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Protected Code Stroke and Crisis Resource Management

Considerations during the COVID19 Pandemic and Beyond

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- No other disclosures

Presenter:

Medical Director, Inpatient Stroke Unit
Assistant Professor, Division of Neurology, Department of Medicine, University of Toronto
Sunnybrook Health Sciences Center
Staff Intensivist, Critical Care Medicine, Southlake Regional Health Center

Contacts:
- houman@stroke.dev
- @neuroccm

- "Stroke FM" Podcast (stroke.fm)

Houman Khosravani, MD PhD

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Challenges: Stroke

- **Remains a medical emergency**
- Stay-at-home orders
- Fear of visiting medical facility
- Social isolation, impact on elderly
- Increased mortality
- Deaths caused by “respiratory failure” when etiolog
- Deaths primarily due to stroke
- Misdiagnosis of stroke
- Stroke incidence is declined in certain groups
- Environmental & behavioural changes

Categories: COVID-19, Advisories & Comments | **Published:** April 22, 2020

The new pandemic threat: People may die because they’re not calling 911

Leaders of major national organizations - dedicated to saving people from heart disease and stroke - speak out

American Heart Association. | ABC Association of Black Cardiologists, Inc. | American College of Cardiology
American Academy of Neurology | American College of Emergency Physicians®
HFSA Heart Failure Society of America | Heart Rhythm Society | SCAI Society for Cardiovascular Angiography & Interventions

* Logo copyrights are held by each organization.

https://newsroom.heart.org/news/the-new-pandemic-threat-people-may-die-because-theyre-not-calling-911

Challenges: SARS-CoV-2 and COVID19

- New Virus, New to Humans, a few Months of experience
- Testing capability, testing type
- Not the most lethal, mean case fatality ~3%, but wide range (0.5-28%), relative to SARS1 9.6%, MERS 34%, but highly contagious, more people affected
- Lack of full knowledge about immunobiology
- Large proportion of asymptomatic individuals (mild in 50-80%, potentially symptomatic up to 30-40%)
- Neurologic involvement – Is it neurotropic? Strong signal for Endotheliopathy!
  - Anosmia, ageusia
  - Ischemic stroke – large vessel occlusions, and other causes such as microvascular
  - Confusion, encephalopathy, seizures, headache
  - Peripheral nervous system involvement

Putting the "Code" into Code Strokes

- Code stroke is a term used to prioritize the hyperacute assessment and care of a patient presenting with signs and symptoms concerning for stroke.
- The word code brings forward **a sense of nuance with measured urgency without compromising precision** in diagnosing and treating patients with stroke
- Protected Code Stroke
  - Framework for running a Code Stroke during COVID19 and other infectious scenarios
  - Maximum protected for stroke teams (RNs, Other staff, MDs, Trainees)
  - Best possible outcome for the patients
    - **Door-to-Needle, Door-to-Groin Puncture remain of key importance!**
    - Preserving the Healthcare team, Lean, Swift + Efficacious action!

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Protected Code Stroke
Part 1 - Screening

** Screening Prior to Code Stroke**

- **On Pre-notification**
  - Is the patient exhibiting any infectious symptoms (Infection Control Screen)?
    - Fever, cough, chest pain, dyspnea, headache, myalgias, emesis/GI symptoms
  - Is there a close contact with infectious symptoms?
  - Does the patient or a close contact have a travel history?
  - **ANY of the above are POSITIVE?** → proceed as a **PCS**

- **Historical and Examination Features**
  - NO or POSITIVE Infection Control Screen?
  - Unclear history? Patient unable to communicate?
  - Decreased level of consciousness? presyncope/syncope?
  - History or examination features suggestive of an alternate (non-stroke) diagnosis?
    - **ANY of the above are TRUE?** → proceed as a **PCS**

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"Pro" Tips!

