



LONG COVID WEB ECHO SESSION SUMMARY from 10 April 2026

(i) KEY PRESENTATION:

Long COVID and Immunology: a focus on respiratory burden by Manali Mukherjee MSc, PhD

The presentation reinforced the fact that Long COVID is heterogeneous and poorly defined, exacerbated by lack of clear diagnostics, leaving clinicians without answers because standard tests appear normal. Additionally, there is variability across patients: “No one patient is same... it’s really a big need to understand what drives each of those symptoms.” This heterogeneity is one of the biggest barriers to treatment and research progress.

The focus on respiratory burden is paramount because “when you can’t breathe, nothing else matters”. Therefore, it is important that physicians understand breathing symptoms in people with Long COVID.

The key message is that Long COVID may involve ongoing immune dysregulation, particularly autoimmunity. In a study by Son et al (2023), 12% of patients, especially those still symptomatic after 12 months, had detectable autoantibodies. These patients who still had autoantibodies had symptoms of dyspnea, cough and fatigue, which suggests a biological basis for persistent symptoms, rather than them being unexplained or psychosomatic.

Studies have identified inflammatory and vascular biomarkers that differentiate symptomatic from asymptomatic individuals: IL-1 β , TNF- α , D-dimer. The speaker emphasized that, “there seems to be something very different about these patients who are symptomatic... increased cytokines like TNF-alpha, IL-1 beta, and D-dimer.” The findings point toward ongoing inflammation and possible endothelial dysfunction in long COVID.

It was strongly emphasized that research should be practical and usable in real-world care, not just academically sophisticated. The speaker expressed, “I really have a philosophy of making sure that whatever I’m doing can be translated into clinics for a rapid assessment format.” She deliberately focused on biomarkers and tools that could realistically be implemented in clinical settings.

Along with this, she stressed the need for well-characterized patients and longitudinal data, warning against over-reliance on weaker study designs: “The importance of translational research... is to make sure it’s done with the right patient set... and not jumping on cross-sectional work.” Crucial truly understanding disease mechanisms over time.

In conclusion, the presentation highlighted that long COVID is a complex, biologically real condition driven in part by immune dysfunction, with respiratory symptoms playing a major role. Despite limited diagnostics, emerging evidence around autoimmunity and inflammatory biomarkers offers promising directions for identifying and managing patients. As shown in the following Summary slide, long-COVID respiratory complaints may reflect an inflammatory/autoimmune subgroup, and both symptom-based evaluation and biomarker testing are valuable in identifying them.



Summary

- A significant subset of previously healthy PACS patients have clinically relevant respiratory burden as identified by unbiased SGRQ-domain analysis
- Respiratory burden in PACS is associated with non-resolved systemic inflammation and autoantibodies

Clinical assessments

- ✓ Dyspnea post 6 min walk test
- ✓ SGRQ
- ✓ Rheumatology assessment: constitutional symptoms

Rapid Assessment Clinical tests (under development)

- ✓ TNFa
- ✓ Anti-SSb-La antibodies
- ✓ Neutrophil activation markers (?)
- ✓ Circulating spike protein (?)

Studies mentioned in the presentation:

Chiu, M. N., Chowdhury, A., Zhang, K., Somalwar, S., Jamil, R., Thakar, A., Sidhom, K., Sedhom, N., Thanavala, N., Mukherjee, M., Kjarsgaard, M., Venegas, C. G., Radadia, N., Tan, N. S., Patel, Z., Ahammed, N., Isshiki, T., Nolasco, S., Chagla, Z., Kolb, M., ... Mukherjee, M. (2025). Respiratory burden in post-acute COVID-19 sequelae: a longitudinal study of airway and systemic inflammation and clinical outcomes. *ERJ open research*, 11(3), 01331-2024. <https://doi.org/10.1183/23120541.01331-2024>

George, P. M., Reed, A., Desai, S. R., Devaraj, A., Faiez, T. S., Lavery, S., Kanwal, A., Esneau, C., Liu, M. K. C., Kamal, F., Man, W. D., Kaul, S., Singh, S., Lamb, G., Faizi, F. K., Schuliga, M., Read, J., Burgoyne, T., Pinto, A. L., Micallef, J., ... Singanayagam, A. (2022). A persistent neutrophil-associated immune signature characterizes post-COVID-19 pulmonary sequelae. *Science translational medicine*, 14(671), eabo5795. <https://doi.org/10.1126/scitranslmed.abo5795>

Son, K., Jamil, R., Chowdhury, A., Mukherjee, M., Venegas, C., Miyasaki, K., Zhang, K., Patel, Z., Salter, B., Yuen, A. C. Y., Lau, K. S., Cowbrough, B., Radford, K., Huang, C., Kjarsgaard, M., Dvorkin-Gheva, A., Smith, J., Li, Q. Z., Wasserman, S., Ryerson, C. J., ... Mukherjee, M. (2023). Circulating anti-nuclear autoantibodies in COVID-19 survivors predict long COVID symptoms. *The European respiratory journal*, 61(1), 2200970. <https://doi.org/10.1183/13993003.00970-2022>

Unpublished: ClinicalTrials.gov. (n.d.). *Investigating development of autoimmunity in post-acute COVID-19 syndrome (PACS)* (NCT05459506). <https://clinicaltrials.gov/study/NCT05459506>



Resources shared by members in the session:

1. From Anne Bhéreur:

Anne shared that “in Complex Chronic Conditions such as Long COVID, the different parts seen are not illusions... They are often various conditions that are associated....”

Bhéreur, A. (2025, January 1). *Medical resolution 2025* [Video]. YouTube.
<https://www.youtube.com/watch?v=v5TAgnBgbsY>

Document (attached) from the recent ECHO® CCAI presentation on patient partnership. She writes “the text of narration is provided. Although in French, it can still give a broad idea of the topics.”

2. From Lyne Filiatrault

Thompson, A., Venter, C., de Villiers, W. J. S., De Swardt, D., Laubscher, G. J., Kell, D. B., & Pretorius, E. (2026, April 9). *An imaging flow cytometry method to study platelet-monocyte aggregates using Long COVID as a model*. bioRxiv.

<https://doi.org/10.1101/2026.04.09.717442>

<https://www.biorxiv.org/content/10.1101/2026.04.09.717442v1.full.pdf>

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*****NEXT SESSION*****

Friday May 8, 2026

Topic: Approach to Exertional Intolerance

Speaker: Dr. Jeff Ratushny

1:30– 3:00 PM EST

Keep up-to-date with session topics: <https://www.longcovidweb.ca/echo>