

No Longer Greek to You: Understanding COVID-19 Variants

The SARS-CoV-2 virus is a novel virus, but it is not unique as far as virus behavior goes. It has done what all viruses do: Evolve into variants. From alpha to omicron, this podcast series describes SARS-CoV-2 variants and the impact of their ever-changing nature on COVID-19 vaccines.

This CE course is relevant to all healthcare professionals.

Episode 2 – The Omicron Game Changer

Close on the heels of COVID-19's Delta variant came Omicron and its unique set of challenges. An internationally known expert shared the data behind Omicron's rise and its effect on cases, hospitalizations, and the efficacy of available vaccines.

Guest

Daniel Griffin, MD, PhD

- Board-certified in internal medicine and infectious disease
- Expertise in global health, tropical medicine, parasitology, and virology
- International speaker for organizations such as the University of Glasgow, the University of Minnesota, the Peace Corps, the Foundation for International Medical Relief for Children, Floating Doctors, and Remote Care Education
- Podcast co-host of *This Week in Virology* by the American Society for Microbiology
- Co-author, *Parasitic Diseases, 7th edition*

Host

Deborah Martin, DNP, MBA, RN, NE-BC, FACHE

- Director of Learning Innovation, Elite Learning
- Certified nurse executive and fellow of the American College of Healthcare Executives
- More than 25 years in healthcare, including as system director of professional practice and development at a large healthcare system

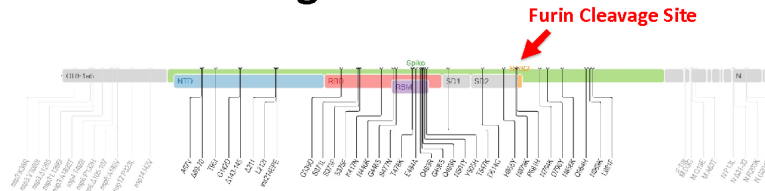
Reviewer

Lisa Simani, APRN, MS, ACNP

- Editor, Nurse Regulatory/Compliance Planner for Elite Learning
- 20 years of publishing experience
- Lead author of peer-reviewed articles for print- and web-based nursing continuing education provider companies

Episode Key Points

What Changed with OMICRON?



NTD 14-306 , RBD 331-528

A67V, Δ69-70, T95I, G142D, Δ143-145, Δ211, L212I, ins214EPE

G339D, S371L, S373P, S375F, **K417N-antibody escape**, N440K, G446S, S477N, T478K, **E484A-antibody escape**, Q493R, G496S, Q498R, **N501Y-improved ACE2 binding**, Y505H

T547K, D614G, H655Y, N679K, **P681H-immune evasion of the interferon system, and improved replication through improved furin site cleavage**, N764K, D796Y, N856K, Q954H, N969K, L981F

https://en.wikipedia.org/wiki/SARS-CoV-2_Omicron_variant

We are seeing less hospitalizations and deaths with Omicron (S. Africa)

Table 1. Characteristics of Patients Admitted With a Positive COVID-19 Result in the 4 Waves^a

	No. (%) of patients				P value
	Wave 1 ^a	Wave 2	Wave 3	Wave 4	
COVID-19 patients treated	3875	4632	6342	2351	
COVID-19 patients admitted	2628 (67.8)	3198 (69.0)	4400 (69.3)	971 (41.3)	<.001
Age, median (IQR), y	53 (21.75)	54 (21)	59 (24)	36 (32)	<.001
Sex, female/male	1337/1291	1657/1541	2035/2365	590/381	<.001
Patients with comorbidities ^b	1472 (56.0)	1868 (58.4)	2311 (52.5)	227 (23.3)	<.001
Acute respiratory condition on admission	1909 (72.6)	2783 (87.0)	4013 (91.2)	307 (31.6)	<.001

44.3% of the adult South African population vaccinated as of December 2021 and **>50%** of the population with previous exposure to SARS-CoV-2

Characteristics and Outcomes of Hospitalized Patients in South Africa During the COVID-19 Omicron Wave Compared With Previous Waves Maslo, C et al. JAMA 12/30/2021