- 1) Prenotification is key
- 2) If patient cannot be screened, run as a Protected Code
- 3) Use collateral information to obtain screening as soon as possible, within the first 4-6 hours of the code, especially if patient is being admitted
- 4) Threshold for making codes PCS should be low – consider making all Code Strokes Protected!

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Protected Code Stroke
Part 2 - Action

** Protected Code Stroke **

- **Use Personal Protective Equipment (PPE) and Place a Mask on the Patient**
  - **(1) Use Droplet/Contact PPE:** full-sleeved gown, surgical mask, eye protection and gloves (ideal to use extended cuff gloves)
    - Is there **Aerosolization?** e.g. oropharyngeal/nasal (open) suctioning, intubation, non-invasive ventilation, Code Blue and/or CPR
      - **YES to Aerosolization?** → use **Airborne/Droplet/Contact PPE:** full-sleeved gown, N95 mask, eye protection and gloves (ideal to use extended cuff gloves)
  - **(2) Place a surgical mask on the non-intubated patient (after securing your own PPE)**
    - Mask should stay on the patient during transport to and from imaging
  - **Is the patient obtunded? Needing high FiO_2 (> 0.5)? Needing CPAP, BiPAP, Nasal High Flow therapy, or Bag-Valve-Mask ventilation?**
    - **YES** to **ANY?** → Consider **EARLY** intubation, Consult ED/ICU physician for airway management prior to transport to imaging

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"Pro" Tips!

- 1) Team pre-briefing
- 2) Designate a Safety Leader – they are the "safety net" for the team, to ensure proper donning and doffing in addition to minimal contamination of the environment
- 3) Pay meticulous attention to PPE
- 4) **ASAP** placement of a surgical mask on the non-intubated patient

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Putting the "Code" into Code Strokes

- "The therapeutic tools we have in stroke are only as good as the teams working together to deliver them to the patient. CRM is uniquely poised to address the current need and future emergency preparedness in stroke care."

Neurocrit Care
https://doi.org/10.1007/s12028-020-01057-4

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Crisis Resource Management (CRM):

- Do not rush inside the resuscitation room – slow is smooth, smooth is fast
- Designate a Safety Leader
- Role designate your team, avoid crowing, do a pre-brief if possible
- Ensure PPE is donned by all team members before starting the PCS
- Avoid contamination of hospital environment (CT scanner) and during transitions to and from the ED

Elements of CRM:

- Triage and Prioritization
- Role clarity
- Situational Awareness
- Cognitive Load
- Communication
  - Closed-loops of communication
  - Sharing the metal model
- Debriefing
- Simulation

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Stroke Checklist

PRIOR to Patient Arrival

- ☑ **Activate Code Stroke via Emergency Line**
- ☑ **Initiate pre-resuscitation *Zero Point Survey***

S	**Self Check**	- Mental readiness - Physical readiness
T	**Team**	- Determination of code stroke leader - Role clarity, Safety Lead designation - Pre-Brief
E	**Environment**	- Space, crowd control, noise, light, equipment
P	**Patient**	- Primary Survey: ABCDE - Clinical History, NIHSS

