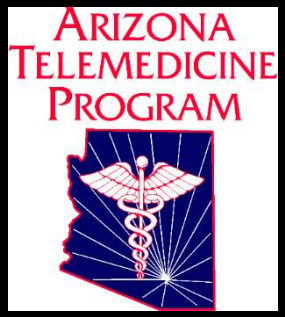

Telemedicine Applications (Part 2): "Advanced" Applications

Ronald S. Weinstein, MD
Director, Arizona Telemedicine Program

Lecture #2

Specialty Services Telemedicine (Direct-to-Hospital)

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Telemedicine & Telehealth Services

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

Specialty Services Telemedicine

4. Mobile Telehealth
5. Direct-to-Consumer Telehealth

6. Cloud Computing Applications

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Telemedicine & Telehealth Services

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

4. Mobile Telehealth
5. Direct-to-Consumer Telehealth

6. Cloud Computing Applications

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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.

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Mobile Telehealth

Case Study

TELE-HOME HEALTH CARE:

'Care Beyond Walls and Wires' Enhances Life for Patients with Congestive Heart Failure

More than 5 million people in the U.S. suffer from congestie heart failure (CHF), a Disease Control and Prevention (CDC). The annual cost is estimated at more than 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 no
months without ha
the hospital. His
has resulted fro
called Care Bey
telemedicine-er
program that ha
improve the hea
with congestive

The program al
room visits and
readmissions, a
stay for those w

"It's phenomena
registered nurs
for Flagstaff-ba
Healthcare, whi
Walls and Wires
Flagstaff Medic
Medical Center

Ms. Yazzie says
Wires "is the be
best thing for my
two hospital readm
the program more than

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

From a national 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.

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
ject got under way in

the study if you lived
amily support," Ms.
could live in Supai
and Canyon) or on
on. Our patients
lispanic, and white,
to early 90s."

Care Beyond Walls
hen it ended on
Arizona Healthcare
tinuing the program.

around $650,
Ms. Sorenson says,
ell phone charges.

h the investment,"
atients benefiting,
penalizes hospitals
onditions, including
are readmitted
discharged.

endous patient
atients 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."

> *"Care Beyond Walls and Wires is the best thing ever for me, and the best thing for my dad."*
>
> Rita Yazzie

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Direct-to-Consumer Telemedicine

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Telemedicine & Telehealth Services

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

4. Mobile Telehealth
5. Direct-to-Consumer Telehealth

6. Cloud Computing Applications

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Direct-to-Consumer Telehealth

United HealthCare Virtual Visits

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

Direct-to-Consumer Telemedicine

American Well

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

TELEMEDICINE SERVICES

98point6

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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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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

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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

