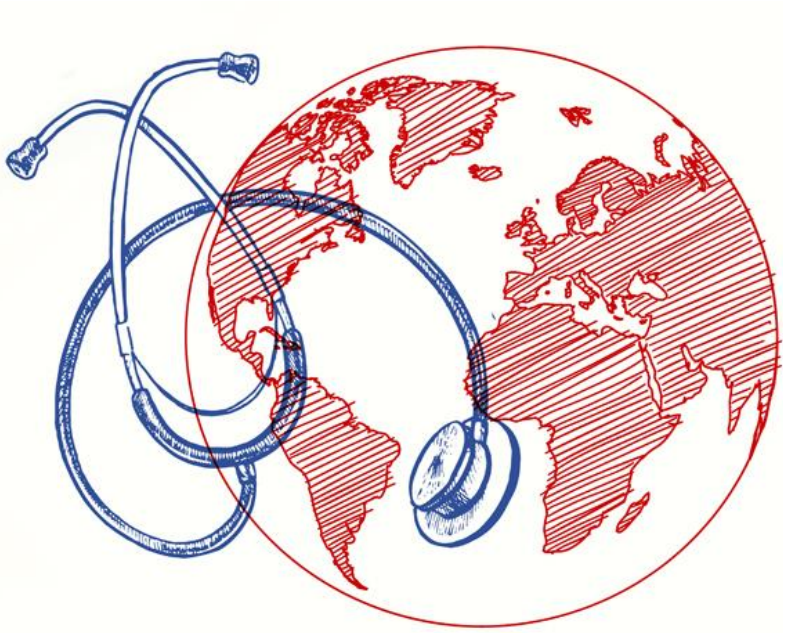
Global Health Cast 56

January 22nd, 2024



Dr. Melvin Sanicas

@Vaccinologist

Prof. Dr. Joe Schmitt

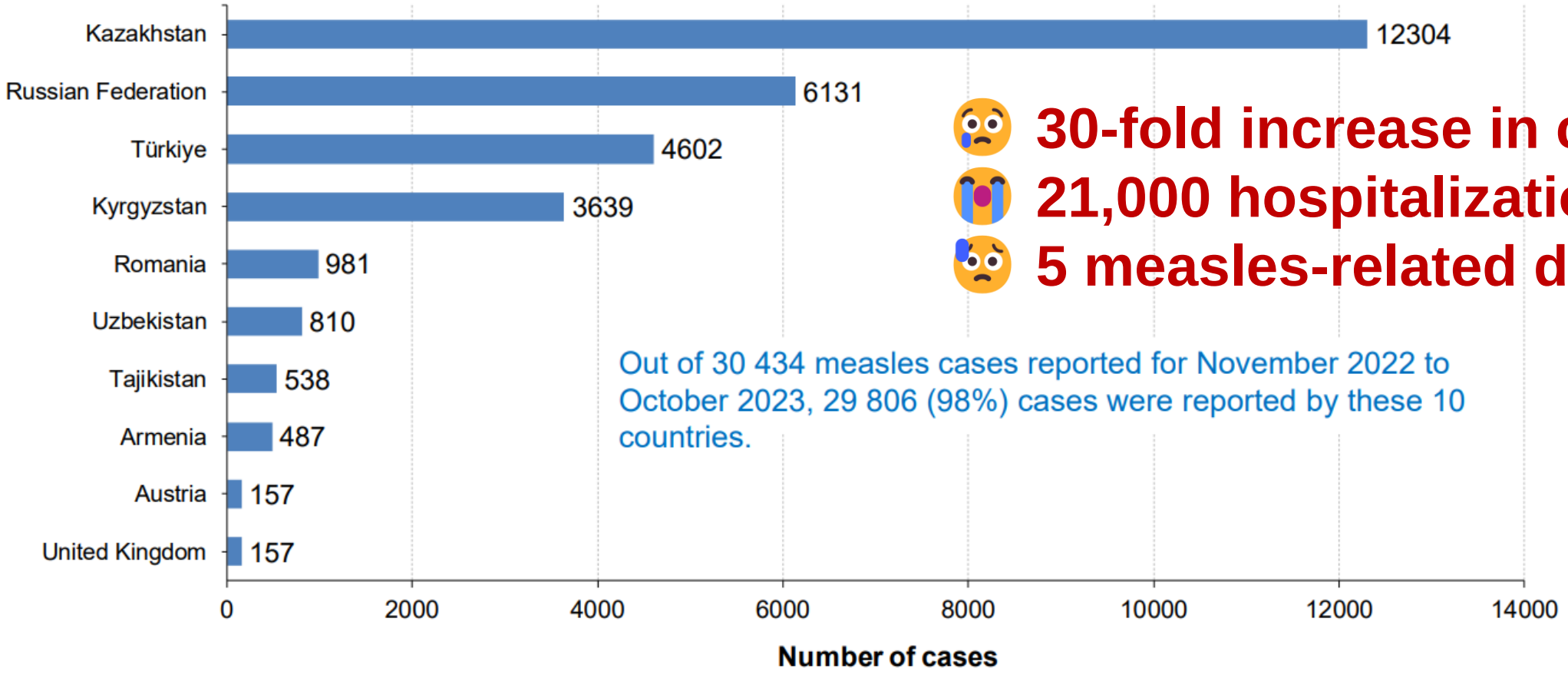
@Prof_Schmitt

What we talk about today

- Measles in Europe in 2023
- Early life digital experience and atypical sensory processing
- Long COVID has a biological cause: less energy in mitochondria
- COVID survivors have a higher risk for digestive diseases
- The forgotten pandemic: HIV / AIDS
- COVID19 vaccines: success factors
- Status of polio-eradication
- Interference of EV/RV and influenza viruses

Ten countries with the highest numbers of measles cases—WHO European Region, November 2022–October 2023

World Health Organization
European Region



😢 **30-fold increase in cases**

😭 **21,000 hospitalizations**

😢 **5 measles-related deaths**

Out of 30 434 measles cases reported for November 2022 to October 2023, 29 806 (98%) cases were reported by these 10 countries.

GLOBAL HEALTH PRESS

https://www.who.int/europe/news/item/14-12-2023-a-30-fold-rise-of-measles-cases-in-2023-in-the-who-european-region-warrants-urgent-action

id-ea.org

Original Investigation

ONLINE FIRST

January 8, 2024

Early-Life Digital Media Experiences and Development of Atypical Sensory Processing

Karen Frankel Heffler, MD[1,2]; Binod Acharya, MS, MS[3]; Keshab Subedi, MS, MSc[4]; et al

» Author Affiliations | Article Information

JAMA Pediatr. Published online January 8, 2024. doi:10.1001/jamapediatrics.2023.5923

Key Points

Question Is early-life digital media exposure associated with subsequent atypical sensory processing?

Findings In this cohort study, early-life television or video exposure was associated with atypical sensory processing in low registration, sensation seeking, sensory sensitivity, and sensation avoiding domains of the Infant-Toddler Sensory Profile, after controlling for perinatal and demographic variables; results differed by age at exposure.

Meaning Greater early-life digital media exposures may be associated with atypical sensory processing. Further research is needed to understand why early media exposure is associated with specific sensory-related behaviors, including those seen in autism spectrum disorder, and if minimizing screen media at a young age can improve subsequent sensory-related outcomes.

