Message

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Subject: RE: Covid 19 Analysis OFFICIAL SENSITIVE (COMMERCIAL)*

Dear All,

Emails crossed. I was literally about to write to Keith, but now sharing wider.

We have had some sensitive and confidential data shared by Singapore on its patients to date,which is embedded below. These data are likely to be highly reliable. In brief:

1. Whilst n=80 is not large, it is still the largest ex-China line listing within a modern HC system and hospitalised patients
2. To note mild cases also hospitalised as a precaution so the series includes some mild cases but perhaps not the very mildest which may have been undetected by their surveillance.
3. But nevertheless it is already notable that over 20% required supplemental oxygen
4. And (assuming that all those ventilated are a subset of those requiring O2) half of these then required ventilatory support (there's a slight caveat that in SE Asia they can be a bit quick to ventilate and by their own admission ICU/HDU distinction can be a bit blurry)
5. Nevertheless the baseline RWC scenario we are working to suggests 5% of UK patients may need hospital care; this is hard to align with the 20% needing oxygen (and I know Keith is working towards O2 desaturation being the major trigger for hospital care, which I agree with). 5% feels a bit low to me. NERVTAG has today opined that they feel 4-5% is very much too low and most opinion was in the 8-10% band with high uncertainty due to lack of data.

6. We then works on 25% (RWC) needing ventilation; NERVTAG felt that between Tier 2 and Tier 3 care combined, 25% was as high as it could possibly be but might come down a bit (again fairly high uncertainty).
7. The LOS in Singapore is also longer than our RWC of 6 days but this concerns me less as probably at this stage SG is a long way from needing to contemplate earlier than ideal discharge. Notwithstanding NERVTAG is suggesting working to 10 days because all data they've seen suggest a longer LOS than for panflu.

If I've read the underlying email correctly 23 days might be ALOS for the V group overall according to ICNARC but the days on ICU figure from Singapore is quite a lot lower.

I hope this information is timely and helpful.

Andrew, I am separately working on possible acquisition of drugs* (COMMERCIAL SENSITIVE) that may be of use to treat COVID-19. Please will share your work outputs with me as soon as you can to give me an understanding of numbers over time in the O and V groups, combined, and separately. Thanks.

JVT

Department of Health & Social Care

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COVID-19 Adult Inpatient Clinical Status*

(as of 19 Feb 2020, 1000hrs)

National Centre for Infectious Diseases

COVID-19 Inpatients	50
Supplemental O_2	5
Critical Care	
ICU	3
HDU	1

Note: Patient data includes those from other PHIs except KKWCH.

Total COVID-19 Inpatients in Data (Including Discharged)	80
Require(d) HDU/ICU	11 / 80 (13.8%)
Require(d) Intubation	8 / 80 (10%)
HDU/ICU Duration, median (range) n=8	6.5 (1-10) days
Symptom Onset to ICU/HDU (n=6)	9 (3-13) days
Require(d) O_2 supplementation	17 / 80 (21.3%)
Symptom Onset to requiring O_2 supplementation (n=12)	8 (2-13) days

Discharged COVID-19 Patients	30
Ever had an abnormal CXR	19 / 29 (65.5%)
Length Of Stay for Discharged Patients, median (range), n=24	12 (5-23) days
Symptom Onset to Discharge, median (range), n=22 (2 of 24 discharged were asymptomatic)	17 (12-26) days

80 adults who have been diagnosed with COVID-19. Of these, 30 (37.5%) have been discharged.

Three-quarters (63/80, 78.7%) of the cases have milder disease, No oxygen supplementation

11 (13.8%) becoming severely ill. Of these, 7 have improved or recovered, while 4 are receiving critical care.

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Subject: RE: Covid 19 Analysis

Andy,

Many thanks for sharing this - very helpful to see – and thanks for the call just now to talk through it.

We also discussed the SAGE commission from this week and how it relates to the analysis you've shared here:

> **NHS England** to provide **SPI-M** with a list of precise and essential criteria upon which NHS planning depends (e.g. is an estimate of the percentage of patients needing respiratory support, and for how

long, the most important thing to know for planning?), in order for SPI-M to model these in different outbreak scenarios.

It looks like there are several areas where having a steer from SPI-M on further assumptions that would be helpful in refining your work. It sounded like length of stay would be critical, and we also discussed age distribution and comorbidities. We agreed that we would discuss a more complete list of parameters offline, which we can then get to SPI-M for their view based on the emerging COVID-19 data, including which scenarios/sensitivities it might be helpful to explore further. We agreed it would be essential to make sure we're using consistent assumptions throughout.

Thanks,

Paul

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Subject: Covid 19 Analysis

Patrick / Paul / Chris

Please find attached the latest modelling we've presented (this morning) to Keith Willets w.r.t. Covid 19.
The purpose of this analysis is to estimate beds, workforce, medicines and consumables based on the SAGE reasonable worst case scenario.

In terms of our next steps we shall be:

- Amending our ALOS assumption for the V group. Instead of 6 days we'll use 23 as per the ICNARC analysis
- We are going to look again at our ALOS assumption for the O group. Currently 6 days, but we'll undertake and analysis of SUS data for the ALOS Viral Phenomena patients w/o critical care. Conscious of the impact of co-morbidities on ALOS.
- We'll expand our analysis to include ordinary and critical care beds.
- We'll look at how best to use the 25% mortality rate figures from the ICNARC papers.

Changing the above assumptions will greatly increase the number of beds required (but don't have).

Much more work will be undertaken on Medicines and Consumables, and we are hoping to make significant progress on that by Monday. We'll be comparing these figures with stock figures from supply chain colleagues.

Hopefully sharing this material is helpful so you know and understand what have done and our next steps are thereby avoiding duplication.....

Happy to discuss.

Best wishes.

Andy

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