ARHAI Scotland

Antimicrobial Resistance and Healthcare Associated Infection

NHS National Services Scotland

Rapid review of the literature

SARS-CoV-2 variant Omicron (B.1.1.529) – implications for infection control within Scottish health and care settings

Version 6.0 - ARCHIVE

14 January 2022

Version history

Version	Date	Summary of changes
V1.0	9 December 2021	First version of literature review
V2.0	16 December 2021	Weekly update of new literature
V3.0	23 December 2021	Weekly update of new literature
V4.0	30 December 2021	Weekly update of new literature
V5.0	6 January 2022	Weekly update of new literature
V6.0	14 January 2022	Weekly update of new literature Final publication – evidence now screened as part of the ARHAI Scotland COVID-19 IPC rapid review.

Contents

Background

Concerns have been raised regarding the emergence of a new SARS-CoV-2 variant B.1.1.529.[1] On 26 November 2021, the independent group of experts from the Technical Advisory Group on SARS-CoV-2 Virus Evolution (TAG-VE) assessed variant B.1.1.529 which was first reported to the World Health Organization (WHO) from South Africa on 24 November 2021.[1, 2] A sharp increase of infection observed in South Africa coincided with the detection of this variant which was first confirmed from a specimen collected on 9 November 2021 although it was not reported by WHO from which country this specimen originated from. It was subsequently detected in specimens collected in Botswana on 11 November 2021 and in South Africa on 14 November 2021.[2]

B.1.1.529 is characterised by a large number of mutations in the spike protein. There are also a number of changes and deletions in other genomic regions.[2, 3] Cases of B.1.1.529 increased in almost all provinces in South Africa and it was detected at faster rates than previous surges suggesting a growth advantage.[1] On 26 November 2021, WHO designated variant B.1.1.529 as a variant of concern (VOC), named Omicron, on the advice of TAG-VE based on the available evidence and potential change in the epidemiology of COVID-19.[1] Since then, a growing number of countries have reported confirmed Omicron VOC cases.[4]

Reports suggesting that the Omicron variant is associated with increased transmissibility, increased risk of reinfection, reduced vaccine effectiveness or potential immune escape have prompted a call to assess whether any changes are required to the infection prevention and control precautions in place in Scottish health and care settings.

Aim

This rapid review was conducted to assess the current evidence base regarding the Omicron (B.1.1.529) variant and any impact it may have on current COVID-19 infection prevention and control recommendations for Scottish health and care settings.

Objectives

The following research questions were assessed:

- What is the current evidence base regarding the infection control implications in Scottish health and care settings of spread of a new variant of SARS-CoV-2 Omicron (B.1.1.529) within the UK?

Methodology

For details of the search strategy see Appendix 1.

Databases were initially searched on 3 December. An update search was conducted 9 December and then daily thereafter. Published updates to the rapid review were scheduled on a weekly basis and ended with publication of Version 6.0 after which evidence relevant to Omicron will be screened as part of the ARHAI Scotland IPC rapid review.

Inclusion criteria was kept broad owing to the novel nature of the variant, any study design was considered. Screening was undertaken by two reviewers, any uncertainty over the relevance of an article was decided by agreement between the two reviewers. As this was a rapid review, evidence was critiqued but not formally graded with the use of an appraisal tool, meaning that graded recommendations were not feasible.

The SIGN50 critical appraisal system is used for ARHAI Scotland systematic reviews and while time constraints meant individual studies were not entered into SIGN50 checklists for this rapid review, the SIGN50 principles were applied to critical analysis of the evidence base and data extraction from studies was entered directly into evidence tables developed for the rapid review.

Results

This rapid review includes evidence from database inception up to 13 January 2022. The searches conducted on databases Embase, Medline and medRxiv plus screening of grey literature resulted in inclusion of 29 studies in Version 1.0 of the review. An additional 15 papers were included for Version 2.0. Thirteen additional papers, including eight papers which are updates to existing studies were included in version 3.0; evidence published between 17

December – 22 December 2021 was screened. Twelve additional papers including updates to two existing articles were included in version 4.0; evidence published between 23 December and 29 December 2021. Eleven additional papers including update to one existing article were included in version 5.0; evidence published between 30 December 2021 and 5 January 2022; 10 additional papers were included in version 6.0.