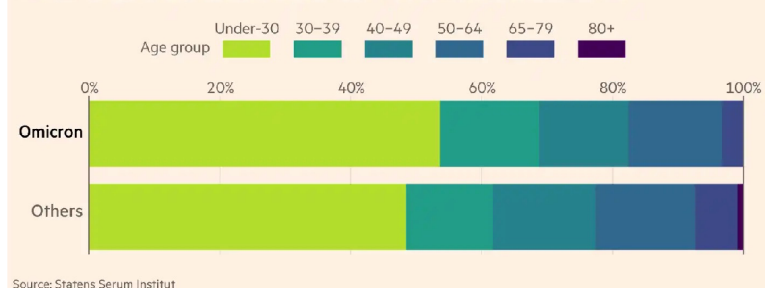
Less hospitalizations and deaths with Omicron (the UK-Scotland)

- Early national data suggest that Omicron is associated with a two-thirds reduction in the risk of COVID-19 hospitalization when compared to Delta
- The third/booster vaccine dose was associated with a 57% (95% CI 55, 60) reduction in the risk of symptomatic S gene negative symptomatic infection relative to ≥ 25 weeks post second dose.

Severity of Omicron variant of concern and vaccine effectiveness against symptomatic disease: national cohort with nested test negative design study in Scotland
<https://www.research.ed.ac.uk/en/publications/severity-of-omicron-variant-of-concern-and-vaccine-effectiveness->

Less hospitalizations and deaths with Omicron (Denmark)

So far, Omicron cases in Denmark skew younger than cases from other variants
Cases in Denmark from November 22 to December 15 2021, by variant and age group

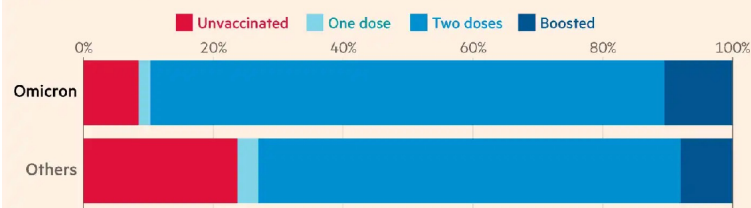


Data from the Statens Serum Institut (SSI)
<https://www.ft.com/content/19065fba-025c-43fd-bd76-37234af97953>

Less hospitalizations and deaths with Omicron (Denmark)

A much lower share of Omicron cases in Denmark are unvaccinated compared with cases from other variants

Cases in Denmark from November 22 to December 15 2021, by variant and vaccination status



Source: Statens Serum Institut

Data from the Statens Serum Institut (SSI)

<https://www.ft.com/content/19065fba-025c-43fd-bd76-37234af97953>

Less hospitalizations and deaths with Omicron (Denmark)

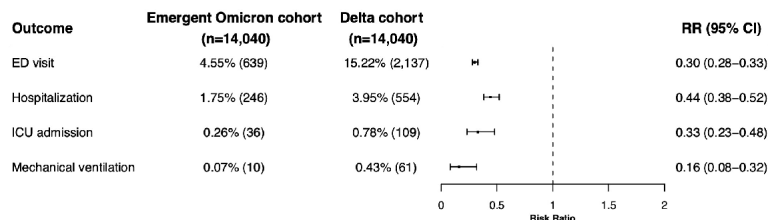
“It is primarily young and vaccinated people who are infected with Omicron, and when we adjust for this, we see no evidence that Omicron should result in milder disease,” said Henrik Ullum, director of the Statens Serum Institut, Denmark’s public health agency, in a press conference.

Data from the Statens Serum Institut (SSI)

<https://www.ft.com/content/19065fba-025c-43fd-bd76-37234af97953>

We are seeing less hospitalizations and deaths with Omicron (the US)

Comparison of 3-day acute outcomes
in matched patients with SARS-CoV-2 infections
Emergent Omicron cohort (12/15–12/24) vs. Delta cohort (9/1–11/15)



Comparison of outcomes from COVID infection in pediatric and adult patients before and after the emergence of Omicron Wang, L et al -preprint
<https://www.medrxiv.org/content/10.1101/2021.12.30.21268495v1>

Reasons Why the Omicron Wave is Different

- Viral infection survivor immunity
- Vaccine induced immunity
- Impacting a different demographic
- Better therapeutics
- Operating outside of surge conditions
- Are testing more and increasing the denominator?
- Change in the virus itself?

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<https://doi.org/10.1056/NEJMoa2104840>

Resources

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[Email Dr. Griffin](#)

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