(DO NOT) KISS: Coronavirus

Since the start of 2020 coronavirus has hit the world and caused unprecedented levels of concern among public and health professionals alike.

This is an evolving field - until identification in China in December this was an unknown pathogen – so what we discuss here today may be out of date in a week. With this in mind at the end of this chapter, we include a range of resources that frequently update as our understanding of the disease and how it affects the world changes. We will try to update this page as new information is published - it is currently up to date for the 18.3.2020.

► *What is it?*

Coronaviruses are a broad range of viruses which at one end of the spectrum cause the common cold, at the other end cause potentially fatal disease such as MERS and SARS.

This new virus is named SARS-Cov-2, the disease it causes is COVID-19. DNA analysis shows it is closely related to SARS and similarly evolved from a virus affecting bats. As we all know, this then spread in Wuhan, China, and subsequently worldwide, although the speculation it was initially transmitted from zoonotic sources in a seafood market in the city has not been confirmed.

SARS-Cov-2 has been isolated in at least 66 countries around the world. One can speculate that where countries have no cases this may be due to lack of testing rather than truly escaping the condition.

► *How is it spread?*

There remains uncertainty about the mechanism of spread. Human-to-human transmission is now undisputed, although the degree of infectivity is still uncertain. The virus is **predominantly respiratory droplet spread among close contacts (e.g. within 2m) for prolonged periods or direct contact with infected secretions** (the virus has been isolated in most bodily secretions including faeces - time to close that lid when flushing...). It can survive on surfaces outside the body, although for how long is unclear – it is assumed to behave like other coronaviruses which can last for hours to several days depending on the conditions.

► *What is the incubation period?*

The average incubation period is 5-6 days but it is very variable and can range from 1-14 days.

People are infective when symptoms manifest. Currently, there is no data on patients transmitting the disease without symptoms, although **viral shedding has been found in the 1-2 days prior to symptoms**, for up to 2 weeks in respiratory samples, and 4-5 weeks in faeces. The significance of this shedding regarding infectivity is currently uncertain. Concern remains that people may be asymptomatic vectors (there are a handful of case reports showing this to be the case).

► *What are the clinical features?*

The main features are fever, cough or chest tightness, and dyspnoea. However, a [paper published in the BMJ](#) shows that **patients may well have none of these** - fever was present in 77%, cough 81%, fatigue/myalgia 52%, headache 34%, diarrhoea in 8%. This was in patients admitted to hospital, so it is very possible that many in the community will have minor symptoms only and none of the above. This will make it impossible to distinguish between coronavirus and 'normal' infections.

Indeed it appears that **80% will have mild symptoms (or none), 15% will be severely unwell, 5% critically unwell**.

The most at risk are the elderly (particularly >80yo), **and those with significant co-morbidity**. Interestingly children appear to be rarely affected, although it is still possible for them to be seriously ill and not clear whether asymptomatic children can still be vectors for disease. Pregnant women were high risk during the swine flu outbreak, but so far this hasn't appeared to be a particular issue for COVID-19.

In [Chinese patients admitted to hospital](#) sepsis was seen in 59%, respiratory failure in 54%, Acute Respiratory Distress Syndrome 31%, heart failure 23%, septic shock 20%, coagulopathy 19%, acute kidney injury 15%... the list goes on. 25% had ICU admission, with an average ICU admission length of 8 days. It becomes clear how secondary care resources will be stretched although it is worth reiterating this study was looking specifically at unwell admitted patients and is in no way representative of what we are likely to see in general practice.

One important piece of [information published in The Lancet](#) is the time from onset of symptoms to serious illness. The median time to hospital admission is 7 days, SOB 8 days, ARDS 9 days and ICU admission 10.5 days. The clear learning point here is that safety netting, warning patients to monitor for escalating symptoms, is critical - if we see an infected patient at day 3, four days later may be a very different picture.

The guidance also states we need to consider avian flu (it never rains but it pours) in patients with travel to China in the past 10 days, and MERS if travel to the Middle East in the past 14 days, if presenting with fever and lower respiratory tract symptoms, although provides no information on how to differentiate between diseases.

► What is the prognosis?

This is the million-dollar question and very hard to answer meaningfully. Mortality is thought to be **around 1-2%**, some reports have suggested slightly higher but this is likely to be biased through testing of mostly high-risk individuals. Given there appears widespread transmission in the community the number of proven cases will be an underestimate of true disease (although we don't know by how much) and the real case fatality rate is presumably lower.

