Lessons Learned from Clinical Applications of Telehealth

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Telehealth Overview

for California Association of NPs

by Anita Denise Savell

Image from http://www.ci.st-joseph.mo.us/health/health_history.cfm

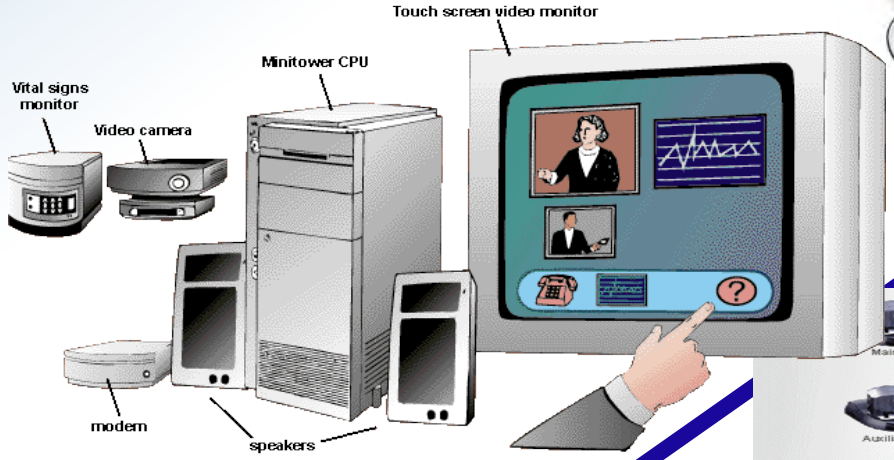
"Telehealth is the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration."

US Dept of Health and Human Services (DHHS), Health Resources and Services Administration (HRSA) 2012

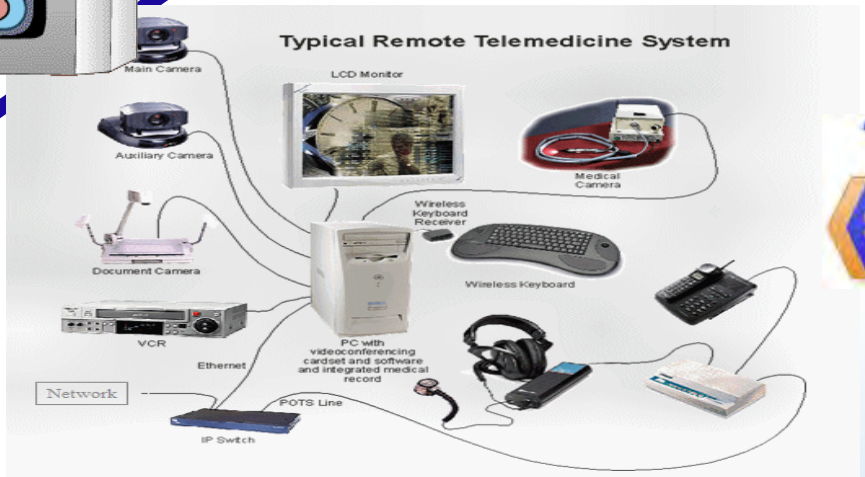
Telehealth Technology Retrospective

S. Korea 13.8 megabits, US 5.8

Wireless Connectivity



Internet Speeds ↑

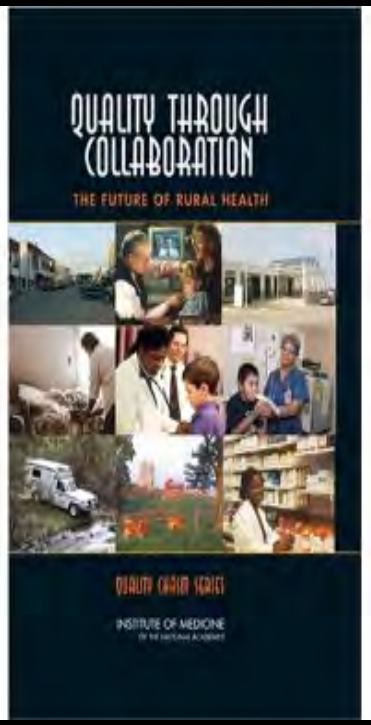


Dial-Up Internet, Wires

Image constructed by A.Savell

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

Information & Communications Technology (ICT) is Potentially Most Crucial in Rural and Frontier Areas



"Invest in building an ICT infrastructure, which has enormous potential to enhance health and health care over the coming decades." (p 4)

IOM. (2004). Executive Summary. Quality Through Collaboration: The Future of Rural Health.

http://www.census.gov/geo/www/maps/2010_census_nighttime_map/nighttime_map_2010.html

