

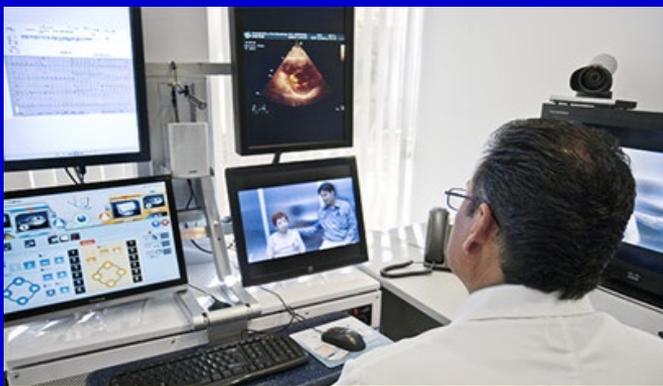
ARIZONA  
TELEMEDICINE  
PROGRAM



# Telemedicine Applications (Part 2): “Advanced” Applications

Ronald S. Weinstein, MD  
Director, Arizona Telemedicine Program

*Lecture #2*



**Specialty Services  
Telemedicine  
(Direct-to-Hospital)**



# Telemedicine & Telehealth Services

1. Gap Services
2. Urgent Services
3. Mandatory Services

Specialty Services  
Telemedicine

4. Mobile Telehealth
5. Direct-to-Consumer Telehealth
6. Cloud Computing Applications

# Telemedicine & Telehealth Services

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<https://ihealthlabs.com/wireless-scales/ihealth-core/>

Images intended as examples of technology and not as an endorsement of companies or products.

# Mobile Telehealth

TELE-HOME HEALTH CARE:

## ‘Care Beyond Walls and Wires’ Enhances Life for Patients with Congestive Heart Failure



### Case Study

More than 5 million people in the U.S. suffer from congestive heart failure (CHF), a Disease Control and Prevention (CDC). The annual cost is estimated at more than \$10 billion. Medications, and lost earnings, the CDC says. Northern Arizona Healthcare’s “Care Beyond Walls and Wires” can improve CHF patients’ health and reduce health care costs.

Woody Smith and his daughter, Rita Yazzie, used to drive as often as twice a month from their home on the Navajo Reservation to Flagstaff Medical Center, nearly two hours away. Mr. Smith is living with congestive heart failure, with symptoms so severe he required frequent hospitalizations.

But Mr. Smith can now go months without having to go to the hospital. His condition has resulted from a program called Care Beyond Walls and Wires, a telemedicine-enabled program that helps improve the health of patients with congestive heart failure.

The program allows for room visits and readmissions, and a stay for those who are hospitalized.

“It’s phenomenal,” says a registered nurse for Flagstaff-based Northern Arizona Healthcare, which runs Care Beyond Walls and Wires from Flagstaff Medical Center.

Ms. Yazzie says the program “is the best thing for my dad. It’s saved me two hospital readmissions and the program more than paid for itself.”

And at 90, Mr. Smith has been able to return to his favorite activity: riding his horse.

Care Beyond Walls and Wires provides patients with a backpack containing the equipment they need to check their blood pressure, measure their oxygen level, and check their weight daily; the latter because patients with CHF can gain and drop weight suddenly. The data are automatically

transferred to a smart phone that transmits the information to Northern Arizona Healthcare’s care coordination office, which provides the smart phone, monitoring equipment and backpack to every patient enrolled in Care Beyond Walls and Wires.

Some of the program’s patients have no electricity at home, so they also are given

The San Diego telecommunications company Qualcomm was chosen to lead the project, with Maryland-based Zephyr Technology and Verizon providing software, smart phones and remote-monitoring hardware.

Northern Arizona Healthcare agreed to conduct a pilot project involving 50 patients. The project got under way in

*“Care Beyond Walls and Wires is the best thing ever for me, and the best thing for my dad.”*

Rita Yazzie

the study if you lived in a rural area with no family support,” Ms. Sorenson says. Ms. Yazzie could live in Supai (in the Grand Canyon) or on the Navajo Reservation. Our patients are 50 percent Hispanic, and white, and 50 percent in their 60s to early 90s.”

