

The critically ill child in the adult ICU: Their needs are special!

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No conflict of interest to declare

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Children in the ICU

- Child's physical and psychosocial developments
- Standards for ICU professionals
- Role of parents and family
- Quality standards
- Children visiting the ICU

Children
in the ICU

Critically ill child
in the adult ICU

Parents
in the adult ICU

Children visiting
the adult ICU

Critically ill child in the adult ICU

Ramnarayan et al. Characteristics and outcome of **children** admitted to **adult intensive care** units in England, Wales and Northern Ireland (1996-2011)

Intensive Care Med 2013;39:2020-7

Table 1 Trends in the case mix of children admitted to adult intensive care units in England, Wales and Northern Ireland (1996–2011)

	1996–1999 (n = 3,043)	2000–2003 (n = 3,848)	2004–2007 (n = 3,449)	2008–2011 (n = 3,090)	Total (n = 13,430)
Age group, n (%)					
<1 year	485 (15.9)	582 (15.1)	577 (16.7)	593 (19.2)	2,237 (16.7)
1–4 years	835 (27.4)	943 (24.5)	822 (23.8)	830 (26.9)	3,430 (25.5)
5–10 years	674 (22.1)	734 (19.1)	624 (18.1)	488 (15.8)	2,520 (18.8)
11–15 years	1,049 (34.5)	1,589 (41.3)	1,426 (41.3)	1,179 (38.2)	5,243 (39.0)
Source of admission, n (%)					
Same hospital	2,857 (93.9)	3,731 (97.0)	3,374 (97.8)	3,023 (97.8)	12,985 (96.7)
Other hospital	175 (5.8)	111 (2.9)	71 (2.1)	61 (2.0)	418 (3.1)
Clinic/home/other	11 (0.4)	6 (0.2)	4 (0.1)	6 (0.2)	27 (0.2)
Location prior to admission, n (%)^a					
Emergency department	882 (30.9)	1,483 (39.7)	1,400 (41.5)	1,291 (42.7)	5,056 (38.9)
Ward	870 (30.5)	1,054 (28.2)	990 (29.3)	970 (32.1)	3,884 (29.9)
Theatres/recovery	765 (26.8)	737 (19.8)	565 (16.7)	424 (14.0)	2,491 (19.2)
Other	340 (11.9)	457 (12.2)	419 (12.4)	338 (11.2)	1,554 (12.0)

Critically ill child in the adult ICU

Wood et al. Characteristics of **adolescents** requiring **intensive care** in the United Kingdom: A retrospective cohort study.

J Intensive Care Soc. 2018;19:209-213

Table 1. Admissions of adolescents to intensive care units 2007–2014.

Age		Age 12–15		Age 16–19	
Type of unit		PICU	AICU	PICU	AICU
Total number of admissions (number of those admissions later transferred to PICU)		15,423	2137 (501)	3459	16,301 (129)
Admission type n (% of admissions)	Elective surgery	6413 (41.6)	241 (14.7)	1857 (53.7)	1358 (8.4)
	Emergency surgery	923 (6.0)	247 (15.1)	182 (5.3)	2389 (14.8)
	Non-surgery	8059 (52.3)	1148 (70.2)	1412 (40.8)	12,425 (76.8)
	Not known	28 (0.2)	0	8 (0.2)	0
Death before ICU discharge (n)		547	78	119	845
Mortality (%)		3.5	4.8	3.4	5.2

AICU: adult intensive care unit; PICU: paediatric intensive care unit.

All data for AICU exclude those adolescents transferred to PICU on discharge from AICU except total number of admissions.

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Wood et al. Characteristics of **adolescents** requiring **intensive care** in the United Kingdom: A retrospective cohort study.

