Possible Futures:
Virtual Care after the Pandemic

Medical Director of Virtual Care

The Queen's Health Systems

Matthew Koenig, MD

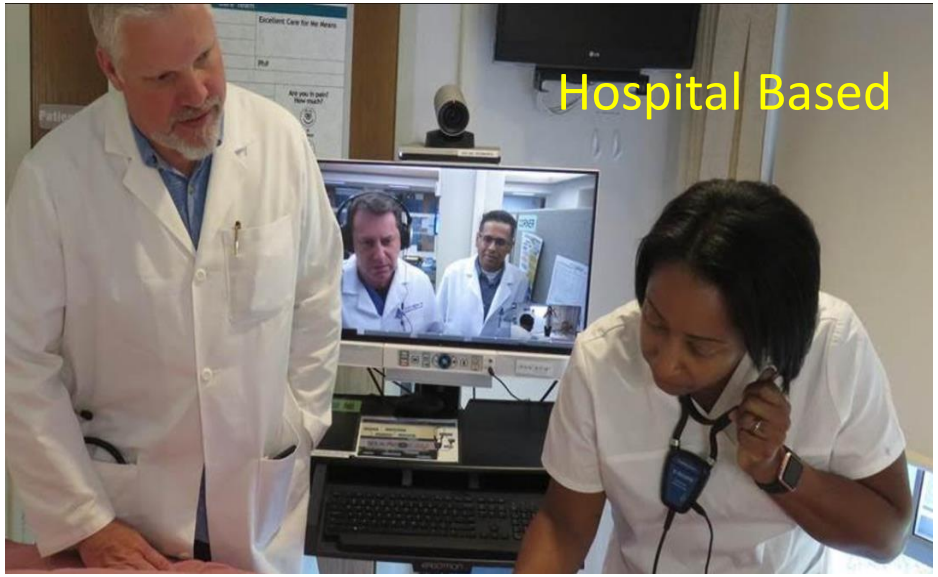
Associate Professor of Medicine

University of Hawaii John A Burns School of Medicine

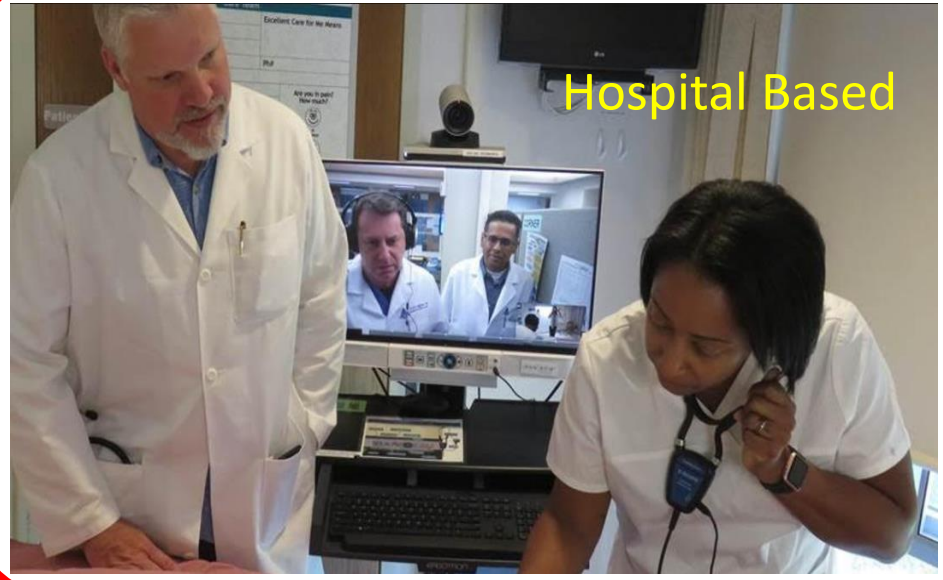
THE QUEEN'S HEALTH SYSTEMS

JOHN A. BURNS SCHOOL OF MEDICINE · UNIVERSITY OF HAWAII MANOA

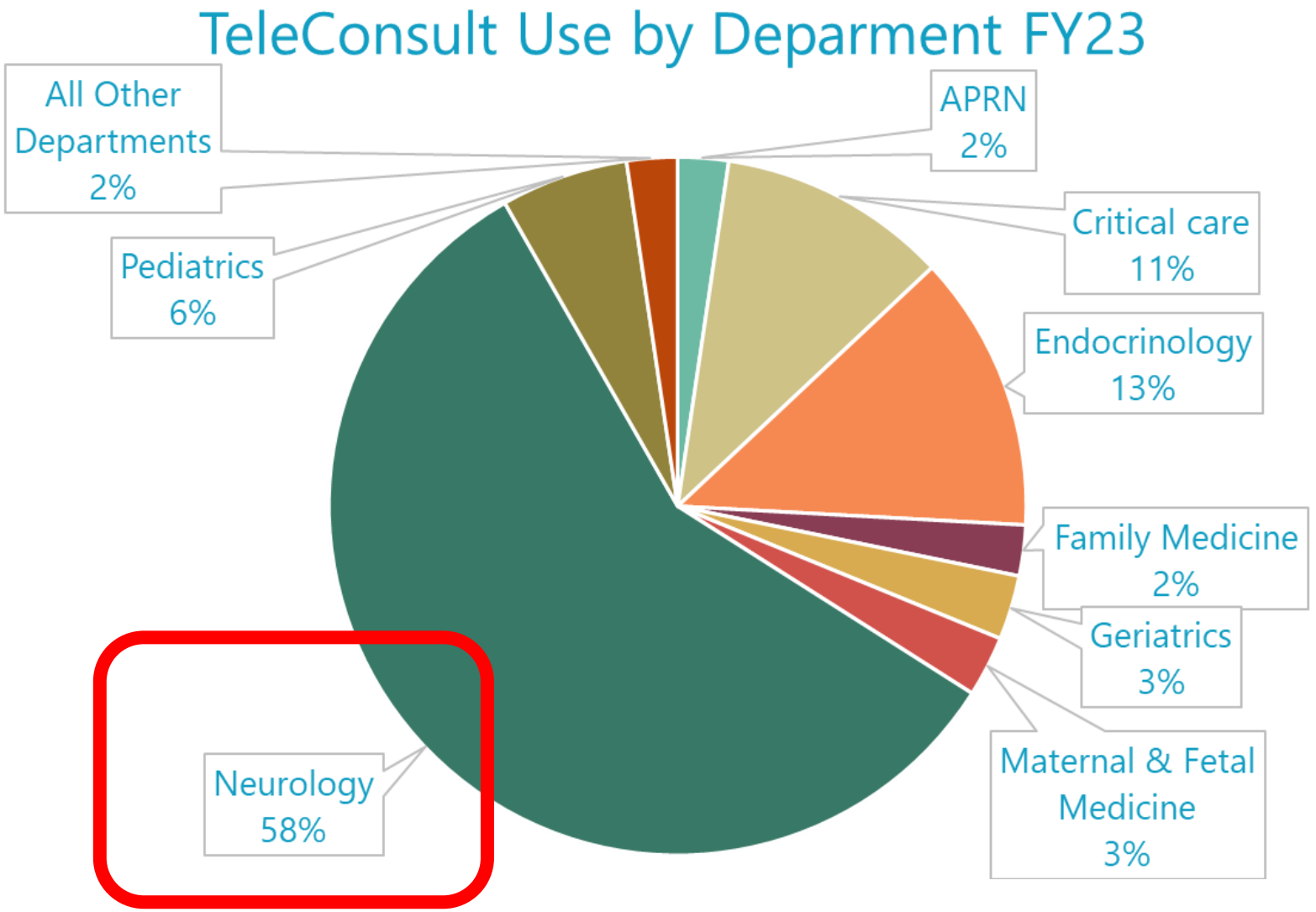
Virtual Care



Virtual Care



Teleconsult



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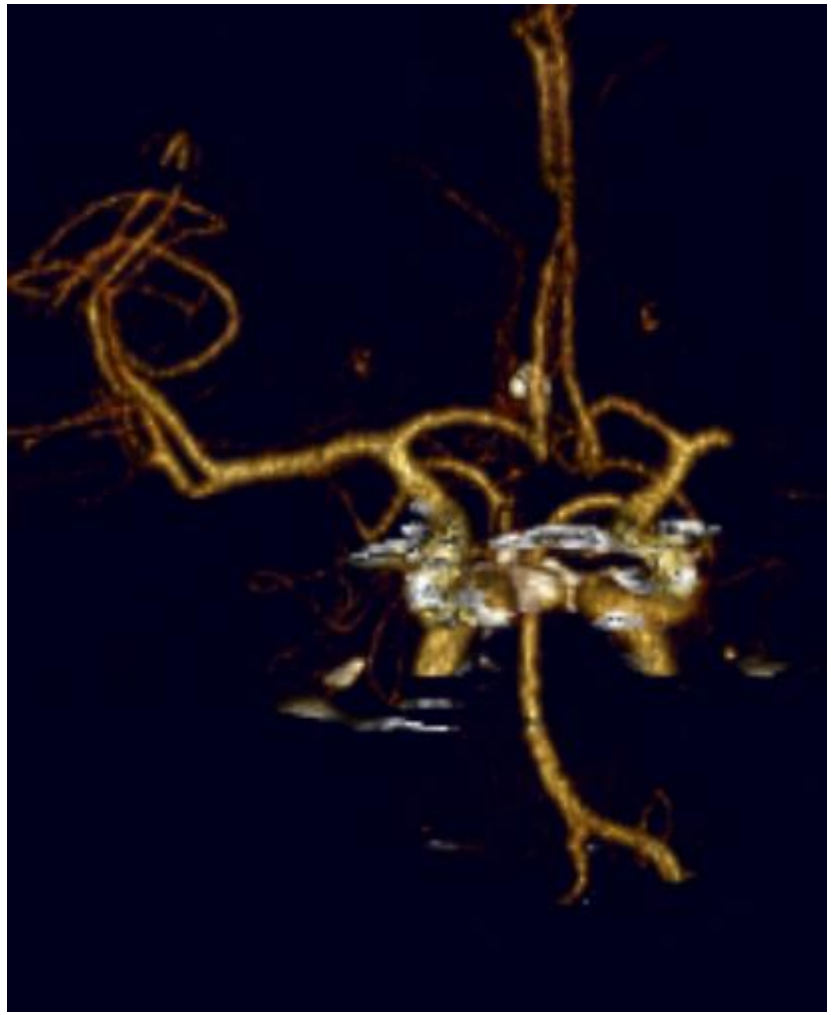
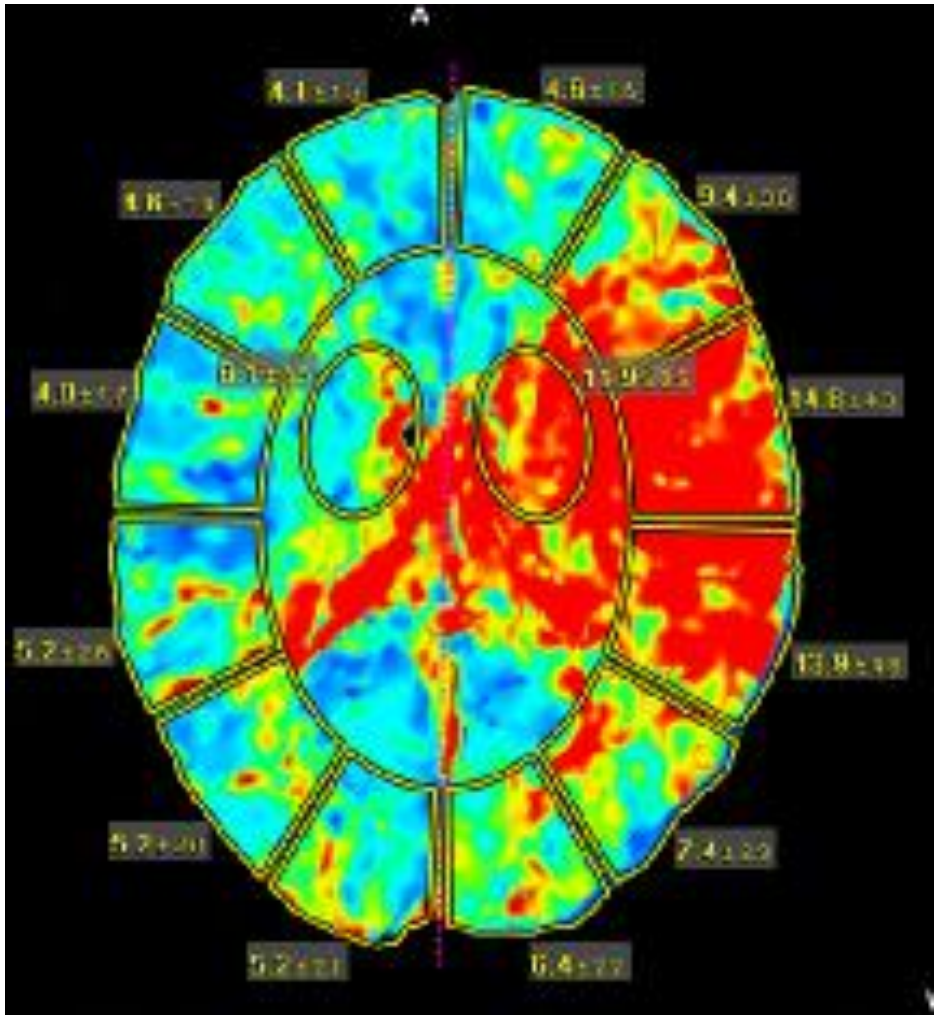
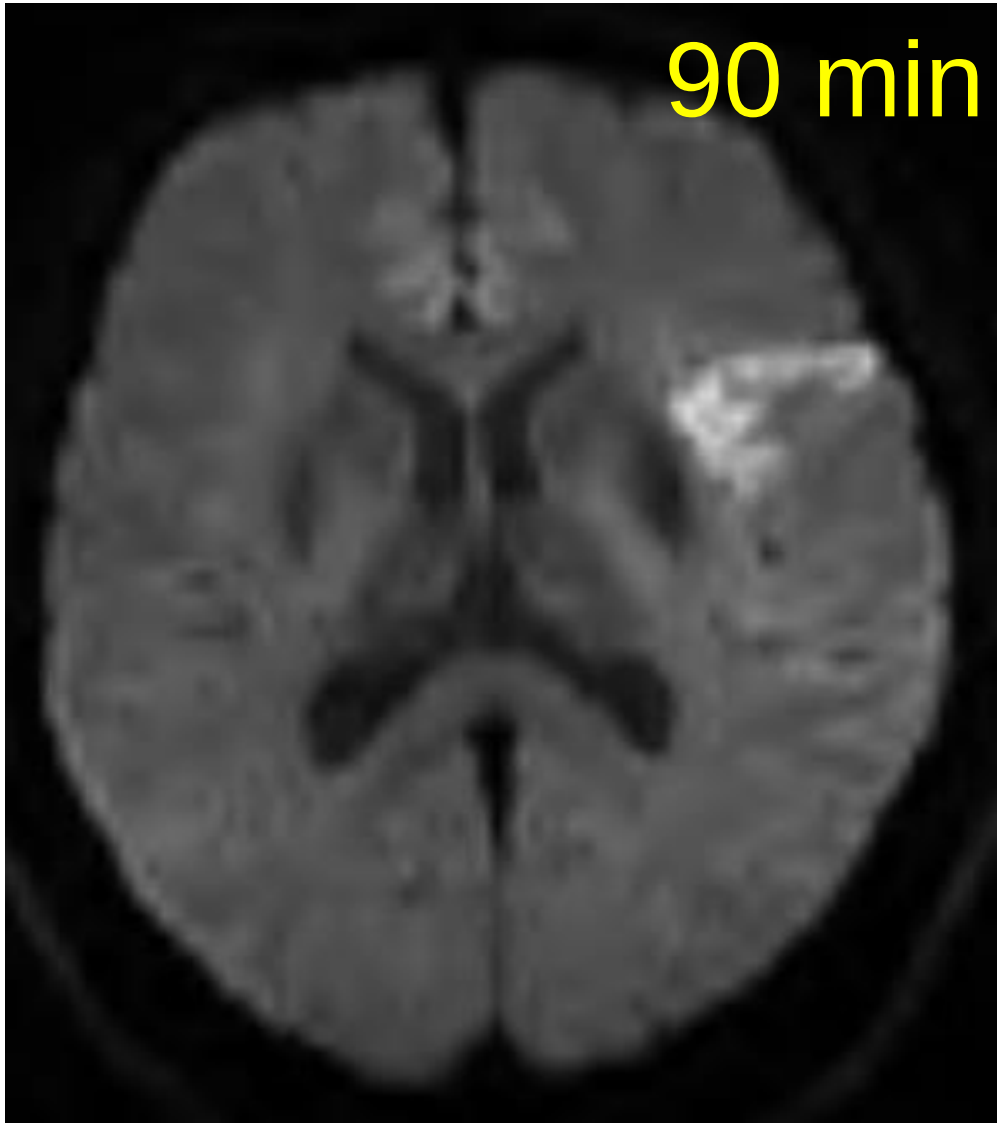
TOTAL Teleconsults for FY23 = 1,852

