CRITICAL CARE RESUSCITATION UNIT (CCRU)

University of Maryland Medical Center’s Innovation to Optimize Outcomes for Inter-facility Transfers with Non-Trauma Time Sensitive Critical Illness

Lewis Rubinson MD, PhD
Professor of Medicine
University of Maryland School of Medicine
Assistant Chief Medical Officer- Critical Care
University of Maryland Medical Center/ R Adams Cowley Shock Trauma Center
FINANCIAL DISCLOSURES

Discovery-Program in Emergency Preparedness (SCCM and USCIIT)
HHS BARDA/FDA funding
Protocol co-chair, Steering Comm member and Site PI

Ventec Life Systems
Novel ventilator multi-therapy device
Financial relationship
Clinical Advisory Board member

Philips/ Respironics
Novel ventilator
Consultation
Scientific Advisory Board member

I have received speaking honoraria and travel support from academic medical centers and academic professional societies.
TIME SENSITIVE STROKE CARE

- Early EMS notification and recognition
- Pt transported to Primary Stroke Center
- Rapid ED recognition and CT
- Left prox MCA (hyperdense M1)
- TPA given (70 min after onset)
- Transfer request to Comp Stroke Ctr for possible endovasc intervention
  - Delayed due to no NCCU bed
  - Sent to ED without full crit care recs, transfer med direction, or adequate commo with Brain Attack to streamline eval/ resus/ time to neuro IR
• 52 y/o woman with HTN presents to a community hospital with chest pain, tearing sensation to back

• Referral request

• Accepted by cardiac surgeon
  – OR not aware of pt prior to arrival
  – Several ongoing CS cases
  – No hemodynamic management recs to referring physician or transport team

• No CSICU bed so delayed transfer until arrangements made for ED or direct OR transfer

• Pt dies prior to arrival

MYRIAD OF TIME SENSITIVE NON-TRAUMA TRANSFER NEEDS

TIME-SENSITIVE EXAMPLES

- **Acute Care Emerg Surgery** - surgical sepsis, hemorrhage
- **Cardiology** - MI, post arrest
- **Cardiac Surgery** - ascending aortic emergencies, cardiogenic shock including high risk & massive PE, acute valvular dysfunction
- **Neurology** - Stroke care (especially neurovasc intervention)
- **Neurosurgery** - atraumatic SAH
- **Oncology** - acute leukemia requiring immediate interventions
- **Respiratory Failure** - multi-specialty eval for advanced resp care including ECMO
- **Transplant** - fulminant hepatic and acute on chronic hepatic failure
- **Vascular** - Acute occlusion, pseudoaneusymal and aneursymal hemorrhage
### The Argument for Regionalization

#### Pro
- Vol: Outcome relationships
  - Structure
  - Process
- Qualified provider shortages
- Reduce redundancy of costs for entire catchment area
- Structure for organizing system and standard processes
  - Referring and receiving facilities

#### Con
- Access
- Concentrating expertise
- May overburden receiving facilities
- Financial implications for referring and receiving hospitals
- Potential transport hazards
- Family impact due to distance from home
- Possible information gap regarding patients previous medical care as well as post discharge handoff potential for communication failure
### POTENTIAL BENEFITS OF INTERHOSPITAL TRANSFERS

Kahn JM et al. AJRCCM 2008.

<table>
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<tr>
<th>Variable</th>
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<th>Small Urban</th>
<th>Rural Area</th>
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<td>57,862</td>
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<td>1,153 (671–1,659)</td>
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<td>6.4 (3.4–12.7)</td>
<td>23.3 (10.8–47.2)</td>
<td>56.6 (47.4–78.7)</td>
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</table>
1 in 20 Medicare crit care stays currently involve interhospital transfers

ADD IMAGE OF TRANSFER NETWORKS
MARYLAND HOSPITALS: VARIABLE LEVELS OF RESOURCE AND CAPABILITY
UNIVERSITY OF MARYLAND MEDICAL CENTER

