjustment in large observational studies using administrative data.

RFK Jr claims GP visits may reflect aluminum-related illness and thus should not be adjusted for.

- This assumes that GP visits are on the causal pathway from aluminum exposure to chronic illness, without evidence. There's no validated mechanism showing that aluminum-adjuvanted vaccines cause acute conditions leading to more GP visits. Absent that, GP visits are much more reasonably treated as a confounder (not a mediator).

RFK Jr. claims the adjustments introduce collider bias.

- There is no compelling evidence that GP visits in this population are caused by both aluminum exposure and the chronic disorders studied. Therefore, GP visits are not a collider in this model.
- If aluminum exposure did cause early symptoms (fever, seizures) that increase GP visits, and GP visits were predictive of diagnoses later, then adjusting for them could theoretically introduce bias. However, this would need to be supported by empirical evidence, which RFK Jr. does not provide.

“It’s like studying whether smoking causes lung cancer while adjusting for coughing...”

- This represents a false analogy. In the smoking example, *coughing* is a known mediator of lung damage and *part of the pathway* between smoking and lung cancer. But GP visits are not symptoms and are not part of the disease mechanism. Rather, they are health service utilization metrics. Thus, adjusting for GP visits is more like adjusting for frequency of clinic contact, which is reasonable to reduce detection bias.

5th Paragraph:

- *"These sleights of hand magnify the potential for allowing the authors to reach their absurd suggestion that higher aluminum exposure is somehow protective against asthma, allergies, and neurodevelopmental disorders, including autism. These findings clash with mountains of contrary literature documenting the neurotoxicity of aluminum and its association with autoimmune and allergic diseases. (Daley, et al. 2023) If the medical establishment truly believed these data, they would be recommending aluminum injections to children as a prophylaxis against neurological and autoimmune diseases."*

This paragraph contains multiple rhetorical statements and attempts at criticism. However, it fails to offer scientifically valid or constructive criticism of the *Andersson et*

al. study. It contains several logical fallacies, misrepresents the findings, and uses sarcasm and hyperbole instead of substantive engagement with the data or methods.

“These sleights of hand magnify the potential for allowing the authors to reach their absurd suggestion that higher aluminum exposure is somehow protective against asthma, allergies, and neurodevelopmental disorders, including autism.”

- “Sleights of hand” and “absurd suggestion” are rhetorical, not analytical. This biases the reader against the authors without evidence ([Loaded Language](#)/Poisoning the Well)
- *Andersson et al.* did not suggest that aluminum is protective. They reported adjusted hazard ratios slightly below 1.0 and explicitly cautioned that the results are “inconsistent with moderate to large relative increases” and that “small relative effects... could not be statistically excluded”(Strawman).

“These findings clash with mountains of contrary literature documenting the neurotoxicity of aluminum and its association with autoimmune and allergic diseases. (Daley, et al. 2023)”

- “Mountains of literature” is a vague appeal to mass rather than specific, high-quality evidence. Much of the cited “literature” in similar contexts includes animal studies, ecological data, or low-quality observational studies, which *Andersson et al.* themselves explicitly noted as a limitation in the existing literature.
- RFK Jr. misuses/misrepresents the 2023 Daley et al. study: This US-based study did report an increased risk for asthma per 1-mg increase in aluminum exposure (HR ~1.2), but it lacked control for key confounders like maternal smoking and socioeconomic status. *Andersson et al.* addressed this study directly, performed a more extensive adjustment, and found no such association.

“If the medical establishment truly believed these data, they would be recommending aluminum injections to children as a prophylaxis against neurological and autoimmune diseases.”

- This is a sarcastic exaggeration of the findings to make them sound ridiculous. The authors never claim aluminum is beneficial or recommend its use for prophylaxis. They report no evidence of harm and did not report evidence of *benefit* ([Reductio ad Absurdum](#)/Strawman).
- Another logical fallacy introduced in this sentence is a [false dilemma](#). RFK Jr. suggests only two options (either aluminum is harmful, or it should be recommended as medicine), ignoring the actual findings. What the authors

reported was that within real-world exposure levels, no significant association with harm was found.

