Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

The fall of *Roe v Wade*: a call to action for religious medical providers

On June 24, 2022, the Supreme Court of the USA overturned *Roe v Wade*, the culmination of a 5 decades-long effort to remove the strongest legal protection of abortion the USA has had thus far. The abortion discourse in the USA has been essentialised to a polarised debate, in which pro-life is equated with a religious–moral injunction to protect the unborn fetus from pro-choice secularists. This rhetoric obfuscates the decades-long activism of faith-based reproductive rights groups for maternal choice and empowers an outlying religious interpretation of prenatal fetal life over the majority of other religious (and non-religious) Americans.

Abortion is supported by the majority of religious groups in the USA,[1] and most women seeking abortions are religious.[2] Thus, the narrative pitting religion against abortion is not only inaccurate and medically dangerous, but violates these patients' religious freedoms and right to private reproductive decision making.

More than half of physicians in the USA are religious.[3] Many feel that facilitating the full spectrum of reproductive health care is not only allowed by their faith, but required. In abortion care and research, we often discuss religion in terms of providers' conscientious objection to involvement. However, the voice of religious providers facilitating access to safe abortion because of their religious beliefs is often unheard.

Many who feel they do not align with a pro-life or pro-choice stance are choosing to remain silent on the sidelines—this is dangerous. While providers of faith do not all agree on the metaphysics of life's beginnings, there is enough diversity within and between faith traditions that, collectively, we should not allow one minority religious interpretation to remove the right to safe abortion access. Failing to protect abortion rights exacerbates socioeconomic and racial inequity, increases the rate of unsafe abortion and pregnancy complications, and harms patients,[4] compromising the fundamental bioethical (and religious) principle of non-maleficence.

For religious providers of all medical specialties who believe in protecting patients' reproductive rights, it is incumbent upon us to raise our voices within our departments, medical systems, professional organisations, and state legislatures to turn the upcoming tide and ensure policies and laws are implemented that protect abortion services now that *Roe* has fallen. Pre-*Roe*, networks of faith-based clergy and medical providers coordinated to facilitate abortion access for their constituents: this kind of organization will now be called upon again. We summarise key considerations for religious medical providers in a post-*Roe* USA in the appendix.

Medicine and law are two fields in which we often assume religion has no role. However, if the recent and upcoming abortion restrictions have taught us anything, religion is profoundly present and powerful in both spheres. If the voice of a religious minority can have such an impact, then medical providers of faith who support reproductive rights should certainly make an impact as well.

We declare no competing interests.

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Clinical severity of omicron lineage BA.2 infection compared with BA.1 infection in South Africa

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The omicron SARS-CoV-2 variant of concern (B.1.1.529) was first reported in South Africa in mid-November, 2021. Early data indicated that infection with omicron (around 99% BA.1 lineage during this period) was associated with a lower risk of hospitalisation and lower risk of severe illness, once hospitalised, compared with delta (B.1.617.2) variant infection.[1] Recently, the BA.2 lineage has increased in many areas globally, including South Africa, associated with increases in case numbers in some settings. In South Africa, the BA.2 lineage was first detected on Nov 17, 2021. From week 49 of 2021 (starting Dec 5, 2021), the proportion of BA.2 lineage began to increase, making up 84% (27 of 32) of all sequenced samples by week 5 of 2022 (week ending Feb 5, 2022).[2] Replacement of BA.1 by BA.2 occurred in a period when SARS-CoV-2 case numbers were declining from the fourth wave peak in South Africa and was associated with a brief increase in case numbers in children of school-going age and slowing of the rate of decline compared with previous waves. The BA.1 lineage contains a 69–70 amino acid deletion in the spike protein, which is associated with S-gene target failure (SGTF) when

See **Online** for appendix

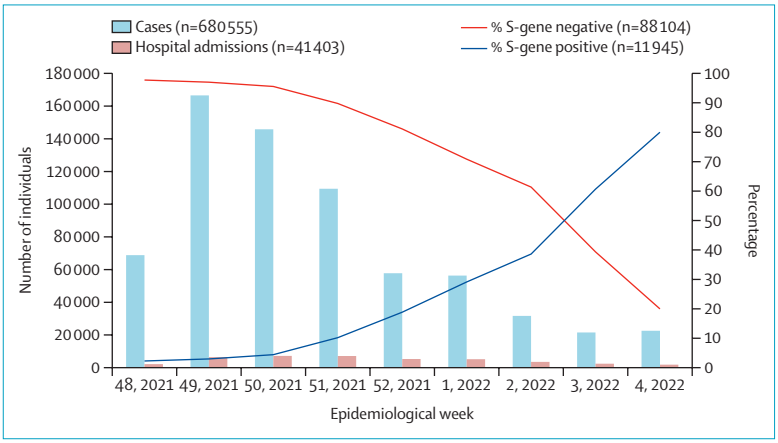

Figure: **Number of cases detected, hospital admissions, and percentage of S-gene positive and S-gene target failure (S-gene negative) infections among tests performed on the TaqPath assay by epidemiological week, Dec 5, 2021, to Jan 29, 2022**

tested using the TaqPath COVID-19 PCR test (Thermo Fisher Scientific, Waltham, MA, USA). At the time of this study, BA.2 lacks this deletion, hence infections with BA.2 are S-gene positive on this assay.