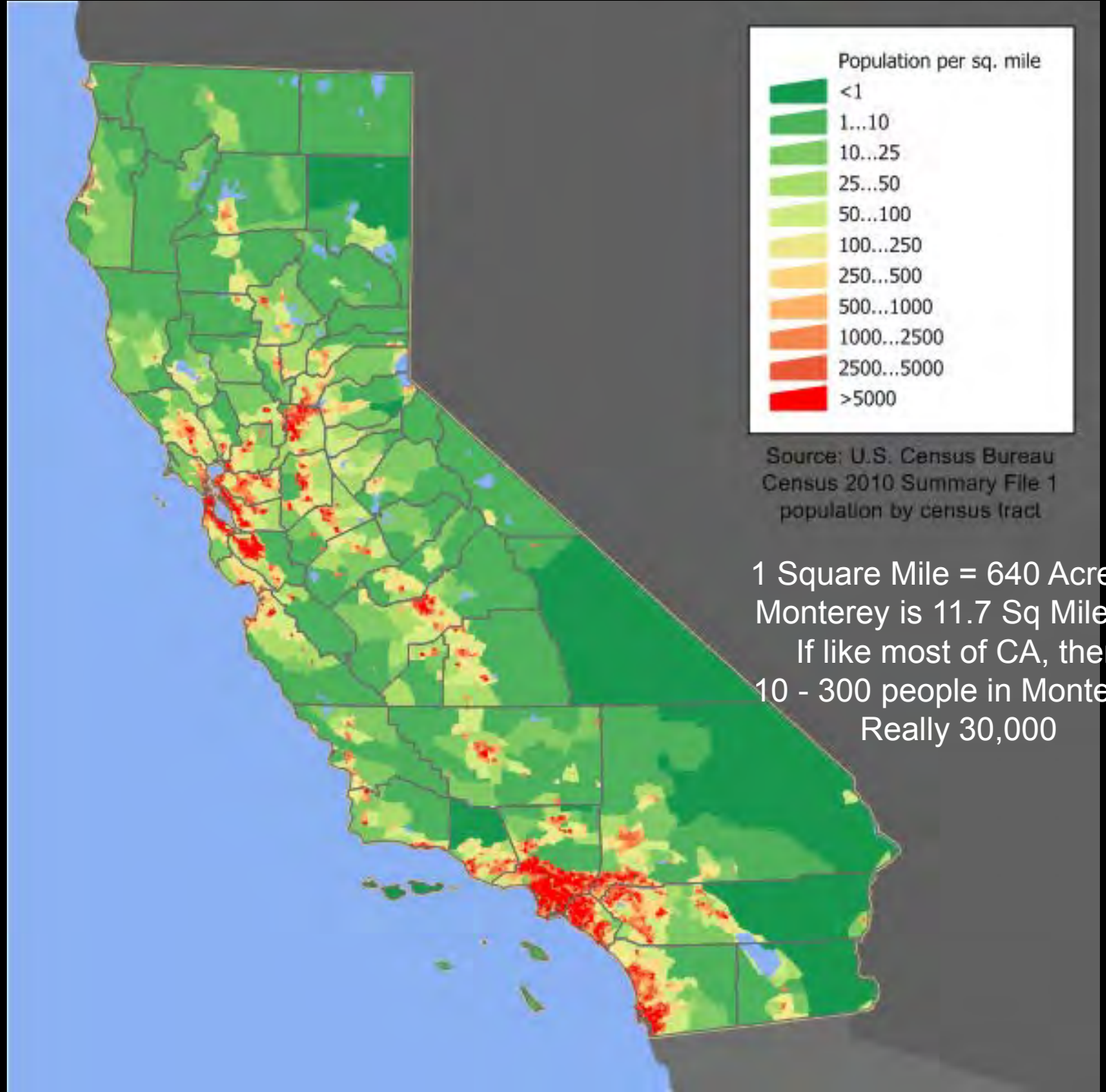
Rural Population

Low Population Density

	California	United States
Rural	5.1 million (10%)	50.1 million

- About 13% of CA's Population is Rural
- 44 of CA's 58 Counties are Rural Counties
- 80% of California's Land is Designated Rural

