

Now: Technology and the Healthcare System

by Sophia



WHAT'S COVERED

In this lesson, you will focus on healthcare technology. Healthcare, like the military, is an existential issue. That is, it can determine not only how, but if, we get to have an existence. This has become even more clear since the development of COVID-19. Specifically, this lesson will cover:

1. Technology and Healthcare System
2. Technophobia
 - a. Print Phobia: *Will We Go Blind?*(1871)
 - b. Car Phobia: *Those Darned Devil Wagons!*(1894)
 - c. X-Ray Phobia: *Death By Radiation?*(1934)
 - d. AI Phobia: *Beware the Machines!*(1955)
 - e. Today's Technophobia: *Still Agile* (Present Day)
3. Technology for Patients and Practitioners
4. COVID-19
5. Approaching Healthcare Technology with an Agile Mindset

"Already today, you don't need to go to your physician in many cases.... We're now in the era of virtual visits."

Dr. Daniel Kraft



BEFORE YOU START

How has technology changed how you communicate with your healthcare provider?

1. Technology and Healthcare System

In the last challenge, we explored military technology, an area where innovation plays a major role. We saw how new inventions changed warfare and later became important for civilian use. In this challenge, we'll turn our attention to another area where daily use of technology is essential: healthcare.

Medical technology affects nearly everyone in the United States, and new technology trends continually cause our healthcare system to evolve. This makes exploring healthcare a great way to examine the impact of

technology. We can learn how people have typically adapted to new technologies and how we can apply that knowledge to our own lives.

Our healthcare system is far more complex today than in the past, largely due to technology. For most of history, medical care was centered around the home: doctors regularly made house calls, and hospital visits were rare. Now we have access to preventive care in doctors' offices or urgent care centers, advanced hospitals with teams of specialists, and a wide range of options for services and treatments.

Communication between providers and patients is also faster than ever, with virtual patient portals, online test results, and digital records. We are beginning to see the possibilities of remote treatment through telehealth, where doctors and nurses diagnose and advise patients over the internet. These improved opportunities for communication allow medical providers to be more agile by integrating more up-to-date information and feedback from patients into their treatment plans.

2. Technophobia



Agility: Skill Reflect

Are you comfortable getting a medical diagnosis that was determined by a computer? How about talking to Siri? Or sharing the streets with self-driving cars? Staying ahead of the curve at work and in life means being able to adapt to changing technology, even though it can cause stress. It's no wonder that new technology inspires so much fear, it has its own name: Technophobia!

Believe it or not, technophobia is nothing new. Throughout history, people have been wary of the latest inventions, devices, and scientific advances. Luckily, our ancestors didn't let their fear get the best of them. Instead, they adapted to new technology by using these agility strategies:

- Do Research.
- Ask Questions.
- Keep an Open Mind.
- Manage Stress.
- Balance Risks and Benefits.

In the sections below, you're about to jump back in time to see how people reacted to new technologies that we now take for granted, and explore how you, too, can be more agile with tech.

2a. Print Phobia: *Will We Go Blind?* (1871)

The "Hoe web-perfecting press," invented in 1871, revolutionized newspaper printing and made information accessible for more people than ever before. But by the end of the century, some concerned citizens in England worried that people were spending so much time reading the printed word, they might go blind! They wrote articles in newspapers — ironically — about their outrage over this so-called "urban myopia."

In spite of fear and uncertainty, many people coped by using their agility skills. They began to **ask questions** of their eye doctors about how they could protect their eyes. This focus on eye health led ophthalmologists to develop new diagnostic techniques and improve existing treatments, like eyeglasses or "spectacles," as they were known back then.



An examination of the eye using an ophthalmoscope in 1969

2b. Car Phobia: *Those Darned Devil Wagons!* (1894)

In the late 19th century, when wealthy Americans began turning to the automobile for transportation, many other people were less than impressed with this newfangled invention. Resisters started calling cars “devil wagons” because they were loud, they kicked up dust, and they killed livestock. These early concerns led to a variety of restrictive laws about car use. In 1894, one Vermont law required a person to walk in front of any moving car waving a red flag. In Pennsylvania, drivers had to shoot off a Roman candle as a warning every mile.