Similar to BA.1, BA.2 is associated with substantial loss in neutralising activity in individuals infected with wild-type SARS-CoV-2 or recipients of mRNA vaccines.[3] BA.2 has also been associated with increased transmissibility compared with BA.1,[4] and in England was shown to have an increased growth rate compared with BA.1.[5] However, data are lacking on the clinical severity of the BA.2 lineage compared with BA.1. We aimed to assess the severity of BA.2 infections compared with BA.1 in South Africa.

See Online for appendix

Using previously described methods,[1] we performed individual-level data linkage for national data from three sources: (1) national COVID-19 case data, (2) SARS-CoV-2 laboratory test data for public sector laboratories and one large private sector laboratory, and (3) DATCOV, which is an active surveillance system for COVID-19 hospital admissions in South Africa (including both incidental and attributable admissions). Case and test data were obtained on Jan 29, 2022, and DATCOV data on Feb 10, 2022. In this analysis, restricted to tests performed on the TaqPath COVID-19 assay, S-gene positive and SGTF infections were considered proxies for omicron lineages BA.2 and BA.1, respectively. Among 680 555 COVID-19 cases identified during the study period, the test used was known in 282 298 (41·5%) cases, and among these, 133 665 (47·3%) were diagnosed using the TaqPath COVID-19 PCR test.

Two multivariable logistic regression models were generated to assess risk factors for (1) hospitalisation and (2) severe disease among hospitalised individuals (subset of individuals in model 1), comparing S-gene positive infections (proxy for BA.2) with SGTF infections (proxy for BA.1). We controlled for factors associated with hospitalisation (age, sex, presence of comorbidity, province, health-care sector, and previous SARS-CoV-2 infection) and factors associated with severity (age, presence of comorbidity, sex, province, health-care sector, number of days between the dates of specimen collection and hospital admission, known previous SARS-CoV-2 infection, and SARS-CoV-2 vaccination status) based on important predictors of outcome in South Africa[6,7] in the respective models. Data on comorbidities and SARS-CoV-2 vaccination were available only for hospitalised individuals. Cases were censored to those with a specimen collected before Jan 20, 2022, to allow for at least 3 weeks of follow-up. Severity analysis was restricted to admissions that had already accumulated outcomes, and all patients still in hospital were excluded. Severe disease was defined (based on a modification of WHO recommendations[8]) as a hospitalised patient meeting at least one of the following criteria: admitted to the intensive care unit, received any level of oxygen treatment, ventilated, received extracorporeal membrane oxygenation, experienced acute respiratory distress syndrome, or died.

Ethical approval was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand for the collection of COVID-19 case and test data as part of essential communicable disease surveillance (M210752), and for the DATCOV surveillance programme (M2010108).

From Dec 1, 2021, to Jan 29, 2022, 680 555 SARS-CoV-2 infections were reported. From week 49 of 2021 (starting Dec 5, 2021) to week 4 of 2022 (ending Jan 29, 2022), the proportion of S-gene positive infections increased from 3% (931 of 31 271) to 80% (2425 of 3031; figure). Among 95 470 samples tested using the TaqPath COVID-19 PCR assay, 3·6% of individuals with S-gene positive infection (BA.2 proxy) were hospitalised compared with 3·4% with SGTF infection (BA.1 proxy; appendix pp 1–2).

By multivariable analysis, after controlling for factors associated with hospitalisation, the odds of being admitted to hospital did not differ between individuals with S-gene positive (BA.2 proxy) infection compared with SGTF (BA.1 proxy) infection (adjusted odds ratio [aOR] 0·96 [95% CI 0·85–1·09]; appendix pp 1–2). In addition to geographical factors, hospital admission was associated with female sex (aOR 1·14 [1·06–1·22]) as well as young age (<5 years, aOR 7·49 [6·02–9·32]) and older age (40–59 years,

aOR 1·39 [1·16–1·66] and ≥60 years, aOR 4·97 [4·12–5·94]) compared with individuals aged 19–24 years. Individuals in the private health-care sector were less likely to be admitted to hospital than those in the public sector (aOR 0·63 [0·58–0·68]).

Among hospitalised individuals diagnosed between Dec 1, 2021, and Jan 20, 2022, after controlling for factors associated with severe disease, the odds of severe disease did not differ between individuals with S-gene positive infection and individuals with SGTF infection (aOR 0·91 [95% CI 0·68–1·22]; appendix pp 3–5). The odds of severe disease was higher among individuals with a comorbidity (aOR 1·52 [1·25–1·84]), and among individuals aged 40–59 years (aOR 2·09 [1·33–3·31]) and 60 years or older (aOR 4·36, [2·77–6·85]), compared with individuals aged 19–24 years. The odds of severe disease were lower in children aged 5–12 years (compared with individuals aged 19–24 years), in females, and in individuals who had received at least one dose of SARS-CoV-2 vaccine. The distribution of the clinical severity components did not differ for individuals with S-gene positive infection compared with SGTF infection (appendix p 6).

