

ARIZONA
TELEMEDICINE
PROGRAM



Telemedicine Applications (Part 2): “Advanced” Applications

Ronald S. Weinstein, MD
Director, Arizona Telemedicine Program

Lecture #3

Telemedicine & Telehealth Services

1. Gap Services
2. Urgent Services
3. Mandatory Services
4. Mobile Telehealth
5. Direct-to-Consumer Telehealth
6. Cloud Computing Applications



<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 in 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 stay at home for 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, a stay for those who are discharged.

"It's phenomenal," says a registered nurse for Flagstaff-based Northern Arizona Healthcare, which runs the Walls and Wires program at 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 the family support," Ms. Sorenson says. "We could live in Supai (and Canyon) or on the reservation. Our patients are Hispanic, and white, and in their early 90s."

Care Beyond Walls and Wires ended on November 1, 2010. Northern Arizona Healthcare is continuing the program.

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

"With the investment," Ms. Sorenson says, "patients benefiting, and it penalizes hospitals for readmissions, including those who are readmitted and discharged."

"It's a tremendous patient benefit," Ms. Sorenson 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."

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.

How mHealth Technology Supports Patient Engagement Strategies

mHealth technology helps providers reach their patients between office visits, helping to drive robust patient engagement.



Source: Think Stock

<http://patientengagementhit.com/features/how-mhealth-technology-supports-patient-engagement-strategies>


Connected Health/Mobile Health



Telemedicine & Telehealth Services

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ARIZONA TELEMEDICINE PROGRAM



TMC NOW

TALK TO A DOCTOR NOW

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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.

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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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GET THE CARE YOU NEED

Our doctors can treat many medical conditions, including:

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

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- **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



Talk to a doctor
anytime, anywhere
you happen to be

Prompt treatment,
median call back in
10 minutes


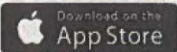
A network of doctors
that can treat every
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Talk to a doctor for only \$49.
Use promo code **FESTIVAL10** for **10% OFF** your first visit.
Expires 3/31/19. One code per person.



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FREE TODAY!



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GET THE CARE YOU NEED

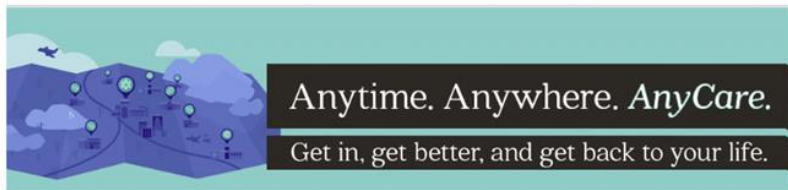
Our doctors can treat many medical conditions, including:

- Cold and flu symptoms
- Allergies
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- ...and more.

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NORTHWEST HEALTHCARE
Northwest Medical Center | Oro Valley Hospital



Anytime. Anywhere. AnyCare.

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VirtualHealthConnect

See A Doctor Anytime, From Anywhere.

- No appointment necessary
- \$49 or less per visit
- Doctor visits via your smartphone, tablet or computer
- Get a diagnosis and treatment recommendation, including a prescription* if needed
- Safe, secure, and confidential

Why Use VirtualHealthConnect?

See A Doctor From Anywhere

Use your smartphone, tablet, or desktop computer to visit with a doctor face-to-face.

Doctors Available 24/7

Our doctors are always on. See a doctor on your schedule, 24/7/365

No Appointments Necessary

Once you set up your free account, just log on, choose a provider and start your visit.

Local Prescriptions

If a prescription is necessary, one will be called into the pharmacy of your choice.

Your Privacy Is Our Priority

Rest easy. We keep your information and health records safe and secure.

Because You Want Care Fast

With VirtualHealthConnect, you're finished with your visit before you'd normally get to the waiting room.



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Tucson, AZ



Northern Arizona Healthcare

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When you don't want to wait to feel better

BeWellNow, Northern Arizona Healthcare and PathfinderHealth's virtual urgent care service, is a faster, easier way to see a doctor. BeWellNow lets you talk with a doctor from the comfort of your own home or on-the-go. It's easy to use, free to enroll and the cost is just \$49 per visit.

BeWellNow offers:

- Unlimited video visits with doctors from the comfort of your smartphone, tablet or computer
- Peace of mind with a doctor "on call" 24/7 to provide quality care to you and your family
- Prescriptions, referrals, and more

You can use BeWellNow any time, day or night. It's perfect when your doctor's office is closed; when you're too sick or busy to see someone in person; or even when you're traveling.

Sign up now:

1. Download the BeWellNow app or sign up on the website:



www.NAHBeWellNow.com

Flagstaff, AZ

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.