However, **in the elderly population, the mortality rate is significant at around 15-20%**.

► What is being recommended to the public?

Recommendations on testing have changed significantly in the past week.

For now, there will now be NO testing of patients in the community. The new case definition:

- Anyone with a new continuous cough or high fever (community definition does not specify a figure)
- These cases are presumed COVID-19 and should self-isolate for 7 days
- If they live with other people the other members of the household should self-isolate for 14 days. People at home should try to keep away from each other as much as possible.
  - The rationale for this is that most infection is transmitted between household units, symptoms normally manifest within 7 days and so 14 days allows for the possible incubation period and then infective period of exposed household members, knowing that some may be asymptomatic but still contagious.
- High-risk individuals in the household (e.g. >70s) should find somewhere else to stay for 14 days if possible
- Be alert that immunosuppressed patients may have atypical presentations.

Social distancing is now recommended for everyone, including large and small gatherings, and especially recommended for high-risk individuals (>70yo, those with significant medical problems - essentially anyone who is entitled to an NHS flu vaccine - and pregnant women). Communities will need to try and support each other as much as possible as the government recommends limiting movement outside of the house.

Remember, this includes US as well. Clinicians should self-isolate if unwell - we need to fight our ingrained belief to turn up to work no matter what. Here it really isn't the best thing to do for your colleagues or patients.

The lack of testing of HCP is of particular concern. Rates of staff shortages are likely to be high, and if we end up self-isolating for infections which are non-coronavirus this is a waste of valuable resources. Hopefully, the increased capacity for testing the government has promised will be available soon and 'critical services' will be prioritised.

► What is the hospital case definition and who will be tested?

Patients with possible COVID-19 who are admitted to hospital will be considered for testing. The new hospital case definition is now simplified and travel history is now irrelevant:

- Any patient requiring hospital admission and either:

- Clinical or radiological evidence of pneumonia, ARDS or influenza-like illness (fever 37.8+ & 1+ of any respiratory symptom)

► How should we manage people in residential homes or who are housebound?

This boils down to staff and residents recognising symptoms and self-isolating if present, good hand hygiene, limiting visitors and careful cleaning.

Detailed guidance can be found [here](#).

► How is testing done?

Testing is predominantly with PCR and only available is specific laboratories. Nose and throat swabs, plus sputum if possible is preferred. Turn-around time is suggested to be 48h, although in practice most patients have a result within 24h. We don't have figures on the sensitivity and specificity, but in general, PCR is considered very good, although doubt remains over the reliability of a negative result. Confirmed cases who are hospitalised may have serology.

If/when testing is performed routinely outside of the reference labs the result is considered presumptive and then needs further confirmatory testing in the reference lab, but that patient should be treated as a confirmed case until proven otherwise.

What seems unclear (te NB authors cannot find information on this currently) is at what point a test becomes positive. At the point of symptoms, there will be plenty of viral shedding and the test should be accurate, but can a negative test be relied upon is a high-risk patient is asymptomatic but still in the incubation period? This leads us on to the next question...

► Are there treatments?

Whilst a range of treatments such as anti-retrovirals for HIV and Ebola, oseltamivir, monoclonal antibodies (using AI to quickly identify possible effective ones based on viral protein profiles) and more complex ICU-based interventions are being tested, at this point, nothing has been clearly beneficial and supportive therapy remains key.

Vaccines have already been produced, which is absolutely remarkable, but require human testing, ideally RCTs, and are unlikely to be widely available (assuming they work and don't have nasty side effects) until 2021.

► What about ibuprofen?

This speculative claim that NSAIDs could worsen the prognosis in COVID-19 came from a French doctor, amplified by a French health minister and then spread globally via social media.

There is no data that ibuprofen or NSAIDs may worsen outcomes from COVID-19, although there is no data refute the hypothesis either. There is data that shows that other respiratory tract infections (and UTI) made be prolonged or have increased complications with NSAID use.

The government released a statement today stating **there is no data to support this claim, has asked the MHRA and NICE to review any data, and in the meantime, it may be prudent to initially use paracetamol in preference. Patients established on NSAIDs for medical reasons (e.g. arthritis, it doesn't state which type...) should continue their treatment as prescribed**.

► And ACEi/ARB?

The other piece of fake news to spread via social media was that ACEi/ARB could also worsen prognosis due to coronavirus using ACE2 to infect people, and ACEi/ARB elevating these levels. There has been a robust international response to this claim stating it lacks any sound scientific basis and no evidence shows this effect. **Recommendations are very clear: people should not pre-emptively stop their ACEi/ARB**.

