July 9, 2020

This is a working document. It is anticipated to evolve in response to new information as it emerges due to the dynamic nature of the pandemic. It is current as of July 9, 2020.

In early 2020, the novel coronavirus SARS-CoV2 pandemic quickly swept the globe with significant impact to all UC locations, forcing modifications to operations, including a transition to remote instruction and teleworking environments. As the dynamics of the SARS-CoV-2 pandemic and COVID-19 cases continue to evolve, it is reasonable to expect ongoing transmission and outbreaks in US communities until herd immunity is achieved through wide-spread natural infection or an effective treatment or vaccine is available. This represents a challenge for normal University operations to resume. As long as community transmission continues, a return to onsite activities is not without risk of morbidity and mortality for the students, faculty, staff, and visitors accessing our campuses.

To decrease opportunities for viral transmission at UC locations, significant public health mitigation measures will be required. Current mitigation efforts include plans to decrease normal campus population density and limiting on-site operations to approved activities. Non-pharmaceutical interventions (NPI), which include but are not limited to performing frequent hand hygiene, practicing physical distancing, wearing facial coverings while in public, and implementing appropriate cleaning and disinfection protocols, are also key. Education regarding COVID-19 and the University exposure control plans will be provided for all individuals who enter UC locations. In addition, a key mitigation strategy will be a process for screening University students, faculty, staff, and visitors for COVID-19 symptoms prior to allowing access to any University facilities, including classroom and research buildings, dining halls, libraries, and congregate living facilities.

University COVID-19 planning efforts are driven by the Six Principles for Responsible Operation for University Locations in Light of the SARS CoV-2 Pandemic, adopted by the Board of Regents, and the University of California Consensus Standards for Operation of Campus and ANR Locations in Light of the SARS-CoV-2 Pandemic, adopted by the President and Chancellors. The President convened a systemwide Testing and Tracing Task Force to make recommendations to campuses related to testing and contact tracing. The task force recommended adoption of a requirement to establish a process for COVID-19 symptom screening at each UC location. To support this requirement, a systemwide task force was organized to share knowledge and best practices related to app- or web-based symptom tracking.

The systemwide Symptom Screening Task Force was convened to make recommendations for UC locations, with the exception of the academic health centers, which are already utilizing previously-developed symptom screening processes. The charge of the Task Force was not to prescribe a platform or process, but rather to inform systemwide operations and public health efforts to:

- Establishing a standard list of symptoms to screen;

- Developing an algorithm for the prioritization of diagnostic testing;
- Creating or recommend platforms for data acquisition, aggregation and visualization that account for the confidentiality and security of data collected

The task force, chaired by Eleazar Eskin, PhD, Professor and Chair, Computational Medicine, UCLA, included subject matter experts, administrators, faculty (including Academic Senate representation), and staff from across the UC system (click here for full roster).

The task force reviewed data and published materials from public health authorities, institutions of higher education, and healthcare systems, as well as data emerging from UC campus symptom screening pilot programs. Members grounded their recommendations in the following guidance:

- Principle 2 of the Six Principles for Responsible Operation for University Locations in Light of the SARS CoV-2 Pandemic and Standard 4 of the University of California Consensus Standards for Operation of Campus and ANR Locations in Light of the SARS-CoV-2 Pandemic
- Federal, state, and local public health guidelines

Task force deliberations were informed by coronavirus guidance issued by the US Centers for Disease Control and Prevention (CDC), as of June 30, 2020:

- There is a wide range of symptoms reported by people with COVID-19, from mild symptoms to severe illness.
- The CDC published a list of COVID-19 symptoms that is updated as new information on symptoms is made available.
- Early data suggest that person-to-person transmission occurs easily, with each infected person (whether symptomatic or not) likely to infect 2.5 more people.
- Individuals may transmit the virus for a number of days before symptom onset; a significant proportion of viral transmission (up to 40%) occurs prior to symptom onset.
- Super-spreading events have occurred in multiple countries, including the US, and have led to large outbreaks.

The task force quickly created three subgroups intended to focus discussions on clinical considerations, policy and infrastructure, and analysis. Their work and recommendations to date are herein described.

Clinical

A subgroup was charged with:

- Establishing a standard list of symptoms to screen; and
- Developing an algorithm for the prioritization of diagnostic testing.

