

**ARIZONA  
TELEMEDICINE  
PROGRAM**



**“Trends and Hot Topics in Telehealth”**

**Ronald S. Weinstein, M.D.**

**Founding Director, Arizona Telemedicine Program  
The University of Arizona, Tucson**

**Past-President, American Telemedicine Association**



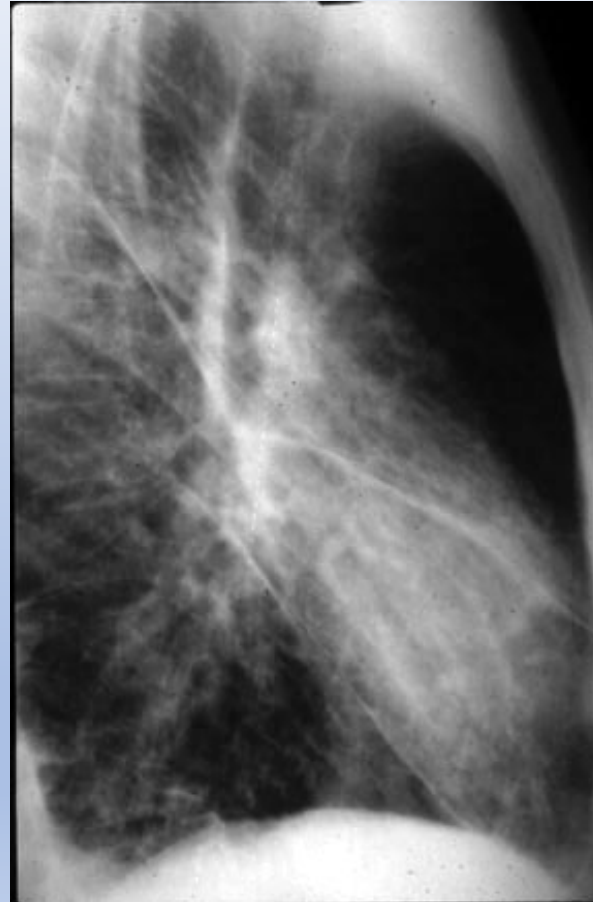
# Categories of Services in General Usage

