

Hurray, you've decided to run the Virus Game! Perhaps it will be an activity for the first day of camp, or a team-building program, or embedded as an integral part of your curriculum. Whatever your objective may be, the Virus Game is designed to be flexible and work across a wide range of settings, devices, and age groups. This Getting Started guide will help you prepare the Virus Game for your specific context.

Note: All **boxed content** in this Getting Started guide also appears in the Quick Reference Guide

Overview – what to expect when you run the Virus Game:

Before running the Virus Game

The facilitator:

1. Reviews this guide in preparation for running each step of the game and discussion.
2. Ensures that players will have powered, compatible devices.
3. Uses the online pSims platform to create a game and select parameters:

Game parameters - section (c) of the Quick Reference Guide	
Patient Zero	The player who starts the game with the virus. The game must have a patient zero in order to begin.
Chance of Immunity Default: 10%	The probability that a player is assigned immunity when s/he joins the game. Note: Players with red hair are immune. Immune players cannot pass on the virus or get sick.
Chance of Infection Default: 90%	The probability that the virus will pass from a sick player or Patient Zero to a healthy player when players meet.
Incubation Time Default: 120 seconds	The average length of time it takes a player to get sick after getting the virus. There is some random variation around this time. Note: It takes Patient Zero 30 seconds longer to get sick.

While running the Virus Game

The facilitator:

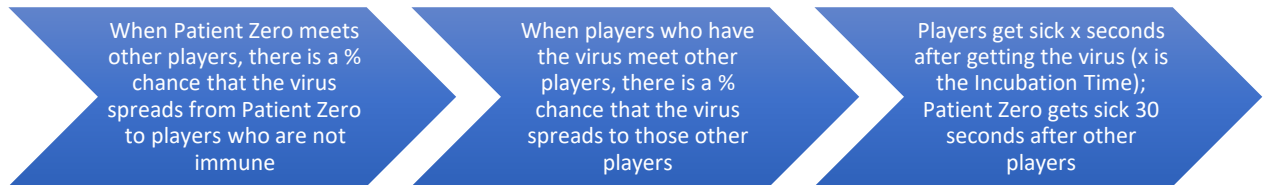
1. Guides players to set up their mobile devices and introduces the game to players.
2. Uses the game dashboard to start the game and monitor players' progress.

The players:

1. Discover the avatars assigned to them at random.
2. Walk around scanning the QR codes on each other's devices to "meet" players.
3. Start getting sick (first at a slow rate, then an exponentially faster rate), as indicated by the game dashboard and changes to players' screens (screens turn red).
4. Notice that almost everyone is getting sick; start talking and asking questions.

The digital simulation (the system controlling what appears on-screen):

1. The Chance of Infection determines whether the virus spreads from one player to another when two players meet. The virus cannot spread to immune players.
2. The player assigned as Patient Zero starts the spread of the virus.
3. An audible alert and a player's screen indicates that the player is sick x seconds after the player meets a player with the virus or Patient Zero, where x is the Incubation Time.



- The facilitator:**
1. Pauses the game and asks players to take a seat.
 2. Leads a discussion for players to develop a hypothesis and design an experiment, usually aimed at figuring out who is Patient Zero and whether anyone is immune. Discussion should be quite general and elicit student ideas rather than supposing any particular structure for the system or how it works. Students will have many varied ideas that should be entertained and tested.
 3. Uses the game dashboard to replay and/or reconfigure the Virus Game for players to conduct their experiment(s). Students should not see the game dashboard except for the graph when needed.
- Note:* The game can be replayed as many times as needed.

Before running the Virus Game – how to prepare for the Virus Game:

Collect Supplies

- For each player:

Use a charged mobile device with a camera and:

 - Android devices: Chrome browser
 - Apple devices [iOS 11 or later]: Safari browser
 - Fire tablets: Silk browser
- For the facilitator: Any device (e.g. phone, tablet, laptop, or desktop computer) that can connect to an internet browser. A tablet or desktop is suggested.
- Reliable wireless internet that all players' devices can access
- A chalk/dry-erase board for recording notes
- A means for sharing the Game Code, URL, and other set-up steps for players (e.g. a hand-out, digital slide, or space on a chalk/dry-erase board). See [Google Slide](#):