Why is treatment of stroke so time-dependent?
Why is telemedicine so important for stroke?

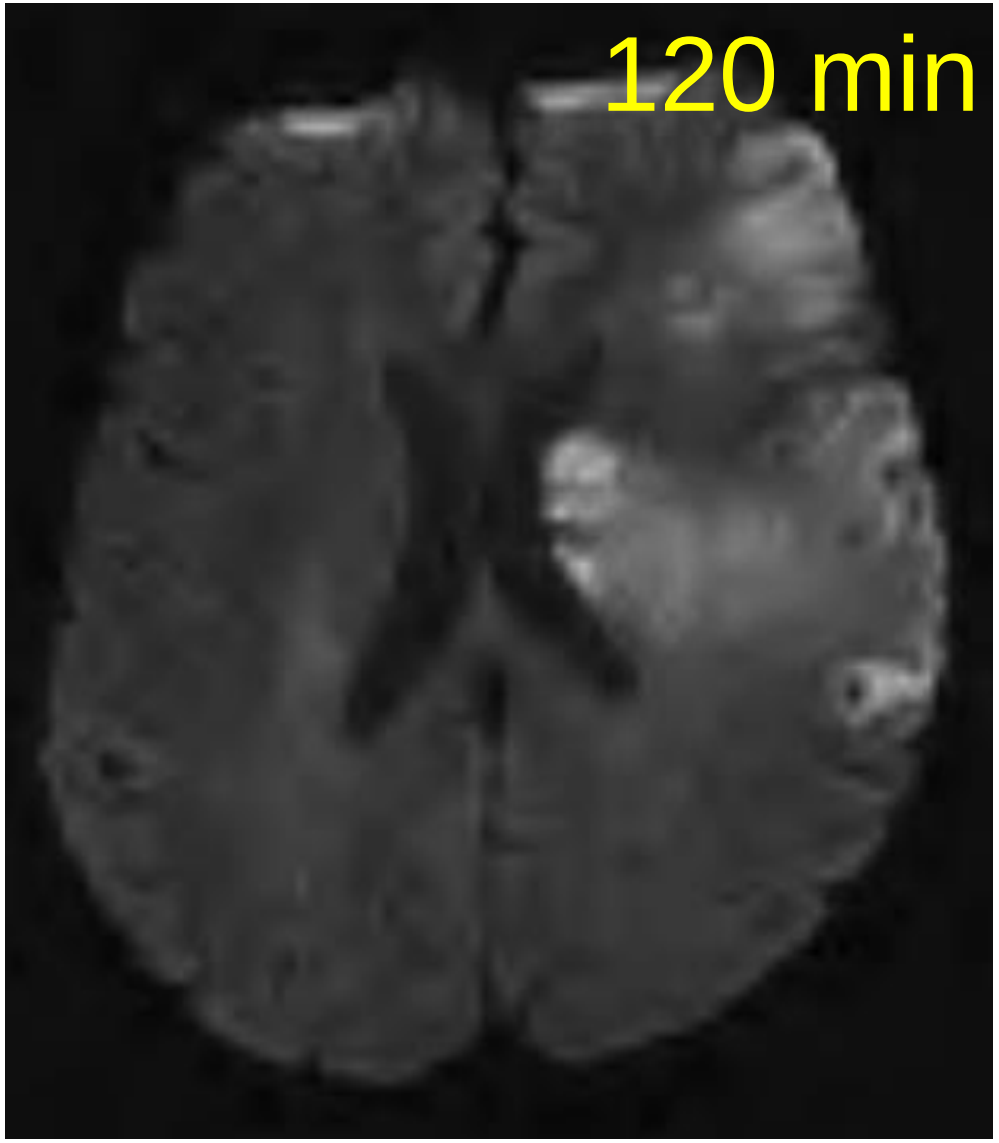




After blockage of blood flow, brain cell death begins at a rate of 1.9 neurons/min



Golden time to treatment:
90 min from symptom onset



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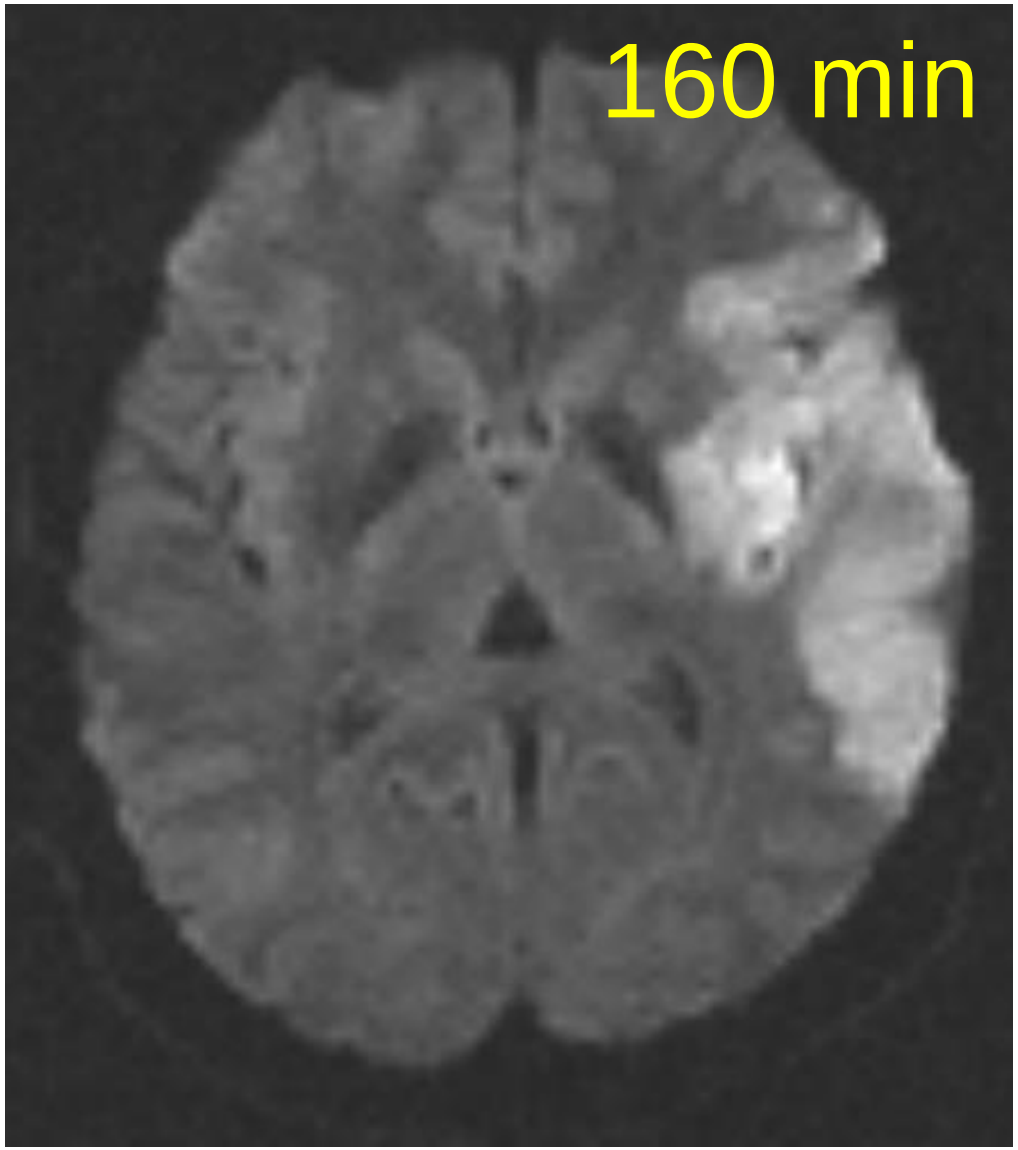

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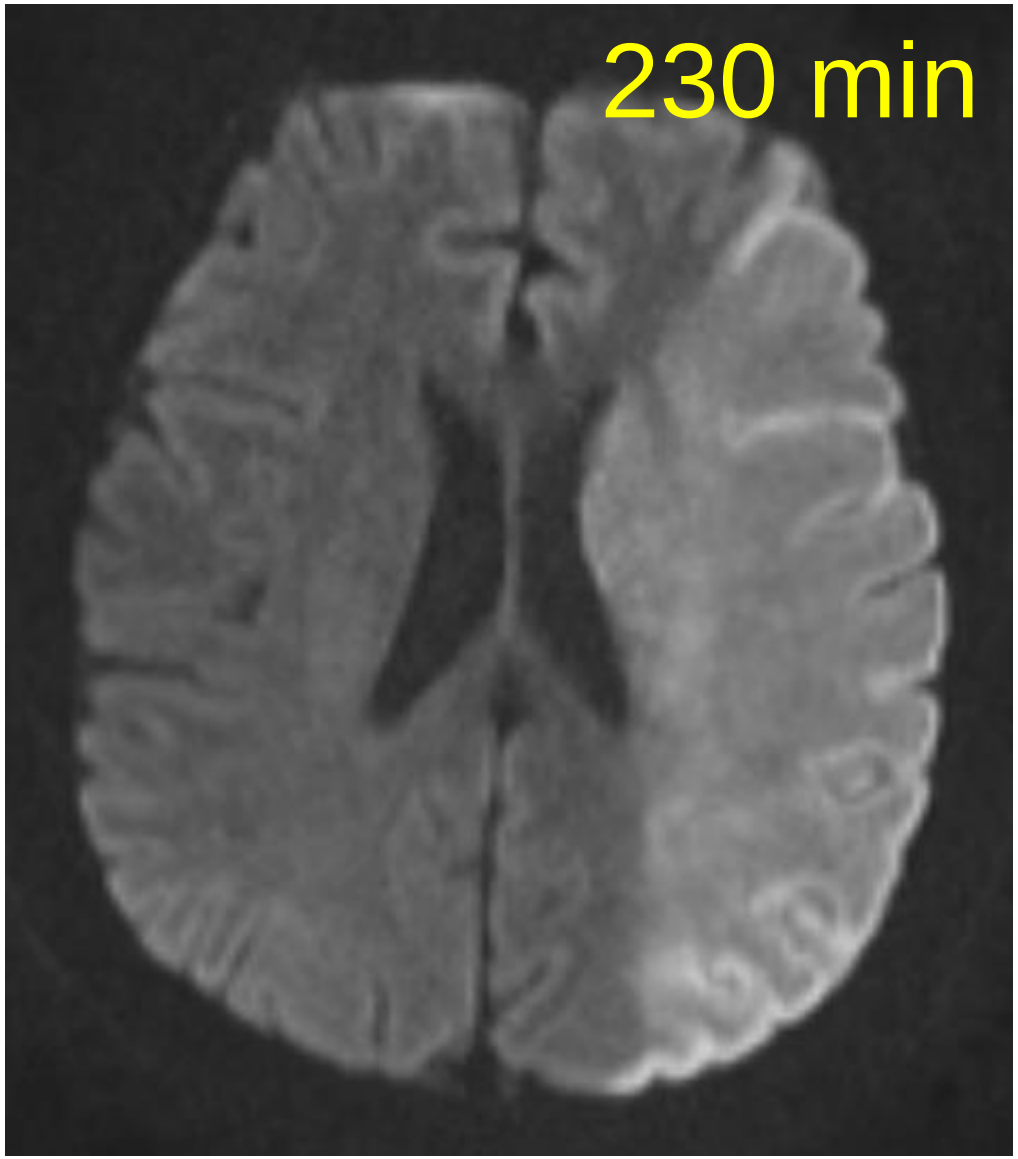
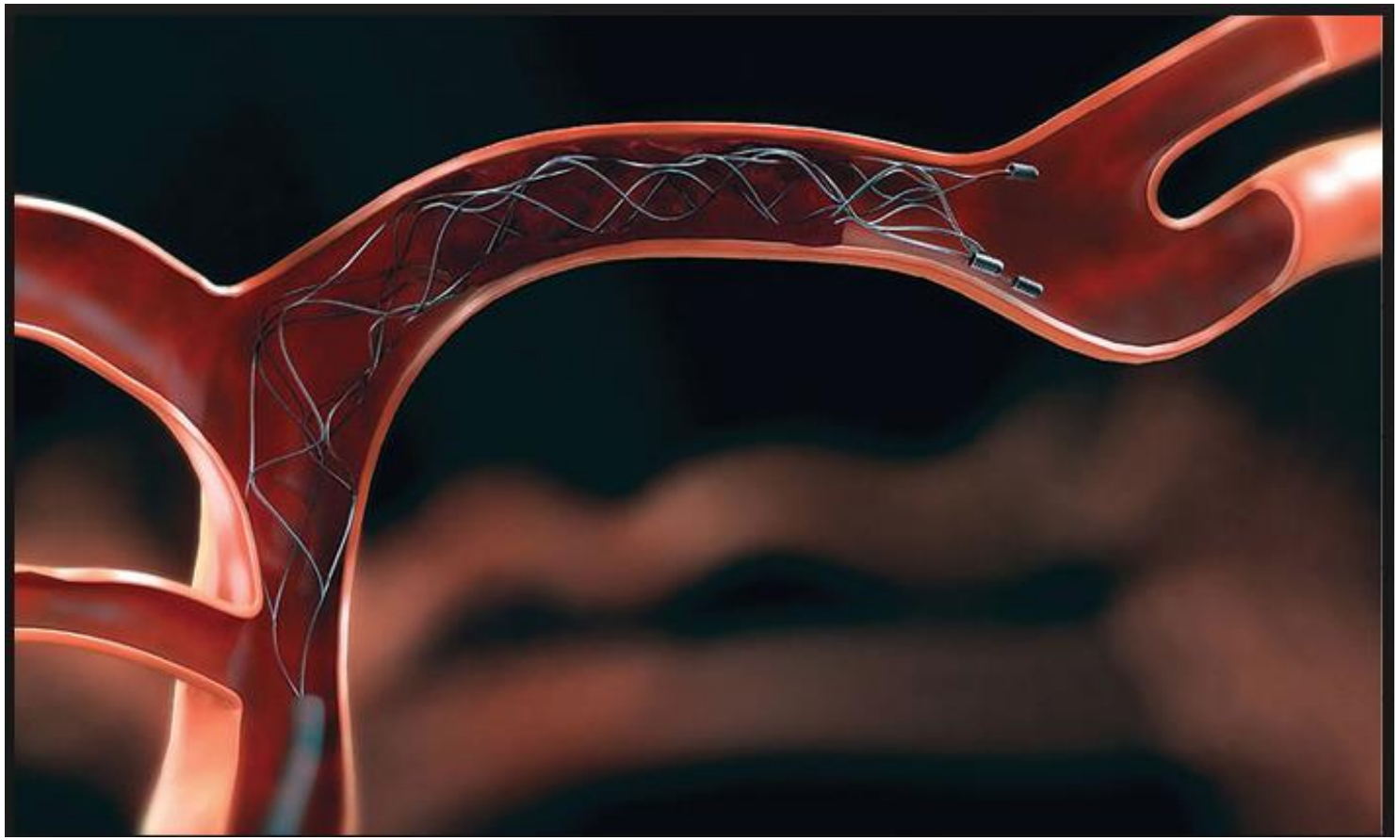


