



**Department
of Health**

**Wadsworth
Center**

COVID-19 serology at Wadsworth: Meeting public health needs

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NYSDOH**

Wadsworth's role

- Qualification of potential plasma donors
 - New York Blood Center
 - Westchester County
 - Mt Sinai
- Ensuring safety of first responders
- Monitoring exposure in the population
- Understanding the immune response



Assays at Wadsworth

FDA-EUA approved (first generation)

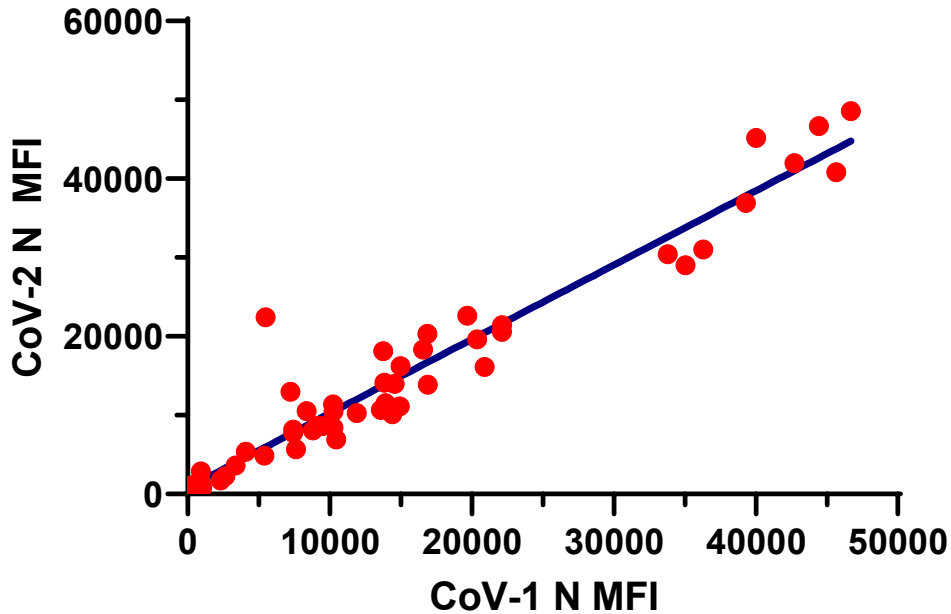
- Total Antibody Microsphere Immunoassay (MIA): venous blood
 - SARS-CoV-1 N antigen
 - SARS-CoV-2 N antigen
 - SARS-CoV-2 RBD antigen

CLEP-approved

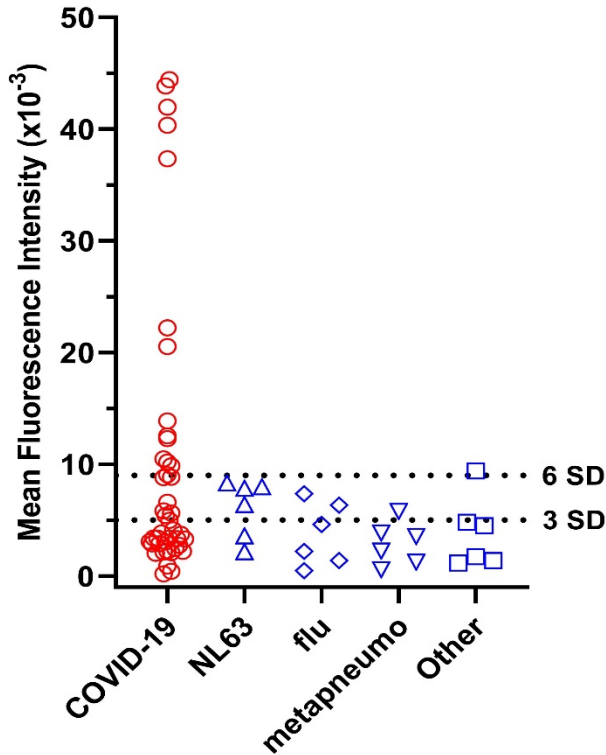
- IgG MIA using bloodspots as sample source
 - SARS-CoV-2 N antigen
 - SARS-CoV-2 spike antigen
- Plaque reduction neutralization assay
 - BEI USA-WA1/2020 strain of SARS-CoV-2
 - Vero E6 cells



