

Educational facilities mid-term review – a focus on primary and post-primary schools. The public health perspective

Office of the Clinical Director of Health Protection

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Consensus of Consultants in Public Health Medicine:

Schools are places of education, equity, opportunity and healthcare and children should be afforded the opportunity of education as a high priority. At population level this is important for the health and wellbeing of our children now and for their social determinants of health. Investigation and control of Covid-19 should be undertaken in a timely fashion. Identifying close contacts is important and should be focussed to those actually at higher risk of exposure to infection, in consideration of the implementation of infection mitigation measures by schools. Widespread routine exclusion of students is undesirable for their educational and developmental needs. National data on Covid-19 positivity of close contacts identified within the schools setting process for the first half-term 24th August to 0930 23rd October 2020 are reassuring.

Mid-term review

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*The Departments of Public Health; Contact Management Programme; End to End Testing for schools;
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1) Introduction

Many countries have determined the need for schools to re-open and stay open as a matter of national priority. The importance of schools for education, safety, health-care and social learning have been widely documented, including here in Ireland, with a report produced by the RCPI on the National Clinical Review on the Impact of COVID Restrictions on Children and Guidance on Reopening of Schools and the Normalisation of Paediatric Healthcare Services in Ireland¹.

There are almost one million students attending educational facilities in the primary and post primary sectors, across approximately 4,000 schools, in which close to 100,000 staff are employed.

The importance and significance of ensuring educational facilities safely open to pupils, and remain safely open for pupils and staff, is acknowledged across society and supported within the Public Health Medical community and the health services at large. Educational facilities are communities providing for not only the educational needs of pupils, but also many of their holistic, health and pastoral needs. It is a setting whereby social interaction and physical activity can be learned and occur in a place of safety, support and warmth.

- It is important to note that in the months since the Covid-19 pandemic has occurred, we have learned that
- Children seem more likely than adults to have no symptoms or to have mild disease.
- Symptoms in children include cough, fever, shortness of breath, sore throat, anosmia, ageusia or dysgeusia
- Investigation of cases identified in school settings suggest that child to child transmission in schools is uncommon and not the primary cause of Sars-CoV-2 infection in children, particularly in preschool and primary schools
- Children are rarely identified as the route of transmission of infection in to the household setting
- Children are not more likely than adults to spread infection to other people
- There are some recent reports that the virus that causes Covid-19 infection may trigger a rare inflammatory disease, Paediatric Inflammatory Multisystem Syndrome, in some children. International research in to this rare disease and its association with Covid-19 is ongoing.

2) International experiences of returning to schools:

The international experience of returning children to school during the Covid-19 pandemic, has shown that it can be done safely. With consideration and diligence to infection, prevention and control measures, and public health actions for confirmed cases of Covid-19, schools have not been identified as amplification settings for the infection.

Danish schools re-opened mid-April 2020 and the experience from Denmark presented to the RCPI outlined several important points. As part of their re-opening they ask that children stay at home when ill; that they undertake hand hygiene regularly throughout the school day; that they have physical distancing of 1m; they avoid crowding by entrances / toilets etc through school organisation; the schools organise drop zones for parents to avoid crowding, and they have 'nudging' as reminder for distance and hygiene awareness. They do not ask anyone to use masks or face-coverings (staff or students). Since re-opening, they saw a continuous decrease of cases of

¹ National Clinical Review on the Impact of COVID Restrictions on Children and Guidance on Reopening of Schools and the Normalisation of Paediatric Healthcare Services in Ireland, National Clinical Programme for Paediatrics and Neonatology, Clinical Design and Innovation, Health Service Executive, August 2020 Final Version
https://hse.drsteevenslibrary.ie/ld.php?content_id=33142467

Covid-19 – in line with the decrease in cases in many European countries at that time. However, with their schools open – this trend was not flattened or reversed, signalling that schools were not sites of amplification and spread of Covid-19. From analysis of confirmed testing by professional groups, teachers are not at increased risk of infection than any other professional group. They do not undertake any systematic testing of staff or pupils. Medically at risk teachers are asked to ensure they are attentive to physical distancing and hygiene measures. Medically vulnerable children are allowed to attend school. They have still identified children only as a small proportion of overall cases, and not increased with schools re-opening. Outbreaks are not reported in Denmark and therefore no detail on school outbreaks nationally.

The UK² published a cross-sectional analysis on Covid-19 transmission within educational settings in August 2020 and concluded that ‘Sars-CoV-2 infections and outbreaks were uncommon in educational settings during their first month after easing of national lockdown in England. The strong correlation with regional SARS-CoV-2 incidence emphasises the importance of controlling community transmission to protect educational settings. Additional interventions should focus on reducing transmission in and among staff members’.