6th Paragraph:

- *“Andersson and his team initially had a zero-exposure cohort within the study group. But instead of evaluating this non-vaccination group separately and treating these children as the control, they lumped these kids into the least-exposed cohort, diluting any signal of harm. More broadly, their analysis assumed a linear dose-response, ignoring evidence from Crépeaux et al. (2017) demonstrating that low doses of aluminum can produce non-linear neurotoxic effects in animal models.”*

At first glance, it seems to raise legitimate issues about control group classification and dose-response assumptions. However, when evaluated carefully against the methods and data from *Andersson et al.*, the critique misrepresents key facts, lacks appropriate context, and introduces logical fallacies.

“Andersson and his team initially had a zero-exposure cohort within the study group.”

- This is true with 15,237 children (1.2% of the cohort) who had **0 mg** aluminum exposure by age 2 because they received no aluminum-adjuvanted vaccines.

“Instead of evaluating this non-vaccination group separately and treating these children as the control, they lumped these kids into the least-exposed cohort, diluting any signal of harm.”

- This is factually incorrect and misleading. *Andersson et al.* did not lump zero-exposure children into a higher exposure group. They included them in the full cohort analysis and conducted dose-response analyses per 1-mg increase in aluminum exposure, using 0 mg as the implicit reference in the model.
- Additionally, in secondary analyses, they categorized exposure into 0 mg (unvaccinated), 0–1.5 mg, 1.5–3 mg, and 3–4.5 mg. These groups were compared using risk differences and cumulative incidence estimates. Therefore, they did analyze the zero-exposure group separately. It is a Strawman argument to imply that no unvaccinated group was separately analyzed. Claims that including unvaccinated children in the model inherently “dilutes” harm, despite the use of proper regression and categorical analyses.

“More broadly, their analysis assumed a linear dose-response...”

- This is partially true but also misses context. The primary model used a linear dose-response per 1-mg increase in aluminum exposure. This represents a common starting assumption in large cohort analyses. However, they also explicitly tested for non-linearity by categorizing aluminum dose into discrete exposure ranges and

examining whether risks varied across those levels. They found no evidence of non-linear associations. RFK Jr. cites only the primary analysis and ignores the secondary categorical dose analysis that was conducted is cherry-picking.

“...ignoring evidence from Crépeaux et al. (2017) demonstrating that low doses of aluminum can produce non-linear neurotoxic effects in animal models.”

- The Crépeaux et al. (2017) study was an animal study using intracerebral or high-dose intramuscular aluminum hydroxide injections in mice, not a human cohort. While it may raise hypothesis-generating concerns about non-linear dose-response in aluminum neurotoxicity, it does not invalidate human epidemiological findings that show no association at real-world exposure levels.
- Inferring that animal results must apply to human populations without appropriate translational evidence represents a potential [hasty generalization](#) fallacy. Comparing fundamentally different study designs and exposure pathways (mouse brains vs. human intramuscular infant vaccination) also represents a potential [category error](#).

7th Paragraph:

- *"While adjusting for birth year can be appropriate in some study designs to account for secular trends, it is not a neutral act in this case. Aluminum exposure from vaccines increased over time, as did rates of chronic childhood disorders. Yet the authors failed to explore whether this correlation might reflect a causal relationship. They did not test this hypothesis but conveniently avoided doing so through this statistical artifice."*

This paragraph misrepresents the study's methodology and intent and relies on rhetorical fallacies rather than a constructive scientific critique. The adjustment for birth year was appropriate, standard, and justified, not a deceptive maneuver. RFK Jr.'s framing implies malfeasance where there is none and fails to engage with the actual data or analytic choices made in the study.

"While adjusting for birth year can be appropriate in some study designs to account for secular trends.