- Gap Services

- Urgent Services

- Mandated Services

# Teleradiology



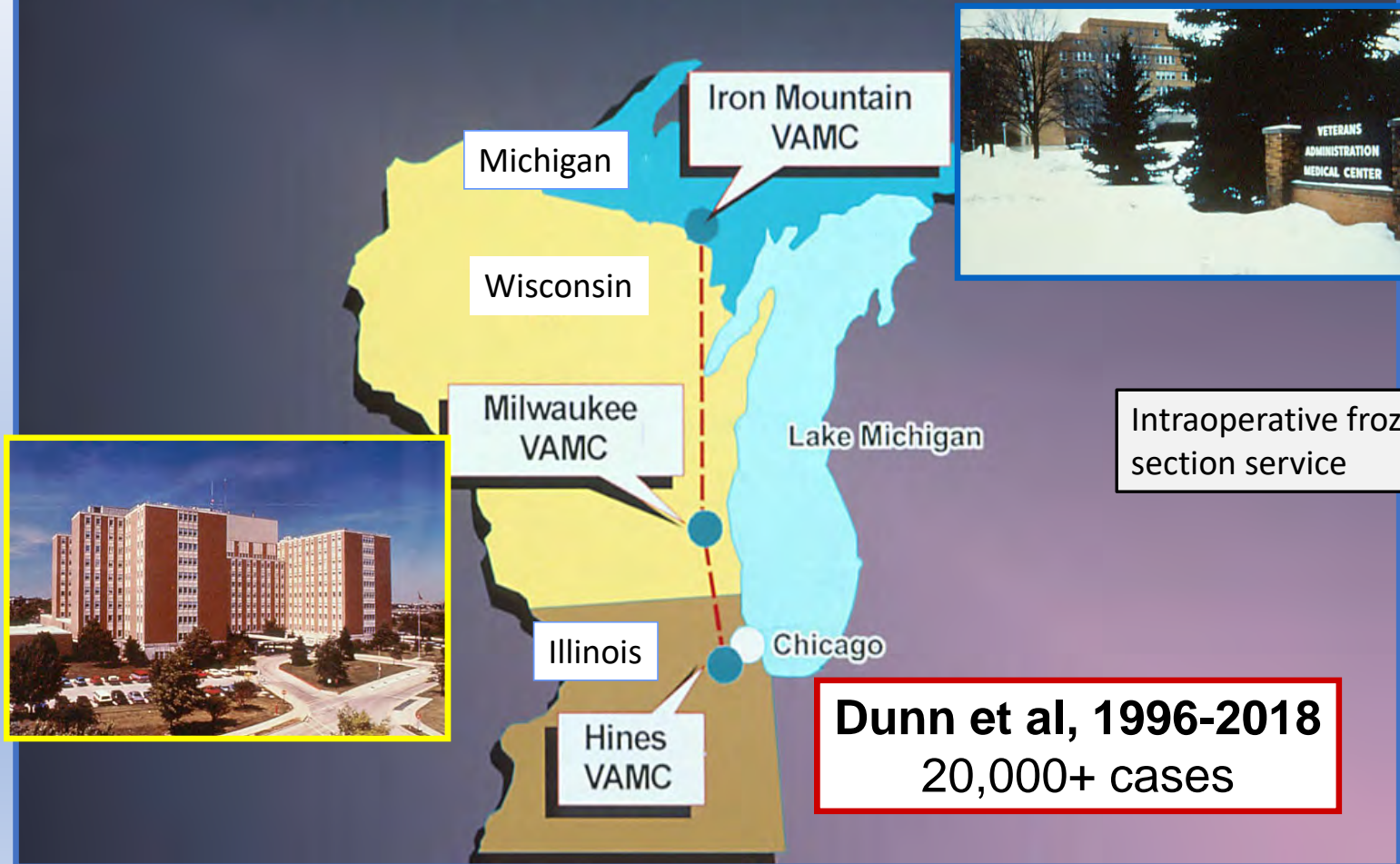
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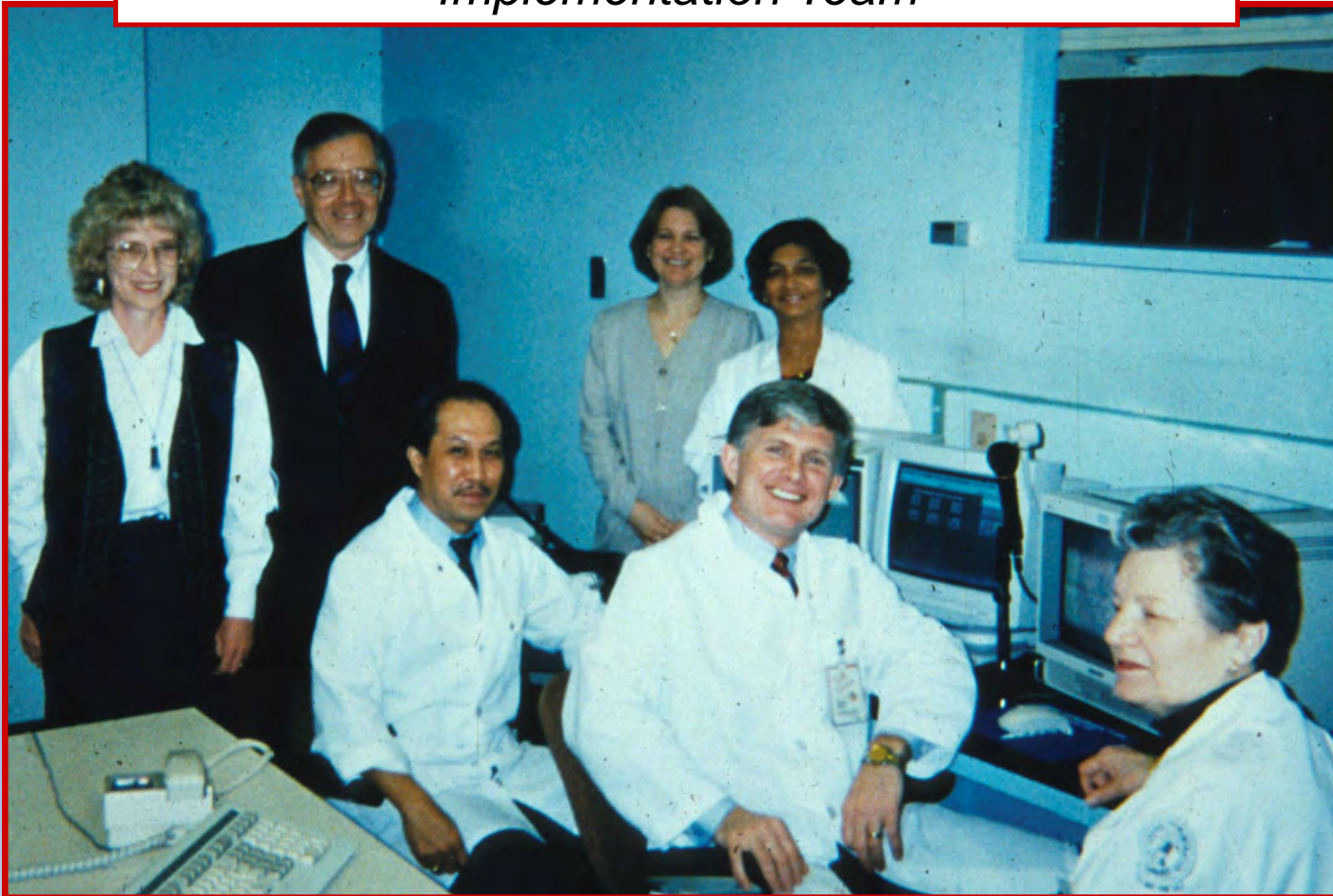
- Urgent Services

