



# Co-infections in Patients with Severe COVID-19 in a National Intensive Care Tertiary Referral Centre

Grace Chan and Niamh Reidy, Shaza Abdalrahman, Conor Mulrooney, Assumpta Killarney, Nuala Scanlon, Breda Lynch, Deirdre Brady, Brian Marsh, Margaret Hannan, Maureen Lynch  
Department of Clinical Microbiology, Pharmacy, and Intensive Care. Mater Misericordiae University Hospital, Dublin, Ireland



## Background:

Co-infections are infrequently reported in patients with COVID-19.

We examined the added microbiologic diagnostic yield of broncho-alveolar lavage (BAL) in COVID-19 patients in our ICU, the national referral centre for extra-corporeal membrane oxygenation (ECMO).

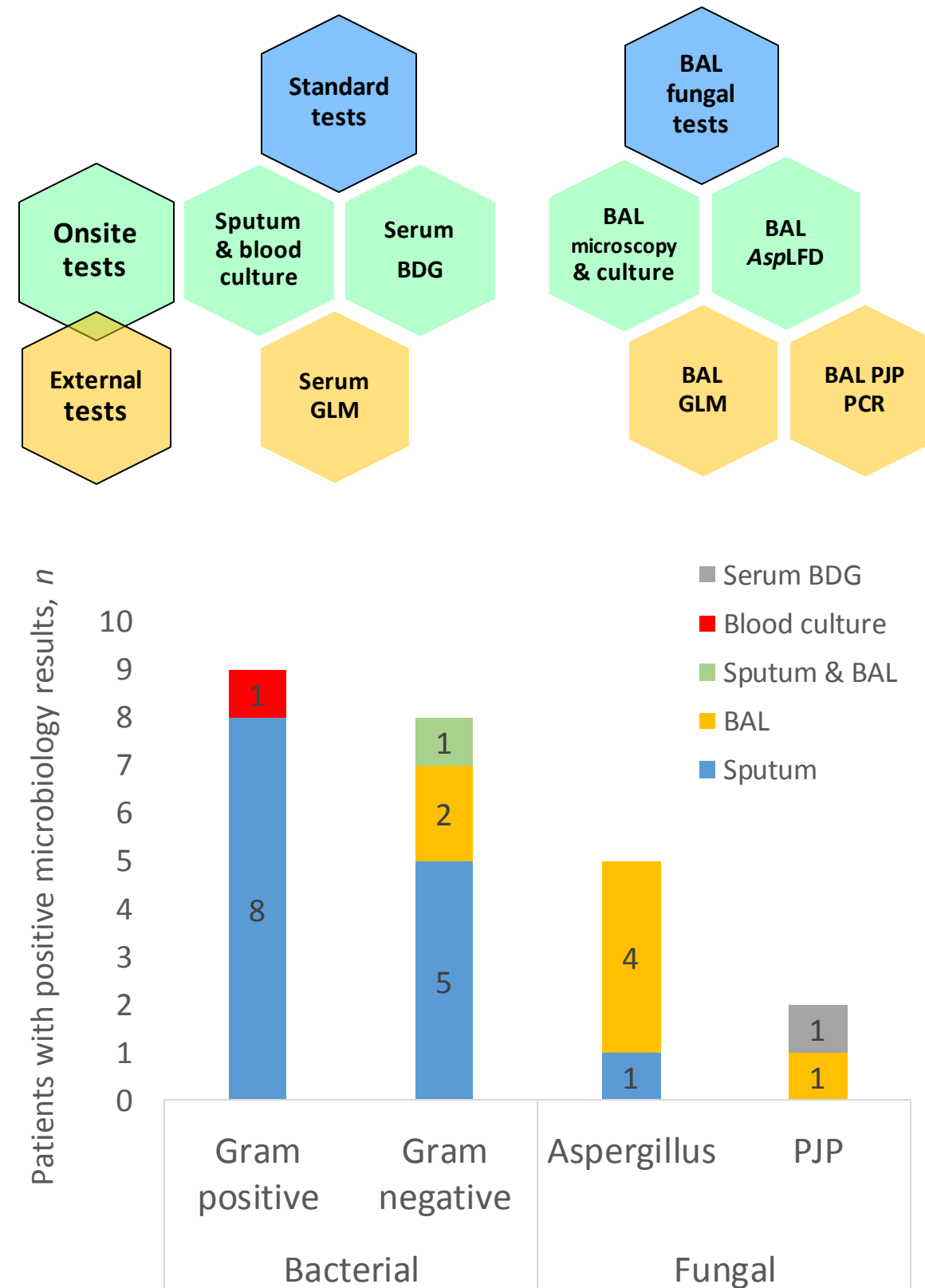
## Methods:

Inclusion criteria: All patients admitted to ICU with COVID-19 in January-February 2021 (7 weeks).