nature communications

Article

https://doi.org/10.1038/s41467-023-44432-3

Muscle abnormalities worsen after post-exertional malaise in long COVID

Received: 21 March 2023

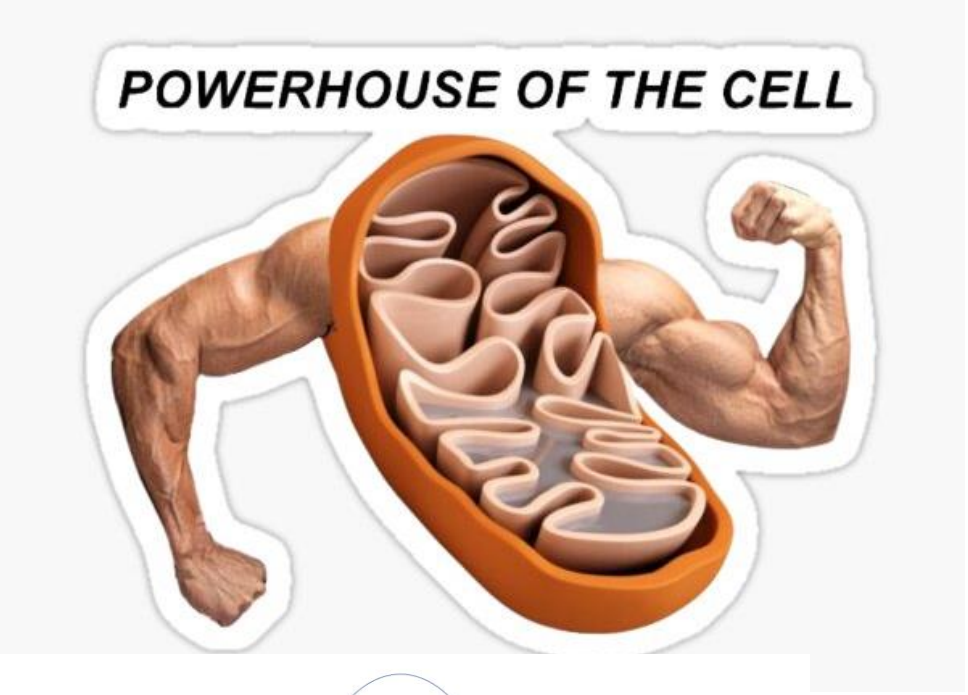
Accepted: 13 December 2023

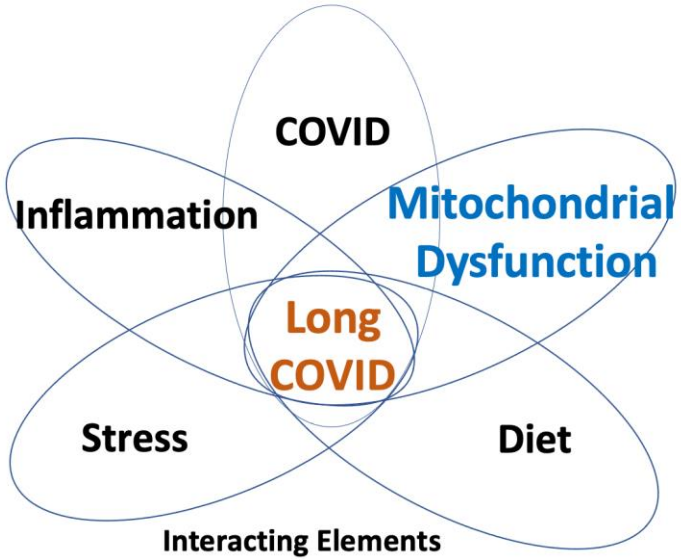
Published online: 04 January 2024

Check for updates

Brent Appelman[1,2,15], Braeden T. Charlton[3,4,15], Richie P. Goulding[3,4], Tom J. Kerkhoff[3,4,5,6], Ellen A. Breedveld[3,4], Wendy Noort[3,4], Carla Offringa[3,4], Frank W. Bloemers[4,7], Michel van Weeghel[8], Bauke V. Schomakers[8], Pedro Coelho[9,10,11], Jelle J. Posthuma[7,12], Eleonora Aronica[11], W. Joost Wiersinga[1,2,13], Michèle van Vugt[2,14,15] & Rob C. I. Wüst[3,4,15]

A subgroup of patients infected with SARS-CoV-2 remain symptomatic over three months after infection. A distinctive symptom of patients with long COVID is post-exertional malaise, which is associated with a worsening of fatigue- and pain-related symptoms after acute mental or physical exercise, but its underlying pathophysiology is unclear. With this longitudinal case-control study (NCT05225688), we provide new insights into the pathophysiology of post-exertional malaise in patients with long COVID. We show that skeletal muscle structure is associated with a lower exercise capacity in patients, and local and systemic metabolic disturbances, severe exercise-induced myopathy and tissue infiltration of amyloid-containing deposits in skeletal muscles of patients with long COVID worsen after induction of post-exertional malaise. This study highlights novel pathways that help to understand the pathophysiology of post-exertional malaise in patients suffering from long COVID and other post-infectious diseases.





Interacting Elements Contributing to Long COVID Symptoms

GLOBAL HEALTH PRESS

RESEARCH ARTICLE Open Access

Risks of digestive diseases in long COVID: evidence from a population-based cohort study

Yuying Ma[1,2†], Lijun Zhang[1,3†], Rui Wei[1], Weiyu Dai[1], Ruijie Zeng[1,4], Dongling Luo[5], Rui Jiang[1,3], Zewei Zhuo[1], Qi Yang[1], Jingwei Li[1,2], Felix W Leung[6,7*], Chongyang Duan[8*], Weihong Sha[1,2,3,4*] and Hao Chen[1,2,3,4*]

Abstract

Background In the post-pandemic era, a wide range of COVID-19 sequelae is of growing health concern. However, the risks of digestive diseases in long COVID have not been comprehensively understood. To investigate the long-term risk of digestive diseases among COVID patients.