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Zero Point Survey

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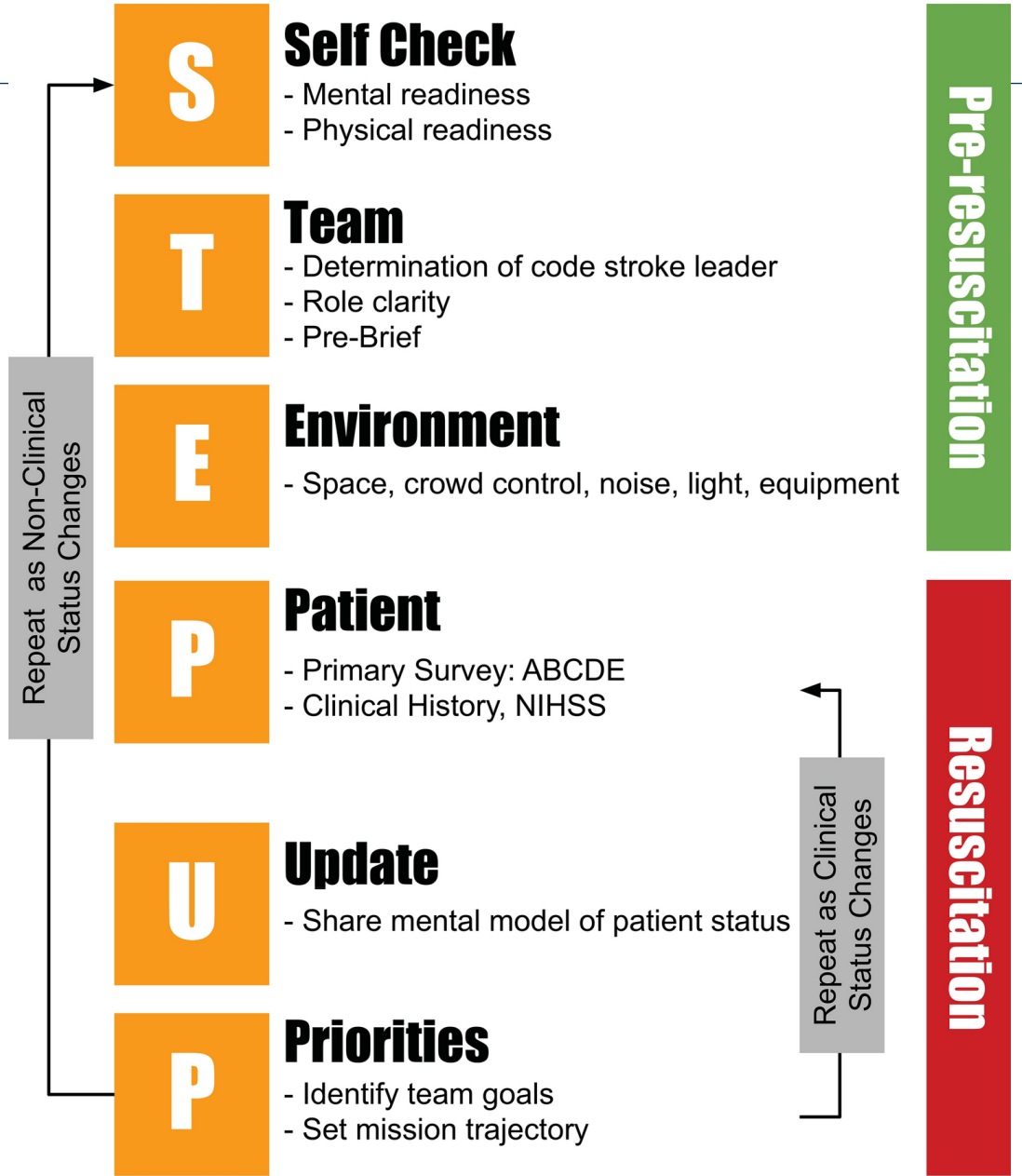