- 757 inpatient beds
- 35K inpatient admissions/yr
  - approx 11K are transfers
  - Many transfers are critically ill or require immediate intervention
- Busy surgical subspecialty services
  - Vascular, Cardiac Surgery including Aortic Center
  - Acute Care Emergency Surgery (ACES), Neurosurgery and Liver Transplant have large emergency practice
  - Soft Tissue service is major referral site for necrotizing STIs
- Comprehensive stroke center
- Lung Rescue Unit
FY 2013: PATIENTS UNABLE TO ACCESS UMMC INPT SERVICES

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- Most Neurosurgery, ACES, Pulm, and Neurology were unable to access due to unavailable ICU beds.
- STC lost admissions were usually isolated non-life threatening or not time-sensitive injuries.
FY’13 DELAYS TO TRANSFER EVEN FOR THOSE WHO ARRIVED AT UMMC

Time From Consult to Transportation Dispatch
### REceiving Unit When Primary Location Unavailable

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<th>Service</th>
<th>Service Primary Unit(s)</th>
<th>Cross Boarding Unit</th>
<th># of Occurrences of Cross Boarding</th>
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Some alternate admission sites had no problems, but sites were generally not designed nor had detailed, deliberate processes for alternate types of patients.
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<tr>
<td>Vascular</td>
<td>38%</td>
<td>35%</td>
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We need a unit to get surgical critical care pts, especially with aortic emergencies to UMMC 24/7. Always at the ready.

We need to grow our tertiary/quaternary services to enhance our clinical, training, and research missions.
THE DILEMMA: BUILDING ADDITIONAL CAPACITY BY SPECIALTY NOT THE ANSWER

• Emergencies are not uniformly distributed across time
  – To be able to always receive pt, some excess capacity must be maintained

• Addl capacity needed for all key programs
  – Multiplier very costly

• BUT, Additional capacity would need to be constantly utilized for sustainability
  – FTE costs, equipment costs, etc
  – May dilute acuity due to availability

• Negative impact of delay to ICU care/ OR has been documented in a number of studies
  – How about delay to perform key processes even within ICU or OR?
  – It may not be about ICU but instead time-sensitive requirements

• ICU workflow not necessarily conducive to receiving emergencies 24/7
We know how to build this

We already do this, but now we’ll do it for non-trauma shock

Prehospital coordinated system and standardized training/protocols
Use speed when appropriate
Real-time med direction to push STC expertise field-forward

Appropriate anticipatory posture
Saying “yes” too all in need is crucial

-But-

It's not just about volume… The TRU is not just a landing zone…

It’s a Resuscitation Unit skilled in provision of full-spectrum trauma management
TRU EXPERIENCE

Never say “no” to referring facilities with sick trauma patients

24/7 attending trauma surgeon providing pre-hospital medical control and consultation to referring clinicians

Entire TRU process developed to optimize time-sensitive evaluation and appropriate interventions

All staff (nurses, RTs, anesthesia, Radiologists and Xray techs, techs, clerks) are trained/experienced for trauma patients

Able to manage all anticipated trauma needs in optimal timelines
Critical Care Resuscitation Unit (CCRU)

Applying the Shock Trauma model to non-trauma time sensitive critical illness
NEW WAY FOR NON-TRAUMA TIME-SENSITIVE CRITICAL ILLNESS

Build a system for ensuring time-sensitive tertiary/quaternary critical care needs get immediate access to UMMC

Link referring facility and transport team data to anticipatory posture of receiving unit

Standardize processes for rapid resuscitation and life-saving intervention

Active management of patients’ subsequent disposition (OR, ICU, downgrade, etc)
  − Short duration (goal 6-12 hrs, shorter for operative emergencies)
CRITICAL CARE RESUSCITATION UNIT (CCRU)

- Requirements-driven rather than disease-specific
  - “Competency” in myriad of time-sensitive eval, procedures, diagnostic processes, organ support

- Deliberate coordination of consultation, transportation, pre-arrival posture, early eval and resus, intra-hosp transfers and QA/QI

- All non-trauma surgical subspecialty critically patients transferred to UMMC

- Model: 6-12 hrs dispo to definitive ICU, faster if dispo to OR

6 beds

24/7 Attending intensivist/ APP dedicated coverage

Dedicated nursing team

Roles/responsibilities/training of clerical and clinical techs fully integrated
WHY IS THE CCRU NOVEL?