A focused literature review was undertaken (see Appendix 1) which concluded ‘the evidence surrounding transmission of SARS-CoV-2 in schools is limited and multiple knowledge gaps exist. Firstly, there is a lack of empiric data on the transmission of SARS-CoV-2 in school settings. From the limited data that is available, it is clear that large outbreaks of SARS-CoV-2 in secondary schools can occur. However, they appear to be uncommon and are less likely to occur and are less likely to involve many secondary cases when precautions are in place (e.g. hand hygiene, social distancing, use of face coverings, etc.). Secondly, children appear to be less susceptible to infection with SARS-CoV-2 than adults, but it is unknown whether transmission of SARS-CoV-2 by children is lower than adults. Finally, the evidence on the effectiveness of school closures to reduce community transmission and overall death rates from COVID-19 is somewhat conflicting, but overall studies suggest that they have a very modest effect on reducing both community transmission and overall death rates.’

3) National / International definitions of close contacts in schools:

A review from some key national and international documents was undertaken with respect to the definitions applied of close contacts within a school setting.

The documents pertaining to close contact are outlined here from Ireland, UK, ECDC and CCDC. More details on these recommendations internationally can be found in appendix 2.

Ireland:

[HPSC close contacts guidelines](#) as per 19.10.20

- Any individual who has had greater than 15 minutes face-to-face (<2m distance*) contact with a case, in any setting.
- For those contacts who have shared a closed space with a case for longer than two hours, a risk assessment should be undertaken taking into consideration the size of the room, ventilation and the distance from the case. This may include office and school settings and any sort of large conveyance.

²SARS-CoV-2 infection and transmission in educational settings: cross-sectional analysis of clusters and outbreaks in England. Ismail, S; Saliba, V; Bernal, J; Ramsay, M; Ladhani, S.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/911267/School_Outbreaks_Analysis.pdf

A clinical PHRA will be undertaken for **all** educational facilities where a confirmed case has attended whilst infectious. It is assumed because of the length of the school day, they will have been within a closed space for at least two hours. As schools are controlled environments, the 15 minutes at <2m distance will take account of wearing a face-covering, as per the NPHET recommendations for face-covering use within educational facility settings.

**A distance of 1 metre is generally regarded as sufficient to minimize direct exposure to droplets however, for Public Health purposes, a close contact definition of 2 metres has been specified (CDC).*

UK:

Schools specific contact guidance from September 2020:

- Early years (typically junior infants to approximately 1st class): Usually children who shared a classroom with the case during their infectious period would be considered contacts, on the basis that social distancing is assumed not possible. Check friendship groups. Identify contacts as children who are known to have had definite face to face contact with them during their infectious period. Check for staff members who have had close contact with the case during the infectious period.
- Key stage 2 (approximately 2nd class to 4th Class): If children mix a lot within the classroom then the whole class would usually be defined as contacts. If there is a seating plan for all lessons and it is felt that social distancing has been observed in the classroom, then look at seating plans instead. Identify contacts as children who sat within 2 metres of the case during their infectious period in school. Check friendship groups / staff / break times / group activities etc. If the case is a teacher, then social distancing may have been possible.
- Key stage 3,4,5 and onward is children aged 11 plus (approximately 5th , 6th primary in Ireland and secondary school children). **‘The default should NOT be to self-isolate the whole class or bubble in a secondary setting or course/department in a further education college’.** Look at the student timetable to identify classes during the infectious period. Look at seating plans. Identify contacts as students who sat within 2 metres of the case during their infectious period in school/FE college. Check friendship groups / staff / breaktimes / group activities etc. If the case is a teacher, then social distancing may have been possible.

Of note face coverings not recommended in education settings in UK; asymptomatic Covid-19 detected cases are deemed infectious from date of test. No testing of close contacts is undertaken.

ECDC:

Last document published in August 2020. Of note the document makes no reference to mitigation measures e.g. distancing, face coverings, hand hygiene, respiratory etiquette; pod systems etc.

Close contact – most relevant pieces: Having face-face contact with a confirmed case of Covid-19 within 2m for more than 15 minutes. In a closed environment with case for more than 15 minutes. Travel together for more than 15 minutes.

CDC:

Classification of an individual as a close contact is based on many factors and should be assessed on a case-by-case basis. In the context of COVID-19, the definition of a close contact is someone who was within 6 feet of a person diagnosed with COVID-19 for a total of 15 minutes or more. 'Factors to consider when defining close contact include proximity, the duration of exposure (e.g., longer exposure time likely increases exposure risk), and whether the exposure was from a person with symptoms (e.g., coughing likely increases exposure risk). '

Conclusions: Guidelines and recommendations for schools vary internationally. The CDC and ECDC guidance would likely result in frequent larger scale exclusions of classes. ECDC guidance is currently under review. The UK approach is similar to that currently taken in Ireland, although Ireland undertakes greater testing of close contacts and has recommendations for face-coverings amongst other mitigation measures.