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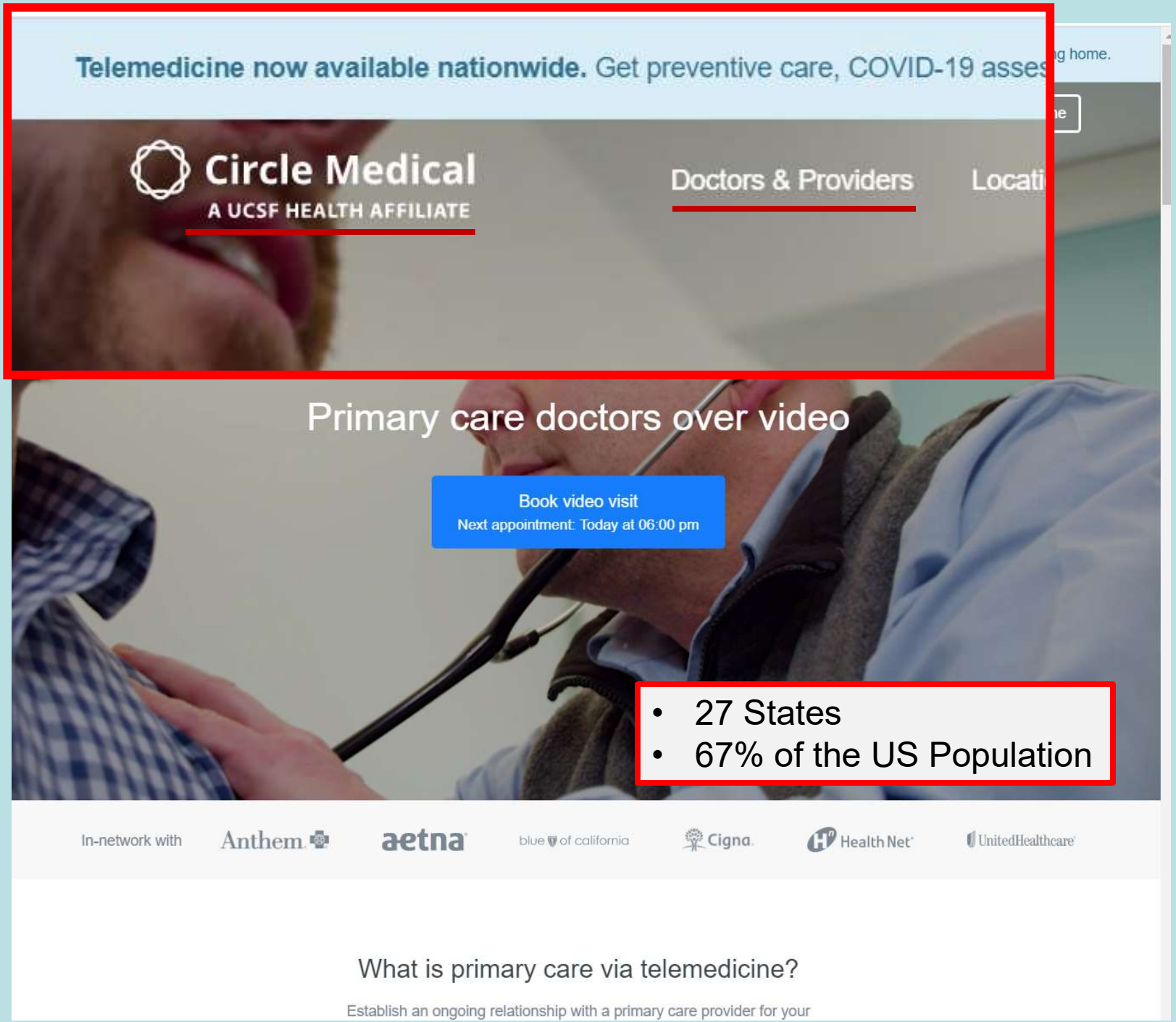
Telemedicine now available nationwide. Get preventive care, COVID-19 asses
g home.
Circle Medical
A UCSF HEALTH AFFILIATE
Doctors & Providers
Locati
Primary care doctors over video
Book video visit
Next appointment: Today at 06:00 pm
• 27 States
• 67% of the US Population
In-network with
Anthem
aetna
blue of california
Cigna
Health Net
UnitedHealthcare
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

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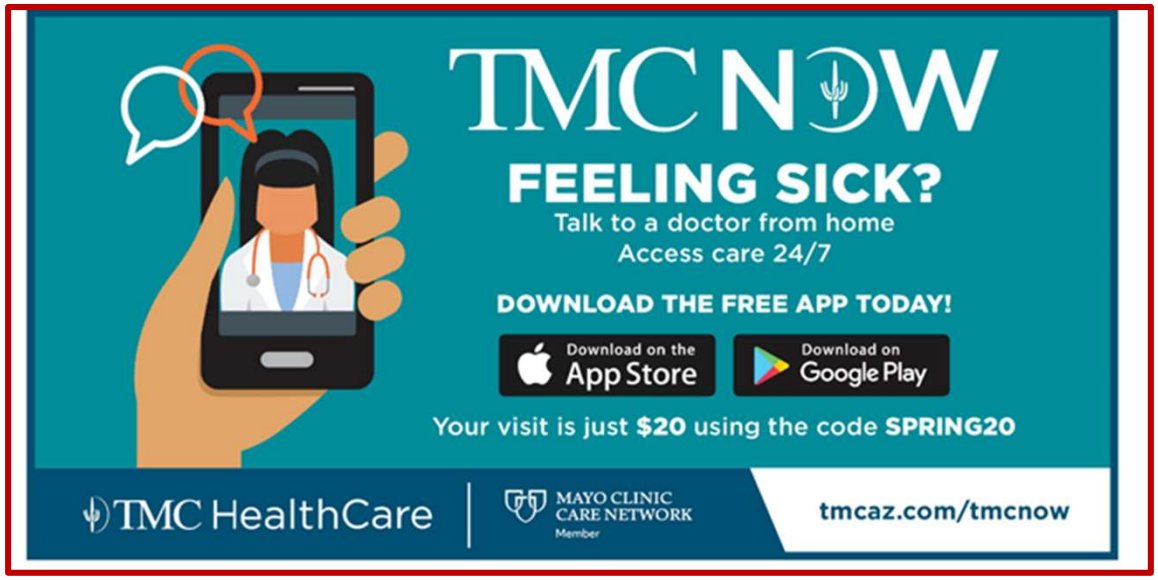
“White Boarding”