• On the surface the CCRU looks like an ICU
  – Uses ICU rooms in STC tower

• Procedures and equipment similar to ICUs
  – However, equipment is what you would see across all adult ICUs
    • EVD, cont EEG, IABP, V-A ECMO, PA cath, prone positioning, V-V ECMO, CRRT, MARS, REBOA, wound vac/ open abdomen

• Community access mission
  – Workflow optimized not only for current pts but next consult and inbound patients

• Optimized communication
  – Referring facility
  – Prehospital transport
  – Receiving ICU, ward or OR

• Anticipatory posture

• As many resources as needed are used for admission
  – Defined roles/ responsibilities

• Specialist can focus on eval, early intervention since CCRU team takes care of hemodynamics/ metabolic derangements
THE INITIAL CONSULTATION

MARYLAND EXPRESSCARE (MEC)
Staffed 24/7
16 FTEs
Comm Ctr Coordinators are EMT trained
Recorded lines for quality monitoring
GPS/computer assisted dispatch

1. Subspecialty attending paged
2. CCRU attending has direct phone
3. Subspecialist determines if transfer is warranted (usually in consultation with CCRU)
4. CCRU determines if CCRU is warranted
   - All surgical critical care pts come to CCRU
     • CSICU and SICU do not take direct transfers any more
   - Neuro, neurosurg, MICU overflow
   - If need time sensitive procedure will still bring even if not critically ill (e.g. limb ischemia)
5. Management recs provided when applicable
6. Transport modality also recommended

11,000 transfers/yr
20+ yrs in existence
Prior to July 2013:

- Receiving ICUs had no standard means to gather and disseminate pre-arrival data from referring and Express Care
- Response to pt arrival was typically reactive rather than anticipatory and proactive
- Some ICUs w/o 24/7 attending intensivist coverage
- No means to rapidly enter patient orders if crashing patient arrived and problem with registration system
- Limited means to rapidly review outside imaging
- No standard prioritization schema if transfers had addl rapid imaging needs
- Transfers frequently came at bad time for ICU work flow
TRANSFERS ARE LIKE A BOX OF CHOCOLATES

Sources of pre-arrival data to ensure:

- Safe transport
- Arrival anticipatory posture

1. Initial consult

2. Chesapeake Regional Information System for our Patients (CRISP)
   - MD statewide

3. Referring nurse: receiving nurse report

4. MEC ground or PHI air team pre-departure call to CCRU attending
   - 80-90% of CCRU transfers

Many reasons why pt’s condition may be different on arrival from what was conveyed on consultation call
Ensuring care starts as early as can be safely accomplished

Pushing CCRU/ UMMC subspecialty care goals to referring hospitals
- e.g. BP control in SAH due to unsecured aneurysm or Type A dissection (HR control as well)
- We ensure things are started asap
  - Did they initiate our recs from consultation (nursing report and transport med direction call)

Based on physiology and equipment needs we provide deliberate recs for best transport means for pt
- Ground vs air
- Advanced capability (e.g. full-feature vent, inhaled vasodilator) vs speed
ACUTE RESUSCITATION FRAMEWORK

• Roles and responsibilities of all CCRU staff for resuscitating a critically ill patient

• Criteria for initiation

• Criteria for de-escalation

• Minimize chaos
EXAMPLES OF CCRU PATIENTS

**Vascular**
- aortic emergencies, acute ischemic limbs, pseudoaneurysmal hemorrhage

**Cardiac Surgery**
- aortic emerg, massive PE, acute need for CABG, endocarditis, acute flail mitral valve, V-V ECMO for resp failure, V-A ECMO for cardiogenic shock