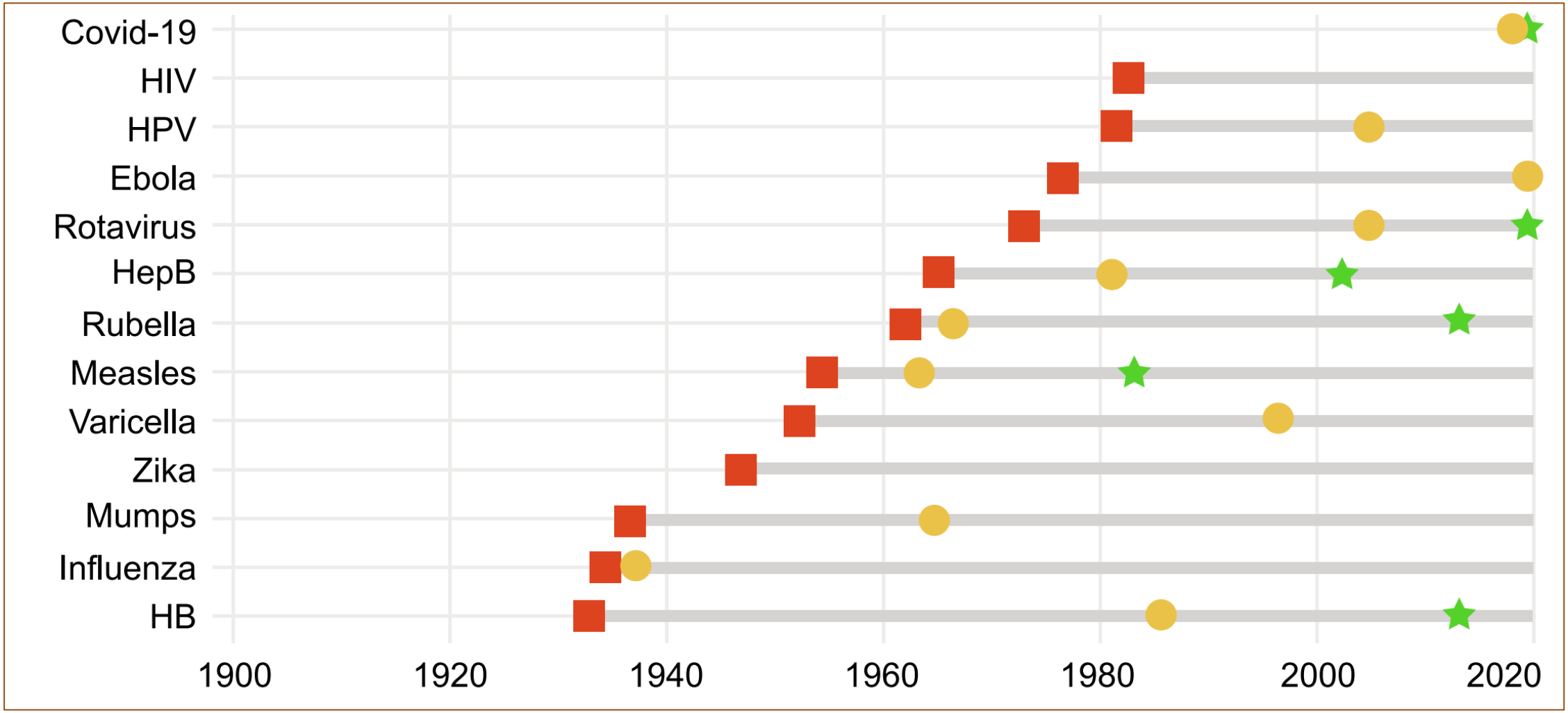
Methods In this large-scale retrospective cohort study with up to 2.6 years follow-up (median follow-up: 0.7 years), the COVID-19 group (n = 112,311), the contemporary comparison group (n = 359,671) and the historical comparison group (n = 370,979) predated the COVID-19 outbreak were built using UK Biobank database. Each digestive outcome was defined as the diagnosis 30 days or more after the onset of COVID-19 infection or the index date. Hazard ratios (HRs) and corresponding 95% confidence intervals (CI) were computed utilizing the Cox regression models after inverse probability weighting.