http://www.csrha.org/2010stats_facts.html

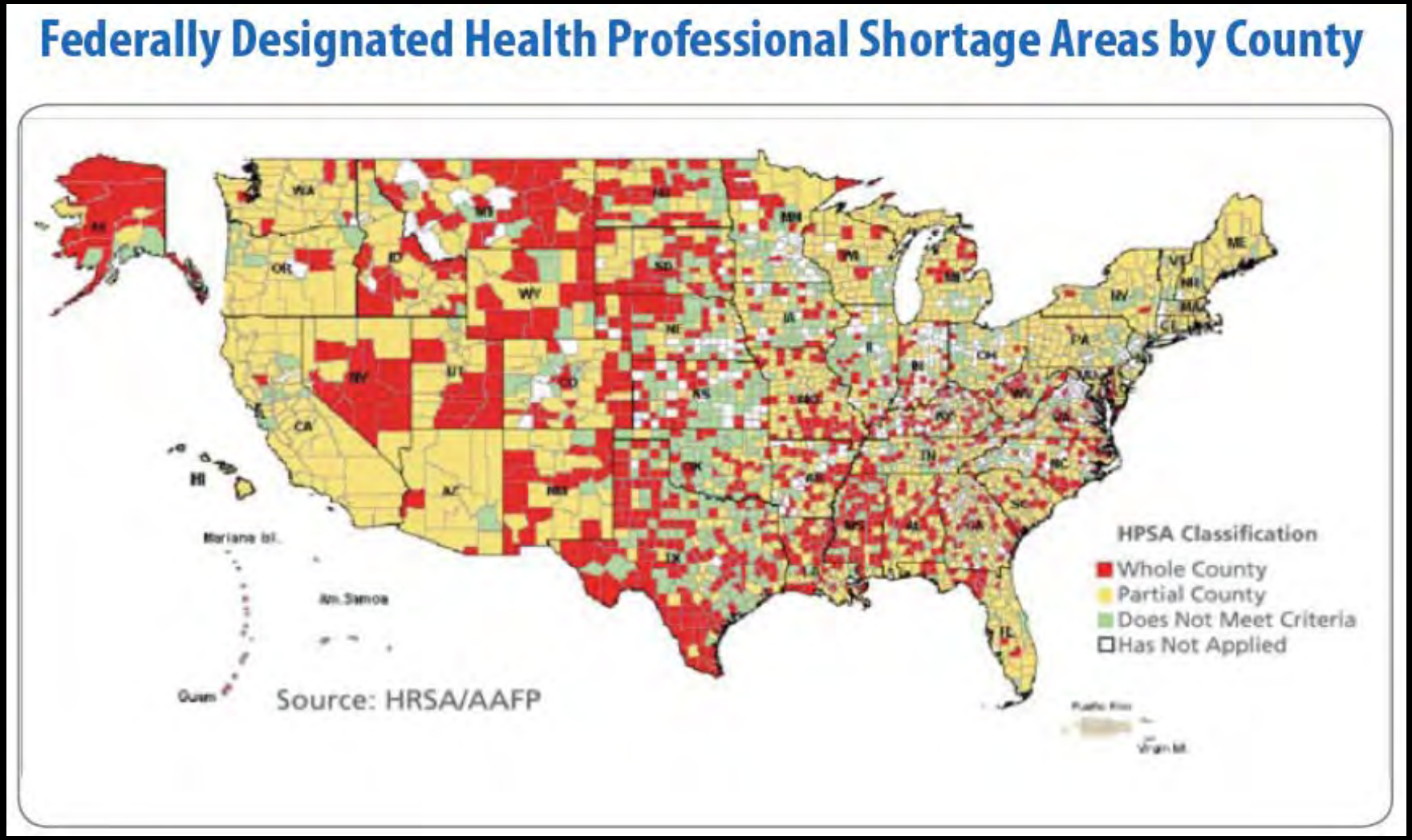


1 Square Mile = 640 Acres
Monterey is 11.7 Sq Miles
If like most of CA, then
10 - 300 people in Monterey
Really 30,000

Primary Care Access Disparities

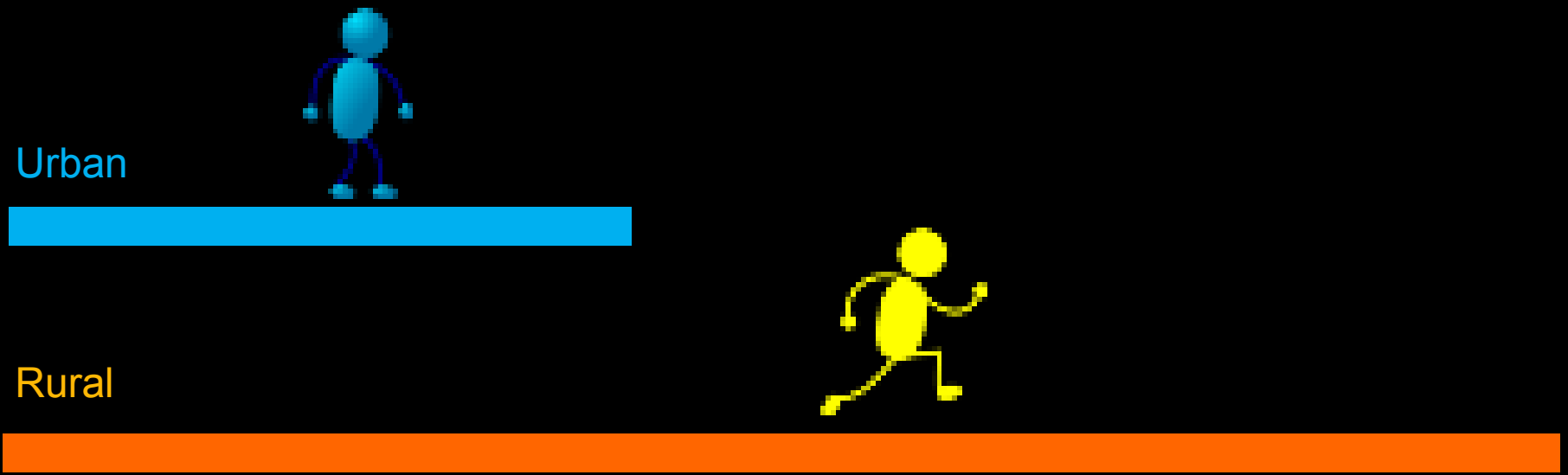
45% of Rural Californians live in Shortage Areas

http://www.csrha.org/factsheet.html



Hospital Access Disparities

- 75% of Urban Area Residents live 1to 78 mi away from a Hospital, average 10 mi
- 90% of Rural Residents live 1to 283 mi away from a Hospital, average 25 mi



http://www.csrha.org/factsheet.html

Ambulances May Be Counted in FRACTIONS in a Rural County

1/2

.75

"The entire county may only have one ambulance, so if that ambulance is bringing a [LTC] resident and somebody happens to have a wreck, there's no EMS there to take care of them."

