

Crynodeb Cyflym o Dystiolaeth Canolfan Dystiolaeth COVID-19 Cymru (WCEC)

Trosglwyddiad COVID-19 mewn lleoliadau sy'n lled awyr agored neu'n rhannol dan do

Rhif adroddiad – RES_00001 (Mai 2021)

CRYNODEB O'R PRIF BWYNTIAU

Beth ydy Crynodeb Cyflym o Dystiolaeth?

Briff tystiolaeth interim i ddarparu sail ar gyfer gwaith pellach a sicrhau bod darganfyddiadau allweddol ar gael yn gynnar. Mae'r adroddiad wedi'i seilio ar chwiliad cyfyngedig o adnoddau allweddol ac asesiad o grynodedau. Rhoddir blaenoriaeth i astudiaethau sy'n cynrychioli cyfuniad tystiolaeth gadarn. Nid yw ansawdd yn cael ei werthuso ac nid yw tystiolaeth yn cael ei chyfuno, a dylid bod yn ofalus wrth ddehongli darganfyddiadau.

Cefndir / Nod

Cynhaliwyd y Crynodeb Cyflym o Dystiolaeth hwn o fewn dwy wythnos i ddarparu sail ar gyfer cyngor oddi wrth y Grŵp Cyngori Technegol a'r Prif Gyngorydd Gwyddonol ar Iechyd ar gyfer yr Adolygiad o Gyfyngiadau ar 22ain Ebrill. Ei nod oedd nodi tystiolaeth ymchwil ynglŷn â **trosglwyddiad COVID-19 mewn lleoliadau sy'n lled awyr agored neu'n rhannol dan do, o'u cymharu â lleoliadau sy'n gwbl dan do neu'n gwbl awyr agored.**

Darganfyddiadau Allweddol

- Chwiliwyd tystiolaeth ynglŷn â throsglwyddiad SARS-CoV-2 (COVID-19) mewn lleoliadau sy'n 'lled awyr agored'. Roedd hyn yn cynnwys ehangu'r chwilio i drosglwyddiad feirol yn gyffredinol, i nodi unrhyw dystiolaeth ynglŷn â throsglwyddiad feirysau anadlol mewn lleoliadau sy'n lled awyr agored nad oedd yn benodol i SARS-CoV-2.
- **Ni nodwyd unrhyw dystiolaeth sylfaenol neu eilaidd a oedd yn adrodd ar drosglwyddiad COVID-19 (neu drosglwyddiad unrhyw feirws anadlol arall).**
- Ystyriwyd y gallai un cyhoeddiad gan yr Awdurdod Gwybodaeth ac Ansawdd Iechyd (HIQA) fod o ryw ddiddordeb, gan ei fod yn adrodd ar fesurau a strategaethau iechyd

cyhoeddus i gyfyngu ar ledaeniad COVID-19; fodd bynnag, ni nodwyd unrhyw dystiolaeth ynglŷn â lleoliadau sy'n lled awyr agored ar adeg yr adolygiad hwn (gohebiaeth bersonol, 2021).

Ynghyd â'r rhanddeiliaid, penderfynwyd peidio â symud ymlaen i adolygiad cyflym oherwydd y sylfaen dystiolaeth gyfyngedig a oedd ar gael.

Dylid dyfynnu'r adolygiad hwn fel a ganlyn:

RES_00001. Canolfan Dystiolaeth COVID-19 Cymru. Crynodeb Cyflym o Dystiolaeth ynglŷn â throsglwyddiad COVID19 mewn lleoliadau sy'n lled awyr agored neu'n rhannol dan do. Mai 2021.

http://www.primecentre.wales/resources/RES/RES_00001_Wales_COVID-19_Evidence_Centre_Rapid_evidence_summary_of_COVID-19_transmission_in_semi-outdoor_or_partially_covered_settings_May-2021-cy.pdf

Ymwadiad: Barn yr awduron yw'r rhai sydd wedi'u mynegi yn y cyhoeddiad hwn, yn hytrach na barn Ymchwil Iechyd a Gofal Cymru o reidrwydd. Mae WCEC ac awduron y gwaith hwn yn datgan nad oes ganddynt unrhyw fuddiannau sy'n gwrthdaro.

