RURAL HEALTH WORKSHOP

Clinical Applications of Telemedicine in Surgery and Beyond

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LOUISIANA RURAL HEALTH ASSOCIATION

Speaker

- Ariel P. Santos, MD, MPH, FRCSC, FCCM
  - Director
  - Texas Tech Telemedicine Program

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Clinical Applications of Telemedicine in Surgery and Beyond

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June 20, 2023

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DISCLOSURE

- The F Marie Hall Institute for Rural and Community Health at Texas Tech University Health Sciences Center is partnered with Well-Ahead Louisiana with the Louisiana Department of Health to form the TexLa Telehealth Resource Center (TRC).

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER
F. Marie Hall Institute *for* Rural *and* Community Health

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- The TexLa Telehealth Resource Center is a federally-funded program designed to provide technical assistance and resources to new and existing Telehealth programs throughout Texas and Louisiana.

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number G22RH30359, the TexLa Telehealth Resource Center, in the amount of $325,000.00. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS, or the U.S. Government.

TRC NATIONAL CONSORTIUM OF TELEHEALTH RESOURCE CENTERS

TexLa Telehealth Resource Center

OBJECTIVES

1. Identify the application of telemedicine in surgery and its specialties like trauma, surgical oncology and global surgery
2. Identify the common pitfalls, limitations and barriers in telemedicine in surgery.
3. Discuss the future direction of virtual care in surgical specialties.

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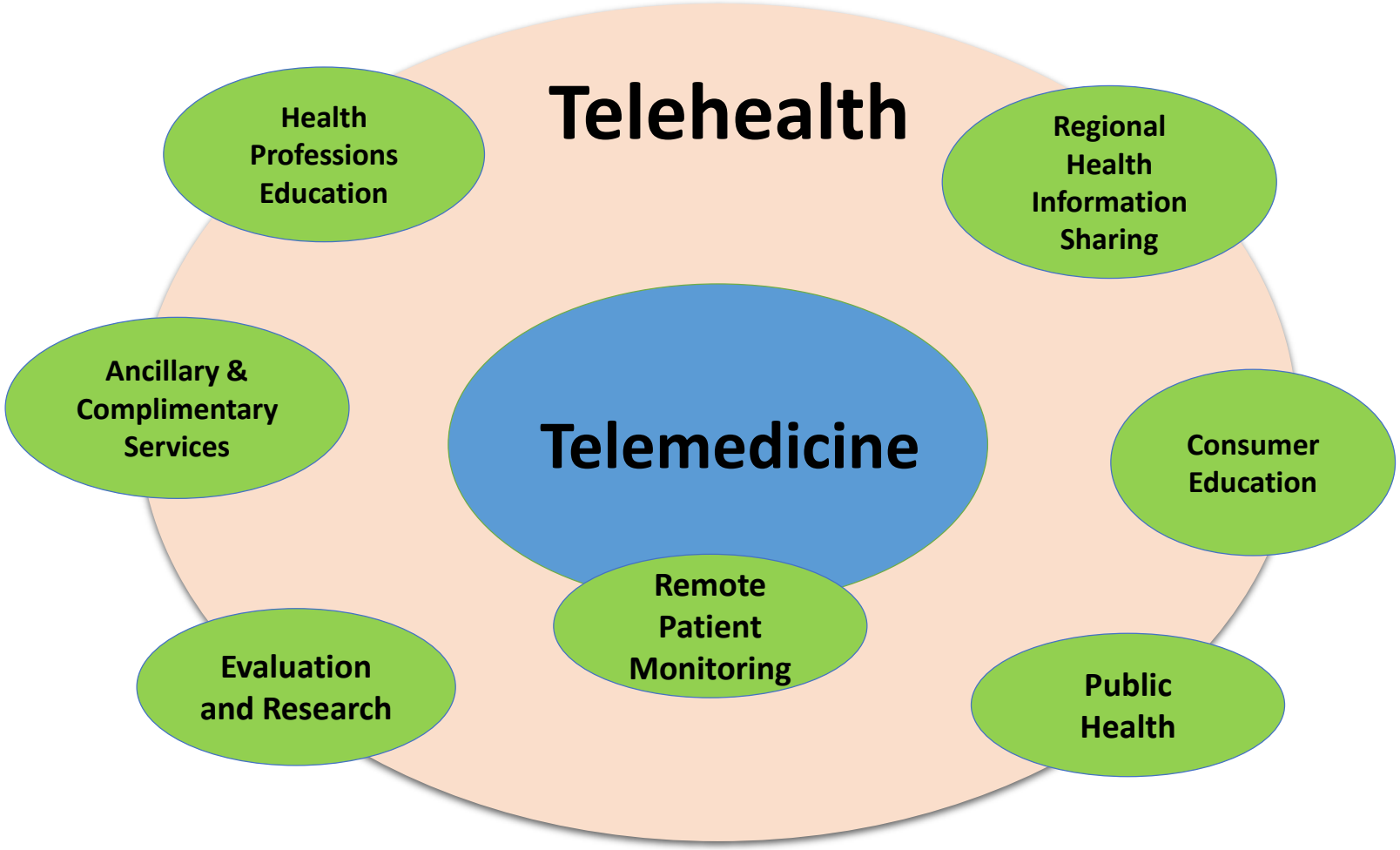
Telehealth vs. Telemedicine

