Project ECHO : Viral Hepatitis in sub-Saharan Africa

Extension for Community Health Outcomes

Moving Knowledge Instead of Patients

Project ECHO

Mission

- **Founder: Dr Sanjeev Arora, Albuquerque, New Mexico**
- To democratize medical knowledge and get best practice care to underserved people all over the world

Goals

- Develop capacity to safely and effectively treat HCV
- Develop a model to treat complex diseases in rural locations and developing countries
- Expanded into 23 countries, managing a range of chronic conditions: viral hepatitis – women's health

Touch the lives of 1 Billion people by 2025

ECHO Model of Care

Four basic principles of ECHO model of care:

1. Using technology to leverage scarce resources in order to deliver the right knowledge, training and administration, to the right people, at the right time

2. Share best practices to reduce disparities of healthcare

3. Employ case-based learning to master disease complexities

4. Monitor outcomes to ensure ongoing benefit

Arora S, Geppert CM, Kalishmanv S, et al: Acad Med. 2007 Feb;82(2): 154-60

How does ECHO work?

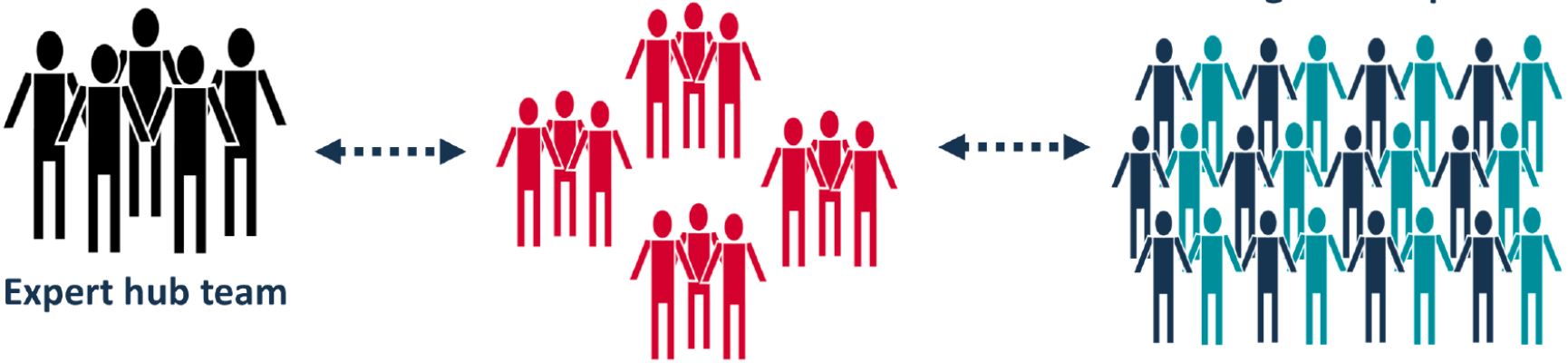
- **ECHO links expert specialist teams** at an **academic 'hub'** with primary care clinicians in **local communities (the 'spokes')**
- Together, they participate in **weekly - monthly teleECHO clinics**, which are like **virtual grand rounds,** combined with mentoring and patient case presentations
- **15 minute didactic lecture**
- The clinics are supported by multipoint telehealth video technology
  - ZOOM
- **Train doctors, nurses, pharmacists, community healthcare workers and their teams within their own communities**
- **Establish learning loops**

ECHO vs. Telemedicine

TeleECHO™ Clinic

ECHO supports community based primary care teams

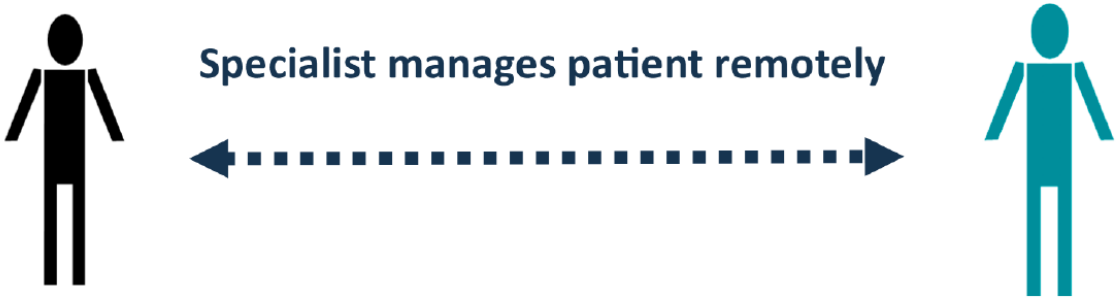
Patients reached with specialty knowledge and expertise



