



Policy Brief

Re-opening of schools as a Part of a Transitional Strategy

An overview of current scientific findings referring to school closings and the effects of re-openings on containing the epidemic

Core Messages

This Policy Brief deals with scientific findings referring to the effectiveness of school closings during the COVID-19 pandemic and potential strategies for the re-opening of schools..

- As of date, just a small number of studies dealing with effects of closing and re-opening of schools have been published.
- In the course of updating this policy brief no new findings from systematic reviews could be identified.

Temporary school closings are one measure used in connection with infectious diseases to reduce the rate of infection. Due to the novelty of the Covid-19 virus epidemic, findings from studies on other viral pathogens with different distribution patterns (e.g. H1N1, H5N1) must be used. These studies provide some indication of reduced spread among schoolchildren and their parents. There is no clear evidence on the question of how to contain the spreading for society as a whole. In connection with other measures like e.g. social distancing, school closings can make sense. Some risks of school closings - especially for disadvantaged and educationally underprivileged children and adolescents and their families - have been shown in studies, others appear plausible, but have not yet been proven.

In connection with re-opening schools, the extent of the re-increase of the frequency of infections has so far rarely been studied. In individual studies on influenza epidemics, the disease rates among schoolchildren and parents rose measurably after re-opening. When schools are reopened, measures to reduce contact, such as increasing the space between desks, phasing lesson times, and restricting the use of communally used areas, can be useful to prevent the SARS-CoV-2 virus from spreading further.

Other papers of the competence network will deal with the closing and re-opening of day care centers. This topic is not part of the present paper. Children's health will also specifically be addressed in other documents.

This document is addressed to state and federal political decision-makers.

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[The level of knowledge about the COVID-19 pandemic is rapidly changing. Thus, we would like to point to the date of publication and the date up to which research findings were considered. In case these findings should change we will account for this in further versions.]



Updating this Policy Brief

By conducting a renewed and targeted search for systematic reviews about school closings and re-openings no new publications could be identified (search conducted Jun 16th-17th, 2020). However, there are now systematic reviews referring to clinical manifestations of COVID-19 in children. These may be requested from the authors in case of interest.

At the end of this document research questions and practical issues have been added which may prove relevant for political decisions of re-opening schools and action to be taken in case of new infections among students.

Contextualisation

Millions of children are currently unable to attend school, as schools in over 100 countries worldwide have been closed since mid-March 2020 to effectively break infection chains by social distancing. This not only seriously affects children and adolescents, it also confronts parents with the challenge of balancing childcare and home schooling with their gainful employment. As a result, many employees are often unable to pursue their occupation without considerable restrictions, or not at all. In the current situation, this proves particularly negative whenever health care workers cannot be deployed to the usual extent, or drop out of the workforce altogether. Other essential areas are equally affected. In addition, parental supervision may eventually be taken over by grandparents, who are a risk group. The teaching staff is looking for creative ways to safeguard the continuation of conveying scholastic content, maintaining the social functions of the classroom and school community, and maintaining a high level of educational justice.

However, not every student can adequately be supported by virtual learning offers, and there is considerable potential for disadvantaging certain groups (e.g. pupils with language development disorders). Therefore, the question of when and under what conditions a school may be reopened and what the possible effects on the epidemic spreading of the SARS-CoV-2 virus might be is of enormous social importance. In considering relaxation or abolishment of measures it is also important to ask which approaches or measures may be useful to further limit the spread of the SARS-CoV-2 virus.

Objective

This policy brief initially gives an overview of the current state of scientific findings regarding the question of what influence school closings have on combatting and controlling epidemics caused by the corona virus as well as other pathogens of viral pulmonary diseases as of now. In reference to re-opening schools, the policy brief can, based on available findings, explain which measures may contribute to containing the epidemic when resuming school lessons and during school routine.

Methods

Rapid systematic literature search based on two key publications (Cauchemez et al 2009 (1), WHO 2019 (2)). All references of the two publications as well as quotations from (1) were examined. Only



systematic reviews (the inclusion of at least two databases was required) on the effectiveness of the closing of educational institutions were looked for. Using a data extraction table, all relevant data on effectiveness and negative effects were extracted, categorized, and summarized from the reviews. In addition to the systematic literature search, a current systematic review (Rapid Review of 6.4 .2020) identifying the effectiveness of combining various non-pharmacological pandemic control measures including the combination of home quarantine and school closing, and primary studies of COVID-19 from this review were included in the presentation of results. The literature has been screened for possible effects of school re-opening in the course of epidemics.

In the course of updating this policy brief newly published systematic reviews have been checked up to Jun 17th, 2020.

The literature review was carried out by a working group from the Pettenkofer School of Public Health at the Ludwig Maximilians University in Munich. Information in brackets refers to the corresponding literature at the end of the document.