4) Regional review of experiences and application of close contact guidelines

The first half-term has required intense input from Departments of Public Health to support schools from a Covid-19 perspective. With a sharp increase in cases of Covid-19 nationally, many cases have naturally been identified amongst those routinely attending educational facilities, either as staff or students.

Schools would appear to have implemented the recommended measures as laid out in the gov.ie website and HPSC guidance generally very well. It was noted that whilst there is national focus and angst around the schools being open and Covid-19 cases, many of the principals have been very co-operative in their approach and understanding of the public health approach and rationale for measures being undertaken. Schools have been identified as a controlled environment from a public health perspective, particularly within the classroom setting.

Regional application

Each Dept PH region has undertaken a clinical PHRA with the educational facilities for cases of Covid-19 who have been identified as being within the school during the infectious period (defined as 48 hours prior to symptom onset, or 24 hours prior to test for asymptomatic cases).

Most Departments of Public Health have not routinely required the exclusion of classes, reflecting the mitigation measures put in place by the schools and the assessment of these as part of the clinical Public Health Risk Assessment. Departments of Public Health have informed that primary schools have seen the largest requirement for class exclusions; because e.g. the integrity of the pod structure can be harder to maintain. Secondary schools have seen small numbers only of classroom contacts excluded usually. Some incidents have required larger class exclusions, but limited case positivity has been subsequently identified among close contacts.

The importance of friendship circles, lunchtime activities, break time activities and supervision have been highlighted as areas where close contacts have often been identified. The staff room has not infrequently been highlighted as an area of concern for potential for infection transmission and resulting in issues around resilient staffing for schools if a significant number of staff members being close contacts are identified. Out-of-school activities, including transportation to and from school,

house-sharing for staff / siblings and likely external sources of infection for groups of students e.g. social activities around sports training have been identified as areas for clear consideration and impact in the school.

The HSE Covid-19 tracker App has been triggered through contact within the educational facility in some schools, and has caused confusion for teachers and principal. The information identified from the HSE App should inform the PHRA. However, the determination of close contacts is as per PHRA, because the PHRA is a carefully considered determination of likely disease transmission within the setting, taking account of case and close contact factors, in conjunction with mitigating measures / walls / perspex screens etc

The HSE Schools Working Group has supported the response to Covid-19 within the educational facilities, through the provision of a Central Administration Team for the busiest departments initially and ultimately to be rolled out to all departments. It has further supported the necessary communications and documents which have been required over the course of the first half term.

5) Data Analysis

Routine data are collected on confirmed cases of Covid-19 and are reported on as part of national data, as per HPSC. For close contacts identified through the education setting, the HSE has a bespoke schools testing pathway, and all tests going through this pathway allow close contact positivity to be routinely interrogated. *Data presented for tables 1,2 and 3 are as of 0930 on 28.10.20.*

Table 1 below outlines the overall activity to date through the schools testing pathway. There are approximately 4000 schools nationally, therefore approximately 18% of schools have required a clinical PHRA and onward testing.

Table 1: Schools referred to Departments of Public Health, through the schools testing pathway

PH Department	No. of Facilities where some testing has been undertaken	%
East	341	45%
Midlands	60	8%
Mid-West	54	7%
North East	81	11%
North West	46	6%
South	78	10%
South-East	29	4%
West	68	9%
Total	757	100%

Table 2: Facility type, close contacts and testing positivity, through the schools testing pathway

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected	No. Pending	No. not Tested/ Invalid
Childcare Facility	158	3105	154	5.0%	2781	161	9
Post Primary	197	4887	97	2.0%	4536	244	10
Primary	364	9532	258	2.7%	8974	284	16
Special Education	38	866	29	3.3%	835	1	1
Overall	757	18390	538	Av. 2.9%	17126	690	36

The 538 detected cases were identified across 189 Schools. 91 individuals are over 18 and the remaining 447 are under 18.

Comparison with close contacts nationally

Nationally the positivity of testing for close contacts in the community is approximately 10%.

Close contact positivity by sector and staff/students.

Table three identifies the close contact testing positivity by staff/student across the different educational sectors.

Amongst all tested through this pathway 86.9% tested are students, the positivity of identified close contacts is 2.8% amongst primary students; 2.1% amongst post-primary students; 3.4% amongst SEN sector. The remaining 13.1% tested are adults, with a positivity of identified close contacts of 3.0% amongst the primary students; 2.6% amongst post-primary students and 3.1% amongst SEN.

