

Control measures to deliver COVID-19 strategies: Education sector evidence review

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Prepared by COVID-19 Public Health Response Strategy Team

Executive Summary

This working paper presents a review of evidence relating to COVID-19 and education settings. It forms part of background work commissioned by the Ministry of Health (the Ministry) by the Director of Public Health to help inform the response to COVID-19.

Recently emerging evidence suggests closure of education institutions has a limited role in reducing COVID-19 morbidity and mortality. Best case scenario modelling, which may not apply to Aotearoa/New Zealand, suggests it may reduce COVID-19 by 2-4 percent. Real world evidence from previous coronavirus outbreaks (SARS) and one evaluation of the impact of closing schools in Japan on COVID-19 do not suggest a large impact of closing schools on reducing coronavirus infections. This is, in part, because of the developing understanding of the reduced role of children in transmission of coronavirus in comparison to influenza virus, which most literature on the effectiveness of school closures in epidemics and pandemics arises from.

Education institution closures have profound and enduring impacts on health, educational, economic and social inequities. These need to be monitored and, where possible, mitigated.

There are a range of measures that could be applied in educational settings in Aotearoa/New Zealand to either replace full closure or as part of a stepped down response. These include measures to reduce the number of social contacts (eg, staggering class start and end times, closing common spaces, splitting classes of the teaching week, physical distancing) and reducing the likelihood of transmission (eg, hand hygiene measures in schools, cleaning commonly used surfaces). A staged, flexible risk-based approach would need to be taken, with accompanying evaluation, as the evidence for these interventions is also poor. High-quality community surveillance should be in place to support this. Moreover considering how any proposed 'step down' measures would impact on inequity is crucial.

Research in this area needs to be monitored closely as more relevant COVID-19 specific studies will emerge.

Document purpose

This document considers the evidence for and equity implications of the different control measures needed to deliver any COVID-19 pandemic strategy in Aotearoa/New Zealand. Furthermore it considers how we might lift each control measure, the risks of lifting it from the current lockdown/COVID-19 Level 4 alert level and approaches to mitigating those risks when lifting.

This document has not been peer reviewed.

This is one of a number of papers to be prepared by the COVID-19 Public Health Response Strategy Team (PHeRST), a group of epidemiologists and public health medicine specialists seconded temporarily to the Ministry of Health

Note:

In this document we refer to **pandemic strategies** and **control measures**. Pandemic strategies are the high level approaches to managing the pandemic. Control measures are the specific interventions that are needed to deliver all the strategies. Control measures include a wide range of non-pharmaceutical interventions that are aimed at reducing the reproduction number of COVID-19 (this is the number of people who are affected by any one person with COVID-19, this needs to be reduced to below 1 to gain control of a pandemic). Control measures act to reduce the reproduction number in two main ways. Firstly, some measures act to reduce the reproduction number by reducing the contacts between people (eg, contact isolation, closing workplaces, border controls). Reducing contacts is similar to the idea of primary prevention - an individual is less likely to be exposed to anyone with COVID-19. Secondly, other measures act to decrease the risk of transmission per contact. This is more like secondary prevention - so if you encounter a person with COVID-19 these interventions reduce the chance they will pass it to you. Examples of these types of measure include hand hygiene and sneeze etiquette.

Background

Control measures for COVID-19 have been implemented in the education sector internationally, with a significant proportion of children globally now not in education.¹ The aim of these measures in the education sector is to contribute to reducing COVID-19 disease and mortality. As with previous pandemics,² COVID-19 would have inequitable impacts on Māori and Pacific peoples (higher levels of mortality in all age groups, higher disease burden in all ages if it becomes widespread and more significant long term consequences from disease and loss of life compared to the pākehā population).

While Māori and Pacific peoples have much to gain from pandemic control, the impacts of the control measures deployed to reduce COVID-19 will themselves disproportionately impact Māori and Pacific peoples. This is due to existing inequities in health status and in the broader determinants of health (economic position and educational achievement) as a result of the process of colonisation. For example, closing of schools is likely to more severely impact groups of children already disadvantaged by the education system such as Māori and Pacific children and children with additional learning needs. Replacement options such as online learning have the potential to further disadvantage these groups who have the least access to technology devices and internet access that allows learning to be delivered this way. The consequences of control measures are also likely to have long term health impacts if they adversely impact the determinants of health for Māori and Pacific peoples.

