

Melinda Wenner Moyer

# Finding and vetting science sources

# Why Sources Matter

Sources interpret &  
contextualize science

Sources shape &  
create narrative

Sources bring  
humanity to science

# Scientists might have discovered a fifth force of nature, changing our whole view of the universe

If the scientists are correct, then the Standard Model of physics could be due a major revision



The discovery is an unprecedented look at the distant universe (ESA/Hubble & NASA)

NUCLEAR PHYSICS

# Evidence of a 'Fifth Force' Faces Scrutiny

10 |

*A lab in Hungary has reported an anomaly that could lead to a physics revolution. But even as excitement builds, closer scrutiny has unearthed a troubling backstory.*



**Natalie Wolchover**

Senior Writer/Editor

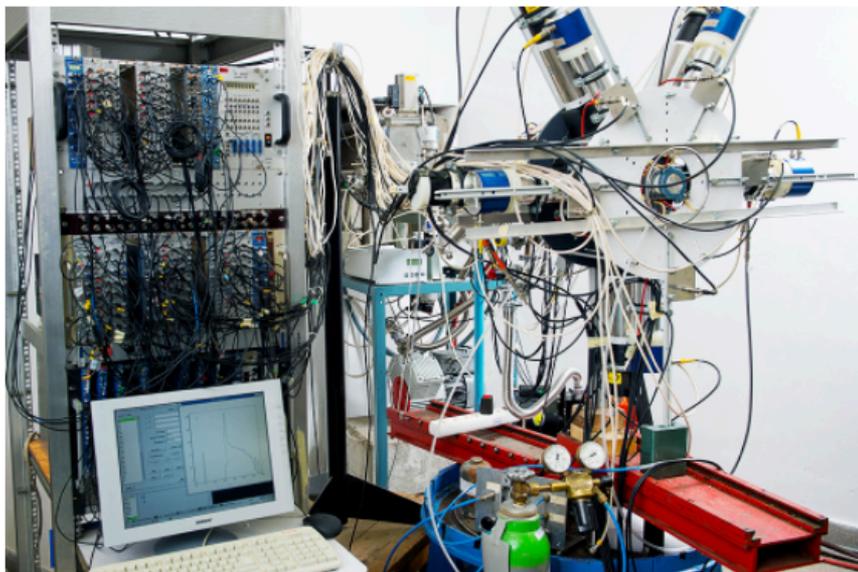
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This experimental apparatus at the Institute for Nuclear Research at the Hungarian Academy of Sciences in Debrecen was used to detect possible evidence of a new particle.

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BRIEF REPORT

## Thrombosis and Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination

→ Nina H. Schultz, M.D., Ph.D., Ingvild H. Sørvoll, M.D., Annika E. Michelsen, Ph.D., Ludvig A. Munthe, M.D., Ph.D., Fridtjof Lund-Johansen, M.D., Ph.D., Maria T. Ahlen, Ph.D., Markus Wiedmann, M.D., Ph.D., Anne-Hege Aamodt, M.D., Ph.D., Thor H. Skattør, M.D., Geir E. Tjønnfjord, M.D., Ph.D., and Pål A. Holme, M.D., Ph.D. ←

### SUMMARY

We report findings in five patients who presented with venous thrombosis and thrombocytopenia 7 to 10 days after receiving the first dose of the ChAdOx1 nCoV-19 adenoviral vector vaccine against coronavirus disease 2019 (Covid-19). The patients were health care workers who were 32 to 54 years of age. All the patients had high levels of antibodies to platelet factor 4–polyanion complexes; however, they had had no previous exposure to heparin. Because the five cases occurred in a population of more than 130,000 vaccinated persons, we propose that they represent a rare vaccine-related variant of spontaneous heparin-induced thrombocytopenia that we refer to as vaccine-induced immune thrombotic thrombocytopenia.

THE EUROPEAN MEDICINES AGENCY HAS APPROVED FIVE VACCINES against coronavirus disease 2019 (Covid-19), and more than 600 million doses have been administered globally.<sup>1</sup> In Norway, older adults living in institutional settings and health care professionals who are in close contact with patients with Covid-19 have been prioritized to receive the BNT162b2 mRNA Covid-19 vaccine (Pfizer–BioNTech). In addition, the ChAdOx1 nCoV-19 vaccine (AstraZeneca) has been administered to health care professionals younger than 65 years of age who do not have close contact with patients with Covid-19. As of March 20, 2021, when administration of the vaccine was paused, a total of 132,686 persons in Norway had received the first dose of the ChAdOx1 nCoV-19 vaccine and none had received the second dose.<sup>2</sup>