Wholesale Telemedicine

“Telemedicine as a Commodity”

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Direct-to-Consumer

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

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PlushCare

How It Works What We Treat Help

Sign In

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*

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Project ECHO Programs

(Extension for Community Healthcare Outcomes)

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Why Project ECHO?

The NEW ENGLAND JOURNAL of MEDICINE

HOME | ARTICLES & MULTIMEDIA | ISSUES | SPECIALTIES & TOPICS | FOR AUTHORS | CME

ORIGINAL ARTICLE

Outcomes of Treatment for Hepatitis C Virus Infection by Primary Care Providers

Sanjeev Arora, M.D., Karla Thornton, M.D., Glen Murata, M.D., Paulina Deming, Pharm.D., Summers Kalishman, Ph.D., Denise Dion, Ph.D., Brooke Parish, M.D., Thomas Burke, B.S., Wesley Pak, M.B.A., Jeffrey Dunkelberg, M.D., Martin Kistin, M.D., John Brown, M.A., Steven Jenkusky, M.D., Miriam Komaromy, M.D., and Clifford Qualls, Ph.D.

N Engl J Med 2011; 364:2199-2207 | June 9, 2011 | DOI: 10.1056/NEJMoa1009370

Share:

Abstract | Article | References | Citing Articles (231) | Metrics

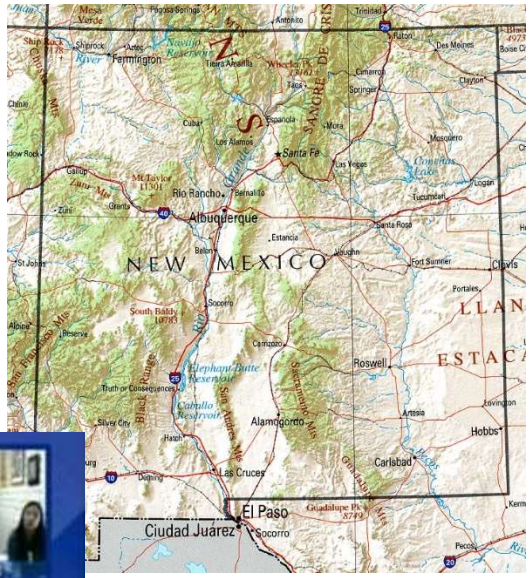
BACKGROUND

The Extension for Community Healthcare Outcomes (ECHO) model was developed to improve access to care for underserved populations with complex health problems such as hepatitis C virus (HCV) infection. With the use of video-conferencing technology, the ECHO program trains primary care providers to treat complex diseases.

Full Text of Background...

