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Abstract

Objectives: In support of schools restarting during the COVID-19 pandemic, some schools partnered with local experts in academia, education, community, and public health to provide decision-support tools for determining what actions to take when presented with students at risk for spreading infection at school.

Methods: The Student Symptom Decision Tree, developed in Orange County, California, is a flow chart consisting of branching logic and definitions to assist school personnel in making decisions regarding possible COVID-19 cases in schools which was repeatedly updated to reflect

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evolving evidence-based guidelines. A survey of 56 school personnel evaluated the frequency of use, acceptability, feasibility, appropriateness, usability, and helpfulness of the Decision Tree.

Results: The tool was used at least 6 times a week by 66% of respondents. The Decision Tree was generally perceived as acceptable (91%), feasible (70%), appropriate (89%), usable (71%) and helpful (95%). Suggestions for improvement included reducing the complexity in content and formatting of the tool.

Conclusions: The data suggest that school personnel found value in the Decision Tree, which was intended to assist them with making decisions in a challenging and rapidly evolving pandemic.

Keywords

formative evaluation; symptom decision tree; COVID-19; public health guidance; health communication; school health

INTRODUCTION

The World Health Organization (WHO) declared the SARS-CoV-2 virus a pandemic on March 11, 2020.[1] This pandemic has impacted all aspects of life and it set off an urgent need for governments, schools, and health systems to formulate strategies to deal with a new and poorly understood disease. At the onset of the pandemic, many schools were required to close for fear that the virus would spread rampantly from student to student.[2] As greater understanding emerged about the efficacy of mitigating the spread of the virus through face covering and other measures,[3,4] schools were allowed to re-open.[5] Yet, the prospect of re-opening brought its own set of concerns and challenges as questions remained about how to create a safe learning environment, manage positive cases of COVID-19, and reduce the spread of the virus over time.

Making on-site and in-the-moment decisions to prevent the spread of COVID-19 became a necessary task for school nurses and administrators. Government agencies, including the Centers for Disease Control and Prevention (CDC) and the WHO, recognized this need and aimed to support school re-opening and ongoing functioning through reports and releasing public health guidelines.[6,7] Unfortunately, these guidance documents varied in the extent to which they focused on the practical concerns of operating schools and the needs of students and staff. Moreover, the nature of the evidence-base guiding these reports also differed over time and across agencies, reflecting the gaps in understanding about the COVID-19 virus and how it affects children and adolescents. Additionally, many of these documents lacked definitive direction for school staff, suggesting that administrators implement what would be feasible given available resources, staff, and capabilities.[8]

In response to this situation, some school systems formed partnerships with academic, community and public health experts to translate broad guidelines into situation-specific policies and recommendations for schools.[9–11] The complexity of the guidelines leant itself to the creation of decision trees, branching flow charts that lead to a decision based on a series of contextual options, which have a long history of utilization for informing a course of action in health-related decision making.[12] Many partnerships and organizations

created school specific decision trees to support school nurses and staff in their daily determinations of how to respond to students who displayed symptoms of COVID-19 or had been exposed to the virus.[11,13–17] Regionally developed decision trees for guiding practices to mitigate the impact of COVID-19 during school reopening attempted to improve upon more generic tools, such as that posted by the CDC, which has been critiqued as leaving specific decisions up to local authorities based on available resources.[18] COVID-19 specific decision trees were also developed to support decision-making within clinics[19,20] and among the general population.[21] Few published studies have evaluated these decision aids, but those that have suggest they were perceived as useful and may have been effective for individuals making decisions about their own heath care.[22] Despite widespread availability of decision trees developed specifically to support decision-making within the school setting during the COVID-19 pandemic, little information is available regarding how useful these decision-support tools were to school nurses and staff or how frequently they were used by school nurses.

A Student Symptom Decision Tree was developed by a coalition of academic, public health, and educational stakeholders in Orange County, California to support decisions in response to possible COVID-19 cases in schools. We carried out an evaluation survey of frontline school health personnel to assess their use of the Student Symptom Decision Tree. We assessed both quantitative and qualitative data to examine whether and why the Student Symptom Decision Tree was perceived to be acceptable, feasible, useful, appropriate, and helpful. The qualitative information we collected gave us a sense of how it could be improved, shedding light on how future versions of such tools could be modified.