Each University location provided a list of symptoms that are currently included or are under consideration for inclusion in the respective symptom screening application. A review of this comprehensive list, the CDC list of COVID-19 symptoms, and the expertise and frontline experiences of UC Health experts resulted in the following recommendations:

Table A: Recommended list of symptoms to include in screening programs

Tier	Symptom	Description
Red	Fever	Specific temperature threshold determined by the local Public Health Authority
Red	Chills or Shaking	New, not from a known or chronic condition
Red	Cough	
Red	Shortness of Breath/Difficulty Breathing	
Red	Loss of Taste or Smell	
Yellow	Sore Throat	
Yellow	Runny Nose/Sinus Congestion	
Yellow	Diarrhea	
Yellow	Muscle Pains/Body Aches	
Yellow	Headache	
Yellow	Unusual Fatigue	
Yellow	Eye Redness with or without Discharge	
Yellow	Nausea or Vomiting	

The identification of any symptoms above (see **Table A**) by a respondent should result in a referral for triage by a licensed Health Care Professional (HCP) and instructions to remain off-

site and avoid contact with others until cleared by the HCP. The HCP should make the final determination regarding recommendations for diagnostic Polymerase Chain Reaction (PCR) testing, care, and clearance or denial of access to UC facilities. To maximize consistency in the implementation of these recommendations, task force members strongly suggest that all locations require clearance by UC Student Health or Employee Health HCPs. The group raised concerns that personal HCPs may provide information and advice that is inconsistent or that does not meet UC standards. While differences in recommendations among HCPs can be expected, any inconsistencies in approach will increase anxiety among UC employees and students and could increase the risk of outbreaks at UC locations. Ultimately, individuals may choose their own healthcare provider for clinical advice and follow up. However, UC HCPs whose job is student or workplace safety should evaluate eligibility for onsite access. Members of the task force felt strongly that a centralized hotline staffed by UC HCPs should be utilized and made available not only for students, faculty, and staff but for others with authorized access to UC facilities (e.g., volunteers) and positive screens as well. Such an option may be considered by campuses but would require substantial planning and financial support to assure appropriate arrangements are made for the treatment of and creation and storage of health records for individuals with authorized access to UC facilities other than students, faculty or staff.

The clinical subgroup recommends that if a respondent reports any of the following CDC-identified emergency warning signs for COVID-19 during HCP triage, they should be referred for emergency medical care immediately.

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion
- Inability to wake or stay awake
- Bluish lips or face

No specific subset of symptoms has been demonstrated to be predictive of infection among exposed individuals. Each of the symptoms recommended for inclusion in symptom screening programs is classified into one of two tiers: red or yellow. Symptoms in the red tier are individually associated most directly to COVID-19 positive PCR test results. The information collected by UC Health in evaluating and treating individuals for COVID-19 suggests that these symptoms have the strongest correlation to the disease and are most frequently reported by COVID-19 positive individuals. Symptoms identified in the yellow tier are commonly linked with COVID-19, but because they are also common to many other diagnoses, they should be differentiated through follow-up triage by a HCP.

In addition to the symptoms included in the screening survey, supplemental information will be required for the HCP to appropriately assess an individual. These should include at least the following two questions:

- Have you been tested for COVID-19 using a nasal, oral, or nasopharyngeal swab in the past XX days? *Note: The number of days should be determined by the UC location and should not be less than 14 days.*
    - If yes, what were the results of your test? *Positive, negative, pending*
    - *A positive test should prevent the individual from being automatically cleared to access UC facilities and should direct the individual to a HCP for additional triage.*
    - *A pending test should prevent symptomatic individuals from being automatically cleared to access UC facilities and should direct the individual to a HCP for additional triage. Asymptomatic individuals participating in surveillance testing studies may be cleared to access UC facilities while test results are pending.*
- Has anyone you live with or had close contact with had a positive COVID-19 test using a nasal, oral, or nasopharyngeal swab in the past XX days (excluding any contact previously reported in this symptom screening program)? *Note: The number of days should be determined by the UC location and should not be less than 14 days. Close contact should be defined consistent with CDC, state, and local public health guidance addressing distance, exposure duration, and level of protection from either the case patient or contact. It typically is understood to include unprotected contact within 6 feet for more than 10 minutes.*
    - *A positive answer should prevent the individual from being automatically cleared to access UC facilities and should direct the individual to a HCP for additional triage.*

As we learn more about transmission dynamics and as the pandemic evolves, it may become necessary to add additional screening questions to this list (e.g., travel to/from specific areas or specific recent activities).