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Wales COVID-19 Evidence Centre (WCEC) Rapid Evidence Summary

COVID-19 transmission in semi-outdoor or partially covered settings

Report number – RES_00001 (May 2021)

FULL REPORT

1. What is a Rapid Evidence Summary?

Rapid Evidence Summaries are designed to provide an interim evidence briefing to inform further work and provide early access to key findings. They are based on a limited search of key resources and the assessment of abstracts. Priority is given to studies representing robust evidence synthesis. No quality appraisal or evidence synthesis are conducted, and the summary should be interpreted with caution.

2. Production of this Rapid Evidence Summary

The following individuals were involved in the Rapid Evidence Summary process and production of this report:

- Dr Lauren Elston, Health Technology Wales, conducted rapid evidence searches and authored report
- Dr Alison Cooper, Wales COVID-19 Evidence Centre, conducted initial evidence scan

WCEC Team

- Adrian Edwards, Alison Cooper, Natalie Joseph-Williams, Rebecca-Jane Law, Ruth Lewis, Micaela Gal, Jane Greenwell, involved in review and editing

3. Requesting stakeholder group

Welsh Government (WG) 'Technical Advisory Group'- Environmental Science Subgroup (TAG-E)

4. Context / Background

This Rapid Evidence Summary (RES) was conducted to **support the evidence requirements for advice from the Technical Advisory Group and the Chief Scientific Advisor for Health as part of the 22 April 2021 review of restrictions**. The advice incorporated recommendations on outdoor attractions and hospitality, the use of fitness facilities, and extended households.

Prior to this, an initial evidence scan of COVID-19 evidence resources was performed, which focused on identifying the available evidence for the risk of COVID-19 transmission in outdoor environments in comparison with semi-enclosed or indoor settings.

Following the initial scan, the research question for the RES was refined to focus on COVID-19 transmission in **semi-outdoor settings or partially covered settings, compared to indoor or outdoor settings** (see proposed research question below).

5. Research question(s)

Review question	
What is the risk of COVID-19 transmission in semi-outdoor or partially covered settings, compared to indoor or outdoor settings?	
Participants	General population Where possible we will also report on specific subgroups, including: <ul style="list-style-type: none"> • Specific age cohorts (e.g. children, teenagers, etc.) • Specific organised groups (e.g. sports teams, school groups)
Intervention / exposure	'Semi indoor' settings, such as gazebos, marquees or partially covered outdoor settings (e.g. outside hospitality).
Comparison	<ul style="list-style-type: none"> • Indoor settings • Outdoor settings
Outcomes	<ul style="list-style-type: none"> • SARS-CoV-2 transmission rates • Transmission of other respiratory viruses
Other Study Considerations	
<p>The following were highlighted as specific considerations of interest with semi-outdoor settings and, where reported, these considerations were taken into account:</p> <ul style="list-style-type: none"> • Scenarios that may result in certain behavioural impacts, e.g. weddings, sports, drinking, mood. • Factors that may confound the setting of transmission (e.g. an event taking place separate to the semi-indoors setting). • Seasonal and weather conditions (e.g. wet versus dry). • Variables that would impact air flow or ventilation of the area (e.g. air purifiers, occupancy levels) • Events where pre-testing does or does not occur and how that may impact on the rate of transmission (e.g. people testing positive before an event and who therefore do not attend). • Use of 'vaccine passports' or reports of vaccinations. 	

6. Summary of Findings

6.1 Key Findings

We searched for evidence on SARS-CoV-2 (COVID-19) transmission in 'semi-outdoor' settings, as detailed in the study selection criteria and search concepts above. This included

broadening the search to viral transmission generally, to identify any evidence on respiratory virus transmission in semi-outdoor settings that was not specific to SARS-CoV-2.

Search results are listed in Section 8 (Results) of this report. Overall, **we did not identify any primary or secondary evidence reporting on COVID-19 transmission (or other respiratory virus transmission) in a semi outdoor setting.**

One publication from the Health Information Quality and Quality Authority (HIQA) was deemed of potential interest, as it reported on public health measures and strategies to limit the spread of COVID-19; however, reference to semi-outdoor measures was limited.

HIQA have also published an evidence report on activities or settings associated with higher risk of COVID-19 transmission. This report was previously identified by the initial evidence scan, but did not meet the inclusion criteria of the Rapid Evidence Summary as it does not report on any semi outdoor settings. However, Health Technology Wales (HTW) liaised with HIQA for further clarification on whether semi-outdoors was considered as a setting of interest; no evidence on semi-outdoor settings was identified at the time of this review (personal correspondence, 2021).