Expert hub team

Learners at spoke site

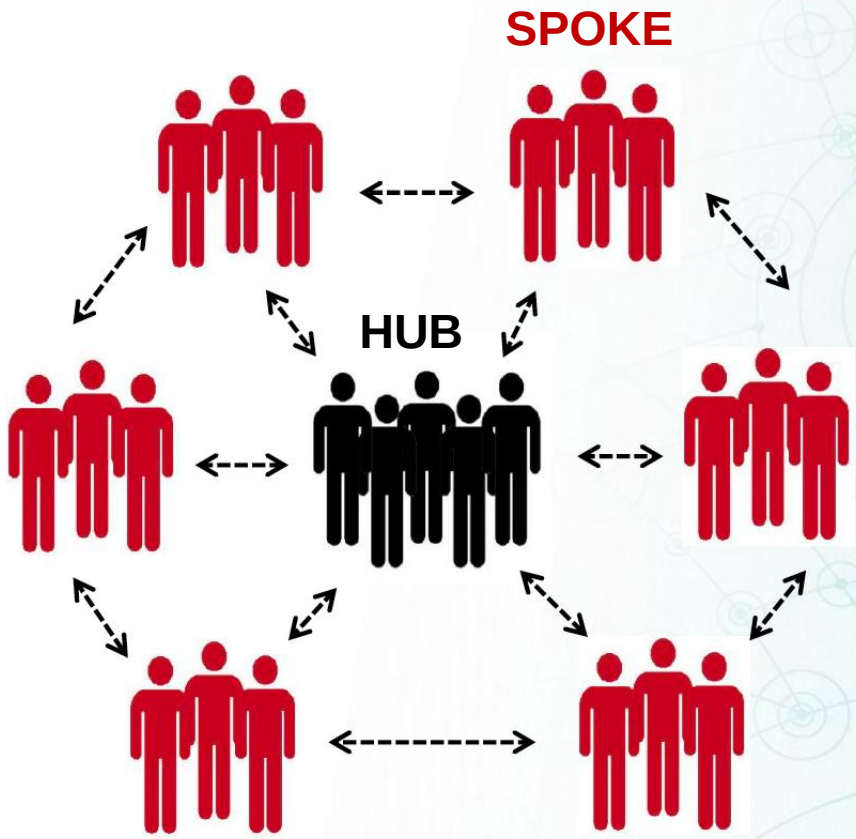
Traditional Telemedicine



Specialist manages patient remotely

Learning Loops

- Interactive learning environment
- Co-management of cases
- Learning by doing
- Learning from didactics
- Learning from each other
- Collaboration in solving problems



NEJM : 364: 23, June 9-2011, Arora S, Thornton K, Murata G

HCV Case Presentation Form

UNM HEALTH SCIENCES CENTER

MINISTRY OF LABOUR HEALTH AND SOCIAL AFFAIRS

Project ECHO

Georgia HCV Elimination Project Initial Presentation Form

Presentation Date: _____ Site: Mtcheveli Clinic Clinician: _____

General Information/Demographics

Presentation ID		**Year of Birth:**		**Gender:** ☐ Male ☐ Female	
Ethnicity:	Other:	**Race:**	☐ Caucasian ☐ Other:	**HCV Genotype:**	

Suspected Route of HCV Transmission (Check all that apply)

☐ Recipient of clotting factor concentrates	☐ Blood transfusion or solid organ transplant	☐ Needlestick injury in healthcare setting
☐ Hemodialysis	☐ Birth to HCV-infected mother	☐ Sharing contaminated personal items with HCV-infected person
☐ Sex with HCV-infected person	☐ Non-professional tattoo	☐ Cosmetic transmission (manicure, barber, etc.)
☐ Current or former injection drug user (even once) If yes, injection drug use in the last 12 months? ☐ Yes ☐ No		☐ Other invasive medical procedures Type:
☐ Other:		☐ unknown

Medical Diagnoses (Check all that apply)

