

GUIDEBOOK

Operation Outbreak (OO): Immerse yourself in a fictional epidemic, where a Bluetooth-transmitted pathogen spreads across smartphones. Take on real-world roles – government official, biomedical researcher, banker, healthcare worker, and more – as you battle the outbreak, gaining hands-on knowledge of society's response in a unique learning experience

SIMULATION BASICS (\cdot)

OVERVIEW

operation

In this immersive simulation, the primary aim is to maintain society's health and functionality. Participants must balance their assigned roles with everyday actions such as eating and taking medicine to keep their in-app avatars healthy. Additionally, they have dynamic opportunities to combat the disease through QR-code-based interventions like diagnostic tests, vaccines, and masks.



OO aims to replicate a dynamic society, emphasizing interactions among diverse social groups, with a focus on key aspects of outbreak response. Participants fall into two categories: General Population, organized into Family Units (1-4 participants per Family Unit), and Workers, who are assigned to one of seven Work Units as follows:

- **Government Officials**
- Healthcare Workers
- Bankers
- Reporters
- Public Health Officials
- Store Clerks
- **Biomedical Researchers**

Participants are encouraged to exercise autonomy in managing the outbreak, guided by specific rules and roles. Stick to these guidelines for an immersive, educational, and creative experience. Facilitator staffing of the various Work Unit stations is highly recommended. Please thoroughly read this guidebook and associated materials beforehand.







Θ 2

THE OO APP

The OO mobile app powers the ABOUT THE APP simulation experience and is available on the Apple App Store and <u>Google Play Store</u>. The app complements a carefully-designed series of activities that will take place in the simulation and integrates well with the tools we've crafted for the facilitators. Please take a moment to familiarize yourself, your fellow facilitators, and your participants with the following features and functions.

Download for iPhone





APP DETAILS

THE AVATAR

The shape, color, and expression of the in-app avatar and surrounding visuals will change depending on its health and protection status (e.g. "masked", "vaccinated"). Participants should closely monitor their avatar's health, so they know when to visit the Healthcare Worker station or quarantine themselves when told to by the Public Health station to limit the spread of disease.



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QR CODES

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Via the "Scan" function on the app, participants can scan QR codes to vaccinate, mask, and/or run a diagnostic test on their in-app avatars. Testing is a key way to discover the spread of disease, even when their avatar shows no symptoms. The QR codes will be provided to the facilitators to print out via the Outbreak Creator (see subsection d below).

PARTICIPANT USERNAME

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Every user is assigned a unique username (e.g. Alpha Boston), which is viewable within the app. When visiting a Public Health Official station, participants will only share their usernames, not real names.

OUTBREAK CREATOR (OC)

Your exclusive playground

as the Lead Facilitator, where you shape the simulation's parameters and starting conditions. It's where the magic begins, crafting a simulation-specific Join Code that participants will wield to fire up their mobile apps.

CHECKING NEARBY CONTACTS

Using anonymous detection technology, the app gives participants an approximate real-time picture of the number of other phones the participant's phone is in contact with. Note that because the feature scans infrequently, it may be slightly delayed when displaying the participant's surrounding contact network. For now, this is an experimental feature that doesn't play a key role in the simulation but that we wish to build further on in the future.

OUTBREAK LOOKOUT (OL)

Some Work Unit

participants' go-to web app (access via laptop is recommended) during the simulation. Think of it as a treasure trove of additional features, where Work Unit participants intake, process, and analyze real-time data from the simulation.

OUTBREAK VISUALIZER (OV)

Once the dust settles



world of data visualization, where you can dissect and understand

the outcomes of the simulation.





03 PRE-SIM CHECKLIST

- Meet with an OO representative (highly recommended).
- Secure a Wi-Fi or cellular data-accessible space/location
- Log onto the Outbreak Creator (OC) to create your simulation and receive a simulation-specific Join Code or reach out to your OO representative to create it for you.
- - Familiarize your participants with Outbreak Lookout (preset demo with each group)
- Run a mobile app test (recommended 2 days prior to the official start time)
 - Select a small group of participants (5-10).
 - Create a new, separate simulation using Outbreak Creator.
- **POPULATE**
- Reach out to your OO representative if you run into any issues.