► What should practices do?

There is specific guidance set out by PHE in the Special Operating Procedures document which needs to be digested and acted upon.

There are several elements to protecting our patients and ourselves:

- Advice from NHS England is to move to TOTAL remote triage of all patients in general practice using telephone or internet. Anything that can be managed remotely should be. This will call for pragmatic medicine, something GPs excel at.
- If patients with possible COVID-19 present at the practice, if they are well they should be directed home to self-isolate and if unwell, we need to isolate them in the practice, get out of personal protective equipment, assess them. Treat if necessary, otherwise call 111 for back up. Then decontaminate yourself and the room.
  - Practices should identify a dedicated room for isolation, declutter it to facilitate cleaning, and have easy access to PPE. We will need to know how to decontaminate ourselves and rooms.
- **Encourage good hand hygiene in patients and staff** attending the practice to reduce the risk of cross-contamination.
- Have clear information at access points to the surgery with the latest guidance on what to do (i.e. don't just turn up, call and we'll contact you).

► Do face masks help?!?

Complicated, and hampered by confusing data involving a plethora of different types of face masks. The European Centre of Disease Prevention and Control recommends for suspected or proven cases the ideal face mask is an FFP3 (or an FFP2 if the former not available). These are fitted face masks which usually have a valve to enable prolonged use.

In primary care, we have been given simple surgical masks. Interestingly a JAMA editorial highlights research which shows if clinician and patient wear these masks the protection is as good as an FFP3 mask when having prolonged exposure to infected patients.

In the general population, it is felt that such masks are unlikely to reduce transmission.

► Do we know how the disease will progress?

Time to get out your crystal balls. Experts have used modelling data and the situations in Wuhan and northern Italy to try and build a picture of how the infection will spread but nothing is certain. The main points:

- It is likely to spread with escalating numbers of cases.
- The number of cases is likely to increase rapidly over the next few weeks.
- The duration of the outbreak is unclear, but we will probably see high numbers of cases for several months.
- Slowing the rate of increase is helpful to ease winter pressures on health services, to allow time to build resources such as testing kits, protective equipment, etc., and to spread cases over a longer period.

Lessons can be taken from the Chinese governments' management of the situation, with a large scale, very restrictive lock-down. Whilst extreme, cases in the country are now falling and wide-spread transmission throughout China appears to have been prevented. Italy appears to have gone in the same direction.

This may be difficult to implement in other Western societies, plus would have significant implications on economies, which in the end could also cause loss of life. These will be discussions for our politicians guided by the experts.

There is even doubt that these methods will have a lasting benefit and that **when the restrictions are lifted a further rise in cases is likely**. Only time will tell, but it will build on our knowledge for the next pandemic.

► Final thoughts

This is a desperately difficult time for everybody with pressures we can't have imagined a year ago. Much of this is about the uncertainty of what will happen over the next few weeks.

So let's remember:

- Be kind to those around you, everyone is scared.
- Be kind to yourself, our job is hard at the best of times, not every decision we make will be right, but it will be the best we could do at the time with the resources, both internal and external, that were available.
- Remember to eat, drink, take a break, exercise.
- You can't do everything. We may need to pitch in a bit extra, but you need time too.
- Do something you enjoy whenever you can.
- Social media can be frenzied and often fan the flames of worry. Ask yourself if you really need to be on Twitter right now and avoid SM near bedtime.
- Keep washing your hands...

KISS: Coronavirus Resources

- *General Information*
  - UK Government Action Plan - includes info on the 4 stages: contain, delay, research, mitigate
  - PHE Coronavirus information webpage
  - Health Protection Scotland Coronavirus information webpage
  - European Centre for Disease and Prevention and Control Rapid Risk Assessment - the most thorough review of the disease available for general distribution
  - WHO Technical Information
- *Primary Care Specific Information*
  - BMJ Infographic summarising primary care management and patient advice - useful document, very clear
  - NHSE Coronavirus: standard operating procedure - we all need to read!
  - PHE Flowchart for managing suspected cases
  - PHE guidance for primary care
  - PHE guidance on infection control and use of PPE (some involving equipment we don't have...)
  - PHE guidance for healthcare providers with relevant travel/contact history
  - PHE guidance on clinicians who have to home isolate - does not tell you how to entertain yourself
- *Patient information*
  - PHE guidance on advising the general public
  - NHS information
  - PHE guidance for the public on how to self-isolate
  - Travel advice

Information correct as of Wednesday 18th March 2020