- Yes. Adjusting for birth year is standard practice in longitudinal cohort studies where exposures and outcomes change over time. It helps account for secular trends like shifts in diagnostic criteria, environmental exposures, or vaccine formulations. In this study, Andersson et al. adjusted for birth year because both aluminum exposure and diagnosis rates changed over time. Birth year is a confounder, not a collider or mediator. Adjusting for it controls for background trends that could otherwise falsely suggest an association.

“Aluminum exposure from vaccines increased over time, as did rates of chronic childhood disorders.”

- Correct. Aluminum exposure increased due to vaccine schedule changes. Rates of some childhood disorders (autism diagnoses) also rose, though due in part to changes in awareness, diagnostic coding, and reporting. However, temporal correlation does not equal causation.

“Yet the authors failed to explore whether this correlation might reflect a causal relationship.”

- This is incorrect and misleading. The study was explicitly designed to test whether increasing cumulative aluminum exposure correlates with increased rates of chronic disorders using nationwide, individual-level data over 24 years. This approach is vastly superior to simply plotting aggregate trends over time, which would be ecological and highly confounded. RFK Jr. here ignores the primary analysis, which was designed to test exactly this question with far greater rigour than a time-trend correlation would allow.

“They did not test this hypothesis but conveniently avoided doing so through this statistical artifice.”

- "Conveniently avoided" implies bad faith or intentional bias without evidence (Poisoning the Well). It suggests that the authors' statistical adjustment was a deceitful act rather than a justified methodological decision (Ad Hominem/Motive Fallacy). It also assumes the correlation is causal and that the authors were wrong to adjust for confounding without first proving the relationship exists (Begging the Question).
- Aluminum exposure changed due to policy, not individual choice (a quasi-experimental setting). Birth year adjustment controls for unrelated trends in diagnosis, healthcare access, or diagnostic inflation. If *Andersson et al.* had not adjusted for birth year, any observed association between aluminum and disease risk could have been a spurious result of coinciding upward trends, which represents a classic [ecological fallacy](#). They even conducted stratified analyses by birth cohort (1997–2006 vs. 2007–2018) and found similar results, further reducing the likelihood that birth year adjustment masked a real effect.

8th Paragraph:

- *“Furthermore, the authors almost exclusively relied on diagnoses from hospital inpatient registers. This gimmick allowed the authors to exclude the vast majority of*

affected children whose autism and food allergies would most likely be diagnosed and managed outside of hospital settings...”

Relying solely on hospital data can indeed undercount milder cases managed in outpatient settings. However, *Andersson et al.* did not rely solely on inpatient data; they also used prescription registry data for conditions like ADHD and allergic disorders.

Using loaded language like “*gimmick*” also could be poisoning the well. In addition, assuming all mild cases were excluded without reviewing which conditions were captured via outpatient proxies (prescriptions) could be considered a hasty generalization.

9th Paragraph:

- *“There were additional problems with this data source. A 2017 [analysis](#) by Holt et al. identified substantial misclassification in the Danish National Health Service Registry — the same source used by Andersson et al. to assess vaccine exposure — finding that children’s medical records often documented vaccinations that were absent from the registry. This casts further doubt on the accuracy of exposure classification in the study. In other words, it’s highly likely that many of the children that the authors classified as not receiving aluminum-containing vaccines actually did.”*

Exposure misclassification is a concern in registry-based studies. If non-differential, it biases toward the null. However, the *Andersson et al* study used reimbursed GP-logged vaccinations, which are strongly incentivized to be complete (for payment). Authors acknowledged that misclassification would likely bias toward the null, not hide harm.

“Highly likely that many... classified as unvaccinated actually did receive vaccines”

- This is speculative without hard evidence. The statement implies systemic registry failure based on one study without addressing mitigation strategies or data validity checks ([appeal to fear](#)).