PRINT & PROVIDE

Materials

- Review the Outbreak Creator Simulation Summary page, which contains the simulation-specific Join Code
- Guidelines for Family Units (General Population Participants)
- General Guidelines for Work Units
- Specific Guidelines for Work Units
- Tokens as "money" (plastic chips, example)
- Provide printed quiz answers to the Banker Work Unit

Media Release Forms - consider this to facilitate any potential media/external coverage

Outfits for each work unit

- Government Ties/Hats/Beanies
- Healthcare Workers Medic Caps/Gloves/PPE
- Biomedical Researchers Lab Coats
- Reporters 'PRESS' badge
- Public Health Officials 'PHO' custom badge

Day-of-Simulation Facilitators (at least one Facilitator per Work Unit

- Station recommended)
- Government Officials
- Healthcare Workers
- Bankers
- Reporters
- Public Health Officials
- Store Clerks
- Biomedical Researchers
- Reflection Station

DETERMINE

Assign General Population participants into Family Units (of 1-4 members)

- Assign Family Units into economic levels and assign the corresponding number of tokens
- Consider completing <u>our post-</u> <u>simulation anonymous feedback</u> <u>survey</u>.





GUIDELINES FOR $\mathbf{04}$ FAMILY UNITS & **GENERAL POPULATION**

- **⁰¹ EVERY GENERAL POPULATION** PARTICIPANT WILL BE RANDOMLY **ASSIGNED INTO A FAMILY UNIT**
 - 01.1 1-4 Participants per family unit
 - 01.2 Each family is assigned an economic level, which represents the starting wealth of each family
 - 01.3 Economic levels are: Level 1 Level 2 Level 3

- ⁰² ALL OTHER PARTICIPANTS (I.E., NOT GENERAL POPULATION) WILL BE ASSIGNED TO WORK UNITS.
 - 02.1 The Lead Facilitator will use a Facilitator-only tool called Outbreak Creator to receive these assignments.

TOGETHER TO DIFFERENT LOCATIONS, SUCH AS THE STORE OR THE BANK, DURING THE SIMULATION.

Select sim duration	90 minutes	120 minutes	• STARTING TOKENS •
Level 1	7 TOKENS	9 TOKENS	Tokens will function as a form of money during the simulation which can be used to purchase the items
Level 2	5 TOKENS	7 TOKENS	needed to keep the avatars healthy. The number of tokens each family unit will start with will
Level 3	3 TOKENS	5 TOKENS	depend on the assigned economic level and the duration of the simulation (90 or 120 minutes) as outlined in the table here.





HOW TO SURVIVE

FOOD

MASKS

MEDICINE

DIAGNOSTIC

TESTS

VACCINATIONS

SCAN QR CODES AND

USE TOKENS TO BUY

INTERVENTIONS

INCREASING CHANCES OF SURVIVAL Follow these actions to make sure your avatar survives

the outbreak.

Feed Your Avatar

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• When your avatar is hungry, as indicated in the app, use tokens to buy food at the Store. The OO mobile app will automatically notify you to eat every 30 minutes. If you don't feed your avatar, it will become more susceptible to the pathogen, meaning they will be infected more easily.

Get Masked and/or Tested

- Visit the Store to use your tokens to buy masks and/or diagnostic tests.
- Visit the Healthcare Worker Station when Sick
 - When your avatar is sick, visit the Healthcare Worker Station to get tested and treated. You may receive a physical prescription (Rx) for medicine to be purchased at the Store.
 - If anyone in your Family Unit is sick, accompany them to the Healthcare Worker Station.

04 Get Vaccinated

• If a vaccine becomes available, it will be distributed at the Healthcare Worker Station.