**Acute Care Emergency Surgery**
- life-threatening intra-abd pathology, massive GI hem, severe pancreatitis

**Soft Tissue**
- necrotizing fasciitis

**Neurological**
- acute CVA post TPA, status epilepticus, AIDP

**Neuro Surgical**
- Non-traumatic SAH, ICH, acute paralysis

**Cardiology**
- cardiogenic shock, post-arrest, Pulm HTN, severe arrhythmias

**Obstetrics**
- life threatening peri-partum hemorrhage, amniotic fluid embolism
CCRU ANTICIPATORY POSTURE AND RAPID RESUSCITATION
INFRARENAL AAA
W/ CONTAINED RUPTURE

CCRU Interventions

1. Endotracheal tube intubation
2. Right IJ MAC cath insertion
3. Right radial a-line
4. Transfer to OR and near immediate skin incision
1. Severe sepsis and septic shock resuscitation
2. Massive hemorrhage resuscitation
3. ICP management
4. Complex ventilator management, (“rescue therapies” for refractory resp failure)
5. ECMO cannulation and management
6. Invasive hemodynamic monitoring and IABP management
7. Renal replacement therapy

Less commonly used, but available
1. REBOA
2. Minnesota tube placement
3. Plasmapheresis
4. MARS
5. Hemoptysis temporizers (endobronchial blockers)
6. In-room operative procedures (decompressive lap)
CCRU NURSES - A TRULY SPECIAL GROUP

Terri Dinardo - CCRU nurse manager (also TRU manger)
- Selected charge nurses with extensive and varied crit care experience

CCRU mission requires wide breadth and deep depth of expertise
- Must provide care with competency of each specialty ICU
Table 1. Nontrauma, Adult Critical Care Transfers and Lost Admissions to the University of Maryland Medical Center

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total critical care transfers, n</td>
<td>1,354</td>
<td>2,228</td>
<td>1,318</td>
<td></td>
</tr>
<tr>
<td>Mortality, n (%)</td>
<td>224 (16.5)</td>
<td>365 (16.4)</td>
<td>193 (14.6)</td>
<td>0.31</td>
</tr>
<tr>
<td>Length of stay, d (excludes in-hospital mortality), median (interquartile range)</td>
<td>8 (4–15)</td>
<td>8 (4–15)</td>
<td>9 (5–16)</td>
<td>0.059</td>
</tr>
<tr>
<td>Lost admissions, n</td>
<td>469</td>
<td>363</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lost admissions/total critical care referrals, %</td>
<td>25.7</td>
<td>14</td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Clinical service, n</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Acute care emergency service</td>
<td>57</td>
<td>161</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>Cardiac surgery</td>
<td>157</td>
<td>225</td>
<td>202</td>
<td></td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>219</td>
<td>375</td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Surgical ear, nose, throat</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Surgical oncology</td>
<td>1</td>
<td>13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Thoracic surgery</td>
<td>23</td>
<td>14</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Transplant surgery</td>
<td>14</td>
<td>52</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Vascular surgery</td>
<td>40</td>
<td>143</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Urology</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Other*</td>
<td>835</td>
<td>1,223</td>
<td>505</td>
<td></td>
</tr>
</tbody>
</table>

*Numerous clinical services, including cardiology, medicine, neurology, and pulmonary critical care.

TOTAL CCRU PT VOLUME

- 134 soft tissue pts
- 138 Trauma pts
- 244 inpt deterioration w/o available ICU bed

Figure 1. Critical care resuscitation unit (CCRU) flow diagram.
CCRU ASSOCIATED WITH EXPANSION OF SEVERAL KEY PROG

UMMC cardiac surgery is highest vol program in MD

3rd busiest adult ECMO program in US
  60% V-V, 40% V-A
  ~ 170 cases/yr

~ 170 liver transplants/yr
### Table 2. Timing and Outcomes of Critical Care Transfers to the University of Maryland Medical Center: Pre vs Post-Critical Care Resuscitation Unit