METHODS

Study Context

In Orange County, California there are 28 public school districts comprised of over 600 schools[23] and close to 475,000 students.[24] Orange County students come from a variety of ethnic backgrounds; as of the 2020–2021 school year approximately 49% are Hispanic or Latino, 24% White, 17% Asian, 1% Black or African American and just under 5% report two or more races. Additionally, 20% of students are English language learners.[24] A significant portion of students across the county come from economically disadvantaged backgrounds, with over 49% of students eligible for free and reduced-price school meals.[24] Public school districts in Orange County have school nurses that typically distribute their time across multiple schools, resulting in a ratio across the county of 1 credentialed school nurse to over 2,000 students as reported by the Orange County Department of Education (Pamela Kahn, MPH, RN, NCSN, e-mail communication, August 17, 2022). In the wake of the pandemic the workload for Orange County school nurses and health staff was quite high. In the 2020–2021 school year 41,049 phone calls were made related to COVID-19 cases and 39,901 students were quarantined for symptoms or diagnosis of COVID-19 (Pamela Kahn, MPH, RN, NCSN, e-mail communication, August 17, 2022).

The Orange County Healthy Schools Restart Group (OCHSRG), which was formed in March of 2020 to assist schools in navigating COVID-19, consisted of individuals from Children's Hospital of Orange County, the American Academy of Pediatrics, the Orange

County Department of Education, the Orange County Health Care Agency (OCHCA) and the University of California, Irvine (Schools of Medicine, Nursing, Public Health, Education, Biology and Management). From this collaboration, schools gained access to numerous experts including virologists, pediatricians, educators, biologists, infectious disease specialists, psychologists, nurses, epidemiologists, and public health experts.

Decision Tree development.—One of the many resources OCHSRG created to support schools during the uncertainty of the COVID-19 pandemic was the Student Symptom Decision Tree, hereafter referred to as the Decision Tree. The Decision Tree is a flow chart consisting of icons, branching logic, and definitions (see Figure 1) to assist school staff in identifying potential cases of COVID-19 and deciding on an appropriate plan to mitigate the spread of the virus. The design of the Decision Tree was based on a model developed at Washington University in St. Louis.[11] The Decision Tree was regularly updated to reflect evolving federal and state guidelines as well as the availability of vaccines. Through cross-disciplinary discussion of guidelines from the CDC and the California Department of Public Health (CDPH), the OCHSRG members translated mitigation strategies, procedures, and recommendations to the school context. Towards the beginning of the pandemic the group met weekly to update the Decision Tree, then transitioned to monthly meetings as guidelines were less frequently updated. New versions of the Decision Tree were always vetted by the OCHSRG members, county-level public health officials, representatives from schools, and school district administration.

A version of the Decision Tree was originally made available in September 2020 to schools submitting waivers to reopen for the 2020–2021 school year to be used as part of the school's COVID-19 management plan. The Decision Tree was also available on the OCHSRG website hosted by the University of California, Irvine's Institute for Clinical and Translational Science.[25] With the resumption of in-person attendance at school for the 2021–2022 school year, updated versions of the Decision Tree were widely distributed to Orange County school districts, available on the Orange County Department of Education website in PDF form, and continued to be posted on the OCHSRG website. School administrators were able to download and print the Decision Tree and distribute it to students and parents in the region. Thus, the Decision Tree was available as a common reference for administrators, staff, parents, and students as well as for the primary users, school nurses, to make health decisions in the uncertainty of the COVID-19 pandemic.

Procedure

Data collection—In February of 2022, a survey was administered to school nurses and administrators to assess the acceptability, feasibility, usability, appropriateness, helpfulness, and frequency of use of the Decision Tree. Potential respondents were contacted from the list of schools that previously received guidance from the OCHSRG, forming a convenience sample. Initial email invitations were followed by a reminder two days later.

Study data were collected and managed using the Research Electronic Data Capture (REDCap) tool, an electronic data capture tool hosted by UCI Health.[26,27] REDCap is a secure, web-based software platform designed to support data capture for research studies,

providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources.