HOW TO EARN TOKENS

The tokens you receive at the beginning of the simulation may not last long. To earn extra tokens, complete quizzes and exchange correct answers for tokens at the Bank. Multiple paper-based quizzes will be physically posted around the venue. Travel with your family to locate a quiz and complete it on the paper provided to you. Next, you travel to the Bank to cash your answers out before seeking the next quiz. Depending on how many questions your family answers correctly, the Bank will award:

1 TOKEN for 25-74% correct answers

1 TOKEN for 75-100% correct answers



SIMULATION OVER

If you receive a 'Simulation Over' notification through the OO mobile app, your avatar has succumbed to the pathogen. If this happens, please do the following:

- Notify your family and give them your remaining tokens.
 - If there is no one else in your Family Unit, return the tokens to the Bank.
- Report your death to the Biomedical Research Station and, then, report to the Reflection Station for further instructions.





05 GENERAL GUIDELINES FOR WORK UNITS



Every non-General Population

participant will be assigned to one of the below Work Units. You are either in a Family Unit (as a member of the General Population), or you are in a Work Unit; they are mutually exclusive.





Healthcare Workers	7 TOKENS	9 TOKENS
Biomedical Researchers	7 TOKENS	9 TOKENS
Public Health Officials	7 TOKENS	9 TOKENS
Bankers	6 TOKENS	8 TOKENS
Store Clerks	6 TOKENS	8 TOKENS
Reporters	6 TOKENS	8 TOKENS

• STARTING TOKENS •

- Tokens will function as a form of money during the simulation which can be used to purchase the items needed to keep the avatars healthy.
- The number of tokens you will start with will depend on your Work Unit and simulation duration (90 or 120 minutes) as outlined in the table here.





HOW TO SURVIVE

INCREASING CHANCES OF SURVIVAL

Follow these actions to make sure your avatar survives the outbreak.

FOOD MASKS MEDICINE DIAGNOSTIC TESTS

VACCINATIONS

SCAN QR CODES AND USE TOKENS TO BUY INTERVENTIONS



01

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03

04

• When your avatar is hungry, as indicated in the app, use tokens to buy food QR codes at the Store. If you don't feed your avatar, it will become more susceptible to the pathogen, meaning it will become more easily infected.

Get Masked and/or Tested

• Visit the Store to use your tokens to buy masks and/or diagnostic tests.



Visit the Healthcare Worker Station when Sick

- When your avatar is sick, visit the Healthcare Worker Station to get tested and treated. You may receive a physical prescription (Rx) for medicine to be purchased at the Store.
- If anyone in your Work Unit is sick, accompany them to the Healthcare Worker Station.

Get Vaccinated

• If a vaccine becomes available, it will be distributed at the Healthcare Worker Station.







SIMULATION OVER

If you receive a 'Simulation Over' notification through the OO mobile app, your avatar has succumbed to the pathogen. If this happens, please do the following:

- Notify your family and give them your remaining tokens.
 - If there is no one else in your Family Unit, return the tokens to the Bank.
- Report your death to the Biomedical Research Station and, then, report to the Reflection Station for further instructions.

FUNDING & DURATION 06

120 minutes	90 minutes	Select sim duration	
\$324 MILLION	\$243 MILLION	Government Starting Fund	
\$1MILLION/MIN	\$1MILLION/MIN	Funding per minute for Depts.	
\$75,000/PERSON	\$75,000/PERSON	Cost to replace HCW, BR, PHO	
\$500,000	\$500,000	Vaccine cost pre 20 persons	



This table displays the base funds allocated to the Government at the start of the simulation. Tokens and Dollars are each their own separate system. The dollar amounts correlate to real governement spending and decision making during a pandemic on a large scale, while tokens simulate the very real disparity of finances in the general population. The graphic below gives an idea of how the funding can play out over the timeline of a simulation.

GOVERNMENT OFFICIALS

click or scan to watch information video



Government Officials should engage in the following tasks and activities, whilst following all the General Guidelines for Work Units (Guidebook Section 5):

KEY DUTIES

IN ORDER OF TIMELINE

MINIMIZE

Aim to minimize the number of infections in the population to the greatest extent possible; less than 50% of the population infected is generally a good target.

ENSURE

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That all other Work Units do not begin any work until









they receive funding.

All Work Units with operating expenses (i.e., Government Officials, Healthcare Workers, Public Health Officials, and Biomedical Researchers) will be notified of the funding you receive through Outbreak Lookout.

Distribute funding through Outbreak Lookout which will automatically track how much time each work unit has to work.