Golden time to treatment:
90 min from symptom onset

Stroke Treatments

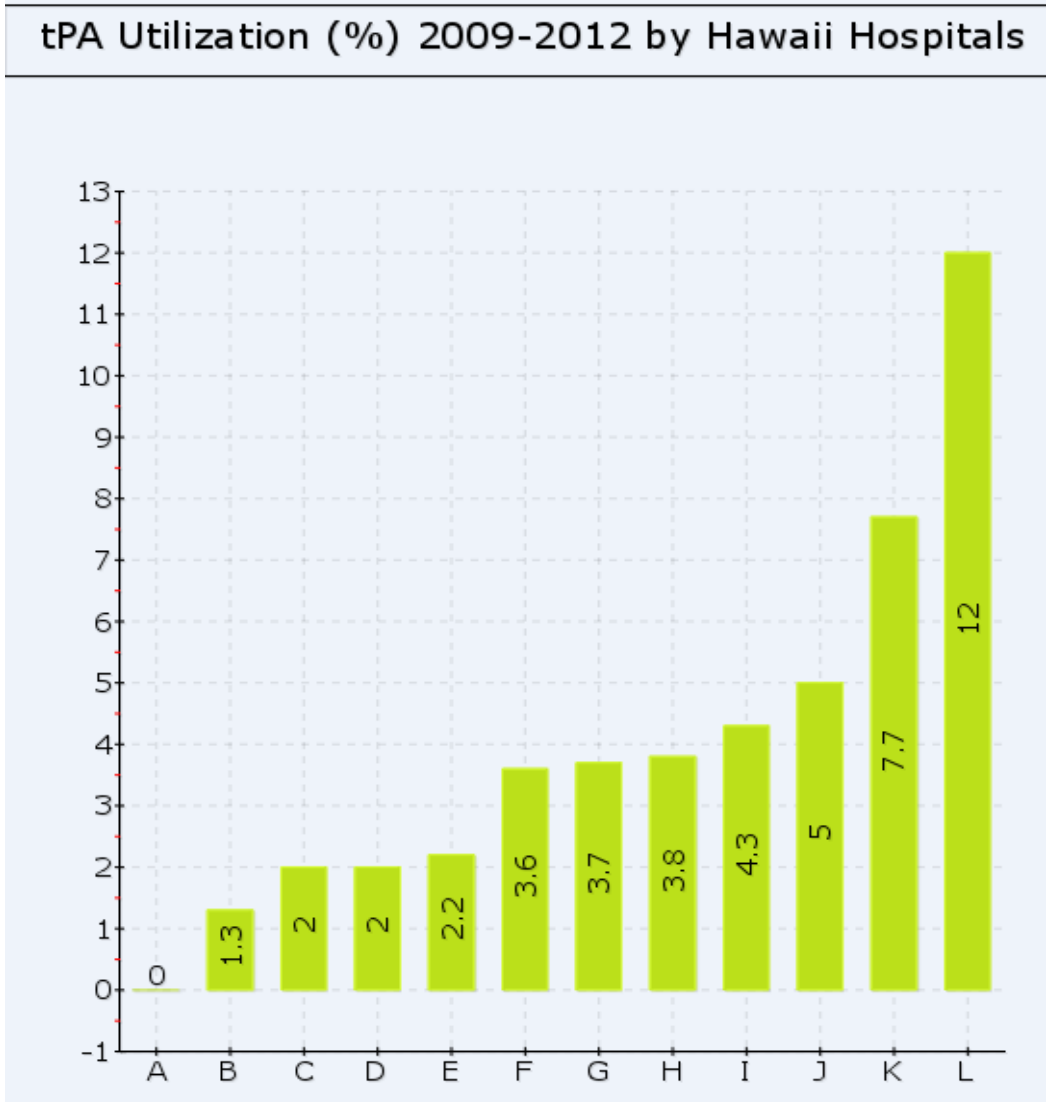
Most strokes



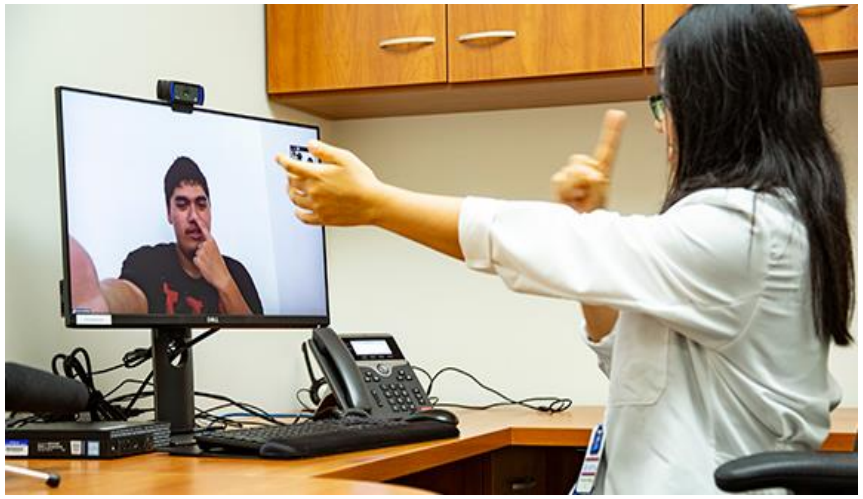
20% of strokes with large vessel occlusion (LVO)

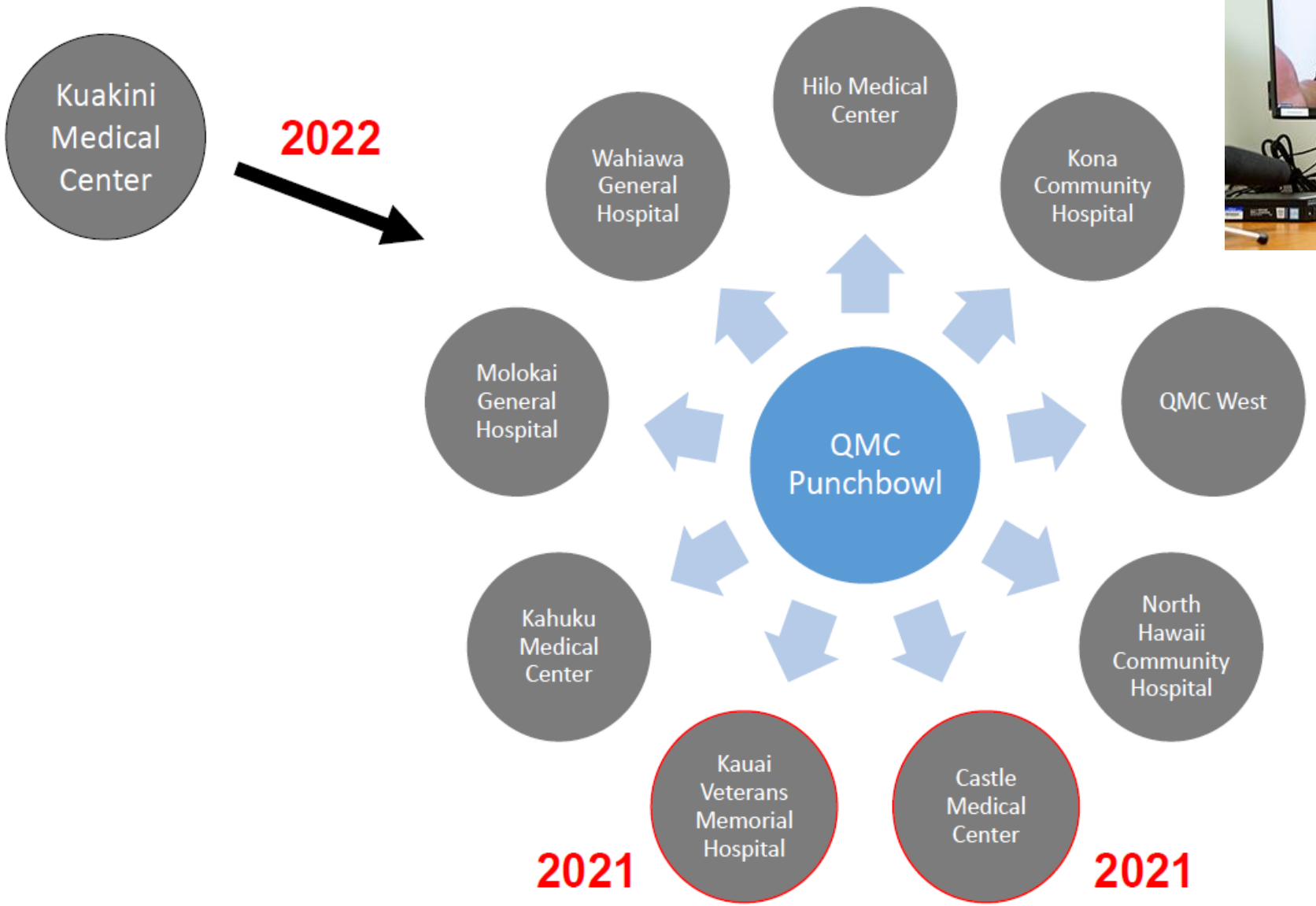
Stroke in Hawaii: What's the Problem to Solve?