Reactivity of Human COVID-19 Samples with SARS CoV-1/2 N proteins



Serological assays: Things to consider



Specificity

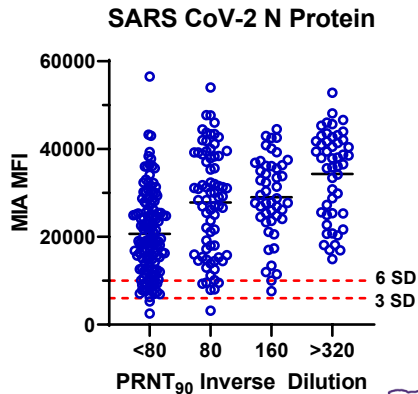
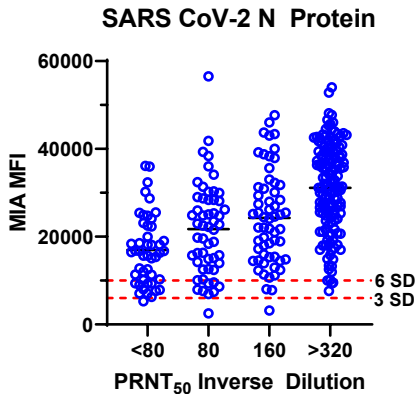
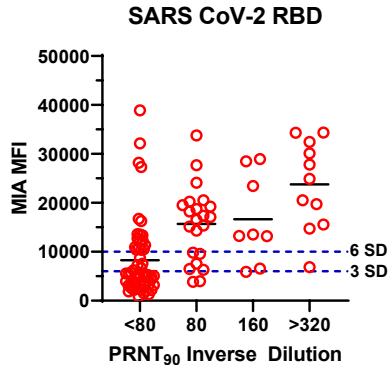
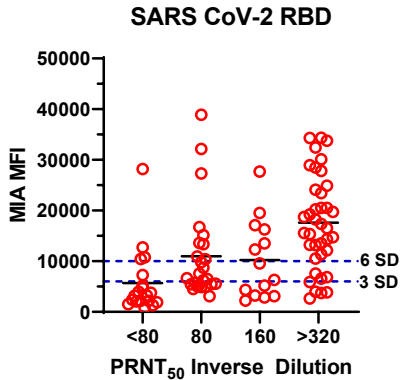
Cross reactivity to other respiratory antigens

Sensitivity:

Timing of collection

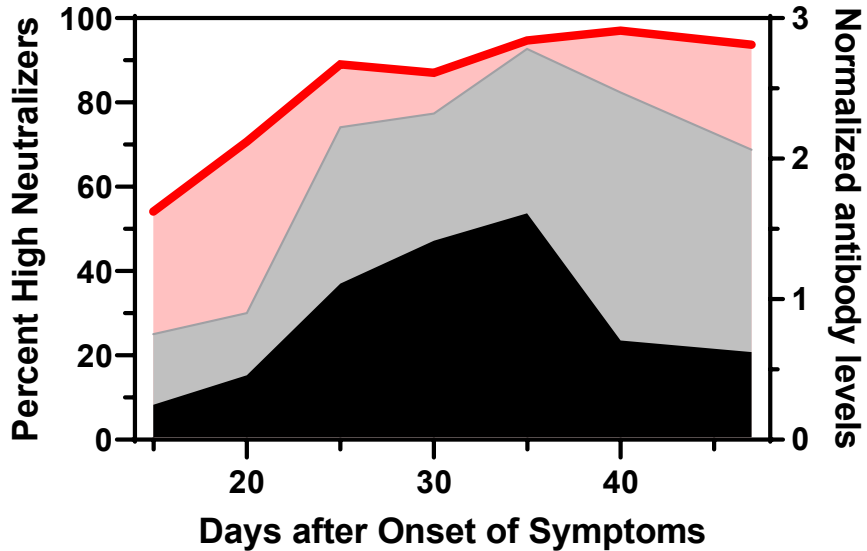


Relationship between Antibody Levels and Neutralizing Activity



Stringency:
How high should we set the bar for a neutralizing antibody response?

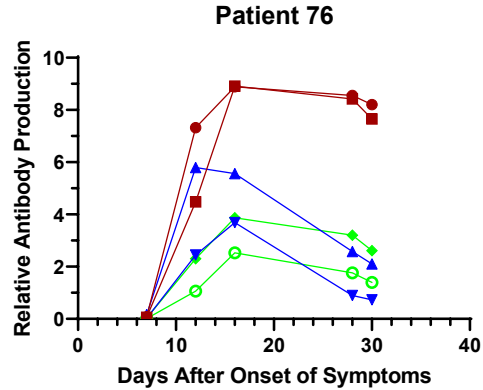
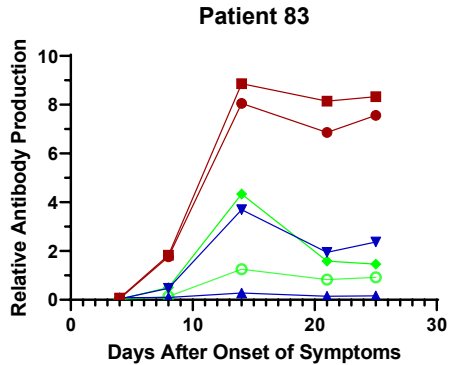
Timing: Development of neutralizing antibody response



— PRNT 50 — CoV N Antibodies
 — PRNT90



COVID-19 Antibody Responses in 2 Hospitalized Patients



- N- IgG ▲ N- IgM ◆ N- IgA
- RBD- IgG ▼ RBD- IgM ○ RBD- IgA

- N- IgG ▲ N- IgM ◆ N- IgA
- RBD- IgG ▼ RBD- IgM ○ RBD- IgA



Seroprevalence studies using blood spot assay at 5/8/20

Population	Percent prevalence
Grocery store random collection: 15,883	13.9% to 19.9%
First responder (FDNY and NYPD): 2268	17.1% & 10.5%
Essential state workforce: (includes transit workers) 3927	14.2%
Health Care Workers 5951	12.2%
Total: 28,029	

Interpretation of serology assays?

Yes

- Seroprevalence studies
- Evidence of prior infection

More study needed

- Return to work without PPE
- Immune status



Many hands....

Wadsworth Center

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