Table 3: Testing by adults and staff, across different educational sectors, through the schools testing pathway

School Type	Age	Detected	Not Detected	Pending	Other	Total Tested
Primary	0-17	224	7869	142	12	8247
	>18	28	915	10	2	955
Post Primary	0-17	84	3965	8	10	4067
	>18	13	496	52	0	561
Special Education	0-17	15	424	10	1	450
	>18	13	401	0	0	414
Total		377	14070	222	25	14694

School Closures – To date, Departments of Public Health have requested <5 primary, post-primary and SEN educational facilities, out of 599 facilities a PHRA and onward testing has been required in to close for reasons of public health. Departments of Public Health are aware of some schools which have voluntarily closed temporarily due to staffing resilience secondary to exclusions.

Intra-school transmission

Provisional data were presented from seven regional Departments of Public Health. Assigning intraschool transmission can be challenging and remains a judgement based on epidemiological investigations. Whole genome sequencing has been requested on several of these cases.

Across the seven regions served by the public health departments data were available for, there were 69 instances where some spread of infection within educational facilities (primary, post primary or SEN) was deemed plausible or likely. This follows 554 schools serving these sectors requiring a PHRA and onward testing, (data until Friday 23rd October 2020). Assuming that schools are evenly distributed across the eight departments of public health this would cover approximately 3467 schools and 554 facilities which required a PHRA. Therefore 1.9% of primary, post-primary and SEN schools had any plausible or likely transmission of Covid-19 within the facilities, 12.5% of the facilities tested and investigated. This spread involved 194 staff and students (24 clearly designated as staff), 0.02% of all staff and students attending educational facilities nationally. Where any plausible or likely transmission did occur within the facility, approximately 3 other cases were identified.

It was identified that there was not consistency with assigning outbreak codes to CIDR nationally. Some Departments were assigning when they were required to undertake close-contact testing, or when resulting more than one case for a facility, regardless of the source of that case of transmission.

Below table 4 outlines the proportion of confirmed cases amongst children August – October 2020, National data HPSC. This has remained a consistent proportion in August before children returned to school, and in September and October.

Table 4: Proportion of confirmed cases amongst children August – October 2020, National data HPSC

Analyses of confirmed COVID-19 cases in school aged children (4-18 Years)

Based on data up to midnight 18/10/2020 extracted from the Computerised Infectious Disease Reporting System (CIDR) at 9.15am on 19/10/2020

Overall number of cases in school aged children

		Confirmed cases in children (aged 4-18 years)	Total number of confirmed cases reported in Ireland across age groups	Proportion
August	Week 32 (2/8/2020 – 8/8/2020)	60	540	11.11%
	Week 33 (9/8/2020 – 15/8/2020)	82	546	15.02%
	Week 34 (16/8/2020 – 22/8/2020)	113	711	15.89%
	Week 35 (23/8/2020 – 29/8/2020)	117	796	14.70%
September	Week 36 (30/8/2020 – 5/9/2020)	135	912	14.80%
	Week 37 (6/9/2020 – 12/9/2020)	202	1304	15.49%
	Week 38 (13/9/2020 – 19/9/2020)	318	1948	16.32%
	Week 39 (20/9/2020 – 26/9/2020)	277	2060	13.45%
	Week 40 (27/9/2020 – 3/10/2020)	357	3036	11.76%
	Week 41 (4/10/2020 – 10/10/2020)	643	4481	14.35%
	Week 42 (11/10/2020 – 17/10/2020)	1194	7469	15.99%
	Week 43* (18/10/2020 – 24/10/2020)	213	1143	18.64%

*Note cases for week 43 (week ending Saturday 24th of October) are not complete

14.35% (372/2593) of cases in the period weeks 32-35 were aged 4-18 years.

14.94% (3339/22353) of cases in the period week 36-43* were aged 4-18 years.

Table 7: Proportion of confirmed cases amongst primary school aged children August – October 2020, National data HPSC

Primary School Aged (4-12 Years)

		Confirmed cases in primary school aged children (aged 4-12 years)	Total number of cases reported in Ireland across age groups	Proportion
August	Week 32 (2/8/2020 – 8/8/2020)	28	540	5.19%
	Week 33 (9/8/2020 – 15/8/2020)	47	546	8.61%
	Week 34 (16/8/2020 – 22/8/2020)	54	711	7.59%
	Week 35 (23/8/2020 – 29/8/2020)	53	796	6.66%
September	Week 36 (30/8/2020 – 5/9/2020)	80	912	8.77%
	Week 37 (6/9/2020 – 12/9/2020)	114	1304	8.74%
	Week 38 (13/9/2020 – 19/9/2020)	143	1948	7.34%
	Week 39 (20/9/2020 – 26/9/2020)	137	2060	6.65%
	Week 40 (27/9/2020 – 3/10/2020)	142	3036	4.68%
	Week 41 (4/10/2020 – 10/10/2020)	242	4481	5.40%
	Week 42 (11/10/2020 – 17/10/2020)	474	7469	6.35%
	Week 43* (18/10/2020 – 24/10/2020)	100	1143	8.75%

*Note cases for week 43 (week ending Saturday 24th of October) are not complete

7.02% (182/2593) of cases in the period weeks 32-35 were aged 4-12 years.