- 3,000 strokes per year in Hawaii
- Very low thrombolytic (clot buster) treatment rate in Hawaii in 2009 (~2% of strokes)
- High variability in tPA utilization among Hawaii hospitals due to poor neurology coverage
- Long delays in treatment time due to poor systems of care



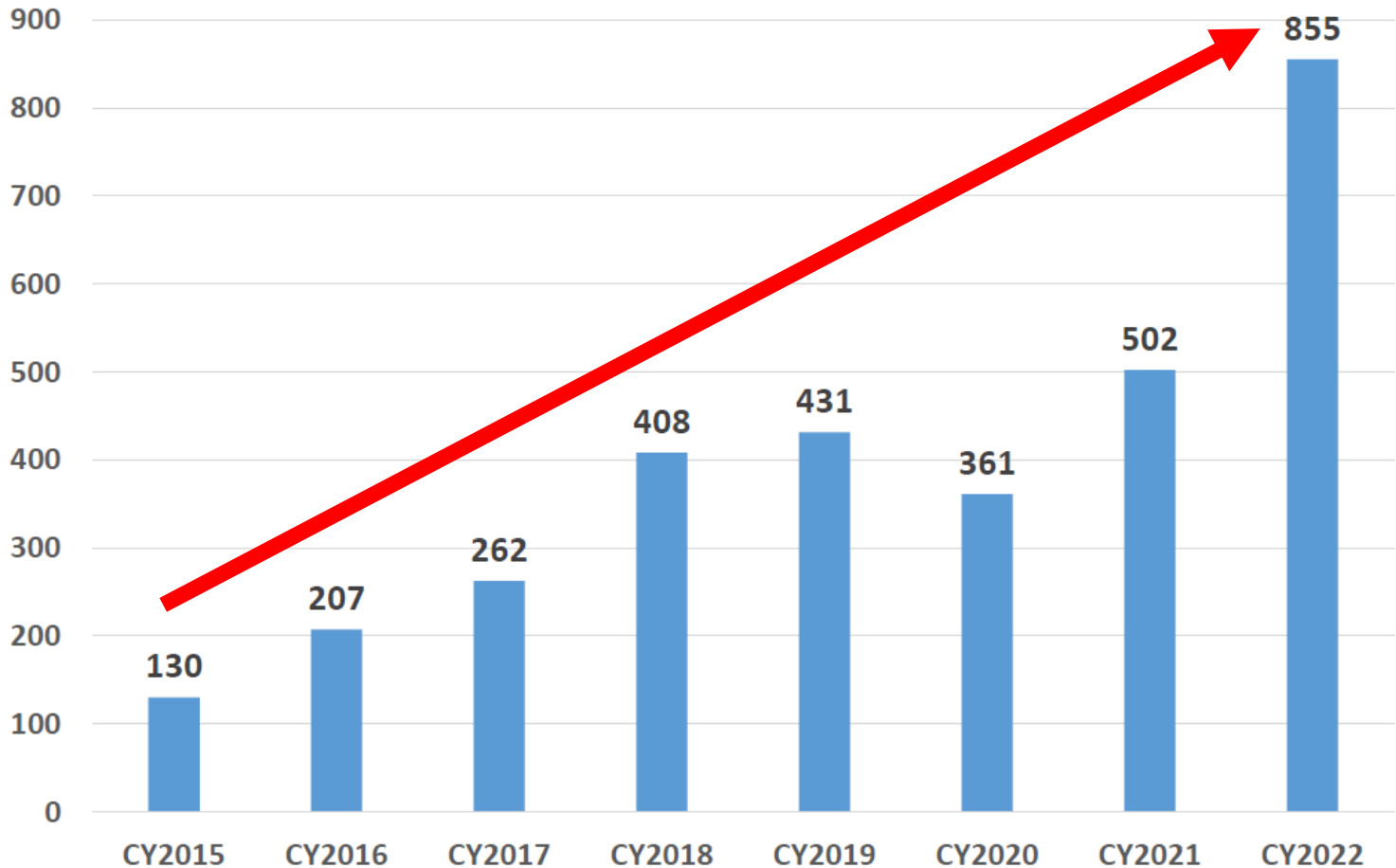
Current Telestroke Network





Impact of Statewide Telestroke Network on Acute Stroke Treatment in Hawai‘i

Hally M. Chaffin BA; Kazuma Nakagawa MD, FAAN, FAHA; and Matthew A. Koenig MD, FNCS



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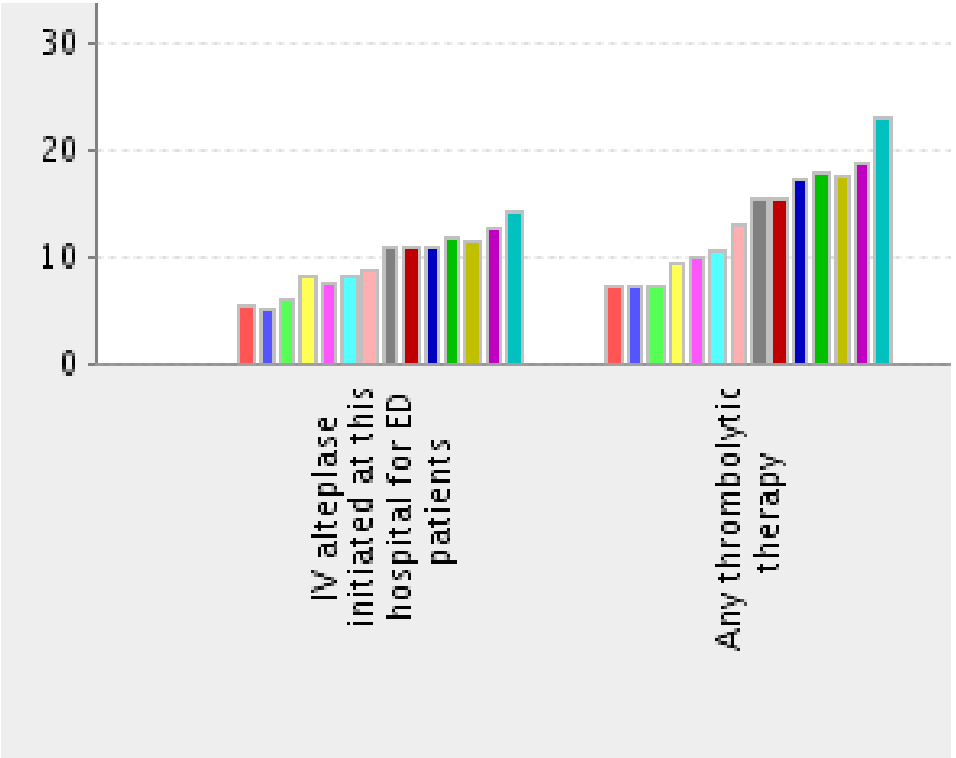
Increase in thrombolytic therapies 2009-2023

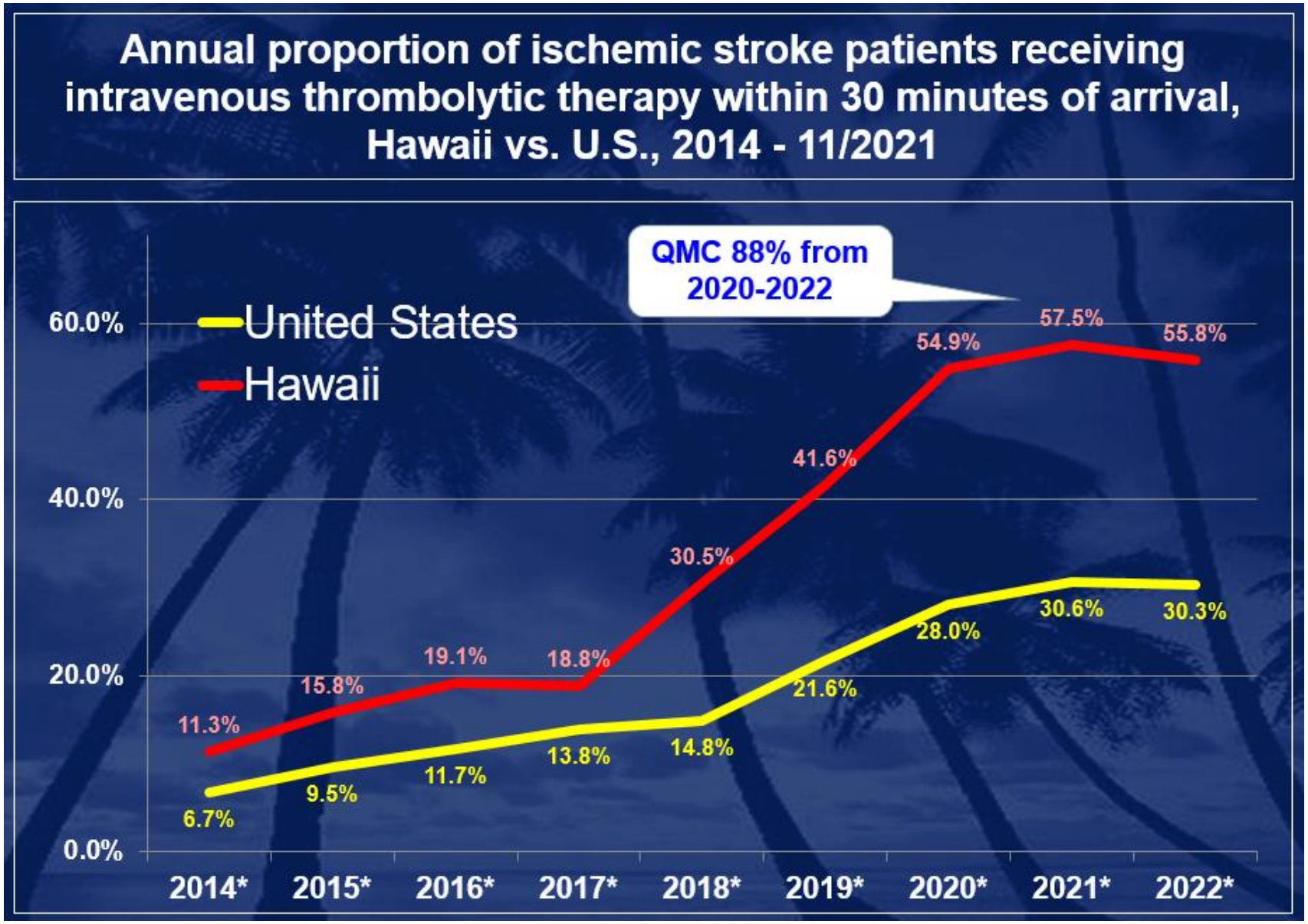


Thrombolytic Therapies

Note: Time periods/Categories at the end of the graph and data table have been omitted because there were no patient records during that time.

Benchmark Group	Time Period	IV alteplase initiated at this hospital for ED patients	IV alteplase initiated at this hospital for Inpatients	IV alteplase initiated at outside hospital and not initiated at this hospital	IA catheter-based reperfusion at this hospital for ED patients	IA catheter-based reperfusion at this hospital for Inpatients	IA catheter-based reperfusion at outside hospital	Any thrombolytic therapy	Total
All HI Hospitals	2009	59 (5.2%)	1 (0.1%)	9 (0.8%)	13 (1.2%)	2 (0.2%)	0 (0%)	80 (7.1%)	1125
	2010	79 (5%)	2 (0.1%)	21 (1.3%)	14 (0.9%)	1 (0.1%)	0 (0%)	113 (7.1%)	1586
	2011	105 (5.9%)	3 (0.2%)	18 (1%)	15 (0.8%)	0 (0%)	0 (0%)	131 (7.4%)	1781
	2012	136 (8.1%)	6 (0.4%)	10 (0.6%)	17 (1%)	1 (0.1%)	2 (0.1%)	157 (9.3%)	1686
	2013	118 (7.5%)	4 (0.3%)	23 (1.5%)	12 (0.8%)	1 (0.1%)	1 (0.1%)	155 (9.9%)	1572
	2014	154 (8%)	12 (0.6%)	32 (1.7%)	11 (0.6%)	2 (0.1%)	1 (0.1%)	201 (10.4%)	1927
	2015	180 (8.7%)	11 (0.5%)	59 (2.9%)	49 (2.4%)	5 (0.2%)	1 (0%)	270 (13.1%)	2060
	2016	227 (10.9%)	16 (0.8%)	63 (3%)	52 (2.5%)	3 (0.1%)	1 (0%)	324 (15.5%)	2086
	2017	248 (10.8%)	11 (0.5%)	77 (3.3%)	45 (2%)	4 (0.2%)	2 (0.1%)	352 (15.3%)	2299
	2018	285 (10.9%)	9 (0.3%)	104 (4%)	91 (3.5%)	1 (0%)	10 (0.4%)	449 (17.1%)	2620
	2019	337 (11.8%)	20 (0.7%)	98 (3.4%)	107 (3.8%)	6 (0.2%)	15 (0.5%)	511 (17.9%)	2852
	2020	301 (11.6%)	14 (0.5%)	82 (3.2%)	105 (4.1%)	3 (0.1%)	8 (0.3%)	455 (17.6%)	2592
	2021	342 (12.6%)	12 (0.4%)	71 (2.6%)	152 (5.6%)	2 (0.1%)	12 (0.4%)	510 (18.7%)	2722
	2022	327 (14.2%)	16 (0.7%)	86 (3.7%)	186 (8.1%)	5 (0.2%)	14 (0.6%)	535 (23.2%)	2310

Faster Treatment Times Statewide



Stroke Death Rate

State: Hawaii ▼ Measurement Period: 2020 ▼

State: Hawaii

37.5

deaths/ 100,000 population

Source: Hawaii State Department of Health, Vital Statistics

Measurement period: 2020
Maintained by: Hawaii Department of Health
Last update: September 2022

COMPARED TO

US Value	Prior Value	Trend	HP 2030 Target
(38.8)	(36.0)		(33.4)

Technical note: Values are not shown where the number of events is between 1 and 9.