- Mandated Services

# US Department of Veterans Affairs



Iron Mountain, MI, VA -- Milwaukee, WI VA- Telepathology  
*"Implementation Team"*



Bruce E. Dunn, M.D., Director



# Stroke

Journal of the American Heart Association

## Telestroke



### **Smartphone Teleradiology Application Is Successfully Incorporated Into a Telestroke Network Environment**

Bart M. Demaerschalk, Jason E. Vargas, Dwight D. Channer, Brie N. Noble, Terri-Ellen J. Kieman, Elizabeth A. Gleason, Bert B. Vargas, Timothy J. Ingall, Maria I. Aguilar, David W. Dodick and Bentley J. Bobrow

*Stroke*. 2012;43:3098-3101; originally published online September 11, 2012;  
doi: 10.1161/STROKEAHA.112.669325

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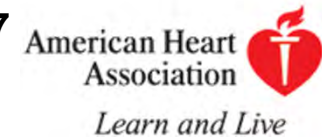




## Photograph depicting the bedside National Institutes of Health Stroke Scale (NIHSS) assessment scenario.



**Demaerschalk B M et al. Stroke 2012;43:3271-3277**

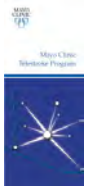




# ResolutionMD mobile.



**Demaerschak B M et al. Stroke 2012;43:3098-3101**



# Conclusions

- Telestroke is cost-effective (cost-savings)
- Telestroke by smartphone is possible

**Demaerschalk B M et al. Stroke 2012;43:3271-3277**



## DIRECTORY OVERVIEW

Welcome to the Telemedicine & Telehealth Service Provider Directory, a service of the Arizona Telemedicine Program. The directory is a resource for hospital and healthcare administrators and other decision-makers who want to expand or improve their healthcare services to their patients, employees, clients, etc. The directory lists companies providing medical specialty services (such as radiology, rheumatology, neurology, psychiatry) and ancillary services (such as patient education and language interpretation) through telemedicine to healthcare providers such as hospitals, clinics, nursing homes, private practices and urgent care centers.