Making this all the more challenging, we are required to act swiftly and in the absence of complete information. It is currently not clear how control measures or packages of control measures impact on the reproduction number of COVID-19.

This paper aims to provide information to help answer the following questions with regards to educational institution closures:

- What is the evidence of effectiveness on closing educational institutions on COVID-19?
- Does the evidence suggest that the control measures in place in education institutions are on the right settings to achieve elimination? If not what should we do? (ie. step down or up)
- What are the ways the inequitable impacts of control measures could be mitigated?
- How can we lift control measures in education institutions in a way that prioritises equity?

To do this we have undertaken a thorough assessment of the control measures in education institutions, including:

- Describing the intervention logic of each control measure
- Documenting what can be learnt from the literature on the effectiveness of each measure
- Detailing the adverse consequences for equity of the implementation of the control measure
- Identifying knowledge gaps
- Detailing how adverse consequences can be mitigated
- Identifying risks of lifting the control measures and how they could be mitigated.

Summary of findings

Detailed consideration of the evidence for the effectiveness of closing ECEs, schools and tertiary institutions, their equity impacts, international comparisons, missing information, actions to mitigate equity impacts, risks of opening and actions to mitigate risks of opening are contained in Table 1 and Table 2 below. The following is a summary of that information.

Educational institution closure (ECE, school and tertiary) may have a modest impact on reducing COVID-19 in Aotearoa/New Zealand. However, there is a significant degree of uncertainty around this as most evidence for education closures comes from influenza which has different transmission dynamics to COVID-19 in children. Specifically, children transmit influenza much more than they transmit COVID-19 (at least on current evidence),

meaning that even from a theoretical perspective there is considerably more uncertainty about the impact of educational institution closures.

Coronavirus-specific literature from SARS and early analysis from COVID-19 does not suggest a large impact of educational closures. At best, current modelling suggests a 2-4 percent reduction in COVID-19 as a result of school and tertiary institution closures. However, social contacts of children in Aotearoa/New Zealand may not be the same as other countries and Aotearoa/New Zealand has taken a different approach to the United Kingdom (where the most influential COVID-19 modelling approaches has come from) by prioritising testing and contact tracing. It is difficult to estimate the impact of school and tertiary closures on top of this altered baseline.

Educational institution closures come with significant and enduring adverse impacts on health, education, economic and social inequities. At a minimum we need to actively monitor the impacts of control measures, giving us the ability to adjust their implementation and/or mitigate potential or realized harms. For example, during recent school closure it became clear the access to technology was inequitably impacting on learning for Māori, Pacific students and for those students of lower SES. Because this was monitored the Government had the ability to develop alternative methods of educational delivery.

Moreover, as currently configured, education closures may come with adverse impacts on the healthcare system itself, due to essential staff having to look after their children. Conservative estimates from the US suggest this may be 15 percent of their healthcare staff.

Around 107 countries have nationally mandated school closures due to COVID-19.¹ Exceptions have included Singapore, which has only recently closed schools for a month due to increased community transmission (starting 8 April), Taiwan (schools have been open since 25 February) and Australia (schools in at least some states have remained open but children are expected to remain home if they can). Some jurisdictions have allowed schools and ECE to remain open for essential service workers.

New Zealand has one large secondary school-based COVID-19 cluster in Auckland, however, no information on this has been released publicly, so any lessons from this experience relevant to re-opening are not available to us. Publishing information on this cluster, and how any risks identified from it will be managed, may be needed to allay public concerns around safety of reopening schools. Preliminary reports from enhanced surveillance in schools and ECE centres in NSW suggests “low onward transmission among children with 1.9 percent of close contacts who were children testing positive for the virus”.³

There are a range of options available that can be implemented in education settings to either replace full closure or as a “step-down” scenario. Table 2 contains the specific details within education settings on both reducing social contacts to reduce the chance of coming in contact with COVID-19 (eg, staggered or split classes, staggered start and end times, reduced weeks, closed common areas) and reducing the risk of transmission even if an individual comes in contact with it (eg, cleaning high contact areas, hand hygiene practices at schools).