Results Compared with the contemporary comparison group, patients with previous COVID-19 infection had higher risks of digestive diseases, including gastrointestinal (GI) dysfunction (HR 1.38 (95% CI 1.26 to 1.51)); peptic ulcer disease (HR 1.23 (1.00 to 1.52)); gastroesophageal reflux disease (GERD) (HR 1.41 (1.30 to 1.53)); gallbladder disease (HR 1.21 (1.06 to 1.38)); severe liver disease (HR 1.35 (1.03 to 1.76)); non-alcoholic liver disease (HR 1.27 (1.09 to 1.47)); and pancreatic disease (HR 1.36 (1.11 to 1.66)). The risks of GERD were increased stepwise with the severity of the acute phase of COVID-19 infection. Even after 1-year follow-up, GERD (HR 1.64 (1.30 to 2.07)) and GI dysfunction (HR 1.35 (1.04 to 1.75)) continued to pose risks to COVID-19 patients. Compared to those with one SARS-CoV-2 infection, reinfected patients were at a higher risk of pancreatic diseases (HR 2.57 (1.23 to 5.38)). The results were consistent when the historical cohort was used as the comparison group.

AIDS- the Forgotten Pandemic

- HIV claimed 40.4 million [32.9–51.3 million] lives so far with ongoing transmission in all countries; some countries reporting increasing trends.
- Of the estimated 39.0 million [33.1–45.7 million] people living with HIV end of 2022, two thirds of whom (25.6 million) are in the WHO African Region.
- In 2022, 630 000 [480 000–880 000] people died from HIV-related causes and 1.3 million [1.0–1.7 million] people acquired HIV.
- There is no cure for HIV infection. However, with access to effective medical care, HIV has become a manageable chronic disease allowing the infected to lead long and healthy lives.
- Global strategies and target (WHO, Global Fund, UNAIDS: ending the pandemic by 2030.
- By 2025, 95% of all people living with HIV (PLHIV) should have a diagnosis, be taking lifesaving treatment (ART) and should achieve a suppressed viral load reducing onward HIV transmission.

