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Impact of Telehealth:

Tele-Emergency and Stroke Care

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Presenter

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Disclosures

- I have received research funding from HRSA
- Employed by Avera eCARE

Telehealth: Focus on the Team

Extend Specialists to Communities

Recruit and Retain Workforce

Provide Back-up Support

Share Resources and Education

Collaborative Teamwork

Learning Objectives:

1. Describe the benefits of Telehealth for Emergency Departments

2. Discuss use cases for a Tele-stroke program

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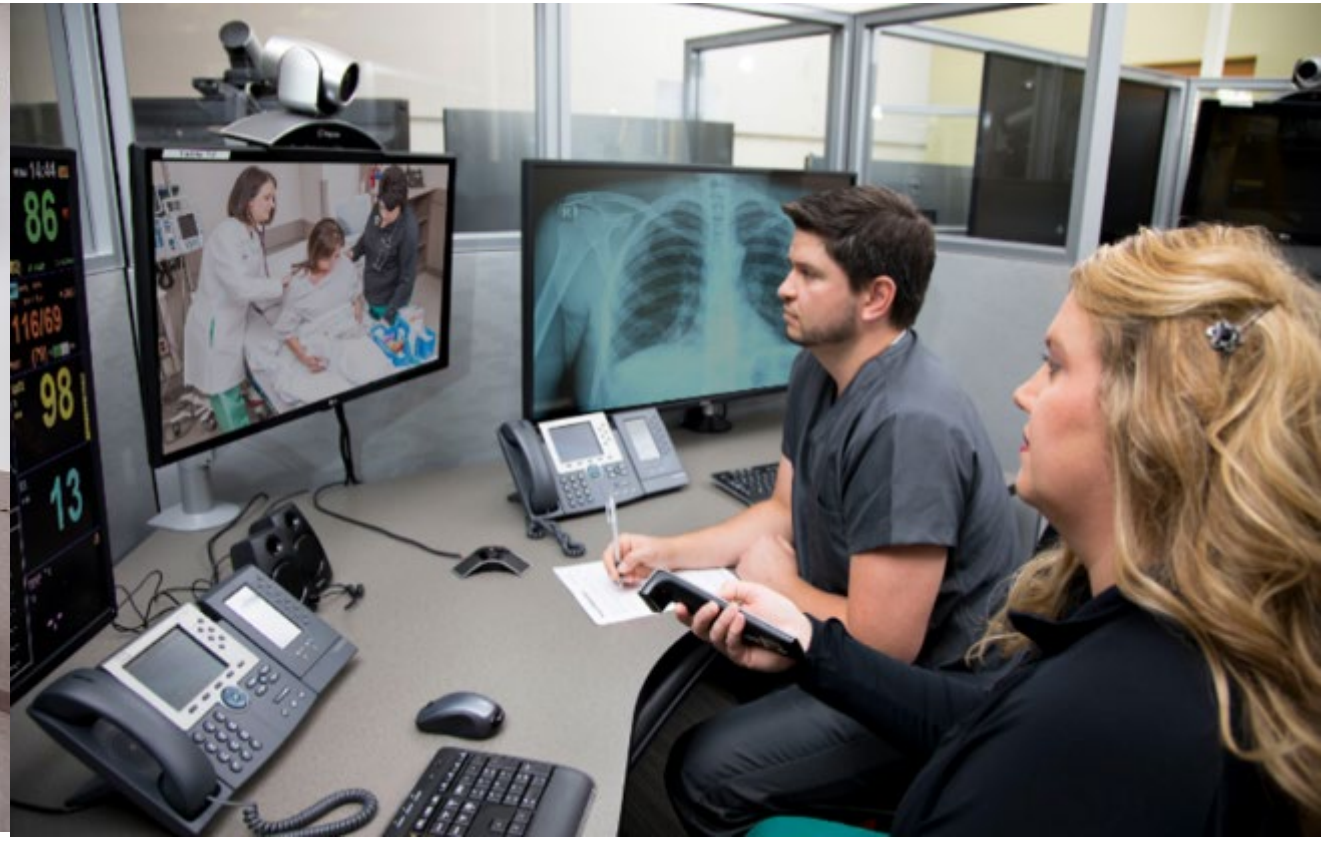
Virtual Emergency Care



