

PulseNet B-Roll Description:

-0:12: CDC signage.

0:13-0:28: Microbiologist picking a colony of bacteria that caused foodborne illness for pulse-field gel electrophoresis (PFGE).

0:29-0:46: Microbiologist takes a pure bacteria from petri dish.

0:47-0:58: Wide frame view of previous step.

1:00-1:03: The bacteria on the swab is placed into the liquid. This creates the bacterial suspension that will be used to make the gelatin plug of bacteria needed to perform PFGE.

1:04-1:17: The microbiologist is pipetting the liquid that will be used for the bacterial suspension.

1:19-1:28: Close-up of the microbiologist in the lab.

1:29-1:40: Close-up view of the gelatin plug containing the bacteria that made someone sick.

1:41-1:44: The gelatin plug is removed from the buffer.

1:45-1:58: Another close-up shot of the plug.

2:00-2:04: The microbiologist places the completed gelatin plug containing the bacteria that made someone sick into the buffer where the plug will go through a series of washing steps. This allows the scientists to get a clear DNA fingerprint, or pattern, at the end of this process.

2:05-2:17: Wide angle view of previous step.

2:18-2:26: Microbiologist placing the smaller plug slice, which will be used to run the DNA gel to determine the bacteria's unique DNA fingerprint, or pattern, into the liquid. The liquid contains enzymes that cut the DNA into many small pieces of different sizes. This allows scientists to separate the DNA pieces based on their size and determine the specific bacteria causing the illness.

2:27-2:34: A close-up view of the cut plug slice.

2:35-2:38: Microbiologist prepares to place the smaller plug slices onto the comb platform. Each spot on the comb represents where a different plug slice will go. Each plug slice is a different bacteria that makes someone sick, and the spacing on the comb allows there to be separation between the DNA fingerprints, or patterns.

2:39-2:48: A close-up of the plug slices on the comb platform.

2:49-3:29: A wide angle view of the previous step. The microbiologist can test bacteria that made people sick from a maximum of eleven different patients on one gel.

3:30-3:34: A close-up of the microbiologist.

3:35-4:28: A wide angle view of the microbiologist turning the platform vertically into the gel platform. This allows all the plug slices to be touching the base of the gel platform. Then, the microbiologist pours the agarose gel around the plug slices. This allows the slices to be trapped at the top of the gel.

4:29-5:08: Close-up view of the previous step.

5:09-5:19: The microbiologist removes the hardened gel from the mold.

5:20-5:46: The microbiologist places the gel into a machine that separates the DNA pieces or fragments. The machine has electrodes around the gel that send a current through the buffer liquid that surrounds the gel. This causes the bacteria's DNA from the plug slices to migrate down the gel generating unique DNA patterns that are uploaded to PulseNet's national databases.

5:47-6:02: After the gel has run for around 17-22 hours depending on the type of bacteria on the gel (i.e. *Salmonella*, *E. coli*, *Listeria*, etc), the microbiologist places the gel on an imaging machine to take a photo of the DNA fingerprints, or patterns.

6:03-6:22: The image shows the finished gel. The peaks at the top that are higher are the larger pieces of DNA. The smaller fragments of DNA migrate to the end of the gel and can be seen as smaller peaks.

6:23-6:33: Close-up view of the last clip of the finished gel

6:34-6:40: A different color setting showing the previous two clips of the finished gel.

6:41-7:03: Close-up of the last clip of the finished gel

7:04-7:21: The microbiologist shows how PulseNet typically views the data and changes it to a different color perspective.

7:22-7:32: Once the gel is imaged, the PulseNet database managers analyze the DNA pattern, or fingerprint, to see if it matches others in the national database. If there are other matches, this could signify an outbreak. The screen shows how a database manager would view the previous and current *Salmonella* clusters, or groups of the same pattern.

7:33-7:51: The database manager is scrolling through the patterns in PulseNet's national database for *Salmonella*. The patterns towards the bottom look identical indicating a cluster, or group of the same pattern, that is likely to represent an outbreak from a common source.

7:52-8:01: Wide screen view of previous clip of database manager scrolling through patterns.

8:04-8:12: Wide screen view of database manager looking for *Salmonella* clusters.

8:13-8:22: Wide screen view of database manager looking for *Salmonella* clusters.

END