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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>

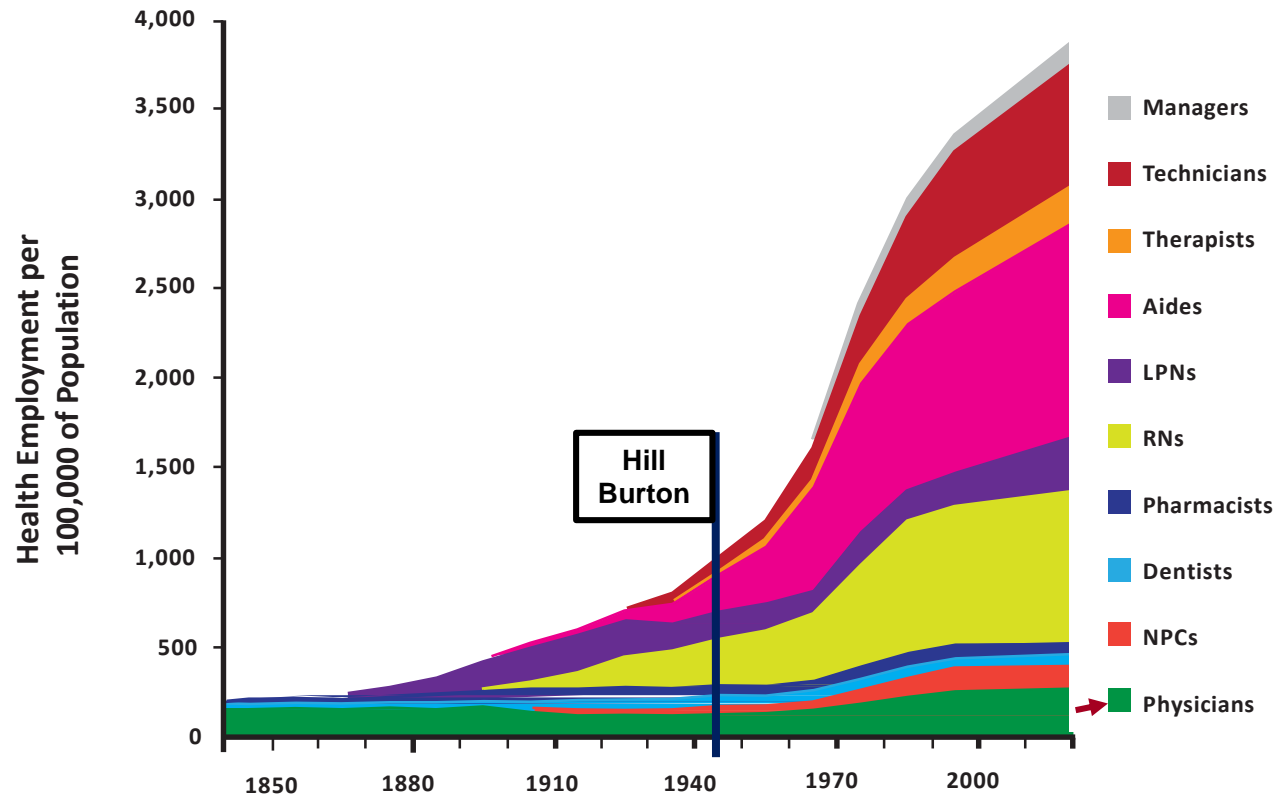
Direct-to-Consumer Telemedicine

American Well



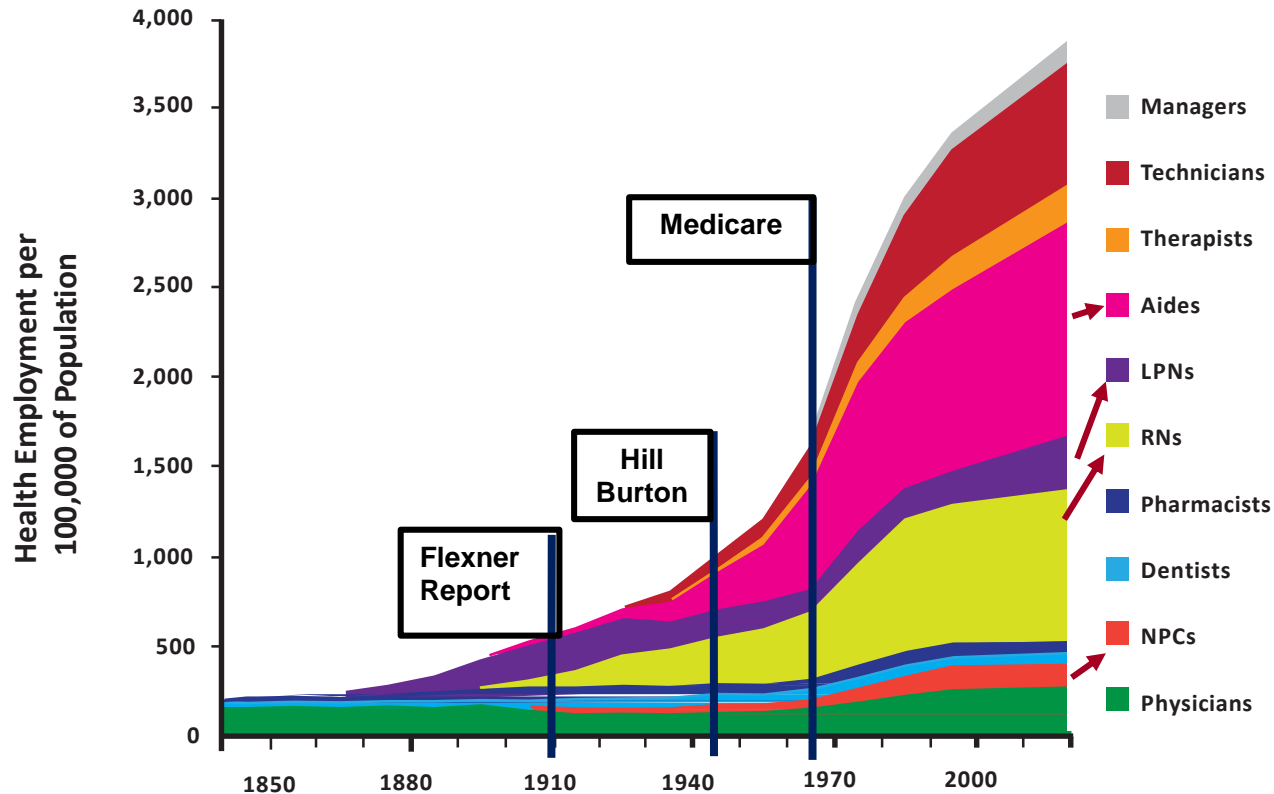
<https://www.youtube.com/watch?v=sBryMAxi5tE>