Results

Effectiveness regarding containment of epidemics

- No direct evidence for Covid-19, thus derivation from other contexts necessary
- Evidence from a rapid review on school closings during corona epidemic pandemics (16), one rapid review on the combination of Public Health measures during corona epidemic pandemics (17), fourteen systematic reviews (particularly regarding influenza) (1, 3-15), and one WHO directive (regarding influenza) (2)
- No clear evidence for effectiveness regarding infection rates (16), e.g.
 - Moderate reduction of peak during influenza outbreak averaging 30% (SD 29%) (4)
 - Postponement of peak during influenza outbreak by eleven days (4)
 - Substantial heterogeneity in regard to reducing transmission (1-50%) (14)
- Reduced transmission particularly among school children (5-17 years), probably less among older age groups (11)
- Possible effects are reduced whenever children / adolescents young people engage in social interaction off school premises after closing (10)
- Effectiveness increases by combining school closing with other measures of social distancing (17)
- Early implementation of school closing is of elementary importance (proactive closing as soon as the transmission of the virus is observed in society) (2, 10)

Health risks

- Hazards for children by parental supervision or supervision by siblings (1, 14)
- Reduced access for children to (healthy) school meals (1, 14)
- Limited support systems for children (5)
- Increase of transmission within households (1, 3)
- Using the services of supervising persons with potential higher risk (e.g. grandparents) (1, 3)
- [Other potential risks, including those regarding mental health and/or domestic violence are discussed in other results published by the competence network; in available studies in the context of school closings no statements are made]



Macrosocial risks

- Negative effects on health and social system (essential professions) due to the absence of parents for necessary childcare and supervision (1, 3)
- Negative economic effects for parents (16 - 45% of all parents) in terms of income stability and job security (1, 3)
- Inequality effects of the measures on socially disadvantaged and educationally disadvantaged families (1)
- Further negative effects of reduced and modified (online) educational offers e.g. on the development of children with special needs, transition to subsequent classes, exams etc. are plausible but have not been examined in previous studies.

Re-opening: Approaches when relaxing measures

The following measures may be effective, based on modeling methods (no strong evidence):

- Increasing the space between desks in classrooms (2, 15)
- Shifting or cancellation of curricular afternoon activities (2, 15)
- Restricting access to communally used areas (2, 15)
- Grading of teaching times
- Reducing opportunities for social contact between pupils in the way to and from school (2, 15)
- Dividing classes into smaller groups (15)

The following measure proved effective in containing H1N1 in Taiwan in an observational study:

- Suspension of classes with infected pupils as an effective measure of social distancing (15, 16)

The following measures may reduce negative effects (no strong evidence):

- Maintaining school routine for children from low-income households and children from parents working in essential occupations (2)

In addition, all general directives for infection control apply like e.g. ensuring frequent washing of hands by providing soap and disinfectant as well as the respective infrastructure.

Prospect: Research questions and practical issues

- What can be considered appropriate and feasible research designs for COVID-19 studies among students and possibly teaching personnel under the aspect of infection epidemiology as well as social science aspects?
- Under which infectiological and other aspects do school openings seem possible?
- Which procedures may be considered for a (stepwise) re-opening of schools?
- Under which scenarios should repeated closing of individual school classes or schools be considered (number of local infections, number of infected students)?



Conclusions and recommendations

The systematic reviews identified by a systematic search deal with school closings and measures in the event of re-opening/ ongoing school routines during epidemics triggered by other viral pathogens than SARS-CoV-2. The reviews under scrutiny include both primary studies and modeling of the effectiveness of school closings in containing viral epidemics. In the absence of direct COVID-19 studies, assessments can only be derived from these systematic reviews at this time. However, the transferability of results to the COVID-19 epidemic is still unclear because important information is missing.

According to several studies, school closings appear to make sense as part of a bundle of measures although the exact contribution to the transmission rate remains to be quantified. The Imperial College modeling study (18) predicts a minor effect (2-4% reduction in COVID-19 deaths) in the UK. There is an urgent necessity for further studies with more precise data on this issue.

For a better understanding of the effects of school closings and openings during the COVID-19 epidemic knowledge about children's susceptibility to infection and their infectiousness while infected is required. Both factors have not yet sufficiently well investigated with respect to COVID-19.

Individual studies provide evidence of an increase in infection rates after re-opening schools, however, there is no systematic evidence. Modeling studies suggest that social distancing measures in schools (including increasing desk spacing, dividing classes, reducing access to communally used areas, and social distancing on the way to and from school) can be effective in reducing virus transmission. Effects of an - even partial - re-opening of schools in Germany and other countries in the context of Covid-19 should be analyzed promptly in order to bridge existing knowledge gaps. The possible consequences regarding the further course of the COVID-19 epidemic should take into account potential consequences regarding health, social and economic issues of school closures as pointed out above when making decisions about re-opening of schools.

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The Competence Network Public Health COVID-19 is an ad hoc union of more than 25 scientific societies from the field of Public Health in order to pool their methodological, epidemiological, statistical, social scientific and (public) health expertise. Overall, we represent several thousand scientists from Germany, Austria, and Switzerland.