METHODS

We conducted a prospective cohort study comparing treatment for HCV infection at the University of New Mexico (UNM) HCV clinic with treatment by primary care clinicians at 21 ECHO sites in rural areas and prisons in New Mexico. A total of 407 patients with chronic HCV



121,697
square miles

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ECHO TeleRheumatology Clinic

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ECHO TeleRheumatology Clinic

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Physicians in Bisbee, AZ
Attending from a rural hospital conference room

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Cloud Computing Applications

(Zoom.com)

*

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

* *Extension of Community Healthcare Outcomes*

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Home Health - Ostomy Care

Colostomy

Urostomy

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PCORI Programs

(**P**atient-**C**entered **O**utcomes **R**esearch **I**nstitute)

EXAMPLE

"Ostomy Telehealth for Cancer Survivors: A Program of Collaborative Research"

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

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In-Person Model

Telehealth Model

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

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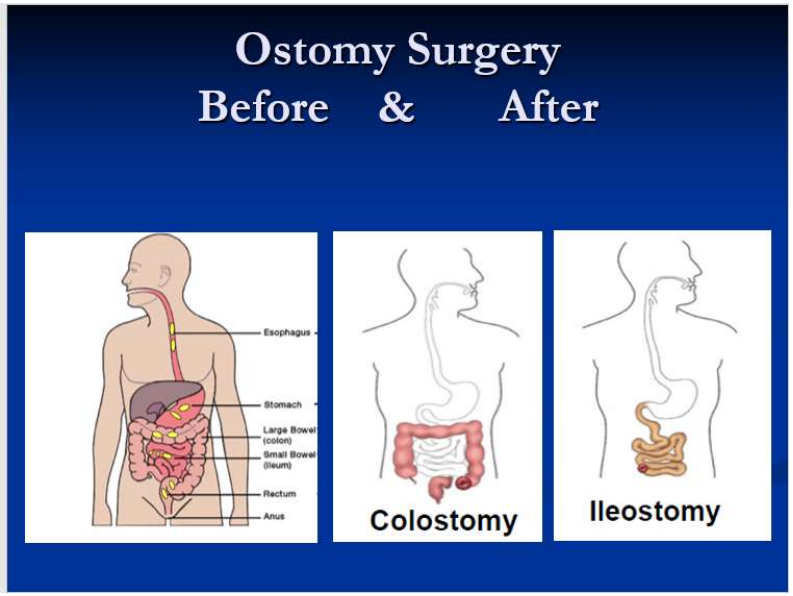
Ostomy Surgery