Survey measures.—The evaluation survey used was a 17-item measure designed to assess multiple constructs reflecting use and perceptions of the decision tree (see Table 1). The survey included items for acceptability (1 item), feasibility (1 item), and appropriateness (1 item) adapted from Weiner et al., 2017,[28] a usability scale (6 items) adapted from Lyon et al., 2021,[29] as well as an item to assess the helpfulness of the decision tree (1 item) developed for this study. For these constructs, the respondents were given closed-ended questions with responses on a 5-point Likert scale from "Completely Disagree" to "Completely Agree." Additionally, when a negative answer was selected, "Disagree" or "Completely Disagree", a text box for an open-ended response was provided to obtain qualitative data explaining the negative response indicated. The survey also contained closed-ended items about respondent usage of the Decision Tree, asking whether there was a school policy for its use, and items assessing demographics of the respondent and school in which they worked. For a complete list of questions in the survey see Table 1.

Analysis.—Frequencies and percentages of responses were generated to characterize respondents' perceptions of the acceptability, feasibility, appropriateness, helpfulness, and usability constructs. The usability scale was computed by taking the mean of the six usability items after four items in the scale were reverse coded. Additionally, qualitative analysis was completed for open-ended items and themes were identified from a two-step coding process. A coder reviewed the detailed feedback given by respondents who marked a negative response and used an inductive approach to identify descriptive codes within the text. The codes were then assessed for commonalities and resulting themes were identified.

RESULTS

Characteristics of Survey Respondents

Responses were received from 56 school personnel out of 104 contacted, a 54% response rate, most of whom were school nurses (75%) as well as principals and other school administrators. The respondents worked at schools with a range of grade levels, with 79% serving elementary (K-5), 64% middle school (6–8) and 52% high school (note that some schools serve multiple grade levels). Respondents were primarily experienced educators, 50% of whom had over 10 years of experience in a school setting and 29% had 6–10 years of experience.

Results from the Evaluation Survey

Use of the Decision Tree.—Usage of the Decision Tree was reported as quite high across respondents. Nearly 77% indicated there was a policy in place at their school to use the Decision Tree. When asked about how recently they had used the Decision Tree the large majority, close to 70%, used the Decision Tree at least once in the last week. Another 16% reported using the Decision Tree within the past two weeks, 5% within the past month,

and 9% used more than a month ago. The respondents were also asked how often they consulted the Decision Tree. Results showed use of the tree over 10 times a week by 39% of respondents, 6–10 times a week by 27% of respondents and 1–5 times a week by 34% of respondents.

Perceptions of the Decision Tree.—The perceptions of the Decision Tree were largely positive. Combining the responses of "Agree" and "Strongly Agree" for the assessed constructs showed that the decision tree was viewed as acceptable (91%), feasible (70%), appropriate (89%), usable (71%) and helpful (95%) by the vast majority of respondents. Figure 2 depicts the detailed survey responses, which show that the proportion of respondents who strongly agreed that the Decision Tree was helpful and acceptable was greater than 40%, whereas only 19% strongly agreed that the Decision Tree was feasible and 26% strongly agreed that it was usable. The pattern of results suggests that respondents felt strongly about the need for this type of decision aid but there may be areas for improvement in implementation of the tool.

Qualitative feedback for the Decision Tree.—A subset of the participants (N = 17) provided comments about ways that the Decision Tree could be improved. Specific concerns organized by theme are presented in Table 2. Two themes emerged from the qualitative data: the formatting and the complexity of the Decision Tree. Under the theme of formatting some respondents commented that it was hard to print to one page, had a crowded format and small print. One participant commented "there are too many words and arrows" and that "the red/purple exposure [as] yes or no is confusing" with another stating "the flow is hard to follow." Under the theme of complexity select respondents described the large number of variables in the tree, that it was hard to explain to others, and there was a need to be an expert. One participant said that "parents and teachers debate the information" and another that "it was complicated at the beginning." Although the survey items did not specifically prompt respondents for positive feedback on the Decision Tree, multiple respondents (N = 8) wrote unsolicited positive comments in their text responses. One participant said, "thank you so much for the wonderful document that has helped us through the dog days of COVID" and another stated "I am very grateful to have the decision tree as a reference."