<table>
<thead>
<tr>
<th>Variable</th>
<th>2011—2012 Transfers to adult ICU</th>
<th>2013—2014 Transfers to CCRU</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>1,354</td>
<td>1,318</td>
<td></td>
</tr>
<tr>
<td>Deaths, n (%)</td>
<td>224 (16.5)</td>
<td>193 (14.6)</td>
<td>0.27</td>
</tr>
<tr>
<td>Time from consult to arrival, min, median (IQR)</td>
<td>234 (142–418)</td>
<td>129 (85–236)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital LOS, d (excluding deaths), median (IQR)</td>
<td>8 (4–15)</td>
<td>9 (6–16)</td>
<td>0.01</td>
</tr>
<tr>
<td>CCRU LOS, h, median (IQR)</td>
<td>NA</td>
<td>9 (4–20)</td>
<td></td>
</tr>
<tr>
<td>Patients operated during hospitalization, n (%)</td>
<td>421 (31.1)</td>
<td>605 (46)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Deaths, n (%)</td>
<td>65 (15.4)</td>
<td>77 (12.7)</td>
<td>0.25</td>
</tr>
<tr>
<td>Time from consult to arrival, min, median (IQR)</td>
<td>223 (146–406)</td>
<td>118 (76–200)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time from arrival to incision, min, median (IQR)</td>
<td>3,424 (927–9,752)</td>
<td>1,133 (323–5,195)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital LOS, d (excluding deaths), median (IQR)</td>
<td>17 (10–28)</td>
<td>13 (8–23)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Patients operated within 12 h of arrival, n (% of operations)</td>
<td>90 (21.4)</td>
<td>248 (41)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Deaths, n (%)</td>
<td>13 (14.4)</td>
<td>31 (12.5)</td>
<td>0.78</td>
</tr>
<tr>
<td>Time from consult to arrival, min, median (IQR)</td>
<td>166 (118–258)</td>
<td>106 (67–155)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time from arrival to incision, min, median (IQR)</td>
<td>318 (192–489)</td>
<td>262 (177–446)</td>
<td>0.105</td>
</tr>
<tr>
<td>Hospital LOS, d (excluding deaths), median (IQR)</td>
<td>13 (7–26)</td>
<td>13 (7–21)</td>
<td>0.32</td>
</tr>
</tbody>
</table>

KEY EQUIPMENT
FOR EMERGENT REQUIREMENTS
Table 3. Critical Care Transfers to University of Maryland Medical Center’s Acute Care Emergency Surgery and Cardiac Surgery Services: Pre- vs Post-Critical Care Resuscitation Unit

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>214</td>
<td>357</td>
<td></td>
</tr>
<tr>
<td>Deaths, n (%)</td>
<td>31 (14.5)</td>
<td>45 (12.6)</td>
<td>0.60</td>
</tr>
<tr>
<td>Time from consult to arrival, min, median (IQR)</td>
<td>199 (138–368)</td>
<td>131 (77–254)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital LOS, d (excluding deaths), median (IQR)</td>
<td>9 (6–19)</td>
<td>10 (5–18)</td>
<td>1.00</td>
</tr>
<tr>
<td>Patients operated during hospitalization, n (%)</td>
<td>132 (61.7)</td>
<td>228 (63.9)</td>
<td>0.70</td>
</tr>
<tr>
<td>Deaths, n (%)</td>
<td>17 (12.9)</td>
<td>27 (11.8)</td>
<td>0.92</td>
</tr>
<tr>
<td>Time from consult to arrival, min, median (IQR)</td>
<td>202 (138–409)</td>
<td>120 (74–220)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time from arrival to incision, min, median (IQR)</td>
<td>1393 (462–5102)</td>
<td>779 (219–4,133)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital LOS, d (excluding deaths), median (IQR)</td>
<td>12 (7–25)</td>
<td>12 (7–22)</td>
<td>0.5</td>
</tr>
<tr>
<td>Procedure in operating room within 12 h of arrival, n (% of operations)</td>
<td>41 (31.1)</td>
<td>114 (50)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Deaths, n (%)</td>
<td>7 (17.1)</td>
<td>12 (10.5)</td>
<td>0.4</td>
</tr>
<tr>
<td>Time from consult to arrival, min, median (IQR)</td>
<td>162 (113–225)</td>
<td>107 (68–169)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time from arrival to incision, min, median (IQR)</td>
<td>254 (164–447)</td>
<td>224 (156–408)</td>
<td>0.49</td>
</tr>
<tr>
<td>Hospital LOS, d (excluding deaths), median (IQR)</td>
<td>8 (6–20)</td>
<td>11 (7–19)</td>
<td>0.65</td>
</tr>
</tbody>
</table>

TIME TO NEUROENDOVASCULAR INTERVENTION

DATA HERE
57 yo M calls 911, EMS arrives at ~1400 with sudden onset chest pain. EMS does EKG and diagnoses STEMI. ASA given.