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Telehealth in the Emergency Department

Instant access to specialty support during difficult or multiple emergency cases

- Assist in intubating patients, managing ventilators and airway protocols

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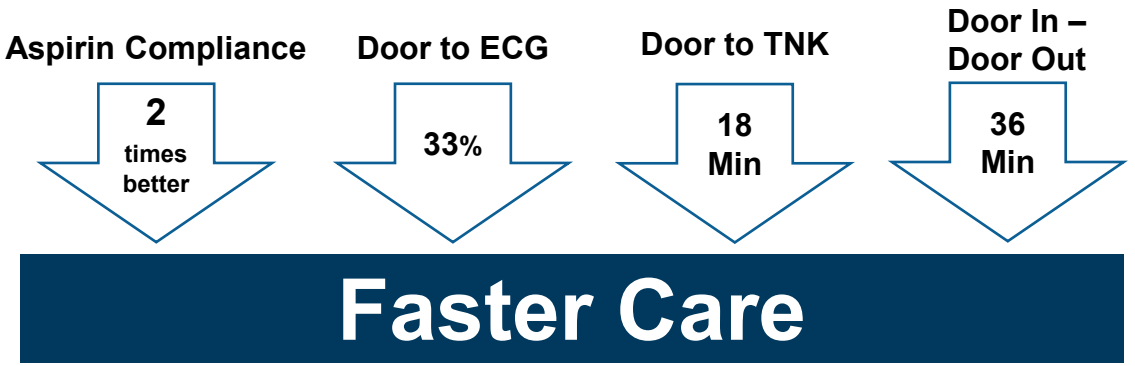
Research: Timeliness of Care

In **28%** of telehealth emergency cases, the hub physician was available prior to the local physician. In these cases, the hub physician was available an average of **21 minutes** sooner than the local physician.

Cardiac Example of Faster Care



Source: https://www.ruralhealthinfo.org/project-examples/749

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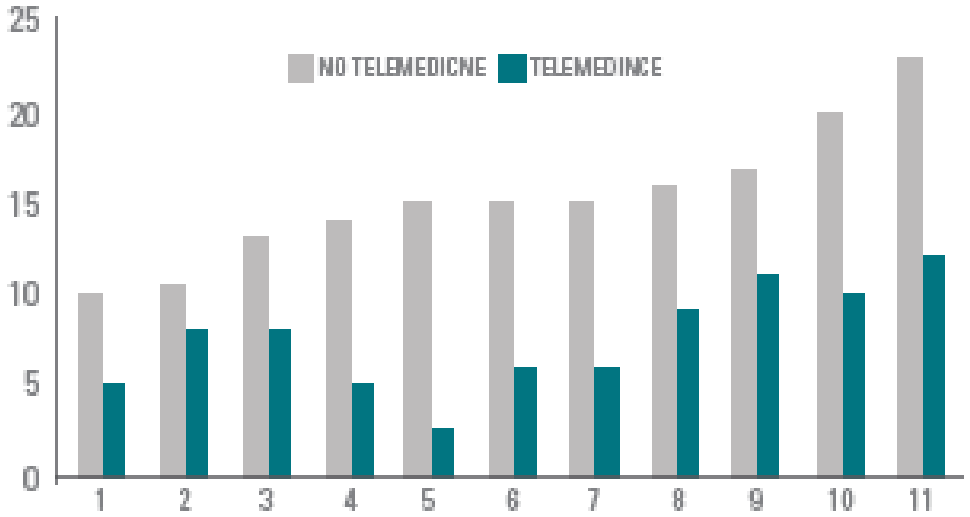
Door-to-Door Provider Time by Facility

The dark green bars show the median hospital-specific, door-to-door provider time in cases where telemedicine is consulted. The light gray bars indicate the median hospital-specific, door-to-door provider time in cases where telemedicine was not consulted.