DISCUSSION

In response to rapidly evolving public health guidelines and a need to make decisions in the context of uncertainty, a coalition of professionals from academic, educational, and public health organizations coalesced to support schools during the COVID-19 pandemic and produced a decision-support tool to aid school personnel during the resumption of in-person school operations. School personnel were surveyed about the Decision Tree in February 2022 during the first fully in-person school year for most districts since the start of the COVID-19 pandemic. This was a time when school administrators, staff, and nurses were required to make frequent decisions to keep the school safe and healthy. Survey respondents found the tool to be acceptable, feasible, appropriate, useful, and helpful. This finding is consistent with a study conducted by Röbbelen et al.[30] who found users of their COVID-19 decision tree perceived it as useful, easy to use, and would likely use it in the future. Additionally, respondents in our study reported frequent use of the tool, the large majority

within the most recent school week. The common use of the tool provides evidence that the Decision Tree was a valuable resource for school personnel faced with the difficult task of assessing student symptoms and determining an action plan for COVID-19 mitigation.

Although the Decision Tree received an overall positive evaluation, qualitative feedback also indicated opportunities for improvement. Feedback from users emphasized complexity of content and formatting as a limitation of the tool. In addition to highlighting ways the tool can be improved in future iterations, the comments also suggested that it was a challenge to clearly convey the complexity of the available scientific and policy guidelines. Although well-intentioned the multiple agencies providing guidance on COVID-19 response- CDC, CDPH, OCHCA- often disseminated conflicting and confusing information. The issue of effectively communicating public health guidelines is timely given the difficulties in science communication exposed by the COVID-19 pandemic and the recent external review of the CDC[31] that has implications for dissemination of public health guidelines in the future. Specifically, the CDC report emphasizes the importance of quickly sharing results and adapting results into practical guidance that is easy to understand.[32] Our paper may point to the value of leveraging local coalitions to facilitate the translation of public health guidelines into locally relevant action plans. The data presented here, that among survey respondents use of the Decision Tree was high and perceptions of the tool were quite positive, may indicate that our collaborative was able to meaningfully assimilate changing guidelines into useful iterations of the tool for the school context.

Furthermore, understanding the usability of the tools provided to school staff and administrators to mitigate the spread of the COVID-19 pandemic is important for policy efforts to encourage their use. By extension, understanding the elements of tools that are most useful can shape science policy regarding how best to support schools as institutions that impact public health and disease mitigation. Our empirical study not only advances knowledge of the use of public health tools in schools, but it also has practical implications for policymakers and institutions seeking to create healthy and safe learning environments during the outbreak of disease.

Our analysis of the use of the Decision Tree in schools to support COVID-19 mitigation has offered new insights into how decision trees may support public health decision-making in schools. The survey showed that school personnel viewed the decision aid as useful and helpful even though they may have had some reservations about its feasibility, mostly related to a desire for less complexity. Faced with the need to make decisions about potential infection transmission in the schools, it may be valuable to give school personnel evidence-based tools to support their decision-making even if those tools are perceived as challenging to navigate.

To the best of our knowledge, our study is the first of its kind to examine utilization of a decision tree in the school setting for an infectious disease. Although there has been a proliferation of decision trees available to inform school decision-making in relation to COVID-19, it is somewhat surprising to note that similar resources do not seem to be available for other infectious diseases such as influenza, respiratory syncytial virus, or measles. A valuable next step would be to evaluate whether decision making is improved

by using the Decision Tree. There is evidence of decision-support tools enhancing decision-making in other contexts, which suggests such tools may have a similar impact in the school setting. For example, McMaughan et al.[33] found improved antibiotic stewardship in nursing homes after a decision-making aid on antibiotic stewardship was implemented. Another study found a decision tree helped nurses choose appropriate dressing for ulcers.[34] In response to limited testing resources during the start of the COVID-19 pandemic, Luu et al.[35] developed a decision tree to improve resource allocation by preventing errors in testing choices for suspected COVID-19 cases and found evidence that the clinicians used the decision tree appropriately resulting in an optimization of resources. In addition to improved decision making, future work could explore variation in rates of COVID-19 transmission contingent upon reliance or frequency of use of the Decision Tree. Similarly public health scholars should investigate the utility of decision trees for school health personnel for other illnesses, such as respiratory syncytial virus or influenza and assess the efficacy of such decision tools in improving decision making and ultimately preventing disease spread. This information can be leveraged to prepare best practices to respond to the next pandemic.