Care Beyond Walls and Wires was launched when it ended on November 30, 2014. Northern Arizona Healthcare is continuing the program.

The program cost around \$650,000, Ms. Sorenson says, including all phone charges.

“It’s worth the investment,” she says. “Patients benefitting from the program penalize hospitals for not treating conditions, including congestive heart failure, if they are readmitted and discharged.”

“It’s a tremendous patient benefit,” she says. “Patients like the feeling that they have more control over their health,” Ms. Sorenson says. “We couldn’t have asked for anything more. It’s a global win.”

From that perspective, the idea for Care Beyond Walls and Wires originated with the National Institutes of Health Office of Public and Private Partnerships, which was looking for better ways to monitor patients with CHF who live in rural areas. The goal was to provide better care while keeping the patients out of the hospital, thus reducing health-care costs.



**Direct-to-Consumer  
Telemedicine**

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# ARIZONA TELEMEDICINE PROGRAM

**TMC NOW**

**TALK TO A DOCTOR NOW**

Talk to a doctor, anytime, anywhere, your nearest to be.

Prevent treatment, miss school back in 10 minutes.

A network of doctors that can treat every member of the family.

Access care anywhere, any place, any time. The TMC Now app gives you 24/7 access to physicians that are licensed to practice in Arizona through the convenience of phone, video or mobile app visits. It's an affordable option for quality medical care.

**Talk to a doctor for only \$49.**  
Use promo code **STAR10** for **10% OFF** your first visit. Expires 2/28/19. One code per person.

Download on the App Store | Download on Google Play

[tmcaz.com/tmcnow](http://tmcaz.com/tmcnow)

**DOWNLOAD THE APP FREE TODAY!** Tucson Medical Center

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# Tucson Daily Star January 6, 2019



**Access care anywhere, any place, any time.**  
The TMC Now app gives you 24/7 access to physicians that are licensed to practice in Arizona through the convenience of phone, video or mobile app visits. It's an affordable option for quality medical care.

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**TMC NOW** DOWNLOAD THE APP FREE TODAY! Tucson

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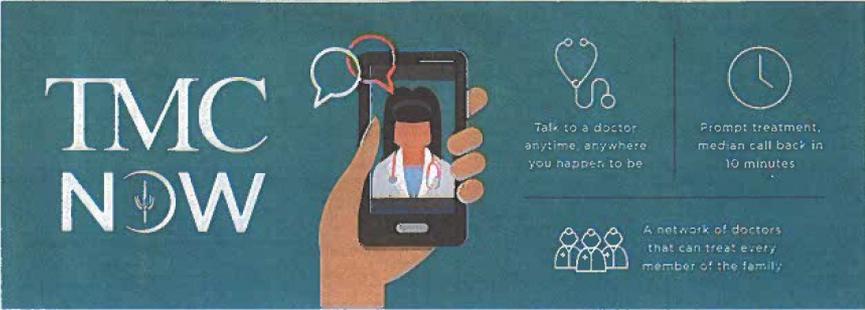
## GET THE CARE YOU NEED

Our doctors can treat many medical conditions, including:

- Co
- All
- Pin
- Ear
- Res
- Sin
- Ski
- ... and

- **GET GREAT CARE YOU NEED**
- Cold & flu symptoms
- Allergies
- Pink eye
- Ear infections
- Respiratory infection
- Sinus problems
- Skin problems
- ... and more

# Tucson Daily Star February 24, 2019



**TMC NOW**

Talk to a doctor anytime, anywhere you happen to be

Prompt treatment, median call back in 10 minutes

A network of doctors that can treat every member of the family

## TALK TO A DOCTOR NOW

**Access care anywhere, any place, any time.**  
The TMC Now app gives you 24/7 access to physicians that are licensed to practice in Arizona through the convenience of phone, video or mobile app visits. It's an affordable option for quality medical care.