6.41% (1432/22353) of cases in the period week 36-43* were aged 4-12 years.

Table 7: Proportion of confirmed cases amongst post primary (secondary school) aged children August – October 2020, National data HPSC

Secondary School Aged (13-18 Years)

		Cases in Secondary School Aged Children (aged 13-18 years)	Total number of cases reported in Ireland across age groups	Proportion
August	Week 32 (2/8/2020 – 8/8/2020)	32	540	5.93%
	Week 33 (9/8/2020 – 15/8/2020)	35	546	6.41%
	Week 34 (16/8/2020 – 22/8/2020)	59	711	8.30%
	Week 35 (23/8/2020 – 29/8/2020)	64	796	8.04%
September	Week 36 (30/8/2020 – 5/9/2020)	55	912	6.03%
	Week 37 (6/9/2020 – 12/9/2020)	88	1304	6.75%
	Week 38 (13/9/2020 – 19/9/2020)	175	1948	8.98%
	Week 39 (20/9/2020 – 26/9/2020)	140	2060	6.80%
	Week 40 (27/9/2020 – 3/10/2020)	215	3036	7.08%
	Week 41 (4/10/2020 – 10/10/2020)	401	4481	8.95%
	Week 42 (11/10/2020 – 17/10/2020)	720	7469	9.64%
	Week 43* (18/10/2020 – 24/10/2020)	113	1143	9.89%

*Note cases for week 43 (week ending Saturday 24th of October) are not complete

7.33% (190/2593) of cases in the period weeks 32-35 were aged 13-18 years.

8.53% (1907/22353) of cases in the period week 36-43* were aged 13-18 years.

6) Discussions

Data analysis are reassuring that case positivity amongst identified contacts is low, despite the high levels of community transmission experienced across Ireland, particularly in Dublin, during October.

To date, approximately 18% of schools nationally have required a clinical PHRA and onward testing for close contacts. Over 18,390 close contacts have been tested through the schools testing system, since schools reopened at the end of August 2020, across all sectors, including CCFs.

Nationally at primary level, since schools re-opened 2.7% of identified close contacts have tested positive for Covid-19. The corresponding figure for the post primary sector is 2.0%.

The national comparison for positivity amongst close contacts (10%) is also reassuring, further highlighting the safety of the controlled school environment. Less than five schools have been closed secondary to public health concerns.

Staffing resilience has proven a problem for some schools, and clear attention to 'pods' for staffing and resilient rosters should be given to minimise the numbers of close contacts which may be identified amongst staff from interactions outside the classroom. The HSE contact management programme and the App itself needs proactive messaging available to staff in educational facilities to ensure they are aware that the PHRA will determine close contacts in this setting.

Amongst all tested through this pathway 86.9% tested are students, the positivity of identified close contacts is 2.8% amongst primary students; 2.1% amongst post-primary students; 3.4% amongst SEN sector. The remaining 13.1% tested are adults, with a positivity of identified close contacts of 3.0% amongst the primary sector; 2.6% amongst post-primary and 3.1% amongst SEN.

The data on intra-school transmission provided by seven departments of public health also reassure that widespread transmission is not occurring. Where transmission may likely have occurred, the onward numbers infected have been 3 cases. Areas of leisure time, breaks, transport and particularly the staff room need very careful attention, to ensure all IPC and infection mitigation measures are maintained.

The proportion of confirmed cases who are children has remained steady since the schools re-opened at the end of August 2020. Whilst the numbers who have tested positive for Covid-19 have substantially increased, as the numbers for all cases has increased in this second wave of Covid-19 infection, the proportion of children has not increased. This further gives confidence that schools are not acting as amplification settings, in line with the testing positivity data.

The strong belief that schools are places of education, equity, opportunity and healthcare is coupled with the belief that they are places of safety during Covid-19 with the clear focussed attention to mitigating measures and IPC recommendations as laid out in the national recommendations. Children should be afforded the opportunity to continue their education as a high priority, with minimum unnecessary interruptions. The impact on Departments of Public Health to provide the necessary service to the schools is severely challenged with the second wave of Covid-19 infections and the many other competing areas of clinical need for Departments of Public Health to deal with. Further supports to their schools teams are required, and full roll out nationally of the Central Administration Team is required.