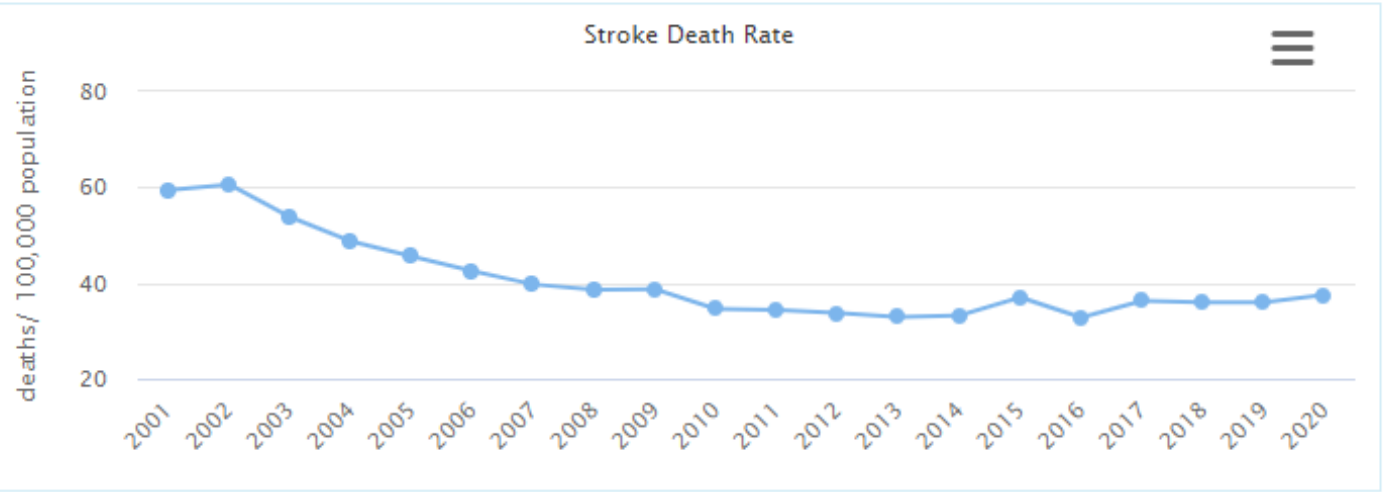
Graph Selections

INDICATOR VALUES

- [x] Change over Time

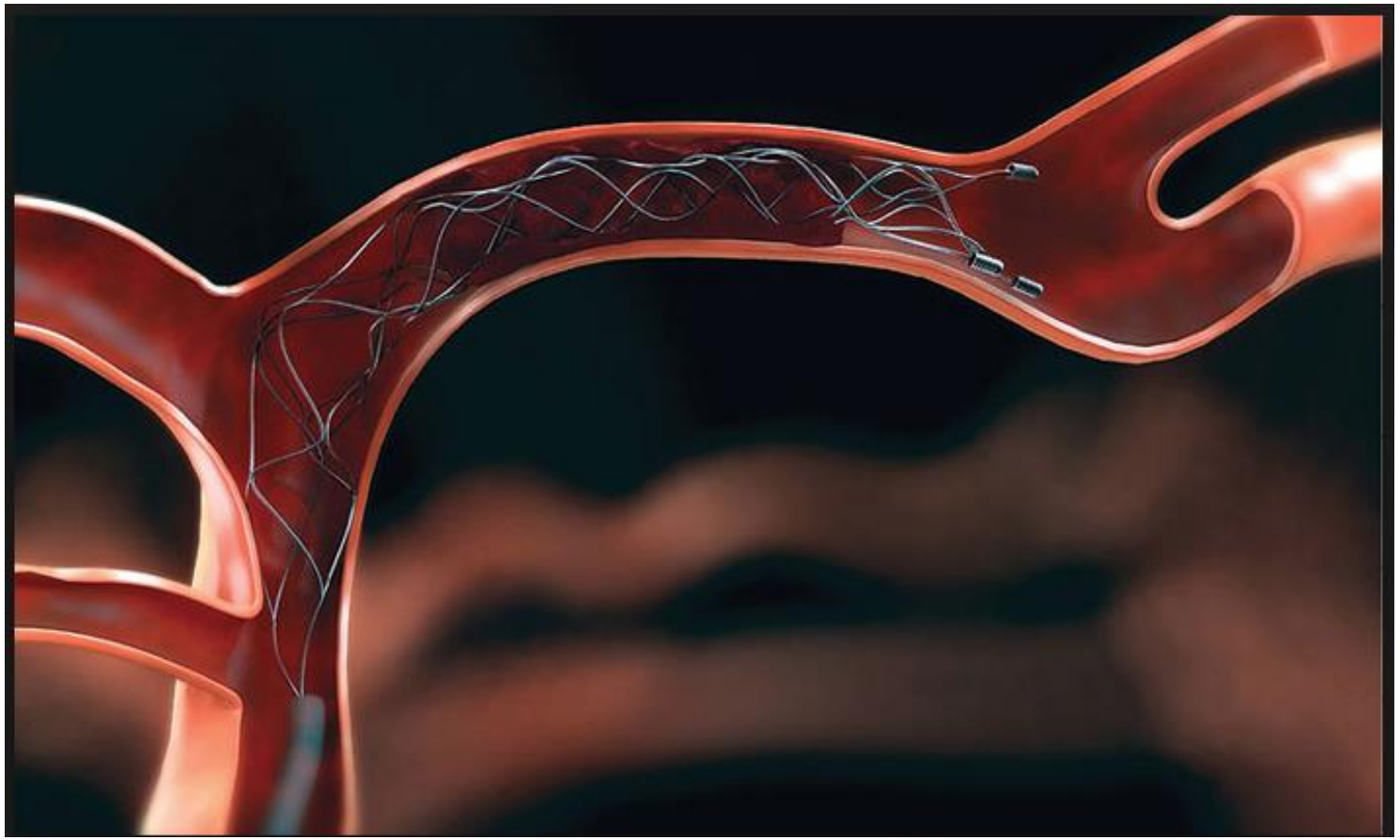
VIEW BY SUBGROUP

- [x] Age
- [ ] Race/Ethnicity
- [ ] Sex



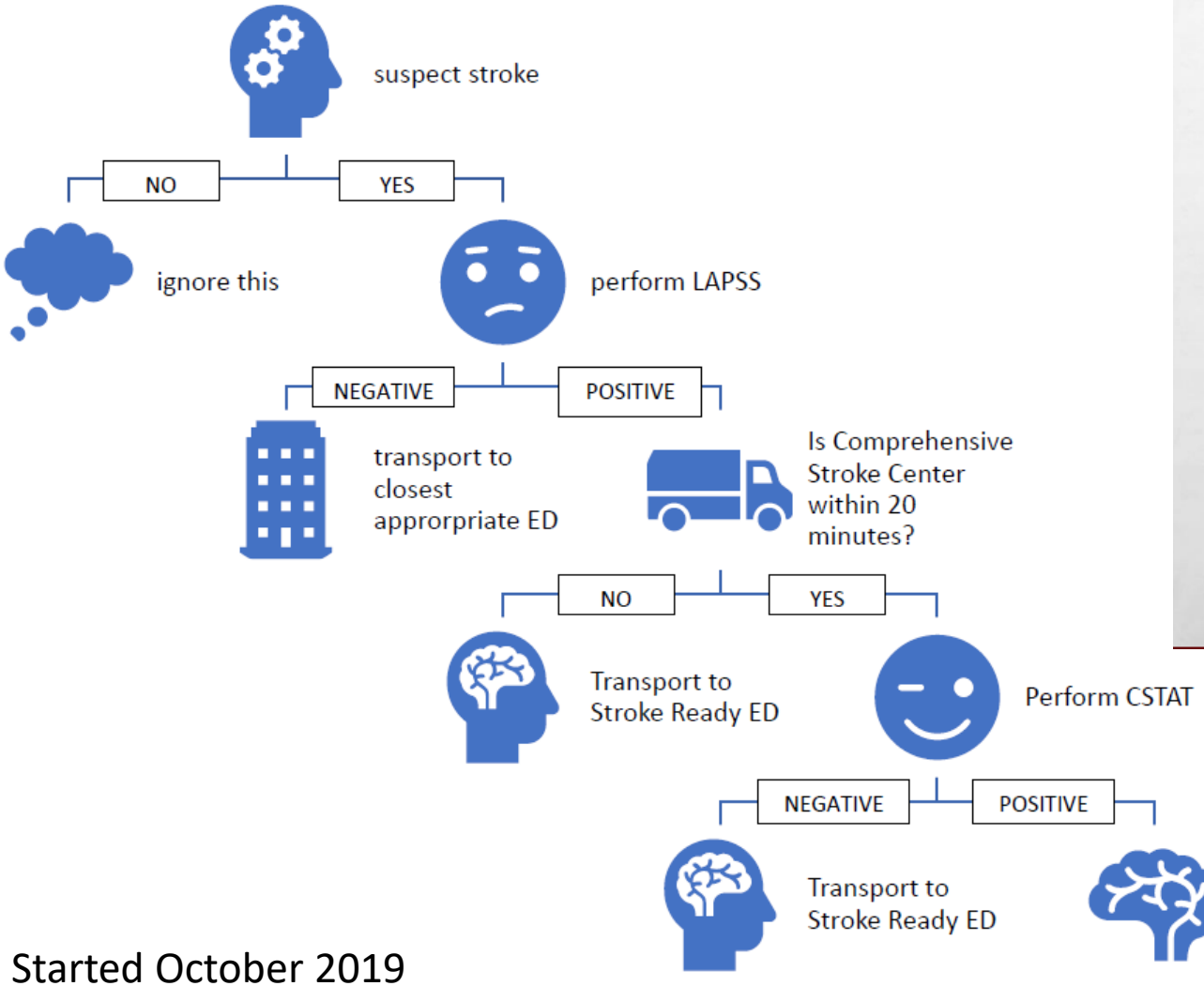
Stroke Treatments

Most strokes



20% of strokes with large vessel occlusion (LVO)

EMS bypass for suspected LVO stroke



C-STAT CINCINNATI PREHOSPITAL STROKE *SEVERITY* SCALE

Cincinnati Pre-Hospital Stroke Severity Scale

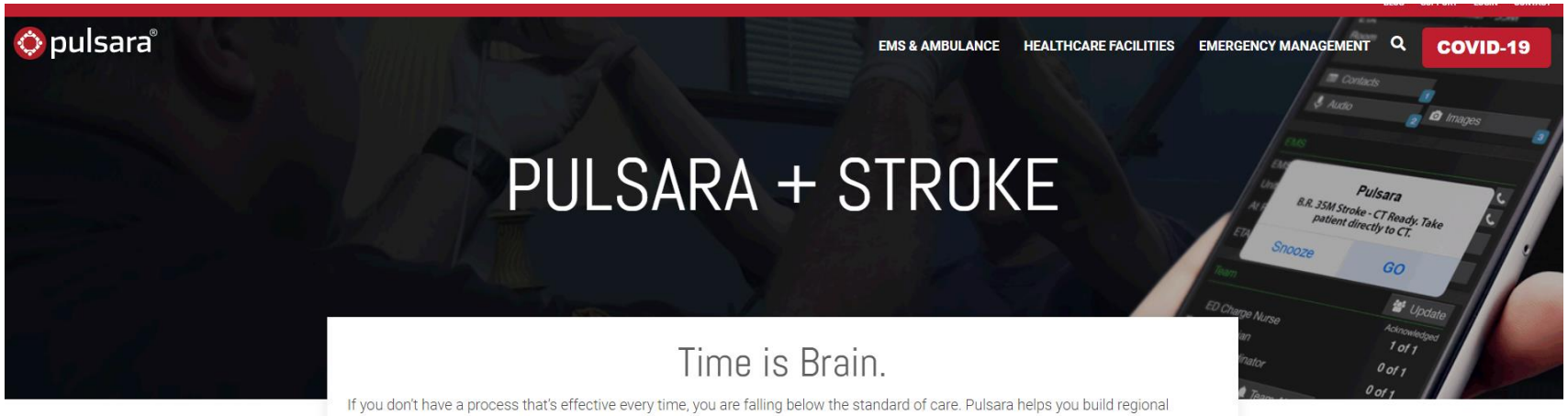
Conjugate gaze deviation	☐ 2 points
Incorrectly answers Age *or* Month **and** Does not follow at least one command (close your eyes, open and close your hand)	☐ 1 point
Arm (right, left or both) falls to the bed within 10 seconds	☐ 1 point

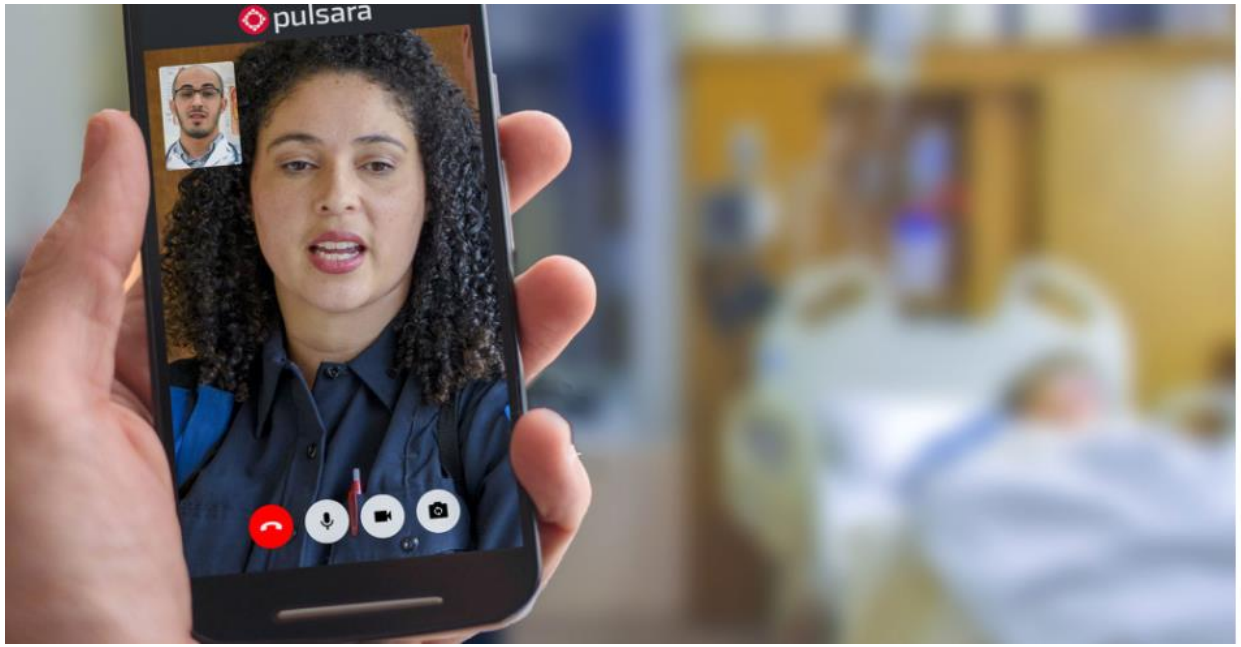
Score of **2 or more** = high likelihood of Large Vessel Occlusion (LVO) Stroke

~50% false positive rate

Started October 2019

Telemedicine in the ambulance





Live Video Calling

Communicate Face-to-Face, Even from Miles Away.

Using Pulsara's HIPAA-compliant live video capabilities, medics and specialists can connect in real time with the app to ensure appropriate destination hospital selection and resource mobilization. Clinicians can even consult with other hospitals and facilitate a transfer via live video communication.

