

Healthcare associated Infection (HAI) COVID-19 agenda briefing for CNO

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1. Situation

There is an identified need to better understand the healthcare associated COVID-19 epidemiology and emerging evidence, in order to identify any additional IPC measures which can be considered for implementation in health and social care settings to reduce risk of HAI.

2. Work to date internationally

2.1 Definitions for HAI in patients and care home residents

There is no agreed international consensus on definitions for HAI (nosocomial) COVID-19. PHE have asked if the IHRs can consider this, however there has been no decision to date.

HAI COVID-19 definitions are unlikely to be in line with the internationally agreed definitions for other respiratory tract HAI in terms of the: nature of the presentation, incubation period and pandemic context. HAI would usually be those infections, not present or incubating on admission, therein arising after 48 hours of admission to hospital.

The incubation period for COVID-19 is longer than the 48 hour after admission period for defining HAI. Current estimates suggest a median incubation period from 5–6 days for COVID-19, with a range from 1–14 days. The median incubation period from a recent study was 5.1 days and 97.5% had onset within 11.5 days¹. The 2.5 percentile was 2.2 days. 25 and 75 percentiles were 3.8 and 6.7 days respectively. Another modelling study confirmed that it remains prudent to consider the incubation period to be up to 14 days². This means that COVID-19, arising before day 14 in hospital or care settings, may not be HAI.

2.1.1. Hospital definitions

Criteria currently used by countries or hospitals looking at nosocomial COVID-19 cases vary widely, from very specific cut-offs for date of onset from more than 14 days, to more sensitive cut-offs of more than 6 or 7 days. The following definition has been agreed by ECDC as of 23/4/20:

The origin of a COVID-19 case can be community-associated (CA-COVID-19) or healthcare-associated (HA-COVID-19), based on the number of days until the onset of symptoms, or positive laboratory test, whichever is first, after admission to a healthcare facility (on day 1). This is informed by current knowledge regarding the distribution of incubation periods. If required, a case-by-case evaluation of the origin should take into account COVID-19

prevalence in the institution/ward, contact with known cases in the community or the healthcare facility, and any other data that plausibly indicate the source of the infection. The case origin definitions are as follows:

Community-associated COVID-19 (CA-COVID-19):

- Symptoms present on admission or with onset of day 1 or 2 after admission
- Symptom onset on day 3-7 and a strong suspicion of community transmission.

Indeterminate association

- Symptom onset on day 3-7 after admission, with insufficient information on the origin of infection to assign to another category.

Probable healthcare-associated COVID-19 (HA-COVID-19)

- Symptoms onset on day 8-14 after admission
- Symptom onset on day 3-7 and a strong suspicion of healthcare transmission.

Definite HA-COVID-19

- Symptom onset on day ≥ 14 after admissions

Cases with symptom onset within 14 days of discharge from a healthcare facility (e.g. readmission) may be considered as community-associated, probable or definite HA-COVID-19, or to have an indeterminate association. The designation of such cases should be made after a case-by-case evaluation.

2.1.2 Long term care facilities (LTCF)

Definitions for long term care facilities were also discussed at the ECDC expert meeting. Many countries reported care homes had a high number of COVID-19 outbreaks. They report a wide spectrum of clinical syndrome and screening, in small single centre studies (unpublished), indicated that many residents and care workers were positive for COVID-19 without any symptoms.

The expert group concluded that symptoms are not the key to testing or surveillance in this setting, and further control measures need considered. Countries, such as France, are considering lockdown of care homes without cases and daily screening of staff. For care homes with any cases, full PPE for all staff and a presumption that all residents are positive.

Other key challenges identified at the ECDC meeting included surveillance of mortality, wherein COVID-19 may be reported in death certification, however most of those residents have not been tested to date and thus are not in the reported COVID-19 cases (denominator) in most countries.

The meeting also discussed experiences with COVID-19 in LTCFs and possible ways forward for surveillance in these settings. A proposal is being developed by ECDC in collaboration with WHO-Euro and will be shared in the coming days.