Within 10 days after receiving a first immunization with ChAdOx1 nCoV-19,

From the Departments of Hematology (N.H.S., G.E.T., P.A.H.), Immunology (L.A.M., F.L.-J.), Neurosurgery (M.W.), Neurology (A.-H.A.), and Radiology and Nuclear Medicine (T.H.S.), and the Research Institute of Internal Medicine (N.H.S., A.E.M., P.A.H.), Oslo University Hospital, and the Faculty of Medicine (A.E.M., G.E.T., P.A.H.), the KG Jebsen Center for B Cell Malignancy (L.A.M., G.E.T.), Institute of Clinical Medicine, and the ImmunoLingo Convergence Center (F.L.-J.), University of Oslo, the Department of Hematology, Akershus University Hospital, Lørenskog (N.H.S.), and the Norwegian National Unit for Platelet Immunology, Division of Diagnostics, University Hospital of North Norway, Tromsø (I.H.S., M.T.A.) — all in Norway. Address reprint requests to Dr. Holme at the Department of Hematology, Oslo University Hospital, Rikshospitalet, Postbox 4950, N-0424 Oslo, Norway, or at pholme@ous-hf.no. ←

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DOI: 10.1056/NEJMoa2104882

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# Study reference sections

## BRIEF REPORT

testing, in patients who have unexpected symptoms after vaccination.

Although rare, VITT is a new phenomenon with devastating effects for otherwise healthy young adults and requires a thorough risk-benefit analysis. The findings of our study indicate that VITT may be more frequent than has been found in previous studies in which the safety of

the ChAdOx1 nCoV-19 vaccine has been investigated.<sup>12</sup>

Disclosure forms provided by the authors are available with the full text of this article at [NEJM.org](https://www.nejm.org).

A data sharing statement provided by the authors is available with the full text of this article at [NEJM.org](https://www.nejm.org).

We thank Siw Leiknes Ernsten, M.D., of the Norwegian National Unit for Platelet Immunology at University Hospital of North Norway for important contributions to laboratory investigations of the cases.

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2. Norwegian Institute of Public Health. COVID 19 Ukerapport — uke 10, March 17, 2021 (<https://www.fhi.no/contentassets/8a971e7b0a3c4a06bdf381ab52e6157/vedlegg/2021/ukerapport-for-uke-10-08.03---14.03.21.pdf>).
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12. Ramasamy MN, Minassian AM, Ewer KJ, et al. Safety and immunogenicity of ChAdOx1 nCoV-19 vaccine administered in a prime-boost regimen in young and old adults (COV002): a single-blind, randomised, controlled, phase 2/3 trial. *Lancet* 2021;396:1979-93.

# Science databases

## Databases containing published, peer-reviewed studies:

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/>)
- Web of Science
- Scopus
- ScienceDirect
- JSTOR
- PsycINFO (social sciences)
- IEEE Xplore (engineering & computer science)
- DOAJ (Directory of Open Access Journals)

# Science databases, continued

## **Unpublished pre-prints:**

- Arxiv (physics & math)
- Medrxiv (medicine)
- Biorxiv (biological sciences)
- Psyarxiv (social sciences)

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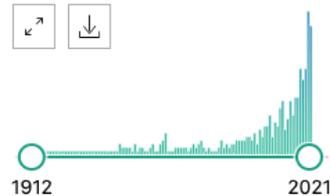
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- Review

**Cerebral venous sinus thrombosis associated with thrombocytopenia post-vaccination for COVID-19.**

1 Cite Castelli GP, Pognani C, Sozzi C, Franchini M, Vivona L.

Crit Care. 2021 Apr 12;25(1):137. doi: 10.1186/s13054-021-03572-y.

Share PMID: 33845870 No abstract available.

**Thrombotic Thrombocytopenia after ChAdOx1 nCov-19 Vaccination.**

2 Cite Greinacher A, Thiele T, Warkentin TE, Weisser K, Kyrle PA, Eichinger S.

N Engl J Med. 2021 Apr 9. doi: 10.1056/NEJMoa2104840. Online ahead of print.

PMID: 33835769

Share METHODS: We assessed the clinical and laboratory features of 11 patients in Germany and Austria in whom **thrombosis** or thrombocytopenia had developed after **vaccination** with ChAdOx1 nCov-19. ...Of the patients with one or more thrombotic events, 9 had cerebral venous ...

**Thrombosis and Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination.**

3 Cite Schultz NH, Sørvoll IH, Michelsen AE, Munthe LA, Lund-Johansen F, Ahlen MT, Wiedmann M,

Aamodt AH, Skattør TH, Tjønnfjord GE, Holme PA.

N Engl J Med. 2021 Apr 9. doi: 10.1056/NEJMoa2104882. Online ahead of print.