Service Providers: [List your company here.](#)

## Search the Directory

**Company Name (or part of)**

<b>Services In</b> Alabama Alaska Arizona Arkansas California Colorado Connecticut Delaware	<b>Tele-services</b> Pulmonary medicine Radiology Rehabilitation Rheumatology Sleep medicine Sonography Speech language pathology Stroke	<b>Customers</b> Accountable Care Organizations Assisted living facilities Community mental health clinics Correctional facilities Educational institutions Employers FQHCs Government agencies	<b>Ancillary Services</b> Continuing education Continuing medical education Distance education Health call center Language interpretation services Patient education Patient engagement Support groups
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**Items per page**  
20

17 record(s) found, scroll down to see results. Page 1 of 1 page(s); up to 20 displayed per page.

## Directory Listings

Scroll to view company dashboard listings in alphabetical order.

Click on company name or logo to see more detailed information.

# Categories of Services in General Usage

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# Categories of Services in General Usage

- Gap Services
- Urgent Services
- Mandated Services
- **Mobile Health**
- **Direct-to-Consumer**
- **Cloud computing applications**



## 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>



<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 leading cause of death, according to the Centers for Disease Control and Prevention (CDC). The annual cost is estimated at more than \$30 billion, including hospitalizations, 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 avoid those months without being able to leave the hospital. His condition has resulted from a program called Care Beyond Walls and Wires, a telemedicine program that helps improve the health of patients with congestive heart failure.

The program also reduces hospital room visits and readmissions, and helps reduce the length of stay for those who are hospitalized.

"It's phenomenal," says a registered nurse at Flagstaff Medical Center for Flagstaff, who says the program has helped reduce hospitalizations and readmissions. "We're saving lives and money."

Ms. Yazzie says the program is the best thing for her dad. "It's the best thing for my dad. He's been able to avoid two hospital readmissions since he started the program more than a year ago."

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 health insurance, so they also receive

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. "We need family support," Ms. Yazzie says. "I could live in Supai and Canyon or on the Navajo Reservation. Our patients are Hispanic, and white, and in their 60s to early 90s."

Care Beyond Walls and Wires was launched when it ended on a pilot project. Northern Arizona Healthcare is continuing the program.

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

"It's worth the investment," she says. "Patients benefiting from the program are readmitted less often and discharged more quickly."


"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.

## Connected Health/Mobile Health





Sections 

The Washington Post  
*Democracy Dies in Darkness*

Try 1 month for \$1

Sign in 

## Google will acquire Fitbit for \$2.1 billion in direct challenge to Apple



An attendant shows a Fitbit Inc. Ionic smartwatch for a photograph at the Wearable Expo in Tokyo, on Jan. 18, 2018. (Kiyoshi Ota/Bloomberg News)

By [Rachel Siegel](#) and [Tony Romm](#)

November 1, 2019 at 7:34 a.m. PDT

Fitbit on Friday announced it will be acquired by Google in a deal that values the smartwatch maker at roughly \$2.1 billion.

# Federal Grants for Telehealth Research

PCORI Program (2010-2018)

(Patient-Centered Outcomes Research Institute)

77 Telehealth Grants

\$350 Million Dollars

Intervention Grant Programs

# Categories of Services in General Usage

- Gap Services
- Urgent Services
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- **Direct-to-Consumer**
- **Cloud ComputingApplications**

Arizona Daily Star / Monday, January 6, 2019

**TMC NOW**

**TALK TO A DOCTOR NOW**

Talk to a doctor anytime, anywhere, your doctor is here.
 Bring your treatment, medicine and 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)

**GET THE CARE YOU NEED**  
 Our doctors can treat many medical conditions, including:

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

**DOWNLOAD THE APP FREE TODAY!**

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

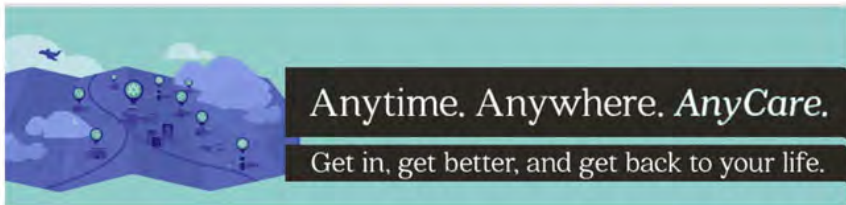
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- **GET GREAT CARE YOU NEED**
- Cold & flu symptoms
- Allergies
- Pink eye
- Ear infections
- Respiratory infection
- Sinus problems
- Skin problems
- ... and more