J Intensive Care Soc. 2018;19:209-213. doi: 10.1177/1751143717746047

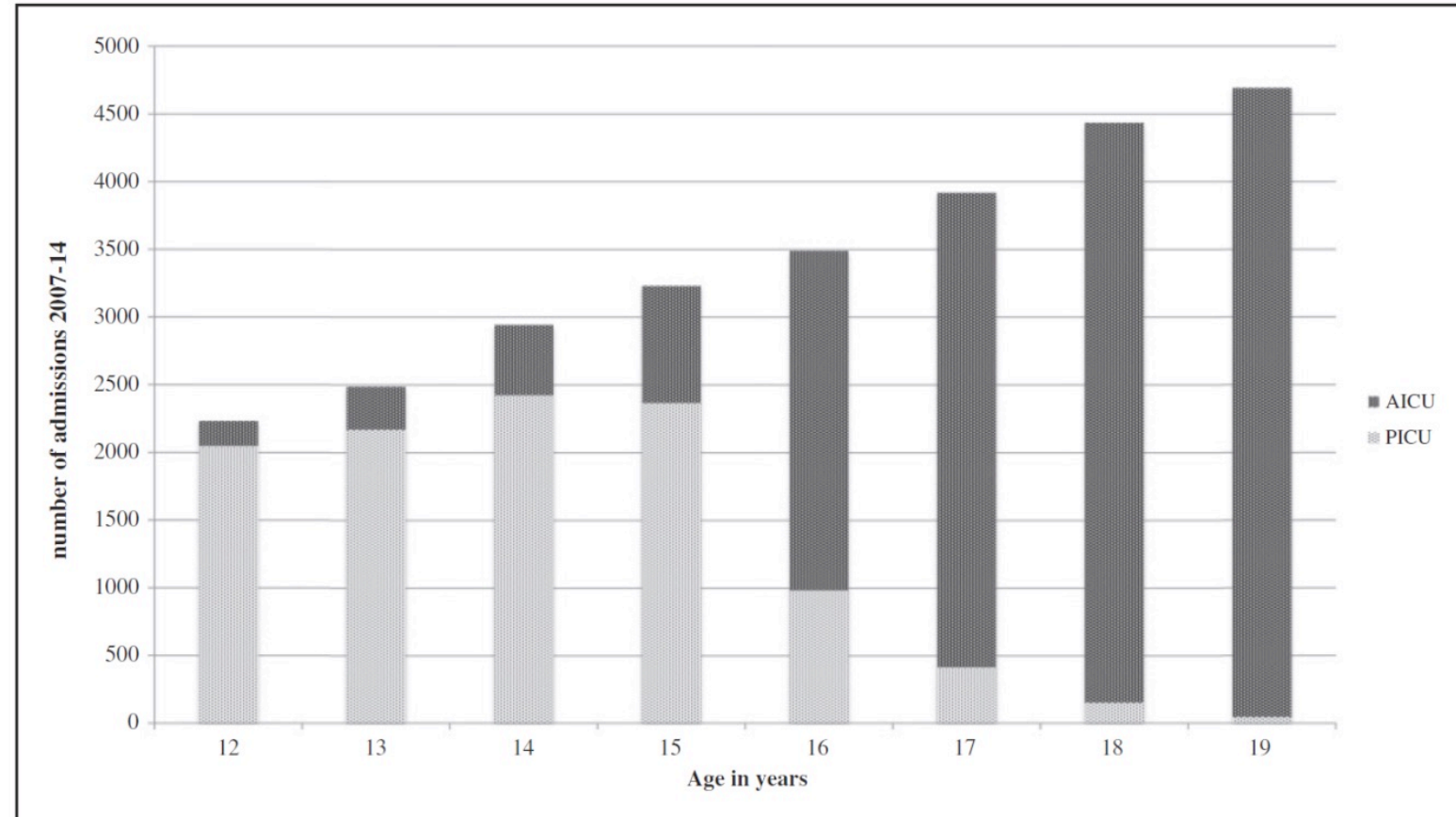


Figure 1. Number of admissions of adolescents to intensive care units by age, excluding those admitted after elective surgery.

Critically ill child in the adult ICU

What are the challenges



Critically ill child in the adult ICU

Anxiety

- Protest – Despair – Resignation

Coping strategies

ICU technical devices vs freedom of movement

Safety

Physical restraint

- Yes or No?

Critically ill child in the adult ICU

Coetzee M. Are **children** really different from **adults** in critical care settings?