HCV Year of diagnosis:		☐ Hepatocellular Carcinoma Year of Diagnosis:	
☐ Cirrhosis Evidence of decompensation: ☐ Ascites ☐ Variceal bleed ☐ Hepatic encephalopathy		☐ Previous HCV Treatment Year: Previous Drug Regimen: Duration of treatment in weeks: Response: --- Year: Previous Drug Regimen: Duration of treatment in weeks: Response:	
☐ Liver Biopsy		Year: Results:	
Known extrahepatic manifestations	☐ Cryoglobulinemia	☐ Vasculitis	☐ Membranoproliferative Glomerulonephritis
	☐ Membranous Nephropathy	☐ Lichen Planus	☐ Porphyria Cutanea Tarda
	☐ B Cell Non-Hodgkin Lymphoma	☐ Multiple Myeloma	☐ Other:

☐ Asthma	☐ Brain Injury	☐ Chronic Pain	☐ COPD
☐ Diabetes Mellitus	☐ Hepatitis B, chronic	☐ Hepatitis D	☐ HIV
☐ Hypertension	☐ Peripheral Neuropathy	☐ Renal Insufficiency	☐ Seizure Disorder
☐ Coronary Artery Disease		☐ Other:	
☐ Auto Immune Disease	Type of disease:		
☐ Cancer	Year:	Type of Cancer:	
☐ Solid Organ Transplant	Year:	Organ transplanted:	

Laboratory

Basic Laboratories		Date (DD/MM/YYYY)			Date (DD/MM/YYYY)
RBC	M/µL		PT	s	
WBC	K/µL		INR		
ANC	K/µL		Albumin	g/L	mg/dL
HGB	g/L	mg/dL	ALT	IU/mL	
HCT	%		AST	IU/mL	
Platelets	K/µL		GGT	IU/mL	
ESR	mm/hr		Alk Phos	IU/mL	
Creatinine	µmol/L	mg/dL	T. Bili	µmol/L	mg/dL
Glucose	mmol/L	mg/dL	Direct Bili	µmol/L	mg/dL
CRP	mg/L		Total Protein	g/L	mg/dL

Other Essential Results	Date (DD/MM/YYYY)	Result		Date (DD/MM/YYYY)	Result
Fe		µg/dL	HCV Genotype		
TIBC		µg/dL	HCV Viral Load		
Ferritin		ng/dL	TSH		IU/mL
AFP		ng/dL	ANA		
HIV Ab		☐ Reactive ☐ Non-reactive	Other:		

Diagnostic Tests

Test	Date (DD/MM/YYYY)	Result		
FIB-4		Final Result:		
Ultrasound		☐ Normal	☐ Ascites	☐ Hepatomegaly
		☐ Splenomegaly	☐ Liver mass	☐ Consistent with fatty infiltration
		☐ Other:		
Elastography		Score: _____ kPa		
Upper Endoscopy		☐ Normal	☐ Small varices	☐ Medium varices
		☐ Large varices	☐ Banding performed	
		☐ Other:		
CT/MRI		☐ Normal	☐ Ascites	☐ Hepatomegaly
		☐ Splenomegaly	☐ Liver mass	☐ Consistent with fatty infiltration
		☐ Other:		

Arora S, Kalishman S, Thornton K, Dion D et al: Hepatology. 2010 Sept;52(3):1124-33

Benefits of ECHO

Regular active participation in teleECHO clinics combined with formal teaching allows the ***rural health care providers to progressively "specialize"*** and be able to manage their own patients at their place of residence

- Rapidly upscales training of local workforce
- Increases patient access to treatment
- Decreases related morbidity and mortality
- Decreases specialist clinic waiting times

Arora S, Thornton K, et al. Hepatology. 2010 Sept; 52(3):1124-33

SCAN-ECHO

2011: Veterans Health Administration adopted SCAN-ECHO (Specialty Care Access Network - Extension for Community Healthcare Outcomes) : Chronic liver disease

- Assessed efficacy of SCAN-ECHO visit within the context of a regional cohort of 62 237 patients with liver disease from 1/6/2011 to 31/3/2015
- **513 SCAN-ECHO pts compared to 62 234 pts with no ECHO visits**
  - ECHO patients were younger, rural with HCV, HBV or cirrhosis
- **Matched patients with SCAN-ECHO program consultation**
  - ***46% less likely to die during follow-up period, HR 0.54***; 95% CI 0.36-0.81; P = 0.003) compared to those with no ECHO visits
  - More likely to undergo surveillance for oesophageal varices and HCC
  - >40% patients had hepatitis C
  - ***Similar survival compared to traditional in-person visits***