Game set-up: Go to tinyurl.com/mit-psims

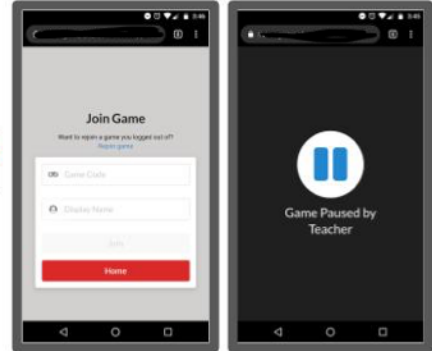
Select **Join a game**, and enter **Game Code:** 

Whenever prompted, allow the website to access and use your device's camera

Enter a **Display Name** you'll remember, and select **Join**

At the **Enter Game** prompt,
select **Continue...**

... then, **STOP**



SHELLER TEACHER EDUCATION PROGRAM
education arcade

Create Game(s)

- Go to psims.games and select Host a Game
 - Log in with a Google Account.
 - Tips:**
 - If another person will be facilitating the game (e.g. a co-teacher), consider creating a shared Google Account that others can access.
 - Select Virus Game from the Choose a Game Type dropdown.
 - Create a Game Code of your choice, for players to enter at the start of a game.
 - Tips:**
 - Create a Game Code for each group of players (e.g. one Game Code for each class period).
 - To prevent autocomplete errors when players enter a Game Code on shared devices, create Game Codes that begin with a unique group identifier, such as:
 - ajul12 and bjul12
 - Use a Game Code that will be easy for you to find in a list of other Game Codes created with your Google Account.
 - Set parameters for the game: Chance of Immunity, Chance of Infection, and Incubation Time (described in the box above on page 1). Settings will be saved automatically.
 - Tips:**
 - Refer to this table for recommended values for each parameter:

Setting Game parameters

Chance of Immunity Default: 10%	5-9 players: set to zero for no immune players. >9 players: set to 10%.
Chance of Infection Default: 90%	Lower grade levels: set to 100% to eliminate this variable (e.g. for players who are not familiar with probability). Other players: set to 90%.
Incubation Time Default: 120 seconds	5-9 players: 60 seconds. 10-30 players: 90 seconds. >30 players: 120 seconds.

Game parameters - section (c) of the Quick Reference Guide

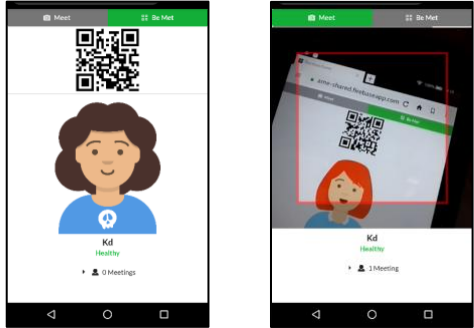
Patient Zero	The player who starts the game with the virus.
Chance of Immunity Default: 10%	The probability that a player is assigned immunity when they join the game. Note: Players with red hair are immune. Immune players cannot pass on the virus.
Chance of Infection Default: 90%	The probability that the virus will pass from one player to another when players meet.
Incubation Time Default: 120 seconds	The length of time it takes a player to get sick after getting the virus. Note: It takes Patient Zero 30 seconds longer to get sick.

Become familiar with how players will experience the game

If you haven't already, watch the pSims Promo Video to see how one classroom of middle school students experienced the Virus Game (2¾ minutes starting at 2:08):

http://education.mit.edu/media/pSims_PromoS.mp4

The facilitator will need to tell players how the game will work:

<p><i>Section (b) of the Quick Reference Guide</i></p> <p>Explain how the game will work:</p> <p>Players will toggle between two tabs</p> <ul style="list-style-type: none">▪ Be Met (with a QR code and avatar displayed)▪ Meet (with a camera displayed) <p>Players will meet each other by scanning the QR codes on each other's devices.</p> <p>The Be Met screen changes with a player's status</p> <ul style="list-style-type: none">▪ Healthy: White background▪ Sick: Red background, audible alert	<p>Players will see these screens</p> <p>Be Met Meet</p> 
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Prepare to be an effective facilitator

As the facilitator, two of the most important things to keep in mind are:

1. Plan to give players as little information as possible for them to start playing the game.
 - Do not refer to the game parameters or related concepts such as Patient Zero, Immunity, or Incubation Time (see Key Terms below for a list of words to reveal later in the game).
 - Avoid answering questions about how players get sick.

