

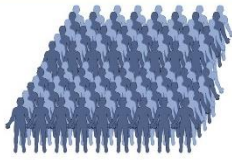


# Immune responses and clinical outcomes following COVID-19 vaccination in patients with immune suppressive diseases (The OCTAVE Study)

## 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**



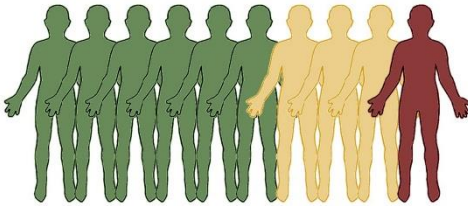
A healthy immune system releases **antibodies** which attack the outer coat of the virus.

**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

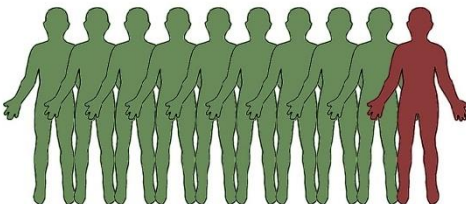
**12%**

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?

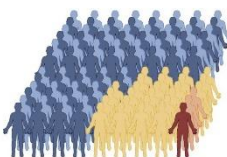


Antibody responses to new variants (such as Omicron) were lower.



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.