KNOX COUNTY TENNESSEE
HEALTH DEPARTMENT

The following are a list of questions the Knox County Health Department (KCHD) received for its epidemiologists and can be attributed to KCHD epidemiologists. Reporter questions are in red. The KCHD response is in black text.

KNS Questions (Vincent Gabrielle)

1) What is/are your name(s) and your preferred job title? We have literally been told nothing about who the epidemiologists are

   Below are the KCHD public health epidemiologists currently working the response:

   - Roberta Sturm, Lead Public Health Epidemiologist
   - Mark Prather, Public Health Epidemiologist
   - Alicia Verlinde, Public Health Epidemiologist

2) Please explain why each of the benchmarks was selected. Explain why you believe it is the best metric for judging Knox County's progress during phased reopening.

   In choosing benchmarks, we selected local data that is refined for the purpose of outbreak detection, mitigation and response. These metrics are meant to be a compilation of different data elements with no hard/fast upper limit or threshold. Instead, these data points are evaluated for acceptable or allowable limits based on historical data. Additionally, metrics may be refined as situations change.

   Data are purposely similar across jurisdictions to allow for comparison across other metropolitan areas, the state and the nation. Evaluation of these metrics is a standardized approach in pandemic response.

   Benchmark 1: Sustained reduction or stability in new cases for 14 days.
   Selection: Indicator of community spread of illness
   Interpretation:

- **Green:** No three-day shifts of 1.5 standard deviations above a rolling mean (based on data from the previous 14 days)
- **Yellow:** Three-day shifts detected above 1.5 but not greater than 3.0 standard deviations above a rolling mean (based on data from the previous 14 days)
- **Red:** Three-day shifts detected above 3.0 standard deviations above a rolling mean (based on data from the previous 14 days)

Benchmark 2: Community-wide sustained and increased diagnostic testing with consistent or decreased test result reporting turnaround time
Selection: Indicator of ability to detect new cases and effectively respond to outbreaks
Interpretation

- **Green**: Sustained or increased diagnostic testing and sustained or decreased test result reporting turnaround time
- **Yellow:** Three-day negative shift detected between 1.5 but no greater than 3.0 standard deviations below a rolling mean (based on data from the previous 14 days) and result reporting turnaround time exceeds weekly average testing report time
- **Red:** Three-day negative shift detected more than 3.0 standard deviations below the rolling mean (based on data from the previous 14 days) and result reporting turnaround time exceeds weekly average testing report time

Benchmark 3: Sustained or increased public health capacity
Selection: Essential for the management of cases and contacts, and mitigation of disease
Interpretation:

- **Green**: No new staff are required for effective case/contact investigation (see definition in plan and summary on website under this benchmark) beyond the 50 that are readily available
- **Yellow:** Additional KCHD staff are required for effective case/contact investigation

- **Red**: Non-KCHD staff are required for effective case/contact investigation

The Knox County Health Department consistently trains and operates under a Public Health Investigation Team (PHIT) model. We have a core team that responds to outbreaks regularly. This team can expand beyond the core team to accommodate outbreaks of greater scale. With an average of 12 outbreaks a year, this team is ready to respond and requires little training in interviewing, contact investigation or contact monitoring. Beyond the PHIT teams, other KCHD staff have been identified to respond in this capacity if needed.

Benchmark 4: Health care system capabilities remain within current and forecasted surge capacity.
Selection: Standard benchmark in pandemic response, state and federal pandemic plans
Interpretation: (For COVID-19 positive Inpatients, ICU and Ventilated patients)

- **Green**: No three-day shifts of 1.5 standard deviations above a rolling mean (based on data from the previous 14 days)
- **Yellow:** Three-day shifts detected above 1.5 but not greater than 3.0 standard deviations above a rolling mean (based on data from the previous 14 days)
- **Red:** Three-day shifts detected above 3.0 standard deviations above a rolling mean (based on data from the previous 14 days)

Benchmark 5: Sustained or decreased COVID-19 related death rate for identified positive or probable cases
Selection: Selected because it is an indicator of the clinical severity of illness
Interpretation:

- **Green:** Sustained or decreased case fatality rate for identified positive or probably cases.