If the pathogen responsible for the outbreak is discovered by the Biomedical Researchers, they will communicate with you and your Lead Facilitator to confirm if their discovery is correct. If so, vaccine production and the protocol for distributing it should be decided upon and communicated to all the other Work Units, including Reporters.

The production cost of the vaccine will be automatically calculated through Outbreak Lookout based on the number of participants.

SIMULATION OVER

If a Government Official receives a 'Simulation Over' notification, they may be replaced with an individual from the general population based on a decision by other Government Officials still in the simulation.

GOVERN

Use careful observation and reporting to make decisions that will impact the simulation outcome.

- Consider visiting or observing any areas/ situations of interest.
- Note that the Total Funding will be automatically assigned and viewable in Outbreak Lookout.
- Coordinate with Public Health Officials to develop and execute a plan to encourage everyone to comply with the quarantine rules"
- Report to a facilitator to record key consultations and decisions made by you and your fellow Government Officials; the facilitator will be able to record these data in a facilitatoronly section of Outbreak Lookout.
- Plan how to use the 50 tokens that the Lead





Facilitator will provide Government Officials at

the start of the simulation.





The functions of many of the **GOVERNMENT COSTS** Work Units rely on having enough funding to keep going. Below are a summary of the costs for resources in each unit:

Select sim duration	90 minutes	120 minutes
Government Starting Fund	\$243 MILLION	\$324 MILLION
Funding per minute for Depts.	\$1MILLION/MIN	\$1MILLION/MIN
Cost to replace HCW, BR, PHO	\$75,000/PERSON	\$75,000/PERSON
Vaccine cost pre 20 persons	\$500,000	\$500,000

- \$1,000,000 PER MINUTE OF BASELINE 01 WORK PER WORK UNIT
- THERE IS NO FINANCIAL COST TO 03 **REPLACE A MEMBER OF ANY GROUP** THAT HAS RECEIVED A 'SIMULATION
- **01.1** Public Health Officials, Healthcare Workers, and **Biomedical Researchers**

⁹² \$75,000 TO HIRE AND SUPPORT EACH ADDITIONAL WORKER TO BOLSTER A **GROUP IF NEEDED.**

OVER' NOTIFICATION, BUT THERE IS A \$75,000 COST TO ADDING A SUPPORT MEMBER PER GROUP.

⁹⁴ \$500,000 FOR VACCINE PRODUCTION AND DISTRIBUTION PER 20 PEOPLE.

⁰⁵ THERE WILL BE NO COST TO THE **GENERAL POPULATION FOR VACCINES** BUT MUST BE FUNDED BY THE GOVERNMENT.

PATHOGEN

WHAT TO DO ONCE IDENTIFIED

ACT TO SAVE LIVES

- Establish delivery and distribution plan in partnership with the Healthcare Workers. *See cost in table above.
- Establish connections directly with all Work Units, including Reporters, for a press conference.
- Maintain contact with Healthcare Workers to manage supplies.









NAME OF PATHOGEN

FACILITATORS

Cut the envelope out of this page and write the name of the pathogen in the space provided. Only reveal this when the Pathogen has been correctly identified by the students.





HEALTHCARE WORKERS

OVERVIEW

Healthcare Workers record cases, symptoms, and test results while maintaining contact with Public Health Officials, Biomedical Researchers, and the Government.

Healthcare Workers should engage in the following tasks and activities, whilst following all the General Guidelines for Work Units (Guidebook Section 5):

KEY DUTIES

IN ORDER OF TIMELINE

WORK TIMES

Await notification by Government Officials through Outbreak Lookout before beginning any work:



If you run out of funding, Outbreak Lookout will lock, and you will not be able to continue to working.



If locked, click the "Request Funds" button in Outbreak Lookout in order to request additional funding from Government Officials to revive your operations.





TEST

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symptomatic participants that enter clinic and confirm their infection status:

Report test results for each individual suspected case.



Report how many people are negative.

Report how many people are positive. 03



SIMULATION OVER

If a Healthcare Worker receives a 'Simulation Over' notification, they can be replaced with an individual that will be hired from the General Population based on a decision by fellow Healthcare Workers.