7) Recommendations (and updates)

- Schools should remain open
- All recommendations for risk mitigation and infection prevention and control should continue
- Ensuring there is not laxity and slippage in implementation of these measures within educational facilities must continue (work with educational partners on supporting this)
- Consideration of break time and staffroom opportunities to occur whilst maintaining the required IPC and mitigation measures, and minimising numbers of potential close contacts within these settings (work with educational partners on supporting this)
- Proactive and clear messaging around the HSE Covid-19 App needs to occur so staff in educational facilities are aware this informs the PHRA but the determination of close contacts is made by the PHRA (undertaken with National App group)
- Specific definitions for close contacts within educational facilities should be refined based on the data and experiences from the first half term (done, as per below)
- CIDR outbreak codes should only be assigned to schools where it is believed there is intraschool transmission identified (consistent approach discussed with Schools Teams)
- Data review should continue, and relevant actions taken as required (ongoing)
- Departments of Public Health require further supports to continue to deliver the level of support required for the schools (in progress – Schools teams strengthened by HSE redeployments and Department for Education Inspectorate redeployments (27.5WTE)nationally; HSE Principals line established providing 7/7 service)
- Re-affirming to parents, pupils and staff that transport to and from school occurs amongst staff and students in a manner that is compliant with national public health recommendations (work with educational partners on supporting this)
- Re-affirming to parents, pupils and staff that adherence to national public health measures is required to keep schools with low levels of Covid-19 infection (work with educational partners on supporting this)
- Central Administration Team supports to Departments of Public Health should be rolled out nationally as soon as feasibly possible (being undertaken)
- Broader partnership working with national bodies supporting educational facilities should continue and increase to assist with the issues around Covid-19 and educational facilities

8) Definitions of close contacts in an educational facility

Case - A confirmed case of Covid-19 notified to the Medical Officers of Health, HSE.

Contact - As per current [HPSC close contacts guidelines](#) a clinical PHRA will be undertaken for **all** educational facilities where a confirmed case has attended whilst infectious. It is assumed because of the length of the school day, they will have been within a closed space for at least two hours.

Close contacts definition applied:

- Any person who has had face to face contact for <1m with a confirmed case of Covid-19 for >15 minutes in a school day.
- any person who has been between 1 and 2 metres from a confirmed case of Covid-19 for >15 minutes in a school day with consideration of other *mitigation measures* e.g. face-covering , pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)

Contacts are assessed from contact with a confirmed case of Covid-19 during their infectious period - 48 hours before the onset of symptoms if symptomatic, or 24 hours before the test for COVID-19 was taken in those who are asymptomatic.

The below outlines points which will be considered when identifying contacts that meet this definition - as part of the PHRA with the case / educational setting.

Of note: the determination of close contacts will be following the PHRA and the determination of the Medical Officer of Health.

Outbreaks

For the purposes of defining an outbreak and reporting on CIDR - In an educational facility, this is two or more confirmed cases of Covid-19 among students or staff where intra-school transmission is deemed the most likely source of infection following epidemiological investigation for the cases identified. Cases identified within educational facilities that have sources of infection which are most likely outside of the school setting following the epidemiological investigation, will therefore not be reported as outbreaks through CIDR.

9) Appendices

Appendix 1

International literature search.

Medline search:

exp Child/ OR exp Adolescent/ OR exp Minors/ OR exp Child, Preschool/ OR teen*.mp. OR pre-teen*.mp. OR boy*.mp. OR girl*.mp. AND exp Schools/ OR kindergarten.mp. OR educational setting.mp. OR exp Teaching/ AND covid-19.mp. OR SARS-Cov-2.mp. OR severe acute respiratory syndrome coronavirus 2.mp. OR coronavirus disease 2019.mp. OR 2019-nCoV.mp. OR SARS-CoV-2019.mp.

limit to (english language and humans and yr="2019 -Current")

Studies identified through search of MEDLINE: 104.

Additional studies identified through snowball searching: 8.

The evidence on the transmission of SARS-CoV-2 in school settings is still evolving and there are many areas in which knowledge gaps exist.

There is evidence to suggest that younger children are less susceptible to infection from COVID-19 than adults. A systematic review and meta-analysis comprising 41,640 children and adolescents and 268,945 adults demonstrated that children and adolescents under the age of 20 years had 44% lower odds of secondary infection with SARS-Cov-2 compared with adults.(1) This lower susceptibility to infection was most marked in children younger than 10–14 years. Unfortunately, the data were insufficient to establish whether transmission of SARS-CoV-2 by children is lower than adults.

There have been published reports of significant outbreaks of COVID-19 in secondary schools in Israel,(2) and New Zealand(3) and a published, but not peer-reviewed, closed cohort study demonstrating widespread transmission of COVID-19 in a secondary school in France based on the results of serologic testing of students, staff and parents and siblings of students eight weeks an outbreak in school.(4) Of note, there were limited measures in place to mitigate the spread of COVID-19 in schools during the outbreaks in Israel and France. The outbreak in Israel coincided with a heatwave which exempted students from wearing face coverings at school. Furthermore, classrooms were overcrowded (with 35-38 students in each classroom), there was continuous use of air-conditioning inside the school and there was significant mixing between classes. The outbreak in France occurred in late January 2020 when precautionary measures to prevent the transmission of COVID-19 in schools were not in place.