Additionally, future research is needed to illuminate specific beneficial aspects of multi-disciplinary collaborations between scientific experts and professionals in the field. One such area of research could study which processes are effective for adapting complex scientific results into clear decision-making guides for educational and other applied settings. Further emphasis on research to develop decision tools in concert with users and soliciting user feedback to enhance the clarity of science-based guidance, is also a crucial area for ongoing research especially in light of changing public health agency priorities due to challenges in science communication during the COVID-19 pandemic. This type of collaboration with users could also be leveraged to determine best formatting practices which could be utilized in decision tools for other illnesses or situations. Further, efforts to establish a rapid feedback loop between tool users and academic experts can be studied in the future, to assess quality improvement in decision-making and associated rates of disease over time.

There are some limitations to this study that should be considered in interpreting the findings. The email list used to solicit respondents was comprised of school-affiliated personnel who had previous contact with the OCHSRG, and thus the study was based on a convenience sample from a self-selected group that were perhaps predisposed to have confidence in the recommendations generated by this coalition. Caution should be exercised in generalizing these findings to school personnel who are unfamiliar with or distrust the information source. Further, although the response rate of 54% exceeds the 44% mean response rate reported in a 2022 meta-analysis of 1,071 online survey response rates,[36] it is possible that non-respondents held more negative perceptions of the Decision Tree compared to those who did respond to our survey. Also, ideally research such as the present study would be carried out with a plan for rapid feedback of results to facilitate incorporation of the findings into revisions to the tool. Such was not the case here, as the preliminary survey results were shared with the OCHSRG after they had discontinued the process of progressive tool refinement. We should also note that although updated versions of the Decision Tree were regularly made available to school personnel on various websites, hard copies that were printed at the school site to inform decisions may not have been the most up-to-date version.

Thus, it should not be assumed that respondents were reflecting on the currently available version when providing their responses.

We hope that this study will inspire other public health scholars to study the utility and efficacy of tools intended to improve decision-making that affects public health outcomes. We also hope that this research leads to further study into factors that improve clarity in communicating guidance through decision-support tools, and that it encourages policymakers to create mechanisms that support partnerships between public health experts and public institutions like schools, to continue to provide guidance that can foster healthy and safe learning environments.

IMPLICATIONS FOR HEALTH BEHAVIOR OR POLICY

These findings display how a multi-sector collaboration engaging academics with public health and education professionals can yield a functional decision aid that school personnel can use to inform their actions during a pandemic. This study is directly relevant to the goal to "reduce rates of infectious diseases and improve health for people with chronic infections" included in the Healthy People 2030 report by the Office of Disease Prevention and Health Promotion[37] and to the prevention of COVID-19, identified by WHO as a priority disease for research and development in emergency contexts.[38,39] The following actions can be taken by researchers in academic and public health settings, as well as by policymakers, in preparation for future health care crises.

- School administrators should work with local academic and health organizations for support in translating generic public health guidelines to local implementation. Experts at universities and public health agencies should include the input of school nurses and other professionals in-the-field when developing science-based guidance and related decision aids that they and their peers will use.

- Academics can leverage contact with professionals in-the-field, to enhance the usefulness of public health decision aids. Quick and consistent evaluation of these tools can create feedback loops to maximize tool efficacy.

- Additional research should assess the impact of decision aids in schools and applied settings, on rates of viral transmission and begin to identify best practices in decision tree implementation.

- Multi-sector coalitions of local academic experts and health professionals should be used in an ongoing manner beyond the response to COVID-19, as these groups may be uniquely well placed to adapt and develop responses to new health crises.

- Policymakers should also allocate funds to encourage and ensure ongoing multi-sector collaborations to address future public health priorities.