## 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.



Talk to a Provider

Tucson, AZ



## 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](http://www.NAHBeWellNow.com)

Flagstaff, AZ

# 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>

## AmericanWell/Cleveland Clinic “The Clinic”

- **The Cleveland Clinic and telehealth vendor American Well have launched a joint venture, The Clinic, to provide virtual access to medical specialists for patients worldwide with complex healthcare issues.**
- **The two organizations have not yet fleshed out the details of exactly what types of services Cleveland Clinic's physicians will offer to patients through the telehealth format, but they said a wide range of specialists will be involved, offering "insights, opinions, recommendations and assistance."**
- **The joint venture extends the relationship between Cleveland Clinic and American Well, which have collaborated since 2014 to provide 24-hour access to virtual non-emergency care for many minor illnesses and injuries through Cleveland Clinic Express Care Online. The express care service, which is primarily staffed with Cleveland Clinic physicians, also provides access to some specialists for virtual visits.**

# Major Categories of Services in General Usage

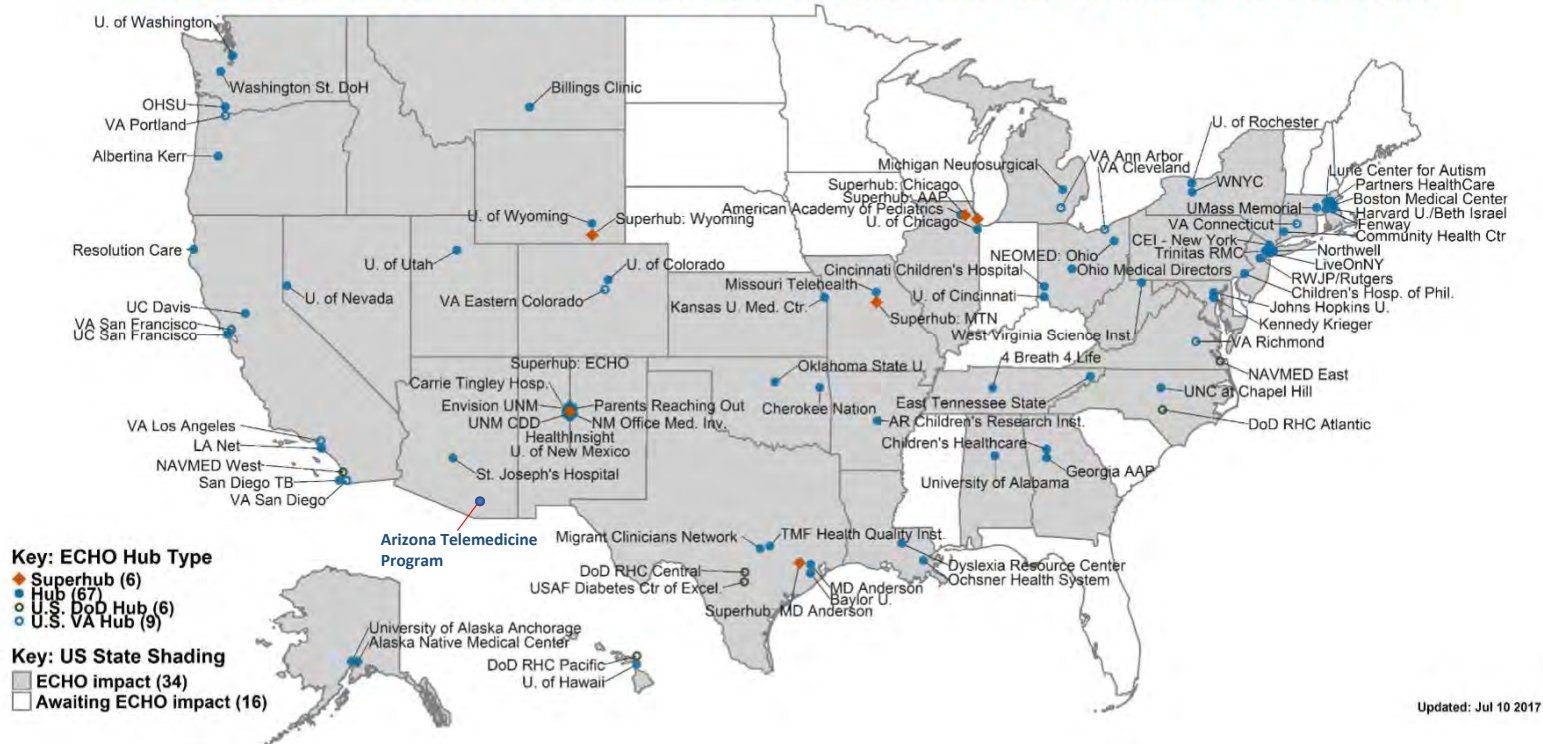
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# **Project ECHO Programs**