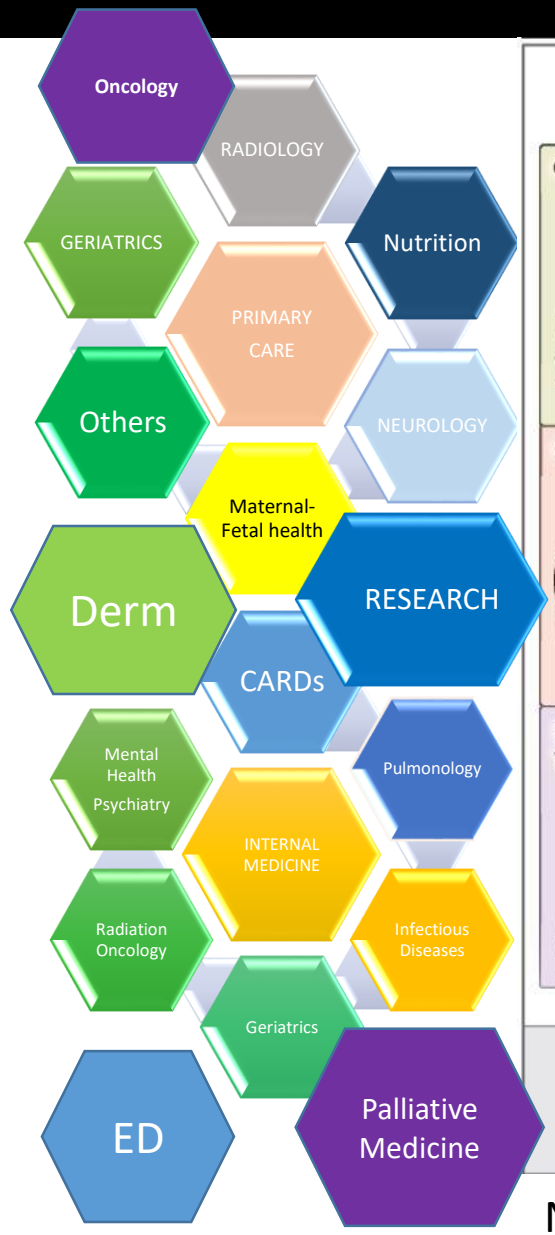


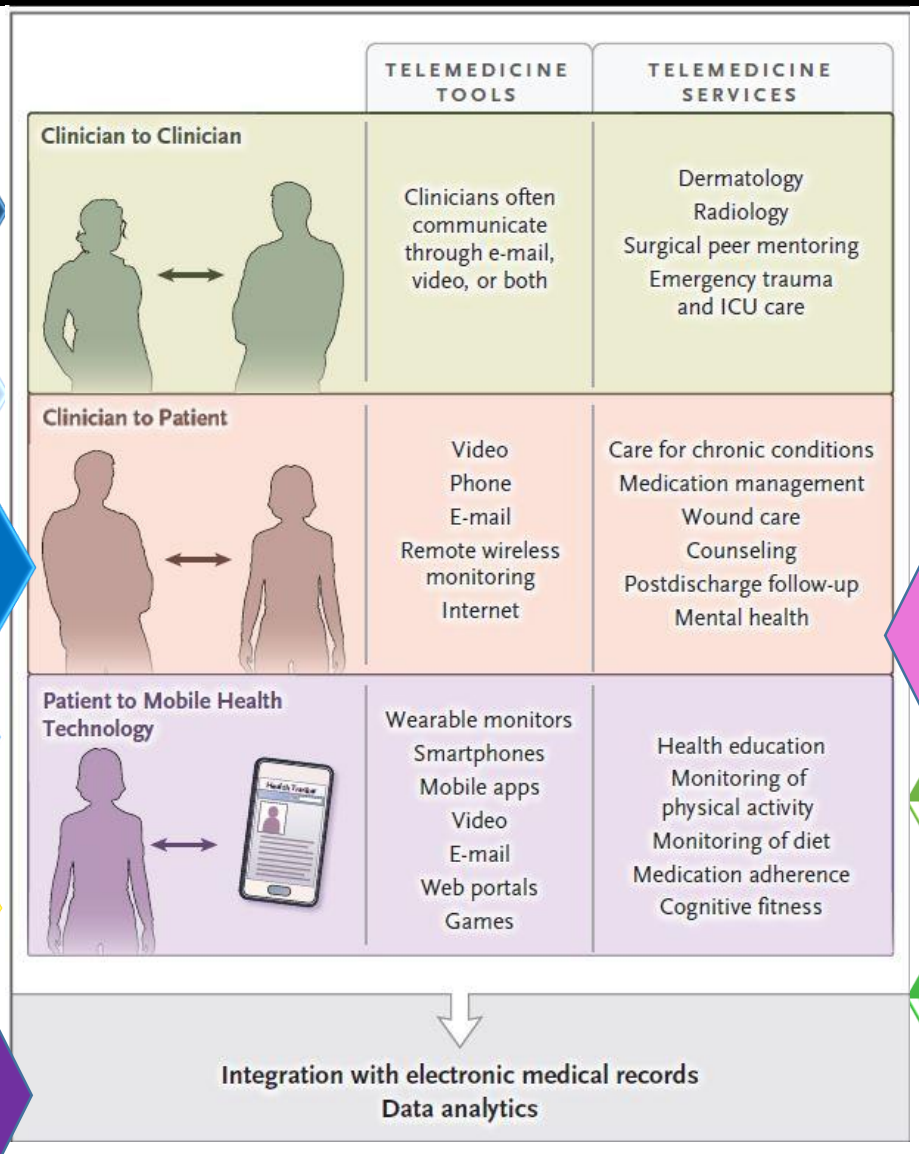
Telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical status.

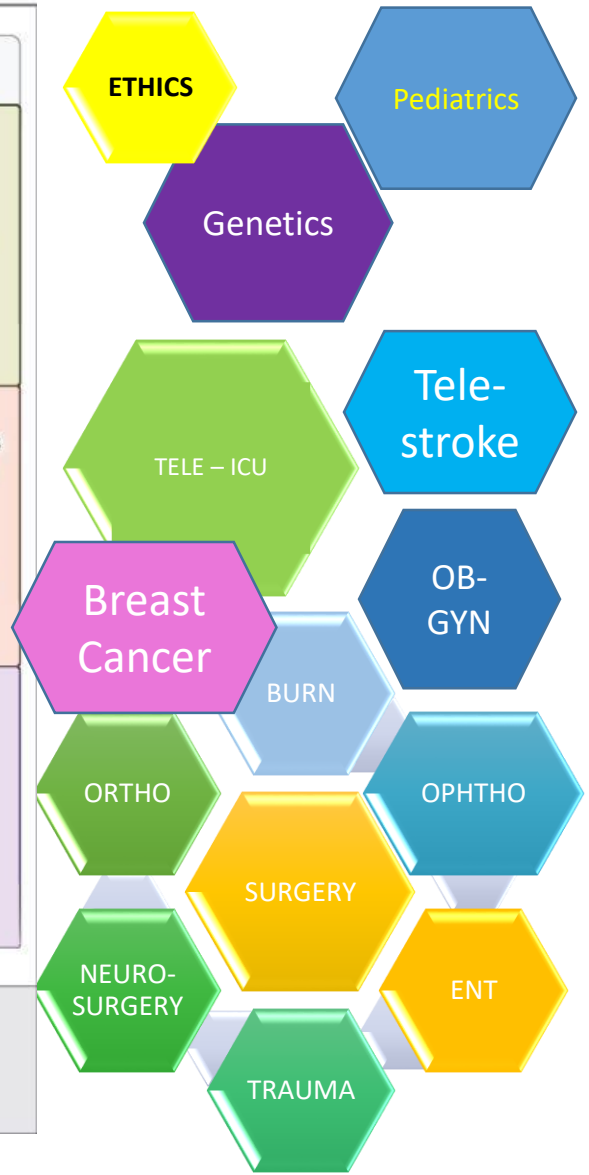
History of Telemedicine

- 1950s – Transmission of video, images & data.
- 1959- University of Nebraska used the first interactive telemedicine to transmit neurological examination .
- 1960's – NASA, Lockheed and US Indian health Service use telemedicine access to Indian Reservation
- 1970's – NASA conceptualized Telesurgery
- 1980's – Radiology is first to fully embraced telemedicine → **Teleradiology.**
- 1989 – Telemedicine in Correctional facility

Telemedicine Applications







N ENGL J MED 2017;377(16): 1585-1592

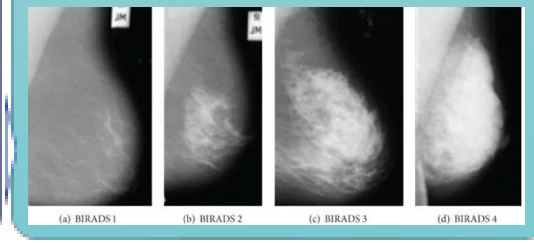
Types of Telemedicine

Live Audio & Video

- Cardiology
- Psychiatry
- Urology
- Neurology
- Correctional Health

Store & Forward

- Dermatology
- Radiology
- Pathology
- Diabetic Retinal Exam



Remote Monitoring

- Diabetes
- Hypertension

Wearables

SYNCHRONOUS

ASYNCHRONOUS

Blended FORMAT

Smartphone based Telemedicine

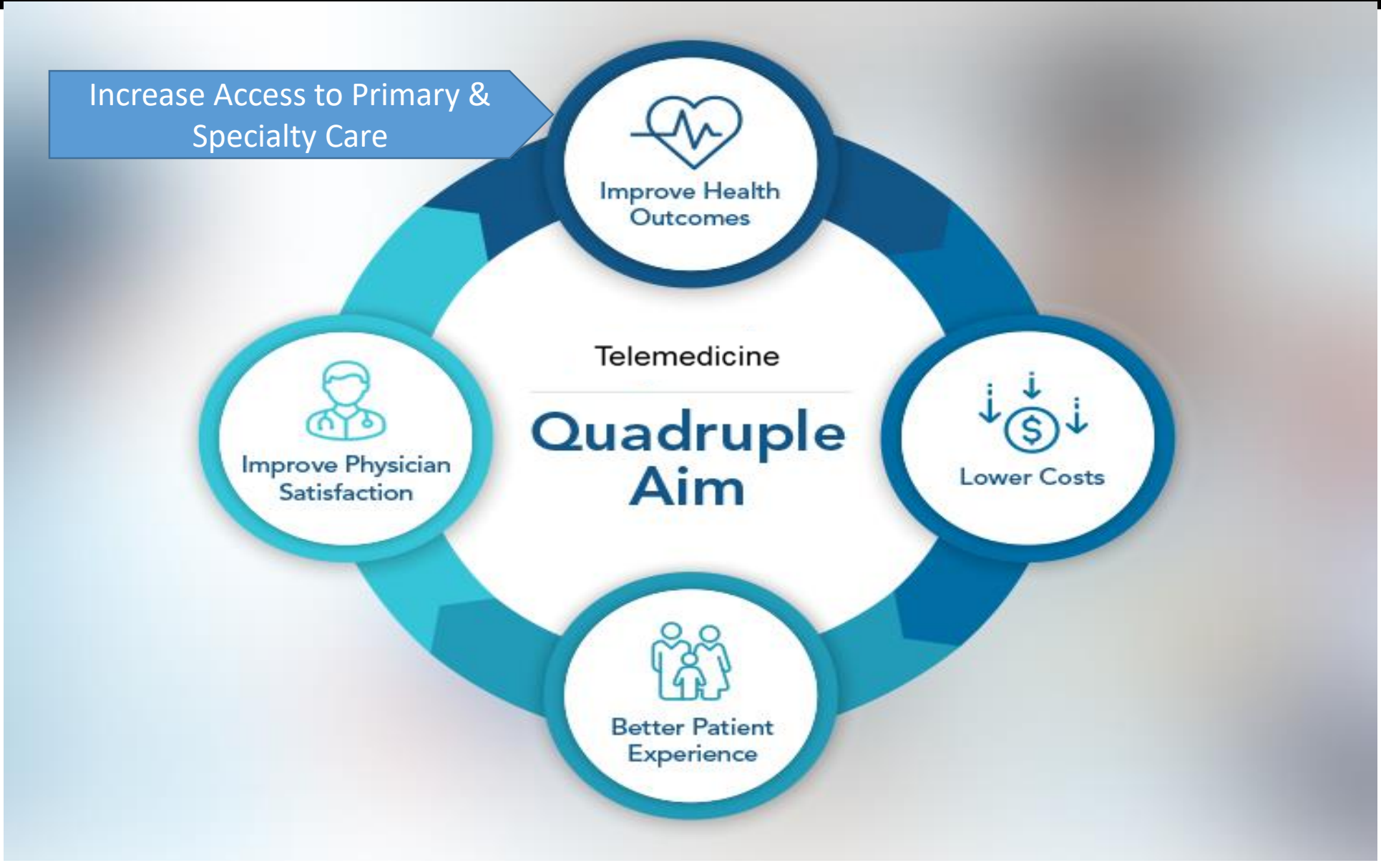
- No Wait Times
- Triage Support
- Post-Op Support
- Infection Control
- Medication Refills & Consults
- Easy Enrollment
- Mobile Access Anytime Anywhere
- Convenient
- Simple Scheduling
- Automated Emails
- 24/7 Patient Technical Support

WHY TELEMEDICINE ?