10th Paragraph:

- *“The CDC’s routine childhood vaccine schedule is also considerably more aggressive than Denmark’s. For example, while Denmark recommends the aluminum-containing hepatitis B (HepB) vaccine only for infants deemed at risk, the CDC recommends a three-dose series for all newborns starting on the first day of life.”*

This is correct. The US recommends more aluminum-containing vaccines (universal Hepatitis B vaccination at birth). This does affect external generalizability. But *Andersson*

et al. never claimed their study applies directly to the US, and they acknowledge differences in vaccine programs. External validity is one of RFK Jr.'s more grounded points.

11th Paragraph:

- *“Andersson et al. also neglects to consider susceptible subpopulations of children based on known genetic risk factors, such as mitochondrial dysfunction, or environmental co-exposures, such as the synergistic toxicity of mercury and aluminum. This suite of deceptive devices and strategic exclusions seems calculated as an additional flimflam for deliberately excluding or diluting out the most vulnerable children.”*

To say the authors neglected a susceptible subpopulation is misleading. The study is not designed to evaluate gene-environment interactions (mitochondrial disease, mercury-aluminum synergy). Those are hypothesis-generating concerns but require much smaller mechanistic studies and not population-wide cohort analyses ([Red herring](#) and [appeal to complexity](#)).

12th Paragraph:

- *“Despite all the deceptive devices the authors used to conceal the signals of harm, Andersson et al.’s own supplementary data are a devastating indictment of aluminum-containing vaccines. These data,. The data show a statistically significant 67% increased risk of Asperger’s syndrome per 1 mg increase in aluminum exposure among children born between 2007 and 2018. Compared to the moderate exposure group, for every 10,000 children in the highest aluminum exposure cohort, there were 9.7 more cases of neurodevelopmental disorder, 4.5 more cases of autistic disorder, and 8.7 more cases of the broader category of autism spectrum disorder. Yet the authors gloss over these harms to children by claiming they “did not find evidence” for an increased risk.”*

The 67% comes from Supplementary Table S4 of a secondary analysis of one subgroup (birth year 2007 to 2018) with only 51 patients and wide 95% confidence intervals. The larger subgroup of 124 patients (birth year 1997 to 2006) showed a lower point estimate of Asperger’s that was not statistically significant. The overall HR for Asperger’s = 1.13 (95% CI, 0.89–1.44), which is not statistically significant. In addition, the summary statistic for six neurodevelopmental outcomes showed a statistically significant point estimate favouring aluminum. This does not mean aluminum decreases neurodevelopmental disorders, but rather that [type I errors](#) can happen when multiple comparisons are done.

- We should be skeptical of subgroup analyses. [Wallach et al JAMA Intern Med 2017](#), evaluated how often subgroup claims are corroborated by subsequent RCT and meta-analyses. They concluded that: “Attempts to corroborate statistically significant subgroup differences are rare; when done, the initially observed

subgroup differences are not reproduced.” In fact, they found that out of 117 subgroup claims, zero were confirmed.

- Another line of evidence that suggests skepticism of subgroups is warranted comes from [Yusuf et al JAMA 1991](#) . They stated: *“the overall trial result is usually a better guide to the direction of effect in subgroups than the apparent effect observed within a subgroup.”*
- Infectious Disease Specialist, Dr. Jake Scott from Stanford, has a good thread explaining this issue.
<https://x.com/jakescottmd/status/1952496126051193241?s=43>



“which they were forced to publish because of public criticism of their analysis, directly contradict the study’s conclusions”

- The supplementary data were not “forced” to be published. They were included as standard supplementary material alongside the peer-reviewed article. This is a common and expected practice for transparency. This sentence contains loaded language and logical fallacies (poisoning the well and ad hominem attack).

“...authors gloss over these harms by claiming they 'did not find evidence' for an increased risk.”

