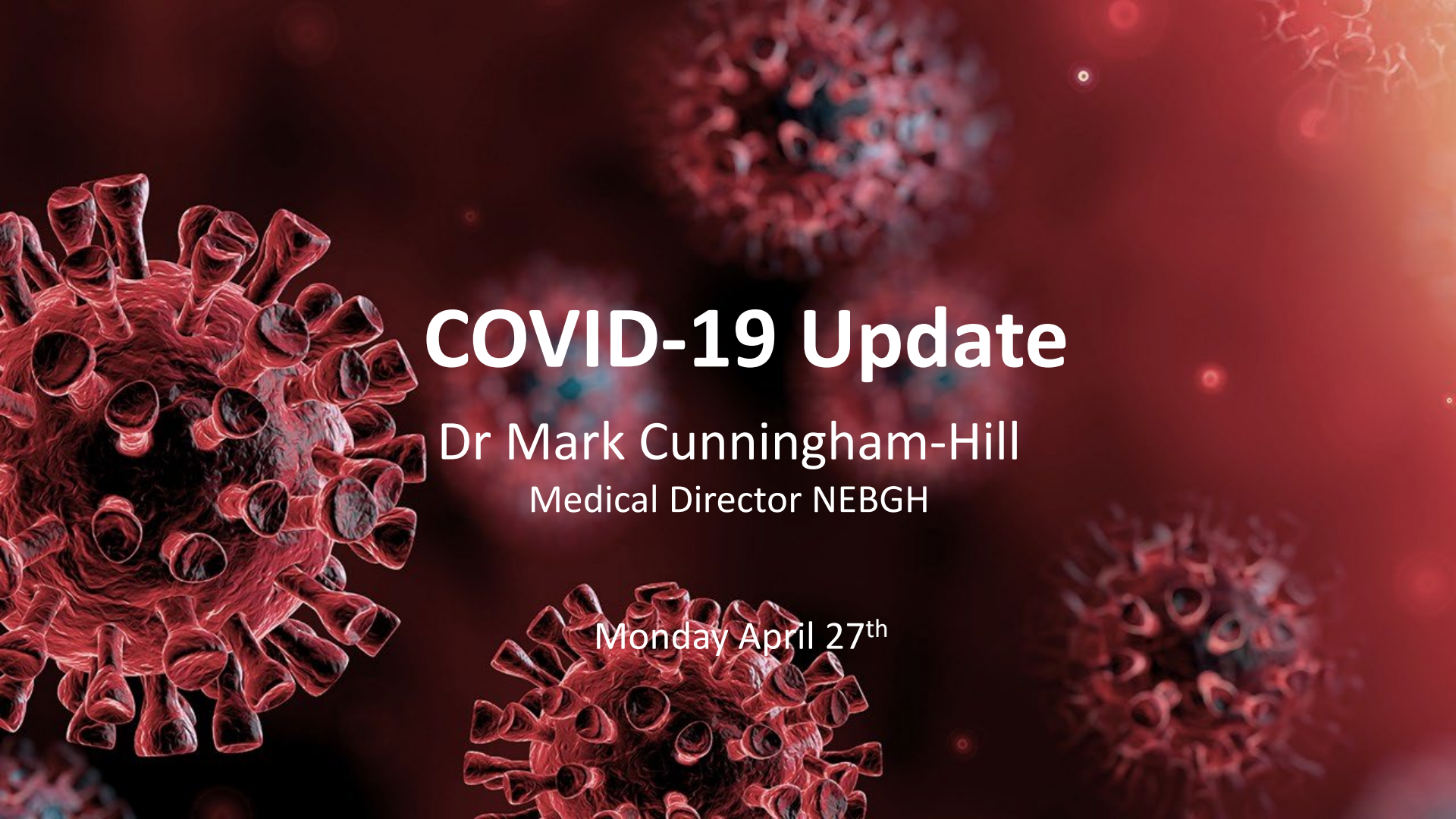
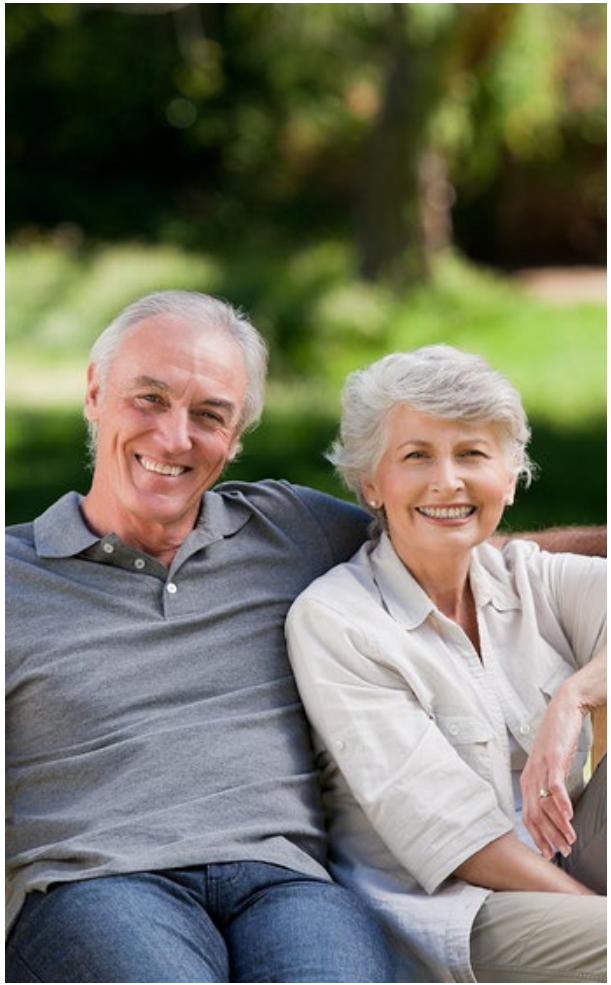