The Omicron variant belongs to the Pango lineage B.1.1.529, Nextstrain clade 21K and is characterised by numerous mutations. These include 30 single amino acid changes, three small deletions and one small insertion in the spike protein compared to the original SARS-CoV-2 virus; 15 of the 30 amino acid substitutions occur in the receptor binding domain (RBD)[3, 4] of which 10 are in the receptor binding motif (RBM) that interacts directly with human angiotensin-converting enzyme 2 (ACE2).[5] Other mutations are found at the furin cleavage site and outside spike.[6] There are numerous key amino acid substitutions in the spike protein.[2-4]

Omicron variant can be identified through genotyping or sequencing due to a spike mutation that deletes two amino acids at positions 69 and 70 causing a reproducible S-gene drop out or S-gene target failure (SGTF) seen in widely used PCR tests. SGTF method may be used as a proxy for the Omicron variant and subsequently help assess spread prior to genotyping results being available.

Emergence in UK

A UK Health Security Agency (UKHSA) technical briefing (#29) of SARS-CoV-2 VOCs and variants under investigation (VUIs) in England was published on 26 November 2021 which had reported that Delta remained the predominant variant accounting for approximately 99.8% of sequenced cases in England from 10 October and 22 November 2021.[6] At that time, variant B.1.1.529 was being rapidly assessed however there was no confirmed laboratory data and no detected cases were found in the UK.[6] The Scientific Advisory Group for Emergencies (SAGE) have reported with high confidence that hospital admissions are expected to rise in the UK due to possible growth advantages of Omicron.[7] Technical brief numbers 30 – 32, published by the UKHSA on the 3rd, 10th and 17th December 2021, respectively, contain early data and analysis of Omicron but cautions that findings have high level of uncertainty.[6, 8, 9]

Case definitions were agreed as follows:

- Confirmed case: Omicron by sequencing or genotyping
- Probable: COVID 19 PCR positive with specimen dates from 1 December 2021 and S Gene Target Failure or 69-70 deletion.

- Possible: COVID 19 PCR positive plus S Gene Target Failure from 1 November 2021 up to and including 30 November 2021, excluding those with confirmed non-Omicron variant.[10]

Early analysis by the University of Oxford using structural modelling indicates that the mutations in Omicron may affect the binding of natural and therapeutic antibodies and enhance binding to ACE2 however data was not included in the brief.[8]

Since then, Omicron has been detected in increasing numbers across various parts of the UK including Scotland.[11, 12] From reports published 5th and 20th December 2021, confirmed Omicron cases in Scotland were relatively younger when compared with other COVID-19 cases, with 50% between the ages of 20-39 years.[10, 13] It would appear that there is rapid transmission of Omicron within Scotland with evidence of widespread community transmission. In the Scottish Government's COVID-19 evidence paper dated 10 December the estimated doubling time in Scotland for Omicron cases was 2.30 (2.18 – 2.66) days based on SGTF method and it is projected that Omicron is likely to make up the majority of cases in Scotland between mid-December and early January 2022.[14] Note that Delta variant occasionally produce SGTF so doubling estimates should be interpreted with caution. As of 5th January 2022, there was a total of 365,376 confirmed (sequenced) and probable (genotyped) Omicron cases in the UK: England 315,639, Scotland 15,219, Wales 13,866 and Wales 13,866.[15]

As of 9th January 2022, Public Health Scotland reported 32,305 confirmed Omicron cases in Scotland.[16] Omicron now accounts for >90% of COVID-19 cases making it the dominant variant in Scotland.[16] Moreover, the Office for National Statistics (ONS) estimated that COVID-19 infections with Omicron continued to increase across England, Scotland, Wales and Northern Ireland in the week ending 6th January 2022 while Delta infections have fallen to very low levels confirming that Omicron is now the dominant variant across all UK countries.[17]