- This is another Strawman argument. The authors didn’t “gloss over” anything. They acknowledged small subgroup deviations and explicitly noted that for most outcomes, their results ruled out moderate to large risks, but could not exclude small effects, especially for rare conditions

Subgroup findings are not confirmatory, but rather, they are exploratory and prone to false positives. They should be considered hypothesis-generating. The Wallach et al. and Yusuf et al. studies provide strong methodological support for caution in subgroup interpretation. RFK Jr.'s interpretation of supplementary data is statistically naïve and selectively framed to support a misleading narrative.

13th Paragraph:

- *“To reassure readers that infants’ vaccine aluminum exposure is “well below” an established “minimal risk level,” Andersson et al. cite [Mitkus et al.](#) (2011). But that FDA analysis was based on ingested soluble aluminum in adult rodents, making its findings irrelevant to injected particulate aluminum in human infants. To cite this study as proof of safety is scientifically indefensible.”*

The *Mitkus et al.* model has limitations and is debated. It used oral intake models, not injection. Critics have noted this as a weak surrogate. However, *Andersson et al.* cited it to provide context, not as central evidence for safety. This paragraph overstates its importance in the study. This represents another Strawman because it attacks a cited contextual source as if it were a core part of the conclusions.

14th Paragraph:

- *“Three of the study’s authors are affiliated with Denmark’s Statens Serum Institut (SSI), a government-owned vaccine company that develops a number of aluminum-containing vaccines. SSI also procures and supplies vaccines for the Danish national vaccination program — a clear institutional conflict given its role in supporting vaccine manufacturing and promoting vaccine uptake. Yet two of the three authors nevertheless declared no conflicts of interest. The senior author, Anders Hviid, reported funding from sources including the Novo Nordisk Foundation, which is directly linked to the pharmaceutical giant Novo Nordisk and maintains a substantial investment footprint in the industry. Such affiliations call into question the study’s independence and underscore the need for raising international standards of gold standard science outlined in the Trump administration’s recent executive order requiring transparency, reproducibility, and data sharing. These are standards that will determine with whom the United States will collaborate or do business going forward.”*

Authors need to disclose institutional affiliations, and readers should scrutinize COIs. However, SSI is a national public health agency, and its vaccine work is separate from commercial for-profit operations. The authors did disclose institutional affiliations and grants, and the journal’s editorial team evaluated these.

RFK Jr. Implies corruption by link to vaccine production ([Guilt by association](#)). This also represents another genetic fallacy. He focuses on authors’ affiliations instead of the validity of the methods or results.

15th Paragraph:

- *“The study, in fact, offers the opposite of transparency. For example, there is no table showing how many of the children in each aluminum exposure cohort were diagnosed with each outcome. Consequently, there is no way to independently evaluate the calculations made, leaving readers to place faith in the authors’ opaque modeling decisions at the expense of scientific reproducibility.”*

Indeed, the published article does not include a full contingency table (a detailed 2x2 or stratified count of outcome diagnoses per exposure group). Such a table would indeed enhance transparency and allow independent re-calculation of risk ratios or risk differences from raw counts. However, the authors do provide the total number of cases per outcome (28,346 asthma diagnoses), HR and 95% CIs for each exposure category and outcome, supplementary materials with exposure stratification, adjusted risk differences, and Kaplan–Meier plots, full details on adjusted covariates, sensitivity analyses, and statistical models used, including the software (R 4.4.0) and methods (Schoenfeld residuals, IPW). Therefore, while the absence of one type of table may slightly limit independent recalculation from first principles, the overall level of transparency is high and consistent with norms for large-scale epidemiological studies using registry data.

“Offers the opposite of transparency...”

- This suggests that without this one table, the study is entirely opaque. That’s an exaggeration and represents a false dichotomy. Transparency exists on a spectrum. The paper’s methods and findings are thoroughly documented, even if some raw frequencies are not presented in tables.

“Opaque modeling decisions”

- This implies deception or obfuscation. There is no evidence of intentional opacity but rather just a different (though standard) approach to reporting.

“There is no way to independently evaluate the calculations...”

