

ANSWERING THE CALL: REPURPOSING A PICU FOR ADULTS

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BACKGROUND

- MGH – 999-bed quaternary care hospital
 - 8 ICUs in the hospital (excluding NICU)
 - 2 adult “legacy” MICUs (36 beds)
 - 6 subspecialty ICUs (97 Beds)
- MGHfC – a pediatric hospital within a hospital
 - 14-bed med-surg PICU
 - 1,100 admissions/year
 - 1 of 4 PICUs in Boston



CORRESPONDENCE

To rapidly communicate short reports of innovative responses to Covid-19 around the world, along with a range of current thinking on policy and strategy relevant to the pandemic, the Journal has initiated the Covid-19 Notes series.

Repurposing a Pediatric ICU for Adults

March 28, 2020 – HICS team decision made to regionalize pediatric critical care

April 2, 2020 – last pediatric patient decanted and first adult admitted

April 5, 2020 – unit filled with 14 COVID ARDS adults

Yager PH, Whalen KA, Cummings BM. Repurposing a Pediatric ICU for Adults. *N Engl J Med*. 2020 May 28;382(22):e80. doi: 10.1056/NEJMc2014819. Epub 2020 May 15. PMID: 32412712.

THE TEAM

- RN-MD PICU team preserved
 - PICU attending – primary
 - PICU fellow + pediatric residents
- Adult expertise added
 - Medicine/Med-Peds residents
 - MICU consult
 - Adult subspecialty consults
- RNs
 - PICU + floor RN dyads caring for 2 patients



WHAT DOES THE TEAM NEED TO FEEL SAFE?

- Leadership presence
- Frequent communication
- Transparency
- Appropriate Staffing
- PPE + practice opportunities
- Expanded privileges and malpractice coverage



WHAT DOES THE TEAM NEED TO PROVIDE SAFE CARE?

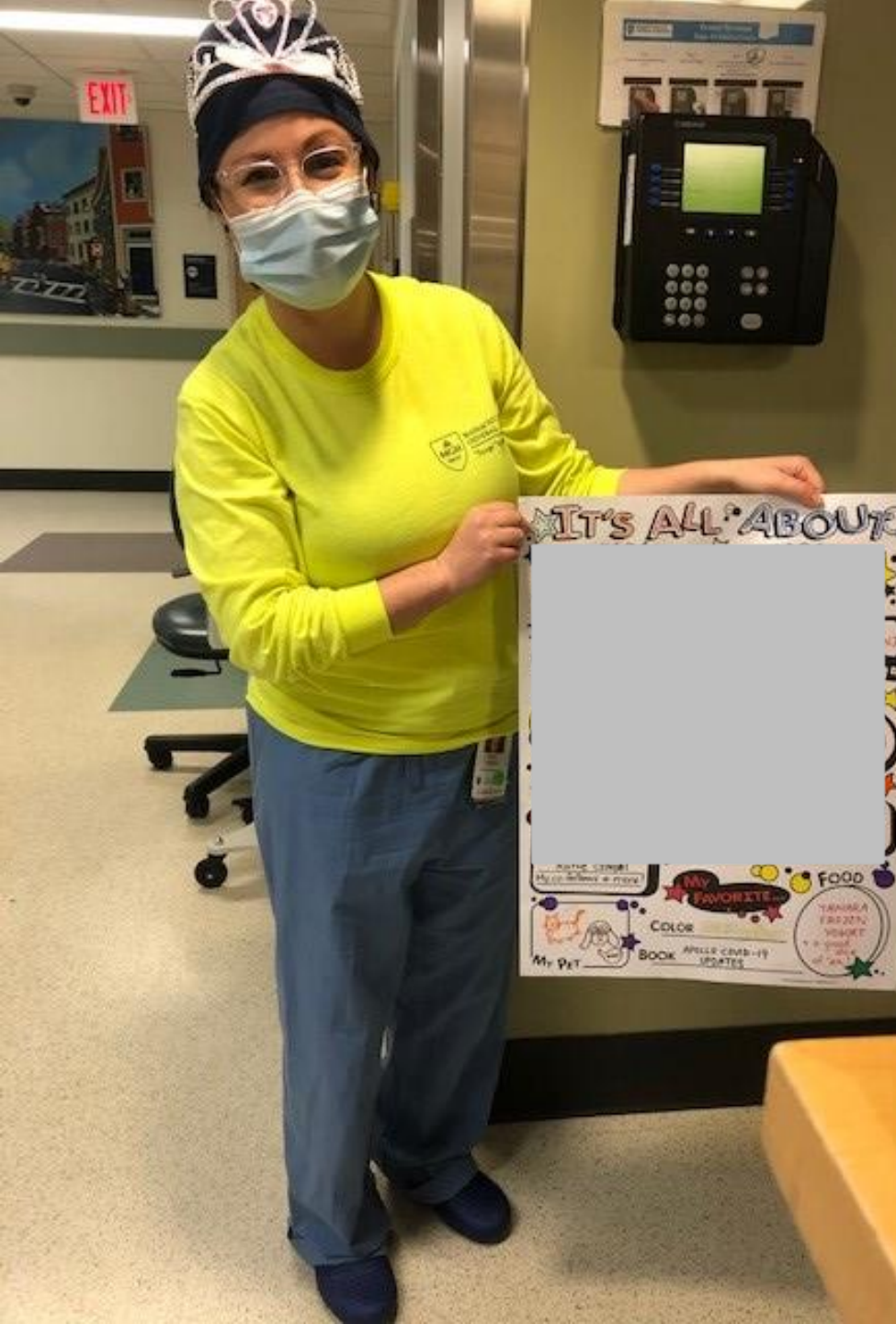
- Education
- Collaboration with adult providers (MD, RN, pharmacy)
- Clinical algorithms, pocket guides
- Centralized intubation, vascular access and proning teams
- Careful patient selection
- Adult supplies (disposables, meds, code cart)





HOW DO WE SUSTAIN OUR TEAM?

