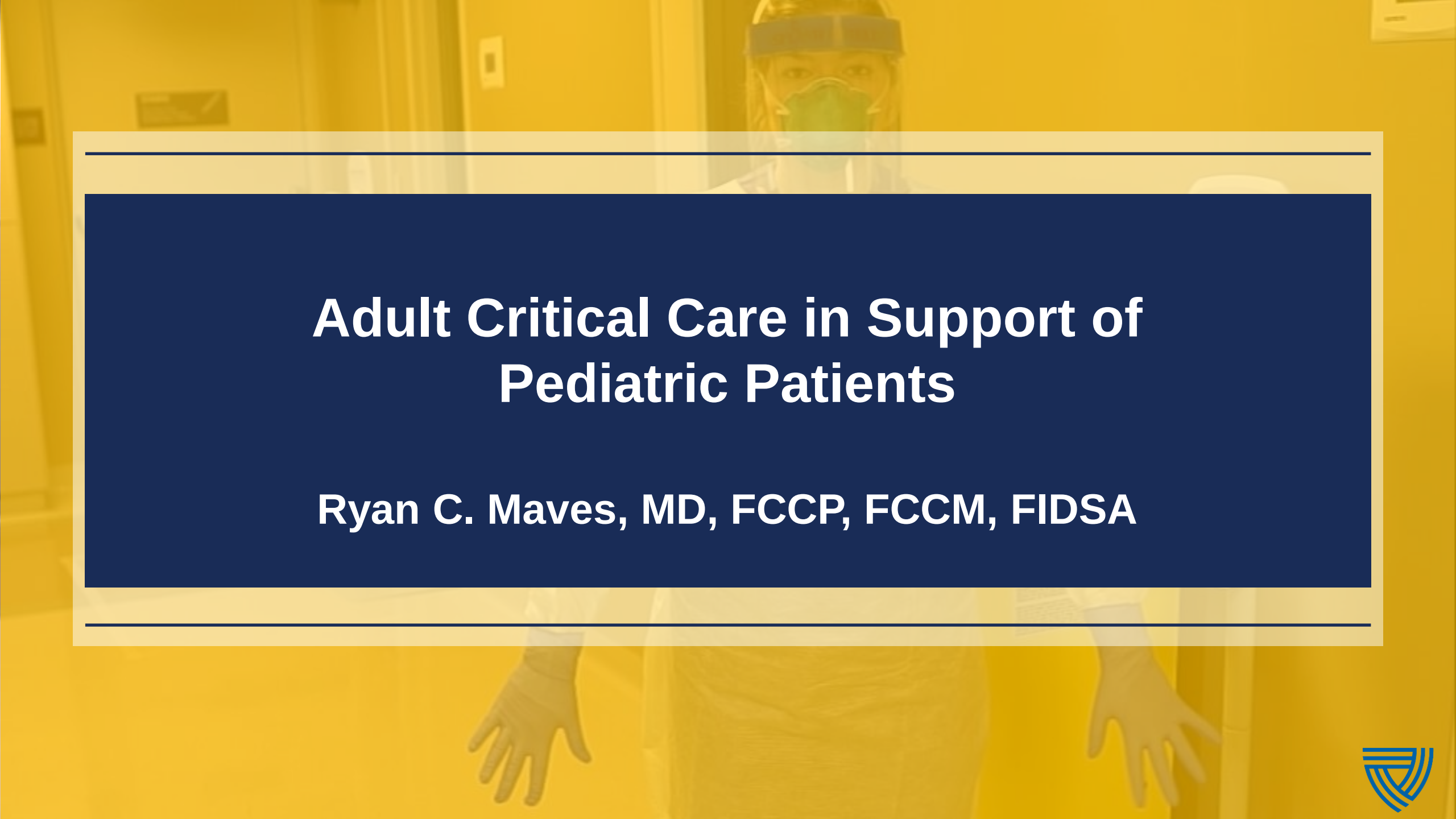

Adult Critical Care in Support of Pediatric Patients

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PICUs and Crisis Standards of Care