Physicians, Non-physician Clinicians, and other Health Workers 1850-2010



Adapted from Kendix and Getzen,
and the Bureau of Labor Statistics

Physicians, Non-physician Clinicians, and other Health Workers 1850-2010



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Telemedicine & Telehealth Services

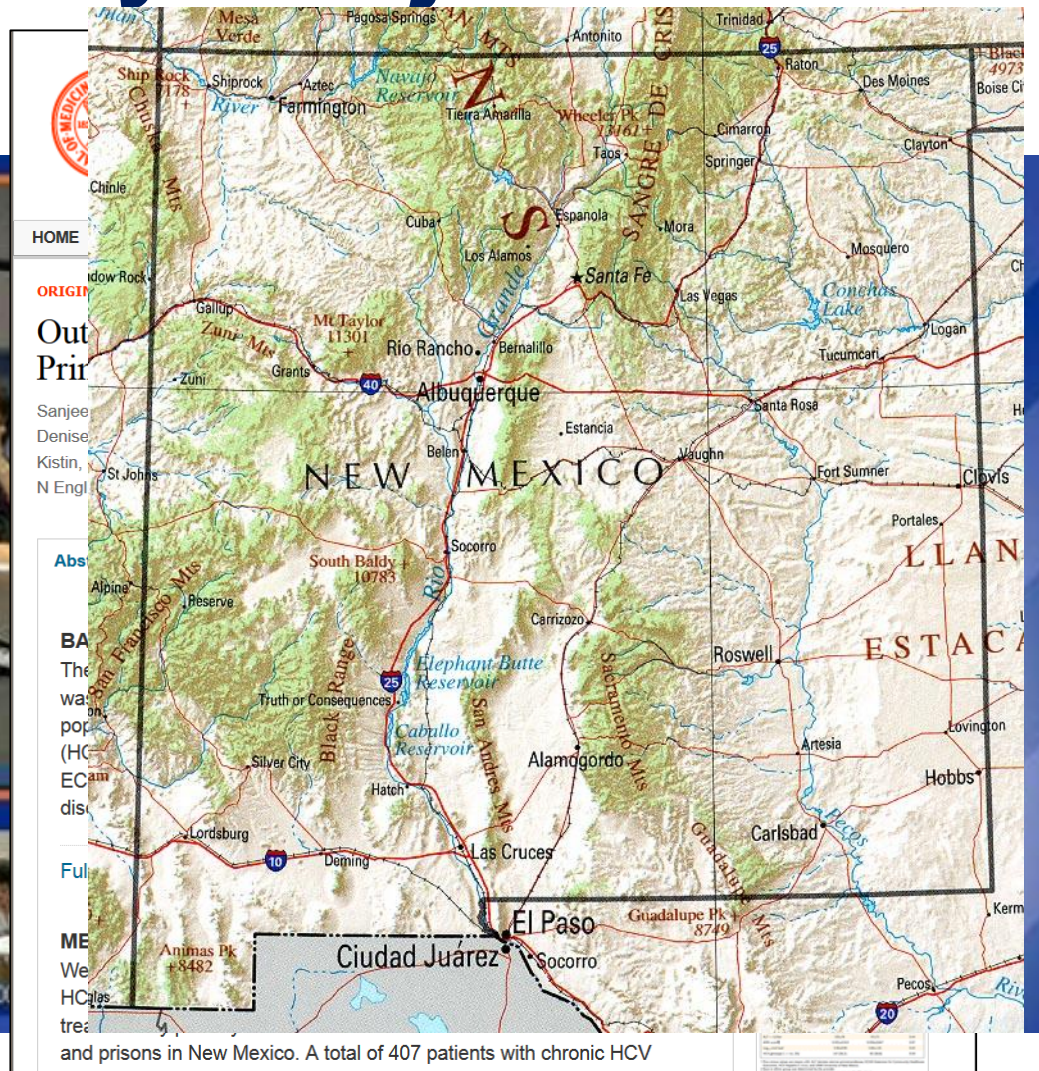
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Project ECHO Programs

(Extension for Community Healthcare Outcomes)

Why Project ECHO?