These options could be implemented in the short term or for the duration of the pandemic. Mitigation options are different for each education setting so a flexible risk-based approach is needed. For example, secondary schools may be more limited in their ability to implement physical distancing if there is a lot of class mixing; a combination of online and face-to-face learning may be required. Options for ECEs need to be further developed due to the difficulty of implementing measures to reduce social contacts within that setting. We note that, similar to the rest of the evidence on the impact of school closures, there is also a weak evidence base for many of these options.⁴⁻⁶

Given the emerging evidence of uncertainty of benefit of education closures in reducing COVID-19, coupled with certainty of increased inequity from the closures (even with mitigation in place) consideration should be given to lifting of mass restrictions on all levels of education and moving towards a more targeted approach. The lack of evidence suggests taking a cautious approach and monitoring / evaluating as we proceed.

For example, consideration could be given to:

- Leaving tertiary institutions who have largely moved to online environments closed for the remainder of semester one and potentially longer (or only allowing opening for specific courses involving essential worker training with an applied component that cannot be replaced by online learning). This would avoid a large

movement of people around the country on reopening and the risks of enhanced social contact in halls of residence, flats and informal students gatherings (eg parties).

- Staged reopening of primary schools and secondary schools with plans in place around:
 - Local closure policies if any probable cases of COVID-19 arise in schools
 - Physical distancing strategies in place within schools eg, staggering start and end times of schools for different years, cancellation of all school events or those that mix classes, partial weeks for different classes, preventing mixing in breaks (perhaps through staggering them). See Table 4 for the range of options.
 - Greater hygiene requirements around cleaning
 - Suspension of other activities that involve children mixing, eg, before and after school care, assemblies, sports etc
 - Redeploying staff to protect those in high-risk groups for COVID-19
 - Where possible (eg, primary schools) consider restricting cross community schooling so children are not moving between neighbourhoods.
- A staged approach with monitoring/evaluation would be essential eg, try something for two weeks (at least), then consider expanding to different age groups or education settings. This is particularly important as there is also a poor evidence base for measures that reduce social contacts in schools.
- Starting with primary schools might be most appropriate as children are more supervised by parents than secondary school students (to ensure less out of school social contacts). Moreover, early primary education may be the most difficult to transition to an online environment. We note starting with primary schools is the approach Denmark is taking to re-open their education system.
- ECE re-opening needs further consideration as there are limited options in some settings for interventions to reduce social contacts. However, delays in reopening ECE centres will have adverse impacts on the ability of parents of young children to return to work, and mitigating the financial impact of this on low income families will be a key consideration for the duration of closure.
- Ministry of Education and public health need to work together to consider re-opening options that meet both infection control and educational goals. Equity needs to be further considered in the options to lift restrictions.
- High quality surveillance systems, which include community-based sampling, would need to be in place to monitor whether opening is causing a rise in transmission.
- Monitoring of the extent of social contacts of children in different educational settings in Aotearoa/New Zealand should be undertaken to better inform modelling and future action. There may be existing data sources that can be harnessed to look at this.
- Monitoring of literature and overseas experience around educational institution closures in relation to COVID-19 remains imperative as this is an evolving area with a sparse and poor quality evidence base.

Table 1 Details of educational institution control measure evidence, equity impacts and mitigation Options

Item	ECE	School	Tertiary education sector
Description of measure	Closure	Closure (staged move to online learning environment occurring)	Moved to an online learning environment
How control measure theoretically acts to reduce COVID-19 (intervention logic)	Reduce total number of social contacts between children attending ECE and wider community (children and adults). Note: ECE closure in the context of a full lockdown may result in a larger reduction in social contacts than outside of a full lockdown as other ECE-related social contacts probably reduce also during lockdown.	Reduce total number of social contacts between children attending school and wider community (children and adults) Note: school closure in the context of a full lockdown may result in a larger reduction in social contacts than outside of a full lockdown as other school-related social contacts (eg play dates) probably reduce also during lockdown.	Reduce total number of social contacts between people undertaking and teaching tertiary education and wider community. Note: tertiary institution closure in the context of a full lockdown may result in a larger reduction in social contacts than outside of a full lockdown as other social contacts (eg student parties) probably reduce also during lockdown.
Evidence control measure is acting as intended in NZ (check of intervention fidelity)	Unknown	Unknown	Unknown
Effectiveness at reducing COVID-19 transmission or other relevant infectious disease (information sourced from University of Auckland literature review, ⁷ a recently published systematic review, ¹ and searching a COVID-19 Endnote library maintained by the University of Otago.	Nil specific related to ECE - see school	The role of school closure in influenza is fairly clear - with school closure reducing influenza transmission in the overall community by around 20-60 percent. School closures are thought to be more useful early in an epidemic and for a longer time period. However, these findings are not necessarily relevant to COVID-19 because of different transmission, susceptibility and reproduction number. Previous coronavirus epidemics (eg SARS) have not produced strong or consistent	Nil specifically related to the tertiary sector - see school. Note we believe a tertiary setting should be considered more akin to a school than a workplace because of evidence of multiple infectious disease outbreaks related to tertiary institutions (eg, mumps recently at Otago University and meningococcal disease outbreaks in student halls of residence)