Tell players: **Their objective is to meet as many people as possible without getting sick.**

Explain that that's it! It's normal to be confused about what's happening in the game. In fact, part of the game is to come up with questions to ask. Save them for the discussion after this first round.

2. Plan to encourage players to make observations, ask questions, and listen to other players.
 - Ask players what they see on their screens.
 - Make sure players pay attention to what other players are saying.
 - If players ask questions directed at the facilitator, tell them to ask other players.

Carefully review the following pages that outline specific steps for running the game and discussion.

Reminder: All boxed content in this guide also appears in the Quick Reference Guide. The Quick Reference Guide is intended to be printed for the facilitator to use while running the Virus Game.

Running the Virus Game

The Virus Game typically flows as follows:



Round 1		Steps to run Round 1 - <i>section (e) of the Quick Reference Guide</i>
Start	During	<p>Have players go to psims.games, enter the game code and username. When all players are logged in, pick a player to be Patient Zero by selecting a Display Name from the dropdown menu. Players cannot be added once the game begins.</p> <p>Note: Try to select someone who will be quick to meet other players, if it's possible to identify a player by the Display Name.</p> <p>You cannot begin or play the game without choosing a Patient Zero.</p> <p>Tell players to get up from their seats.</p> <p>Select Start Game.</p> <p>Note: Once a game starts, it is not possible for the host to change the game parameters, or for new players to join the game.</p>
		<p>Select Run Game.</p> <p>Keep an eye on the host dashboard in order to:</p> <ul style="list-style-type: none"> Monitor the status of the game, including the number of sick players and meetings Patient Zero has had. Accept rejoin requests from players who accidentally log out, shown under the student information tab. Receive alerts if Patient Zero is absent, in which case the host should make sure the Patient Zero rejoins the game. <p>If players ask questions, say "Good question!" and remind them that they'll have the chance to ask each other questions after this round.</p>
End		When a majority (or most) of the players are sick, end the round by selecting Pause Game and ask players to take their seats.

Discussion	Discussion overview - <i>section (g) of the Quick Reference Guide</i>
<p>The job of the facilitator is to initiate a student-driven discussion, while also pointing out concepts and questions that are important for players to explore in the next round(s) of gameplay. To do so, a facilitator:</p> <ul style="list-style-type: none"> Records notes on a chalk/dry-erase board (try organizing notes as observations, questions, guesses, ideas, proposed experiments). Names the target (Key Terms) concepts as players describe them. While players are seated, unpauses the game (selects Run Game), and 	

point out the **Meetings** list on players' screens that shows who each player has met.

The facilitator *embraces all players' ideas* (even those that are off track) and *gently guides players to a consensus* about how the game will be played in the next round(s). The following table outlines how a discussion shifts from observations about each **individual's experience**, through a process of analyzing players' **collective experience**, to a proposed experiment that will answer **players' questions**.

Discussion

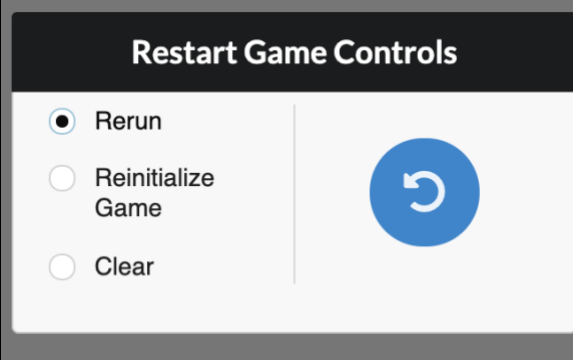
Discussion steps - *section (h) of the Quick Reference Guide*

	Common facilitator questions	Common player responses [and related Key Terms]
Observations Personal ← Collective experience	What happened? How many people did you meet? What happened to you? What did you notice about other players? What did you do when you noticed people getting sick? What questions do you have?	I met people and got sick. I got sick when I ____. The virus spread quickly. Why didn't some people get sick? Where did the virus come from?
Hypotheses Analyze ← Guess	How do you think the virus spreads? Why? Develop a theory. How did it start? Did you notice any pattern? What causes some players to get sick?	People get sick if they meet a lot of people. People get sick when they meet a sick person [Transmission] . ____ started it [Patient Zero] . It's random [Probability] . Maybe it starts when two particular people meet. Maybe people can spread the virus when they're not sick [Asymptomatic Carriers] . Maybe there's a time lag between meeting someone and getting sick [Incubation period] . Some people can't get sick because ____ [Immunity] .
Experiment Design Develop an action plan	Now you have a chance to play the game again, with the exact same starting conditions. How will you play differently in order to answer your questions and test your ideas about how the virus spreads? How might you limit the spread of the virus?	Let's each meet one person and then wait until someone gets sick. Get into groups and only meet people in your group.

