





# Impact of rapid diagnostic testing on school closures

Nov 22, 2021

#### **Research Objectives**

The primary question examined in this review was:

What evidence exists on rapid diagnostic testing (RDT) for COVID as a tool to limit school closures?

This rapid research synthesis was conducted between Nov 6-21, 2021.







#### **Methods**

- A comprehensive search was conducted by an information specialist on Nov 6-8, 2021 to retrieve studies published from Jan 1, 2020 until search date
- Databases searched: Medline, Embase, Web of Science Core Collection
- A targeted grey literature search was also conducted





#### Results

- 1568 unique published articles were found in the peer reviewed data sets; a number of additional studies were found through review of reference lists, and carried over from previous work
- Screening by title and abstract kept 3 modeling studies and 11 empirical studies
- These papers came from six countries
- Five public members provided responses to a short questionnaire





## Key messages

- RDT may be a useful tool for limiting transmission of Covid-19 in schools and more limited interventions such as Test-to-Stay may be particularly worth further study with respect to impact on school closures.
- School RDT as reported in the literature tends to take place on site, using trained staff members rather than health care professionals, which adds burden to those in schools and thus in practice pose practical challenges.
- Access to RDT for at home testing may be a practical approach but this shifts burden to families; there have been no studies on the cost-effectiveness of this approach at home and there may also be equity implications.







#### Implementation considerations

- RDT for COVID-19 may well be a useful tool to limit school closures but the precise contribution of RDT amongst other public health measures is not yet known.
- Studies reviewed were mostly positive about RDT in schools, as were public members.
- Rather than widespread administration, it is likely that a more nuanced approach focusing in places where there is high prevalence and/ or specific uses such as for field trips or with more vulnerable student groups will be most fruitful.





## **Key Gaps**

 More work is needed to tease out the precise contribution of RDT for limiting school closures relative to other common public health measures





#### **Emerging evidence**

- Based on limited evidence from the literature as well as input from members of the public, an argument can be made for the benefits of RDT for use in schools K-12 as one tool in the public health toolkit
- Specific application is likely best contextualized and informed through public engagement noting potential challenges in terms of burden on school staff and equity concerns for take home kits