121,697
square
miles

ECHO Hubs and Superhubs: United States



ECHO TeleRheumatology Clinic



ECHO TeleRheumatology Clinic



Physicians in Bisbee, AZ

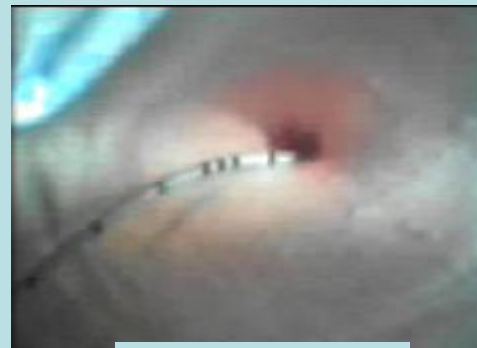
Attending from a rural hospital conference room



Home Health - Ostomy Care



Colostomy



Urostomy



Federal Grants for Telehealth Research

PCORI Program (2010-2019)

(Patient-Centered Outcomes Research Institute)

78 Telehealth Grants

\$338 Million Dollars

PCORI Programs

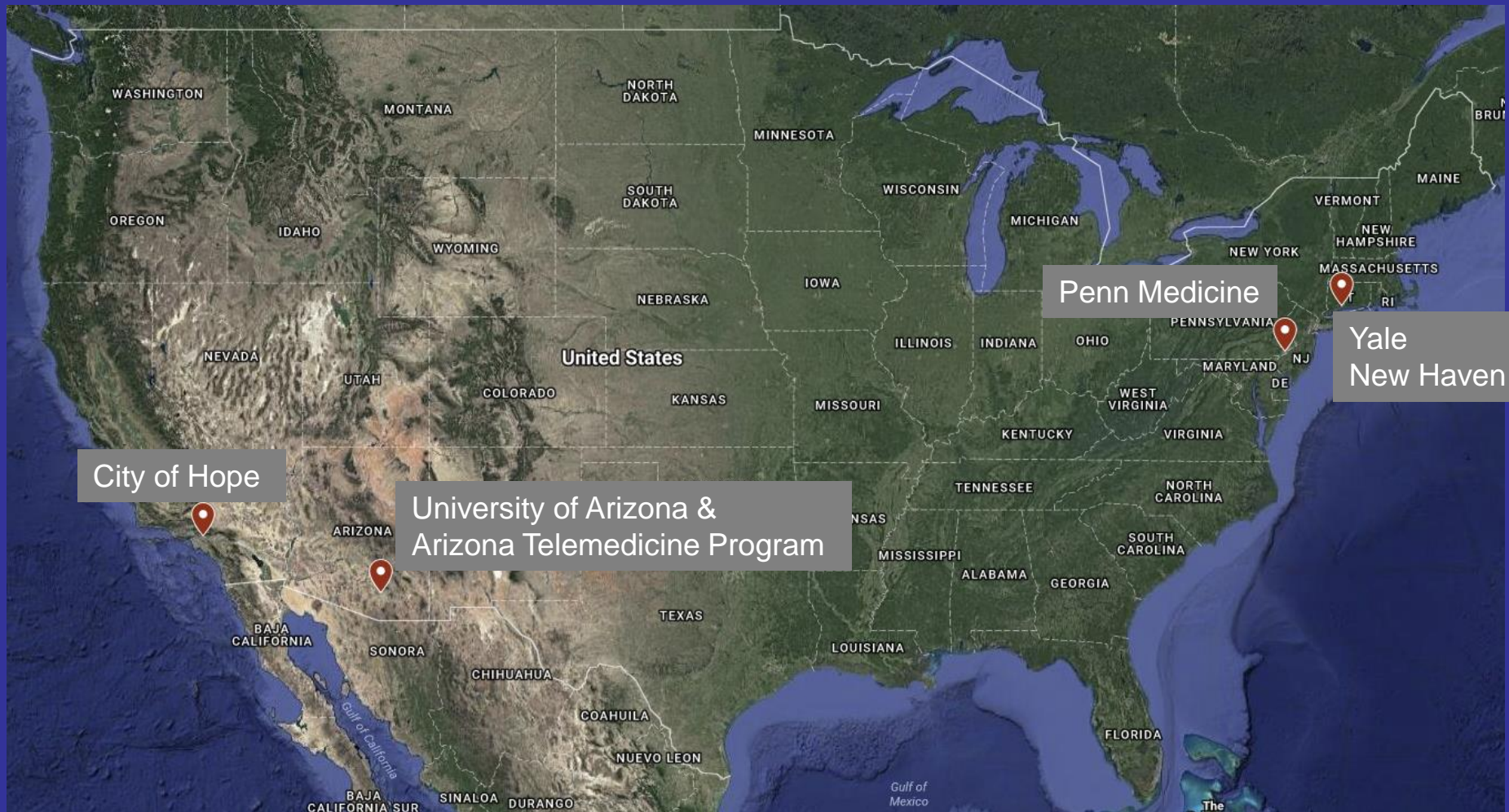
(Patient-Centered Outcomes Research Institute)