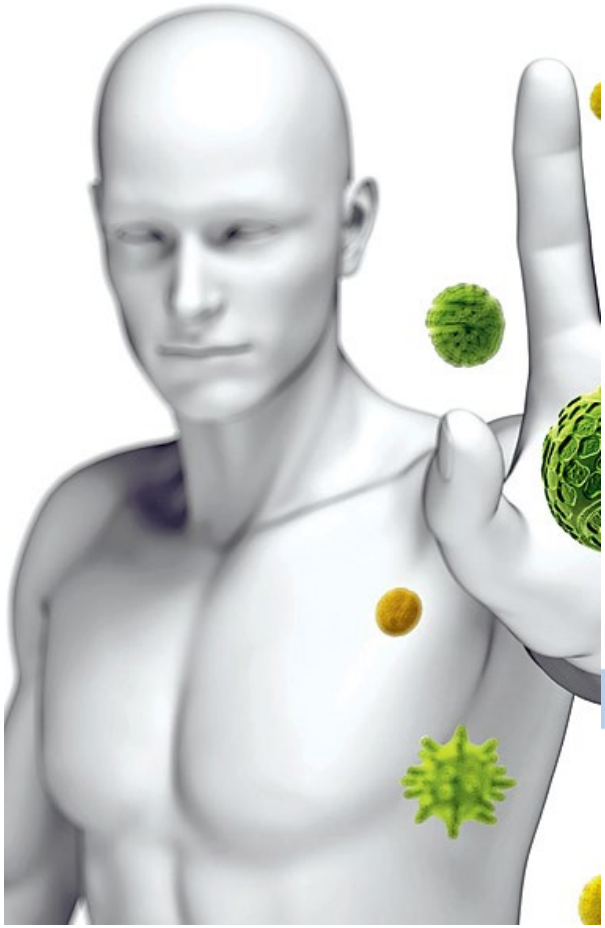