- Geographic Location
- Physician Shortage
- $ Savings
- Limited Resources
- Health Care for Special Population

- CORRECTIONAL FACILITY
- SCHOOL
- MINORITY POPULATION RESERVATIONS

GOALS OF TELEMEDICINE



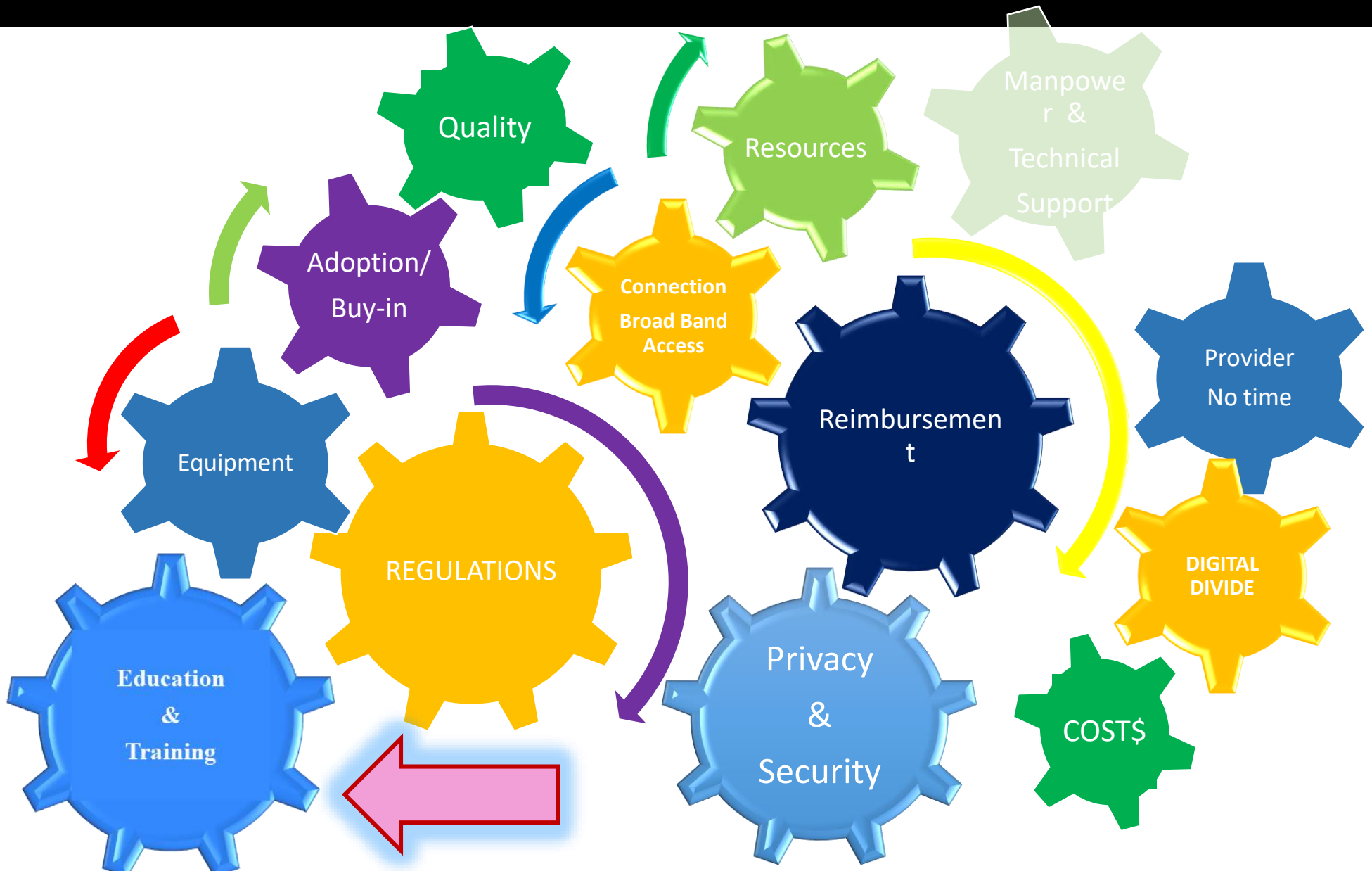
Leveraging Technology to Address Provider Shortage

Telemedicine

Telemedicine increase access to oncology care esp. in rural areas and proven clinical and cost effectiveness as well as patient satisfaction.

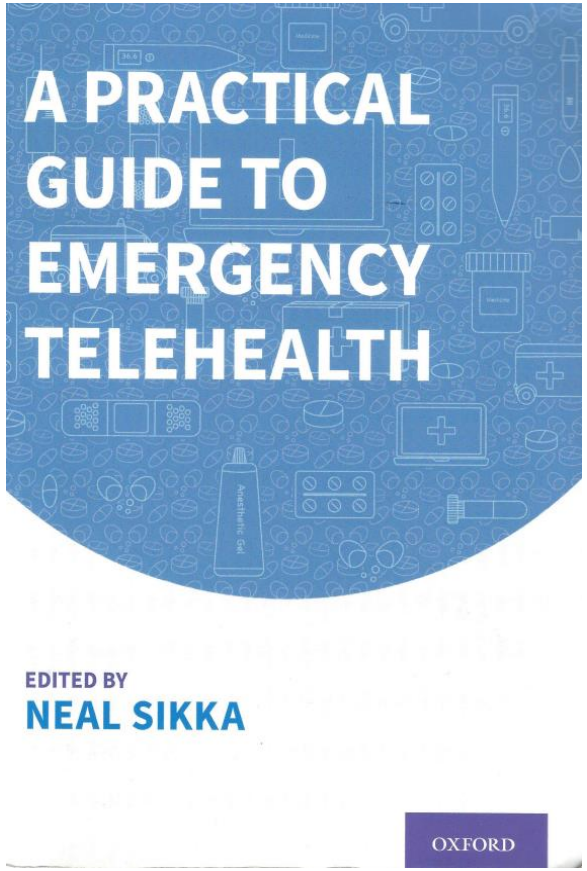
Doolittle, et al J Telemed Telecare, 1997.

Barriers in Telemedicine



Telesurgery applications

- **Pre-operative Applications**
- **Intraoperative Applications**
- **Post operative Applications**



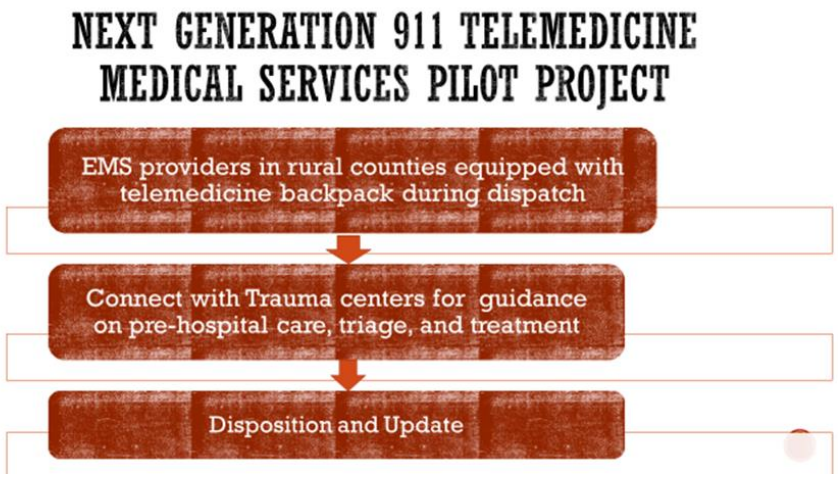
Pre-operative Applications

- Review of Data (past medical history), Images, reason for referral, discussion of options.
- Planning for OR
- Need for further work-up
- Need for Transfer

Do we need to transfer ?