In evaluating positive answers (or in the case of tests, a pending test), HCPs should consider the local epidemiological context, recent exposure events (e.g., travel to higher prevalence settings), and self-reported symptoms when determining whether a PCR test is indicated and whether the individual is cleared to access UC facilities.

Individuals who indicate the presence of one or more red-tier symptom(s) should be prioritized for PCR testing. Individuals who indicate the presence of one or more yellow-tier symptom(s) may be considered for PCR testing, pending the outcome of the HCP triage. If PCR testing is indicated, the individual should be directed to a UC COVID-19 testing site (if available), a local Public Health COVID-19 testing site, or to their primary care physician. Importantly, the Consensus Standards require location plans to include provisions for arranging for clinical tests of any symptomatic students, faculty, or staff.

To provide more consistent recommendations regarding PCR testing and UC facility access, locations should utilize a standard script and decision tree for HCP triage. Locations may

develop these resources or use existing models. Several examples discussed by the task force are included in Appendix A.

Local Public Health officials may have developed specific symptom screening requirements. This document provides the minimal recommendations for screening, and locations may need to add additional questions or processes depending on local conditions and the instructions from their respective local Public Health Departments. Each UC location should consult with their local Public Health Department and verify the adequacy of their symptom screening program.

Policy and Infrastructure

The policy and infrastructure subgroup was charged with:

- Developing plans to collect symptom data on each campus; and
- Developing capabilities to detect outbreaks or increased viral prevalence or transmission on a campus

The Consensus Standards for Operation of Campus and ANR Locations in Light of the SARS-CoV-2 Pandemic include a requirement to implement symptom screening. As discussed in the Testing and Tracing Task Force report, these programs should include a uniformly administered strategy for screening all campus populations, including students, faculty, staff, and visitors. Clear guidelines should be developed for responding to individuals who refuse to participate.

Prior to the convening of the Symptom Screening Task Force, each UC location independently took steps toward the development and implementation of a symptom screening strategy, and several have successfully deployed pilot programs. Software platforms to support online symptom screening surveys were selected by each location separately (refer to Appendix B). Task force review of the platforms in use or under consideration for use led to the conclusion that a single, systemwide platform is not necessary. It was determined that utilization of consistent language and user prompts, as suggested by the Clinical Subgroup, will provide sufficient means for data aggregation and systemwide benchmarking.

While these surveys provide an option for supporting the screening requirement without heavy reliance on human resources, accommodations or alternative means for conducting required screenings must be developed to accommodate disabilities, limited English proficiency, and lack of access to technology. For example, UCLA is installing iPads at strategic locations throughout campus for use to complete the online survey. Locations may also need to consider establishing designated entry points for facilities that are staffed by UC personnel who could conduct the screening verbally. Each symptom screening workstream, including alternatives, should include careful examination of data management strategies that establish privacy and security protections as necessary.

Additionally, the group focused on issues related to the development of guidelines for responding to individuals who refuse to participate. Each location should identify the individuals or units responsible for monitoring compliance and determining the process for responding to

those who refuse to submit to the screening or who seek access when they are determined to be ineligible.

Some locations are facing challenges in determining how to extend screening programs to visitors, including:

- Guests of students, faculty, or staff (e.g., parents, spouses, caretakers, etc.)
- Volunteers
- Third-party contractors and vendors
- General public

Consensus Standard 4 requires that campus plans include provisions for screening anyone entering University-owned or -operated facilities. Arrangements must be made to require the same or substantively equivalent screening not only of students, faculty, and staff but also to guests, contractors and vendors, and members of the public who are permitted access to those facilities.

The Clinical Subgroup recommends that any student, faculty, staff member, or others flagged by the initial screening survey be triaged by a UC HCP for final determination regarding recommendations for PCR testing, care, and clearance or denial of access to UC facilities. In order to operationalize this recommendation, UC locations will need to evaluate thoroughly their current workforce and infrastructure to determine whether existing resources can be augmented. Otherwise, locations will need to establish this framework. Current HCP resources available on UC campuses are illustrated below in **Table B**.