Impact on transmissibility

The WHO, CDC and ECDC reported initially that it was not yet clear whether Omicron was more transmissible compared to other variants including Delta.[4, 7, 9, 18, 19 2] The sharp rise in the number of confirmed cases and increased case rates coincided with emergence of Omicron however overall COVID-19 case numbers in South Africa are currently low with varying rates observed in multiple South African countries.[4] Therefore estimates of transmissibility remained uncertain. The ECDC and WHO have stated that Omicron has a significant growth advantage

compared to Delta which combined with the potential for immune escape was favouring rapid transmission.[20, 21] Significant uncertainties remain due to lack of rigorous scientific, clinical and laboratory evidence and limited data from preliminary studies.

Findings from a cohort analysis estimating odds of household transmission for Omicron index cases was included in the UKHSA's technical brief #32 which showed that 18% (n = 141/777) of Omicron index cases gave rise to secondary household cases compared to 10% (n = 11,593) of Delta index cases (adjusted OR for Omicron vs Delta index cases 2.9 (95% confidence interval (CI): 2.4 – 3.5 P<0.001) suggesting Omicron variant has transmission advantage compared to Delta.[9] However, analysis is likely to be affected by ascertainment bias due to increased surveillance for Omicron cases. Details of the cohort study were not provided in the technical brief.[9] Data from England's NHS Test and Trace for the period 15th November – 4th December 2021 show secondary attack rates for household contacts were higher for Omicron compared to Delta but observed secondary attack rates were similar for non-household contacts. Overall adjusted odds ratio, aOR, (adjusted for household/non-household exposure of close contact becoming confirmed Omicron case compared to Delta index case) was 1.96 (95% CI 1.77 – 2.16).[9] Limited details were provided in the brief and evidence from NHS Test and Trace should be treated with caution as data has high risk of imprecision due to the nature of contact tracing and testing.

At the time of publication there are a number of unconfirmed theories proposed to explain the increased transmission associated with Omicron. These include: a longer period of infectivity during the pre-symptomatic phase; a higher percentage of asymptomatic or very mild infection which prevents identification (and thus isolation) of cases; vaccination resulting in milder disease so further impacting symptom identification; a widening of the size distribution of respiratory particles containing infectious virus which could result in more virus emitted per breath; a reduced infectious dose.

Further studies both epidemiological and laboratory-based are required to better understand Omicron's transmissibility.

Impact on disease severity

The CDC, ECDC and WHO stated that at the time of reporting it was unclear if infection with Omicron was associated with more severe disease as current assessment was limited by the small number of cases attributed to this variant.[2, 3, 7, 19, 22] Early data pointed towards increasing hospitalisation rates in South Africa but it was unclear whether this was due to infection specifically associated with Omicron or other factors.[18, 23] A cohort analysis of data between