Triage of Trauma/Burn Patients

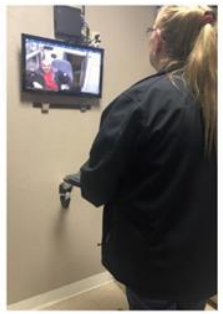
Treatment & Triage of Trauma Patients



Scene Audio-video triage between paramedics & hospital

ER to ER triage for transfer or other disposition keep in Critical access hospital

- Trauma
- Stroke
- Heart Attack



Triage of Burn Patients

Scene – Pre-hospital

↓

Critical Access Hospital

↓

Inter-facility transfer

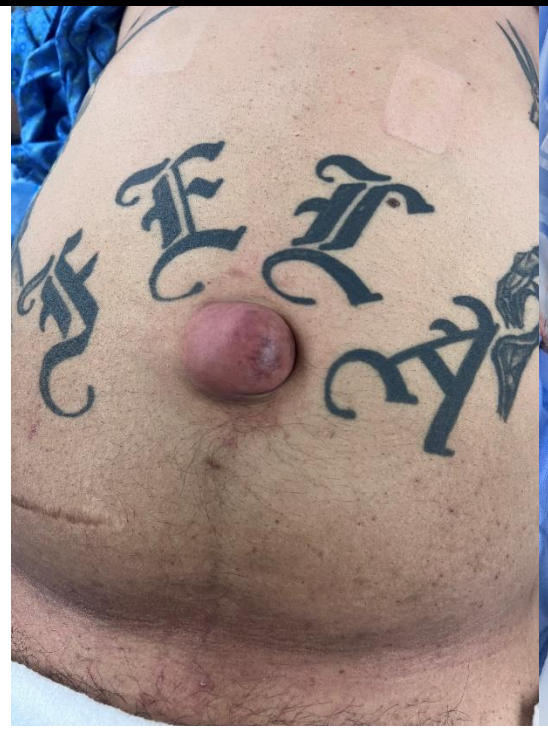
↓

Definitive Core Facility (trauma or Burn Center)

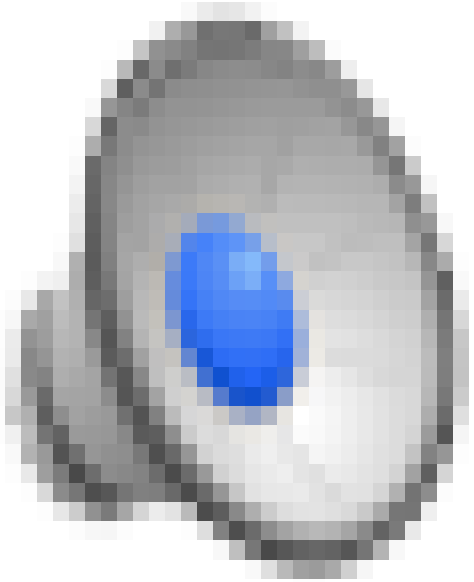
↓

Recovery (SNF – Rehab – Home)

Triage of Acute Care Surgery Patients



Triage and Care of Burn Patients



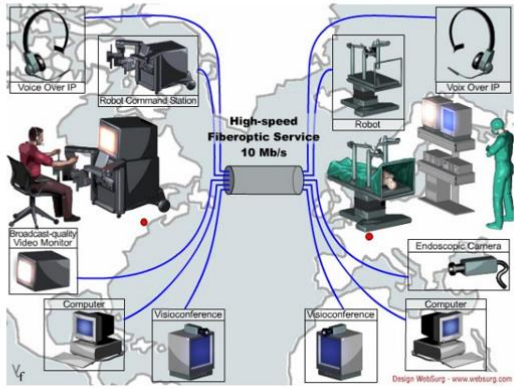
Intraoperative Applications

1. Remote Surgery: Operation Lindbergh OR time : 54 minutes, No complications.

2001 – Dr. Jacques Marescaux in NYC performed a transatlantic cholecystectomy in a patient in Strasbourg, France

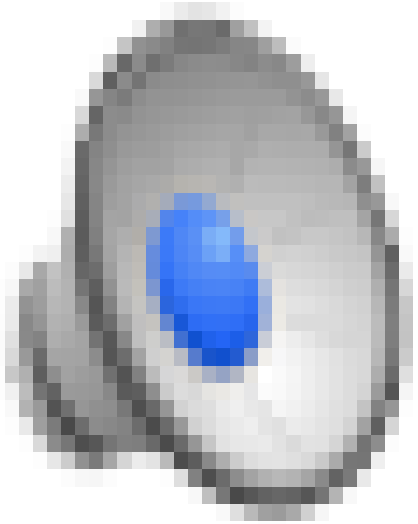
Figure 1. Sitting at a console in New York City, Dr. Jacques Marescaux performs laparoscopic surgery, using the ZEUS Robotic Surgical System, on a patient located in Strasbourg, France (seen on the monitor in the rear).