As cars became more common, both pedestrians and drivers showed agility as they adapted to the change. They **managed their stress** and improved safety by creating traffic signals and wider roads. Soon, a growing number of gas stations and a nationwide highway system led to more travel, exploration, and comfort with cars!



Bustling market: Cars, trucks, and horse-drawn wagons competed for space at a fruit and vegetable market.

2c. X-Ray Phobia: *Death By Radiation?* (1934)

In 1934, Marie Curie, the woman who discovered radioactivity, died from aplastic anemia, likely caused by prolonged radiation exposure. Her death worried the public because for decades doctors had been using x-rays — which rely on radiation — to see inside their patients' bodies. Portable x-ray machines were widely used in the field during World War I. After Marie Curie's death, people's concerns about radiation skyrocketed, leading to a fear of x-rays.

Luckily, people showed agility by staying open to the potential of x-rays to change medicine for the better. As medical practitioners **did research** about how to make treatments more effective, they eventually found new safety measures, like lead shields that patients and technicians could wear for protection.



Hospital X-ray, 1932

2d. AI Phobia: *Beware the Machines!* (1955)

In 1955, a computer programmer named John McCarthy first used the phrase "artificial intelligence" to describe a machine that could think like a human. Over the next several years, computers were programmed to perform complex tasks usually only done by people like recognize pictures, translate languages, and understand instructions. Soon, the intense fear that computers could think for themselves and potentially destroy their human creators became a recurring theme in pop culture. For the next half century, movies and novels were filled with murderous robots, terminators, cyborgs, androids, and other forms of artificial intelligence.

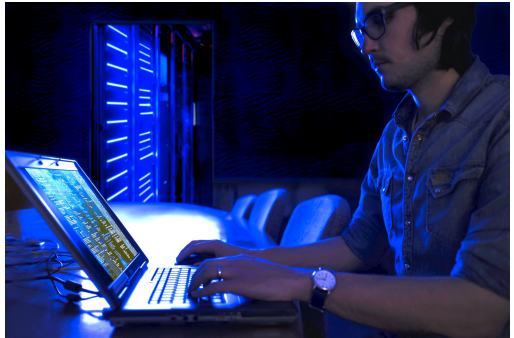
Fortunately, agile computer scientists **kept an open mind** to AI's potential, even as they urged caution and regulation around security and ethical issues. By the 1970's, a speech recognition system called "Harpy" could understand 1011 words, approximately the vocabulary of an average three-year-old. Today, speech recognition AI has given us virtual assistants like Siri and Alexa.



St. Joseph Hospital computer operator

2e. Today's Technophobia: *Still Agile* (Present Day)

The technologies described above have changed and advanced. Today, we continue to adapt to them, using the same strategies as the people who came before us to balance their risks and benefits.

Phobia	Strategy	Example
Print	Instead of printed newspapers, people now get the bulk of their information on screens. That hasn't eliminated fear of eye strain! To address concerns about the impact of screens on our vision, eyeglass companies have developed lenses that block blue light from screens.	
Car	We don't need people walking in front of our cars with flags any more. But with over 280 million cars on American roads, manufacturers are addressing modern fears about pollution by designing more fuel efficient vehicles, like the electric car.	
X-Ray	Today, x-rays are used for imaging in medicine, astronomy, and security, but concern about radiation overexposure remains. So, scientists have developed machines that deliver higher-resolution images... without the need for increased radiation.	
AI	While movies about killer robots still occasionally hit theaters, we as a society have grown more comfortable with AI and have begun to incorporate it into our everyday lives. Many of us use digital assistants on our phones and smart speakers in our homes. Concerns about privacy remain, which is why developers are constantly creating new precautions to safeguard user data.	



BIG IDEA

Agility empowers us to stay open, weigh risks and benefits, and conquer our fears to make informed decisions about what technology has to offer.



THINK ABOUT IT

Is there a particular technology that triggers technophobia in you?

3. Technology for Patients and Practitioners

Medical technology includes everything from lifesaving medicines and research tools to digital record-keeping systems.

If you were to visit a healthcare center today, it's possible that you wouldn't see a single piece of paper during your appointment other than the magazines in the waiting room. You might check in on a tablet and be examined by a nurse who enters your vital signs into your medical record on a laptop. Then you might speak with a doctor who sends a prescription over the internet to your local pharmacy. What's more, the drugs, surgical techniques, and other therapies available today would have been nearly unthinkable only a few generations—or even a few decades—ago.