**Talk to a doctor for only \$49.**  
Use promo code **FESTIVAL10** for **10% OFF** your first visit.  
Expires 3/31/19. One code per person.

Download on the App Store

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[tmcaz.com/tmcnow](http://tmcaz.com/tmcnow)

**GET THE CARE YOU NEED**

Our doctors can treat many medical conditions, including:

- Cold and flu symptoms
- Allergies
- Pink eye
- Ear infection
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- Sinus problems
- Skin problems
- ...and more.

**TMC NOW** DOWNLOAD THE APP **FREE TODAY!** Tucson Medical Center

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Trouble viewing this email? [Click to view in browser.](#)



## Register for Virtual Visits now to save time later.



### See a doctor whenever, wherever.

Get registered for Virtual Visits now, so you're ready for cold and flu season — and can see the doctor without having to leave home.

[Register Now](#)

### Start feeling better faster.

A Virtual Visit lets you see and talk to a doctor on your mobile device,\* tablet or computer. The doctor can give you a diagnosis and even write a prescription\*\* if needed. No appointment necessary — it's available 24/7. And, with your UnitedHealthcare plan, your cost is \$50\*\*\* or less.

# Direct-to-Consumer Telehealth

## United HealthCare Virtual Visits

<https://www.youtube.com/watch?v=gnVmHZRSOnQ>

# Direct-to-Consumer Telemedicine

American Well

<https://www.youtube.com/watch?v=sBryMAxi5tE>

# Market Differentiation

## Staffing Models

- Bronze – AI-driven messaging, Board certified MDs
- Silver – MDs, Nurse practitioners, PAs
- Gold – Elite MDs (graduates of top-50 US medical schools)

# Direct-to-Consumer

## ● Bronze (\$19-\$49)

- Staffing – AI-driven, board certified MDs
- Mode – “*In-app* messaging”
- Target - student health services
- Technology - smart phones
- *Example - 98point6, Inc.*
- Tucson – UA Student Health Services

# TELEMEDICINE SERVICES

*In app* messaging

**98point6**

# Direct-to-Consumer

- Bronze (\$19-\$49)

## ○ Silver (\$49-69)

- Staffing – MDs, nurse practitioners, PAs
- Mode – video conferencing
- Target: primary care
- *Examples- TelaDoc, Amwell, Circle Medical*
- Arizona > Tucson Medical Center, Northwest  
>UA's State-Sponsored  
Medical Plans

Telemedicine now available nationwide. Get preventive care, COVID-19 asses



[Doctors & Providers](#)

[Locations](#)

## Primary care doctors over video

[Book video visit](#)  
Next appointment: Today at 06:00 pm

- 27 States
- 67% of the US Population

In-network with



blue  of california



### What is primary care via telemedicine?

Establish an ongoing relationship with a primary care provider for your



**Circle Medicine**  
UCSF HEALTH AFFICATE

## Staffing Model

- Medical Doctors
- Nurse Practitioners
- Physicians Assistants



**Dr. Tom Ronay**

[Play video](#)

Board Certified, Family Medicine, 9 years of experience



**Caitlin Swift, FNP-BC**

Family Medicine, 3 years of experience



**Jennifer Herrera, PA-C**

Family Medicine, 6 years of experience

# “White Boarding”

An advertisement for the TMC NOW app. The background is teal. On the left, a hand holds a smartphone displaying a doctor's profile. Above the phone are two speech bubbles, one white and one orange. To the right of the phone, the text reads: "TMC NOW" in large white letters, "FEELING SICK?" in bold white letters, "Talk to a doctor from home" in smaller white letters, and "Access care 24/7" in smaller white letters. Below this is the text "DOWNLOAD THE FREE APP TODAY!" in bold white letters. Underneath are two buttons: "Download on the App Store" with the Apple logo and "Download on Google Play" with the Google Play logo. At the bottom of the teal section, it says "Your visit is just \$20 using the code SPRING20". The bottom of the advertisement is a dark blue bar with the TMC HealthCare logo on the left, the Mayo Clinic Care Network Member logo in the center, and the website "tmcaz.com/tmcnow" on the right.