COVID-19-associated invasive pulmonary aspergillosis (CAPA) was defined by the ECMM/ISHAM criteria (modified *AspICU* and EORTC/MSG definitions)<sup>1</sup>.

- Total number of COVID-19 in ICU, *n*=57.
- Sputum specimens were cultured in 45 (79%) patients whilst BAL were performed in 21 (37%) patients.

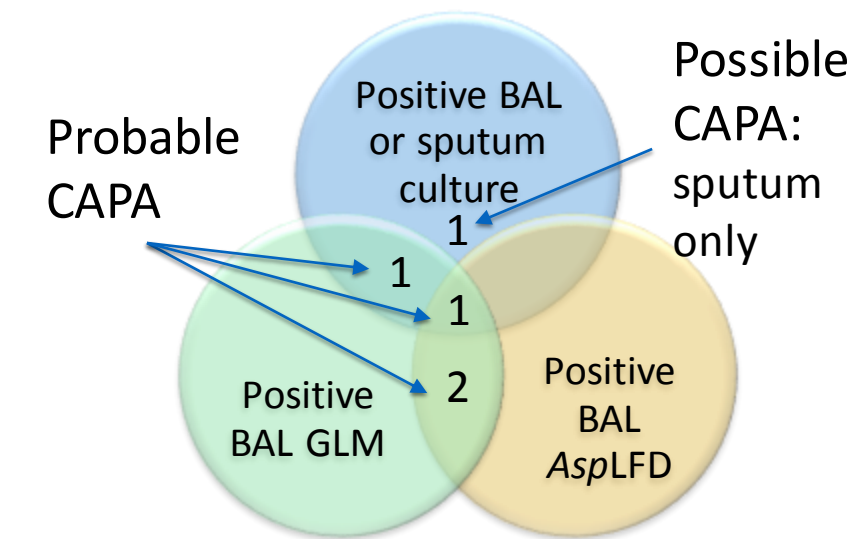
## Results:



Abbreviations: *AspLFD*, *Aspergillus* Lateral-Flow Device (OLM Diagnostics); BDG, β-D-Glucan (Fujifilm Wako Chemicals); GLM, Galactomannan; PJP, *Pneumocystis jirovecii* pneumonia.

## Fungal investigations:

- 5 of 57 (8.8%) patients were classified as having CAPA, with 2 of these patients (40%) requiring ECMO.
- Serum GLM testing did not yield any positive result.



		BAL GLM		
		Positive	Negative	Total
BAL AspLFD	Positive	3	0	3
	Negative	0	17	17
	Not tested	1	0	1
	Total	4	17	21

- *AspLFD* (OLM Diagnostics) onsite testing PPV=100%, NPV=100%
- Negative BAL fungal investigations led to rationalisation of 64.7% (11/17) of antifungal prescriptions by de-escalation or avoidance of empiric antifungal therapy.

## Bacterial investigations:

Number of patients with bacterial growth, <i>n</i> =17	Sputum or BAL	Blood culture
<i>Streptococcus pneumoniae</i>		1
<i>Staphylococcus aureus</i>	8	
<i>E. coli</i>	1	
<i>Enterobacter cloacae</i>	2	
<i>Hafnia alvei</i>	2	
<i>Klebsiella pneumoniae</i>	1	
<i>E. coli</i> & <i>Pseudomonas aeruginosa</i>	1	
<i>K. pneumoniae</i> & <i>E. cloacae</i>	1	
Total patients, <i>n</i> (%)	16 (28)	1(1.8)

## Conclusion:

The practice of obtaining BAL samples in critically ill patients with COVID-19 is essential for the detection of CAPA in 8.8% of patients.

Non-culture based fungal biomarkers on BAL are useful diagnostic tools, and aid in antifungal stewardship practice in these high-risk patients in critical care setting.

## Reference:

1. Koehler P, et al. The Lancet Infectious Diseases. 2020.