While significant outbreaks of COVID-19 in secondary schools have been reported, other studies suggest that these are uncommon events. Surveillance data from Germany from March–August 2020, a period during which schools in Germany were initially fully open, then closed and subsequently partially reopened, indicated that outbreaks of COVID-19 in schools represented 0.5%

of all outbreaks in Germany during this period.(5) The data showed that outbreaks in schools still occurred when the rate of community transmission was low and that the number of outbreaks in schools and the number of cases associated with outbreaks in schools was lower when schools reopened with precautions in place than when schools were open with no precautions.

Another study from the state of Baden-Wurttemberg in Germany demonstrated that the rate of transmission of COVID-19 in schools and childcare facilities was low when multiple measures to prevent spread were in place.(6) After extensive testing of school contacts, it was shown that of the 137 cases who attended school or a childcare facility during his/her infectious period, only 6 cases transmitted COVID-19 to 11 individuals in schools or childcare facilities. Moreover, assuming that each case spent two days in school during his/her infectious period, there was one secondary case per roughly 25 infectious school days.(6) Similarly, a study of surveillance data in Ireland from spring 2020, when precautions were not in place in schools in Ireland, demonstrated that of the 6 cases who attended school during their infectious period, none of them transmitted COVID-19 to another individual in the school setting.(7) However, at this time extensive testing of school contacts was not taking place, therefore the detection of asymptomatic secondary cases may have been missed.

There has been limited evidence of robust transmission of SARS-CoV-2 in primary schools(8) and this may be due to the fact that younger children have been found to be less susceptible to infection with SARS-CoV-2 than adults.(1, 8)

In regards to school closures, the evidence on their effectiveness to reduce community transmission is equivocal. Modelling studies from the US, UK and South Korea offer somewhat conflicting evidence on the effectiveness of school closures to reduce the growth rate of COVID-19 cases in the community, but overall they suggest that the effects on community growth are modest.(9-12) Additionally, modelling studies from the US and UK suggest that the effectiveness of school closures to reduce the overall death rates from COVID-19 is limited.(13, 14) but studies from the US and Canada indicate that school closures may be effective in reducing ICU demand(15, 16)

In summary, the evidence surrounding transmission of SARS-CoV-2 in schools is limited and multiple knowledge gaps exist. Firstly, there is a lack of empiric data on the transmission of SARS-CoV-2 in school settings. From the limited data that is available, it is clear that large outbreaks of SARS-CoV-2 in secondary schools can occur. However, they appear to be uncommon and are less likely to occur and are less likely to involve many secondary cases when precautions are in place (e.g. hand hygiene, social distancing, use of face coverings, etc.). Secondly, children appear to be less susceptible to infection with SARS-CoV-2 than adults, but it is unknown whether transmission of SARS-CoV-2 by children is lower than adults. Finally, the evidence on the effectiveness of school closures to reduce community transmission and overall death rates from COVID-19 is somewhat conflicting, but overall studies suggest that they have a very modest effect on reducing both community transmission and overall death rates.

The limitations of this rapid review must be acknowledged. Firstly, the search strategy extended to the search of only one electronic database and a very limited amount of snowball searching. Therefore, it cannot be asserted with a high degree of confidence that the findings of this study are comprehensive. Secondly, the lack of a second independent reviewer means that both selection bias regarding the inclusion of studies and outcome reporting bias may reduce the internal validity of this study.

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International documents

Appendix Two

UK

Schools specific contact guidance from September 2020: (Of note: Early years is typically junior infants to approximately 1st class. Key stage 2 is approximately 2nd class to 4th Class. Key stage 3,4,5 and onward is children aged 11 plus (approximately 5th, 6th primary in Ireland and secondary school children). Of further note face coverings not recommended in education settings in UK; asymptomatic Covid-19 detected cases are deemed infectious from date of test. No testing of close contacts is undertaken.

EARLY YEARS FOUNDATION STAGE TO YEAR 2

- Usually children who shared a classroom with the case during their infectious period would be considered contacts, on the basis that social distancing is assumed not possible.
- Check friendship groups. Identify contacts as children who are known to have had definite face to face contact with them during their infectious period.
- Check for staff members who have had close contact with the case during the infectious period.