Acknowledgments

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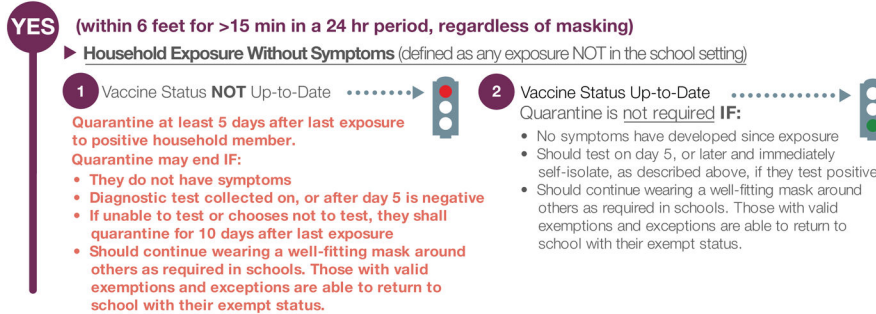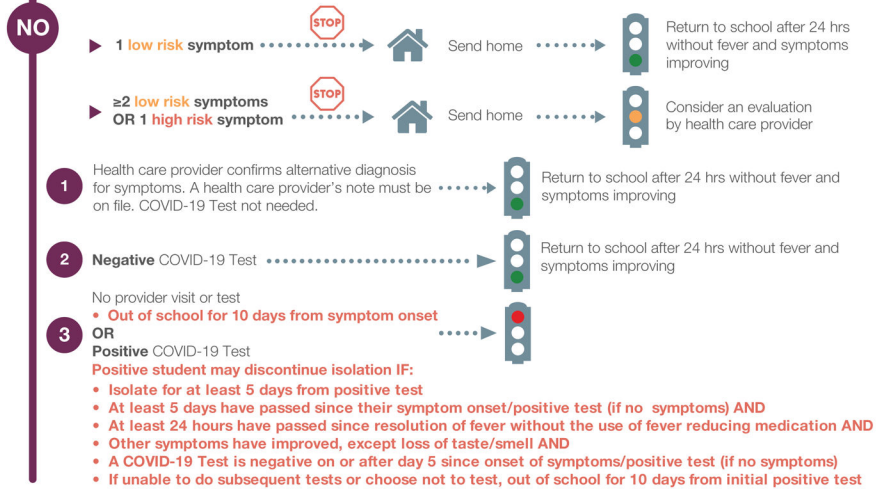
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Student Symptom Decision Tree

Low-risk: general symptoms

Fever (≥100.4°)

Sore throat

Congestion/runny nose

Headache

Nausea/vomiting/diarrhea

Fatigue/muscle or body aches

High-risk: red flag symptoms

Cough

Difficulty breathing

Loss of taste/smell

Exposure to a COVID-19 positive person?
within 6 ft of a COVID + or clinically compatible person for >15 min in a 24 hr period, regardless of masking, and occurring in any location (indoor or outdoor)

NO

▸ 1 **low risk** symptom 〔STOP〕 ⌂ Send home ⟶ Return to school after 24 hrs without fever and symptoms improving

▸ ≥2 **low risk** symptoms **OR** 1 **high risk** symptom 〔STOP〕 ⌂ Send home ⟶ Consider an evaluation by health care provider

1 Health care provider confirms alternative diagnosis for symptoms. A health care provider's note must be on file. COVID-19 Test not needed. ⟶ Return to school after 24 hrs without fever and symptoms improving

2 **Negative** COVID-19 Test ⟶ Return to school after 24 hrs without fever and symptoms improving

3 No provider visit or test
• **Out of school for 10 days from symptom onset**
OR
Positive COVID-19 Test
Positive student may discontinue isolation IF:
• **Isolate for at least 5 days from positive test**
• **At least 5 days have passed since their symptom onset/positive test (if no symptoms) AND**
• **At least 24 hours have passed since resolution of fever without the use of fever reducing medication AND**
• **Other symptoms have improved, except loss of taste/smell AND**
• **A COVID-19 Test is negative on or after day 5 since onset of symptoms/positive test (if no symptoms)**
• **If unable to do subsequent tests or choose not to test, out of school for 10 days from initial positive test**

YES (within 6 feet for >15 min in a 24 hr period, regardless of masking)

▸ **Household Exposure Without Symptoms** (defined as any exposure NOT in the school setting)