6.2 Areas of uncertainty

Remaining uncertainties include:

- **It is not clear whether some semi outdoor or partially covered settings exist but are reported as just ‘outdoor’ settings**, with the specific details (e.g. cover/enclosure scenarios) not reported clearly, if at all. Although rapid evidence summaries assess evidence at mostly abstract level, for this report we also checked full texts of potential interest (i.e. reporting on outdoor transmission); we did not identify any reference to semi-indoor settings or similar concepts. Therefore, based on this initial exploration of the evidence, data on the risk of transmission in semi outdoor settings is lacking.
- Semi outdoor settings covers a broad range scenarios, with different covariates related to their location and structure, e.g. wind tunnelling/circulation due to nearby buildings, permeability of shelter materials, level of enclosure. **It is uncertain whether transmission evidence in specific outdoor settings would be transferable or generalizable to other types of semi-outdoor settings.**

7. Conclusions

We did not identify any evidence on transmission in semi-outdoor settings, for either SARS-CoV-2 or other respiratory viruses, so it is difficult to make conclusions on how risk of transmission in semi-indoor settings may differ to outdoor and indoor settings. A fuller evidence review would be required to scrutinise texts fully, or perhaps contact authors for clarifications on settings where appropriate.

A decision was made **not to proceed to a Rapid Review due to the limited available evidence** base.

8. Methods used in this Rapid Evidence Summary

General repositories of evidence reviews noted in our resource list were searched on 29 April 2021 and additional COVID-19-specific resources searched 6 May 2021. An audit trail

of the search process is provided in the Appendix. Searches were limited to English-language publications and did not include searches for primary studies if secondary research relevant to the question was found. Search hits were screened for relevance by a single reviewer.

Priority was given to robust evidence synthesis using minimum standards (systematic search, study selection, quality assessment, appropriate synthesis). The secondary research identified was not retrieved as full text or formally quality assessed.

Date of Search	April-May, 2021
Search Concepts Used	<ul style="list-style-type: none"> • COVID-19, COVID, sars-cov-2, novel coronavirus, virus/viral • transmission • semi-outdoors, semi-enclosed, semi-open, covered, partially covered, semi covered, sheltered, outdoors/outdoor settings, tent, covered area, waterproof.
Search Completed by	Lauren Elston, Health Technology Wales. COVID-19 Evidence Centre partner

An initial evidence scan of COVID-19 evidence resources was performed, prior to conducting the Rapid Evidence Summary, to answer the early research question: Can we better quantify the relative risk of Covid-19 transmission in enclosed, semi-enclosed and outdoor environments? The search focused on outdoor settings, compared to semi-enclosed or indoor settings. The resources searched for this initial scan are listed in the Appendix and the results in next Section.

Date of Search	6-7 April 2021
Search Concepts Used	'Covid' 'outdoor' 'semi-enclosed' 'transmission'
Search Completed by	Alison Cooper, Core Team, COVID-19 Evidence Centre

9. Results

Table 1: Rapid Evidence Summary - Summary of included evidence

Resource	Title	Annotation
Secondary / Tertiary research		
Health Information and Quality Authority (HIQA)	Public health measures and strategies to limit the spread of COVID-19 https://www.higa.ie/reports-and-publications/health-technology-assessment/public-health-measures-and-strategies-limit	<p>The report summarises public health measures taken across different countries, with very limited reference to semi-outdoor settings. Austrian strategy states that maximum 50% capacity is to be used for “closed and covered vehicles” (pg 35). France strategy states that certain retail (food stores or stores selling flowers, seeds, and fruit/vegetable plants) can remain open in the open and covered markets (pg 56).</p> <p>This report also mentions outdoor hospitality/dining but does not reference any partial cover; for example, Israel employs a ‘purple badge’, which allows settings like outdoor dining to remain open, adhering to certain restrictions (pg 21).</p>
	Activities or settings associated with a higher risk of SARS-CoV-2 transmission: Advice and Evidence Summary https://www.higa.ie/reports-and-publications/health-technology-assessment/activities-or-settings-associated-higher-risk	<p>This review was previously identified by the initial evidence scan. Although the HIQA evidence report does not refer to semi-outdoor settings, HTW has contacted HIQA to establish more information on whether semi-outdoors was a setting of interest in this review.</p>