- This is misleading and an [appeal to ignorance](#). Readers with access to Danish registry data (via appropriate ethics approval) could replicate the analysis. Moreover, the study’s structure enables indirect validation (checking that HRs match the reported events and follow-up time).

16th Paragraph:

“Finally, the Annals of Internal Medicine failed to share raw data that is essential for transparency and reproducibility. The disclosures on the Andersson study say “owing to data privacy regulations in Denmark, the raw data cannot be shared.”

- Correct: Raw individual-level Danish registry data are protected by law. This is a real limitation. But it is misleading to call it deceptive. Researchers can request access through appropriate ethics approval under Danish law. The limitation is systemic, not author-specific. This paragraph seems to set up a strawman, poison the well and [false attribution](#).

17th Paragraph:

- *“Public health policy should not rest on non-reproducible observational studies that are not merely inconclusive but appear to be intentionally designed to find no association between vaccines and health harms. If the authors are truly committed to science, they should ask the Danish government to waive the requirements of the law and allow full access to their raw data for scientists across the world to verify their findings.”*

No evidence is provided that the authors designed the study to hide harm (begging the question, ad hominem/motive fallacy).

18th Paragraph:

- *This study does not just suffer from mere methodological limitations. Its design flaws are defining. The only thing this study proves is the thorough corruption of the scientific journals that publish such garbage-in, garbage-out exercises in statistical manipulation.*

This paragraph is not a scientific critique. It relies on inflammatory language and logical fallacies rather than evidence or methodologically grounded reasoning (ad hominem, poisoning the well, false dichotomy and appeal to outrage). It reflects rhetorical hostility, not constructive skepticism. *Andersson et al.* used a nationwide cohort of over 1.2 million children. The study leveraged a quasi-experimental design (natural variation in aluminum exposure due to policy). They adjusted for numerous covariates, conducted multiple sensitivity analyses, and transparently reported their methods. This is not remotely characteristic of “*statistical manipulation*” or journal corruption.

“Its design flaws are defining.”

- These are unsupported assertions. The paragraph does not specify which “*defining*” design flaws render the entire study invalid. Prior criticisms in RFK Jr.’s article either mischaracterized the methods (misinterpreting dose-response modeling) or cited limitations common to large observational studies (misclassification, residual confounding). All studies can have limitations, but calling them “*defining*” implies fatally invalid design, which is not substantiated by any cited methodological review or reanalysis.

“The only thing this study proves is the thorough corruption of the scientific journals...”

- This is an extreme accusation. There is no evidence that [Annals of Internal Medicine](#) is "thoroughly corrupt" or engaged in publishing fraudulent science. It is a generally respected, peer-reviewed journal published by the [American College of Physicians](#). The journal adheres to standard practices of peer review, conflict of interest disclosure, and methodological transparency.

19th Paragraph:

- *“The Annals of Internal Medicine should immediately retract this badly flawed study.”*

This statement is hyperbolic and unsupported. No evidence of misconduct, data fabrication, or methodological malfeasance is presented that would justify retraction under standard editorial policies ([appeal to outrage](#)).

20th Paragraph:

- *“For years, American parents have been calling for rigorous, transparent, and independently conducted science comparing the long-term health outcomes of children vaccinated according to the CDC schedule with those of completely unvaccinated children. Yet studies like Andersson et al. showed they had the data to make this comparison between vaccinated and unvaccinated children, but instead excluded and lumped data that made their insights opaque. These authors squandered an important opportunity to restore trust by animating an international scientific process to develop safer vaccines. By excluding unvaccinated children from meaningful analysis, obscuring raw data, and relying on hidden statistical assumptions, this study exemplifies the kind of institutional obfuscation that continues to erode public trust. What’s needed is not more statistical modeling designed to bury signals of harm, but independent research grounded in full transparency, methodological integrity, and the courage to confront inconvenient truths.*

This final paragraph from RFK Jr offers a sweeping indictment of the *Andersson et al.* study and, more broadly, of vaccine safety research infrastructure. It combines emotional appeals, mischaracterizations of the study's methodology, and rhetorical language that suggest bad faith on the part of researchers. This is all done without providing substantive evidence.