November 1, to December 19, 2021 in Scotland (pre-print), showed that there were 15 hospital admissions with an adjusted observed ratio of 0.32; 95% CI 0.19, 0.52) suggesting that Omicron is associated with a two-thirds reduction in the risk of COVID-19 hospitalisation when compared to Delta.[24, 25] However, these findings should be interpreted with caution as this study only looked at a subset of the Scottish population with limited data on hospital admissions (only 15 cases).[24] A study in England (not peer-reviewed) reported that Omicron was associated with a 20-25% reduction in hospitalisation compared to Delta, however the researchers acknowledged there was limited data and an imbalance in follow-up time for Omicron cases.[26] In their most recent technical brief, the WHO has stated that disease severity for Omicron may be lower when compared to the Delta variant, citing preliminary outbreak and/or surveillance data from South Africa, Norway, UK, Denmark and the European Surveillance System.[21] Findings from a cohort study conducted in South Africa that included 5,144 patients from Omicron-driven wave and 11,609 from previous waves show that the risk of all clinical outcomes such as death, severe hospitalisation (ICU admission, mechanical ventilation or oral/IV steroid prescription) was lower in wave 4 (Omicron-driven) compared to previous Delta waves.[27] A US study[28] also showed that compared to Delta, Omicron infection was associated with a reduced risk of hospitalisation (adjusted Hazard ratio 0.48 [95%CI: 0.36-0.64]), reduced rates of ICU admission, reduced hospital length of stay (69.6% reduction) and lower mortality. Additionally, daily risk of mechanical ventilation was significantly lower among Omicron infected patients compared to Delta (0 vs 0.04 per 1000 person-days; 2-sided P<0.001).[28, 29]However, results should be interpreted with caution given the limitations of the data-sets, including limited understanding of the protection of vaccine or infection-related immunity against severe disease, lack of genomic confirmation to confirm Omicron and Delta infections and differences in population demographics.[22] WHO initially stated that there is currently no published information to suggest that symptoms associated with Omicron are different from other variants.[18] UK and NHS guidelines still advise that the most common COVID-19 symptoms are continuous cough, fever/high temperature and loss of/change in sense of smell or taste. However early reports from the CDC and an Omicron outbreak investigation in Norway suggest that cold-like symptoms including cough, runny/stuffy nose, fatigue, sore throat and headache were commonly reported by individuals infected with Omicron.[30, 31] The ECDC in their technical brief on 2 December 2021 reported that for those EU/EEA countries where data was available on disease severity, half of the cases were asymptomatic and the other half had mild symptoms with no hospitalisations nor deaths.[4] However, no data is presented in this report.

As of 29 December 2021, UKHSA reported 981 hospitalisations and 75 deaths in England with confirmed Omicron infection.[12] Data as of 9 January 2022 from Public Health Scotland report

that confirmed Omicron infection was related to 337 hospital admissions, 9 ICU/HDU admissions and 15 deaths in Scotland[16] however, it is unclear whether the reason for admission was directly related to COVID-19 or in fact for another reason whilst coincidentally positive for COVID-19. This demonstrated an increase in the number of hospital admissions since early December. It should also be noted that evidence on the level of disease severity associated with the Omicron variant on different age groups is currently limited due to the relatively small number of hospitalisations and deaths.

Overall, the current evidence regarding disease severity related to Omicron remain uncertain, further studies are required to establish more accurate estimates.

Risk of reinfection

Initial report of increased risk of reinfection with Omicron variant is based on a retrospective study of routine surveillance data by Pulliam et al.[23] Included were 2,796, 982 individuals with laboratory confirmed SARS-CoV-2 who had positive test results at least 90 days prior to 27 November 2021; suspected reinfections was defined as sequential positive tests at least 90 days apart. Their findings suggest that the substantial observed increase in SARS-CoV-2 reinfection in South Africa is consistent with the emergence of the Omicron variant indicating that it has increased ability to infect previously infected individuals compared to previous variants. They found a decrease in the hazard coefficient for primary infection and an increase in reinfection hazard coefficient since early October 2021, consistent with the recent spread of the Omicron variant. The estimated relative hazard ratio for the period from 1 November 2021 to 27 November 2021 versus wave 1 was 2.39 (95%CI: 1.88 – 3.11). However, results from this study should be interpreted with caution due to several important limitations including lack of genomic/sequencing tests to determine if reinfection was with Omicron variant, there was reliance on timing only therefore results may be imprecise. Additionally, reinfections were not confirmed by sequencing or by requiring a negative test between putative infections. It is unknown if individuals may have prolonged viral shedding or if they were true cases of reinfections. It is difficult to interpret study findings and apply these to other countries such as the UK which has higher vaccination rates and different population immunity status. Additionally, South Africa has a younger population and high burden of HIV which suppresses the immune system making it challenging to extrapolate results to countries with differing population groups, access to healthcare and medical condition/vulnerabilities.