		<p>information that school closures were effective at reducing transmission or containing the epidemic. One non-peer reviewed evaluation of the impact of school closure in Japan on COVID-19 showed it did not reduce cases.⁸ The most useful COVID-19 modelling studies show:</p> <p>1- In Singapore school closures would be effective at reducing cases but should be lower down the list of priority interventions compared to workplace closures and isolating cases and household contacts of cases.⁹ But NZ has different work arrangements and (probably) social contact patterns to Singapore.</p> <p>2- UK modelling found that school and university closure would be needed to reduce the reproduction number sufficiently for mitigation and suppression (not the strategies NZ is currently following). However, the impact of this was only estimated to be 2-4 percent.¹⁰ They did not include contact tracing as a population intervention in their modelling (which NZ is doing).</p> <p>3- Modelling from China suggests that keeping schools closed for a 12 week period (rather than 8) would be important for delaying a later epidemic wave - with considerable uncertainty depending on transmission in children.¹¹</p>	
International comparisons	Singapore - ECE centres have up until this point remained open, however from 8 April - 4 May all ECE providers will	Around 107 countries have nationally mandated school closures due to COVID-19. ¹ Exceptions include Singapore and	Singapore - from 8 April - 4 May all tertiary/institutes of higher learning will shift to home based learning.

	<p>suspend general services. They will remain open for parents unable to find alternative childcare (eg essential workers)</p> <p>Australia - As of 6 April, the Australian Health Protection Principal Committee (AHPPC) recommended that early childhood and learning centres (ECLC) are essential services and should continue but with risk mitigation measures in place.</p> <p>South Korea - ECE closed however these are to provide emergency childcare services for parents who must work. Class sizes can be no greater than 10 children.</p>	<p>Taiwan which have, thus far, kept schools open (except in cases where there is infection) and compared to similar countries (South Korea and Hong Kong) seem to have maintained a similar level of containment of COVID-19. (In February Taiwan extended the school winter break by two weeks, however reopened schools Feb 25). From 8 April - 4 May Singapore is shifting all primary, secondary and tertiary education to full home-based learning.</p> <p>Australia has schools open to some students. The AHPPC does not recommend schools to be shut however state level guidance may differ (eg schools are open in NSW but it is recommended children stay at home if possible).</p>	<p>Australia - many universities have moved to online learning where possible. For example, as of 6 April UNSW had ceased all in-person classes with only essential staff on campus.</p> <p>Taiwan - universities remain open with increasing measures to reduce risk of transmission. For example, moving to online learning for classes over a certain size, increased hygiene measures and temperature checks, and staff working from home where possible.</p> <p>South Korea - universities are providing online learning</p>
<p>Evidence gaps relevant to Aotearoa/New Zealand</p>	<p>Is ECE closure reducing the total number of contacts for Māori and Pacific children, their caregivers and whānau/family they live with?</p> <p>Is ECE closure reducing the total number of contacts for NZ children and ECE staff?</p> <p>How would any reductions in contacts differ if ECE closure was not in the context of a lockdown?</p> <p>What proportion of Māori and Pacific households have an essential worker and a child/children at ECE? What proportion also have high risk individuals living in the household?</p> <p>What proportion of ECE staff are high-risk for COVID-19?</p>	<p>Is school closure reducing the total number of contacts for Māori and Pacific students, their caregivers and whānau/family they live with?</p> <p>Is school closure reducing the total number of contacts for NZ students and teaching staff?</p> <p>How would any reductions in contacts differ if school closure was not in the context of a lockdown?</p> <p>What proportion of Māori and Pacific households have an essential worker and a child/children at school? What proportion also have high risk individuals living in the household?</p> <p>What proportion of school staff are high-</p>	<p>Is tertiary institute closure reducing the total number of contacts for Māori and Pacific students and whānau/family they live with?</p> <p>Is tertiary institute closure reducing the total number of contacts for NZ students and teaching staff?</p> <p>How would any reductions in contacts differ if tertiary institution closure was not in the context of a lockdown?</p> <p>What proportion of students would be considered high risk?</p>