“American parents have been calling for... science comparing vaccinated vs. unvaccinated children.”

- This is a fair point. There is a longstanding public interest in comparing health outcomes between fully vaccinated and completely unvaccinated children. However, this demand runs into both ethical and methodological problems. There are ethical concerns about withholding vaccination in prospective trials. Selection bias in retrospective cohort comparisons (unvaccinated children often differ substantially in socioeconomic status, healthcare access, and parental beliefs) is also a concern. So, while calls for such studies exist, they are not easy to execute rigorously or interpret validly.

“...studies like Andersson et al. showed they had the data to make this comparison... but instead excluded and lumped data...”

- This is factually incorrect. *Andersson et al.* included 15,237 unvaccinated children (1.2% of the cohort) and used both continuous and categorical models of aluminum exposure, including a 0 mg exposure group. In categorical models, they explicitly treated the unvaccinated group (0 mg) as its own reference category.
- RFK Jr. suggests that the unvaccinated group was “*excluded*” or “*lumped*,” which is contradicted by the study design.

“Authors squandered an opportunity to restore trust...”

- This seems unfair and speculative. The study already represents an exceptional effort with a nationwide cohort of 1.2 million children, carefully designed to leverage natural policy variation in aluminum exposure as a quasi-experiment. To claim this work “*squandered*” an opportunity, simply because it didn’t affirm a predetermined narrative, reflects confirmation bias, not evidence-based reasoning.

“...excluding unvaccinated children from meaningful analysis, obscuring raw data, and relying on hidden statistical assumptions...”

- This sentence contains three separate errors and three logical fallacies (strawman, appeal to motive and false cause). Unvaccinated children were analyzed as the 0 mg exposure group. Danish data laws prohibit public release of identifiable registry data. This is a legal and ethical limitation, not concealment. *Andersson et al.* did not hide any statistical assumptions and clearly described all modelling assumptions (proportional hazards, stratification, adjustments).

“What’s needed is not more statistical modeling designed to bury signals of harm...”

- This statement is rhetorically charged and misleading. Statistical modelling is not a tool to “*bury*” evidence. In contrast, it’s essential for adjusting for confounders in observational studies. This framing delegitimizes the very methods that make non-randomized studies interpretable (poisoning the well).

“...but independent research grounded in full transparency, methodological integrity, and the courage to confront inconvenient truths.”

- We agree that science should be transparent and methodologically sound. However, this sentence sets up a false contrast, implying (without evidence) that *Andersson et al.* lacked all of these traits.

Conclusion:

RFK Jr.’s review of the *Andersson et al.* study doesn’t hold up to scientific scrutiny. While he raises several reasonable points (external validity of the US vaccine schedules, some debate surrounding the Mitkus model, and the desire for greater data transparency), those concerns unfortunately get lost in his inflammatory language and fallacious arguments.

RFK Jr. misrepresents the study methods, cherry-picks results that aren't statistically significant, and uses emotionally charged language that doesn’t belong in a scientific discussion. There were numerous logical fallacies (strawman arguments, false equivalencies, guilt by association and others).

Instead of engaging with the data and helping move the science forward, this kind of rhetoric undermines public trust. The *Andersson et al* study was a large, transparent, peer-reviewed piece of high-quality research. It’s good to ask questions about methodology or generalizability, but better to keep the conversation grounded in evidence. Science moves forward through constructive criticism, not via commentary like this from RFK Jr.

Skepticism isn’t about being cynical; it’s about asking for the evidence, critically appraising it with tools to mitigate against biases, and arguing respectfully about the interpretation of the data without using logical fallacies.

Remember to be skeptical of anything you learn, even if you heard it from me.