**TMC NOW**  
**FEELING SICK?**  
Talk to a doctor from home  
Access care 24/7

**DOWNLOAD THE FREE APP TODAY!**

Download on the App Store | Download on Google Play

Your visit is just **\$20** using the code **SPRING20**

TMC HealthCare | MAYO CLINIC CARE NETWORK Member | [tmcaz.com/tmcnow](https://tmcaz.com/tmcnow)

## Wholesale Telemedicine

### “Telemedicine as a Commodity”

# Direct-to-Consumer

- Bronze (\$19-\$49)
- Silver (\$49-69)
- Gold (\$75-\$99)
  - Staffing – Elite MDs (top 50 medical schools)
  - Target -- Preferred Patients
  - **PlushCare**

# Care for you, and the ones you love most.



## High Quality

Our highly-skilled doctors are trained at the top 50 U.S. medical schools with an average of 15 years of experience. Our

doctors give you and your entire family the peace of mind you should expect from your healthcare provider.

[Our Doctors](#)

# Market Differentiation

## Staffing Models

- Bronze – AI-driven messaging, Board certified MDs
- Silver – MDs, Nurse practitioners, PAs
- Gold – Elite MDs (graduates of top-50 US medical schools)

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# Cloud Computing Applications

*(Zoom.com)*

- **ECHO Programs** \*
- **Disease-Specific Support Groups**

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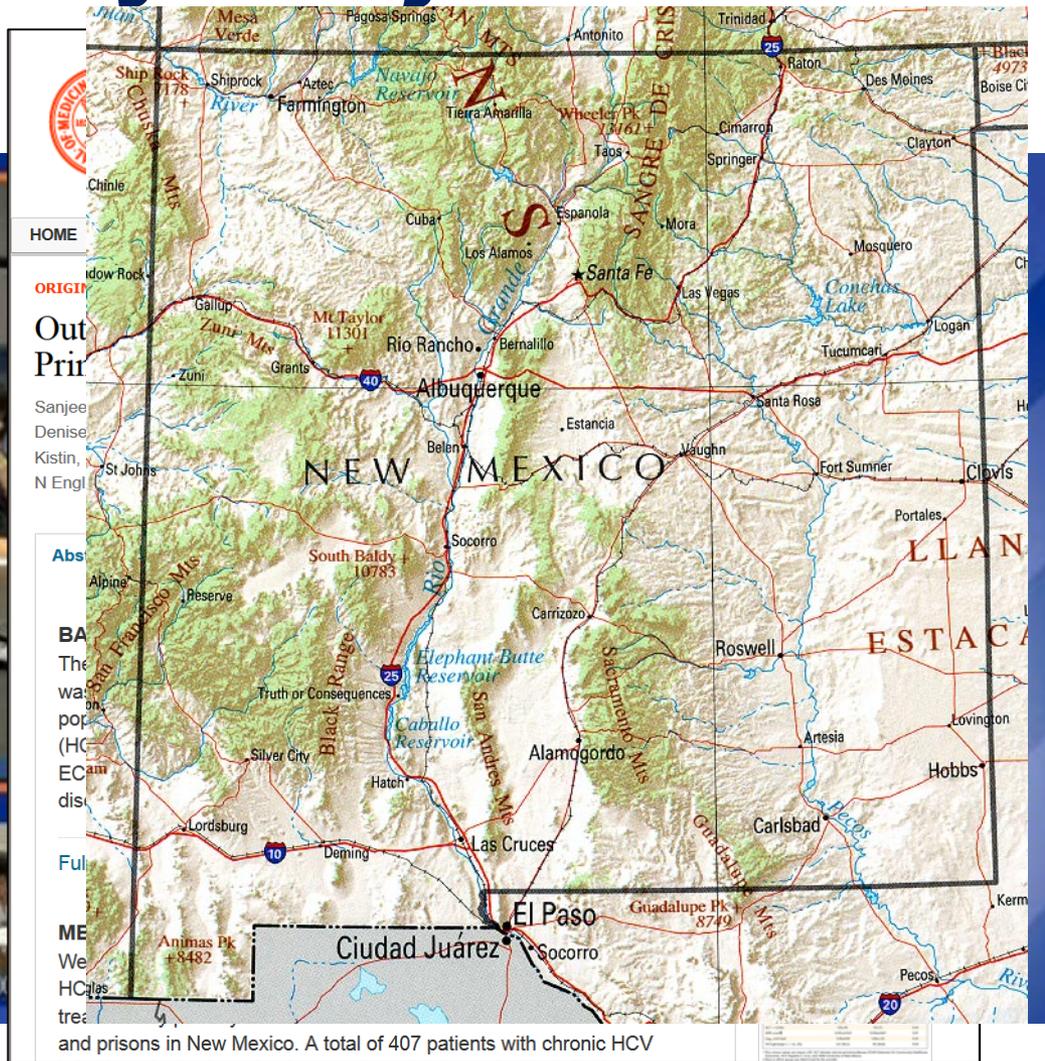
\* *Extension of Community Healthcare Outcomes*