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Ostomate Patient at Home

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Service Providers

1. Home-based

2. Virtual medical centers

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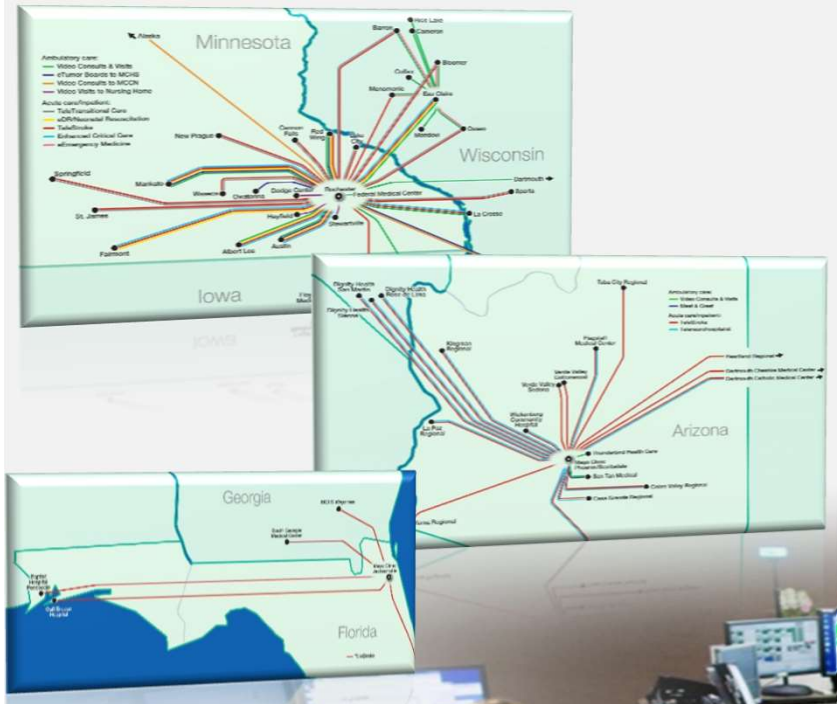
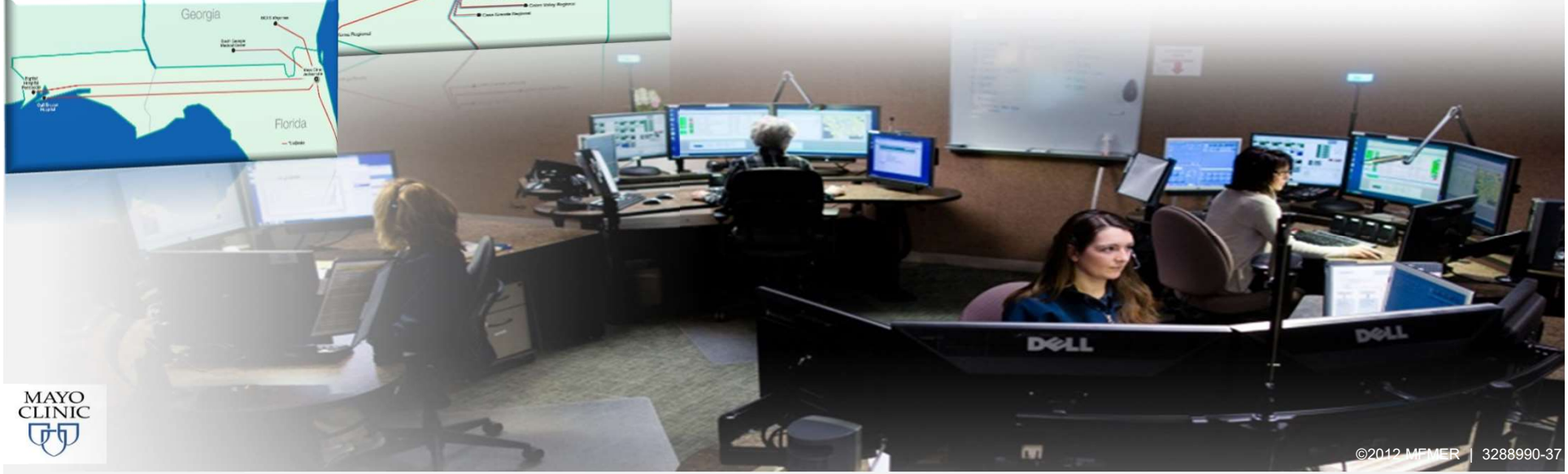
Mayo Acute Care Telemedicine



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



MAYO CLINIC

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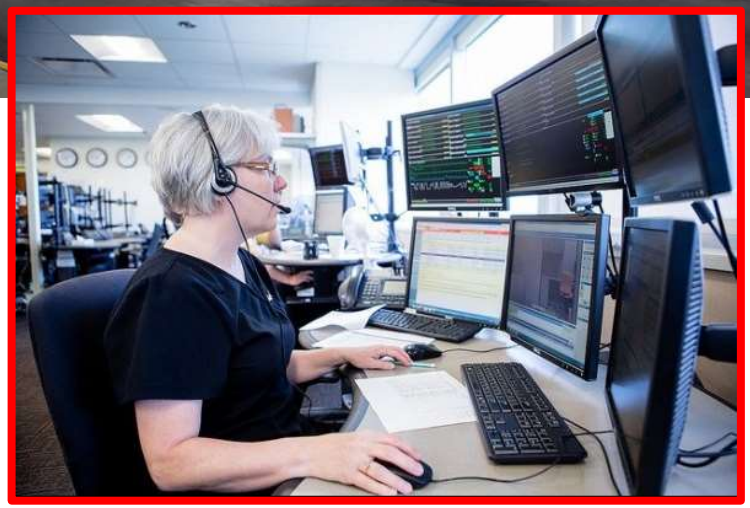
Mercy Virtual Hospital

Chesterville, MO - 2017



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Mercy Virtual

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Looking Ahead

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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

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

Copy Link

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FORTUNE

TECH KAISER PERMANENTE

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

by Kia Kokalitcheva @imkialikethecar 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/

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July/August "AARP Bulletin"*

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

COVID-19 Effect

Telemedicine's Sea Change – ? "tsunami"*

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