COVID-19 Update

Dr Mark Cunningham-Hill
Medical Director NEBGH

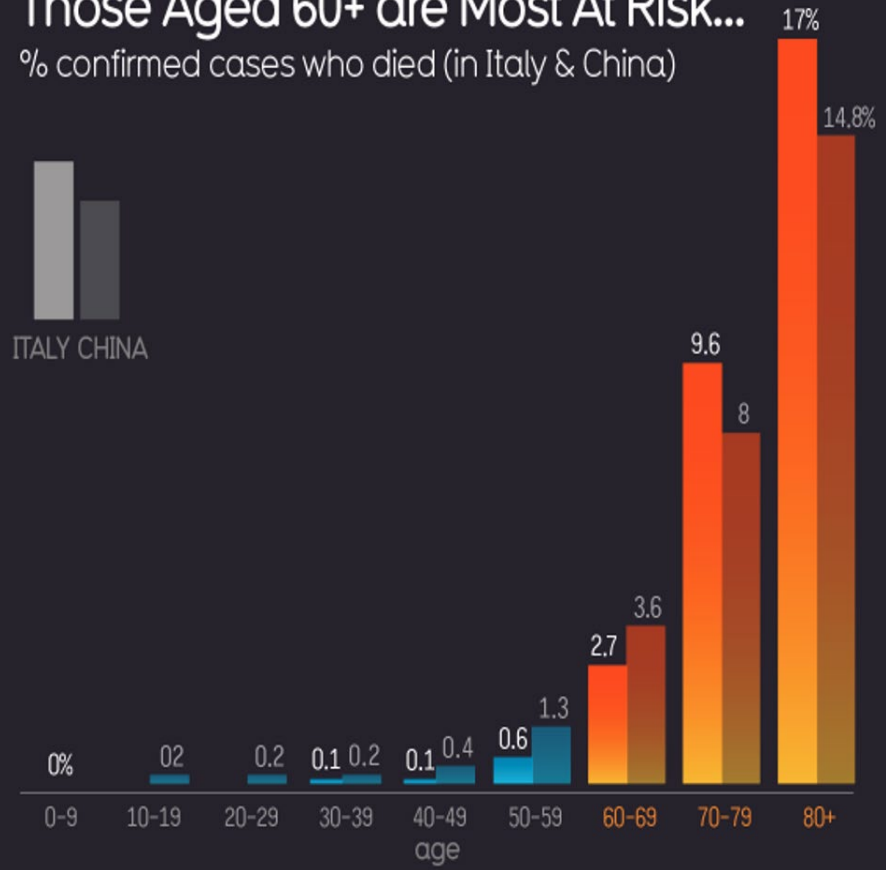
Monday April 27th





Those Aged 60+ are Most At Risk...

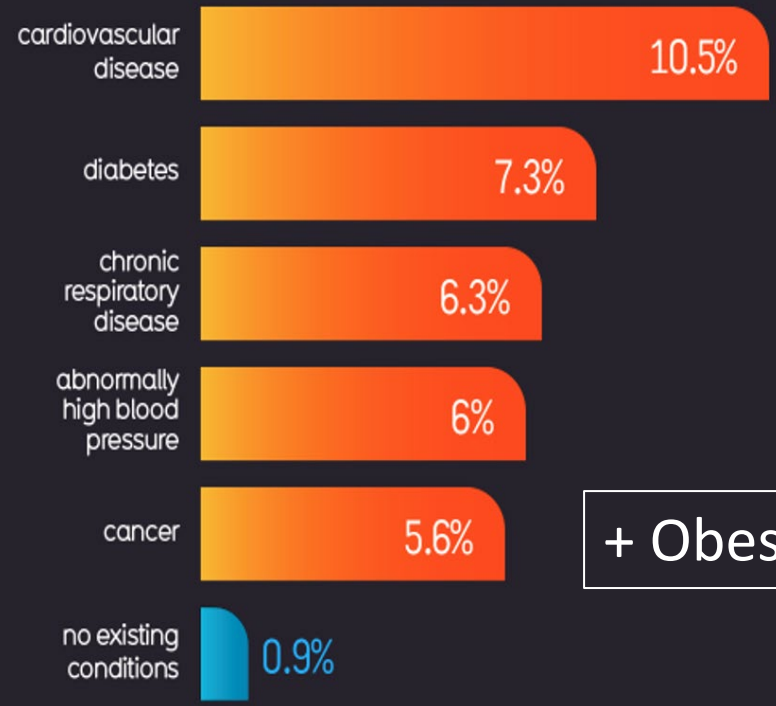
% confirmed cases who died (in Italy & China)



sources:
China Centre for Disease Control & Prevention, Italian Portal of Epidemiology for Public Health, study of 44,672 confirmed cases in Mainland China & 16,925 cases in Italy