(Mohr, Young et al. 2018)

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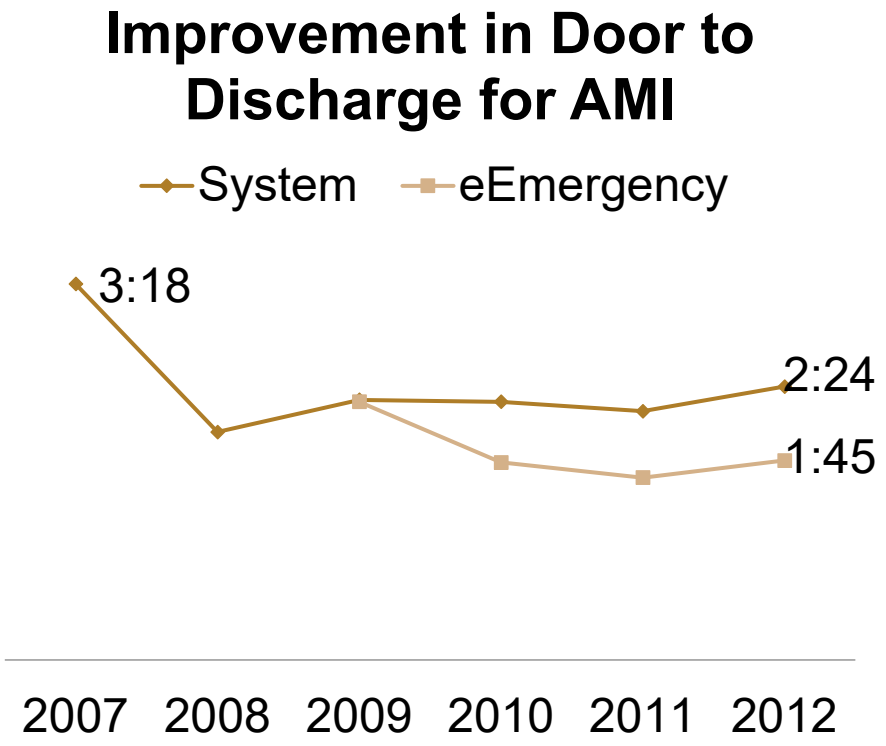
Cardiac Study

- A statistically significant improvement in median time to ECG from 12 minutes to 8 minutes.
- 100% compliance with aspirin administration. Patients were 2.19 times as likely to receive aspirin.
- An 18 minute improvement in door to t-PA for eligible patients
- A 36 minute improvement in mean door-in, door-out time (time to transfer)



Source: https://smhs.gwu.edu/urgentmatters/sites/urgentmatters/files/eEmergency.AveraHealth.pdf