KEY STAGE 2 (YEAR 3 TO 6)

- If children mix a lot within the classroom then the whole class would usually be defined as contacts.
- If there is a seating plan for all lessons and it is felt that social distancing has been observed in the classroom, then look at seating plans instead. Identify contacts as children who sat within 2 metres of the case during their infectious period in school.
- Check friendship groups. Identify contacts as children who are known to have had definite face to face contact with them during their infectious period
- Check for staff members who have had close contact with the case during the infectious period.
- Check for other identifiable individuals who have had definite face to face contact with the case, e.g. at break times or other group activities such as sport or music lessons
- If the case is a teacher, then social distancing may have been possible. Ask if the teacher can identify all the other members of staff and other children who they had close contact with during their infectious period.

KEY STAGE 3, 4, 5, FURTHER EDUCATION AND ABOVE (YEAR 7 TO 13+)

The default should NOT be to self-isolate the whole class or bubble in a secondary setting or course/department in a further education college.

- Look at the student timetable to identify classes during the infectious period
- Look at seating plans. Identify contacts as students who sat within 2 metres of the case during their infectious period in school/FE college
- Check friendship groups. Identify contacts as students who are known to have had definite face to face contact with them during their infectious period
- Check for staff members who have had close contact with the case during the infectious period.
- Check for other identifiable individuals who have had definite face to face contact with the case, e.g. at break times or other group activities such as sport or music lessons.

- If the case is a teacher, then social distancing may have been possible. Ask if the teacher can identify all the other members of staff and other children who they had close contact with during their infectious period.

ECDC:

Last document published in August 2020. Of note the document makes no reference to mitigation measures e.g. distancing, face coverings, hand hygiene, respiratory etiquette; pod systems etc.

Table 1. Classification of a contact based on level of exposure [10]

High-risk exposure (close contact)	Low-risk exposure
<p>A person:</p> <ul style="list-style-type: none"> • having had face-to-face contact with a COVID-19 case within two metres for more than 15 minutes; • having had physical contact with a COVID-19 case; • having had unprotected direct contact with the infectious secretions of a COVID-19 case (e.g. being coughed on); • who was in a closed environment (e.g. household, classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for more than 15 minutes; • travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for more than 15 minutes. 	<p>A person:</p> <ul style="list-style-type: none"> • having had face-to-face contact with a COVID-19 case within two metres for less than 15 minutes; • who was in a closed environment with a COVID-19 case for less than 15 minutes; • travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for less than 15 minutes.

Longer duration of contact is assumed to increase the risk of transmission; the 15-minute limit is arbitrarily selected for practical purposes. Public health authorities may consider some persons who have had a shorter duration of contact with the case as having had high-risk exposure, based on individual risk assessments.

In the context of school settings, high-risk exposure (close) contacts are defined as follows:

- Students and staff who have shared a classroom with the confirmed case and during the same time period.
- Other students and staff with whom the confirmed case has spent time, according to the definition in Table 1 'High risk exposure' (e.g. students with whom the confirmed case have been in close proximity during breaks or sport activities, in the cafeteria, gym or school playground).
- Students and staff in boarding schools/residential schools - also those sleeping in the same room or sharing a common kitchen, social space and/or bathroom.

Low-risk exposure contacts are defined as follows:

- Other students and staff with whom the confirmed case had contact, according to the definition in Table 1 'Low-risk exposure'.
- Public health authorities may consider some children with a low-risk exposure to a case as having had high-risk exposure, based on individual risk assessments.

Public health authorities should define contacts in these circumstances in conjunction with the school authorities and ensure that any decisions are clearly translated and understood by staff, students and guardians.

CDC:

Classification of an individual as a close contact is based on many factors and should be assessed on a case-by-case basis. In the context of COVID-19, the definition of a close contact is someone who was within 6 feet of a person diagnosed with COVID-19 for a total of 15 minutes or more. More information to inform the determination of exposure risk can be found, on CDC's Public Health Guidance for Community-Related Exposure. This information further notes that: 1) data to inform the definition of close contact are limited. Factors to consider when defining close contact include proximity, the duration of exposure (e.g., longer exposure time likely increases exposure risk), and whether the exposure was from a person with symptoms (e.g., coughing likely increases exposure risk). Furthermore, while research indicates masks may help keep those who are infected from spreading the infection, there is less information regarding how much protection masks offer a contact exposed to a symptomatic or asymptomatic patient. Therefore, the determination of close contact should be made irrespective of whether the person with COVID-19 or the contact was wearing a mask. 2) Data are insufficient to precisely define the duration of time that constitutes a

prolonged exposure. Recommendations vary on the length of time of exposure, but a total of 15 minutes or more close exposure can be used as an operational definition. Brief interactions are less likely to result in transmission; however, symptoms and the type of interaction (e.g., whether the infected person coughed directly into the face of the exposed individual) remain important. Assessment of exposure beyond close contact is a recommended strategy in some K-12 school and IHE settings to control transmission of SARS-CoV-2.