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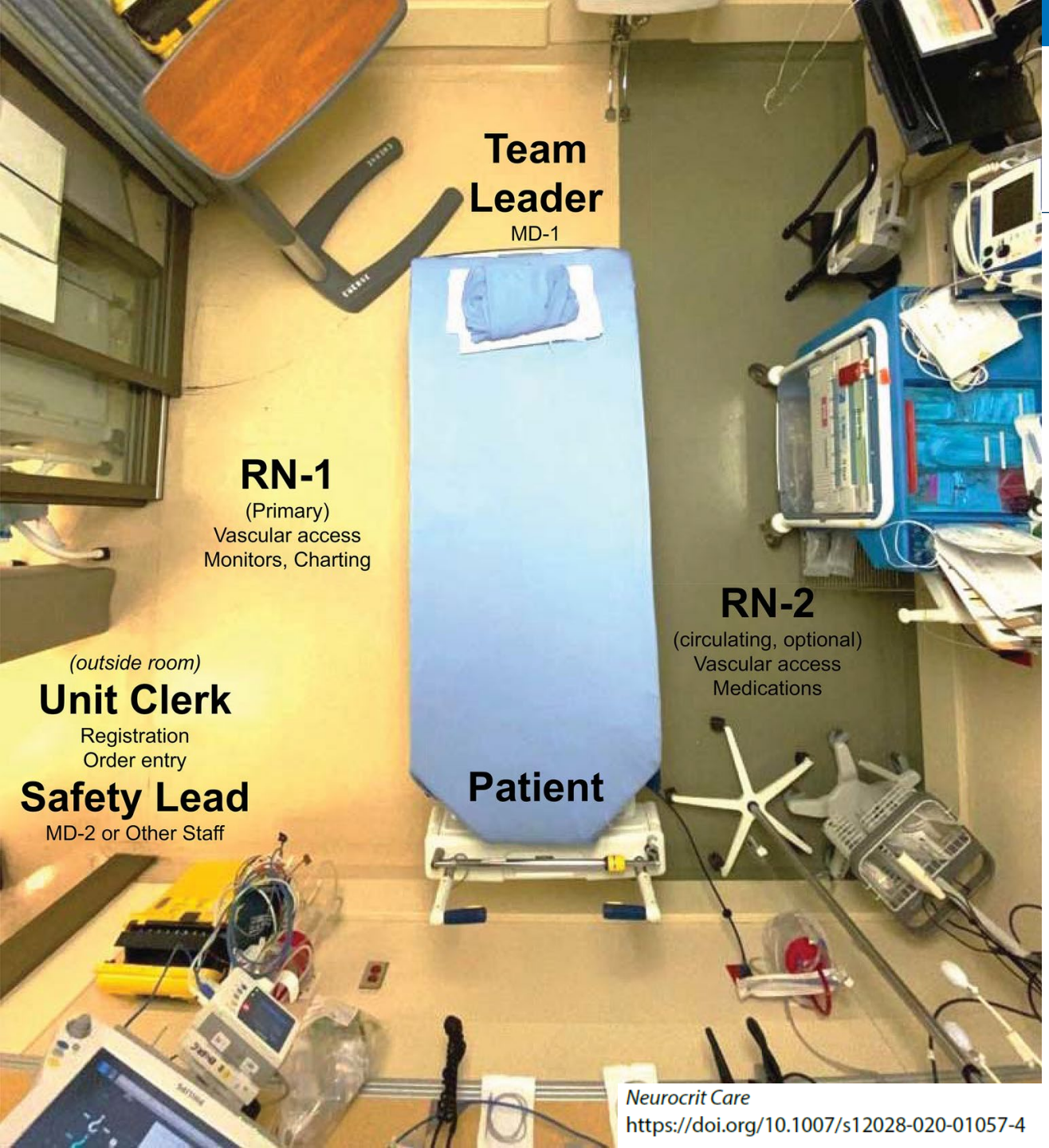