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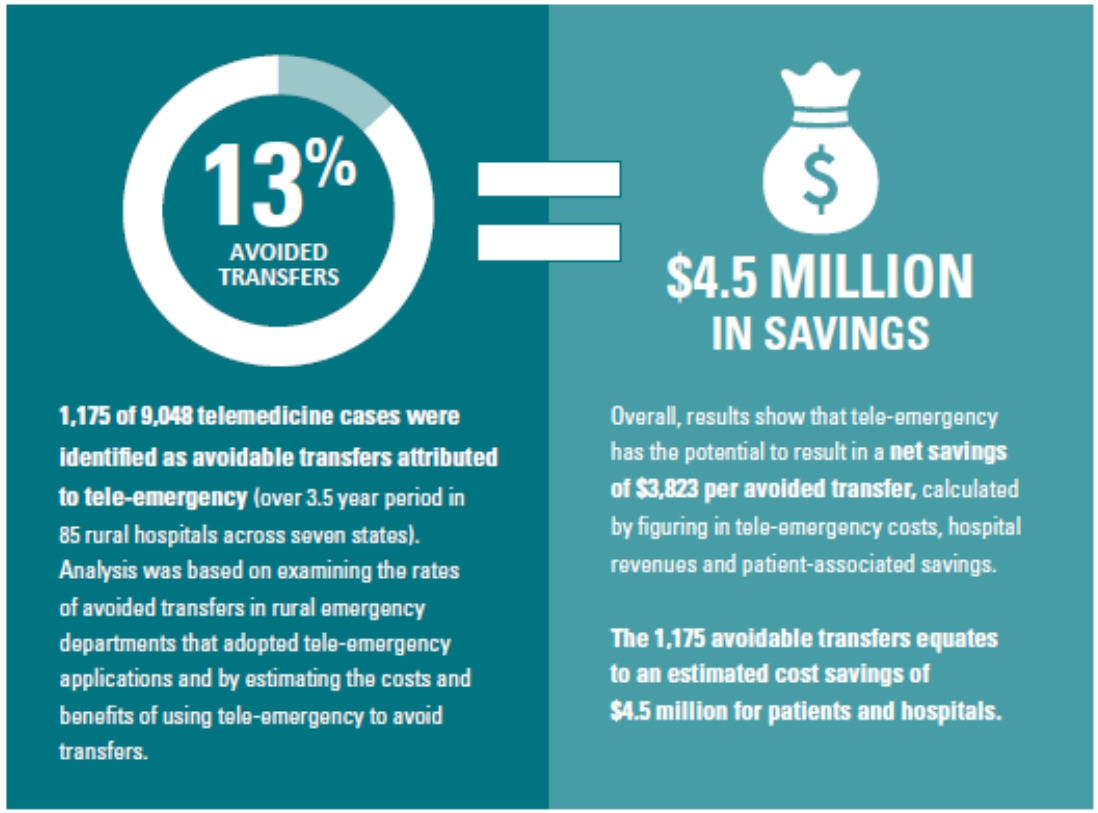
Telehealth's impact on patient transfers



Reference: Using Tele-Emergency to Avoid Patient Transfers in Rural Emergency Departments: An Assessment of Costs and Benefits

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RESEARCH/Original Article

Using tele-emergency to avoid patient transfers in rural emergency departments: An assessment of costs and benefits

Journal of Telemedicine and Telecare
0(0) 1–9

DOI: 10.1177/1357633X17696585
journals.sagepub.com/home/jtt
SAGE

RESULTS:

Physicians indicated **1,175 avoided transfers** were attributed to tele-emergency.

$5,563 in avoided transportation and indirect patient costs

-$1,739 in tele-emergency costs per avoided transfer

$3,824 in net savings

Table 3. Estimated patient transportation cost savings associated with avoided patient transfers.

		Base-case (1175 avoided transfers)			Worst-case scenario (683 avoided transfers)			Best-case scenario (1667 avoided transfers)		
Transfer method	%	Transfers	Mileage	Costs (US$)	Transfers	Mileage	Costs (US$)	Transfers	Mileage	Costs (US$)
Ground ambulance	45%	529	59,585	673,710	307	33,735	381,842	750	85,434	965,577
Rotary wing	35%	411	32,720	2,696,961	239	19,058	1,567,611	583	46,381	3,826,311
Fixed wing	15%	176	23,784	1,136,136	102	14,279	675,008	250	33,289	1,597,264
Private automobile	5%	59	5288	3041	34	3240	1863	83	7337	4219
Total	100%	1175	121,377	4,509,848	683	70,312	2,626,324	1667	172,441	6,393,371

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Emergency Department Telemedicine Shortens Rural Time-to-Provider and Emergency Department Transfer Times

Purpose: To measure the impact of ED-based telemedicine on timeliness of care in participating rural hospitals.