Su et al; Hepatology 2018;00:1-8

ECHO PROGRAM : SSA

Implementation of supranational model in four pilot countries : South Africa, Nigeria, Ghana and Ethiopia

- Development of hub and spoke services to diagnose and treat a greater number of HBV and HCV infected individuals than are currently treated

- ***Provides a platform in SSA for:***
  - Best-practice care for patients with complex health conditions
  - Outcomes research

By "Democratizing" knowledge and practice, we can exponentially increase local capacity to diagnose and treat the disease, in order to

meet the 2030 WHO elimination targets for chronic viral hepatitis

Can be expanded to management of other chronic conditions

ECHO PROGRAM : SSA

HUBS

South Africa

- Liver clinic, Groote Schuur Hospital
- University of Witwatersrand & Donald Gordon Medical Centre

SPOKES

Liver Clinic, GSH: Start with centres already part of our referral base

- Worcester, Paarl, George, Mthatha, Port Elizabeth, East London

4 Internationally linked spoke centres

- **Nigeria:** The University of Lagos, Lagos ***(Prof Funmi Lesi)***
- **Ghana:** Kwame Nkrumah University of Science and Technology, Kumasi ***(Prof Mary Afihene)***
- **Ethiopia:** Adis Ababa University Medical School***, (Prof Abate Shewaye)***
- **London:** UCL Institute of Liver and Digestive Disease and Kings College Hospital ***(Prof G Dusheiko); support and guidance***

Implementation : ECHO SSA

The SSA ECHO Viral Hepatitis program will support:

- A series of didactic lectures and case discussions
- Clinically approved cost effective prescribing of drug treatments in accordance with local procurement policy
- Spokes at the University of Lagos, Kumasi Hospital, Ghana and Adis Ababa developing into Hubs with their own spokes
- Progressively increase the number of spokes in SA

Implementation : ECHO SSA

Project ECHO programs

- Highly-regulated system of anonymizing and encrypting data and personal information to ensure data protection, confidentiality and security

- ***Expanded to treat other chronic conditions using the same infrastructure***
  - Diabetes Mellitus and hypertension
  - Rheumatology
  - Palliative care
  - Oncology

