Lesson 4 Worksheet
Chain of Infection: Story Map Outlines

Name: _____ Date:_____

DIRECTIONS

Use the CDC resources provided below each story map outline to identify how influenza A viruses circulate among animal populations, such as within bird (avian), pig (swine), and human populations, and how certain viruses that circulate among one animal population can occasionally transmit to another animal population. Then, complete each story map outline by creating a story about the virus's **chain of infection** within or among an animal population provided in the story map outline title (e.g., Bird-Bird-Bird). Remember, the chain of infection is the process that begins when the virus leaves its reservoir or host through a portal of exit (e.g., mouth or saliva, or nose or mucous membrane) and conveyed by some mode of transmission (e.g., direct contact or touching, contaminated surfaces or fomite transmission, or viruses in the air, droplet, or airborne), and then enters through an appropriate portal of entry (e.g., eyes, nose, or mouth) to infect a susceptible host.

In the case of influenza A virus, the most common ways influenza can spread between pigs or birds and humans, include:

Direct Transmission

- Droplet spread (e.g., droplets containing virus produced by coughing or barking, sneezing, ortalking that travel through the air short distances to a susceptible host)
- Direct contact (e.g., touching the infected host, including nasal or oral and sometimes fecalsecretions and then touching one's own eyes, nose, or mouth; and kissing)

Indirect Transmission

- Fomites or contaminated surfaces (e.g., touching a contaminated inanimate object or surfacesuch as food container, water feeder and then touching one's own eyes, nose, or mouth)

SET THE STAGE

1. Select an **initial setting** in which your story will occur (e.g., fair, farm, city, wildlife park, or summercamp). Describe the setting in detail (e.g., a farm in Michigan with a large pond).
2. Identify the **initial reservoir** — the habitat in which an infectious agent normally lives, grows, andmultiplies (e.g., bird, pig, human, or environment) — for the virus based on the title of the story map(e.g., **Bird**-Bird-Bird). Describe the reservoir in detail (e.g., a domestic duck living in the pond).

CREATE A CHAIN-OF-INFECTION

1. Select the first host — **host A** (i.e., Bird-**Bird**-Bird). Describe the host in detail (e.g., an award-winning domestic Silkie chicken that was recently purchased and whose coop is located near thepond on the farm).
2. Identify a **method of transmission** to infect the **host A**. Describe the method of transmission indetail (e.g., the domestic duck living in the pond waddles up to the coop about 2 feet from the Silkiechicken and shakes its head releasing influenza virus into the air.) Then describe how host Abecomes infected (e.g., the virus enters through the eyes, nose, or mouth [beak] of another chickenin the coop).
3. Identify the second host — **host B** (i.e., Bird-Bird-Bird). Then, identify a method of transmissioninfect **host B** (e.g., the infected Silkie chicken defecates on the ground, causing the ground tobecome contaminated with feces containing influenza virus. Next, the infected Silkie chicken flapsits wings and scratches the ground with its talons, which kicks up small particles containinginfluenza virus into the air. The virus then enters through the eyes, nose, or mouth of nearbySebright chicken.)

STORY MAP OUTLINE: BIRD-BIRD-BIRD

Virus	Avian influenza A (H7N9) virus
Initial Setting	
Initial Reservoir	
Method of Transmission A	
Host A	
Method of Transmission B	
Host B	

CDC Resources: https://www.cdc.gov/flu/about/viruses/transmission.htm
https://www.cdc.gov/flu/avianflu/avian-in-birds.htm
https://www.cdc.gov/flu/avianflu/h7n9-virus.htm

STORY MAP OUTLINE: BIRD-BIRD-PIG OR HUMAN

Virus	Avian influenza A (H5N1) virus
Initial Setting	
Initial Reservoir	
Method of Transmission A	
Host A	
Method of Transmission B	
Host B	

CDC Resources: https://www.cdc.gov/flu/avianflu/avian-in-birds.htm
https://www.cdc.gov/flu/avianflu/avian-in-humans.htm

STORY MAP OUTLINE: PIG-PIG-PIG

Virus	Swine influenza A (H3N2) virus
Initial Setting	
Initial Reservoir	
Method of Transmission A	
Host A	
Method of Transmission B	
Host B	

CDC Resources: https://www.cdc.gov/flu/swinflu/h3n2v-basics.htm

STORY MAP OUTLINE: PIG-HUMAN-HUMAN

Virus	Swine influenza A (H3N2) virus (in the pig) Variant influenza A (H3N2) virus (when it infects a human)
Initial Setting	
Initial Reservoir	
Method of Transmission A	
Host A	
Method of Transmission B	
Host B	

CDC Resources: https://www.cdc.gov/flu/swinflu/h3n2v-basics.htm
https://www.cdc.gov/flu/pdf/swineflu/transmission-between-pigs-people.htm

STORY MAP OUTLINE: HUMAN-HUMAN-HUMAN

Virus	Human seasonal influenza A (H1N1) virus
Initial Setting	
Initial Reservoir	
Method of Transmission A	
Host A	
Method of Transmission B	
Host B	

CDC Resources: https://www.cdc.gov/flu/about/disease.spread.htm

STORY MAP OUTLINE: HUMAN-HUMAN-PIG

Virus	Human seasonal influenza A (H3N2) virus
Initial Setting	
Initial Reservoir	
Method of Transmission A	
Host A	
Method of Transmission B	
Host B	

CDC Resources: https://www.cdc.gov/flu/swinflu/peole-raise-pigs-flu.htm
https://www.cdc.gov/flu/pdf/swineflu/transmission-between-pigs-people.htm

Story Map

Name: _____ Date:_____

DIRECTIONS

Create a story map by using the assigned story map outline. See below for a sample of how to create a story map.

STORY MAP TITLE: NAME OF VIRUS