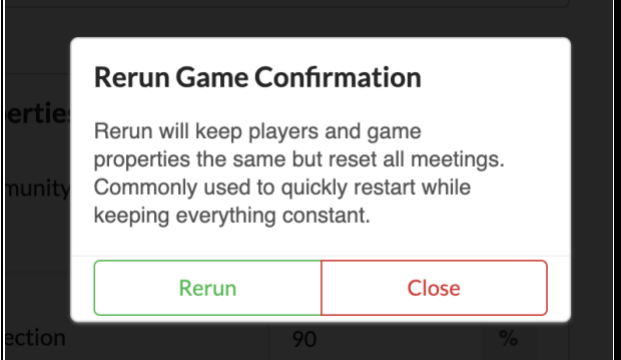
Round 2

To initiate a new round with the same starting conditions (Patient Zero, etc.) as the first:

1. Select Rerun Game.

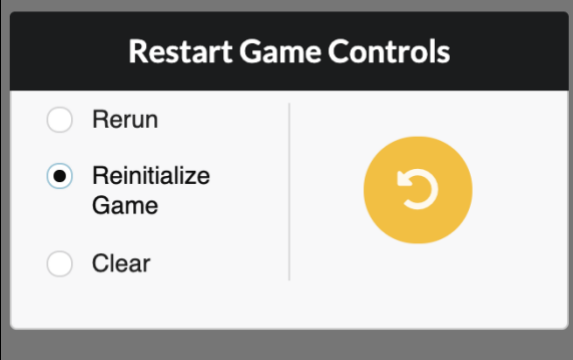


2. Select Rerun.

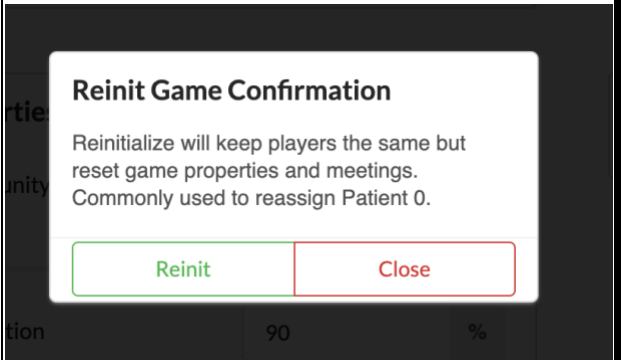


To initiate a new round with the same players but new starting conditions, including potentially a new Patient Zero (this should only be done if some sort of mistake was made in round 1):

1. Select Reinitialize Game.

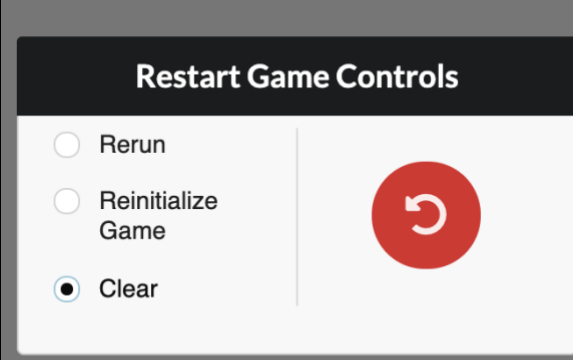


2. Select Reinit. All the starting conditions/game properties will now become available to edit before you hit **Run Game** to begin a new round.