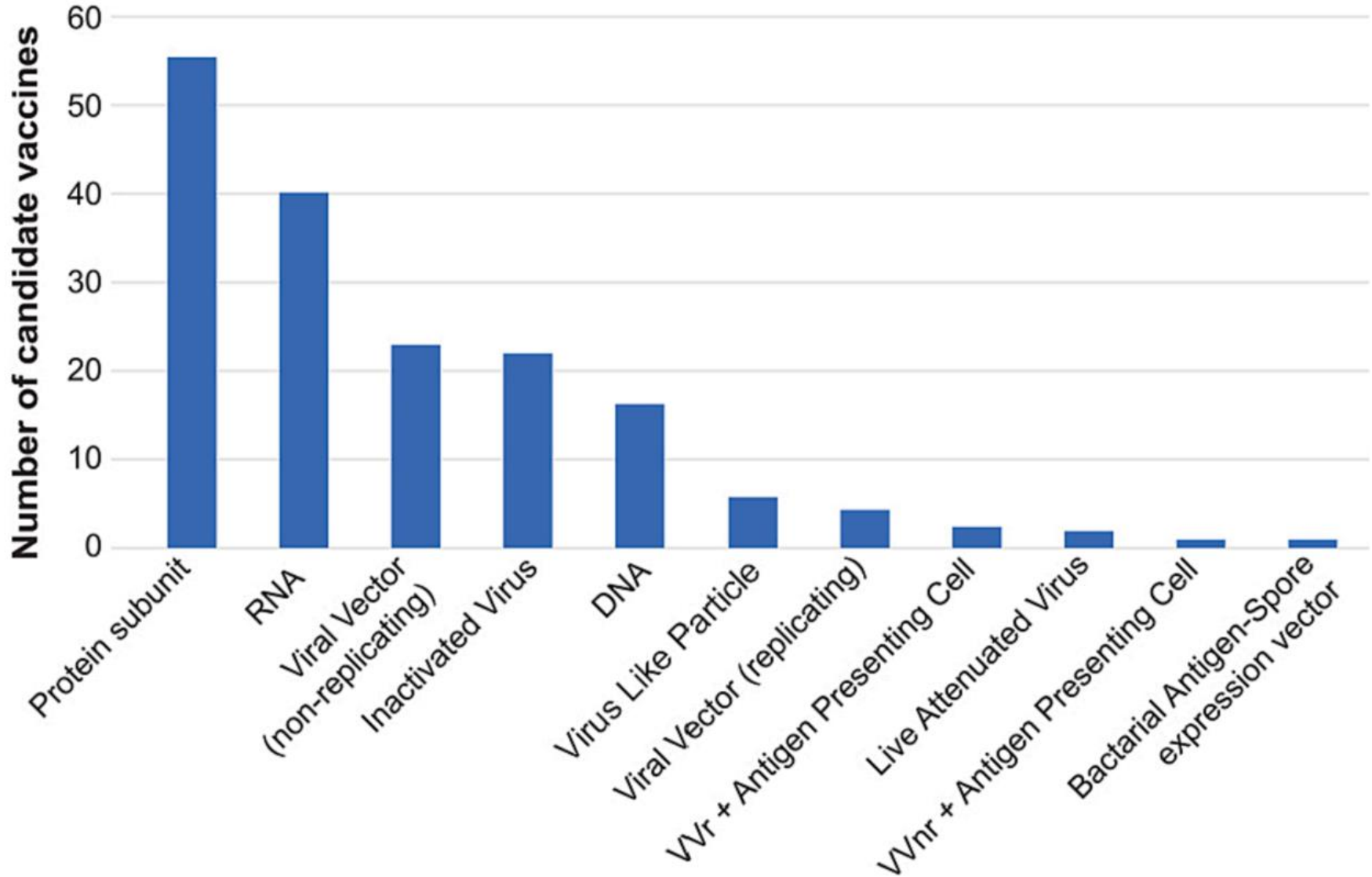
Time from identification of microbe to substantial vaccination



■ Identification of microbe; ● First vaccine developed; ★ 40% vaccinated.