These kinds of technologies are making the process of receiving healthcare easier and often safer for patients. Technology can streamline healthcare systems and even help to limit human error—for example, when a doctor sends prescriptions to a pharmacy online, no one has to decipher the doctor's handwriting.

The big question the United States is grappling with today is not whether to use these new technologies but how to pay for them. Technology is making healthcare more affordable in some ways, such as by streamlining administrative work with computers, but advanced treatments and new drugs are expensive, and healthcare costs are on the rise. As we look to the future, understanding the economic effects of using new healthcare technologies will continue to be an issue that requires critical thinking and thoughtful problem solving.

4. COVID-19

At the end of 2019, the coronavirus evolved and made the jump from one species to another -- specifically, humans. This is known as zoonosis. When the coronavirus affects humans they develop a disease known as COVID-19. In March of 2020, the World Health Organization declared COVID-19 a global pandemic.

Because of its infectious nature and deadly effects, governments around the world responded by encouraging/forcing people to shelter-in-place. While this had devastating economic effects, it is believed to have helped save millions of lives as it slowed the spread of the disease and helped hospitals and medical suppliers prepare for more patients. Despite these efforts, COVID-19 continued to infect more and more people. Within four months of being declared a global pandemic, COVID-19 had killed more than half a million people worldwide. Within three months of the first declared case in the United States, more Americans had died from COVID-19 than died fighting in Vietnam -- a war that lasted 19 years.

This existential threat created an unprecedented medical and technological focus. Medical labs and researchers around the United States and world focused on creating cures and vaccines for this deadly disease. Within three months of the coronavirus's spread, scientists had sequenced its entire genome and made the results public. Within four months of COVID-19 being declared a global pandemic, drug companies and universities were moving dozens of potential vaccines through clinical tests at unprecedented rates.

5. Approaching Healthcare Technology with an Agile Mindset

A rapidly changing healthcare system requires a great deal of agility from the people who are involved in it. Remember, **agility** is having the ability to embrace change and adapt to new circumstances. An agile mindset will help both patients and practitioners as they respond to new systems, evaluate and apply new types of treatments, and keep up with new communication tools. Just as patients need agility to navigate new medical systems and insurance policies, healthcare providers need agility to keep up with the latest in medical and administrative technology.

Patients and doctors alike also need critical thinking to evaluate new technology and news about the latest medical research. This will help them decide when to adopt new practices or change medical advice and when to wait. And even for those who aren't currently employed in the medical field, meeting the changing healthcare system with agility might mean recognizing new career opportunities; the healthcare field is growing, and it offers career options ranging from office administrators to medical practitioners.

As we've done in previous challenges, we're now going to jump into the past to examine some moments in the history of healthcare technology and observe how individuals have responded and adapted to change. Then we'll use this knowledge to draw conclusions about healthcare today and in the future.



SUMMARY

In this lesson, you learned how **technology and the healthcare systems** have evolved together as a result of innovation. New medical technology and advances in communication have resulted in a far more complex healthcare system than in the past. This evolution sparks **technophobia** in many consumers of healthcare. However, history shows that fear and anxiety often accompany the advent of new technology.

Technology for patients and healthcare practitioners continues to progress at a rapid pace, as the recent **COVID-19** pandemic clearly demonstrates. Making best use of this technology requires **approaching healthcare technology with an agile mindset**.

Best of luck in your learning!

Source: Strategic Education, Inc. 2020. Learn from the Past, Prepare for the Future.



ATTRIBUTIONS

- [An examination of the eye using an ophthalmoscope in 1969](#) | Author: Grafissimo / Getty Images | License: Royalty-free
- [Bustling market: Cars; trucks and horse-drawn wagons competed for space at fruit and vegetable market.](#) | Author: John Boyd / Getty Images | License: Rights-managed
- [Hospital X-ray, 1932](#) | Author: Daily Herald Archive / Getty Images | License: Rights-managed
- [St. Joseph Hospital computer operator](#) | Author: Duane Howell / Getty Images | License: Rights-managed