The WHO have reported that there may be a higher risk of reinfection, citing preliminary outbreak and/or surveillance data from UK, South Africa, Denmark and Israel.[21] In the

UKHSA's technical brief #32, reinfection cases (infections with previous positive test results > 90 days earlier) were estimated amongst confirmed, highly probable and probable Omicron case data with a specimen date between 20th November and 14th December 2021.[9] The risk of reinfection for Omicron was calculated at 3.3 (95% CI: 2.8 – 3.8), adjusted for age, public health region and collection pillar, i.e. route of testing; findings should be treated with caution as estimates are preliminary.[9]

Further studies both epidemiological and laboratory-based are required to better identify Omicron's transmissibility, impact on disease severity which will inform appropriate infection prevention and control measures.

Impact on vaccine effectiveness

The CDC anticipates that based on changes in the spike protein of the Omicron variant, locations of these substitutions and data from other variants with similar spike protein substitutions, there is likely to be significant reductions in neutralising activity of sera from vaccinated and previously infected individuals.[3] However, no evidence is cited by CDC. A recent study (not peer-reviewed)[5] using molecular dynamics simulations and ELISA bioassay indicate Omicron has comparable binding affinity to human ACE2 with wild type (WT) SARS-CoV-2 ($P=0.22$) but has weaker binding affinity compared to Delta ($P<0.01$). These findings suggest Omicron has similar infection capability to WT but is milder than Delta. The study also showed Omicron compared to WT has weaker binding affinity to monoclonal antibodies Etesevimab ($P<0.001$) and Bamlanivimab ($P<0.001$) suggesting high risk of immune evasion.[5] The weaker binding affinity of Omicron's RBD to ACE2 does not necessarily lead to lower transmissibility; there may be other viral pathways and functions involved throughout the whole cycle of viral infection and replication.

The ECDC also notes that the variant may reduce vaccine effectiveness due to a neutralisation escape by convalescent and sera from vaccinated individuals.[3,4, 32]

Thirty two publications which assess the ability of sera from vaccinated or previously SARS-CoV-2-infected individuals to neutralise the Omicron variant are currently included in this review.[33-49 50-56 57-63]There was wide variation in the methodologies (e.g. pseudovirus or live virus neutralisation assays) and types of selected sera used however overall findings consistently show no or significantly reduced neutralisation activity of sera from vaccinated recipients and convalescent sera against the Omicron virus compared to other SARS-CoV-2 VOCs and wild-type strain. These *in vitro* studies suggested that there may be some reduction in neutralisation ability with Omicron but that vaccination or infection and booster may increase

neutralising antibody titres. Wilhelm *et al*., also reported that there may be a reduction in the ability of monoclonal antibodies (imdevimab and casirivamb) to neutralise Omicron.[45] Neutralising titres were observed to drop to low or undetectable levels from 2 doses of both homologous ChadOx1 and BNT162b2 vaccines[33-35, 37-40] however there is also indication that vaccine effectiveness was increased to 71.4% (95%CI: 41.8 to 86.0%) for ChAdOx1 primary course recipients and 75.5% (95%CI: 56.1 to 86.3%) for BNT162b2 primary course recipients 2 weeks after receiving mRNA (BNT162b2) booster dose.[33]

Additionally, findings from 2 preliminary studies[64, 65] indicate that prior COVID-19 infection was associated with a significantly higher magnitude of T cell response regardless of variant however CD8+ memory T cell responses to the Omicron spike were significantly decreased compared to wild type in vaccinated individuals (P<0.005). Overall B and T cell responses were significantly increased by a booster dose.[64, 65] A further study suggested that vaccination (2 doses) or prior infection were associated with CD4 and CD8 T cell response.[66] Evidence from these studies should be interpreted with caution due to the small sample sizes and relatively short follow-up periods.