Director of Telemedicine at Texas Tech

Type and Quantity of Providers

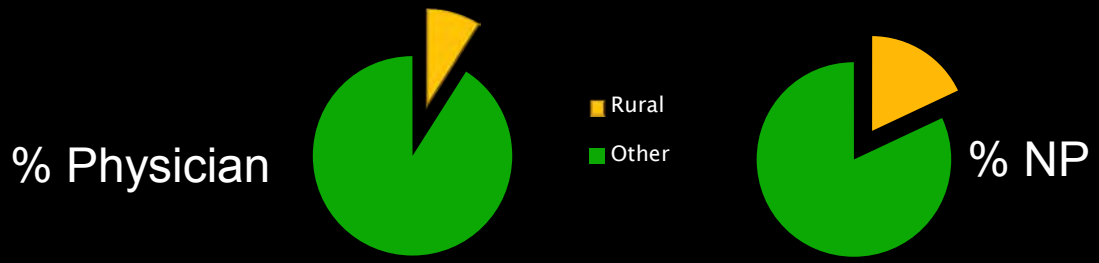
http://knowledgecenter.csg.org/kc/content/health-care-workforce-shortages-critical-rural-america

- 20% of people live in rural areas, but 9% of physicians practice in rural areas

Carol Adaire Jones, Timothy S. Parker and Mary Ahern. "Taking the Pulse of Rural Health Care." Amber Waves: The Economics of Food, Framing, Natural Resources and Rural America. September 2009. U.S. Department of Agriculture.

- Nurse practitioners (NP) are most likely to practice in rural communities. 18% of NPs practice in communities of < 25,000 (that's nearly 1 in 5 NPs).
- In states with a large % of rural residents & favorable regulatory environments, NPs are significantly more likely to practice in rural settings including Vermont (56%), South Dakota (50%), Wyoming (43%), and Montana (40%).

"Nurse Practitioners in Primary Care." American Academy of Nurse Practitioners



Rural Context for Healthcare

People Need Services

Not Locally Available

Rural Barriers to Access

- Providers are Limited in Number & Type
- Geographic Location
  - *Distance
  - *Travel Time
- Fewer Healthcare Workers
- Fewer Facilities

Can We Overcome the Barriers ?

Technology . . . Part of the Solution?

Technology: Part of a Rural Solution?

Technology		Technology Exists to Allow Remote Access to Providers
Location *Distance *Travel Time		Remote Access to Providers Can Decrease Distance & Travel Time
Limited Providers		Remote Access Can Increase the Number & Types of Providers Available
Fewer Health Care Workers & Facilities		Technology Can Be Used to Build a Support Network for Rural Healthcare Workers & Facilities

Some Common Barriers to Telehealth

- Reimbursement
- Technology
  - *Appropriate
  - *Affordable
  - *Agreeable to User
- Regulation
- Resistance to Change

New 2011 CA Telehealth: AB 415

"... has the potential to move two-way audio-visual technology out of the realm of wonky oddity and into the **mainstream**"

http://www.californiahealthline.org/think-tank/2011/how-can-california-make-most-of-telehealth-law.aspx#ixzz1jqY0vbo5

- **Replace** the outdated legal terminology of **"telemedicine" with "telehealth"**
- Update the definition of telehealth to reflect the broader range of services in use today, and apply the definition to **all licensed health professionals**;
- Change the need for an additional written patient consent specifically for telehealth services to a **verbal consent**;
- **Remove the Medi-Cal rule requiring** documentation of a barrier to an **in-person visit before** a beneficiary can receive telehealth services;
- **Include store and forward** technologies as viable for all types of telehealth services;
- Remove a twice-extended sunset date in Medi-Cal on store and forward services reimbursement for teledermatology, teleopthalmalogy and teleoptometry.
- Eliminate restrictions on reimbursement of services provided via **email or telephone**
- Eliminate restrictions on the **type of settings**, such as doctors' offices or hospitals, where telehealth services may be provided http://www.connectedhealthca.org/node/1282

Under previous law, telehealth providers had to have at least one in-person visit with a patient before initiating telehealth visits. They also had to obtain a special written consent from the patient to allow telehealth care. Under AB 415, verbal communications will suffice for both the notification and consent requirements. That is, **providers can inform patients verbally that they may use telehealth, and patients can verbally consent to telehealth treatment.** http://www.fiercemobilehealthcare.com/story/new-telehealth-law-eliminates-need-person-visits/2011-10-12#ixzz1jqbNNS7O

“There are times to stay put, and what you want will come to you, and there are times to go out into the world and find such a thing for yourself.”