Especially Those with Existing Conditions

% with other serious ailments who die



+ Obesity

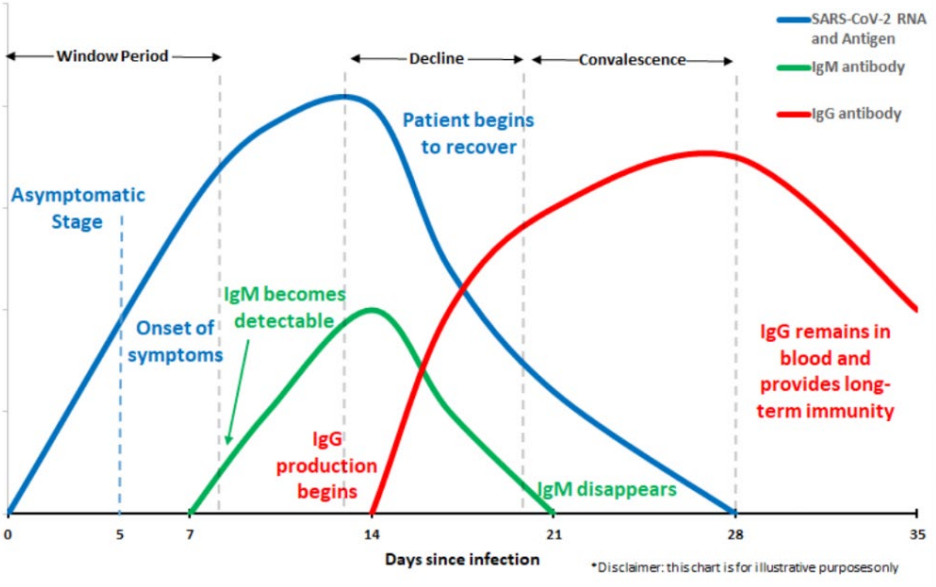
study of 44,672 confirmed cases in Mainland China
sources: China Centre for Disease Control & Prevention

High Risk Populations and Restart/Return to Work

- Majority (80-95%) will not have had an infection so are susceptible to the virus
- Ideally stay safe until vaccine available but….
- Organizations
  - Can recommend stay at home
  - Accommodate concern when possible
  - Cannot prohibit or treat differently

Immunity Tests

- 4 tests ‘approved’ by FDA under an EUA but also others being sold to organizations
- Serology tests identifying antibodies (IgM and IgG)
- Used to detect who has had the disease and maybe have developed immunity



Could Knowing Immunity Status Help Manage High Risk Populations

High Risk Workplace:

- Social distancing difficult
- Crowded
- Contact with many people
- Commute higher risk

Low Risk Workplace:

- Social distancing in place
- Cleaning routines
- Additional controls (PPE, screening, temp checks..)
- Commute lower risk e.g. drive own vehicle

Immunity from Serology testing

Challenges

- Sensitivity - true positive rate
- Specificity- true negative rate
- Positive Predictive value = % true positive
- Negative predictive value = % true negative

Prevalence

Population: 1000
Infected: 3% (30)
Test Sensitivity 93%
Test Specificity 95%

Truth

Test Result	Has Disease	Doesn't have disease	
Test Positive	28	48	76
Test Negative	2	922	924
	30	970	1000

Total Positive tests = 76
False Positive tests = 48 (63%)
Positive Predictive value = 37%

Total Negative tests = 924
False negatives = 2 (1%)
Negative Predictive Value = 99%

Population: 1000
Infected: 40% (400)
Test Sensitivity 93%
Test Specificity 95%

Truth

Test Result	Has Disease	Doesn't have disease	
Test Positive	372	30	402
Test Negative	28	570	598
	400	600	1000

Total Positive tests = 402
False Positive tests = 30 (7%)
Positive Predictive value = 93%

Total Negative tests = 598
False negatives = 28 (5%)
Negative Predictive Value = 95%

Serology Testing

- Useful at a community level to understand % who had been infected
- Specificity and sensitivity improve >15-21 days post illness
- Positive predictive value increases as % of population infected increases (NPV decreases)
- Identifying who may have antibodies for convalescent plasma donation
- **NOT** yet ready for use on an individual level –Immune therefore safe to be on the frontline
- **NOT** yet ready for organizations to use to manage return to work


Questions