TREAT

Triage and treat patients through a range of activities:

- Recording check-in times.
- Recording symptoms (intake form via Outbreak Lookout).
- Write a physical prescription (Rx) for medicine that will be used by the patient at the Store.
- If your patient receives a 'Simulation Over' notification, instruct them to visit the Biomedical Researcher station.

COMMUNICATE

Keep in constant communication with the relevant departments to ensure information is distributed.

- Maintain lines of communication with Biomedical Researchers and Government Officials.
- Consult initially and on an ongoing basis with Government Officials to develop and execute a distribution plan for the vaccine









PUBLIC HEALTH OFFICIALS

Public Health Officials design, implement, **OVERVIEW** and ensure compliance with contact tracing and quarantining tactics to help identify new cases and and quarantining measures keep the pathogen from spreading.

Public Health Officials should engage in the following tasks and activities, whilst following all the General Guidelines for Work Units (Section 5):

KEY DUTIES

IN ORDER OF TIMELINE

WORK TIMES

Await notification by Government Officials through Outbreak Lookout before beginning any work.

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If you run out of funding, Outbreak Lookout will lock, and you will not be able to continue to working.

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If locked, click the "Request Funds" button in Outbreak Lookout in order to request additional funding from Government Officials to revive your operations.



OBSERVE & RECORD

Remain stationed in close proximity to the Healthcare Worker station.

Record answers to the following questions on Operation Lookout:



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What activities were the participants doing before symptom onset?

What is the participant's Username found on their phone through the app?

What are the names of the other participants with whom the participant in question had contact when the onset occurred? Only OO-assigned anonymous Usernames can be inputted into Outbreak Lookout.

SIMULATION OVER

If a Public Health Official receives a 'Simulation Over' notification, they may be replaced with an individual who will be hired from the General Population based on a decision by fellow Public Health Officials.

TRACK & TRACE

Develop and implement contact-tracing strategies

Notify the Government, Healthcare Workers, Reporters, and the General Population when strategies are implemented, indicating what participants need to do to comply

Work with all groups to implement quarantines if directed by the Government

- Set up and quarantine those individuals that are infected in a group-designated area
- Search and find contacts of the infected individuals
- Decide if the contacts should be tested. If so, instruct them to see a Healthcare Worker



Decide if the contacts should be quarantined





BIOMEDICAL RESEARCHERS

OVERVIEW Biomedical Researchers, which can include many different types of scientists (like biologists and epidemiologists), use data from the outbreak to provide information about pathogen biology and its spread.

Biomedical Researchers should engage in the following tasks and activities, while following all the General Guidelines for Work Units (Guidebook Section 5):

WORK TIMES

Await notification by Government Officials through Outbreak Lookout before beginning any work:



02

If you run out of funding, Outbreak Lookout will lock, and you will not be able to continue to working.

If locked, click the "Request Funds" button in Outbreak Lookout in order to request additional funding from



Government Officials to revive your operations.



KEY DUTIES

IN ORDER OF TIMELINE

COMMUNICATE

Review the data that Healthcare Workers input via Outbreak Lookout.

- Communicate with the Healthcare Workers and Public Health Officials, recording the number who have received the 'Simulation Over' notification.
- Record the number of individuals that are suspected cases; the number who have positive results and negative results.

CALCULATE

The information (facilitated by Outbreak Lookout) and research the symptoms of pathogens:

- Disease prevalence at different time points
- Mortality rate
- Case fatality rate (CFR)
- If the Lead Facilitator confirms the correct pathogen has been identified, notify the Government Officials immediately.
- Government Officials will decide how to proceed.

SIMULATION OVER

If a Biomedical Researcher receives a 'Simulation Over' notification, they may be replaced with an individual that will be hired from the General Population based on a decision by fellow Biomedical Researchers.









BANKERS

OVERVIEW Bankers are responsible for managing token collection and distribution to ensure the simulated "commerce" functions efficiently, by keeping money moving around the economy.

Bankers should engage in the following tasks and activities, whilst following all the General Guidelines for Work Units (Section 5):

KEY DUTIES

IN ORDER OF TIMELINE

FUND



Distribute tokens for correct answers per Family Unit* as follows:

- 25-74% correct = 1 token
- 75-100% correct = 2 tokens



Collect money from the Store to use throughout the simulation.