1 Vaccine Status **NOT** Up-to-Date

Quarantine at least 5 days after last exposure to positive household member.
Quarantine may end IF:
• **They do not have symptoms**
• **Diagnostic test collected on, or after day 5 is negative**
• **If unable to test or chooses not to test, they shall quarantine for 10 days after last exposure**
• **Should continue wearing a well-fitting mask around others as required in schools. Those with valid exemptions and exceptions are able to return to school with their exempt status.**

2 Vaccine Status Up-to-Date
Quarantine is not required **IF:**
• No symptoms have developed since exposure
• Should test on day 5, or later and immediately self-isolate, as described above, if they test positive
• Should continue wearing a well-fitting mask around others as required in schools. Those with valid exemptions and exceptions are able to return to school with their exempt status.

YES (within 6 feet for >15 min in a 24 hr period, regardless of masking)

▶ **Exposure In School** (defined as on the bus, in the classroom, or during sports/extracurricular activities)

Option 1: Individual Management

Modified Quarantine Exemption
- Student vaccine status is not up-to-date and both exposed student and COVID-19 positive person were wearing masks.

Student may continue attending school in person IF:
- The exposed student does not develop any symptoms; AND
- The exposed student continues to wear an appropriately fitting mask; AND
- The exposed student undergoes COVID-19 testing at least twice during the 5-day quarantine period; AND
- The exposed student stays out of all extracurricular activities at school, including sports and activities in the community setting for the entire quarantine period.
- The exposed student may participate in all instructional activities, except activities where a mask cannot be worn (eg. some musical instruments)
- If the exposed student in unable to test or chooses not to test, they shall remain in quarantine for 10 days after last exposure

Option 2: Group Tracing Approach

Schools will notify groups of potentially exposed students defined as:
- Potentially exposed students are those who spent over 15 minutes, in 24 hrs in the same indoor airspace with someone who has COVID-19
- All members of the group are notified regardless of vaccine status, previous COVID-19 disease status, or whether they were masked or not

Notification is to groups of students, rather than individual students, and will include:
- Exposure to COVID-19 with last known date of exposure
- Continue school attendance as long as they are free of symptoms
- Recommend testing 3-5 days after last exposure
- Continue wearing a well-fitting mask
- If unable to wear a mask, student must quarantine at home until a negative test result is obtained 3-5 days after most recent exposure

- Students may participate in activities wearing an appropriate mask
- If a mask cannot be worn, the student will refrain from that activity until negative COVID-19 test results are obtained 3-5 days after most recent exposure
- If student is part of a routine (weekly) test program, they may continue all activities as long as they remain without symptoms and test negative

Definitions:
- **Exposure** (for individual management approach): Student was within 6 feet of someone who has COVID-19 for a cumulative total of 15 minutes or more over a 24-hour period
- **Vaccine status up-to-date:** Persons 12 years and older who have completed a primary series of COVID-19 vaccine and have either received a booster shot or are not yet recommended to receive a booster dose according to CDC guidance. For those <12 years of age, they are considered up-to date if they have completed their primary series according to CDC guidance.
- **COVID-19 Test:** Antigen tests, nucleic acid amplification tests (PCR or NAA), or LAMP are acceptable, but **antigen testing is preferred to end isolation**. Home/over-the-counter tests are acceptable.
- **Resources for COVID Testing:**
  - https://occovid19.ochealthinfo.com/covid-19-testing
  - https://health.choc.org/guide/covid-19/#test

This care pathway was designed to assist school personnel and is not intended to replace the clinician's judgment or establish a protocol for all patients with a particular condition. Diagnosis and treatment should be under the close supervision of a qualified health care provider, including school nurses. This guidance is based on current evidence and best data at the time of publication. Updates are provided to reflect changes in knowledge about the impact of the disease on children and adolescents (02.08.2022).
For more detailed guidance, see the California Department of Public Health: https://www.cdph.ca.gov/