Results: Of 127,928 qualifying ED encounters, 2,857 consulted telemedicine and were matched with non-telemedicine controls. Door-to-provider time was shorter in telemedicine patients by 6.0min (95% confidence interval [CI] 4.3–7.8 min). The first provider seeing the patient was a telemedicine provider in 41.7% of telemedicine encounters, and in these cases, telemedicine was 14.7min earlier than local providers. ED LOS was 22.1 min shorter (95% CI 3.1–41.2) among transferred patients, but total ED LOS was longer (40.2min, 95% CI 30.8–49.6 min) for all telemedicine patients.

Conclusion: Telemedicine decreases ED door-to-provider time, most commonly because the telemedicine provider was the first provider seeing a patient. Among transferred patients, ED LOS at the first hospital was shorter in patients who had telemedicine consulted.

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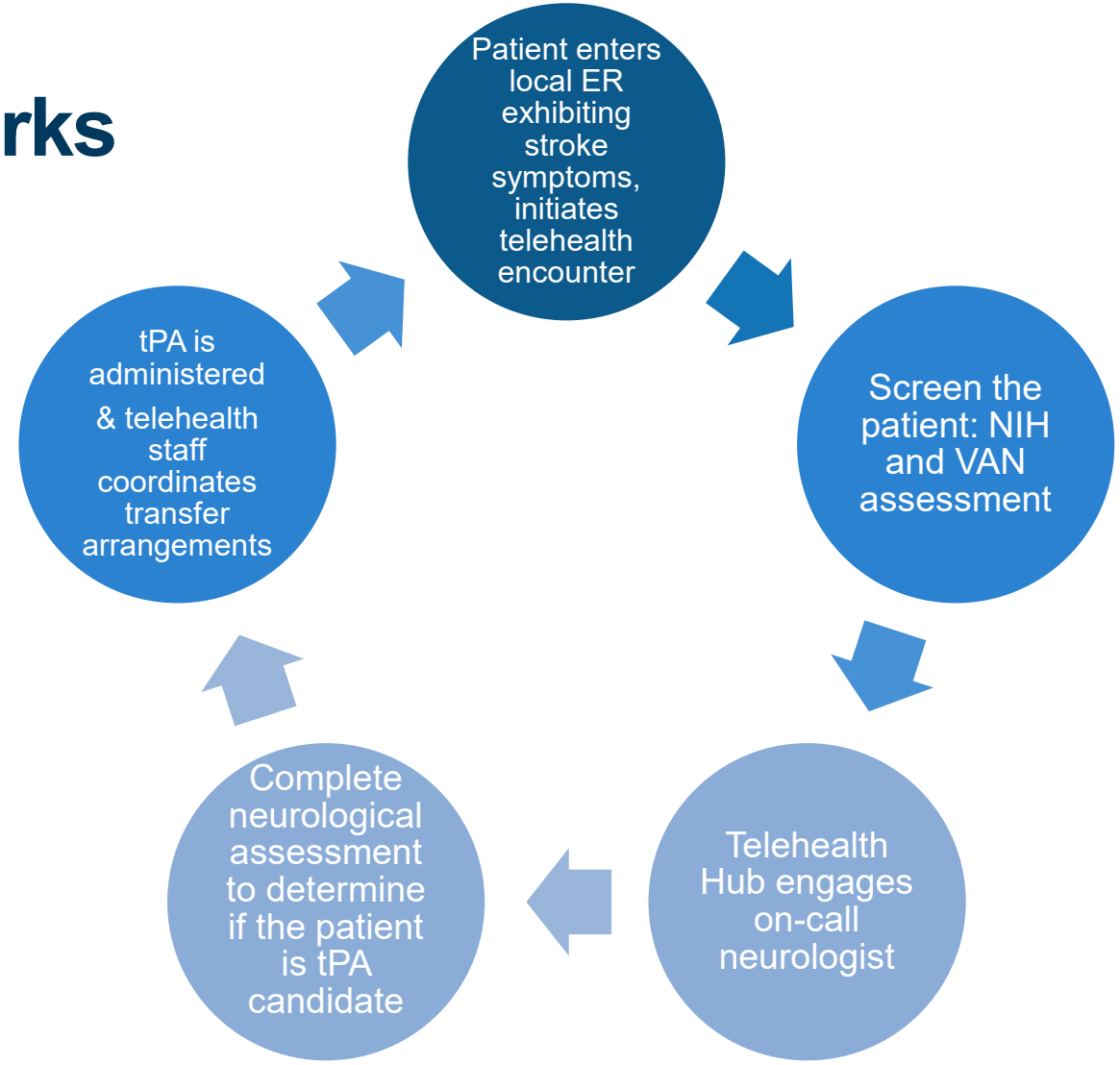
Tele-Stroke: How it Works