EXAMPLE

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

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

Ostomy Self-Management *Clinical Research Sites*



In-Person Model



Telehealth Model



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

Cloud Computing -- Staff Meeting



Cloud Computing -- Friday Afternoon Staff Meetings for PCORI Grant

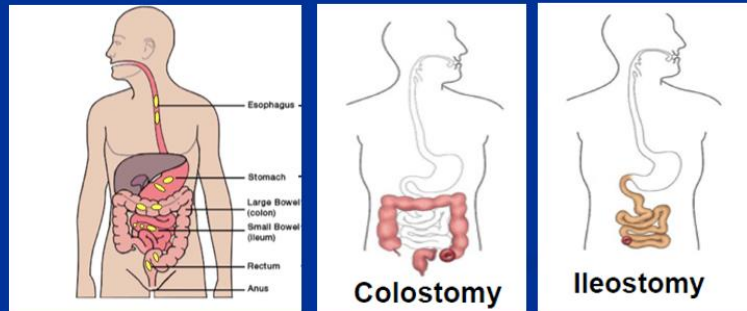


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Ostomy Surgery

Ostomy Surgery Before & After



Healthy versus Unhealthy Skin



Session/Content

- **Session 1: Self-management & immediate concerns**
 - Nutrition
 - Pouching System
 - Goals/Resources
- **Session 2: Social well-being and body image**
 - Social/Interpersonal relationship
 - Sexuality/Intimacy
 - Psychological Health
- **Session 3: Caregiver/Support Person only**
 - Ostomy review
 - Concerns regarding ostomates
 - Caregiver/Support person well-being
- **Session 4: Healthy Lifestyle**
 - Interpersonal Relationships
 - Travel Concerns
 - Physical Activity
 - Improving Attitudes
 - Psychological Health
- **Session 5: Booster session for ostomate and support person**
 - Content Review
 - Available Resources
 - Goal Progress