(Extension for Community Healthcare Outcomes)

# ECHO Hubs and Superhubs: United States



# ECHO TeleRheumatology Clinic



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



# PCORI Programs

(Patient-Centered Outcomes Research Institute)

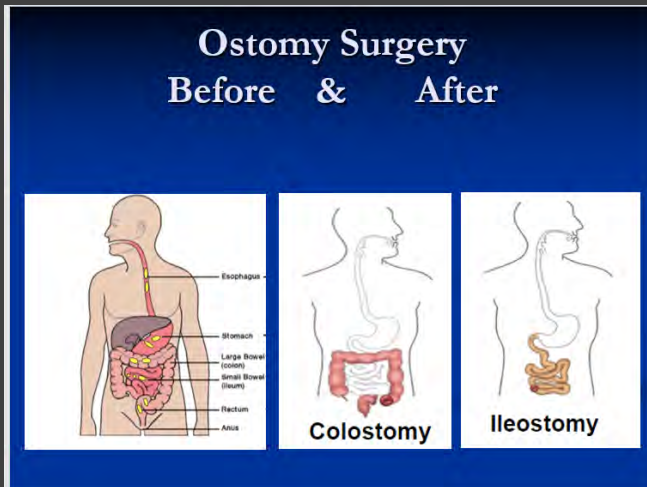
## EXAMPLE

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

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



# Ostomy Surgery



# 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

## In-Person Model



## Telehealth Model



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

## Cloud Computing -- Staff Meeting



## Cloud Computing -- Staff Meeting for PCORI Grant



## Next Generation Applications

- **Surgicenter Networks**
- **Robotics/Automation/Artificial Intelligence**
- **Virtual Hospitals**

## New Generation Applications

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- **Robotics/Automation/Artificial Intelligence**
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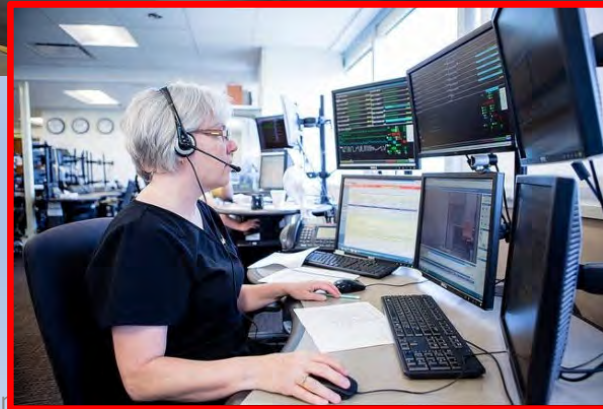


## New Generation Applications

- **Surgicenter Networks**
- **Robotics/Automation/Artificial Intelligence**
- **Virtual Hospitals**

# 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.



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



Tucson

# “Grand Opening – HSIB Building – Room 567” November 1, 2019



**Thank you!**

**Ronald S. Weinstein, M.D.**

**[rweinstein@telemedicine.arizona.edu](mailto:rweinstein@telemedicine.arizona.edu)**