Evidence from these non-peer reviewed studies are limited due to limitations such as very small sample sizes leading to significant uncertainty in vaccine effectiveness estimates. The *in vitro* design lacks the ability to account for immune responses mediated by B, T cells and NK cells, lack of clinical data which may be a source of potential confounders.[67]

A US study[29] (not peer-reviewed) of 6657 test positive cases found that vaccine effectiveness from 2-dose mRNA1273 vaccine against Omicron infection was providing only 30.4% (95%CI: 5.0%-49.0%) protection at 14-90 days post vaccination and declined quickly to 0.0% after 180 days, however effectiveness increased to 95.2% (93.4%-96.4%) after 3 doses. Three-dose vaccine effectiveness against Omicron infection was low among immunocompromised individuals (11.5%; 0.0%-66.5%) suggesting that 3 doses may be inadequate to protect them against Omicron infection. None of the Omicron positive cases with 3 doses were hospitalised however their numbers were too small to draw firm conclusions regarding the effectiveness and durability of mRNA-1273 vaccine in preventing hospitalisation.[29]

Even with limited evidence relating to the impact of Omicron variant on vaccine effectiveness, the ECDC, WHO, JCVI and UKHSA maintain that vaccination offers some protection against hospitalisations and death regardless of the presence of multiple mutations in the spike protein.[3, 21, 22, 68-70] Findings from a UKHSA technical brief from 31st December 2021 report a substantial reduction in risk of hospitalisation (81% (77 to 85%) for Omicron cases after 3 doses

of vaccine compared to those who are unvaccinated, however despite the reduced risk and vaccine effectiveness, increasing numbers of Omicron infections could eventually translate into increases in hospital admissions.[71]

Although as noted from the different technical briefs and emerging scientific studies it is highly likely that Omicron can escape immunity to some extent, there is still much unknown about the potential impact of the Omicron variant on the effectiveness and durability of current vaccines. Findings from preliminary data need to be confirmed by larger robust studies which include sera from individuals with different immunologic profiles and age groups (e.g. receipt of different vaccines or additional doses, etc.) including sera collected at different times post COVID-19 infection and/or vaccination.

Impact on Infection Prevention and Control (IPC) measures and government response to Omicron

More evidence is now emerging on Omicron however it remains unclear what impact the Omicron variant will have on health and care settings. It is likely that the exponential growth of cases will cause additional hospitalisations and therefore further strain on the health system. WHO, CDC and ECDC recommend enhanced surveillance of Omicron to quickly identify and confirm possible Omicron cases and subsequent characterisation.[2-4, 19, 22] Over recent months, many community based pandemic mitigation measures in the UK have been relaxed or withdrawn and it is reasonable to assume that where mitigations do remain, compliance is very often waning. It is therefore difficult to interpret to what extent the transmissibility of the Omicron variant is greater than other variants or whether in fact it is amplified by the reduction in community based measures. ECDC calls for the continuous implementation of non-pharmaceutical interventions (NPIs) such as remote working, physical distancing, adequate ventilation in closed spaces, maintenance of hand and respiratory hygiene measures, use of face masks and staying home when ill – notably, a strengthening of largely community-based measures.[3, 4] SAGE reported that measures may need to be considered to reduce transmission and possible pressure on the NHS.[72] In the wake of the Omicron variant, UK and Scottish governments have both announced the reinstatement and/or implementation of a limited number of public health measures such as mandatory face coverings in public spaces in order to reduce transmission.[73-78] On 12 December 2021, the UK launched an urgent appeal calling for people to get their vaccines/booster doses which comes as the UK COVID alert level was increased from Level 3 to Level 4 due to a rapid increase in Omicron cases.[79, 80]

There is limited published evidence regarding nosocomial transmission and Omicron. Every ward in every Scottish acute, specialist and community hospital is included in the reporting of COVID-19 clusters/outbreaks to ARHAI Scotland; this represents 277 hospitals, inclusive of thousands of hospital wards across Scotland. An outbreak cluster in Scottish acute care settings is reported when two or more unexpected patient or staff cases are identified on the non-respiratory pathway (or two or more staff cases on the respiratory pathway) and may include some cases that are not associated with the hospital (nosocomial epidemiological case definitions are not applied to each case). As observed in previous waves, hospital admissions and nosocomial transmission are driven by increases in community transmission. In the period from July 2021 onwards (Delta-dominant), there has not been the same increase in nosocomial cases driven by the rise in community cases as observed in previous waves. It is likely that vaccination has had an influence in this regard. It is unclear to what degree waning vaccine immunity may have had on community transmission in recent months coinciding with the emergence of Omicron. Whilst it is too early to assess trends with regards Omicron, unpublished Scottish cluster data has shown an increase in the number of nosocomial outbreaks since the emergence of Omicron however it is unknown whether these are due to infection with Omicron only or a mixture of both Omicron and Delta. As Omicron has become dominant in Scotland, it is more likely that clusters are as a result of Omicron infection. Media-reported Omicron outbreaks involving HCWs have largely been related to social gatherings (e.g. Christmas parties) outside of the workplace where IPC mitigations were minimal or non-existent.