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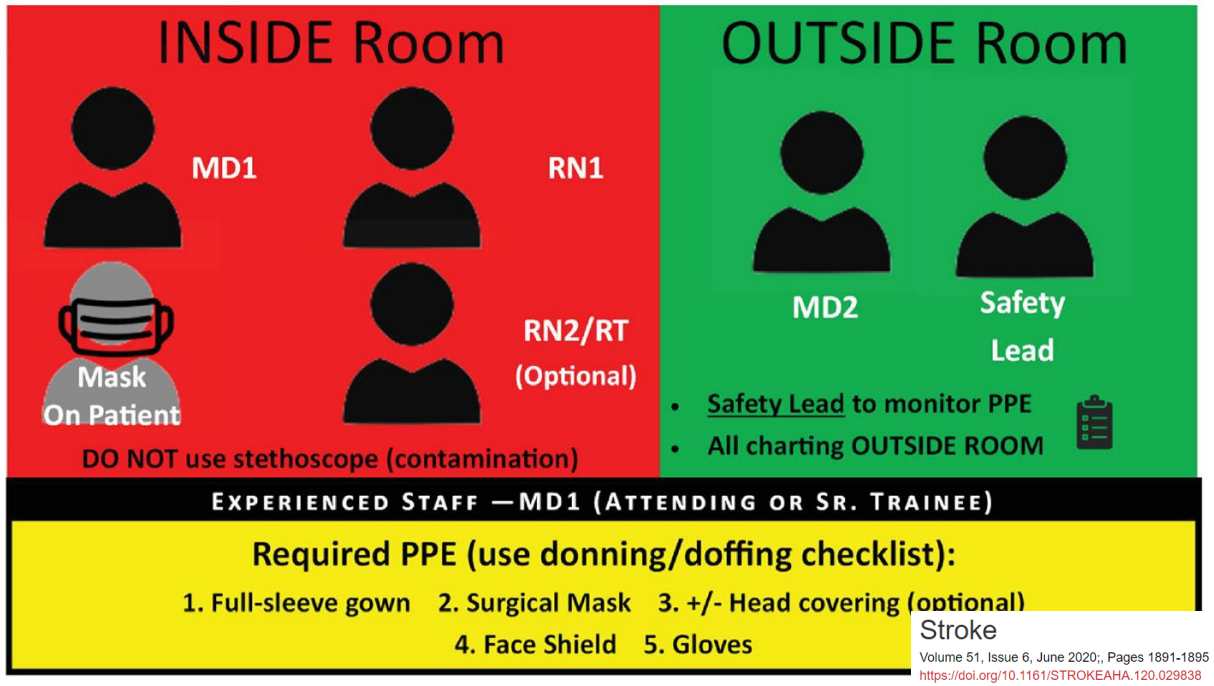
- Role clarity
- Situational Awareness
- Cognitive Load (safety lead)
- Communication
  - Closed-loops of communication
  - Sharing the metal model



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PRIOR to Departure from Assessment Room

- ☑ Are we satisfied with the primary survey?
- ☑ Is the transport monitor & thrombolysis kit ready?
- ☑ IV access established and functioning?
- ☑ Has bloodwork been sent?
- ☑ Is CT ready?
- ☑ Do we need additional equipment or medications?

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Hot Debrief

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☑ Initiate

- Announce to the team that a quick debriefing will occur
- Encourage all team members to participate

☑ Safe Space

- Ensure psychological safety and a flat hierarchy
- Create a non-threatening, no-blame environment

☑ Review

- Discuss chronological progression of events
- Allow team members to provide their own perspectives

Team Successes	Team Challenges
- Discuss personnel, process, and equipment issues - Discuss team communication and barriers - Avoid critique of individual performance - Avoid jumping to a solution	

☑ Participate

- Ensure all team members have an equal opportunity to speak

☑ Follow-up

- Track and follow-up on voiced concerns
- Allow option for individuals to discuss concerns privately

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Additional considerations:

- STEP – Self Check, Team, Environment, Patient
  - Attire at work: Masks/Glasses/Hair-tie/Glasses-strap, Scrubs, footwear
- Minimize In/Out of Room transitions
- Pragmatic physician exams, Minimize Repeat examinations
  - Use remote monitoring in ED
- Admit if needed – avoid phone-tag with different services and vice-versa
- Consider discharge and outpatient tests for TIA – high-risk get a CTA!

References and On-line Resources:

- Protected Code Stroke:
  - Stroke Journal: https://doi.org/10.1161/STROKEAHA.120.029838
- Crisis Resource Management and High-Performing Teams in Hyperacute Stroke Care
  - Neurocritical Care: https://link.springer.com/article/10.1007/s12028-020-01057-4
- Blog post with Additional considerations
- Codestroke.net – if you are interested in bringing codestroke.net, individualized for your own center, please get in touch: houman@stroke.dev

Questions?

Thank You