# Project ECHO Programs

(Extension for Community Healthcare Outcomes)

# Why Project ECHO?



121,697  
square  
miles



# ECHO TeleRheumatology Clinic



# ECHO TeleRheumatology Clinic



# Physicians in Bisbee, AZ

## Attending from a rural hospital conference room



# Cloud Computing Applications

*(Zoom.com)*

- **ECHO Programs<sup>\*</sup>**
- **Disease-Specific Support Groups**

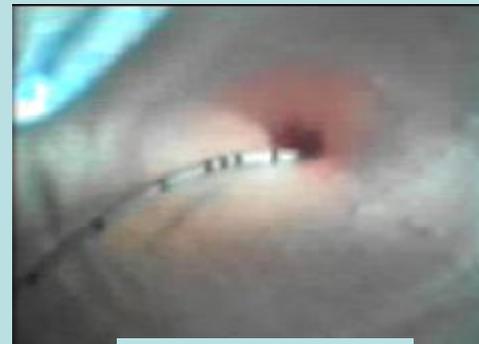
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<sup>\*</sup> *Extension of Community Healthcare Outcomes*

# Home Health - Ostomy Care



Colostomy



Urostomy



# PCORI Programs

(Patient-Centered Outcomes Research Institute)

## EXAMPLE

**“Ostomy Telehealth for Cancer Survivors: A Program of Collaborative Research”**

Robert Krouse, M.D., FACS, Principal Investigator

# In-Person Model



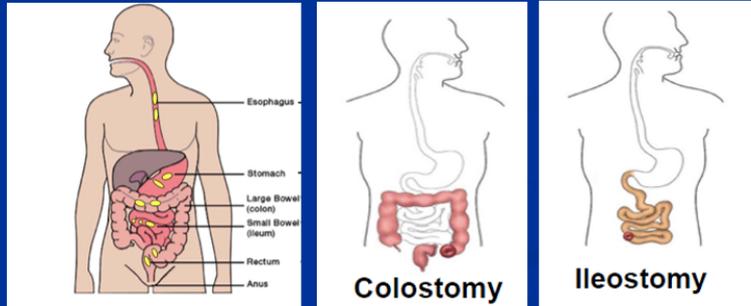
# Telehealth Model



- Nurse-educators
- “PCORI Peers”
- “TeleHealth” Engineers

# Ostomy Surgery

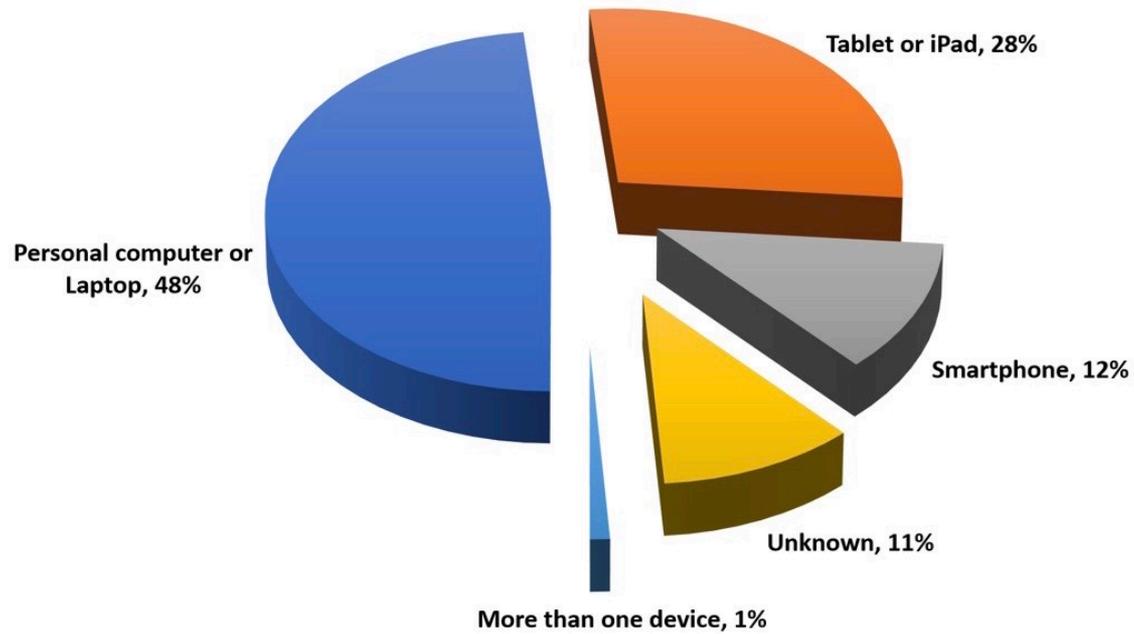
## Ostomy Surgery Before & After



## Healthy versus Unhealthy Skin



# Patient Video Devices



Krouse et al, *in preparation* 2020

# Ostomate Patient at Home



# Service Providers

1. Home-based

2. Virtual medical centers

# -- Emergency Medicine Telehealth Center --



Referring sites



Clinics



ED

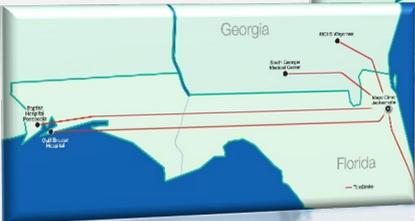
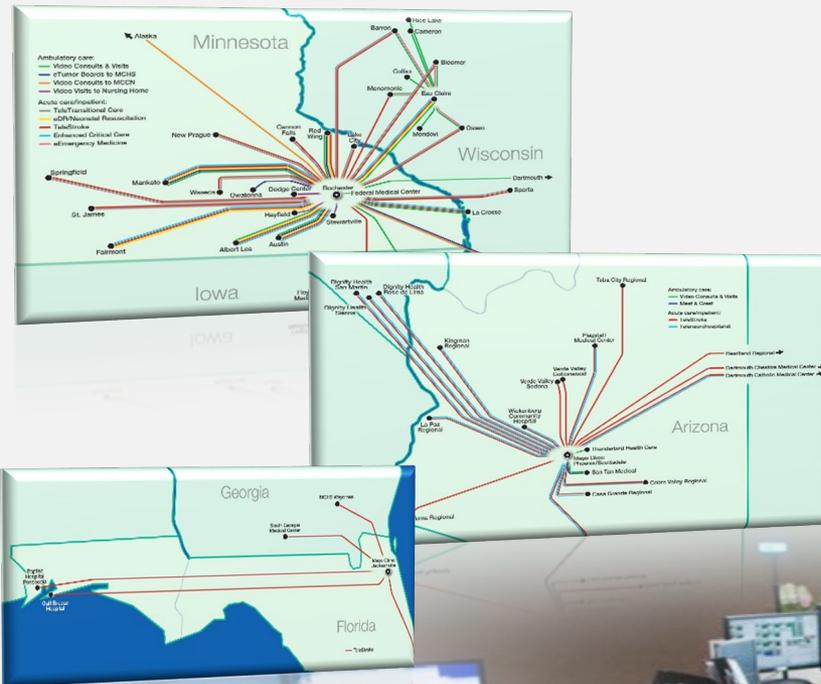