Graphic of Operation Lindbergh

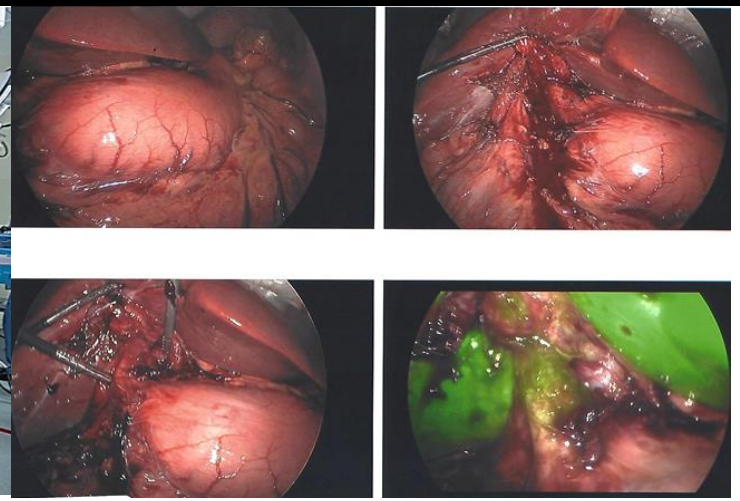


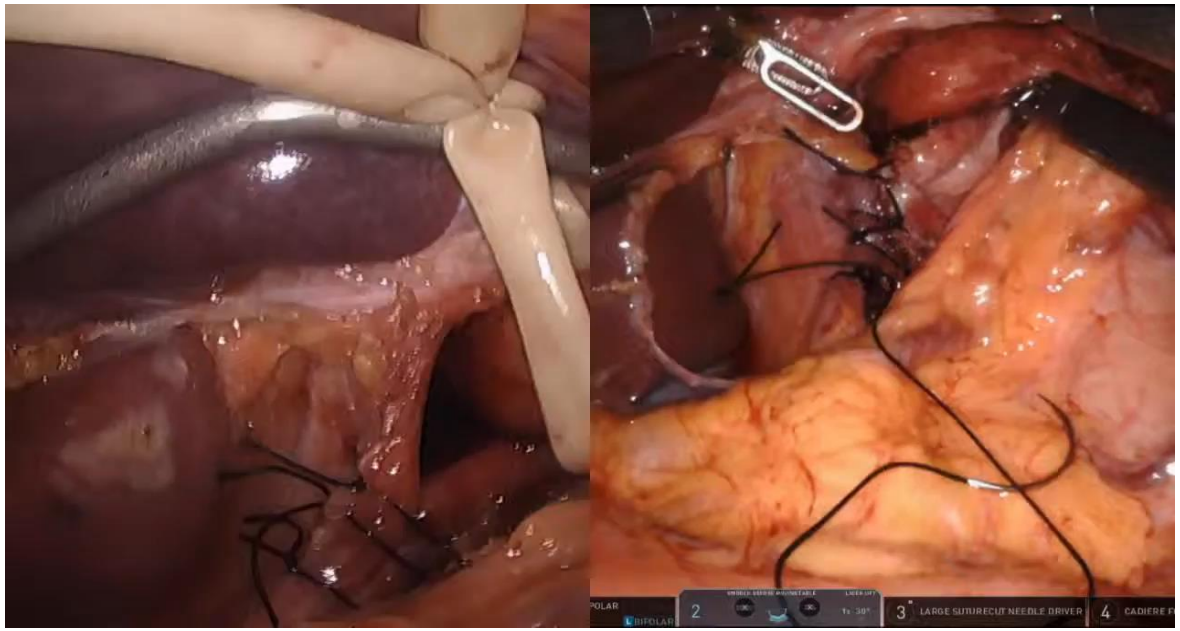
- 2. Intra ... oring

Remote Robotic Surgery

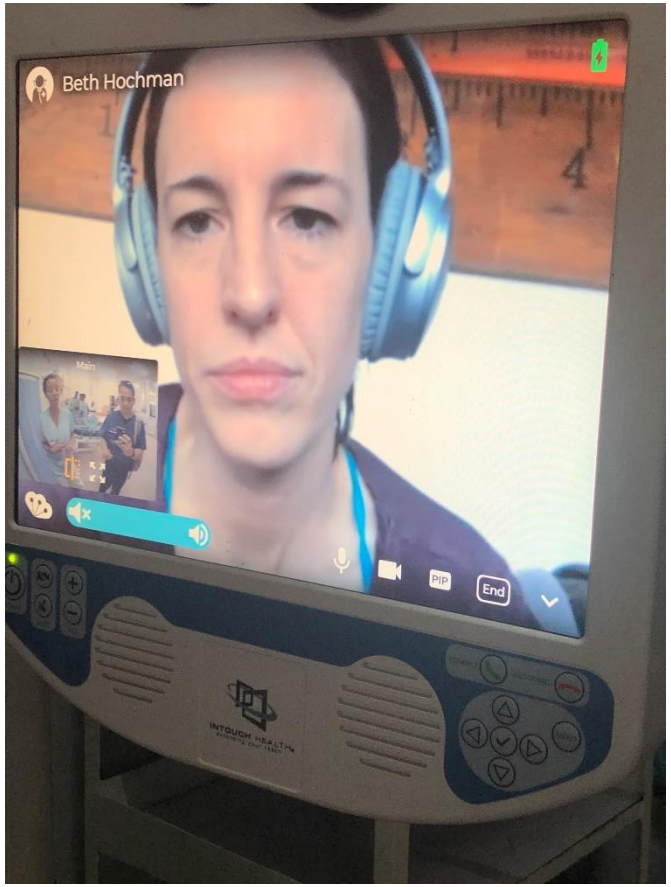


Intraoperative Consultation





Tele-ICU, Consultation & Global Surgery

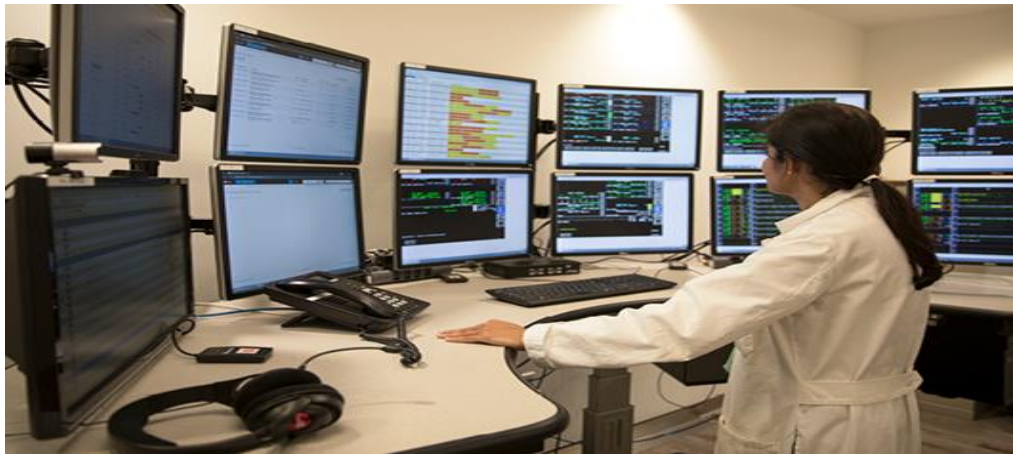


Tele-ICU or Tele Critical Care

- 4 M patient admitted to ICU/year
- < 15 % of Hospital with ICU can provide critical care. MD shortage
- 1970 concept of proposed remote captured vital signs and phone connection to provide ICU care
- 2000 – first Tele ICU in Woodbridge, VA

Tele-ICU or Tele Critical Care

- 15- 60 % reduction in mortality
- 20-30% reduction in LOS in first year
- 35-45% reduction in complications
- Average start up cost $600,000
- Cost Savings 1.4 Million in first year



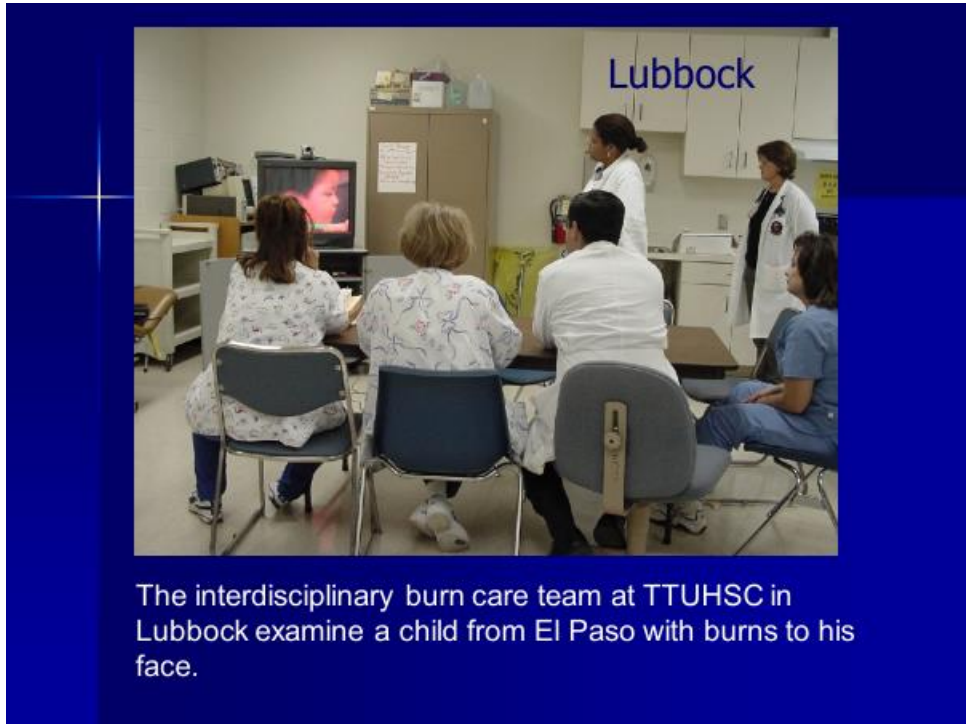
Postoperative Applications

- Follow up
- Virtual Prescriptions
- Drain and Wound follow up
- Colostomy Follow up

Box 2. Common Key Data Points in Surgical Patients

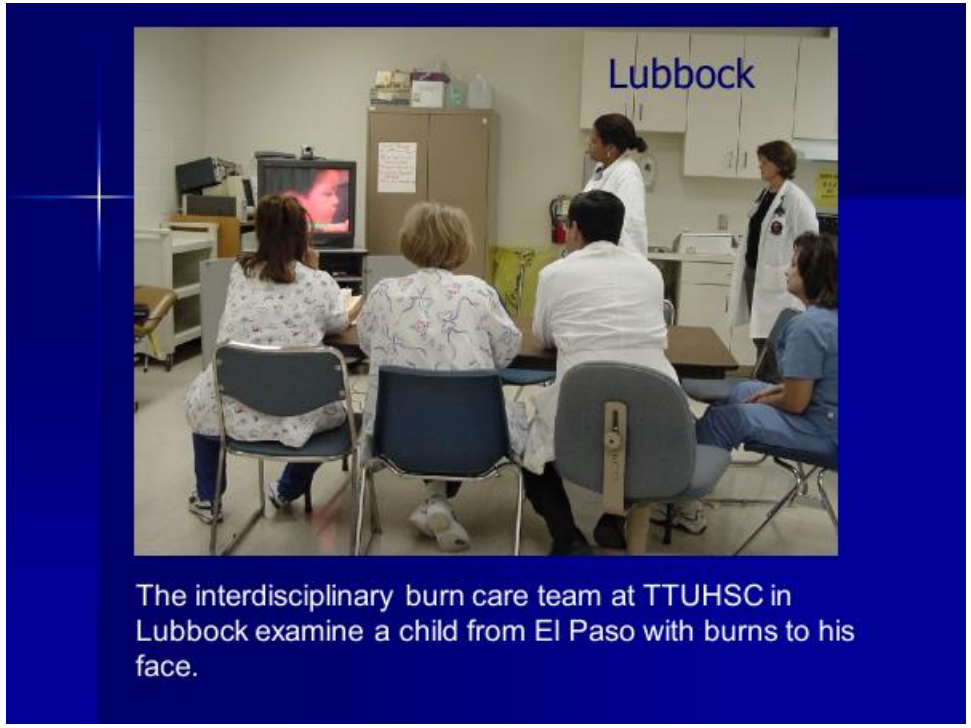
Colostomy, ileostomy or ostomy output
Digital imaging to assess patient's wound or surgical site
Medication adherence
Surgical drain output
Vital signs like blood pressure, heart rate and temperature
Compliance with treatment
Gastrostomy or jejunostomy feeding tube functions

Burn Clinic Follow up



The interdisciplinary burn care team at TTUHSC in Lubbock examine a child from El Paso with burns to his face.

Surgery Follow



The interdisciplinary burn care team at TTUHSC in Lubbock examine a child from El Paso with burns to his face.