- **Yellow:** Increased case fatality rate by 1.0%-2.0% over a 14-day period for identified positive or probable cases
- **Red:** Increased case fatality rate above 2.0% over a 14-day period for identified positive or probable cases

**In development: Given the low frequency of COVID-related mortality, the metrics for this benchmark may be adapted if the COVID-19 related deaths increase*

3) What is the significance of each benchmark? There are no interpretive guidelines on the KCHD benchmark section of the website.

   See above answer for question 2

4) For each metric, please explain what would constitute a shift to "red" status. What are the actual benchmarks?

   See above answer for question 2

5) What policies are being considered should one or more metrics shift to "red."

   Decisions about how to move through the phases or whether to institute mid-phase adjustments will not be made based on any one number or figure. Decisions must be made by looking at multiple data points and trends, while incorporating public health expertise and developments in science and technology. All of these factors must be considered when determining when and how to proceed through the reopening process. Red signifies trends are not moving toward benchmark attainment and may indicate the need for mid-phase adjustments.

6) Why are the specifics of what constitutes the various color levels not included on the website?

   This information is now available on our website under each benchmark's drop-down menu.

7) What is the maximum new daily caseload that would shift metric 1 to yellow?

See response to question 2

There is no defined maximum new daily case load. An increase of new cases that are unrelated to known cases or not part of a cluster, over a period of time would be cause for concern. Additionally, an increase in a subset of the population, such as in the elderly could be a reason to react.

Data is evaluated to determine acceptable increases. We typically look for a three-day trend in data as one day does not constitute a trend. We utilize methodology that is similar to what is used in our current syndromic surveillance system ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) to detect aberrations in data.

8) What is smallest acceptable rate of increase in testing of Knox County residents for a green rating?

As defined by the benchmark, a sustained rate of testing is acceptable

9) What is the slowest acceptable turnaround time for a test?

Our current average turnaround time for test results is under five days (an average of 2.6 days last week). If the turnaround time consistently increases above the weekly average, then it would be cause for concern.

10) What is the minimum staffing in metric 3 that would constitute a green rating?

That number is dependent on the number of cases we have. If case counts increase, our Epidemiology Response team will increase personnel. If case counts decrease, the response team doesn't need as many individuals.

As we state in the plan, estimates of personnel needs for these tasks range from four to 15 per 100,000 population. That translates to approximately 16-75 investigators for Knox County, along with additional personnel to monitor cases and contacts, enter data, and provide data analysis, which would be a total of approximately 100-120 people for the County. However, our current case load does not warrant 100-120 individuals on this team.

11) How do you define a surge on the health care system?

Area hospitals' senior leaders (CEOs, CMOs, and others) have been meeting routinely and took on the task of gathering the current surge capacity for our region. They gathered this information as a group with the assistance of the Knox/East Tennessee Healthcare Coalition. Dr. Keith Gray, Chief Medical Officer for the University of Tennessee Medical Center, explained this process when he joined us for a media briefing last month. We refer you to the hospitals for more information. Additionally, the hospitals, given their full perspective on bed availability, staffing, resources, and supplies, will be working with us to assess their health care system capacity benchmark.

12) What is the second graph in metric 4 intended to convey? It looks like you have positive cases lumped into a graph about people awaiting lab results.

The graph you are referencing illustrates hospitalized individuals with a pending test for COVID-19 and those in the ICU or on a ventilator with pending tests.

13) What is the upper bound for all criteria in metric 4's graphs that would constitute a shift from green status?

See above answer for benchmark 2

14) Why is the death rate presented as a table? It's hard to judge cases over time on a table.

Time interval graphs are used to illustrate trends, and fortunately we do not have enough data to adequately demonstrate a trend at this time

15) What is the upper bound of death rate that would constitute a shift from green to yellow?

See above answer for benchmark 2

16) What is the current effective reproduction number for Knox County, last Monday it was stated in the "phased reopening announcement presser" that this was "good" but the actual number was never stated.

That answer currently depends on the model used and models vary based on data sources, assumptions and other factors. While this information is informative, it does not drive our local public health response. We are not utilizing model data in our benchmarks due to the inconsistency in their findings, and you will not find them referenced in our plan.