2.2 Healthcare worker acquisition

In addition to HAI in patients it is also possible that HCWs acquire HAI COVID-19 from patients or other HCWs, in addition to wider community transmission. Some countries have completed case control studies and others doing cohort studies. Few have published, early indications from some countries (France and Hungary) are that the risk factors for HCWs are similar to that of the general population inclusive of severe outcomes. Key challenges are in identifying source, i.e. HCW HAI COVID-19.

WHO have issued guidance for how this should be investigated^{3,4}. Few other European countries are intending to implement these risk factor studies using the WHO protocol, with the exception of Italy currently.

ECDC are considering if a simplified protocol, to ensure consistency in application of these studies, may be required in order that data can be aggregated and learned from.

3. Evidence re HAI epidemiology and prevention measures

Few countries have any specific focus on COVID-19 from an HAI perspective, however there are a number of peer reviewed and non-peer reviewed papers being published and emerging evidence examining for example:

- COVID -19 in hospitalised patients, secondary bacterial infections, ICU stays and deaths in hospital – none of these presented as healthcare associated to date
- Pilot studies using record linkage in England indicate that on average 20% of COVID-19 cases are HAI, i.e. occur after 14 days in hospitalised patients (inclusive of readmissions within 2/52 of a previous stay), which is the only indicator to date in the UK. This varies by Trust reported COVID-19 incidence
- COVID-19 screening in HCWs working in hospitals and care homes and the proportion of asymptomatic HCWs with positive tests
- COVID-19 screening in asymptomatic patients attending hospitals/ admission screening

The evidence to date is challenging, has issues of bias and confounding, and is further hampered because there is no consistency in the definition used for HAI caused by COVID-19.

Some key challenges in terms of identifying additional IPC measures exist, due to asymptomatic cases and a wide clinical syndrome of presentation. Guidance indicates suspected cases should be isolated, however many countries are cohorting suspected cases with known COVID-19 positive cases, due to insufficient isolation capacity within hospitals. Patient flow and the possibility of suspected COVID-19 wards or COVID-19 hospitals are all being considered by countries now.

4. Key evidence gaps

- 4.1 Definition of HAI COVID-19, now agreed in principle by ECDC
- 4.2 Transmission dynamics in hospitals and care settings for COVID-19 and how much of this is HAI in Scotland
- 4.3 Epidemiology and key risk factors for HAI COVID-19 in hospitals and care homes
- 4.4 Epidemiology and key risk factors for healthcare workers with COVID-19
- 4.5 HAI attributable mortality for COVID-19

5. Recommendations

- 5.1 Adopt the ECDC COVID-19 HAI case definition in Scotland.
- 5.2 Scope all the existing HAI data and wider national datasets in Scotland, and consider use of local NHS board data (which is more timely although not quality assured for record linkage) to determine the proportion of COVID-19 cases meeting the agreed case definition and examine epidemiology of deaths associated with HAI in patients, residents in care homes and HCWs involved in identified clusters.
- 5.3 Scope WGS merits in understanding the transmission within clusters and incidents reported in health and care settings and consider implementing this in pilot sites (connecting to the SAGE nosocomial work to date on this matter- being led by public health microbiology colleagues in PHS in Scotland)
- 5.4 Consider piloting admission screening for COVID-19 in asymptomatic patients with follow up during their inpatient stay (Testing of all admissions or admissions for some specific patients groups is being considered at a Policy level)
- 5.5 Consider piloting anonymously asymptomatic health and care worker to determine asymptomatic prevalence in hospitals and care homes.
- 5.6 Consider undertaking serial Point Prevalence studies for COVID-19 in hospital settings (and pave the way for collaboration with EU colleagues through ECDC).

- 5.7 Consider adopting the ECDC LTCF national surveillance of HAI COVID-19 protocol when available.
- 5.8 Formally review the wider published evidence to inform any potential additional IPC measures to prevent HAI COVID-19.
- 5.9 Establish an HAI COVID-19 group in Scotland, with key ARHAI, public health microbiology and virology/ PHS and wider Scotland SAGE stakeholders to review all the intelligence and make recommendations for national surveillance, research, guidance and policy in Scotland, reporting to the UK SAGE Nosocomial Group via the CMO Scotland SAGE group.

References

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