Table B: Health Care Professional Services Available at UC Campuses

Location	Onsite Student Health Services	Onsite Employee Health Services	Associated Medical Center	Employee Health Services Provided by Assoc Med Ctr	Onsite Visitor Health Services
UC ANR	N/A	No	No	N/A	No
UC Berkeley	Yes	Yes	No	N/A	No
UC Davis	Yes	Yes	Yes	Yes	No
UC Irvine	Yes	No	Yes	Yes	No
UCLA	Yes	No	Yes	Yes	No
UC Merced	Yes	No	No	N/A	No
UCOP	N/A	No	No	N/A	No
UC Riverside	Yes	No	No	N/A	No
UC San Diego	Yes	No	Yes	Yes	No
UC San Francisco	Yes	Yes	Yes	Yes	No
UC Santa Barbara	Yes	No	No	N/A	No
UC Santa Cruz	Yes	No	No	N/A	No

Privacy and Data Use

The subgroup recommends that all screening programs develop a data handling protocol in consultation with the local Campus Privacy Official. An external-facing transparent privacy statement may be developed based on the protocol and posted for individuals in a central location (e.g., UC San Diego COVID-19 Symptom Screening Program Privacy Practices). The statement should address anticipated uses and disclosures of identifiable data and the purposes of data use, including use for public health purposes, operations, reporting, and research, if relevant. The task force also recommends that campuses consider other privacy concerns related to reopening efforts.

Records Retention

The task force identified significant variability among UC locations with respect to records retention protocols for symptom screening survey data ranging from 0-30 days. The California Information Practices Act and other laws strictly limit the collection and use of personal information to that which is relevant and necessary to accomplish a purpose of the University permitted or required by law. The task force recommends that symptom screening records be:

- Maintained consistent with legal and regulatory requirements, including requirements for security of sensitive data and requirements for segregating health records from regular employment or administrative records; and
- Retained only for the period of time they are useful and necessary to inform campus pandemic response and public health practices.

Analysis

Data collected as part of daily symptom screening can be leveraged to provide rapid detection of such changes and inform changes in policy and practice designed to avert or quickly contain outbreaks. Data science and analysis can contribute in many other ways to resumption of onsite operations. Examples include:

1. Pairing testing with symptom data to refine models of prediction of SARS-CoV-2 infection from symptoms;
2. Surveying campus community members activities and exposures to facilitate identification of common mechanisms of transmission;
3. Localizing outbreaks on campuses when they occur;
4. Facilitating the differentiation of an increase in Influenza-like symptoms due to SARS-CoV-2 relative to normal seasonal increases due to influenza;
5. Understanding the rates of adoption of various NPIs and their impact.