King ML. Vaccine 2024 in press. https://doi.org/10.1016/j.vaccine.2023.12.031

COVID Vaccines Used ≥11 Different Technologies

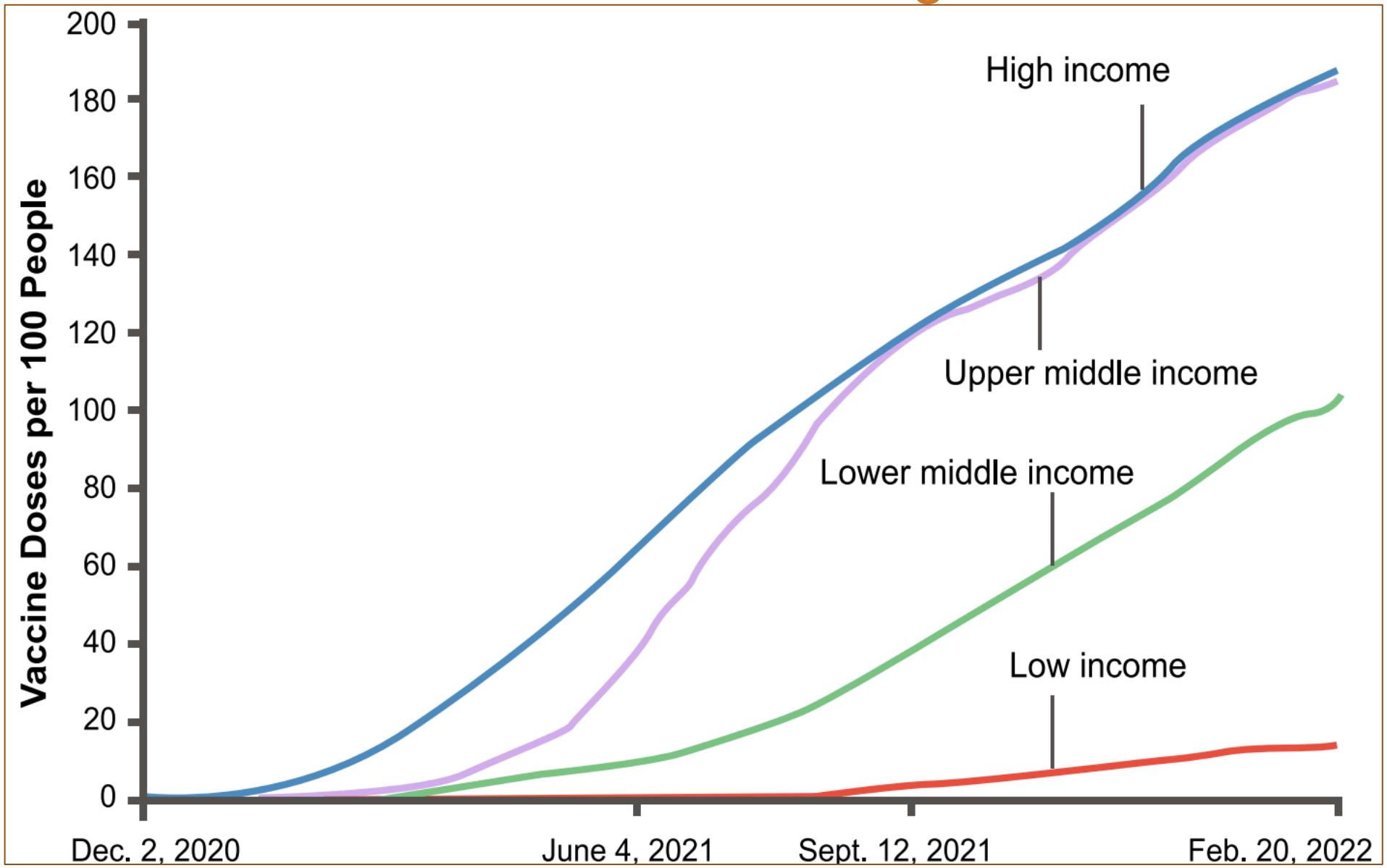


King ML. Vaccine 2024 in press. https://doi.org/10.1016/j.vaccine.2023.12.031

Eleven Vaccines using four technologies received WHO EUL by Sep 2022

Technology	Vaccine	Manufacturer	First EUL
mRNA	COMIRNATY	Pfizer/BioNTech	Dec 2020
	SPIKEVAX	Moderna	Apr 2021
Non-replicating virus	VAXZEVRIA	AstraZeneca	Feb 2021
	COVISHIELD	Serum Institute of India	Feb 2021
	Covid-19 Vaccine Ad26.COV2-S	Janssen	Mar 2021
	CONVIDECIA	CanSino Biologics	May 2022
Inactivated viral vaccine	Inactivated Covid-19 Vaccine (Vero Cell)	Beijing Inst. Biol. Products	May 2021
	CORONAVAC	Sinovac	Jun 2021
	COVAXIN	Bharat Biotech	Nov 2021
Protein subunit with adjuvants	COVOVAX	Serum Institute of India	Dec 2021
	NUVAXOVID	Novavax	Dec 2021