Tele-oncology Applications

Sirintrapun and Lopez, Telemedicine in Cancer Care, 2018

Teleoncology Applications

- Cancer Telegenetics
- Remote Chemotherapy supervision
- Survivorship Care
- Symptom management and Palliative Care
- Telepathology
- Tele-education/ Patient education
- Telementoring/Teleproctoring
- Multidisciplinary Conference or Tumor board

Sirintrapun and Lopez, Telemedicine in Cancer Care, 2018

Teleoncology Applications

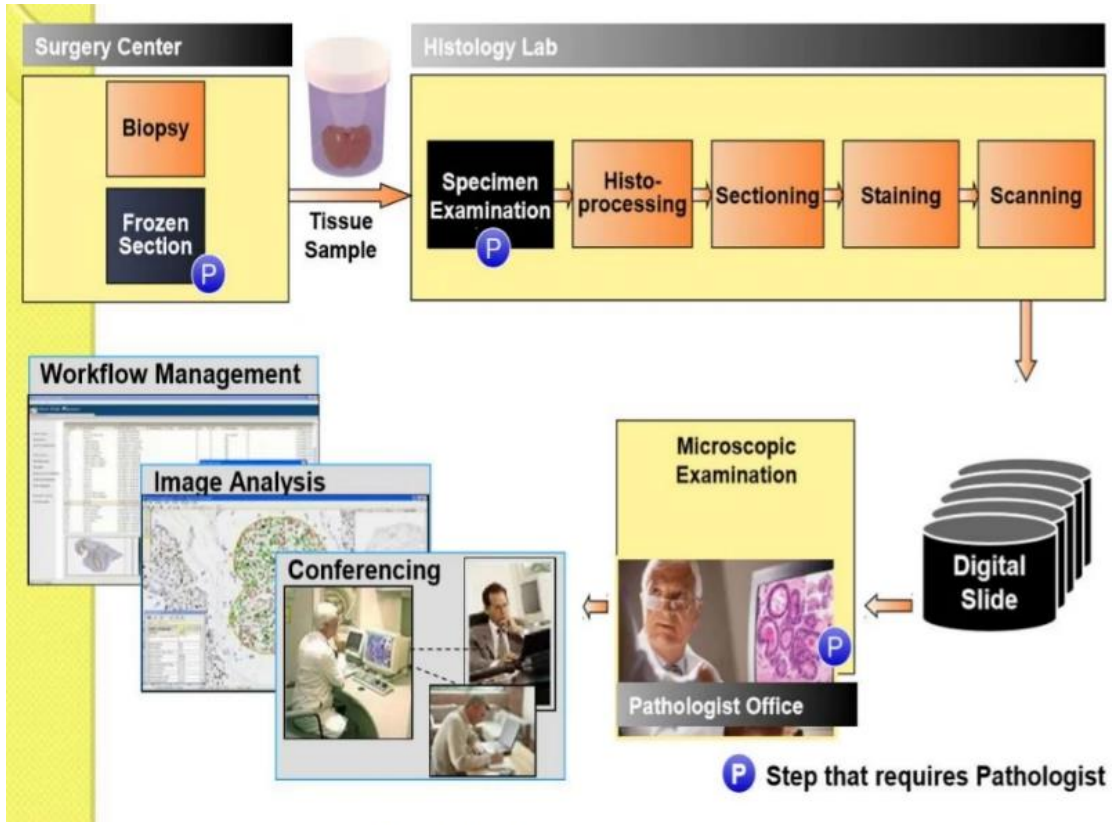
Survivorship Program

Telescreening

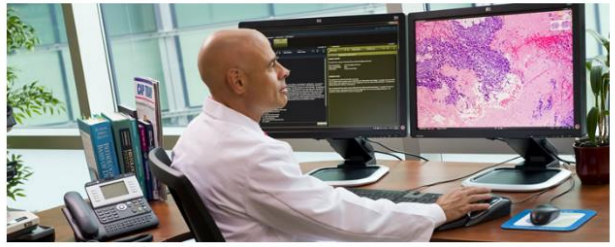
Tele-Pathology

ROSE: Rapid on Site Evaluation Adequacy Study

Ronald Weinstein, MD
Father of Telepathology

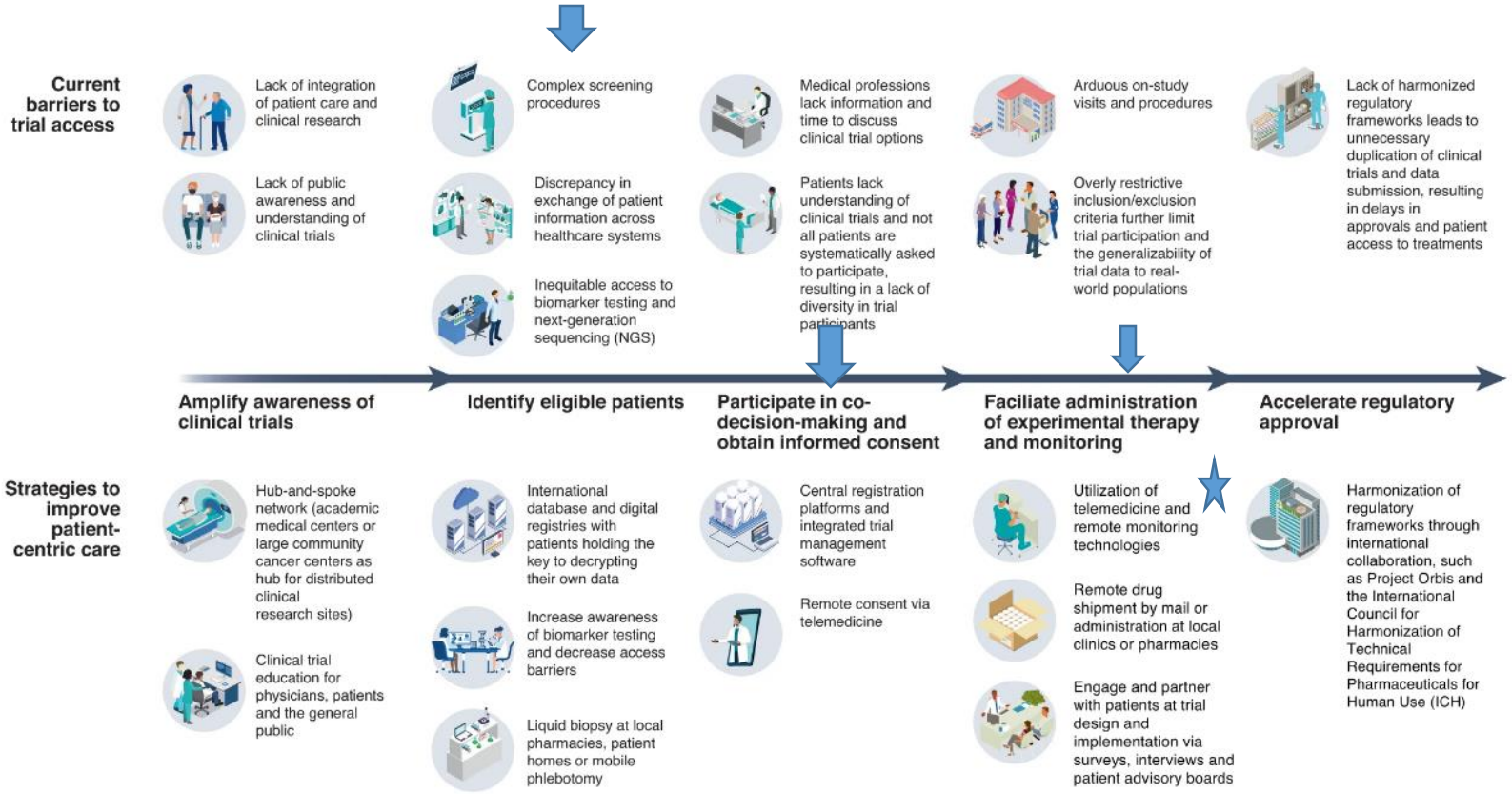


TELEPATHOLOGY



Weinstein, et al. Overview of telepathology. Human Pathol. 2009; 40:1057-69.