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#### References

- 1. Berke EM, Newman LM, Jemsby S, Hyde B, Bhalla N, Sheils NE, Oomman N, Reppas J, Verma P, Cangelosi GA. Pooling in a Pod: A Strategy for COVID-19 Testing to Facilitate a Safe Return to School. Public Health Rep. 2021 Nov-Dec;136(6):663-670. doi: 10.1177/00333549211045816. Epub 2021 Sep 6.
- 2. Bilinski A, Ciaranello A, Fitzpatrick MC, Giardina J, Shah M, Salomon JA, Kendall EA. SARS-CoV-2 testing strategies to contain school-associated transmission: model-based analysis of impact and cost of diagnostic testing, screening, and surveillance. medRxiv [Preprint]. 2021 Aug 10:2021.05.12.21257131. doi: 10.1101/2021.05.12.21257131.
- 3. Bird SM. Covid tests in secondary schools: A statistical cause célèbre. Signif (Oxf). 2021;18(3):42-45. doi:10.1111/1740-9713.01535
- 4. Blanchard, A.C., Desforges, M., Labbé, A.-C., Nguyen, C.T., Petit, Y., Besner, D., Zinszer, K., Séguin, O., Laghdir, Z., Adams, K., Benoit, M-È, Leduc, G., Longtin, J., Ragoussis, I., Buckeridge, D.L., Quach, C. Evaluation of real-life use of Point-Of-Care Rapid Antigen TEsting for SARS-CoV-2 in schools for outbreak control (EPOCRATES). medRxiv 2021.10.13.21264960; doi: https://doi.org/10.1101/2021.10.13.21264960.
- 5. Campbell JR, Uppal A, Oxlade O, et al. Active testing of groups at increased risk of acquiring SARS-CoV-2 in Canada: costs and human resource needs. CMAJ. 2020;192(40):E1146-E1155. doi:10.1503/cmaj.201128
- 6. Cho EY, Choe YJ. School closures during the coronavirus disease 2019 outbreak. Clin Exp Pediatr 2021;64:322-7. https://doi.org/10.3345/cep.2021.00353
- 7. Denford, S., Towler, L., Ali, B., Treneman-Evans, G., Bloomer, R., Peto, T., Young, B.C., Yardley, L. Feasibility and acceptability of daily testing at school as an alternative to self-isolation following close contact with a confirmed case of COVID-19: A qualitative analysis medRxiv 2021.10.05.21264548; doi: https://doi.org/10.1101/2021.10.05.21264548
- 8. Dove N, Wong J, Gustafson R, Corneil T. Impact of School Closures on Learning, Child and Family Well-Being During the COVID-19 Pandemic. BC Centre for Disease Control & BC Children's Hospital. September 2020
- 9. European Centre for Disease Prevention and Control. COVID-19 in children and the role of school settings in transmission second update. 8 July 2021. Stockholm: ECDC; 2021.
- 10. Ganann, R., Ciliska, D., & Thomas, H. (2010). Expediting systematic reviews: methods and implications of rapid reviews. Implementation science: IS, 5, 56. https://doi.org/10.1186/1748-5908-5-56
- 11. Hammerstein S, König C, Dreisörner T, Frey A. Effects of COVID-19-Related School Closures on Student Achievement-A Systematic Review. Front Psychol. 2021 Sep 16;12:746289. doi: 10.3389/fpsyg.2021.746289.
- 12. Health Canada. 2021. Priority strategies to optimize testing and screening for primary and secondary schools.
- 13. Johnson KE, Stoddard M, Nolan RP, White DE, Hochberg NS, Chakravarty A (2021) In the long shadow of our best intentions: Modelbased assessment of the consequences of school reopening during the COVID-19 pandemic. PLoS ONE 16(3): e0248509. https://doi.org/10.1371/journal.pone.0248509
- 14. Lanier WA, Babitz KD, Collingwood A, et al. COVID-19 Testing to Sustain In-Person Instruction and Extracurricular Activities in High Schools Utah, November 2020–March 2021. MMWR Morb Mortal Wkly Rep 2021;70:785–791.
- 15. Kriemler S, Ulyte A, Ammann P, Peralta GP, Berger C, Puhan MA and Radtke T (2021) Surveillance of Acute SARS-CoV-2 Infections in School Children and Point-Prevalence During a Time of High Community Transmission in Switzerland. Front. Pediatr. 9:645577. doi: 10.3389/fped.2021.645577
- Pescatore RM, Carr D, Gaeta CM, Alois C, Haberstroh S, Massett K, Weiss M, Covey A; NCSN, Kleinschmidt K; Med, NCSN, Walker RD, Chasanov W, Bunting S, Magarik M, Rattay KT, Hong R. Know As You Go:: Pilot Program of Point-of-Care SARS-CoV-2 Antigen Screening Testing in Delaware Schools. Dela J Public Health. 2021 Mar 13;7(2):68-70. doi: 10.32481/djph.2021.03.015.
- 17. Ontario Agency for Health Protection and Promotion (Public Health Ontario). "Test-to-Stay" SARS-CoV-2 rapid antigen testing strategies in K-12 schools. Toronto. ON: Queen's Printer for Ontario: 2021.
- 18. Smith-Norowitz TA, Hammerschlag MR, Kohlhoff S. Coronavirus disease 2019 (COVID-19) infection rates in a private school in Brooklyn, New York. Acta Paediatr. 2021 May;110(5):1569-1570. doi: 10.1111/apa.15786. Epub 2021 Feb 11.
- 19. Tricco AC, Antony J, Zarin W, Strifler L, Ghassemi M, Ivory J, Perrier L, Hutton B, Moher D, Straus SE. A scoping review of rapid review methods. BMC Med. 2015 Sep 16;13:224. doi: 10.1186/s12916-015-0465-6.
- 20. Tupper P, Colijn C (2021) COVID-19 in schools: Mitigating classroom clusters in the context of variable transmission. PLoS Comput Biol 17(7): e1009120. https://doi.org/10.1371/journal.pcbi.1009120
- 21. Unger, J.B., Soto, D.W., Lee, R., Deva, S., Shanker, K., Sood, N., Hu, H. COVID-19 testing in schools: Perspectives of school administrators, teachers, parents, and students in Southern California. medRxiv 2021.10.14.21265000; doi: https://doi.org/10.1101/2021.10.14.21265000
- 22. Villani, A., Coltella, L., Ranno, S. et al. School in Italy: a safe place for children and adolescents. Ital J Pediatr 47, 23 (2021). https://doi.org/10.1186/s13052-021-00978-w
- 23. Volpp KG, Kraut BH, Ghosh S, Neatherlin J. Minimal SARS-CoV-2 Transmission After Implementation of a Comprehensive Mitigation Strategy at a School New Jersey, August 20–November 27, 2020. MMWR Morb Mortal Wkly Rep 2021;70:377–381.
- 24. Wachinger J, Schirmer M, Täuber N, et al. Experiences with opt-in, at-home screening for SARS-CoV-2 at a primary school in Germany: an implementation study. BMJ Paediatrics Open 2021;5:e001262. doi: 10.1136/bmjpo-2021-001262
- 25. WHO Europe. Schooling during COVID-19: recommendations from the European Technical Advisory Group for schooling during COVID-19, June 2021. Copenhagen: WHO Regional Office for Europe; 2021.
- Young,Bernadette C.;Eyre,David W.; Kendrick,Saroj; White,Chris; Smith,Sylvester; Beveridge,George; Nonnenmacher,Toby; Ichofu,Fegor; Hillier,Joseph; Oakley,Sarah; Diamond,Ian; Rourke,Emma ;Dawe,Fiona; Day,Ieuan; Davies,Lisa; Staite,Paul; Lacey,Andrea; McCrae,James; Jones,Ffion; Kelly,Joseph; Bankiewicz,Urszula; Tunkel,Sarah; Ovens,Richard; Chapman,David; Bhalla,Vineta; Marks,Peter; Hicks,Nick; Fowler,Tom; Hopkins,Susan; Yardley,Lucy; Peto,Tim E. A. Daily testing for contacts of individuals with SARS-CoV-2 infection and attendance and SARS-CoV-2 transmission in English secondary schools and colleges: an open-label, cluster-randomised trial. The Lancet. VOLUME 398, ISSUE 10307, P1217-1229, OCTOBER 02, 2021.
- 27. Zierer K. Effects of Pandemic-Related School Closures on Pupils' Performance and Learning in Selected Countries: A Rapid Review. Education Sciences. 2021; 11(6):252. https://doi.org/10.3390/educsci11060252