On 23 December 2021, WHO published updated mask guidance stating that respirators should be used in care settings where ventilation is poor.[81] The recommendation was made without involvement of the WHO IPC Guideline Development Group, and in the absence of any new evidence regarding mask effectiveness or transmission mode. The rationale for the recommendation was based on the limited vaccine coverage in HCWs around the world and the potential immune escape. In Scotland, vaccine coverage in HCWs is high, and the current IPC guidance already provides wider use of respirators following a hierarchy of control risk assessment. The UK IPC Cell considered the WHO guidance and concluded no change to the current UK IPC guidance was necessary, apart from a strengthening of messaging around the current IPC mitigations. The Government of Canada recently updated their IPC guidance in response to the high community transmission associated with the Omicron variant. The updated guidance includes all health and care settings and recommends the use of respirators for health and care staff undertaking direct patient care with suspected/confirmed Covid-19 cases.[82] Likewise, the Irish Health Protection Surveillance Centre (HPSC) updated their

recommendations for the use of PPE in the context of the COVID-19 pandemic to extend respirator use as a requirement for all patient care – not just for Covid-19 patients.[83] There is however inconsistency in the Irish guidance which states that surgical masks can be used for 'low risk' patient care activities such as initial clinical assessments, taking a respiratory swab, recording temperature, inserting a PVC, administering IV fluids, and helping to feed a patient. These guidance documents do not provide evidence/rationale for the move to respiratory protection and they have not incorporated an assessment of the adequacy of ventilation.

Conclusion

There is currently limited scientific, clinical, epidemiological and laboratory-based data on the Omicron variant. With the increase in community cases there has been an increase in hospital admissions. It is apparent there has been an increase in nosocomial clusters in line with the rise in community transmission, however current Scottish data does not indicate that a change to the current IPC measures is required.

Further, preliminary evidence does not suggest a change in the transmission mode, therefore a change to the current infection prevention and control measures in health and care settings is not warranted at this time.

It is advised that the current IPC measures in health and care settings be reemphasised to strengthen efforts to reduce nosocomial transmission.

Further studies are underway to characterise Omicron and to investigate the following: transmissibility between humans, infection severity and clinical characterisation, naturally acquired immunity, vaccine-derived immunity, therapeutics and diagnostics.

Appendix 1

Search 1

The following search strategy was first carried out in Medline and Embase databases on 3rd December 2021; with no date restrictions.

1 (coronavirus or corona virus or ncov* or covid* or 2019-ncov or ncov19 or ncov-19 or 2019-novel CoV or sars-cov2 or sars-cov-2 or sarscov2 or sarscov-2 or Sars-coronavirus2 or Sars-coronavirus-2 or SARS-like coronavirus* or coronavirus-19 or covid19 or covid-19)

2 ("B.1.1.529" or B11529 or Omicron or "Omicron variant")

3 1 and 2

Search 2

The following search strategy was first carried out on the preprint database medRxiv on 3rd December 2021.

1 ("Omicron" or "Omicron variant" OR "B.1.1.529") AND SARS-CoV-2

Search 3

Additional grey literature searches of online resources was also carried out including World Health Organisation (WHO), Centers for Disease Control and Prevention (CDC), European Centre for Disease Prevention and Control (ECDC), UK Health Security Agency (UKHSA; formerly Public Health England), Public Health Scotland, New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG), Scientific Advisory Group for Emergencies (SAGE), UK Government and Scottish Government.

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