17) Please list all the models included in your forecasting for Knox County.

a. If you have developed your own model or there is a local model, please explain the assumptions in the model or provide the model.

Due to the vast differences in variability and reliability in models, we are not relying on forecasting for our reopening plan. Again, models are informative but do not drive our public health response. Instead, our team has chosen to closely monitor our local data to make recommendations about the phased reopening. With that in mind, we planned for longer phases (two incubation periods or 28 days) as minimum timeframes for our phases to allow us to utilize our local data for our public health response recommendations.

In full disclosure, we have looked at and/or been presented information on the following models; however, you will not see

them referenced or utilized in our plan: Vanderbilt, IHME, Columbia University, University of Tennessee's Coronavirus Calculator. Additionally, we have received information from our hospitals who are also looking at various models to include some of the above and other models that include a more local picture such as the CHIME and Oliver Wyman model.

18) Please list all counties included in these projections. Do these differ from the counties included in the UTMC 21-county service area?

All 16 counties in our data are in the 21 county UT County Service Area. Our area is based on Public Health Regions as defined by the state.

1. Scott
2. Campbell
3. Union
4. Claiborne
5. Morgan
6. Anderson
7. Knox
8. Grainger
9. Jefferson
10. Hamblen
11. Roane
12. Loudon
13. Blount
14. Sevier
15. Cocke
16. Monroe

19) What is the COVID-like illness prevalence in Knox County?

Prevalence is not calculated for COVID-like illness. Counts of illness are analyzed within syndromic surveillance. Of note, the use of emergency rooms has been altered some, so this data is interpreted with great caution. Prevalence is not a preferred calculation for an emerging situation. In infectious disease outbreaks, incidence is the preferred metric.

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Compass Knox Questions (Scott Barker)

20) I know you're getting questions about Covid-like illness monitoring, so this might be redundant. What does CLI data tell us and what does it not tell us about the disease burden?

Knox County uses ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) to conduct syndromic surveillance. Currently syndromic surveillance data is collected from individuals being seen at area emergency departments. For Knox County, this includes all emergency departments. Historically syndromic surveillance is used to determine trends in influenza-like illness, and look for increases in gastrointestinal illness, respiratory illness, or other significant health events such as overdose, or smoke exposure during the Smoky Mountain wildfires.

COVID-like illness is defined as symptom terms, free text, or discharge diagnoses specified by the CDC that are likely related to illness caused by the 2019 Novel Coronavirus. It's important to note that changes in emergency room usage may have affected the data.

CLI data tells us that individuals presenting to area emergency departments either:

- Have reported symptoms consistent with COVID-19 (cough, fever, shortness of breath, etc.);
- Have mentioned COVID-19/coronavirus as their chief complaint;
- Have a clinical picture similar to COVID-19 (not based on laboratory results, but may have been tested); or
- Have all three.

Syndromic surveillance is not an indication of positive tests, but more of disease burden in a community.

This is an excellent tool to determine community burden of influenza-like illness primarily because influenza is not reportable.

21) Will patients with positive Covid-19 test results be included in the CLI numbers, even though some are asymptomatic?

They will be included in CLI numbers if they were seen at an emergency department regardless of results or even symptoms. If someone presents to an emergency department and mentions COVID-19 or coronavirus, they could be included in CLI.

22) Will fatalities associated with CLI be reported?

Death data is not a feature of the ESSENCE system we use.

23) In addition to Covid-19, what illnesses could account for CLI symptoms?

Influenza, allergies, or other respiratory illnesses such as rhinovirus or adenovirus, or other coronaviruses have similar symptoms. There are many other illnesses and that is why we interpret with caution.

24) We write for lay people. Is it accurate to occasionally refer to CLI cases as "possible Covid-19 cases" or "potential Covid-19 cases" or "unconfirmed Covid-19 cases"?

Syndromic surveillance isn't really meant to diagnose, just to inform public health officials of how many individuals are seeking care for illness and keep us abreast of what is circulating in the community. This is most useful when counts of illness are high so we can determine if it is trending up or down (much like we do for influenza season). A more accurate definition would be individuals being evaluated for or are concerned about COVID-19 exposure.