Photo – Ostomate Peer at Home



Service Providers

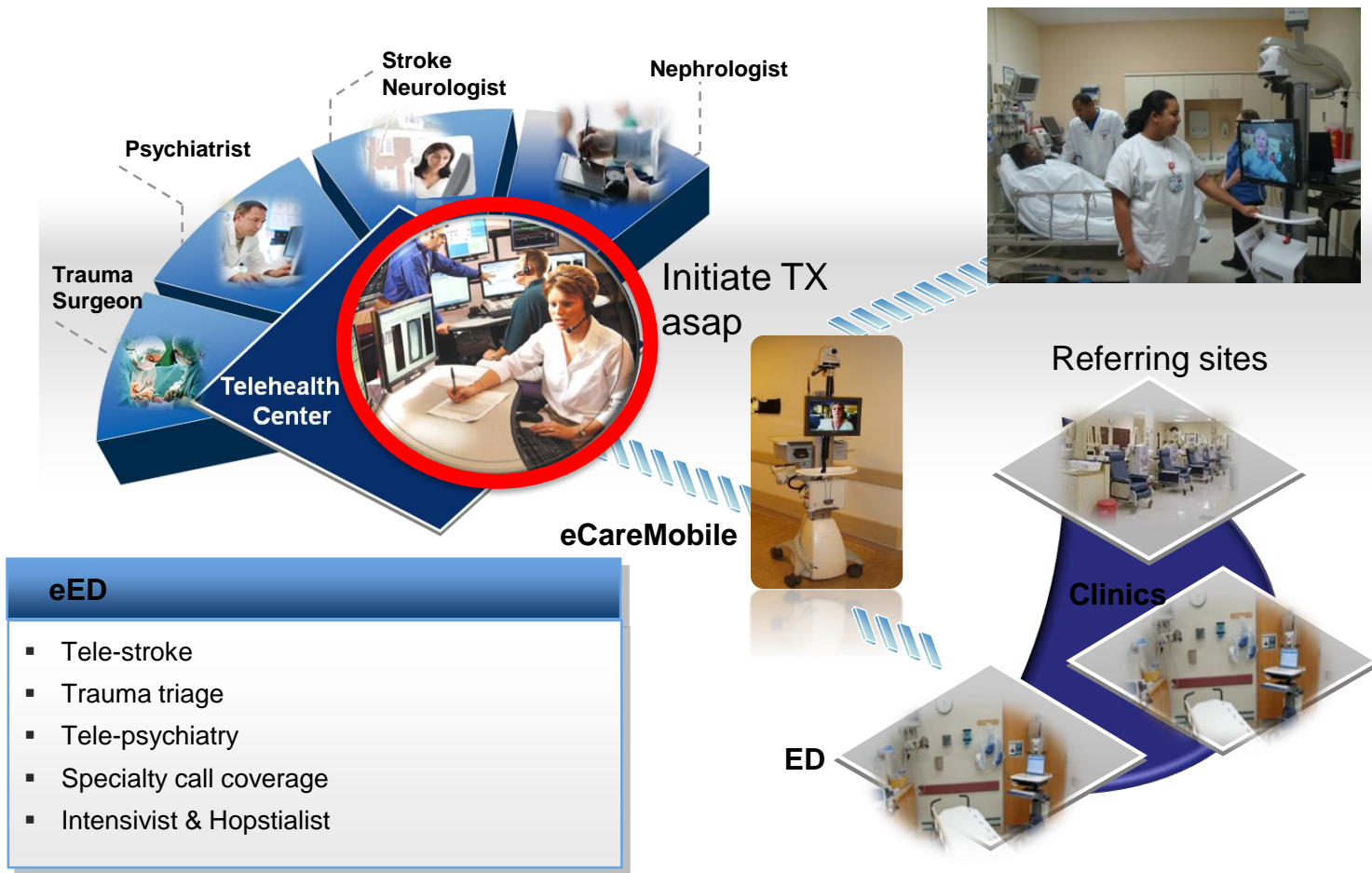
1. Home-based

2. Virtual medical centers



Banner University Medical Center -- Tucson

-- Emergency Medicine Telehealth Center --

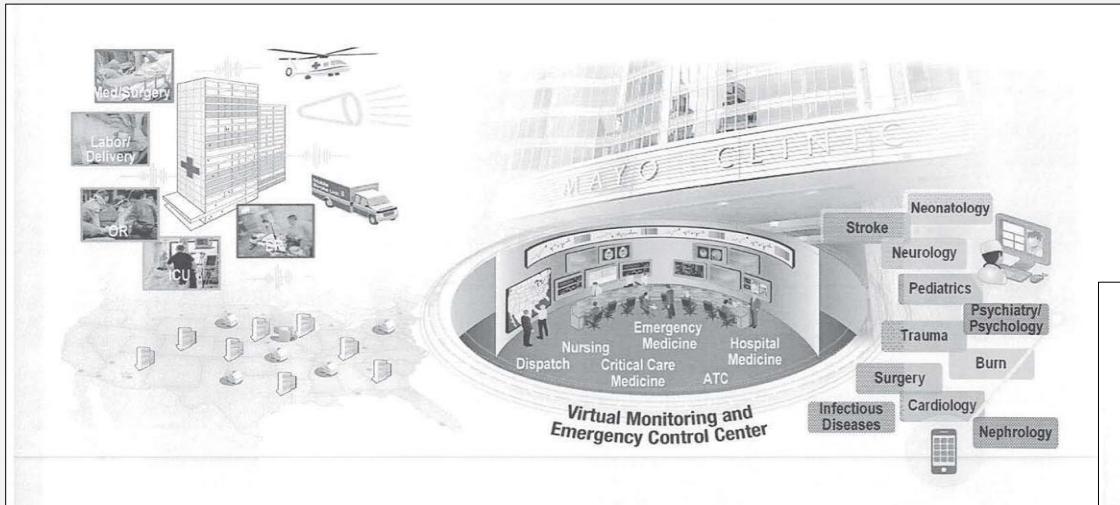


- **60 originating sites**
- **Command & Control Center**
- **~3000 activations per year**

- Tele Stroke
- Tele Emergency Medicine
- Tele Neonatology
- Tele Behavioral Health

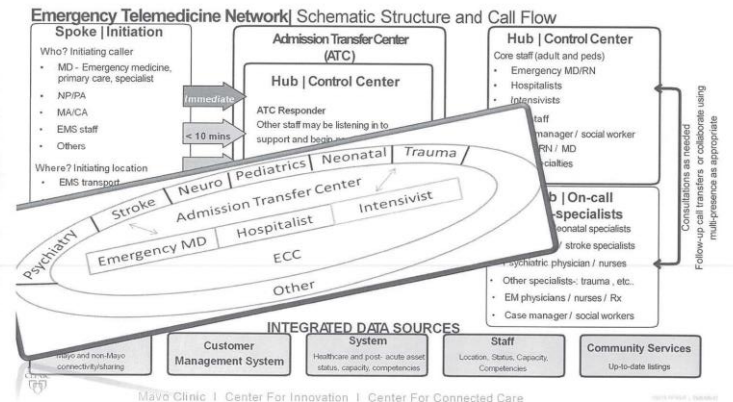


Mayo Acute Care Telemedicine



Presented to:
Arizona Telemedicine Council
AZ State Capital
Phoenix, AZ

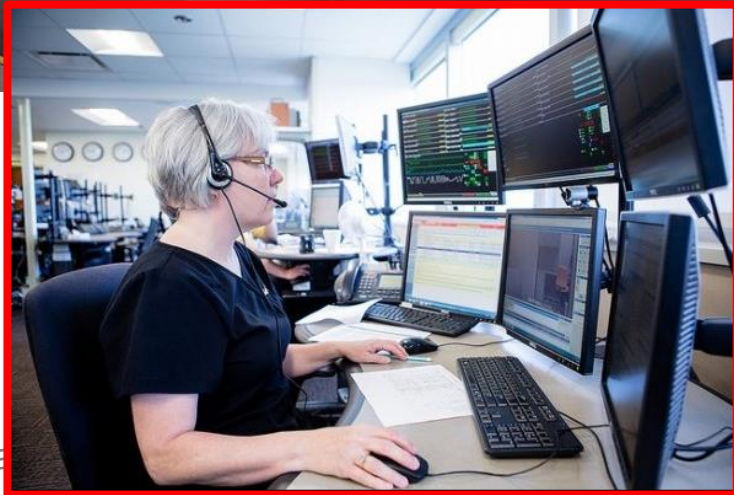
April 19, 2017



Reproduced from Bart Demaerschalk, MD

Mercy Virtual Hospital

Chester, MO - 2017



Mercy Virtual





The University of Nebraska Medical Center has broken ground on a new \$119 million facility meant to help physicians and nurses train for next-generation care delivery using emerging virtual and augmented reality technology.

