**SCCM Choosing Wisely KEG meeting May 20, 2020**

COVID19 serology discussion

Open / roundtable: Are you conducting antibody testing at your institution? How are you using this information?

Approximately half of attendees had antibody testing at their institution; however, guidelines for how this information may be useful has not been clearly outlined

Speaker:

Kamran Kadkhoda, Ph.D., SM(ASCP), D(ABMM), D(ABMLI)

Medical Director, Immunopathology

PLMI, Main campus, Cleveland Clinic

Slides are available on SCCM Connect - Choosing Wisely KEG website

* Background
  + Serological tests look for the presence of host antibodies developed in reaction to an infection, rather than directly detecting the pathogen itself (e.g., real time RT-PCR)
  + Once fine-tuned and fully-validated, serology may be used to look for surveillance purposes (very high specificity)
  + It has not yet been determined whether the presence of antibodies correlates with immunity against re-infection
* COVID19 serology discussed across several domains, including diagnosis, assessing immune status, convalescent plasma, vaccine trials and surveillance
  + Diagnosis of Covid19:
    - IgM and IgG appearance occur 10-12 days after onset, peaks at about 3 weeks. This delay makes IgM and IgG serology less useful as patients will be critically ill at this point
    - IgM serology not reliable for diagnosing acute symptomatic COVID19. Sensitivity may be as low as 4% in the first 10 days post ‘onset of symptoms’. False positive can be observed in sera positive for several pathogens outside of COVID19
    - IgG serology not a reliable option for diagnosing acute or convalescent COVID19. IgG seroconversion much delayed, requires 2 blood draws/more exposure to healthcare environments, problems with specificity and therefore requires confirmation using PRNT (requires significant expertise, is labor intensive and not amenable to automation)
  + COVID19 serology for immunity:
    - Many states have seroprevalence estimated as less than 2% so will likely not achieve herd immunity (until vaccine available)
    - Presence of IgG does not guarantee the patient is immune to reinfection or that they cannot infect others. SARS data showed us that despite seroconversion by PRNT, the virus still grew from upper resp. samples in 54% and 16% of cases, 2 and 3 weeks post onset of symptoms. Correlate of protection has not been established so cannot determine immunity based on IgG serology
  + IgG serology for COVID19 convalescent donor screening:
    - Critically ill patients found to have high levels of neutralizing antibodies, similar to neutralizing antibody titers found in healthy recovered asymptomatic individuals. FDA only provides recommendation for neutralizing antibody titers of 1:160 for donor eligibility; however, several publications have demonstrated lack of correlation between PRNT and other commercial assays. Will require clinical trials to further define what titer is useful to confer protection.
    - Cochran review – uncertain if convalescent plasma is effective
    - IgG serology may be useful for COVID19 serosurveys but it depends on the specificity of the assay
* Take-home messages
  + Serology is not an acceptable method for diagnosing acute cases
  + Population and individual-level immunity following exposure to the virus is still debatable and being studied
  + The role of antibody testing in particular populations needs to be defined through targeted serosurveys
  + The role of serology in convalescent plasma therapy is not standardized yet
  + Serology will play an important role in vaccine trials

**Attendees:**

Anita Reddy

Matt Tyler

Jessica Mercer

Anne Rain Brown

Peter Lindbloom

Vidula Vachharajani

Russ Roberts