Lemony Snicket, *Horseradish: Bitter Truths You Can't Avoid*

Telehealth

Offers a Growing Number of Career Options for Advanced Practice Nurses (APNs)

Provider

Administrator

Care Coordinator / Case Manager

Wound Care Nurse

Mental Health APN

Diabetic Educator

Facility Telehealth Coordinator, etc ...

Telehealth Examples on USA Jobs Site

Nurse Manager / Facility Telehealth Coordinator

...is open for a Nurse Manager (Facility Telehealth Coordinator) at the Oklahoma City VAMC...00 p.m. (Monday-Friday);The Facility Telehealth Coordinator is directly responsible ...Ambulatory Care. The Nurse Manager, Telehealth Coordinator (TC), manages care across...

Salary:	$0.00 - $0.00 / Per Year
Series & Grade:	VN-0610-00/00
Position Info:	Full Time - Permanent
Control Number:	332980900
JOA Number:	RT-13-PRG-801806
Department:	Department Of Veterans Affairs

Nurse Practitioner Care Coordinator

... health care. This Nurse Practitioner will work with the Home Telehealth Program (HT) team, utilizing the latest in communication technology...primary care office visit, or emergency room visit. The Home Telehealth (HT) Nurse Practitioner (NP) Care Coordinator will assist ...

Salary:	$69,216.00 - $111,382.00 / Per Year
Series & Grade:	VN-0610-00/00
Position Info:	Full Time - Excepted Service Term NTE 4 Years
Control Number:	333802500
JOA Number:	PM-13-AKJ-809125

Nurse Practitioner (Telehealth)

...seeking to fill 3 Nurse Practitioner positions for the Nursing Service Home Telehealth Program (HT). The incumbents will be accountable to the Nurse Manager/ Telehealth Coordinator and will receive medical supervision through Primary Care. Salary...

Department:	Department Of Veterans Affairs
Agency:	Veterans Affairs, Veterans Health Administration
Open Period:	8/14/2012 to 12/31/2012
Who May Apply:	All groups of qualified individuals
Location(s):	Oklahoma City, Oklahoma

More Recent Examples Posted on USA Jobs for APNs in Telehealth

Nurse Practitioner-Telemental Health

The Birmingham VA Medical Center in Birmingham, AL is seeking (1) full-time Nurse Practitioner. Salary: To be determined by Professional Standard Board of your peers and based on your education, experience, and professional accomplishments. OUR MISSION: To fulfill President Lincoln's promise -

Department:	Department Of Veerans Affairs
Agency:	Veterans Affairs, Veterans Health Administration
Open Period:	12/19/2012 to 1/2/2013
Who May Apply:	All qualified U.S. Citizens
Location(s):	Birmingham, Alabama
Salary:	$64,411.00 - $110,323.00 / Per Year
Series & Grade:	VN-0610-00/00
Position Info:	Full Time - Permanent
Control Number:	334126300
JOA Number:	OB-13-ADa-812036-MHC

Nurse Practitioner

...Chief of Surgical Service or his/her designees. S/he is responsible for general surgical care in the outpatient, inpatient and telehealth care settings. S/he possesses the advanced clinical skills for assessing, diagnosing, prescribing and rendering appropriate...

Department:	Department Of Veterans Affairs
Agency:	Veterans Affairs, Veterans Health Administration
Open Period:	11/2/2012 to 1/18/2013
Who May Apply:	United States Citizens
Location(s):	Fresno, California
Salary:	$89,585.00 - $119,142.00 / Per Year
Series & Grade:	VN-0610-03/03

My Telehealth Background

OffsiteCare, Inc (2008-2011)

Small startup offering remote medical services to 8 rural hospitals in Northern California

* Outpatient Services Manager
* Sub Acute Services Coordinator

Doctor of Nursing Practice Capstone Project

* Telehealth to Long Term Care

Veteran's Health Administration (VHA) (2012-now)

International leader in Telehealth, broad offering of telehealth services to US Veterans , estimated 830,000 to be touched by telehealth in 2013

*Lead Home Telehealth (HT) Care Coordinator

Home Telehealth (HT)

Focuses on Veterans with Chronic Disease

Diabetes Hypertension Heart Failure Depression Post-Traumatic Stress Disorder (PTSD) Chronic Obstructive Pulmonary Disease (COPD)

Chronic conditions can make it difficult to live independently at home if symptoms and vital signs need to be checked frequently.

Monitoring symptom and health data can help prevent serious problems from developing.

