

# Non-routine testing of patients with suspected COVID-19 of little benefit to assess risk

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Non-routine testing of patients with suspected COVID-19 to help predict their prognosis on admission to emergency departments offers limited benefit and could have significant cost implications, according to a collaborative evaluation by Cardiff University and the University Hospital of Wales.

Researchers drew together laboratory and clinical findings at Wales's largest hospital from the first wave of the pandemic using a newly created electronic healthcare resource, aimed at learning from routine care in the NHS. In its first use, they evaluated whether performing non-routine laboratory tests added value beyond the usual set performed in emergency departments.

Patients with suspected COVID-19 undergo an extended range of blood tests on admission to look for co-existing bacterial infection, heart damage, blood clots or for so-called "hyper-inflammation." This can cost more than £20 per [test](#), and with thousands of tests per month at a single hospital, the costs have the potential to quickly escalate.

The team's findings suggest there should be a move away from systematic screening on admission to hospital because the benefit remains "unclear." Their work has been submitted for independent review by other scientists, but has been published on medRxiv.

The group, including immunologists, [emergency department](#), critical care, infectious disease, and data scientists, concluded that use of these tests should be targeted at patients with specific clinical needs where their utility is more clearly defined.

"We performed this service evaluation to help guide clinical practice and cost-efficient use of resources in future waves of COVID-19 within our center, in line with recommendations from the UK's Royal College of Pathologists," said Dr. Mark Ponsford, a Welsh clinical academic trainee at Cardiff University's Division of Infection and Immunity, who led the study.

"The results of our analysis suggest that performing these extra tests adds little additional prognostic information to help clinicians assess whether someone is at risk of death or needs intensive care treatment."

In this study, the researchers looked at clinical outcomes for adult patients admitted to the University Hospital of Wales in Cardiff between March and June 2020, alongside costs for individual tests and data on clinical outcomes.

The non-routine tests include:

- Procalcitonin—a marker of [bacterial infection](#)
- Troponin—a marker of heart damage
- D-dimer—a marker of blood clotting
- Ferritin—a marker associated with hyper-

inflammation

- Lactate dehydrogenase—a marker of lung inflammation

They found that these tests did not independently improve risk stratification of COVID-19 patients when accounting for routine measures and basic demographics such as age.

The researchers found that "core" testing, such as full blood count and renal function, among others, offered similar predictive value to more expensive additional tests such as markers of cardiac injury or inflammation.

Dr. Jonathan Underwood, consultant in [infectious diseases](#) and acute medicine, and senior author on the study, said: "Over-requesting of lab tests can also increase the number of false-positive results, with the potential to lead to further potentially harmful and unnecessary interventions. Our findings advocate a move away from systematic testing of suspected COVID-19 patients on admission to emergency departments. Extensive testing should instead be targeted at patients with specific clinical indications."

Ross Burton, a doctoral research student with the Division of Infection and Immunity and joint first author on the study, said: "This is the first project using a new electronic database, created as a joint initiative between the NHS Information Technology team and Cardiff University's School of Medicine. It shows the potential of this approach to help us understand and improve our response to the pandemic, and the wider role of data science in healthcare."

The study has been submitted for peer review.

**More information:** Mark J Ponsford et al. Extended laboratory panel testing in the Emergency Department for risk-stratification of patients with COVID-19: a single center retrospective service evaluation, (2020). [DOI: 10.1101/2020.10.06.20205369](#)

Provided by Cardiff University

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