- Telehealth gives originating sites immediate access to neurologists for acute stroke patients and neurological emergencies



Tele-Stroke: Benefits

24/7/365 video access to neurologist via telehealth for stroke consults

Access to specialty consultation for ischemic strokes, TIAs, and stroke mimics

Decreased door-to-neurologist time, increasing chances that eligible patients will fall within the window for tPA administration

Avoids unnecessary transfers

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Telemedicine Is Associated with Faster Diagnostic Imaging in Stroke Patients: A Cohort Study (2019)

Table 2. Association of Telemedicine with Time to tPA/CT Interpretation and Those Given tPA (Stroke Within 3 h of Symptom Onset) and Fibrinolysis and EKG Time and Fibrinolysis Rate (Myocardial Infarction and STEMI Cohorts)

	MODEL 1 (LINEAR SCALE)[a]				MODEL 2 (LOG SCALE)[a]				MODEL 3 (LOGISTIC SCALE)[a]	
	TELEMEDICINE WAS AVAILABILITY		TELEMEDICINE ACTIVATED		TELEMEDICINE WAS AVAILABILITY		TELEMEDICINE ACTIVATED			
	MEAN DIFFERENCE	95% CI	MEAN DIFFERENCE	95% CI	MEAN DIFFERENCE	95% CI	MEAN DIFFERENCE	95% CI	OR	95% CI
MI										
EKG time[b]	−4.3	−13.6 to 5.0	−3.50	−11.7 to 4.7	−0.04	−0.10 to 0.03	−0.01	−0.07 to 0.04	NA	NA
Fibrinolysis time (STEMI patients only)	−28.2	−82.9 to 26.6	2.5	−44.3 to 49.3	−0.08	−0.39 to 0.22	0.02	−0.24 to 0.28	NA	NA
Fibrinolysis rate (STEMI patients only)										
Telemedicine available	NA	NA	NA	NA	NA	NA	NA	NA	0.80	0.23 to 2.78
Telemedicine activation	NA	NA	NA	NA	NA	NA	NA	NA	6.17	2.34 to 16.3
STROKE										
Head CT interpretation time[b]	20.0	−40.0 to 0.10	−18.50	−35.1 to −1.8	−0.13	−0.27 to 0.01	−0.15	−0.26 to −0.04	NA	NA
tPA time	−12.8	−57.8 to 32.2	1.50	−41.0 to 43.9	−0.12	−0.41 to 0.16	0.04	−0.23 to 0.31	NA	NA
tPA administration										
Telemedicine available	NA	NA	NA	NA	NA	NA	NA	NA	0.14	0.06 to 0.34
Telemedicine activation	NA	NA	NA	NA	NA	NA	NA	NA	3.49	1.50 to 8.15

[a]Clustered on hospital.
[b]A constant of 61 was added to times to allow for log transformation of zeros.
CI, confidence interval; MI, myocardial infarction; NA, not applicable; OR, odds ratio.