PMID: 33835768

Share We report findings in five patients who presented with venous **thrombosis** and thrombocytopenia 7 to 10 days after receiving the first dose of the ChAdOx1 nCoV-19 adenoviral vector **vaccine** against coronavirus disease 2019 (Covid-19). ...Because the five cases occurred ...

**Diagnosis and Management of Vaccine-Related Thrombosis following AstraZeneca COVID-19 Vaccination: Guidance Statement from the GTH.**

4 Cite Oldenburg J, Klamroth R, Langer F, Albisetti M, von Auer C, Ay C, Korte W, Scharf RE, Pötsch B,

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## How could a COVID vaccine cause blood clots? Scientists ...

4 days ago — ... unusual **clotting** and the Oxford–AstraZeneca coronavirus **vaccine**. ... a **teacher** in Granada, Spain, with the Oxford-AstraZeneca **vaccine**.

<https://www.wsj.com> › World › Europe

## Scientists Say They Found Cause of Rare Blood Clotting ...

Mar 19, 2021 — “Nothing but the **vaccine** can explain why these individuals had this immune response,” **Prof.** Holme said. Norway's health authority cited the ...

<https://www.sciencemediacentre.org> › qa-with-vaccine-s...

## Q&A with vaccine safety and thrombosis experts | Science ...

6 days ago — **Prof** Adam Finn, **Professor** of Paediatrics, University of Bristol. **Prof** Beverley Hunt, **Professor** of **Thrombosis** and Haemostasis, King's College ...

<https://www.sciencemediacentre.org> › expert-reaction-t...

## expert reaction to preprint looking at blood clotting events ...

Mar 30, 2021 — ... patients who exhibited blood **clotting** events following **vaccination** with the Oxford-AstraZeneca COVID-19 **vaccine**. **Prof** Adam Finn, **Professor** ...



## Key Things To Consider When Considering Sources

- Does this source have expertise in the particular subject you're covering?
- Does this source seem well-respected? Do they collaborate with others in the field? What does their CV look like?
- If this source is contentious, why are they contentious?
- Does this source have any conflict of interest red flags?

## Twitter bio:

Epidemiologist & Health Economist. Health Policy & Justice. Senior Fellow, FAS. Former 16 yrs @Harvard. @JohnsHopkins & @HarvardEPI alum. COVID updates Jan'20-

📍 Washington DC & Virginia [org/expert/eric-fe...](#)

📅 Joined January 2009

**8,630** Following **483.4K** Followers

# Institution web page bio

## Research Narrative:

~~\_\_\_\_\_~~, a nutritionist and epidemiologist, is an Instructor of Medicine faculty at Harvard Medical School and Brigham and Women's Hospital, and Founder and Director of the Campaign for Cancer Prevention. His research primarily focuses on obesity and nutritional risk factors for diabetes, heart disease, and cancer, as well as translation of research for population prevention and global health.



NEWS



## This Harvard Epidemiologist Is Very Popular on Twitter. But Does He Know What He's Talking About?

By *Tom Bartlett* | APRIL 17, 2020



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# Reasons sources can be contentious

Promote themselves / their ideas even when not supported by scientific consensus

Bad reputation due to behavior (abuse, harassment, etc)

Push against dogma in an established field

Unconventional in some other way



## Key Things To Consider When Considering Sources

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## Red Flags for Conflict-of-Interest

- Source receives money from, or has consulted for, companies or advocacy organizations or has been on a speaker's bureau
- Source discloses potential conflicts of interest on research papers or conference abstracts
- Source is developing or sells products

# Avoid False Balance / False Equivalency

- False balance happens when journalists present an issue as being more balanced between opposing viewpoints than the evidence supports.
- False balance often arises in stories about controversies that persist among the general public even though the science on the issue is clear-cut — such as climate change and childhood vaccine safety.
- Check to see if your writers are equating ideas that may have different levels of merit.
- Be wary of patient anecdotes, especially if those anecdotes are being framed as medical evidence.

> STAR INVESTIGATION

## A wonder drug's dark side

Hundreds of thousands of teen girls in Canada have safely taken **Gardasil**, a vaccine shown to prevent HPV. But a Star investigation has found that since 2008, at least **60 Canadians** experienced debilitating illnesses after inoculation. Patients and parents say the incidents point to the importance of **full disclosure** of risks

DAVID BRUSER AND JESSE MCLEAN  
STAFF REPORTERS

By the time Kaitlyn Armstrong received her third and final injection of the popular HPV vaccine Gardasil, pain had spread through the Whitby teen's body, migrating from her back to her knees to her hips.

After her first dose, Natalie Kenzie of London developed egg-size lumps on the soles of her feet, her joints swelled and her limbs twitched uncontrollably.