Cancer Clinical Trials

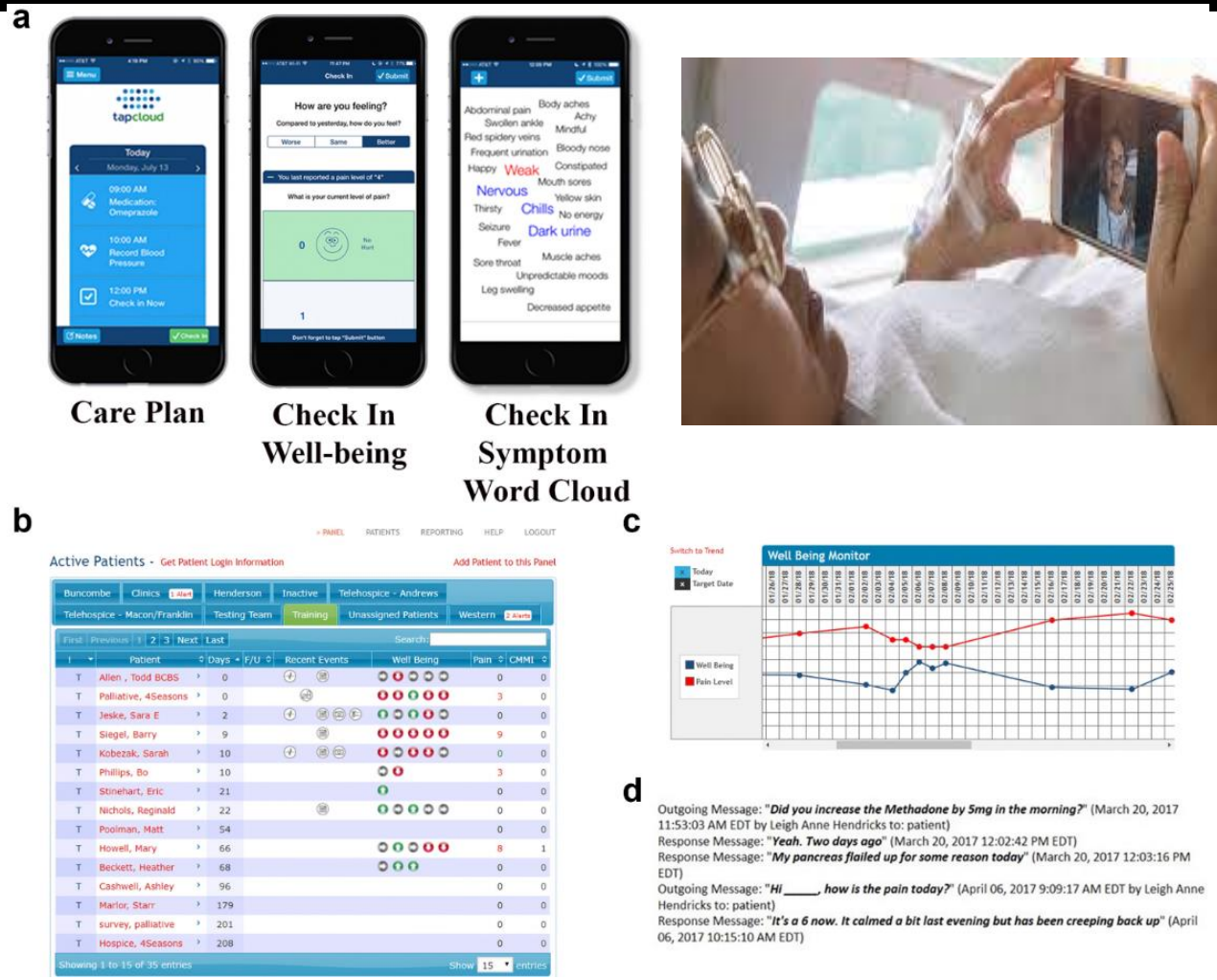


Patient-centric care may be achieved by reducing barriers to trial participation, by leveraging technologies such as telemedicine, remote monitoring and liquid biopsy, and by international collaboration including regulatory harmonization.

Meghiref Y, et al. The Use of Telemedicine in Cancer Clinical Trials: Connect-Patient-to-Doctor Prospective Study. JMIR Cancer. 2022 Jan 27;8(1).

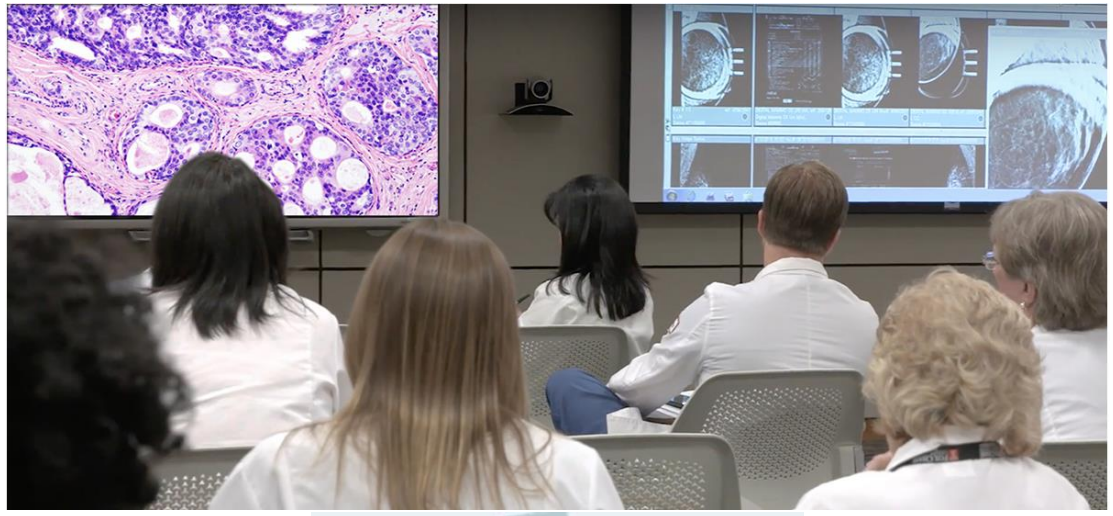
Li, et a.. Reimagining patient centric cancer clinical trials. Nature Medicine. 2022 Apr 28; 620-626.

Palliative Medicine & Hospice



Bonsignore, et al. Evaluating the Feasibility and Acceptability of a Telehealth Program in a Rural Palliative Care Population. Journal of Pain and Symptom Management. 2018 56(1) 7-14)

Multidisciplinary Conference



Received: 29 April 2021 | Revised: 16 July 2021 | Accepted: 22 July 2021
DOI: 10.1002/cam4.4213

RESEARCH ARTICLE

Cancer Medicine WILEY

Patient participation in multidisciplinary tumor conferences: How is it implemented? What is the patients' role? What are patients' experiences?

Lena Ansmann[1] | Christian Heuser[2] | Annika Diekmann[2] | Barbara Schellenberger[2] | Claudia Biehl[3] | Mahmoud Danaei[4] | Christian Eichler[5] | Dina Heinz[6] | Andrea Hocke[7] | Wolfram Malter[5] | Badrig Melekian[6] | Havva Metin[4] | Alexander Mustea[7] | Jenci Palatty[3] | Uwe Peisker[8] | Ines Petschat[8] | Nicole Ernstmann[2]

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Abstract

Background: Prior research has shown that around 5%–7% of patients in breast cancer centers in Germany participate in the discussion of their own case within a multidisciplinary tumor conference (MTC). The PINTU study is one of the first to research this practice. The objective is to describe (a) how patient participation in MTCs is implemented, (b) what is the role of patients, and (c) how patients experience MTCs.

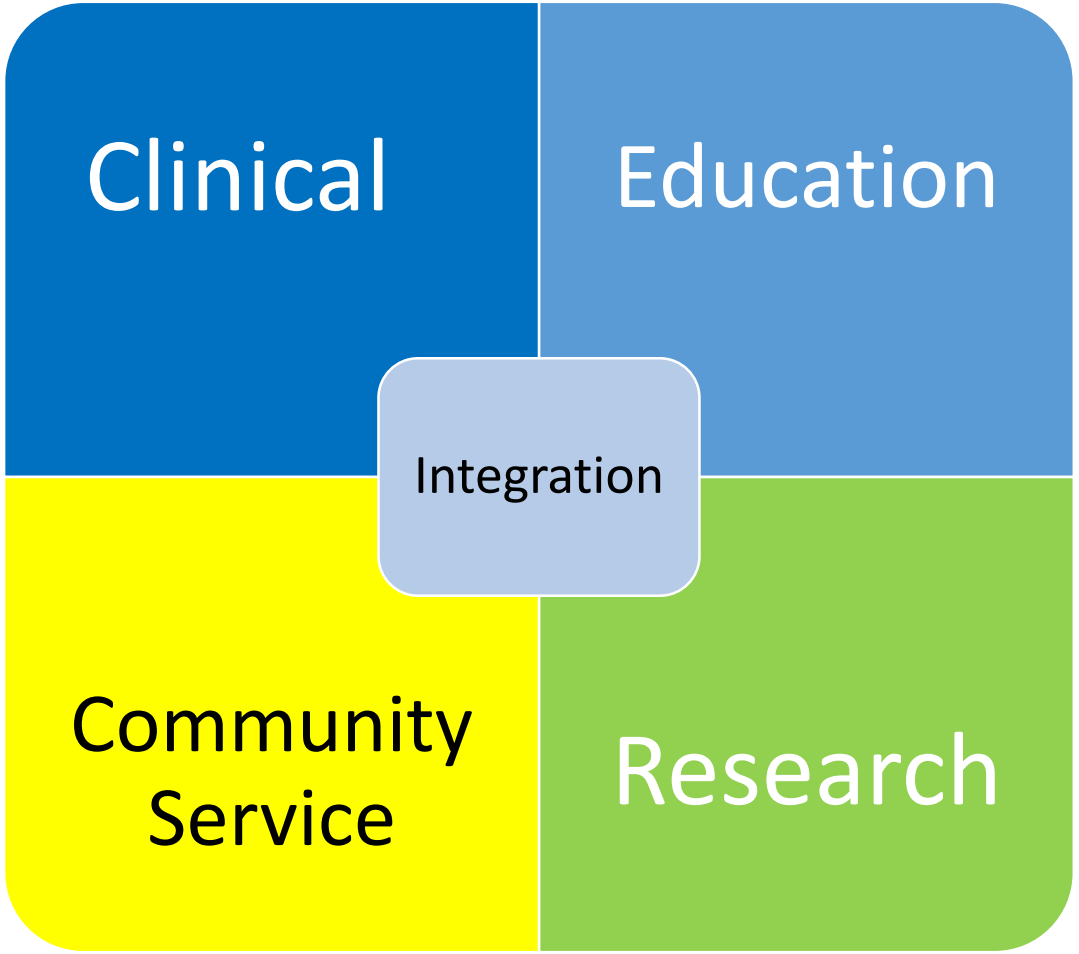
Methods: MTCs in six breast and gynecological cancer centers in North Rhine-Westphalia, Germany, with and without patient participation, are studied prospectively by (non)participatory, structured observation. Breast and gynecological cancer patients completed surveys before, directly after, and 4 weeks after MTC participation. Data are analyzed descriptively.