- Morning team huddle
- Pedi psych check-ins and drop-in resiliency rounds
- Peer SIC Support Team (PSST)
- Hotel rooms
- Childcare resources
- Cards, food
- Celebrate the successes
- Get back to what we do best – family-centered care



FAMILY-CENTERED CARE

- All about me posters
- Bedside patient-family zooms
- Daily telephone updates for families

CAREFUL PATIENT SELECTION

- COVID vs. non-COVID
- Age cut-offs
- Co-morbidities
- Primary admissions vs lateral transfers



ADULT COVID-19 PATIENTS CARED FOR IN A PEDIATRIC
ICU EMBEDDED IN A REGIONAL BIOTHREAT CENTER:
DISEASE SEVERITY AND OUTCOMES

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Phoebe H. Yager, and Ryan W. Carroll

Health Security

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Table 1. Demographics and Clinical Course of Patients Admitted to the PICU

<i>Demographics and Clinical Course</i>	<i>Data Value</i>
Male, n (%)	21 (75)
Weight (kgs), median (IQR)	80.35 (73.1-90.1)
Age (years), median (IQR)	54 (43.5-63.8)
Body Mass Index, median (IQR)	28.58 (25.6-33.0)
Mortality, n (%)	2 (7.1)
Ethnicity, n (%)	
Non-Hispanic/Latino	8 (28.6)
Hispanic/Latino	17 (60.7)
Not specified	3 (10.7)
Comorbidities, n (%)	
Diabetes mellitus	11 (39.3)
Hyperlipidemia	11 (39.3)
Hypertension	9 (32.1)
Neurological/seizures/stroke/psych	6 (21.4)
Cardiovascular system	5 (17.9)
Cancer	3 (10.7)
Immunocompromised condition	3 (10.7)
Pulmonary system	3 (10.7)
Gastrointestinal reflux	3 (10.7)
Tobacco user	3 (10.7)
Obstructive sleep apnea	2 (7.1)
Prediabetes	2 (7.1)
Renal disease	1 (3.6)
Alcohol use	1 (3.6)
None	4 (14.3)

Respiratory support	
Number intubated, n (%)	24 (85.7)
Time to intubation (days), median (IQR)	0 (0-1)
Duration of mechanical ventilation (days), median (IQR)	18 (14-21)
Time to tracheostomy (days), median (IQR)	23 (20.3-27.3)
Lowest PaO ₂ /FiO ₂ ratio while in PICU, median (IQR)	161.5 (141-184.5)
Number prone while in the PICU, n (%)	12 (50)
Prone duration while intubated in the PICU (days), median (IQR)	3 (3-4.8)
Best PEEP trial completed in the PICU, n (%)	15 (62.5)
Peak PEEP utilized while in PICU (cm H ₂ O), median (IQR)	14 (12-15.8)
COVID-19-specific therapies n (%)	
Atorvastatin	21 (75)
Azithromycin	19 (67.9)
Hydroxychloroquine	16 (57.1)
Nitric oxide	7 (25)
Tocilizumab	2 (7.1)
Remdesivir	5 (17.9)

<i>Demographics and Clinical Course</i>	<i>Data Value</i>
Outcomes	
PICU length of stay (days), median (IQR)	11 (4.3-18.8)
Hospital length of stay (days), median (IQR)	34 (19.5-45.5)
Mortality, n (%)	2 (7.1)

Abbreviations: IQR, interquartile range; PaO₂/FiO₂, ratio of arterial oxygen partial pressure to fractional inspired pressure; PEEP, positive end-expiratory pressure; PICU, pediatric intensive care unit; psych, psychiatric.

Disposition:

- Ward (64.3%)
- RACU (17.9%)
- MICU (10.7%)
 - 3 patients possibly needing ECMO
 - ECMO delivery consolidated to optimize utilization of limited human and equipment resources

2 mortalities:

1. Multi-organ failure
2. Limited trial of antibiotics and vasopressors but otherwise limited code status

LESSONS LEARNED

1. Keep the PICU RN-MD team together
2. Carve out time to practice PPE donning and doffing
3. Obtain written documentation ensuring expansion of privileges and expansion of malpractice insurance
4. Don't underestimate cultural differences when forming a hybrid adult-pediatric medicine team
5. Clearly define roles and responsibilities for all team members
6. Collaborate with adult colleagues
7. Leadership must be present, be flexible, listen and provide constant communication
8. Transparency breeds trust
9. Minimize lateral transfers
10. Family-centered care contributes to provider well-being

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THANK YOU