Before getting the shots, both 13-year-old girls were told the vaccine had no significant risks. And as they struggled to learn what ailed them, and began to believe Gardasil played a role, doctors dismissed their concerns.

Hundreds of thousands of teenage girls in Canada have received the vaccine's three doses, the vast majority without incident.

Regulators, including Health Canada and the FDA in the United States, cite comprehensive clinical trials and other data that show the vaccine's well-studied safety and efficacy.

But since 2008 at least 60 girls and women in Canada have convulsed or developed disabling joint and muscle pain and other debilitating conditions after receiving Gardasil.

One needed a wheelchair, another a feeding tube. A 14-year-old Quebec girl, Annabelle Morin, died two weeks after receiving the second injection of the vaccine.

It was 7:30 p.m. on the night of Dec. 9, 2008, when her mother, Linda, found her in the tub, her head underwater and turned to the side.

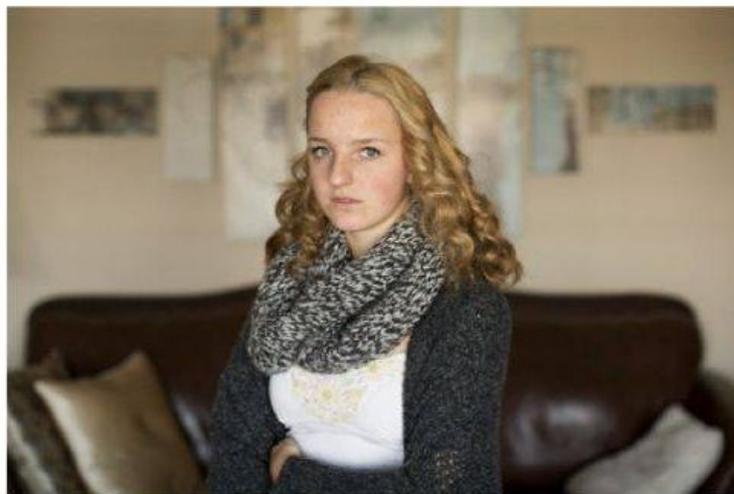
The paramedics lifted Annabelle's body on to a stretcher. "I put a blanket on her, saying, 'She's going to freeze,'" Linda recalled. "I did not know she was already dead."

The Quebec coroner's office said the cause of death was drowning, yet also said that any role Gardasil might have played should be further investigated.

In the cases discussed in this article, it is the opinion of a patient or doctor that a particular drug has caused a side-effect.

There is no conclusive evidence showing the vaccine caused a death or illness.

Like Kenzie and Armstrong, many of the girls say the vaccine was pushed on them by school officials, nurses or doctors who understated the risks, sometimes



RANDY RISLING/TORONTO STAR

Kaitlyn Armstrong says the nurses giving her the HPV vaccine Gardasil ignored her when she said she was allergic to metal.

claiming zero significant side effects despite the existence of a list of rare but serious vaccine-related reactions published by the drug's maker.

The Star has found the girls' concerns are not isolated, that in Canada important safety information about the vaccine has not been communicated to many young patients and their parents.

As part of its ongoing investigation into drug safety, the newspaper analyzed side-effect reports from a Health Canada data-

base, and interviewed regulators, a doctor closely involved in the vaccine's clinical trial and, in 12 cases, young women and parents who believe the vaccine caused considerable suffering.

Some of the girls have, after several years, made partial recoveries and are trying to live normal lives. Others are still bouncing from doctor to doctor, looking for answers.

GARDASIL continued on A10

### > WHAT IS GARDASIL?

> A vaccine delivered in a series of shots. The \$400-\$500 cost paid by province. Public health nurses administer the inoculations in schools.

> Approved in more than 130 countries, the vaccine protects against strains of human papillomavirus (HPV) that cause 70 per cent of cervical cancer cases. Roughly 400 Canadian women die of cervical cancer each year.

# How the Toronto Star massively botched a story about the HPV vaccine — and corrected the record

By Julia Belluz | @juliaoftoronto | Updated Feb 21, 2015, 5:01pm EST

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Joe Raedle/Getty Images

If there was ever a textbook case in how to botch a health story, the Toronto Star's investigation into the "dark side of the HPV vaccine" is it. The report not only misrepresented

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# Summary

- Sources can make or break a story.
- Journalists can find expert sources through studies, database & Google searches, and by asking scientists and PIOs / PR for recommendations.
- Consider how relevant a source's expertise is, whether they seem well-respected, if they are controversial and if they have conflicts of interest.
- Avoid false balance by ensuring that perspectives are presented in ways that are proportional to the evidence supporting them.

Thanks to KSJ@MIT, the Kavli Foundation, Joshua Hatch & Saad Lotfey