Immune responses and clinical outcomes following COVID-19 vaccination in patients with immune suppressive diseases (The OCTAVE Study)

Who was involved?

11 hospital sites

2686 patients with reduced immune systems

Patient groups included:
- Cancer
- Joint disease
- Other diseases of the immune system
- Kidney disease (including those on dialysis)
- Liver disease
- Liver and kidney transplant patients
- Inflammatory bowel disease
- Blood cancer (including some with stem cell transplants)

What was done?

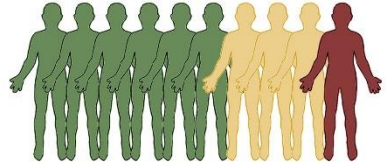
- Blood test before vaccination
- Blood test after first vaccine
- Blood test after second vaccine

The immune response was measured in each blood sample.

How does the immune system work?

1. A healthy immune system releases **antibodies** which attack the outer coat of the virus.
2. **T cells** target cells that have become infected and destroy them. This happens later in the immune response to infection.

What did you find?

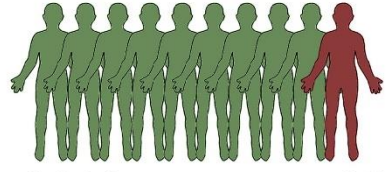


61% generated good levels of antibodies

27% generated low levels of antibodies

12% did not develop antibodies

Lower antibody response was linked to:
- Certain medications (such as Rituximab)
- Patients with kidney disease receiving dialysis
- Liver and kidney transplant
- Newer variants of COVID-19 (such as Omicron)



88% generated T cells against COVID-19

12% did not develop T cells against COVID-19

Lower T cell response was found in:
- Patients with kidney disease
- Liver and kidney transplant patients

What about new variants?

Antibody responses to new variants (such as Omicron) were lower.

T cell responses did not change with new variants of COVID-19.

And the overall results?

2686 patients with reduced immune systems

474 became infected with COVID-19

48 were admitted to hospital or died because of COVID-19 infection

15 died from COVID-19

Patients with no or low antibodies and no or low T cells were more likely to have severe COVID-19.

Key findings

Overall, this study identifies patient groups that may not respond to COVID-19 vaccines and shows that both parts of the immune system (antibodies and T cells) protect patients from severe COVID-19.

Who carried out this study?
Chief Investigator: Professor Iain McInnes
Sponsor: University of Birmingham, UK
Study team: A team of clinicians and researchers from across the UK, supported by a group of patient representatives.