Table 2. Results from Initial evidence scan of COVID-19 specific resources – Summary of research pertaining to COVID-19 transmission in outdoor/indoor settings

Resource	Year /author	Title	Annotation
Secondary / Tertiary research			
WHO database, Litcovid	*Bulfone et al. Nov 2020	Outdoor Transmission of SARS-CoV-2 and Other Respiratory Viruses, a Systematic Review. https://search.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/en/covidwho-949478	Five primary studies included. The odds of indoor transmission was very high indoors compared to outdoors (18.7 times; 95% CI 6.0, 57.9). High heterogeneity in study quality and individual definitions of outdoor settings. Factors such as duration and frequency of personal contact, lack of personal protective equipment and occasional indoor gathering during a largely outdoor experience were associated with outdoor reports of infection.
NCCMT rapid evidence reviews	Freeman et al April 2020	COVID-19 and outdoor safety: Considerations for use of outdoor recreational spaces https://www.nccmt.ca/covid-19/covid-19-evidence-reviews/125	Review article including an overview of SARS-CoV-2 transmission and how this may be influenced by the outdoor environment
	Bornstein et al May 2020	Being Outside Safely and COVID-19 https://www.nccmt.ca/covid-19/covid-19-evidence-reviews/84	Evidence summary – inventory of relevant articles with hyperlinks
Lit covid	Senatore et al Feb 2021	Indoor versus outdoor transmission of SARS-COV-2: environmental factors in virus spread and underestimated sources of risk. https://www.ncbi.nlm.nih.gov/research/coronavirus/publication/33585671	Review article, no details on method for article selection or appraisal. It summarizes current knowledge on transmission pathways including potentially underestimated factors that affect its propagation: ventilation systems, wastewater treatment and particulate matter.
L*VE evidence	*Weed 2020 PREPRINT	Rapid Scoping Review of Evidence of Outdoor Transmission of COVID-19 https://www.medrxiv.org/content/10.1101/2020.09.04.20188417v2	A rapid review including 14 studies which found very few examples of outdoor transmission of COVID-19 in everyday life among c. 25,000 cases considered, suggesting a very low risk. However risk of outdoor transmission increases when the natural social distancing of everyday life is breached, and gathering density, circulation and size increases, particularly for an extended duration.

	LeClerc Oct 2020	What settings have been linked to SARS-CoV-2 transmission clusters? https://wellcomeopenresearch.org/articles/5-83/v2	Article originally published May 2020, updated from publicly available database. Transmission clusters from 201 events were identified from 22 settings – mainly indoor.
Trip database	HIQA Advice Dec 2020	Wearing of face masks in the community to reduce the transmission of SARS-CoV-2 https://www.hiqa.ie/sites/default/files/2020-12/Use-of-face-masks-in-the-community_Advice-to-NPHET.pdf	Updated review article with evidence from July 2020 onwards – beneficial effect in reducing transmission, minimal evidence of harm. Consideration should be given to indoor and outdoor settings where physical distancing cannot be maintained.
	HIQA advice Nov 2020	What activities or settings are associated with a higher risk of SARS-CoV-2 transmission? https://www.hiqa.ie/sites/default/files/2020-11/Advice_Activities-and-settings-at-higher-risk-NPHET_meeting-12-November-2020.pdf	Indoor, high occupancy, poorly ventilated environments, where there is shouting and singing, insufficient use of face coverings, and prolonged contact present the highest risk of SARS-CoV-2 transmission.
UNCOVER USHER Institute	Evidence summary April 2020	Summary: What is the evidence for the importance of outdoor transmission and of indoor transmission of COVID-19? https://www.ed.ac.uk/files/atoms/files/uncover_002-01_summary_-_indoor_and_outdoor_transmission.pdf	No high-quality studies directly addressing the study question were identified. Evidence of community transmission across a range of (mainly indoor settings), precise transmission mechanisms remain unclear. There is an absence of evidence on transmission in outdoor settings.
	Evidence summary May 2020	Summary: What is the evidence for outdoor transmission of SARS-CoV-2? https://www.ed.ac.uk/files/atoms/files/uncover_002-03_summary_-_outdoor_transmission.pdf	Update of above review. SARS-CoV-2 is transmissible by contact (fomites) and droplets. It can be detectable and viable in aerosols. Epidemiological, microbiological, mechanistic and environmental evidence is presented for outdoor transmission.
Twitter (from Ruth)	*Cevik et al Sept 2020	SARS-CoV-2 transmission dynamics should inform policy https://amein.org.mx/downloads_nor/ciaa1442.pdf	An overview of dynamics affecting transmission including: host, contact, environment and socio-economic factors
Primary Research			
LitCovid	Belosi et al Dec 2020	On the concentration of SARS-CoV-2 in outdoor air and the interaction with pre-existing atmospheric particles. https://www.ncbi.nlm.nih.gov/research/coronavirus/publication/33307081	An estimate of outdoor concentrations in northern Italy was performed using a simple box model approach, based on an estimate of respiratory emissions. Results indicate very low (<1 RNA copy/m ³) average outdoor concentrations in public areas.