Patient transported outside hosp @ 1431 with pre-hospital cath lab activation.
Cath lab course:

Eptifibatide, heparin, and norepinephrine drips started
Plavix 600mg administered
Left main coronary artery 99% occlusion
  • Wire passed, but unable to sufficiently aspirate, balloon or angiojet despite multiple attempts
  • 99% LAD, 70% ramus

Pt more hypotensive (norepi @ 15mcg/min), so Intra-arterial Balloon Pump (IABP) inserted
Worsening respiratory status, so emergently intubated
Call to UMMC and CCRU @ 1620
ExpressCare call taken @ 1620
Patient arrival to CCRU @ 1910 (delay at OSH)

Cardiac surgery, perfusion, and V-A ECMO cannulation/circuit ready at bedside on patient arrival.

Vital signs:
HR 105, BP 75/40 (MAP 52)
Norepi @ 15mcg/min (0.2 mcg/kg/min)
IABP 1:1 – “augmenting” to 56
IMMEDIATE LIMITED BEDSIDE ECHO
TYPE A AORTIC DISSECTION W/ ACUTE AORTIC INSUFF

Slide courtesy of Dr. Daniel Haase
TYPE A DISSECTION WITH CARDIOGENIC SHOCK

CCRU course:

Turn off IABP
Did not cannulate for VA ECMO (initially)
Stop anti-coagulation
Emergently to OR for dissection repair

Slide courtesy of Dr. Daniel Haase
ACTIVE MANAGEMENT OF PATIENT FLOW

CCRU attending works closely with UMMC/STC nursing coordinators (Patient Placement) and all ICU triage staff.

As we near capacity, we immediately establish contingency plans to ensure there is always capacity/capability for true time-sensitive emergencies.

- Bed availability is based on acuity of need, not number of beds.

Established agreements w/ ICUs for prioritization of CCRU patients vs crashing floor pts vs ED patients.

Speed bumps are dealt with quickly if determined to be system issue.
CCRU, AN EXTRA HAND-OFF
OPTIMAL COMM IS ESSENTIAL

1. Redundant communication with disposition unit
   Attending CCRU to ICU (or other unit) attending/fellow
   NP/PA to NP/PA verbal and written summary
   Nurse to nurse

2. Consulting service is involved in CCRU

3. QA/QI Processes to ensure CCRU is optimizing communication
$2.75 M FTE budget (does not include physicians)
   - 27 nurses
   - 8 techs
   - 6 NP/PAs
   - Clerical staff

$0.75 M equip/etc

ROI complex
Expanded CCRU role from outset for crashing pts in UMMC outside of ICUs

• Relationship with Rapid Response Teams

ED patients awaiting OR/ ICU bed and with time-sensitive need

− Does not address all ED boarding challenges but allows resource-intensive pts to leave ED and get immediate care

Resuscitation, (optimal time-sensitive care) is about meeting requirements, not about location

− ED vs ICU less important than capability to meet time-sensitive requirements

Time-sensitive requirements must drive workflow/resource
NEXT STEPS

Revise Maryland Express Care/ Patient Placement Center to Univ of MD Med System Access Center

Continue to improve patient flow and access through UMMC/UMMC

CCRU will re-locate near TRU to allow for flexible right-sizing of each unit/staff based on pt volume/acuity needs
THE NEAR FUTURE: REGIONALIZED NOT CENTRALIZED CRITICAL CARE

UMMS hospitals and affiliates.
“To serve as a multidisciplinary clinical, educational and research institution dedicated to world class standards in the prevention and management of critical injury and illness and its consequences.”