- ***Already HIV ECHO programs in Namibia and Kenya***

- ***Planned Oncology program: Kimberley Hospital, SA***

Successful Expansion into Multiple Diseases

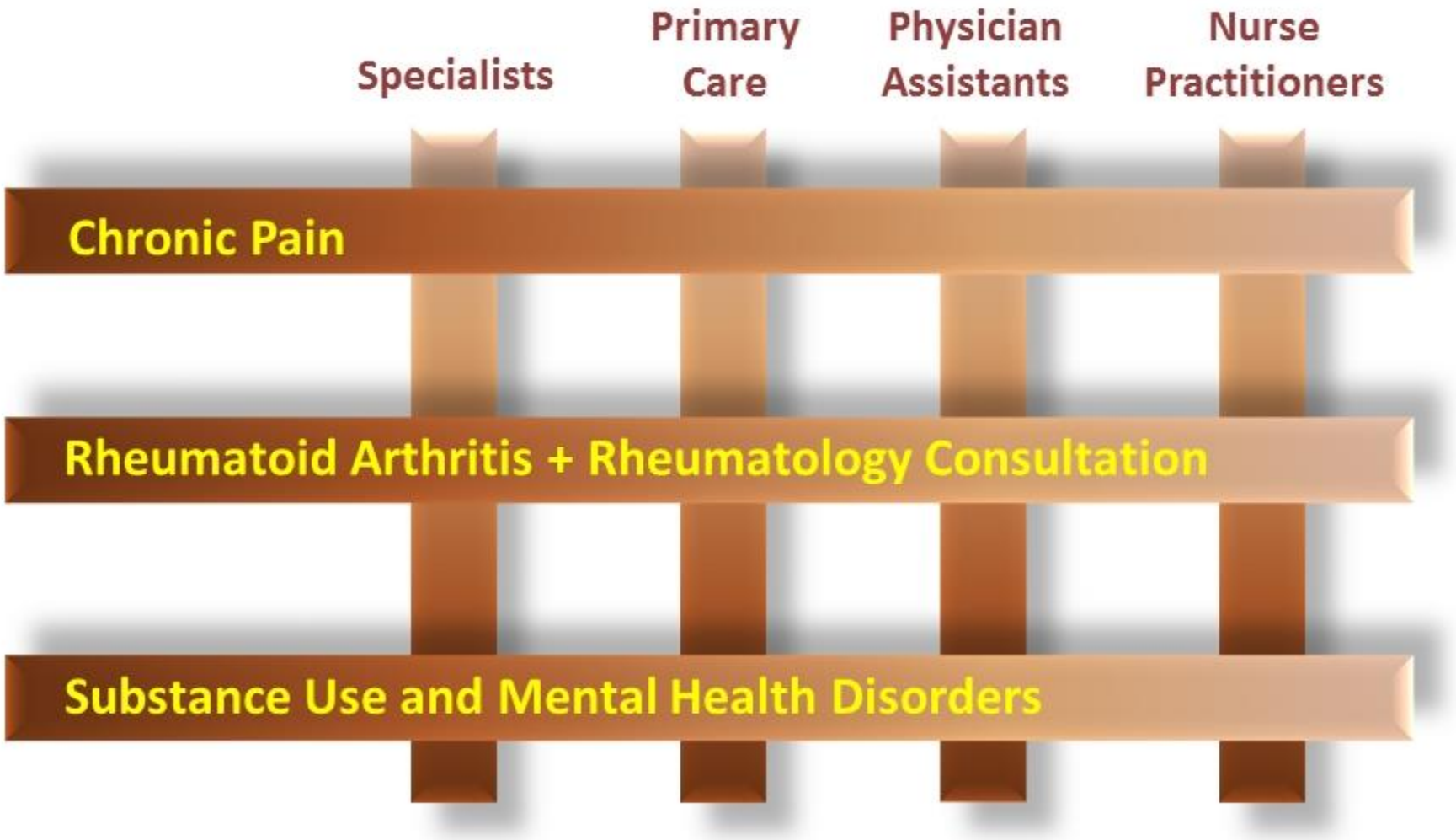
	Mon	Tue	Wed	Thurs	Fri
8-10 a.m.	Hepatitis C • Arora • Thornton	Diabetes & Endocrinology • Bouchonville		Geriatrics/ Dementia • Herman	Palliative Care • Neale
10-12 a.m.	Rheumatology • Bankhurst	Chronic Pain • Katzman	Integrated Addictions & Psychiatry • Komaromy		Complex Care • Neale • Komaromy
2-4 p.m.	HIV • Iandiorio • Thornton		Prison Peer Educator Training • Thornton	Women's Health & Genomics • Curet	

UNM HEALTH SCIENCES CENTER

Project ECHO®

Force Multiplier

Use Existing Community Clinicians



Copyright 2013 Project ECHO®

Project ECHO: Viral Hepatitis in sub-Saharan Africa

Extension for Community Health Outcomes

Moving Knowledge Instead of Patients

Start-up funding from Gilead Grants Program (G Dusheiko)

- **First ECHO clinic February 2019**

ECHO Project : Infrastructure

Videoconferencing Hardware : HUBS

- Microphones system: 1500 USD x 13.5 = R 20 250
- Speakers system: 1000 USD x 13.5 = R 13 500
- Webcam: 1500 USD x 13.5 = R 20 250
- 2 x high definition displays/monitors: 4000 USD = R 54 000
- Computer: 1500 USD x 13.5 = R20 250
- Network: WIFI or LAN
- Videoconferencing Software: ZOOM
  - Provided free from ECHO

Total : R 128 250

ECHO Project : Infrastructure

Videoconferencing Hardware : SPOKES

- Microphones system: 500 USD x 13.5 = R 6 750
- Speakers system: 1000 USD x 13.5 = R 13 500
- Webcam: 1500 USD x 13.5 = R 20 250
- 1 x high definition displays/monitors: 2000 USD = R 27 000
- Computer: 1500 USD x 13.5 = R20 250
- Network: WIFI or LAN
- Videoconferencing Software: ZOOM
  - Provided free from ECHO

Total : R63 450

ECHO PROGRAM : SSA

The team structures would include:

- ***Hub medical director***
  - Recruitment of spokes and management, curriculum development
- ***Clinicians: Specialists (Hubs), primary healthcare clinicians (spokes)***
- ***Clinical co-ordinators***
  - Manages day-to-day supervision of ECHO clinics and data collection
- ***IT co-ordinators***
- ***Pharmacists***
- ***Social worker***
- ***Nursing sisters***
- ***Community health workers***