- **Categories:**

Conventional	Normal operations
Contingency	Additional resources utilized but usual standards of care
Crisis	Severe limitations lead to modification in standards of care

- **Critical care surge strategies seek to increase hospital capacity, keep hospitals in a “contingency” status, and avoid crisis.**

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PICUs and Crisis Standards of Care

PICU support to adult ICUs in 2020:

- **Underlying concepts in respiratory failure, shock, sepsis care are similar in older children and younger adults**
- **Increased admission age to 26 years**
- **Adult hospitalist support for adult chronic needs; ICU issues managed by pediatric intensivists**
- **Invasive procedures managed by clinicians with experience in adult and pediatric care (e.g., pediatric surgeons and anesthesiologists)**

How can adult ICUs return the favor?

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Goals

- Focus of this contingency strategy is to **preserve pediatric systems of care** for those children who depend on PICUs' unique skills

- **Not all pediatric diagnoses are suitable for adult ICU transfer**

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Category	Age Cutoffs	Comments
Conventional	18 years and older	• Standard adult ICU admission criteria
Contingency	15 years and older	• Equipment size and medical dosing will be generally the same as in adult, consistent with trauma system practices
Crisis	12 years and older AND >40 kg	• Using a Broselow measurement cutoff of 12 years and 40 kg, one can typically use adult medication doses and equipment sizes

Equipment, Supply and Management

- **Older children: ≥12 years and 40 kg)**
  - **Adult-size equipment is usually adequate, e.g., ETT size 6.5-7.0 cuffed tube, 7.5 French CVC**
  - **Similar indications for NIV, IMV, CVC placement in older children and adults**
  - **Similar strategies for volume resuscitation, management of shock, initial vasopressor management with norepinephrine**
  - **ARDSnet / low-tidal volume ventilation**

Common PICU Diagnoses

NETEC

Suitable for Adult ICU	Not Suitable for Adult ICU
• Community-acquired sepsis	• Congenital heart diseases with residual disease
• Cystic fibrosis	• Active pediatric malignancy
• Sickle cell disease	• Chronic kidney disease and end-stage kidney disease
• Post-solid organ and hematopoietic stem cell transplantation	• Significant developmental delay
• Diabetes mellitus	• Rare genetic diseases
• Adolescent trauma (if the adult ICU is part of a trauma center) and poisonings	
• Critical illness due to COVID-19 pneumonia	
• Multisystem inflammatory syndrome in children (MIS-C)	

Pediatric Decision-Making

- **Critically-ill children unable to communicate are treated similar to adults:**
  - **Emergency care rendered first**
  - **Goals of care established with parents/guardians, care team, and patient**
  - **Issues of assent versus consent**
- **Ethics consultations for discordant opinions between parents, care team, and patient**
- **Child protective services for suspected harm and neglect**

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Pediatric Subspecialty Consultation

- **Need to develop systems to ensure available consultant support**
- **Role of telemedicine**
- **Specific specialties:**
  - **General surgeons and anesthesiologists likely able to manage routine pediatric needs, outside of specific congenital disorders and highly subspecialized areas**
  - **Adult cardiologists may be able to manage general ICU issues (e.g., cardiac function assessment), but pediatric expertise needed for many conditions**
  - **Bronchoscopy in younger patients requires pediatric pulmonary or critical care assistance**
  - **Pediatric neurologic disease in the ICU differs in presentation and therapy (e.g., seizures and epilepsy)**
  - **Electrolytes, fluid management, and dialysis catheter insertion in children ≤12 years need specialist input in the setting of CKD and AKI**

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Summary

- More similarities than differences
- Adult ICUs can care for well-selected pediatric patients
- Need clear admission criteria and protocols, plus availability of pediatric-specific consultation

Goal is to preserve effective care for all children