More vaccine doses administered in higher income countries



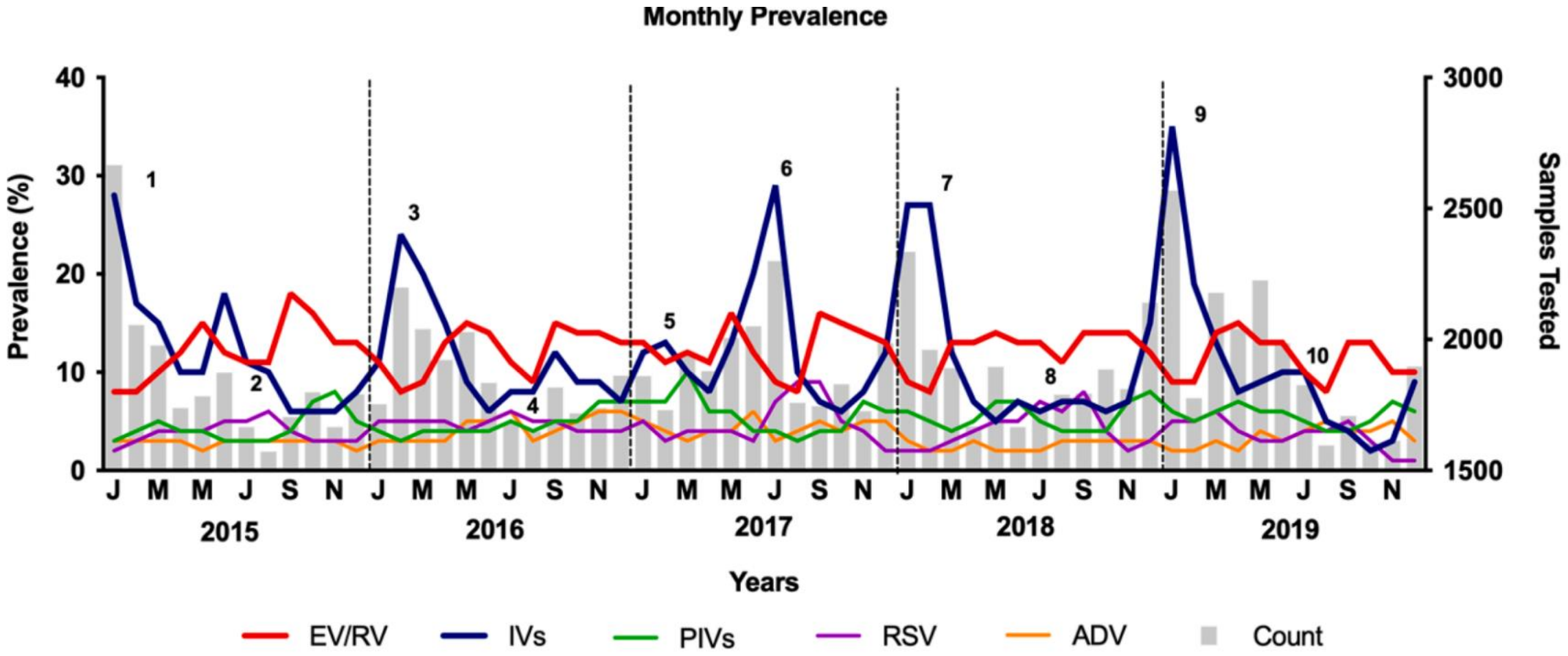
King ML. Vaccine 2024 in press. https://doi.org/10.1016/j.vaccine.2023.12.031

COVID19 Vaccines: Success Factors

- Development of COVID-19 vaccines was the **most rapid ever** in history.
- **32 products** using a broad range of technologies received emergency use authorization end of 2021.
- However, **27 of those 32 vaccines had little impact** on the global course of the pandemic.
- Only five vaccines, from **AstraZeneca, Pfizer/BioNTech, Sinovac, Moderna, and Sinopharm**, were manufactured, authorized, and distributed in time to significantly impact the number of deaths worldwide.
- These five vaccines averted an estimated **17 million deaths in the first year** of the vaccination campaign.
- The shared characteristic of these five manufacturers was their ability to **rapidly develop** and **scale up** vaccine production to **deliver large manufacturing volumes** for the global population.
- Critical success factors include **prior experience** with **commercialization and approval**, **robust quality systems**, **rigorous process development strategies**, **flexible manufacturing facilities** with a **skilled workforce, collaboration, access to consumables, reagents**, and adjuvants (if relevant), and an **equitable distribution** of the global vaccine manufacturing network.

Summary of new polioviruses this week

- **Afghanistan:** seven wild poliovirus type 1 (WPV1) environmental samples
- **Pakistan**: three WPV1-positive environmental samples
- **Chad**: one cVDPV2 case
- **Côte d'Ivoire:** one cVDPV2 case and one positive environmental sample
- **DR Congo:** four cVDPV1 cases and one cVDPV2 case
- **Mozambique:** one cVDPV1 case
- **Nigeria:** six cVDPV2 cases
- **South Sudan:** one cVDPV2 case
- **Zimbabwe:** six cVDPV2-positive environmental samples



Tao KP et al., 2024: https://doi.org/10.1016/j.crmicr.2022.100147

Conclusion

Epidemiological surveillance and the sequential infection in vitro suggests viral **interference** between EV/RV and IV operates at the **population**, **individual** and **cellular levels**.

What we talked about today

- Measles in Europe in 2023
- Early life digital experience and atypical sensory processing
- Long COVID has a biological cause: less energy in mitochondria
- COVID survivors have a higher risk for digestive diseases
- The forgotten pandemic: HIV / AIDS
- COVID19 vaccines: success factors
- Status of polio-eradication
- Interference of EV/RV and influenza viruses