		risk for COVID-19?	
Adverse consequences – equity (these are informed assumptions)	<p>Education: Increase in existing inequity of children in a high quality early childhood environment that supports their early developmental needs. Increase in existing inequity of children being ‘school ready’ when they start school due to prolonged ECE closure. Possible reduction in ECE attendance if job losses associated with COVID-19.</p> <p>Health: Children having longer durations exposed to adverse home environments (cold, damp houses). Children with pre-existing health conditions eg, asthma will be doubly impacted. Mental health and anxiety issues related to reduced social contact.</p> <p>Economic: Māori and Pacific parents may be more likely to work in jobs with less provision for sick leave/leave to care for dependents or the ability to work from home, meaning they are more likely to be in economic hardship as a result of having to take unpaid leave or being made redundant. Closure means higher costs of living at home – eg, food, water and electricity consumption, especially for larger households, who can already least afford it.</p>	<p>Education: Māori and Pacific children more likely to live in houses without support for online learning (requires internet, device, space to work etc) Children already not being well served by the education system are likely to be further disadvantaged by prolonged school closure than peers who are better served by the system thus disproportionately reducing, for example, Māori and Pacific NCEA achievement and scholarship attainment. Stress related to inability to achieve educational expectations and goals.</p> <p>Health: Children having longer durations exposed to adverse home environments (cold, damp houses). Children with pre-existing health conditions eg asthma will be doubly impacted. Mental health and anxiety issues related to reduced social contact. School can be the only source of primary health care for some children - who may not be able to access treatment of amenable health conditions (eg streptococcus throat infections, skin infections, injury) or routine vaccinations. Food insecurity will be worsened for children who rely on food in school.</p>	<p>Education: More Māori and Pacific in tertiary training that has an applied component- less likely to be able to transition to an online environment. Students who are already struggling in a tertiary education system that does not cater for them may be more likely to fail or drop out of courses as a result of moving to online environments, thus disproportionately reducing Māori and Pacific graduates. Stress related to inability to achieve educational expectations and goals.</p> <p>Health: Mental health, drug and alcohol, and anxiety issues related to reduced social contact.</p> <p>Economic: Students at higher risk of leaving or failing to meet requirements of their courses may face the additional economic burden of a student loan for a course they were unable to complete. Students may need to manage significant accommodation costs even if they have moved home during lockdown. Furthermore they may be less likely to remain in and gain employment. Students who need to work to support themselves during study</p>

	<p>Social: Children in families already under economic stress may be more likely to be exposed to adverse life events (eg, witnessing violence) due to additional economic and other stress resulting from ECE closures. Children being left unsupervised if parents/caregivers must work and there are no other options.</p>	<p>Economic: Māori and Pacific parents may be more likely to work in jobs with less provision for sick leave/leave to care for dependents or the ability to work from home, meaning they are more likely to be in economic hardship as a result of having to take unpaid leave or being made redundant. Closure means higher costs of living at home – eg food, water and electricity consumption, especially for larger households, who can already least afford it.</p> <p>Social: Children in families already under economic stress may be more likely to be exposed to adverse life events (eg witnessing violence) due to additional economic and other stress resulting from school closures. Additional services provided by or during school that acted to ameliorate difficult life circumstances (eg food in schools, counselling, sports) no longer available. Children being left unsupervised if parents/caregivers must work and there are no other options.</p>	<p>may be unable to as a result of COVID-19 impacts.</p> <p>Social: Students under economic and social stress, without the additional supports and opportunities provided by their institution (such as student health services, social gathering and clubs, peer supports) may be more likely to be exposed to, or involved in adverse life events such as violence and risk-taking behaviour</p>
<p>Adverse consequences – whole society</p>	<p>Some essential workers, disproportionately women, will be unable to attend work (in the US this was conservatively estimated to be 15 percent of the healthcare workforce) and did not include staff essential to functioning of hospitals such as cleaners.</p>	<p>Some essential workers, disproportionately women, will be unable to attend work (in the US this was conservatively estimated to be 15 percent of the healthcare workforce) and did not include staff essential to functioning of hospitals such as cleaners.</p>	<p>Potential for reduced numbers of graduates, especially from courses with applied components. Reduced opportunity for research and advocacy provided by students.</p>