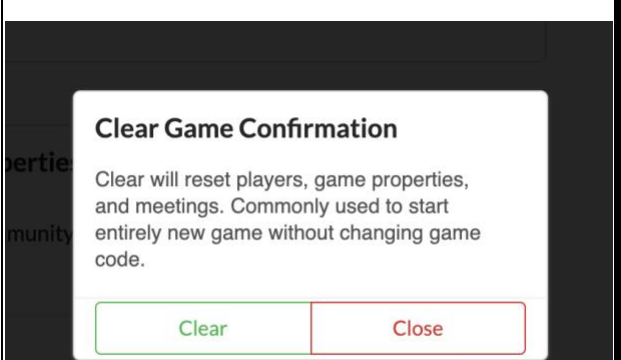


To completely clear the game, including players and all starting conditions, but keep the same game code (done between periods to keep the same game code with new students):

1. Select Clear Game.



2. Select Clear.



Repeat

If there's time, the facilitator can run more rounds, including some with different conditions, ideally reaching a point when players identify all the "Key Terms" concepts and relate those concepts to the game experience.

Key Terms - section (f) of the Quick Reference Guide

<ul style="list-style-type: none"> ✓ Transmission ✓ Patient Zero ✓ Probability ✓ Immunity ✓ Incubation Time ✓ Carriers 	<ul style="list-style-type: none"> ✓ Asymptomatic ✓ Quarantine ✓ Epidemiology ✓ Genetic Predisposition 	<p>During the discussion, players will describe many of the concepts in this list without necessarily using the exact terms listed here. The job of the facilitator is to give names to these core learning goals as players ‘discover’ them.</p> <p>For example, when a player suggests, “players don’t get sick immediately after meeting a sick person,” it might be appropriate for a facilitator to respond, “So, you’re wondering if there’s an incubation period” and write the term on the board.</p>
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Reflection

section (i) of the Quick Reference Guide

Common prompts - section (j) of the Quick Reference Guide

The purpose of the reflection is to help players learn that systems are made up of many parts, and problems are solved by many people, each with different perspectives. Additionally:

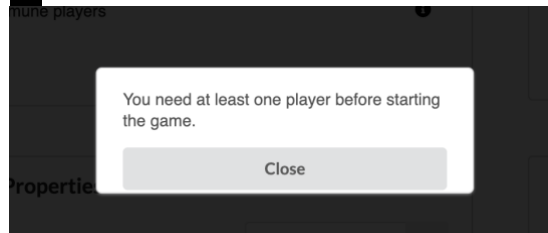
- Each player’s participation is important – both in playing the game and in discovering how it works.
- The concepts this game explores are important, and connect to disciplines beyond epidemiology.

What was this game about? What was the objective?
 Can anyone summarize how the virus spread?
 Is the game a realistic model/simulation?
 How might we limit a virus’s spread in the real world?
 What are the ethical implications of your ideas?
 What did we learn about the spread of disease?
 How did we work together to answer questions?
 What questions do you still have?

Troubleshooting

Not enough players in game. If you are alerted that there are no players in the game, you should share the game code and wait for students to enter the game code before attempting to start the game again.

1. Click the close icon and wait until the all the members of the class have joined the game.



Patient Zero Absent or Idle (section (d1) of the Quick Reference Guide). If you are alerted that Patient Zero is not meeting other players, *and* you are not able to ask Patient Zero to start meeting other players, then:

1. Click the alert icon and/or see a prompt for reassigning Patient Zero.
2. Select **Reassign** and announce that the gameplay so far was a practice round. *The game will pause automatically.*

3. Select a new Patient Zero
4. Select **Run Game**. *Players’ screens will show zero meetings.*

The image displays four panels illustrating the 'Patient Zero' interface in a game simulation. Each panel shows a 'Patient Zero' selector dropdown and associated game status information.

- Panel 1 (Left):** Shows the 'Patient Zero' selector set to 'Test'. A red warning icon is present next to the selector. Status: Online: Patient zero not selected, Sick: yes, Players Met: 2.
- Panel 2 (Middle):** A modal dialog titled 'Patient Zero Absent' is displayed. It contains the text: 'Testone, the patient zero, has left the game. Please restart with a new patient zero or have them rejoin the game.' and 'Press the red icon next to the patient zero selector to see this message again.' Below the text are two buttons: 'Reassign' (green) and 'Close' (red).
- Panel 3 (Right):** Shows the 'Patient Zero' selector set to 'Test'. Status: Online: Patient zero not selected, Sick: no, Players Met: 0.
- Panel 4 (Far Right):** Shows the 'Patient Zero' selector set to 'Test'. A dropdown menu is open, showing 'Test' (highlighted) and 'Testthree'. Status: Online: Patient zero selected, Sick: no, Players Met: 0.