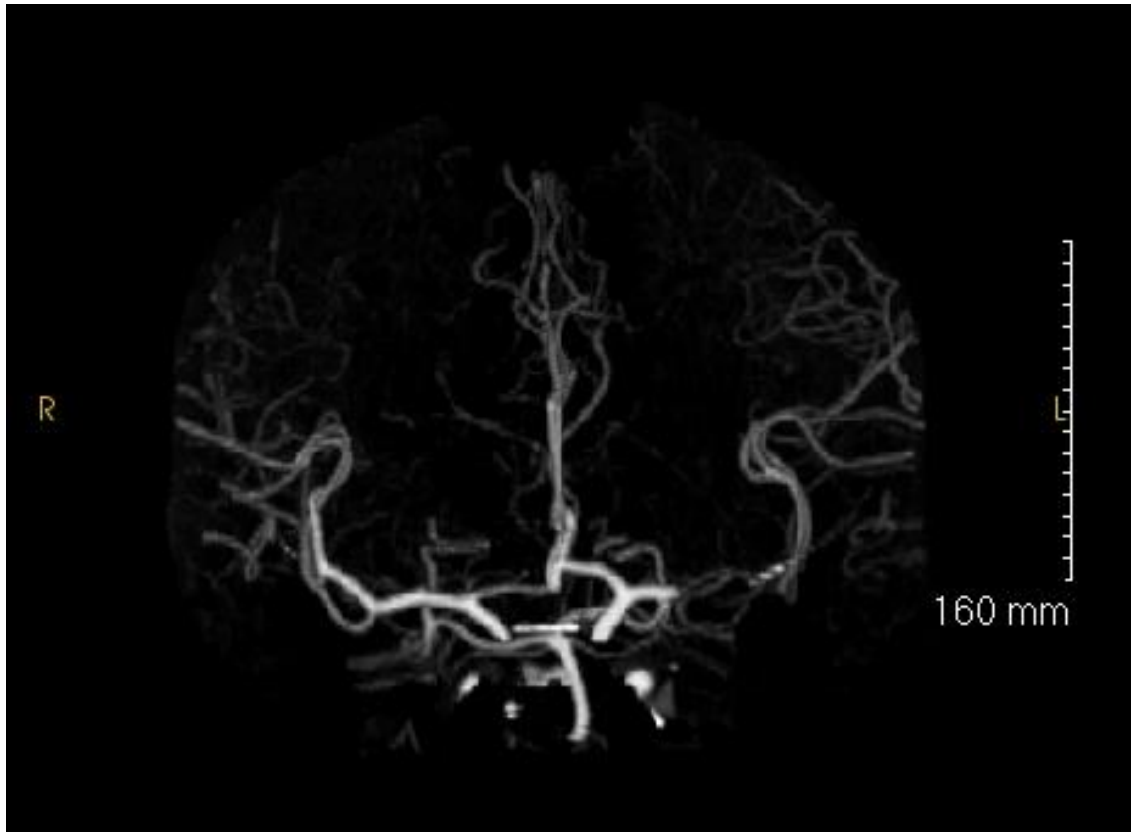
Using Pulsara PATIENT you can connect directly with the patient. Send patients a text inviting them to a secure video consultation. That way, you can meet the patient wherever they are.

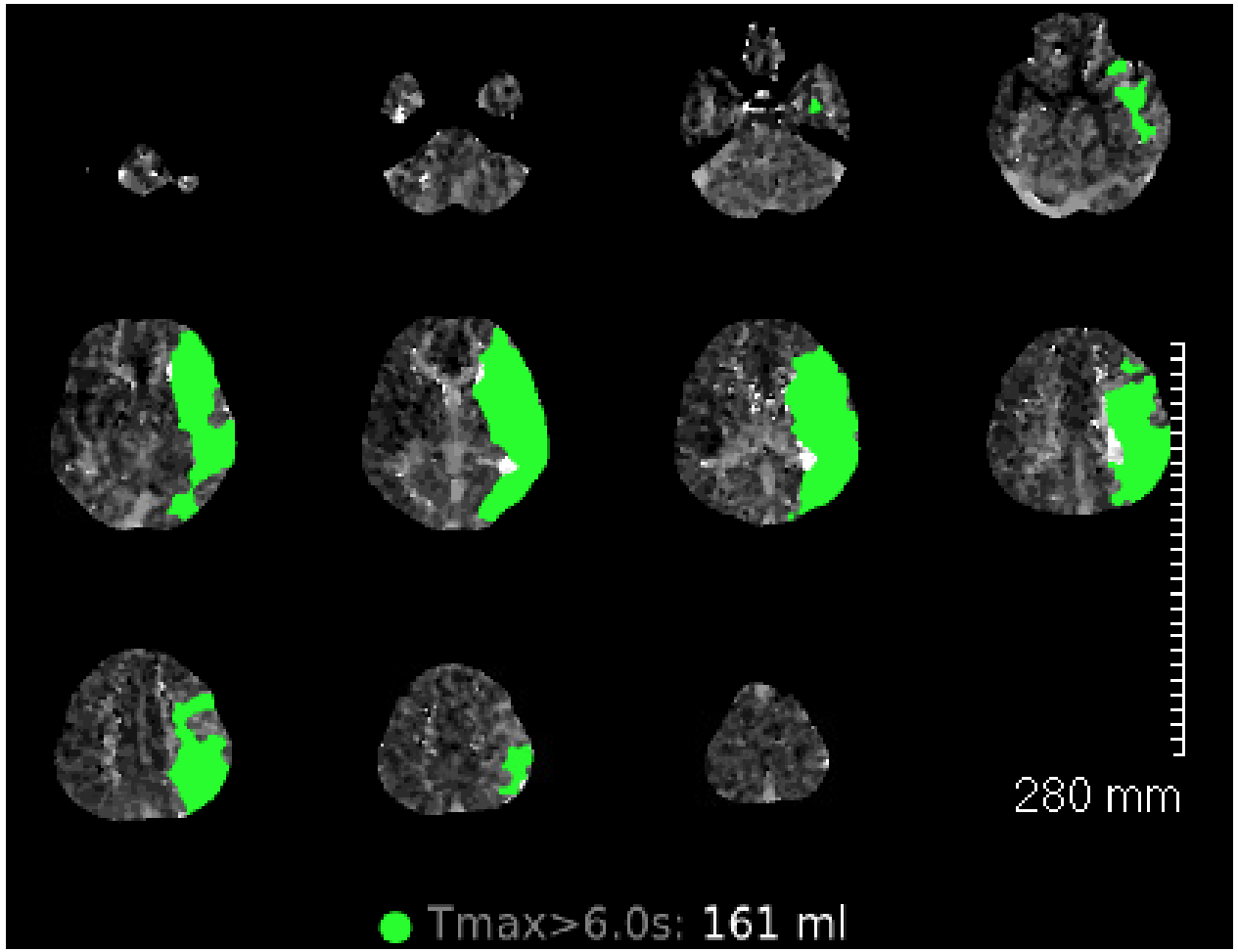
Project Goals

- Avoid unnecessary EMS bypass / diversion
- Ensure non-LVO patients who just need TNK treatment are transported to the nearest hospital for faster treatment
- Ensure LVO patients bypass the nearest hospital and are transported to the Comprehensive Stroke Center for faster thrombectomy
- Speed up inter-hospital transfer and treatment times by starting telestroke evaluation earlier in the prehospital setting
- Faster treatment by shifting history and examination to the prehospital setting
- Enable secure EMS-hospital and inter-hospital communications

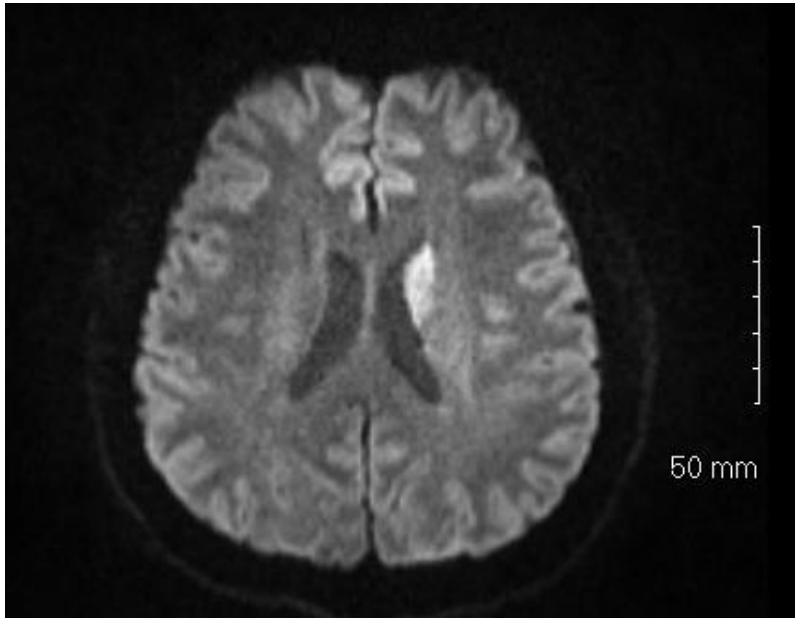
Patient example (Pre-hospital activation)

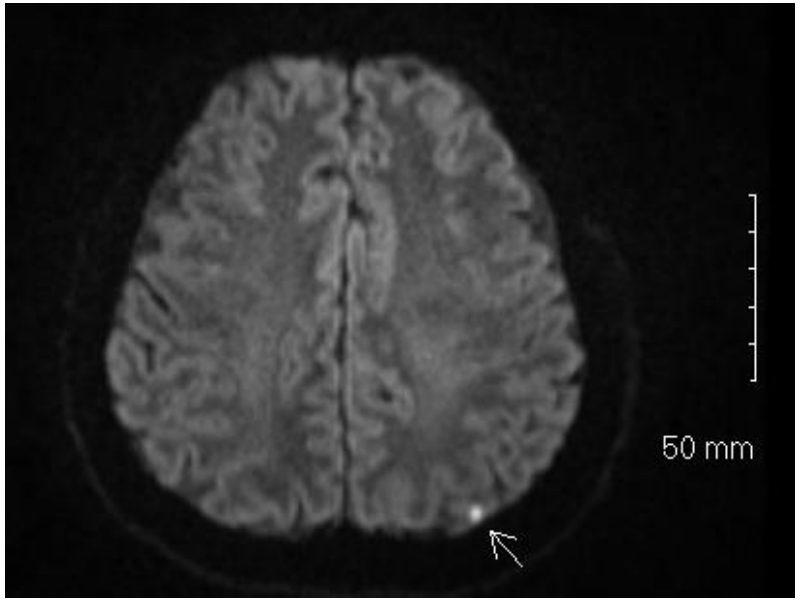
- 58 year old man with speech problems, right sided weakness, and left gaze deviation
- Neurologist examined the patient by video, took history, reviewed medications, talked to witnesses, and obtained consent for treatment through Pulsara prior to arrival
- He was transported directly to QMC with pre-activation of the stroke team
- Treated with TNK quickly after arrival
- Taken to mechanical thrombectomy for left middle cerebral artery (MCA) occlusion


R
L
160 mm


280 mm
Tmax>6.0s: 161 ml

He had returned to normal by hospital day 2.

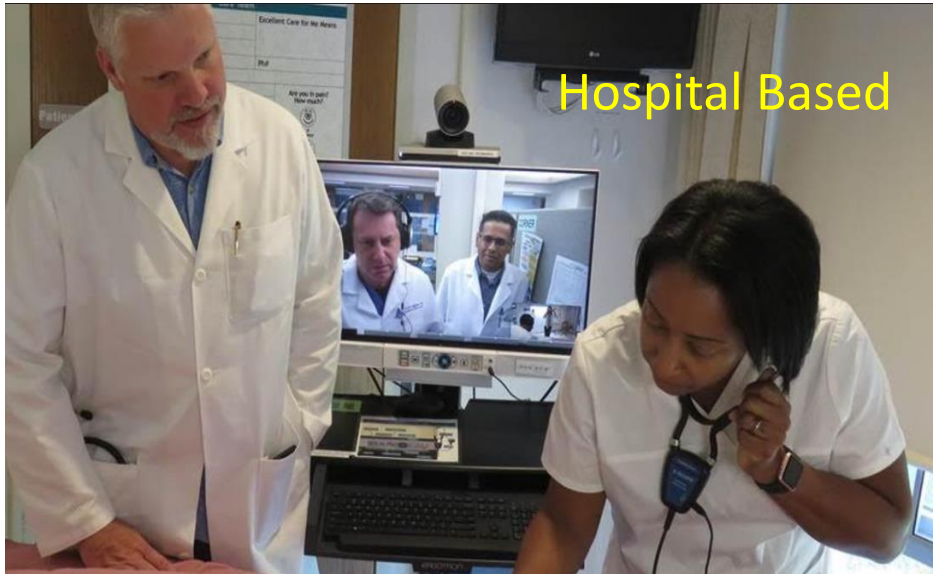




How can Hawaii support more robust EMS-to-hospital and hospital-to-hospital collaboration?

- Emergency Management and Mass Casualty Incident patient tracking
- Mental health emergencies / MH4
- EMS treat-not-transport or transport to alternate destination
- Community paramedicine
- Telemedicine consults on the ambulance