	<p>This absenteeism was estimated to increase case fatality rates slightly.¹² Increased overall absenteeism/leave in workforce due to childcare needs Decreased productivity due to need to care for children even while working. Possible weight gain in children due to reduced physical activity.</p>	<p>This absenteeism was estimated to increase case fatality rates slightly.¹² Increased overall absenteeism in workforce due to childcare needs (one survey suggested 20 percent of adults missed work because of this - NB: likely to be biased estimate) Decreased productivity due to need to care for children even while working Possible weight gain in children due to reduced physical activity.</p>	
<p>Actions that could mitigate adverse equity consequences</p>	<p>Education: Accessible opportunities for whānau/family to support early childhood development needs, particularly for those already experiencing inequities (Māori, Pacific, low SES). Accessible interventions in the ECE to mitigate loss of time for children who are starting school in the next 12 months, specifically tailored to children are already experiencing inequities (Māori, Pacific, low SES).</p> <p>Health: Expand housing quality supports, winter fuel payment scheme and further increases to benefit level. Both targeted to those at greatest risk. Expand winter energy payment for 2020 to include all those receiving WFF</p> <p>Economic: Increased benefit levels, and no stand down for eligibility. Provision of free childcare for children <5</p>	<p>Education: Accessible interventions in the school system to mitigate loss of time during the year that are focused on those who are already experiencing inequities (Māori, Pacific, low SES) For example, extra teaching staff, support staff in classes.</p> <p>Health: Expand housing quality supports. Expand winter energy payment for 2020 to include all those receiving WFF.</p> <p>Increase capacity of school-based health services to respond to backlog of unmet primary health care needs in low decile schools.</p> <p>Further increases to benefit level, to compensate for increases in cost of living due to school & workplace closures.</p> <p>Economic: Increased benefit levels.</p>	<p>Education: Targeted ‘catch up’ programmes to make up time missed. Active recruitment of people who dropped out or did not achieve requirements with tailored responses to help them come back to their courses (eg, provision of online learning assistance)</p> <p>Health: Extra funding for culturally appropriate mental health wellbeing promotion and support services.</p> <p>Economic: Student loan debt forgiveness policies. Fees free study for remainder of degree. Accommodation benefit supports.</p> <p>Social: Expanded funding for culturally appropriate student support services</p>

	<p>years who normally attend ECE, for low income essential workers (and non-essential low income workers once workplaces reopened). Wage subsidy continued.</p> <p>Social: Expanded funding for services such as women’s refuge, iwi specific responses to family violence.</p>	<p>Expansion of free childcare for essential workers to include children of low income non-essential workers, once workplaces reopened. Wage subsidy</p> <p>Social: Expanded funding for services such as women’s refuge, iwi specific responses to family violence. Expanded school support services when schools re-open eg, counselling.</p>	<p>and online support networks.</p>
<p>Monitoring of consequences</p>	<p>Education: Timely monitoring of impact of COVID-19 on early childhood development and being ‘school ready’ by ethnicity and NZDep. Timely monitoring of enrollments in ECE by ethnicity and NZDep.</p> <p>Health: Timely monitoring of admissions to hospital for housing related conditions by ethnicity. Timely monitoring of illnesses related to poor quality housing (potential to monitor through healthline/plunketline queries, primary care presentations, hospital admissions etc) by ethnicity and NZDep. Timely monitoring of age appropriate indicators of psychological distress by ethnicity and NZDep.</p> <p>Economic: Timely monitoring of absenteeism and all</p>	<p>Education: Timely monitoring of impact of COVID-19 on school achievement, being held back a year, and school absenteeism by ethnicity and NZDep.</p> <p>Health: Timely monitoring of admissions to hospital for housing related conditions by ethnicity. Timely monitoring of illnesses related to poor quality housing (potential to monitor through healthline/plunketline queries, primary care presentations, hospital admissions etc) by ethnicity and NZDep. Timely monitoring of mental health and anxiety in the student population by ethnicity and NZDep.</p> <p>Economic: Timely monitoring of absenteeism and all forms of leave across sectors by ethnicity and NZDep.</p>	<p>Education: Timely monitoring of impact of COVID-19 on numbers of students failing or dropping out of courses by ethnicity and NZDep.</p> <p>Health: Timely monitoring of mental health, drug and alcohol use, and anxiety in the student population by ethnicity and NZDep.</p> <p>Economic: Timely monitoring of impact of COVID-19 on student loan and accomodation debt by ethnicity and NZDep. Timely monitoring of employment outcomes of cohort of students impacted by COVID-19 by ethnicity and NZDep.</p> <p>Social: Timely monitoring of use of, or</p>