Google scholar	Clouston et al PREPRINT	Outdoor transmission of COVID-19: Analysis of windspeed https://www.medrxiv.org/content/10.1101/2021.02.05.21251179v1	Average windspeed and maximal daily temperature were derived from the National Oceanic and Atmospheric Administration. Negative binomial regression was used to model incidence, adjusting for susceptible population size. Warmer days with windspeed <5.5 MPH had increased COVID-19 incidence (aIRR=1.50, 95% C.I.=[1.25-1.81], P<0.001) as compared to days with average windspeed ≥5.5 MPH.)
	Rowe et al PREPRINT	Simple quantitative assessment of the outdoor versus indoor airborne transmission of viruses and covid-19 https://www.medrxiv.org/content/10.1101/2020.12.30.20249058v2.full.pdf	Modelling outdoor transmission using an 'airshed concept' to compare the probability of outdoor vs indoor transmission for similar situations.
National Institutes Covid-19 portfolio for preprints	Termansen et al PREPRINT	SARS-CoV-2 prevalence and transmission in swimming activities: results from a retrospective cohort study https://icite.od.nih.gov/covid19/searchwebapp/covid19/secure/fetchFile?appName=medbiorxiv&id=10.1101/2021.03.19.21253351&filename=2021.03.19.21253351.full.pdf	Questionnaire-based, retrospective cohort study of swimming activities in Danish swimming clubs over five months of 2020. Responses from 172 of the 298 invited swimming clubs (57.7%). The percentage of transmission episodes was 4.9% (competitive 8.9%; recreational 1.3%).
Ongoing secondary research			
PROSPERO	Vardoulakis et al	Airborne transmission of COVID-19 and other coronaviruses in indoor and outdoor environments: a systematic review https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=185563&VersionID=1381884	Australian National University. Anticipated completion date Dec 2020.

10. Additional information

10.1 Acknowledgements

The team would like to acknowledge Davey Jones and Jamie Kaijaks for their contributions towards this work.

Website: <https://healthandcareresearchwales.org/about-research-community/wales-covid-19-evidence-centre>

11. About the Wales COVID-19 Evidence Centre (WCEC)

The WCEC integrates with worldwide efforts to synthesise and mobilise knowledge from research.

We operate with a core team as part of [Health and Care Research Wales](#), are hosted in the [Wales Centre for Primary and Emergency Care Research \(PRIME\)](#), and are led by [Professor Adrian Edwards of Cardiff University](#).

The core team of the centre works closely with collaborating partners in [Health Technology Wales](#), [Wales Centre for Evidence-Based Care](#), [Specialist Unit for Review Evidence centre](#), [SAIL Databank](#), [Bangor Institute for Health & Medical Research/ Health and Care Economics Cymru](#), and the [Public Health Wales Observatory](#).

Together we aim to provide around 50 reviews per year, answering the priority questions for policy and practice in Wales as we meet the demands of the pandemic and its impacts.