Virtual Care



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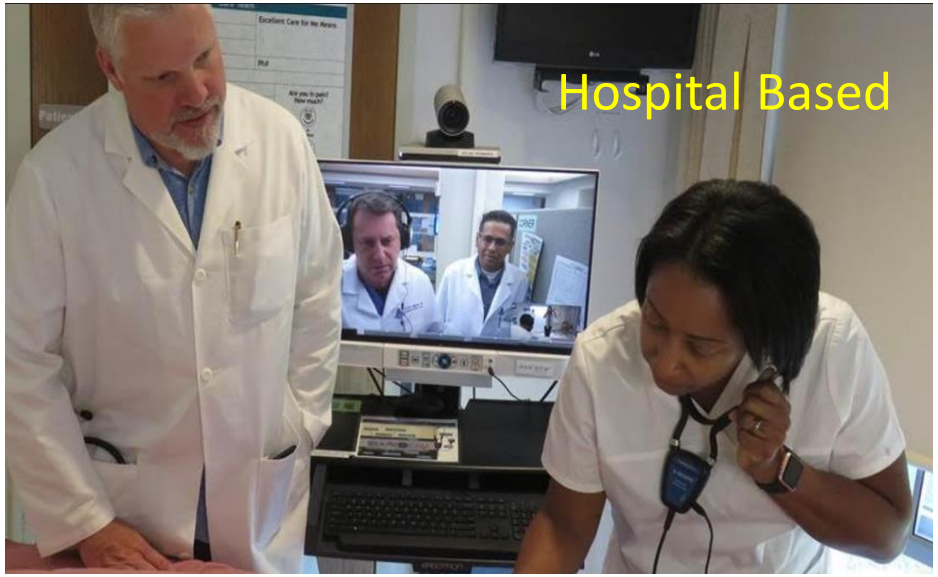
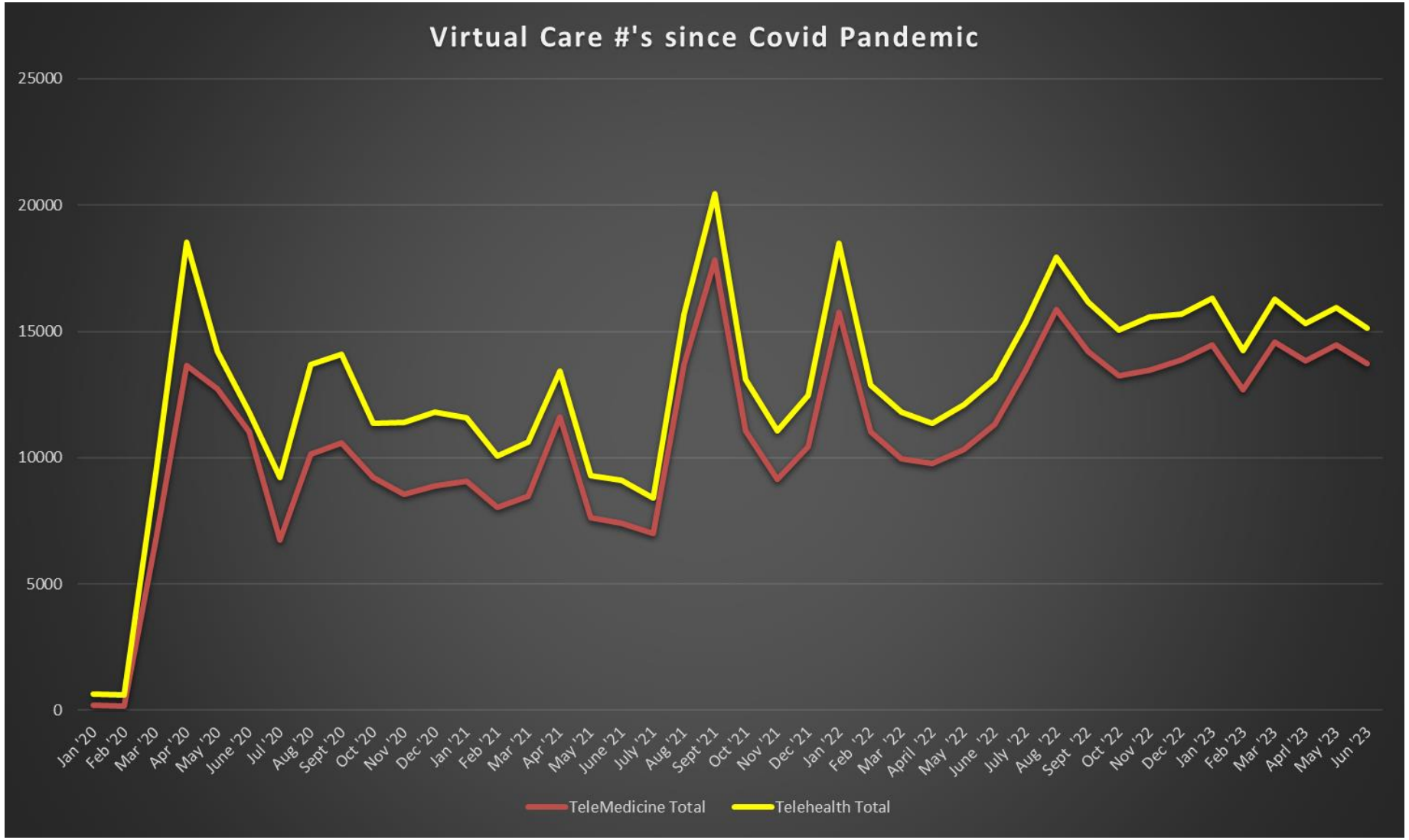
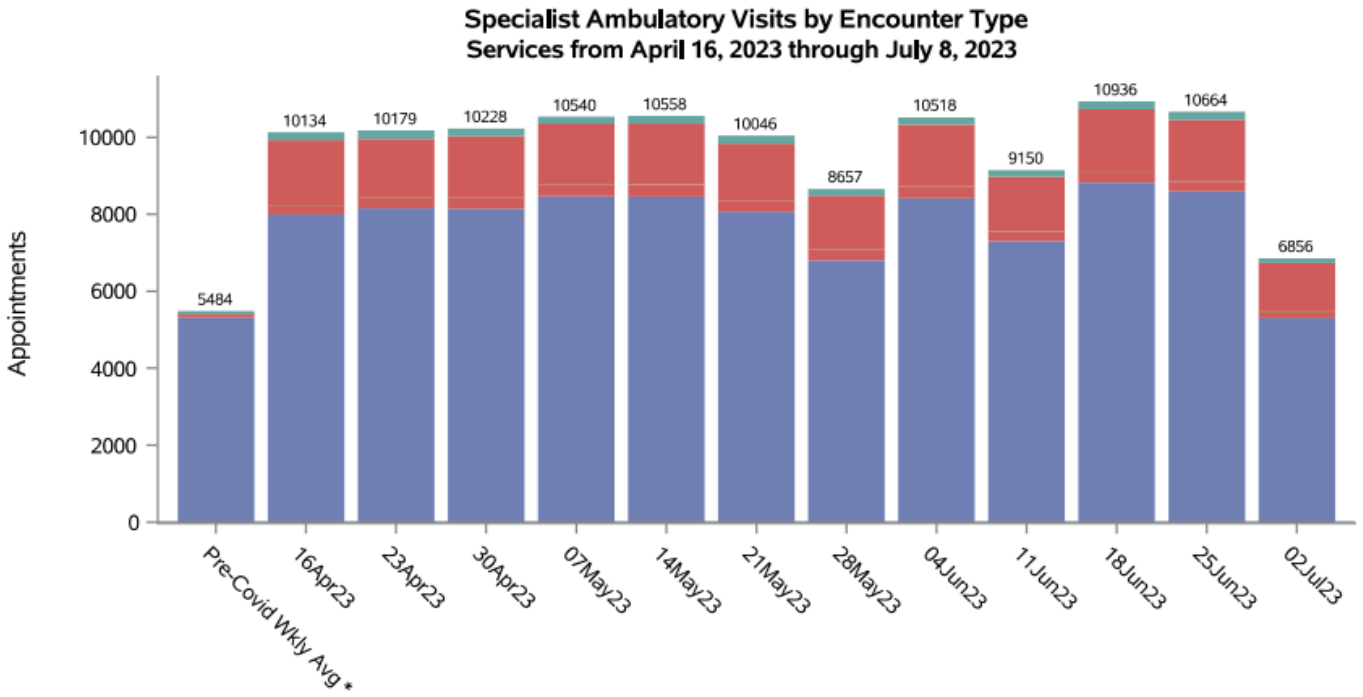
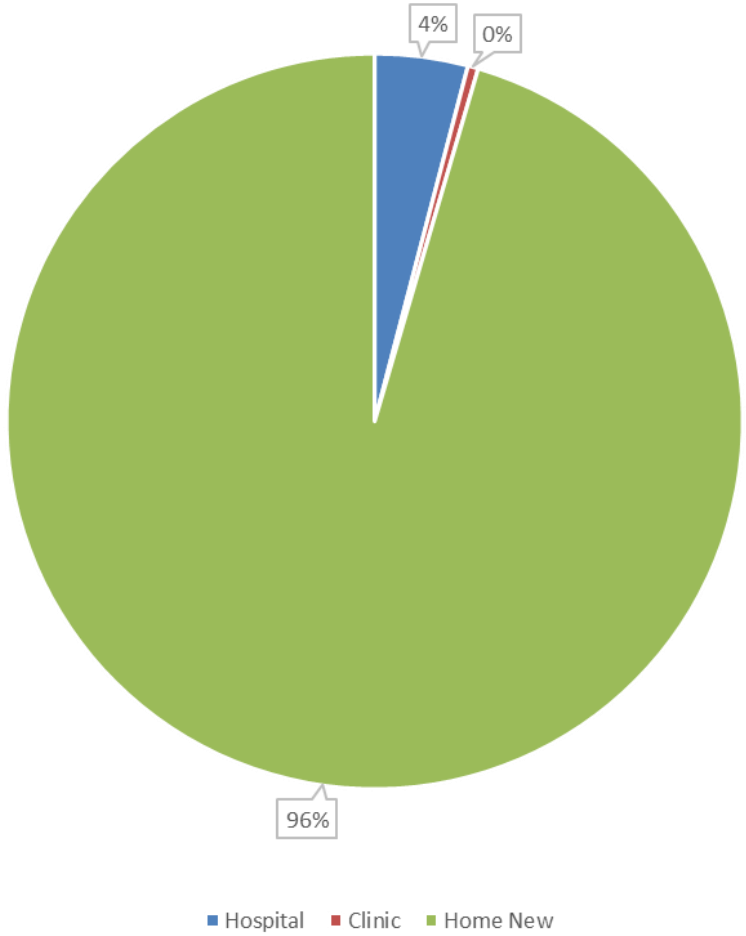


Overall Virtual Visits Since Covid-19 Pandemic



Total Virtual Visits in FY23 = 189,000





15-20% of visits done virtually

Prior Barriers to Virtual Care Pre-Pandemic

MEDICARE RESTRICTIONS

Lack of reimbursement for telehealth visits for patients in the home

CONSUMER DEMAND

Limited public knowledge about telehealth

PROVIDER ADOPTION

Small pilots of early adopter clinics and providers

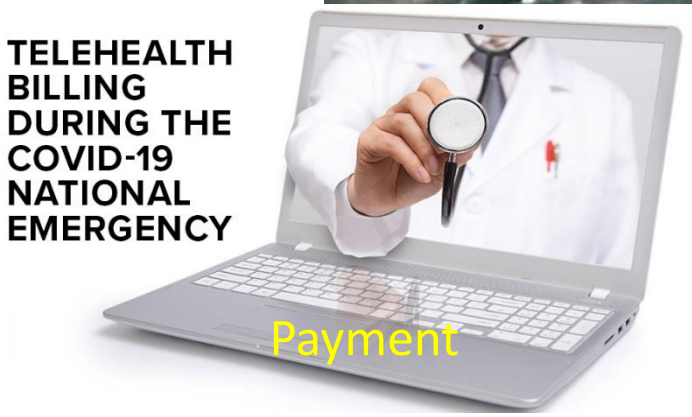
TECHNOLOGY BARRIERS

Lack of integration with Epic and multiple video platforms in use

CLINICAL WORKFLOWS

Integration with in-person practice and clinic operations

COVID Pandemic:
Perfect Storm for Virtual Care



Transitioning to the New Normal or Waiting for Return to Business as Usual?

News > Medscape Medical News > Features

Why America's Love Affair With Telemedicine Is Fizzling Out

Amanda Loudin
June 15, 2022

Add to Email Alerts

38

46

When Josh Emdur, DO, announced in 2017 that he was leaving hospital practice to join a startup teleme

Though telemedicine wasn't br wasn't exactly the model patier But Emdur believed in the idea to have more impact in the mec for those who otherwise might

Backlash?

JAMA Network Open. 2021;4(12):e2136405. doi:10.1001/jamanetworkopen.2021.36405

Table 2. Preferences for In-Person or Video Visit by Demographic Characteristics

Characteristic	Unweighted frequency, No.	Preference, weighted %				*P* value
		In-person visit	Video visit	None or both	Do not know	
Total sample	2080	53.0	20.9	22.9	3.3	
Sex						
Female	1162	49.1	23.9	23.1	3.9	.16
Male	918	57.2	17.6	22.7	2.6	
Age group, y						
20-39	226	42.3	25.9	29.6	2.2	<.001
40-59	692	50.8	24.4	20.7	4.0	
60 and up	1162	64.5	12.6	19.7	3.3	
Race and ethnicity[a]						
Hispanic/Latino	268	58.6	22.9	15.2	3.3	.02
Non-Hispanic						
Black/African American	175	64.1	16.5	14.2	5.2	
White/Caucasian	1521	49.3	22.0	26.3	2.4	
Other[b]	116	53.7	11.8	26.6	7.9	
Educational level						
<High school	54	64.4	17.8	13.4	4.3	.03
High school diploma to associate's degree	922	55.6	18.8	21.2	4.4	
≥Bachelor's degree	1104	46.7	24.5	27.3	1.4	

Lessons Learned / Investing in Success

PATIENT SELECTION

Clinical appropriateness, patient readiness, geographic considerations

PRE-VISIT PREPARATION

Help Desk support, patient education materials, support for clinic staff

PROVIDER AND PATIENT EXPERIENCE

Telehealth visit must be adequate to replace the in-person visit, high return rate

PLATFORM EASE OF USE

EMR integration, back-up plan outside of the patient portal, telehealth app or webRTC

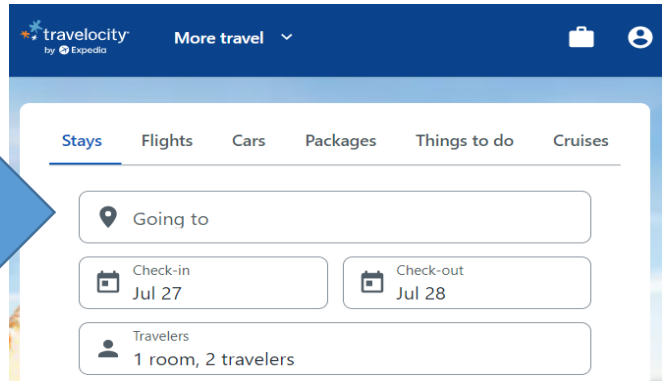
CLINIC WORKFLOWS

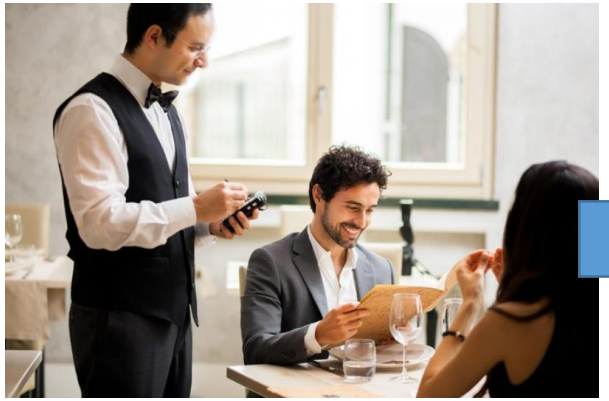
Integration with in-person practice and clinic operations

Perceptions of Telehealth Pre-Pandemic

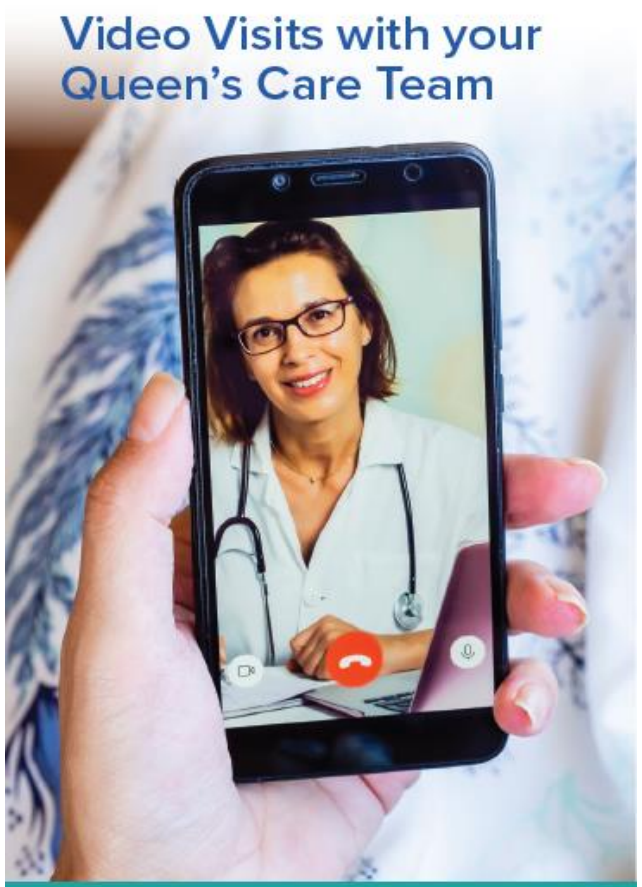
- Convenience
- Travel time / cost
- Mobility challenges
- Timeliness of care
- Access to care in rural communities
- Duplicative care or adequate to replace an in-person visit?
- Fragmentation of care?
- Impact on cost of care?
- Equivalence to in-person care?