Care coordinators (mostly nurses) support Veterans & their Caregivers in improving Self-Management of Chronic Conditions through the use of Evidence Based strategies (such as Motivational Interviewing).

http://www.telehealth.va.gov/ccht/index.asp

Benefits of HT

- From 2003 and 2007, VHA HT census ↑ from 2,000 to 31,570 (1,500%)
- Routine analysis of data obtained for quality and performance purposes from a cohort of 17,025 HT patients
  - **25% ↓ bed days of care**
  - **19% ↓ hospital admissions**
  - Mean HT satisfaction score rating of 86%

Darkins, A., Ryan, P., Kobb, R., Foster, L., Edmonson, E., Wakefield, B., & Lancaster, A. E. (2008). Care Coordination/Home Telehealth: The Systematic Implementation of Health Informatics, Home Telehealth, and Disease Management to Support the Care of Veteran Patients with Chronic Conditions. *Telemedicine and e-Health*, *14*(10), 1118-1126. doi:10.1089/tmj.2008.0021

Benefits of HT in Rural Areas

3.5 million older Veterans live in rural areas & face singular challenges

- Limited access to providers
- Limited local health programs
- Transportation barriers
- Poverty

Analysis of 111 older rural Veterans with complex conditions using HT

- Set up & connected telehealth equipment
- Monitored complex medication regimens & symptoms daily
- Showed that HT is feasible for older Veterans in rural areas using a symptom-based approach

Luptak M, Dailey N, Juretic M, Rupper R, Hill RD, Hicken BL, Bair BD. The Care Coordination Home Telehealth (CCHT) rural demonstration project: a symptom-based approach for serving older veterans in remote geographical settings. *Rural and Remote Health* 10: 1375. (Online) 2010. Available: http://www.rrh.org.au.

Diabetes Benefits of HT

Compared Veterans taking oral diabetic medication or insulin for ≥1 year & having an A1C ≥7.5%

- HT (*n* = 73)
- Monthly care coordination telephone call with self-management training (*n* = 77)

Baseline characteristics were similar in both groups, with mean A1C of 9.4% (CC group) and 9.6% (HT group)

HT group had significantly larger ↓ A1C at 3 months (1.7 vs. 0.7%) & 6 months (1.7 vs. 0.8%; $P < 0.001$ for each)

Stone, R., Rao, R., Sevick, M., Cheng, C., Hough, L., . . . DeRubertis, F. (2010). Active care management supported by home telemonitoring in veterans with type 2 diabetes. *Diabetes Care, 33*(3): 478–484. doi: 10.2337/dc09-1012

Benefits of HT Locally

VA Sierra Nevada Health Care System serves Veterans in 21 counties across northern California and Nevada

Home Telehealth census is approximately 400

During 4th Quarter 2012, HT benefits locally were

- **68% ↓ bed days of care** among HT Veterans enrolled for 12 months or >
- **51% ↓ hospital admissions** among HT Veterans enrolled for 12 months or >
- **1.1 point ↓ in A1C Scores** among HT Veterans enrolled for 6 months or > and having initial A1C levels > 8.0
- Mean HT satisfaction score rating of 86%

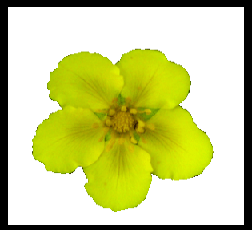
Take Home Message

Perceived Value by Veterans

Reduced BDOC & Hospitalizations

Reduced A1C

Cost Effective



Overcomes Some Rural Barriers

Why Aren’t You Using Telehealth?

Contact Info

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savell.anita@gmail.com, cell 707-478-9539

anita.savell@va.gov, work 775-829-5687

Thanks

"Time is the longest distance between two places."

Tennessee Williams
The Glass Menagerie

KONA VA – Retinal imaging

The Kona VA screens patients for ocular diseases and diabetes using a Topcon Retinal Camera. Many ocular disorders and diseases can be promptly identified and treated when using a retinal camera as a diagnostic tool.

Retinal Imaging

The regions of the retina that are imaged are the fundus view, superior, nasal, and external. For each eye, a minimum of 4 pictures are taken. Since there is no optometrist on staff at the CBOC, the Telehealth Clinical Technician is not able to dilate patient's eyes. As a result, glare and artifacts may appear on the image. Therefore, additional images may be taken in order to get readable images for the reading optometrist.

The camera being utilized is the Topcon TRC-NW8 Camera : easy-to-use, auto focus, auto capture non-mydriatic retinal camera is designed to obtain high resolution color and monochrome images of the retina and the anterior segment of the human eye. It is equipped with automatic focusing and capture making its use quick and simple. A 12.3 megapixel camera back provides high resolution images with a 45° field of view. The incorporated filters and internal firmware allow the user to obtain color and red-free images. The TRC-NW8 has nine internal fixation points that facilitate the composition of wide angle views of the retina.

Retinal Imaging

This is an example of a typical image taken for review. This image is then uploaded to Vista Imaging and anyone in the VA system can view it.