Director:

Professor Adrian Edwards

Contact Email:

WC19EC@cardiff.ac.uk

Website: <https://healthandcareresearchwales.org/about-research-community/wales-covid-19-evidence-centre>

11. Appendix– Resources searched

Appendix 1 – Rapid Evidence Summary: Resources searched

Resource	Reviewer comment on resource
COVID-19 resources	
<u>Cochrane COVID Review Bank</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>VA-ESP</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>L·OVE – COVID-19 (L*VE by Epistemonikos)</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>Collabovid</u>	We did not identify any evidence on semi-outdoors settings from this source.
HTA organisations	
<u>Healthcare Improvement Scotland</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>Health Technology Assessment Group</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>Health Information and Quality Authority (HIQA)</u>	Public health measures and strategies to limit the spread of COVID-19 https://www.hiqa.ie/reports-and-publications/health-technology-assessment/public-health-measures-and-strategies-limit
	Activities or settings associated with a higher risk of SARS-CoV-2 transmission: Advice and Evidence Summary https://www.hiqa.ie/reports-and-publications/health-technology-assessment/activities-or-settings-associated-higher-risk
<u>EUnetHTA</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>International HTA Database</u>	We did not identify any evidence on semi-outdoors settings from this source.
UK guidelines and guidance	
<u>SIGN</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>NICE</u>	We did not identify any evidence on semi-outdoors settings from this source.
Secondary literature and economic evaluations	
https://www.epistemonikos.org/en/	We did not identify any secondary evidence on semi-outdoors settings from this source.
https://www.tripdatabase.com/	We did not identify any evidence on semi-outdoors settings from this source.
<u>Cochrane library</u>	We did not identify any evidence on semi-outdoors settings from this source.
<u>Medline (via Ovid or Pubmed)</u>	We did not identify any secondary evidence on semi-outdoors settings from this source.

Primary studies	
https://www.epistemonikos.org/en/	We did not identify any primary evidence on semi-outdoors settings from this source.
https://www.tripdatabase.com/	We did not identify any primary evidence on semi-outdoors settings from this source.
Cochrane library	We did not identify any primary evidence on semi-outdoors settings from this source.
Medline	We did not identify any primary evidence on semi-outdoors settings from this source.
Ongoing primary or secondary research	
PROSPERO database	We did not identify any ongoing secondary evidence on semi-outdoors settings from this source.
Clinicaltrials.gov	We did not identify any ongoing primary evidence on semi-outdoors settings from this source.
Other	
Google/google scholar	We did not identify any evidence on semi-outdoors settings from this source.

Appendix 2 - Resources searched for the initial evidence scan of COVID-19 transmission in outdoor/indoor settings

Resource	Reviewer comment on resource
Wales specific information	
Public Health Wales Observatory Welsh: http://www.arsyllfaiechydcyhoedduscymru.wales.nhs.uk/tystiolaeth-gryno-covid English: http://www.publichealthwalesobservatory.wales.nhs.uk/coronavirus-covid-19-publications	zero
HCRW https://healthandcareresearchwales.org/covid-19-updates	zero
NHS Wales e-library – Coronavirus COVID-19 Subject Guide for NHS Wales Health and Care Professionals https://elh.nhs.wales/news1/latest-news/coronavirus-covid-19-subject-guide-for-nhs-wales-health-and-care-professionals/	zero
Velindre NHS Trust Resources http://www.velindre-tr.wales.nhs.uk/covid-19-resources	zero
North Wales Social Care and Well-being Services Improvement Collaborative – Latest information on Novel Coronavirus (COVID-19) https://www.northwalescollaborative.wales/latest-information-on-novel-coronavirus-covid-19/	zero
Wales Centre for Public Policy https://www.wcpp.org.uk/	zero
UK specific information	
NICE https://www.nice.org.uk/guidance/conditions-and-diseases/respiratory-conditions/covid19/products?Status=Published	zero
Healthcare Improvement Scotland http://www.healthcareimprovementscotland.org/our_work/coronavirus_covid-19/evidence_for_scotland.aspx	zero
Public Health England https://phelibrary.koha-ptfs.co.uk/coronavirusinformation/	zero
Health Information and Quality Authority https://www.hiqa.ie/reports-and-publications/all-publications?field_pub_published_year_target_id=All&keyspub=covid&=Apply	HIQA evidence summaries
National Institutes Covid-19 portfolio for preprints https://icite.od.nih.gov/covid19/search/	Termansen et al PREPRINT
UK research and development road map https://www.gov.uk/government/publications/uk-research-and-development-roadmap UKRI	zero