Is this convenience?





MyChart

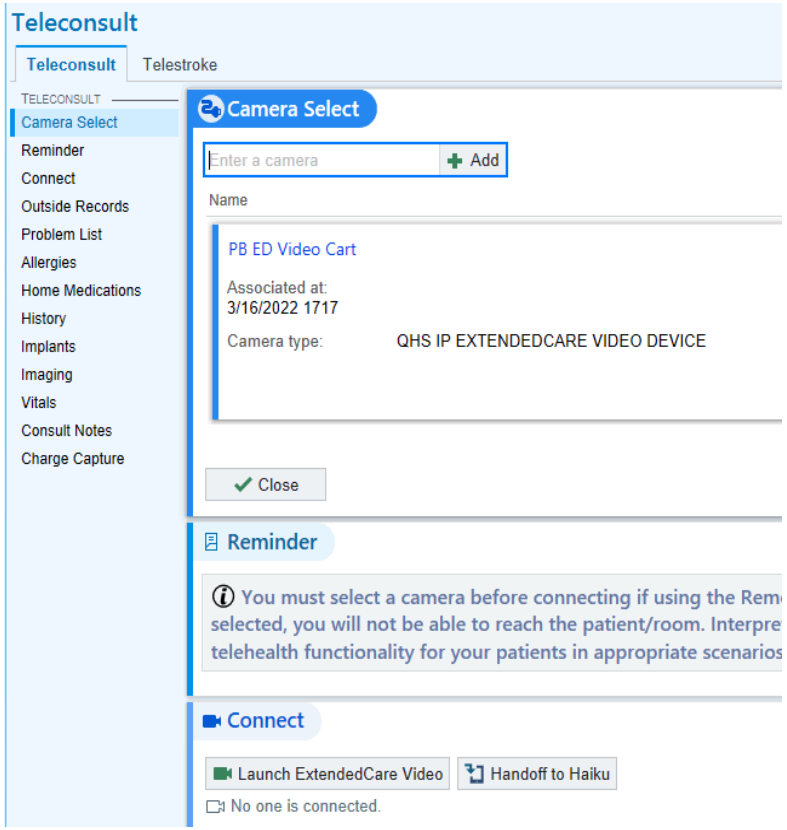


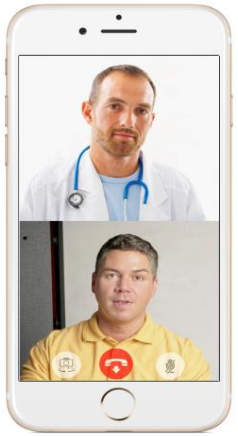
With a video visit, you don't need to travel to the clinic to see your provider. You can see your healthcare team on a mobile device or computer from home! **Ask your doctor if a video visit is right for you.**

Telehealth: Adding Value to In-Person Care

- Convenience
- Travel time / cost
- Mobility challenges
- Timeliness of care
- Access to care in rural and urban communities
- Access to subspecialty care in austere communities
- Remote family presence
- Language interpretation services
- Multi-provider collaboration
- Device integration for remote patient monitoring
- Patient portal adoption and electronic medical record integration

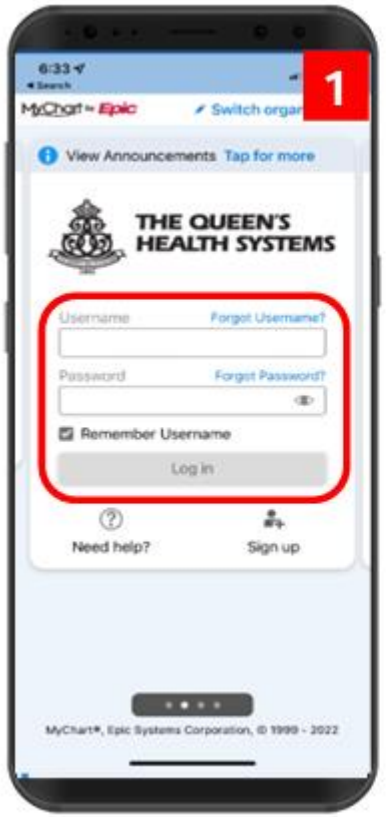
Integrated Telehealth Platform





MyChart powered by Epic

THE QUEEN'S MEDICAL CENTER 1859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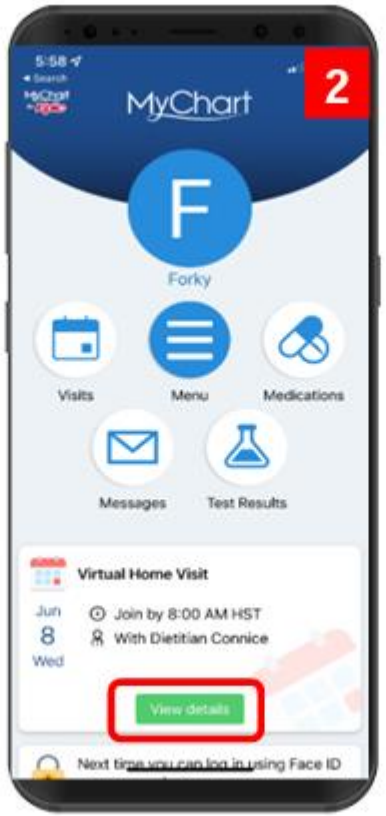
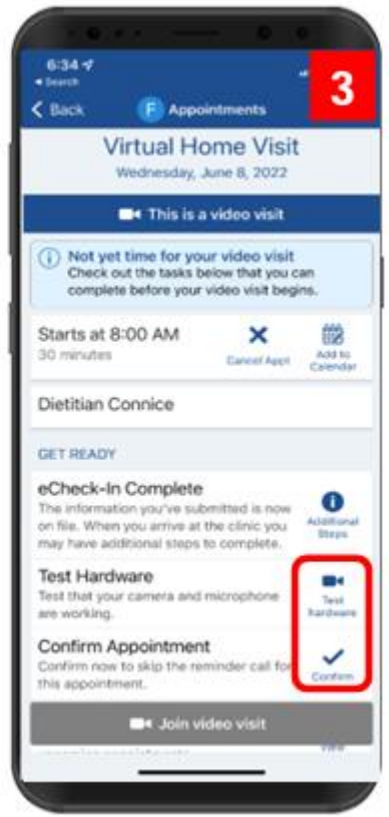
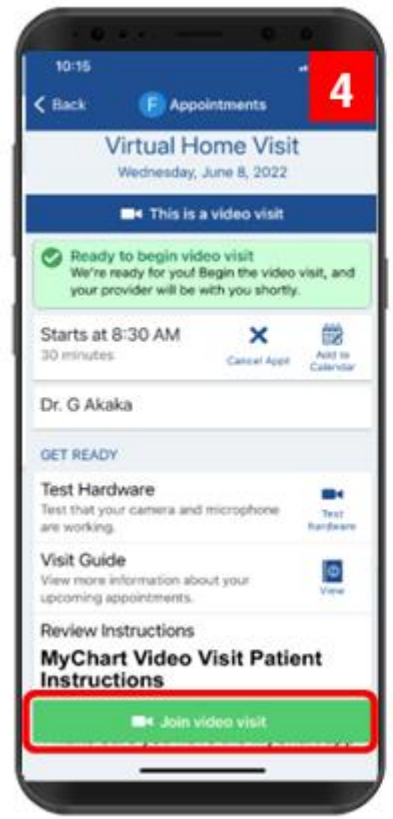
Username
Forgot Username?
Password
Forgot Password?
Remember Username
Log in
Need help?
Sign up


2
MyChart
Forky
Visits
Menu
Medications
Messages
Test Results
Virtual Home Visit
Jun
8
Wed
Join by 8:00 AM HST
With Dietitian Connice
View details


3
Back
Appointments
Virtual Home Visit
Wednesday, June 8, 2022
This is a video visit
Not yet time for your video visit
Check out the tasks below that you can complete before your video visit begins.
Starts at 8:00 AM
30 minutes
Dietitian Connice
GET READY
eCheck-In Complete
Test Hardware
Test that your camera and microphone are working.
Confirm Appointment
Join video visit


4
Back
Appointments
Virtual Home Visit
Wednesday, June 8, 2022
This is a video visit
Ready to begin video visit
We're ready for you! Begin the video visit, and your provider will be with you shortly.
Starts at 8:30 AM
30 minutes
Dr. G Akaka
GET READY
Test Hardware
Test that your camera and microphone are working.
Visit Guide
View more information about your upcoming appointments.
Review Instructions
MyChart Video Visit Patient Instructions
Join video visit


5
THE QUEEN'S HEALTH SYSTEMS
QUICK LAUNCH
Join video visit from mobile browser
BACKUP OPTION
Join video visit from mobile app
Download required
prod.aws.extcare.com


6
VIRTUAL CARE ROOM
Virtual care room initializing...
"prod.aws.extcare.com" Would Like to Access the Microphone and Camera
Cancel
Allow

Scheduling – MyChart Adoption

Adoption of MyChart is the **easiest way** to provide a seamless Virtual Home Visit experience for patients.

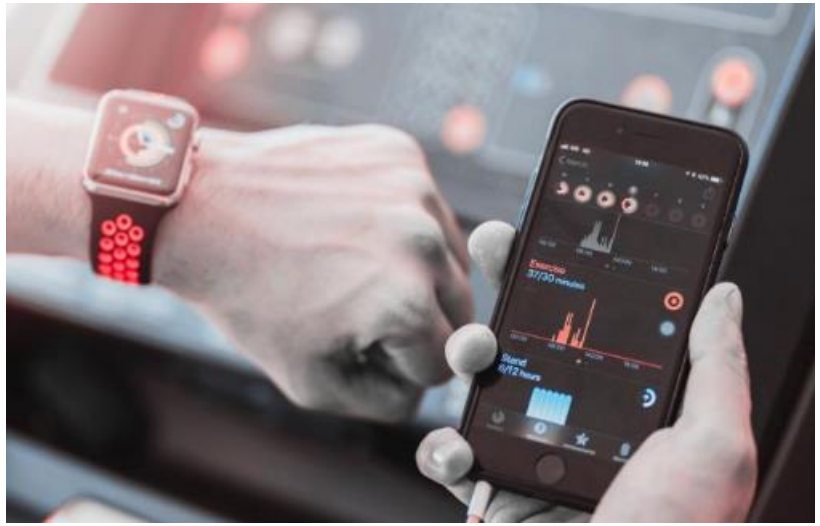
Encourage patients to sign up for MyChart after initial appointments!

Patients Can

- **REQUEST** med refills, appts, provider input
- **REVIEW** their records and medical history patients and providers and staff
- **PAY** their bills
- **MANAGE** child or parent healthcare
- **JOIN** a video visit

Transitioning to the New Normal or Waiting for Return to Business as Usual?

On the Horizon



Impact on Clinical Care and Practice

- Consumer preferences will play a greater role in the transition from the pandemic (“you have to do virtual care”) to post-pandemic (“here’s an option for you”).
- Virtual care must transition from a temporary solution during the pandemic to a professional-grade patient experience.
- We need to harness the power of computers without worsening access for people with limited computer proficiency or poor broadband coverage.
- For many practices, virtual care will transform the clinic staff, workflows, and physical layout.

Discussion Points

- How invested are we in maintaining robust virtual care programs after the pandemic?
- What statutory, regulatory, and budgetary changes are needed to support virtual care?
- How do we leverage virtual care to improve access to care without worsening the digital divide for vulnerable populations?
- What data and analytics are needed to ensure virtual care services add value to patient care?

HOUSE OF REPRESENTATIVES
THIRTY-SECOND LEGISLATURE, 2023
STATE OF HAWAII

H.C.R. NO. 49

HOUSE CONCURRENT RESOLUTION

REQUESTING THE ESTABLISHMENT OF A TELEHEALTH WORKING GROUP TO EXAMINE THE IMPACT OF WIDESPREAD TELEHEALTH ADOPTION DURING THE COVID-19 PANDEMIC AND IDENTIFY PUBLIC POLICY INITIATIVES AT THE FEDERAL AND STATE LEVEL TO OPTIMIZE TELEHEALTH UTILIZATION AS THE STATE TRANSITIONS OUT OF THE COVID-19 PANDEMIC.

WHEREAS, the State experienced an increase in the use of telehealth during the COVID-19 pandemic by a factor of sixty-five and has remained at that level, which is well above the pre-COVID-19 pandemic usage; and

WHEREAS, telehealth adoption was most significant with direct-to-consumer video visits on personal devices and audio-only telephone visits, often without important elements of the physical exam or vital signs being obtained during the visit; and

WHEREAS, although there is some data to support the safety, efficacy, timeliness, access, and cost effectiveness of telehealth, the impact of widespread telehealth adoption in the State is largely unknown; and


Mahalo