T-Health – Phoenix

Institute for Advanced Telemedicine
& Telehealth



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Phoenix, Arizona

T·I·HEALTHTM
INSTITUTE



*the Phoenix division of the
Arizona Telemedicine Program*



The University of Arizona
Health Sciences



T-Health Amphitheater/Phoenix

Phoenix/Tucson

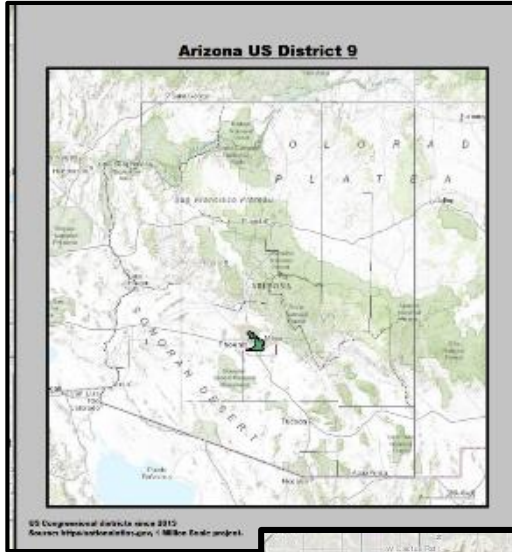


***T-Health Amphitheater
“e-Classroom-of-the-Future”***

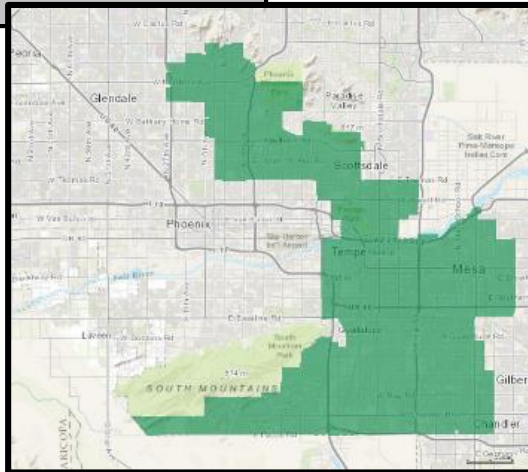
“Care Beyond Walls and Wires”

T-Health Institute, Phoenix

January 24, 2018



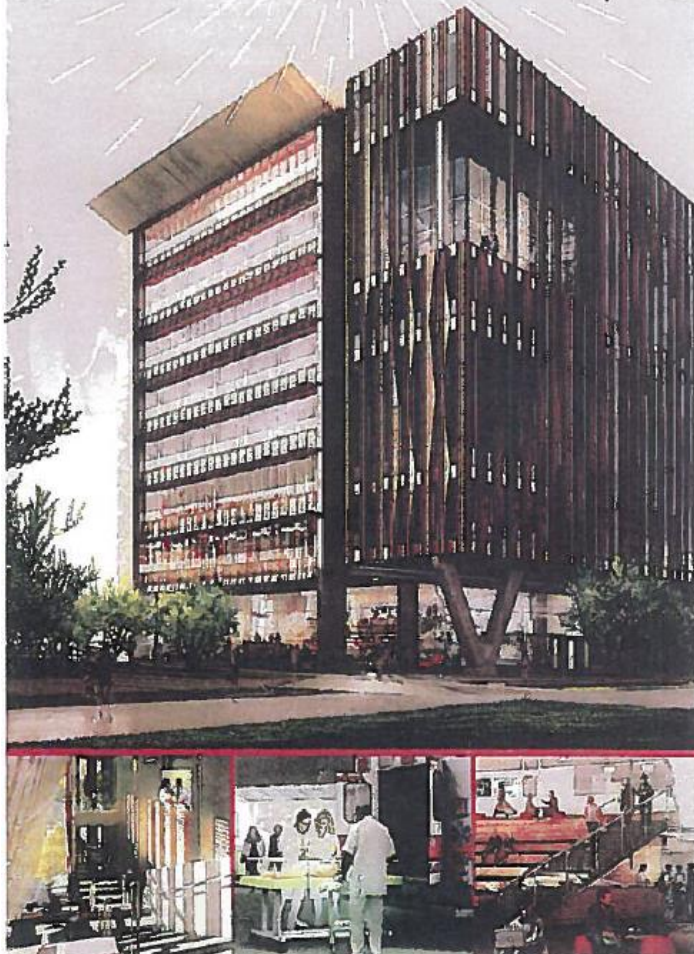
Congresswoman Kyrsten Sinema,
U.S. Representative, Arizona's 9th Congressional District





The University of Arizona
Health Sciences

HEALTH SCIENCES INNOVATION BUILDING



▶ **The Health Sciences Innovation Building** will serve as a cutting-edge platform to build and foster collaborations among multidisciplinary teams of health professionals, students and faculty in medicine, nursing, pharmacy and public health. In addition to providing world-class spaces for simulation practice, clinical skills learning and community interaction on the University of Arizona Health Sciences campus in Tucson, this building will serve as the vanguard for inter-professional health education in the U.S. The nine-floor, 220,000 s.f. facility in the heart of the health sciences campus will welcome students and faculty in the summer of 2018.