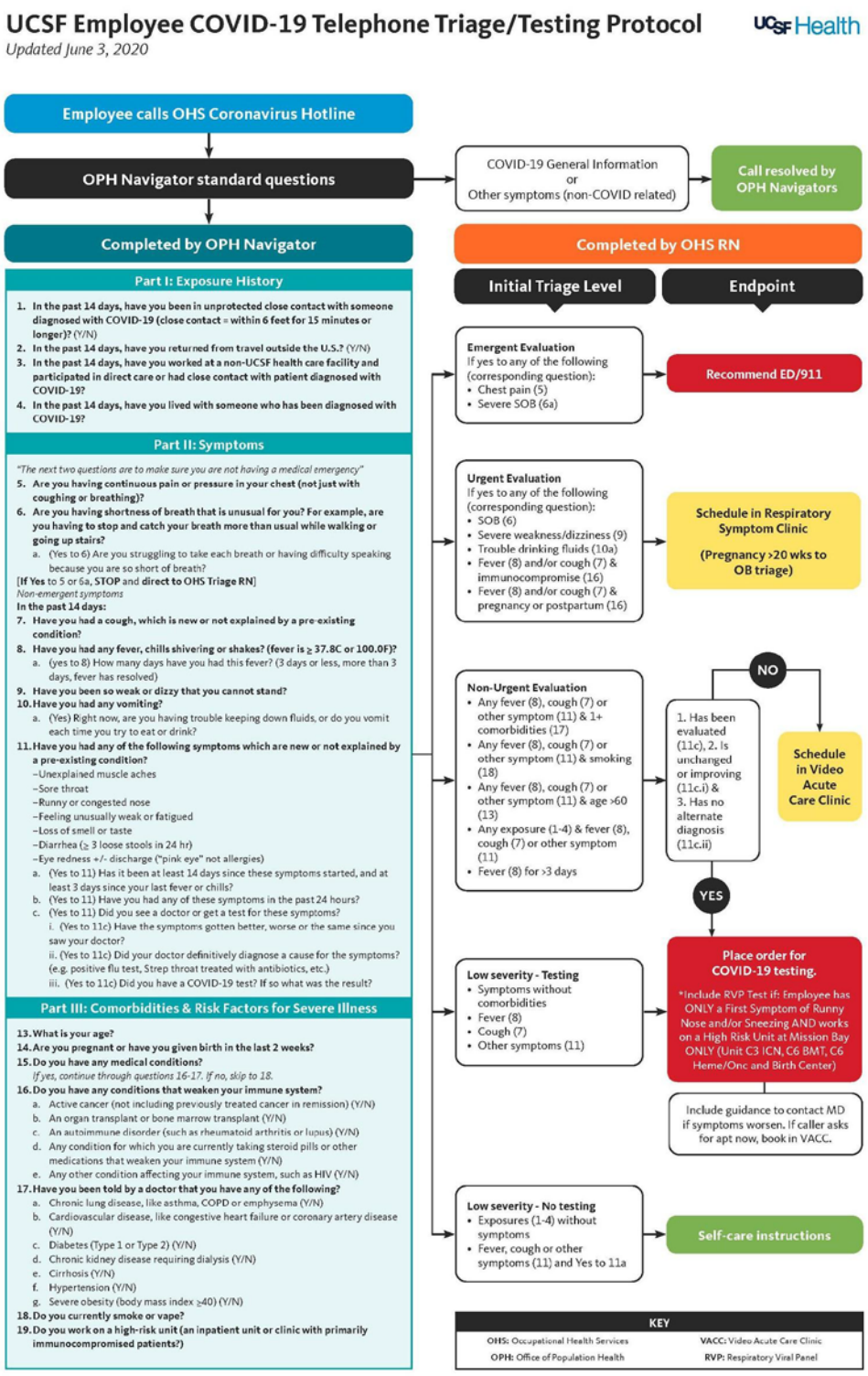
The analysis subgroup of the task force has assembled a team of data scientists representing all of the UC campuses whose expertise covers many subject areas including epidemiology, computer science, statistics, mathematics, and more.

This group has been asked to develop capabilities for the UC system to answer these questions. This can be done in two ways: (1) by aggregating and analyzing data collected through symptom screening for operational and health oversight purposes; and (2) by performing a voluntary research study. Data collected through either approach could be centrally aggregated and members from the analysis team representing all of the UC campuses would then have access to the data. The Analysis Group plans to work collaboratively to design the study and analyze the data. Currently there is no plan or protocol to aggregate the data for operational purposes.

A prototype algorithm for detection of changes in virus prevalence is expected to be operational by the end of summer.

Appendix A: Health Care Professional Triage Decision Tree Examples

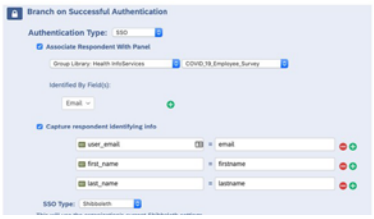
Example 1: UCSF Health



Example 2: UC San Diego Health

UC San Diego
HEALTH SYSTEM

All Users are Authenticated Using SSO



- Authentication using Shibboleth allows use to capture the SAML assertion variables being passed. In this case:
  - Email
  - First Name
  - Last Name

Enrollment

The work site information is important because it allows UCSD to be able to prioritize asymptotic testing based of building density.