https://coronavirusexplained.ukri.org/en/	
PROSPERO https://www.crd.york.ac.uk/prospero/#searchadvanced	<i>Malekinejad et al (published as Bulfone) Vardoulakis et al</i>
NIHR Innovation Observatory http://www.io.nihr.ac.uk/covid-19-updates/	zero
SAGE https://www.gov.uk/government/organisations/scientific-advisory-group-for-emergencies	UNCOVER evidence review
Evidence hubs	
Cochrane library https://www.cochranelibrary.com/covid-19 Cochrane study register https://covid-19.cochrane.org/	(Title abstract keyword “covid outdoor”) Zero
WHO https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov	(Systematic review and english filter) Bulfone et al
McMaster Covid-end rapid evidence reviews https://www.mcmasterforum.org/networks/covid-end McMaster Plus https://plus.mcmaster.ca/COVID-19/	(Covid-end inventory PH measures and economic and social responses) Zero
National Collaborating Centre for Methods and Tools https://www.nccmt.ca/knowledge-repositories/covid-19-evidence-reviews	Rapid evidence reviews Bornstein et al and Freeman et al 2020
Evidence aid https://www.evidenceaid.org/coronavirus-covid-19-evidence-collection/	Zero
LitCovid https://www.ncbi.nlm.nih.gov/research/coronavirus/	(cannot select review filter) Bulfone et al 2020 Belosi 2020 Senatore et al 2021
L-OVE -Covid-19 https://app.iloveevidence.com/loves/5e6fdb9669c00e4ac072701d	(systematic and broad syntheses filters) Bulfone et al 2020 Weed et al 2020 PREPRINT LeClerc et al 2020
Epistemonikos https://www.epistemonikos.cl/living-evidence/	Zero

Campbell collaboration systematic reviews https://www.campbellcollaboration.org/blog/covid19-campbell-evidence.html	Zero
TRIP database https://www.tripdatabase.com/search?criteria=covid-19+or+%22novel+coronavirus%22	HIQA evidence summaries
Covid Evidence Database https://covid-evidence.org/	(no easy search, uses L*OVE database) Zero
COVID-NMA https://covid-nma.com/	(trials) zero
Joanna Briggs Institute https://joannabriggs.org/covid-19	(no easy search) zero
Usher Institute https://www.ed.ac.uk/usher/uncover	2 Evidence summaries
Centre for Evidence Based Medicine Oxford https://www.cebm.net/oxford-covid-19-evidence-service/	Zero
The Strategy Unit https://www.strategyunitwm.nhs.uk/covid19-and-coronavirus	Zero
VA Evidence Synthesis Programme http://covid19reviews.org/	UNCOVER evidence summaries NCCMT evidence summary
Norwegian Institute for Public Health https://www.fhi.no/en/gk/systematic-reviews-hta/map/	Zero
Unicef Children and Covid19 Research Library https://www.unicef-irc.org/covid-children-library	Zero
EPPI Centre http://eppi.ioe.ac.uk/cms/Projects/DepartmentofHealthandSocialCare/Publishedreviews/COVID-19Livingssystematicmapoftheevidence/tabid/3765/Default.aspx	(Systematic review filter) Zero
ECRI https://www.ecri.org/coronavirus-covid-19-outbreak-preparedness-center	Zero
General Resources	
BMJ Coronavirus hub https://www.bmj.com/coronavirus	Zero
Centers for disease control and Prevention https://www.cdc.gov/library/researchguides/2019novelcoronavirus/researcharticles.html	Zero
Academia Europaea https://www.ae-info.org/	zero

Ariadne labs Boston https://www.ariadnelabs.org/	zero
Lenus, The Irish Health Repository https://www.lenus.ie/handle/10147/627286	HIQA evidence summaries
Canadian Agency for drugs and technologies in health https://covid.cadth.ca/	zero
New South Wales Agency for clinical innovation https://aci.health.nsw.gov.au/covid-19/critical-intelligence-unit/evidence-check	zero
Sante Publique france Syntheses rapides des connaissances https://www.santepubliquefrance.fr/dossiers/coronavirus-covid-19/covid-19-etat-des-connaissances-et-veille-documentaire	zero
CYTEL Global clinical trials tracker https://www.covid-trials.org/	zero
Google scholar https://scholar.google.co.uk/	(all hits first 2 pages) Weed et al PREPRINT Clouston et al PREPRINT Bulfone et al Freeman et al Senatore et al LeClerc et al Rowe et al PREPRINT
Twitter (via team member)	Weed et al Bulfone et al Cevik et al