Figure 1:
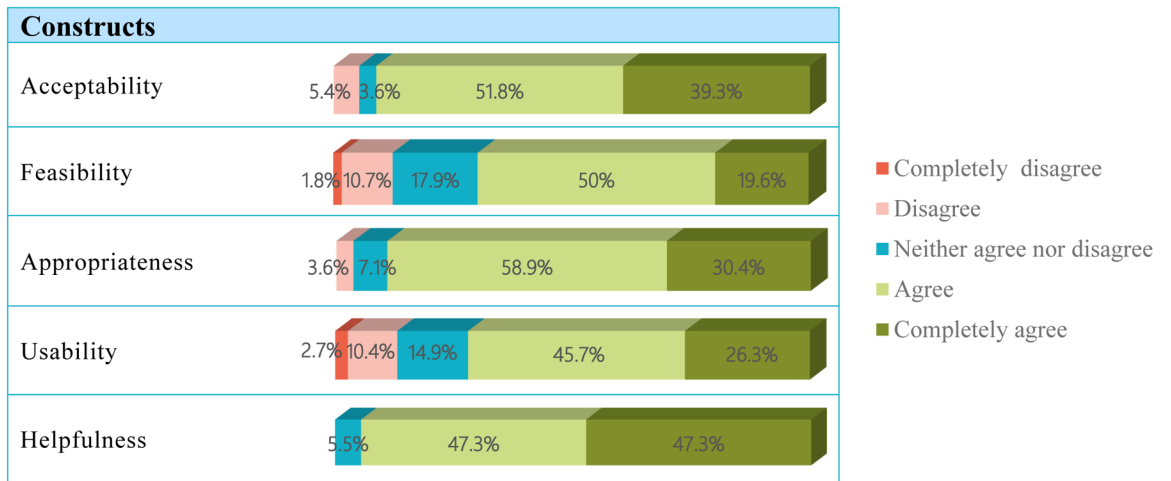The Student Decision Tree at the Time of the Survey

Figure 2.
Respondents (N = 56) Reported Positive Perceptions Overall of the Decision Tree

Table 1

Decision Tree Survey Items

Constructs and Items	Response Type
Acceptability	
I like the Student Symptom Decision Tree.	Likert scale
Feasibility	
I think the Student Symptom Decision Tree is easy to use.	Likert scale
Appropriateness	
The Student Symptom Decision Tree seems suitable for my needs.	Likert scale
Usability	
I find the Student Symptom Decision Tree unnecessarily complex.[a]	Likert scale
I need the support of an expert consultant to use the Student Symptom Decision Tree.[a]	Likert scale
I find the Student Symptom Decision Tree very cumbersome to use.[a]	Likert scale
I needed to learn a lot of things before I could get going with the Student Symptom Decision Tree.[a]	Likert scale
I feel very confident using the Student Symptom Decision Tree.	Likert scale
I would imagine that most people would learn to use the Student Symptom Decision Tree very quickly.	Likert scale
Helpfulness	
The Student Symptom Decision Tree was helpful to develop a course of action following an exposure.	Likert scale
Characteristics	
What is your job title?	Principal School nurse School health technician Administrator Other
Please provide your job title.	Open-ended
Which of the following grades are served by your school?	Elementary (K-5) Middle school (6–8) High school (9–12)
Do you have a policy in place to use the Student Symptom Decision Tree?	Yes No
How many times have you consulted the Student Symptom Decision Tree?	Never 1–5 times per week 6–10 times per week More than 10 times per week
When was the last time you used the Student Symptom Decision Tree?	Within the past week Within the past two weeks More than two weeks ago More than a month ago
How many years have you worked in the school setting?	5 years or less 6–10 years More than 10 years
Please provide any improvements that you think should be made to the Student Symptom Decision Tree.	Open-ended

[a]Reverse coded for comparison to other Likert scale items.

Table 2

A Minority of Respondents (N = 17) Found the Decision Tree Complex and Saw Room for Improvement

Descriptive Codes	Count	Themes
Too much information	5	format, complexity
Hard to follow	4	format, complexity
Too many groups	4	format
Hard to print to one page	4	format
Crowded	3	format
Small print	2	format
Many variables	5	complexity
Hard to explain to others	3	complexity
Needed to be an expert	3	complexity
Content is complex	3	complexity
Guideline updates	2	complexity
Need outside knowledge	2	complexity

Note: Respondents may have more than one code identified per item.