Symptom Survey

Enrollment info and link displayed in survey header

Symptom Question 1

Symptom Question 2

Symptom Question 2: "Yes", moves to Question 3

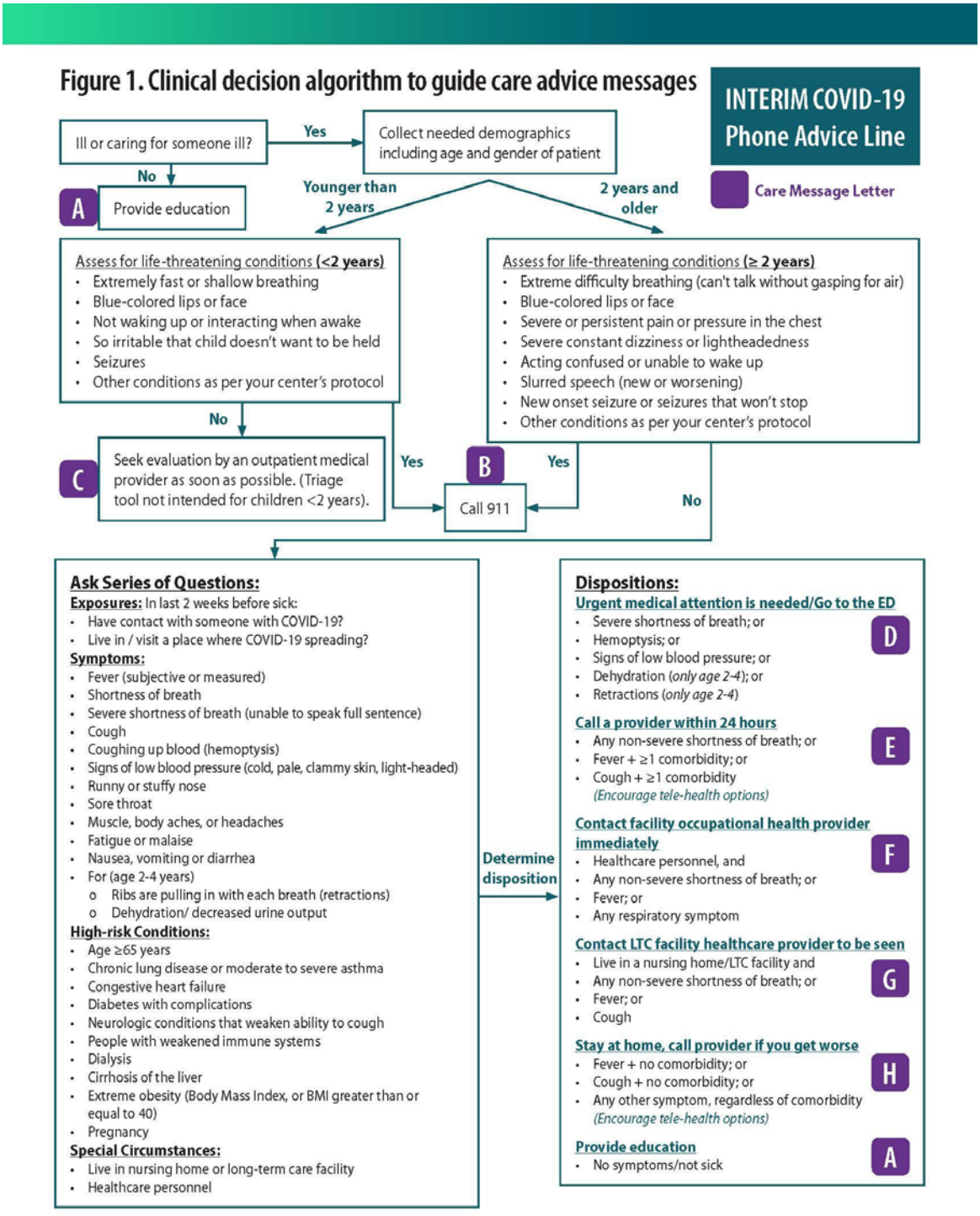
Symptom Question 2: "No"

Symptom Survey

Symptom Question 2: "Yes", then moves to Question 3

Symptom Question 3: "No", then moves to Question 4 & 5

Example 3: Centers for Disease Control and Prevention



Appendix B: Software Platforms Supporting UC Symptom Screening Surveys

Location	Software Platform
UC ANR	Qualtrics
UC Berkeley	Qualtrics
UC Davis	Qualtrics
UC Davis Health	Qualtrics
UC Irvine	Service Now
UCI Health	UCI Health Staff Screening*
UCLA	Qualtrics
UCLA Health	Qualtrics
UC Merced	Service Now
UC Office of the President	Qualtrics
UC Riverside	Qualtrics
UC San Diego	Qualtrics
UC San Diego Health	Qualtrics
UC San Francisco	Conversa
UCSF Health	Conversa
UC Santa Barbara	Qualtrics
UC Santa Cruz	Qualtrics

**UCI Health IT has developed a web-based mobile application hosted internally.*