Results: Case discussions of a sample of n = 317 patients (n = 95 with MTC participation and n = 222 without) were observed. Survey data were obtained from n = 242 patients (n = 87 and n = 155). Observational data showed heterogeneity in the ways MTC participation was practiced. Among participating patients, 89% had the opportunity to express their opinion and 61% were involved in decision-making. Whereas most patients reported positive experiences and would recommend participation, some had negative experiences and regretted participating.

Conclusions: Due to a lack of recommendations, hospitals implement patient participation in MTCs in many different ways. So far, it is unknown which setting and procedures of MTC participation are beneficial for patients. However, existing evidence on communication in cancer care together with this exploratory

Bonsignore, et al. Evaluating the Feasibility and Acceptability of a Telehealth Program in a Rural Palliative Care Population. Journal of Pin and Symptom Management. 2018 56(1) 7-14)

Sustaining Telehealth Success



PROJECT ECHO

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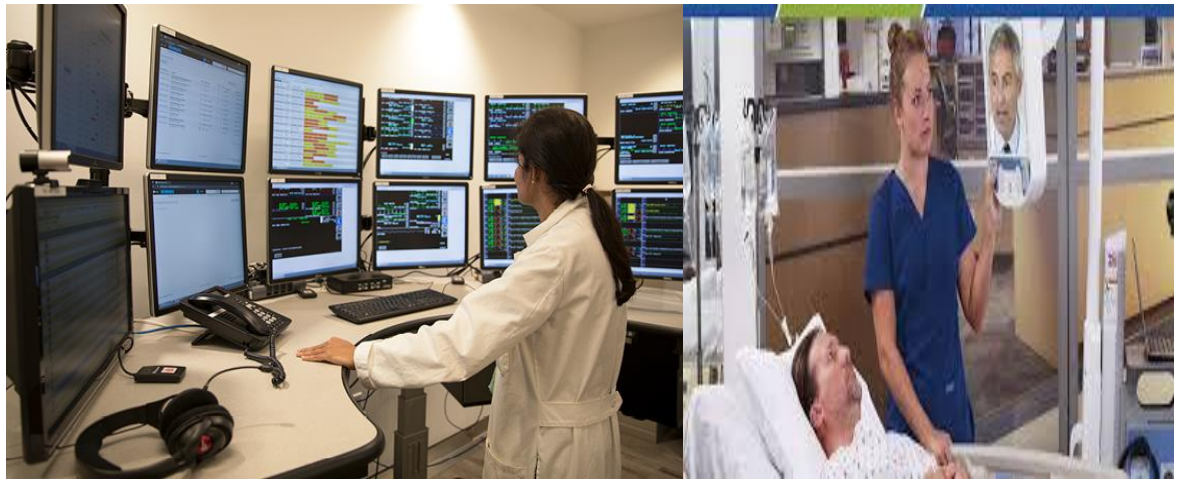
Optimizing Telemedicine in Your Specialty Series Telemedicine Project ECHO		
Date	TOPICS	Speaker/s
January 13, 2022 Noon	Tele-Pharmacy in Modern Health Care National Pharmacist Day	Les Covington and Emily Lammers, PharmD TTUHSC-Amarillo
March 3, 2022 noon Kidney Month	Telemedicine in Nephrology	Dr. Lekha George TTUHSC – Lubbock
March 10, 2022 noon World No Tobacco Day – May 31	Telehealth and related Technologies to help patient Quit Smoking	Dr. Karam-Hage Dr. Diane Beneventi MD Anderson Medical Center Sara Tello – co-moderator
May 12, 2022 noon Mental Health Awareness Month	Telemedicine in Behavioral Health	Dr. Sarah Wakefield TTUHSC Chair, Psychiatry
May 19, 2022 noon Speech & Language Pathology Week	Speech -Language Pathology Services: A Bright Virtual Future	Sherry Sancibrian Professor, Speech & Language Pathology TTUHSC
June 2, 2022 noon	Telemedicine in Pediatrics	Dr. Helen Hughes Director of Pediatric Telemedicine Johns Hopkins University
July7, 2022 noon	Trauma Informed Care in the Primary Care Setting and Telehealth	Elizabeth Scott, M.Ed. COMBEST TTUHSC School of Nursing
August 4, 2022 noon	**Tele-stroke and Tele-Neurology: Lessons Learned in Wild West.**	Stephanie Lyden, MD University of Utah Direct, Tele Stroke
September 1, 2022 noon	Tele-Surgery	Dr. John Griswold TTUHSC
October 6, 2022 noon	Virtual Care in the Emergency Room: Current and Future Trends	Emily Hayden, MD MGH–Harvard University
November 3, 2022 noon	Building a Telemedicine Center of Excellence: UMMC experience	Dr. Saurabh Chandra UMMC Chief Telehealth Officer
December 1, 2022 noon HIV/AIDS Awareness Month	Telemedicine in HIV and Infectious Disease Cases	Todd Vento, MD Todd.Vento@imail.org Medical Director, Telehealth Infectious Diseases Intermountain Health Care

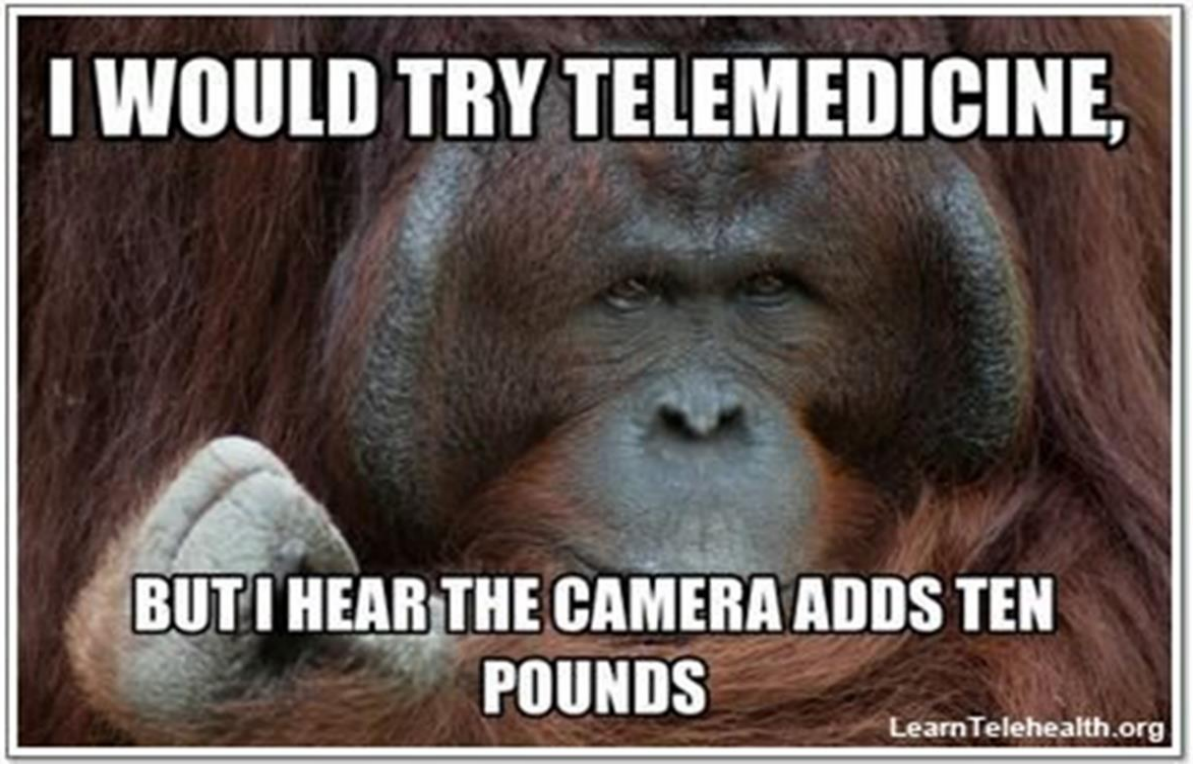
Future of Telemedicine

EVOLUTION



1. Reach medically underserved area: rural, battlefields, submarines, spacecraft.
2. Eliminate long distance travel and financial burdens and dangers
3. Allow for multi-specialty collaboration in real time
4. Secure patient privacy.
5. Improvement in technology
6. Broadband access for all = Health for all.

QUESTIONS



GET IN TOUCH

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We want to hear from you!

https://www.surveymonkey.com/r/RCYLXYT

RURAL HEALTH WORKSHOP

Lunch and Learn: 12:00 p.m. – 1:15 p.m.

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