THE HEALTH SCIENCES INNOVATION BUILDING WILL:

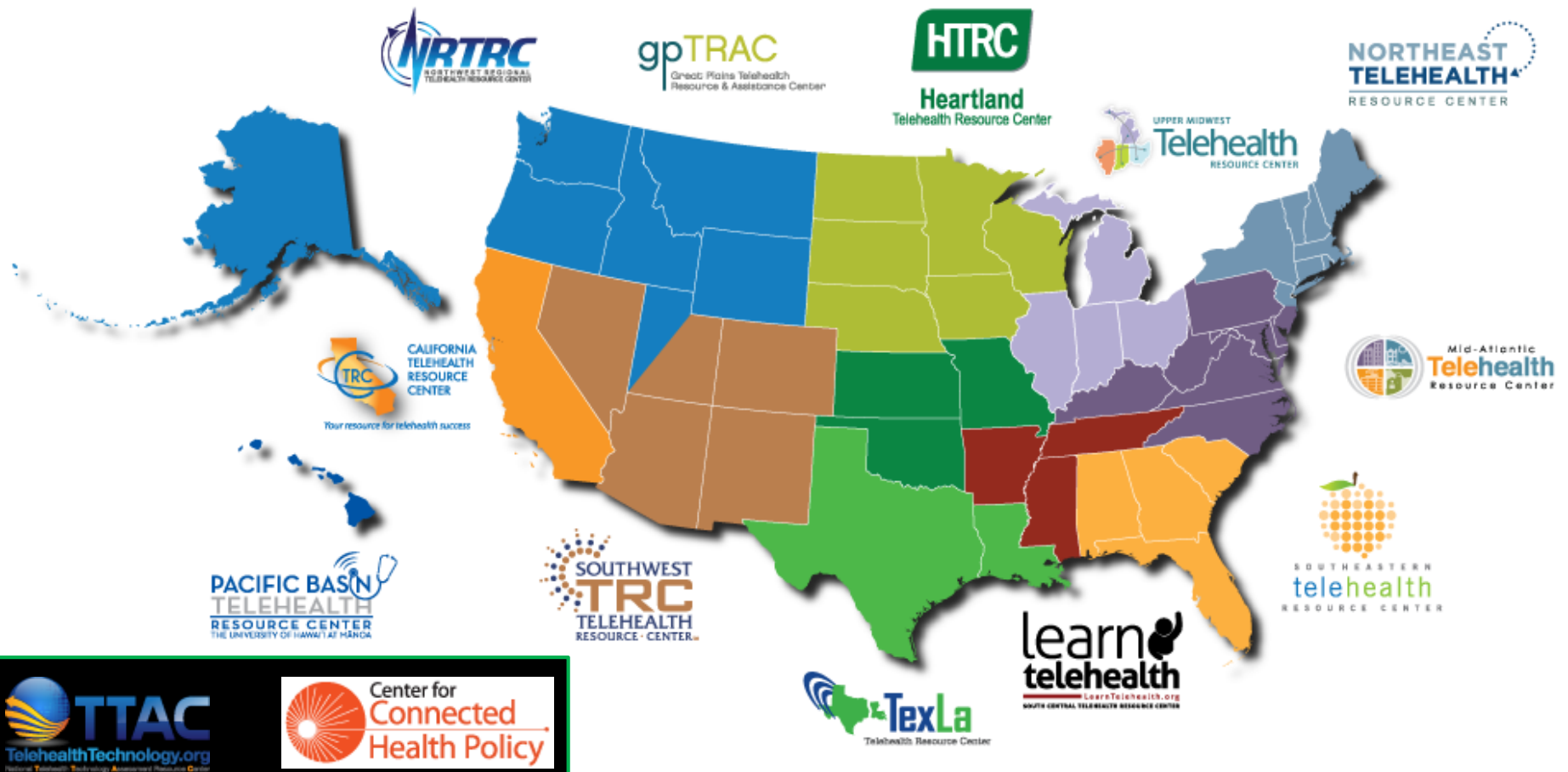
- **Improve human health** by preparing "collaboration-ready" graduates who will advance medicine, nursing, pharmacy and public health
- **Foster collaboration among different disciplines** to learn, evaluate and improve critical processes in health care
- **Launch valuable public-private** partnerships to tap our cognitive diversity and expertise
- **Attract and retain the best** health sciences students, faculty, researchers and thought leaders
- **Close the gap between new technology and modern medical education** by expanding the Arizona Simulation Technology and Education Center
- **Move health care forward** by enhancing the research and development of specialized hardware and software



Tucson

Telehealth Resource Center Network

TelehealthResourceCenters.org



Health Resources and Services Administration - HRSA

SOUTHWEST TRC
TELEHEALTH
RESOURCE CENTER

Looking Ahead

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/>

Telepresence – (January, 2011).

Arizona Telemedicine Program Conference Room, Tucson, AZ



Telepresence – (January, 2011).

Arizona Telemedicine Program Conference Room, Tucson, AZ



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Telepresence – (January, 2011).

Arizona Telemedicine Program Conference Room, Tucson, AZ



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Telepresence – (January, 2011).

Arizona Telemedicine Program Conference Room, Tucson, AZ



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The background of the slide is a photograph of a desert landscape at sunset. The sky is filled with soft, wispy clouds in shades of orange, pink, and blue. The sun is low on the horizon, creating a bright glow. In the foreground, several saguaro cacti are silhouetted against the bright sky. The cacti are of various sizes and shapes, some with multiple arms. The overall scene is peaceful and scenic.

Thank you!

Ronald S. Weinstein, M.D.
rweinstein@telemedicine.Arizona.edu