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*Recall that there will be only one designated quiz-taker per Family Unit; please check and distribute the tokens accordingly.

SIMULATION OVER

If a Banker receives a 'Simulation Over' notification, they may be replaced with an individual that will be hired from the General Population based on a decision by fellow Bankers.





REPORTERS

Reporters interact with, interview, and **OVERVIEW** inform all participants about events happening in the simulation-both planned and unexpected.

> Reporters should engage in the following tasks and activities, whilst following all the General Guidelines for Work Units (Section 5):

OBSERVE & REPORT

KEY DUTIES

IN ORDER OF TIMELINE



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Conduct interviews of all Work and Family Units.

Continually update all participants with information through official press announcements roughly every 20 minutes.

 Verify/fact-check all information before making announcements.

If Government Officials, Biomedical Researchers, Healthcare Workers, or Public Health Official, would like to have a press conference, work with that specific Work Unit to organize that press conference, distributing the following information to all participants:

- Announcement
- Time
- Location
- Interview

SIMULATION OVER

If a Reporter receives a 'Simulation Over' notification, they may be replaced with an individual that will be hired from the General Population based on a decision by fellow Reporters.









STORE CLERKS

OVERVIEW

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Store Clerks sell items (emulated as physical QR codes) to Family Units (General Population), using tokens as the currency of exchange and depositing all proceeds to the Bank.

Store Clerks should engage in the following tasks and activities, whilst following all the General Guidelines for Work Units (Guidebook Section 5):

OBSERVE & REPORT

KEY DUTIES

IN ORDER OF TIMELINE

Consult with fellow Store Clerks to decide upon item pricing to be listed/displayed on paper. If prices change during the simulation, the displays must be updated to reflect the change(s).

• Recall that the maximum number of tokens Family Units can receive per quiz is 2 tokens; please consider pricing accordingly.

Sell QR codes for.

- Food, masks, medication, and diagnostic tests
- medication cannot be sold unless a physical prescription (Rx) is provided

Deposit excess funds to the Bank to keep the economy moving every 30 minutes.

Decide whether to have one or two Stores (Store A and Store B); your decision will be informed by how many Store Clerks you will have, per the assignment you will receive by your Lead Facilitator.

SIMULATION OVER

If a Store Clerk receives a 'Simulation Over' notification, they may be replaced with an individual who will be hired from the General Population based on a decision by fellow Store Clerks.







REFLECTION STATION

OVERVIEW Before you begin engaging in Reflection Station activities, make sure to report to the Biomedical Researcher station to inform them that you have received the 'Simulation Over' notification.

Return any of your remaining tokens to your Family Unit or Work Unit (if you are a one-person Family Unit, return your remaining tokens to the Bank).

ACTIVITIES

COMPLETE IN ORDER OF APPEARANCE PART ONE - SOCIAL MEDIA WALL

Report to the Social Media Station* and follow the below steps. A facilitator will be there to assist you.

Using the provided paper, pens, and markers, create a school-appropriate physical social media post that illustrates/explains your experiences throughout the





simulation. The post must include at least one visual and an explanation of fewer than 50 words to be displayed in a designated space, such as a wall or fence.

O2 Turn your post into the Station Facilitator for approval before going on to the next step.

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Hang the post at the designated 'Social Media' location for others to see and read.







PART THREE — COMMENTS

- What are your overall thoughts about the simulation?
- What did you like about the simulation?

PART TWO — DEBRIEF QUESTIONS

Questions will be posted around the station stop at each one and reflect on your simulation experience.

Where were you when you became infected?

Did you use a diagnostic test to confirm your positivity when you became infected?

03 Did y

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Did you self-report to a Healthcare Worker?

04 Did you purchase a mask at any point in the simulation?

Did you receive a physical prescription (Rx) and purchase medication at any point in the simulation?

06 Were you able to receive a vaccine? If so, when?

Did the vaccine work? Why or why not?

Do you have an idea as to how you became infected? If so, what is your hypothesis?

Is there anything you wish you did differently in the simulation experience?

10 What is one thing you learned about outbreak response?