## eED

- Tele-stroke
- Trauma triage
- Tele-psychiatry
- Specialty call coverage
- Intensivist & Hospitalist

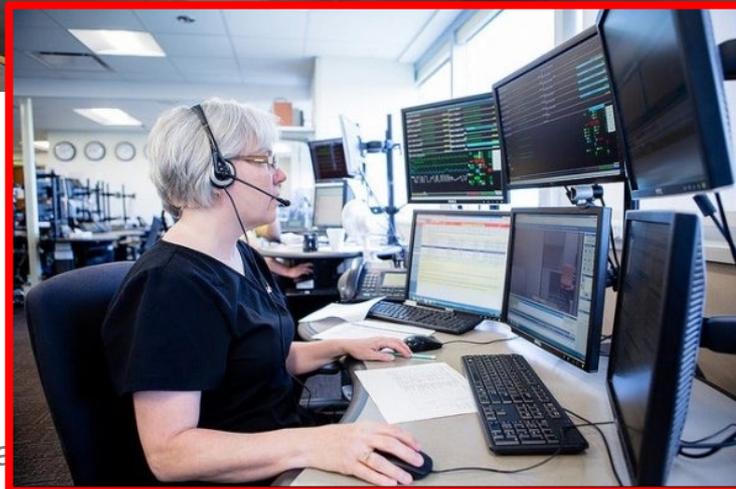
# Mayo Acute Care Telemedicine

- 60 originating sites
- Command & Control Center
- ~3000 activations per year
- Tele Stroke
- Tele Emergency Medicine
- Tele Neonatology
- Tele Behavioral Health



# Mercy Virtual Hospital

*Chester, MO - 2017*



# Mercy Virtual



# Looking Ahead

The  
New York  
Times

## *Telemedicine Arrives in the U.K.: '10 Years of Change in One Week'*

With the coronavirus pandemic turning doctors' offices into no-go zones, family physicians are now doing many of their consultations online or by telephone.

**COVID-19**



**Did** April 20, 2020

# Coronavirus ~~Should Finally~~ Smash the Barriers to Telemedicine

American physicians, insurers and regulators are pushing the rapid expansion of technologies once confined to optimistic press releases.

By [Virginia Postrel](#)  
April 10, 2020, 6:00 AM EDT

**1968-2020** -- 52 Years



**COVID-19**

**Bloomberg**Opinion

● Business ● Finance ● Economics ● Markets ● Politics & Policy  
● Technology & Ideas

A thing of the past? *Photographer: Andrew Harrer/Bloomberg*

 Copy Link

# More Than Half of Kaiser Permanente's Patient Visits Are Done Virtually

by Kia Kokalitcheva @imkialiketecar OCTOBER 6, 2016, 7:15 PM EDT

**Last year, patients and doctors interacted more than 110 million times in total.**

“For the first time, last year, we had over 110 million interactions between our physicians and our members,” said Tyson, adding that 52% of them were done via smartphone, videoconferencing, kiosks, and other technology tools.

<http://fortune.com/2016/10/06/kaiser-permanente-virtual-doctor-visits/>

17 million TM cases in 2017 (*ATA estimate*)

39 million TM cases in 2020 (*January 2020 est.*)

250 million TM cases in 2030 (*March 2020 est.*)

Revised - ? 1 billion TM cases in 2020 (*April 2020 est*)\*

July/August “AARP Bulletin”\*

A sunset over a desert landscape. The sky is filled with soft, wispy clouds in shades of orange, yellow, and blue. In the foreground, several saguaro cacti are silhouetted against the bright light of the setting sun. The overall scene is peaceful and scenic.

Thank you!

Ronald S. Weinstein, M.D.  
[rweinstein@telemedicine.Arizona.edu](mailto:rweinstein@telemedicine.Arizona.edu)