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	<p>forms of leave across sectors by ethnicity and NZDep.</p> <p>Timely monitoring of job loss or hours reductions by ethnicity and NZDep. Surveys on reasons for job loss or hours reductions by ethnicity and NZDep.</p> <p>Social: Timely monitoring of use of, or referrals to, agencies such as women's refuge, Oranga Tamariki, police call outs to domestic incidents by ethnicity and NZDep.</p> <p>Qualitative research and surveys of lived experience could also provide useful information about impact. (parent-report, and/or teacher-report)</p>	<p>Timely monitoring of job loss or hours reductions by ethnicity and NZDep. Surveys on reasons for job loss or hours reductions by ethnicity and NZDep.</p> <p>Monitoring of adequacy of capacity of free childcare provision (MSD)</p> <p>Social: Timely monitoring of use of, or referrals to, agencies such as women's refuge, Oranga Tamariki, police call outs to domestic incidents by ethnicity and NZDep.</p> <p>Qualitative research and surveys of lived experience could also provide useful information about impact. (parent-report, teacher-report and/or self-report)</p>	<p>referrals to, social support agencies, police call outs for violence by ethnicity and NZDep.</p> <p>Qualitative research and surveys of lived experience could also provide useful information about impact.</p>
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Table 2 Risks of reopening education institutions and options to mitigate these risks.

	ECE	Schools	Tertiary
Risks around lifting restrictions	Increasing social contacts between communities, families and individuals resulting in increasing risk of COVID-19 spread. Higher risk with larger size ECEs and those with wider catchments of children. Staff who are high-risk exposed to COVID-19 because of increased social contact.	Increasing social contacts between communities, families and individuals resulting in increasing risk of COVID-19 spread. Higher risk with schools with wider catchments of students. Staff who are high-risk exposed to COVID-19 because of increased social contact.	Migration of students back to the region the tertiary provider is located (many students went home before lockdown). Increasing social contacts of students with commencement of face-to-face teaching, including informal contacts through parties etc. Increase in numbers of students living in communal situations (eg, university halls) with higher risk for transmission.
Options to mitigate risks around lifting restrictions - focused on reducing social contact.	Limit to in-home care arrangements where groups are limited in size (eg, max 4 children). Messaging around no further mixing with children.	Physical distancing eg, could split school day into two shifts, half of students attend at a time, staggered lunch breaks and start and end times, or staggering classes over the week so no one does a full week, closing common areas eg, playgrounds, moving desks apart, rotating teachers rather than students. Note some of these options were implemented during the SARS outbreak in Taiwan, ¹ and some are normal practice in other countries. Maintaining a parallel accessible distance/online/paper option for those that are isolated/quarantined/mildly unwell.	Allow only high-need courses to return to face to face teaching (eg, essential service training that requires a practical component that can be delivered currently) with policies around physical distancing, isolation etc. Physical distancing measures in university halls, lecture theatres etc Messaging around reducing out of class contact between students.
Options to mitigate risks around lifting restrictions - focused on reducing transmission.	Enhanced hygiene procedures around nappy changes and other contact with body fluids. Strict sickness policies relevant to the range of	Strict sickness policies relevant to the range of symptoms children experience from COVID-19.* Increased hygiene measures (cough and sneeze etiquette, disinfecting of high-touch surfaces, access to alcohol hand gel and appropriate hand washing facilities).	Strict sickness policies. Increased hygiene measures (cough and sneeze etiquette, disinfecting of high-touch surfaces, access to alcohol hand gel and appropriate hand washing facilities).

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	symptoms children experience from COVID- 19.*		
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*Note: stricter sickness policies will also push up absenteeism for essential worker parents due to needing to stay home when children are ill with non COVID-19 winter respiratory viruses

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