Limitations of our study include restriction to samples tested with the TaqPath COVID-19 PCR assay, biasing data geographically, and that we used S-gene positive infection as a proxy for BA.2 lineage infection. Some misclassification could have occurred with other non-omicron variants, but these made up less than 2% of all detected viruses in December, 2021, and January, 2022. There could be a lag in hospitalisation and severe outcomes leading to underestimation of severe illness. To address this issue, we analysed data from hospitalised patients with known outcomes and censored cases to ensure at least 3 weeks of follow-up. We only had vaccination information for hospitalised patients, and this was based on self-report. Reinfection is probably also under-ascertained, as less than 10% of SARS-CoV-2 cases were diagnosed during the first and second waves in South Africa.[9]

We found a similar proportion of individuals were hospitalised and developed severe illness, given hospitalisation, for individuals infected with BA.1 compared with BA.2, during the omicron-dominated fourth wave in South Africa. These data are reassuring as they suggest that although BA.2 might have a competitive advantage over BA.1 in some settings, the clinical profile of illness remains similar. South Africa might differ from other settings in having a high level of previous immunity after natural infection,[10] and data evaluating BA.2 severity are needed from other settings.

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Tachi Yamada: a missed global health leader

On June 5, 2022, Tachi Yamada was remembered by family and a legion of friends, colleagues, and students in a special gathering in Seattle, WA, USA. This date would have been his 77th birthday. Sadly, this global health titan passed away prematurely in August, 2021.

Yamada was born in Tokyo in 1945—a city devasted at the end of the second world war. Weighing 1·3 kg at birth, his survival was in doubt. Yet he grew up to be a tall and formidable athlete, in addition to having a truly exceptional intellect.

Few people in medicine have excelled as Yamada did across academia, industry, and philanthropy. At the University of Michigan, he led the division of internal medicine, and he was the editor of the reputed *Textbook of Gastroenterology*—now in its seventh edition and translated into many languages. He was recruited to the pharmaceutical industry in the early 1990s, eventually becoming Head of Research and Development, and board member, at GlaxoSmithKline (GSK). It was here Yamada's passion for global health was fuelled by the infamous dispute over antiretroviral drugs between GSK and the South African Government. Ashamed of the dispute, Yamada persuaded the GSK board to create a unit that would produce drugs to treat neglected diseases—an area with scarce market and profits.

In 2006, Yamada became President of Global Health at the Bill & Melinda Gates Foundation. Over the next 5 years, he oversaw more than US$9 billion in global health investments. Yamada conceived and implemented the triple D concept—the discovery, development, and delivery of innovative health solutions. As a sharp focus of his tenure, this concept ensured that products in the pipeline—drugs, diagnostics, and vaccines—reached the most vulnerable people. Good governance was another priority of Yamada's, and the reform achieved at Gavi, the Vaccine Alliance was one of his biggest sources of pride. Yamada adhered convincingly to the foundation's focus on global health priorities—although he was aware and open to the external criticisms of *The Lancet* and many others about the potential distortion of the global health agenda. As Richard Horton wrote in 2011: "whatever one might say about the foundation, you could never question Tachi's unwavering belief in the Gates vision for global health".[1]

Surprisingly, Yamada's extreme self-confidence was not opposed to being humble, soft-spoken, and kind. More than once, Tachi came to the defence of the talented team he recruited, against Bill's abrasive questioning in staff meetings. After Yamada's untimely passing, Melinda Gates tweeted: "Dr Tachi Yamada was one of my first global health teachers… He saw the infinite worth in every person and worked tirelessly to keep them all healthy",[2] and Bill Clinton wrote: "Dr. Tachi Yamada was an extraordinary scientist and leader who used his brilliant mind and kind, good heart to improve the lives of millions of people".[3]

Yamada and his wife, Leslie, also ventured into philanthropy by giving a generous gift to the University of Michigan for the creation of the Center for Global Health Equity. Yamada received many awards in recognition of his effect on global health. These awards included an honorary knighthood from Queen Elizabeth II, the Order of the Rising Sun from the Government of Japan, and honorary degrees from universities across the world.

After his 5-year tenure at the Bill & Melinda Gates foundation, Yamada returned to the pharmaceutical industry—this time to Takeda, as Chief Medical and Scientific Officer, where he led the development of a new vaccine pipeline. At the time of his death, he was an active board member of several innovative pharmaceutical start-ups.

Yamada will long be remembered as a brilliant mind determined to help others and for his proverbial generosity as a mentor and friend. Yamada's global health leadership will be missed, but his legacy shall perdure.

I joined the board of HilleVax as an independent member in 2021.

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