Retinal Imaging

- Diabetic retinopathy is a condition occurring in persons with diabetes, which causes progressive damage to the retina, the light sensitive lining at the back of the eye. It is a serious sight-threatening complication .
- Diabetes is a disease that interferes with the body's ability to use and store sugar, which can cause many health problems. Too much sugar in the blood can cause damage throughout the body, including the eyes. Over time, diabetes affects the circulatory system of the retina.
- Diabetic retinopathy is the result of damage to the tiny blood vessels that nourish the retina. They leak blood and other fluids that cause swelling of retinal tissue and clouding of vision. The condition usually affects both eyes. The longer a person has diabetes, the more likely they will develop diabetic retinopathy. If left untreated, diabetic retinopathy can cause blindness.
- Symptoms of diabetic retinopathy include:
- Seeing spots or floaters in your field of vision
- Blurred vision
- Having a dark or empty spot in the center of your vision
- Difficulty seeing well at night

What causes diabetic retinopathy?

- Diabetic retinopathy is the result of damage caused by diabetes to the small blood vessels located in the retina. Blood vessels damaged from diabetic retinopathy can cause vision loss:
- Fluid can leak into the macula, the area of the retina which is responsible for clear central vision. Although small, the macula is the part of the retina that allows us to see colors and fine detail. The fluid causes the macula to swell, resulting in blurred vision.
- In an attempt to improve blood circulation in the retina, new blood vessels may form on its surface. These fragile, abnormal blood vessels can leak blood into the back of the eye and block vision.

Diabetic Retinopathy

Diabetic retinopathy is classified into two types:

Proliferative and Nonproliferative diabetic retinopathy:

- **Non-proliferative diabetic retinopathy** (NPDR) is the early state of the disease in which symptoms will be mild or non-existent. In NPDR, the blood vessels in the retina are weakened causing tiny bulges called microanuerysms to protrude from their walls. The microanuerysms may leak fluid into the retina, which may lead to swelling of the macula.

Diabetic Retinopathy

- **Proliferative diabetic retinopathy** (PDR) is the more advanced form of the disease. At this stage, circulation problems cause the retina to become oxygen deprived. As a result new fragile blood vessels can begin to grow in the retina and into the vitreous, the gel-like fluid that fills the back of the eye. The new blood vessel may leak blood into the vitreous, clouding vision. Other complications of PDR include detachment of the retina due to scar tissue formation and the development of glaucoma. Glaucoma is an eye disease defined as progressive damage to the optic nerve. In cases of proliferative diabetic retinopathy, the cause of this nerve damage is due to extremely high pressure in the eye. If left untreated, proliferative diabetic retinopathy can cause severe vision loss and even blindness.

How is diabetic retinopathy diagnosed?

- Diabetic retinopathy can be diagnosed by retinal imaging.
- Diabetic retinopathy can be diagnosed through a comprehensive eye examination. Testing, with special emphasis on evaluation of the retina and macula, may include:
- **Patient history** to determine vision difficulties experienced by the patient, presence of diabetes, and other general health concerns that may be affecting vision
- **Visual acuity measurements** to determine the extent to which central vision has been affected
- **Refraction** to determine the need for changes in an eyeglass prescription
- **Evaluation of the ocular structures, including the evaluation of the retina** through a dilated pupil
- **Measurement of the pressure** within the eye

Thank you…


Jim Genrich
Telehealth Clinical Technician
Kona VA CBOC
Marcia Lydiard, RN BSN
Clinical Nurse Manager
Kona VA CBOC

“One's destination is never a place,
but a new way of seeing things.”
Henry Miller

Innovation in Care Management

Management via Synchronized Video Teleconferencing (VTEL)

Inclusion Criteria

- ***Willing provider***
- ***Willing patient***
- ***Willing remote Community Based Outreach Clinic (CBOC)***
- ***Provider & CBOC with Technology & Abilty to operate equipment***
- ***Willing to complete Bimonthly Group and Individual Sessions***

Exclusion Criteria: Veteran is Not Committed

- Participation in group self management skill building
  - For Diabetes (A1C), HTN (BP) and HLD (LDL)
- Intensive individual treatment for medication/lab monitoring/adjustment
- 4 month (6-8 sessions)


But Wait! There's More!