- Telemedicine activation resulted in faster transfer of care to next available provider for MI patients
- Telemedicine use increased the proportion of eligible patients that received fibrinolysis
- Telemedicine activation resulted in faster CT interpretation

Quality Initiatives for Timeliness of Care

- Accurate determination of Last Known Well
- CT order time
- CT interpretation time
- Neuro Consult time
- Accurate Inclusion / Exclusion criteria review
- Improving Door-to-Needle time
- Decision to transfer time to appropriate Stroke Center (LVO to Intervention)

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Tele-Stroke Patient Testimonial

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Tele-Stroke

Tele-Stroke


EMERGENCY
PHONE
MODEL E-1600A
CALL
CONNECTED
PUSH FOR
HELP
VIKING
2B13
2B14

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Tele-Stroke

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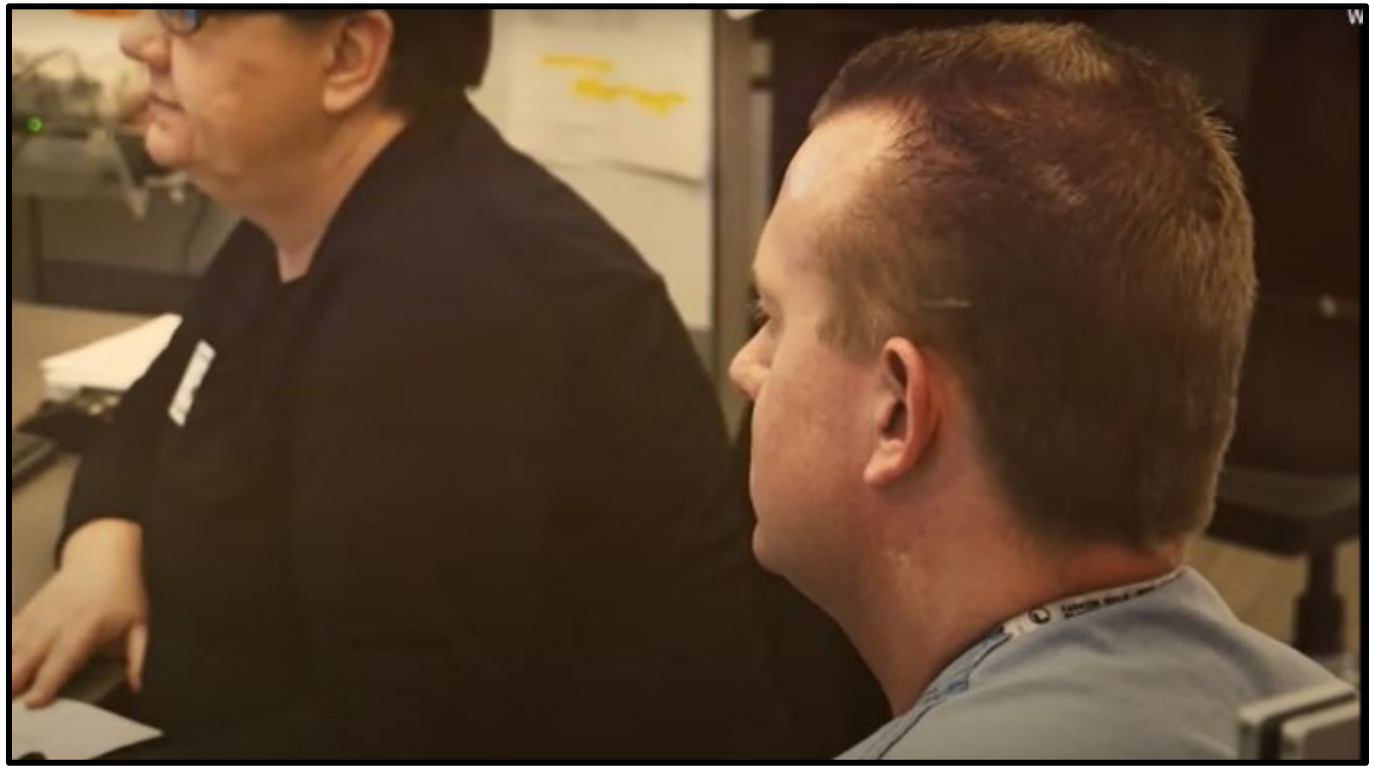
Tele-Stroke



Tele-Stroke

Tele-Stroke

Questions?

Thank You

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