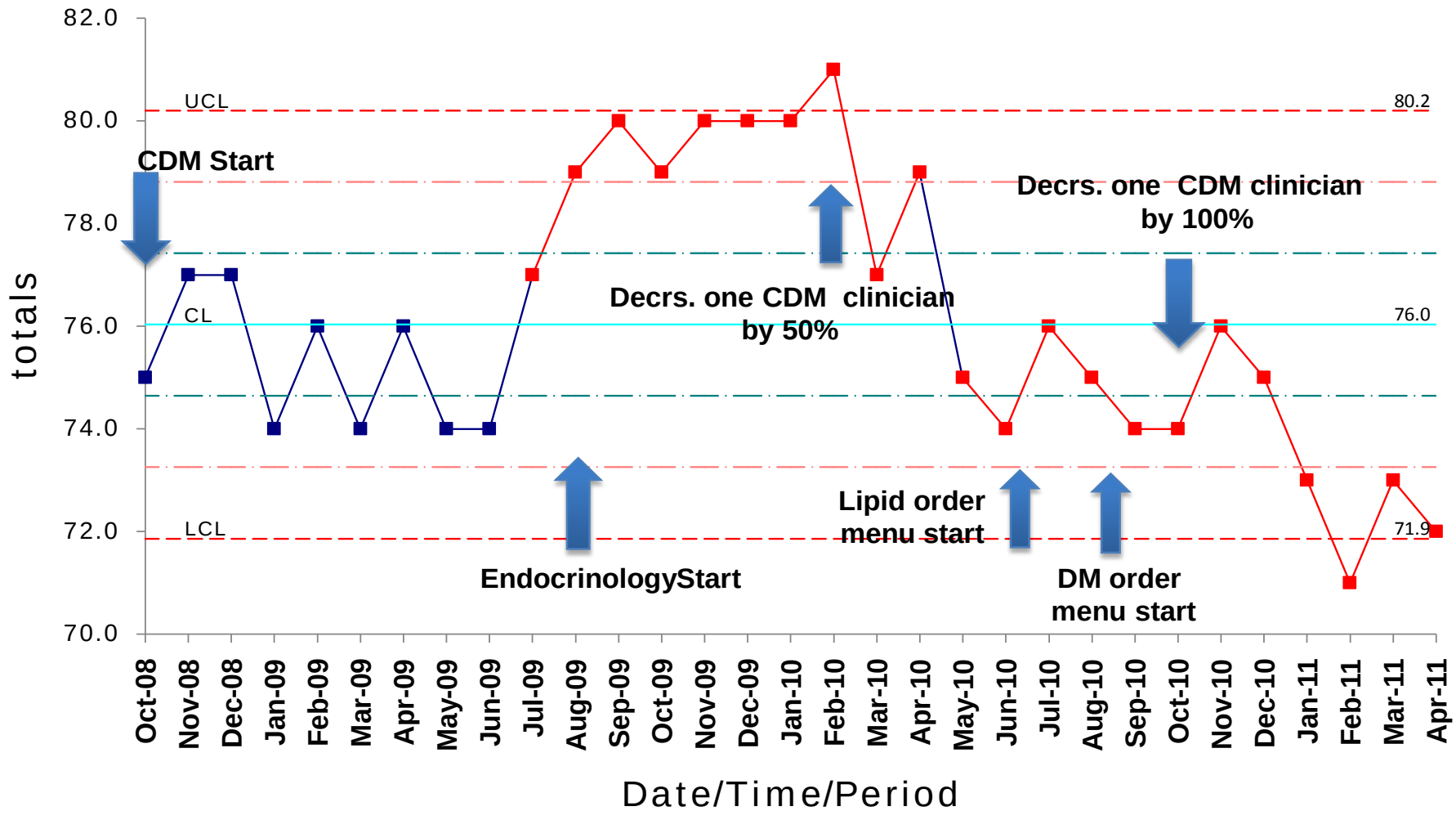
Self-Management, Education & Skill Building

- **Therapeutic alliance with informed activated patient** (Barofsky, 1978)
  - **Self management & patient focus critical** (Becker & Maiman, 1980)
- **Healthy Interactions Conversation Map program** (Healthy Interactions, 2006, 2009)
  - **Engages meaningful interaction, skill building in education-support groups**
  - **American Diabetes Association curriculum** (2009)

Integrate Health Promotion Models

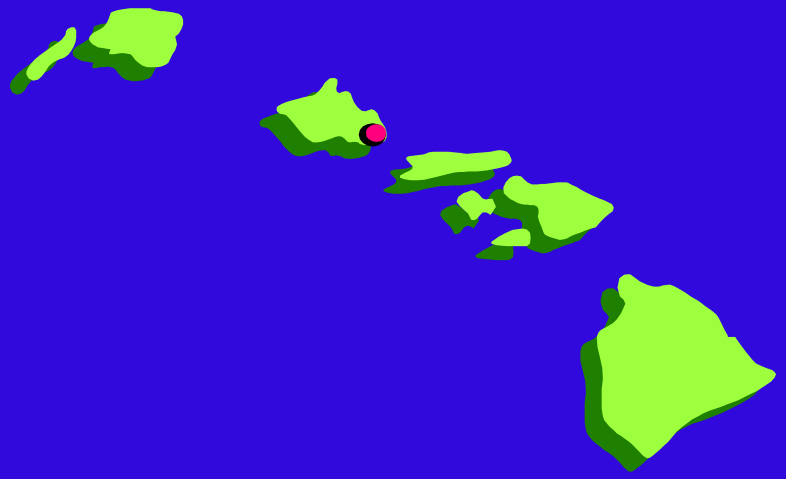
- **Bandura Social Learning & Self Efficacy** (Bandura, 1977)
- **Trans Theoretical Model** (Prochaska & Norcross, 2001)
- **Adult Learning Principles** (Illeris, 2003).
- **Motivational Interviewing** (Miller & Rollnick, 2002)
- **Action Plans** (MacGregor et al., 2006)

SPC Performance Measure
Overall Totals A1c
Oct 08-May 11



COMING SOON!

To a neighbor island near you...



Very Brief How To Guide

"Step one: take a good stiff drink."

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