SAJCC. 2005;21:70-76

Table II. The major differences between the critical care required by adults and children

1. Physiology and disease processes in children are different.

As physiology (how the body works) is vastly different from adults, indicators and measurement norms are therefore different – ranging from vital signs and laboratory results to physiological and psychological responses to illness.²

2. There is a vast variability of age-related differences all linked to the developmental stage and ability of children.

This requires complex understanding and a very adaptive skill set from nurses of critically ill children. Skills from age-appropriate assessment and communication to intervention differ for different ages. A child with severe burns who is 8 months old will require very different care to one who is 4 or 14 years old. Refined techniques of assessment in typical ICU contexts, such as anxiety and/or pain, have been shown to have significant effects on morbidity.³

3. Specialised care of children is ALWAYS interwoven with the care of their families.

There are therefore specific challenges of participation related to attachment, family coping and function. Achievements in high-technology care have brought complex new challenges to families, e.g. grieving amid difficult decision making, complexity of information, ongoing uncertainty and prospects of complex chronicity.⁴

Critically ill child in the adult ICU

Coetzee M. Are **children** really different from **adults** in critical care settings?

SAJCC. 2005;21:70-76

Table I.

An illustration of some of the differences in disease processes, responses and effects between adults and children

	Child	Adult
Cardiac conditions	<p>Compromised cardiac function may result from complex congenital malformations of the heart (requiring surgical correction)</p> <p>Infective conditions such as myocarditis, toxins (organophosphate poisoning) and rheumatic (resulting from streptococcal infections, mostly throat infections)</p>	<p>Conditions are primarily ischaemic (tissue damage related to metabolic changes)</p> <p>Arrhythmias – defective nerve conduction in the heart muscle</p> <p>Degenerative heart disease</p>
Respiratory: pneumonia	<p>Develop bronchiolitis, bronchopneumonia, ARDS</p> <p>While children usually have normal lung tissue, there may be structural congenital lung abnormalities and possibly immune problems</p>	<p>The adult will have lobar pneumonia, ARDS/ALI, etc.</p> <p>The adult will often have underlying chronic obstructive pulmonary disease (COPD)</p>

Critically ill child
in the adult ICU

Guidance and Standards



Critically ill child in the adult ICU

Gobréau-Kuijpers and Latour: Unmet nursing needs of **children** in **AICUs**. *Connect: the World of Critical Care Nursing* 2001;1(3):99-101

Table 3. Basic standards of care for child in AICU

- ▶ Availability of a paediatrician 24 hours a day
- ▶ Appropriate (age-relevant) care of the child and its parents in an AICU, e.g. psychosocial guidance, a child-friendly environment
- ▶ Appropriate medical equipment for (small) children
- ▶ Appropriate education support, including courses for the nurses of an AICU
- ▶ A system of manpower allocation, in which the available expertise is appropriately managed, with, if necessary, adjustment of the staff structure (Consensus Intensive Care Committee, 1995)
- ▶ Paediatric advanced life support course for nursing staff in adult intensive care units and emergency and accident departments

Critically ill child in the adult ICU

2013

www.ics.ac.uk/ICS/ICS/GuidelinesAndStandards/StandardsAndGuidelines.aspx

Sorry, **nothing** mentioned
about care of children in
adult ICU



Critically ill child in the adult ICU

2015

https://pccsociety.uk/wp-content/uploads/2016/05/PICS_standards_2015.pdf


PICS Paediatric Intensive
Care Society

Quality Standards
for the Care of Critically Ill Children



But check the PICS standards !

Critically ill child in the adult ICU

2015

https://pccsociety.uk/wp-content/uploads/2016/05/PICS_standards_2015.pdf

Section:

Paediatric Anaesthesia and General (Adult) Intensive Care

Staffing

A nominated... **lead nurse** should be responsible for ICU policies, procedures and training relating to care of children

Drugs and Equipment

Drugs and equipment should be checked

Note: List of drugs and equipment needed for paediatric resuscitation is available on The Paediatric Intensive Care Society website <https://pccsociety.uk/>

 Paediatric Intensive
Care Society

Quality Standards
for the Care of Critically Ill Children



5th Edition
December 2015

Critically ill child in the adult ICU

2015

https://pccsociety.uk/wp-content/uploads/2016/05/PICS_standards_2015.pdf

Section:

Paediatric Anaesthesia and General (Adult) Intensive Care

Information and Support

Age-appropriate information about anaesthesia

ICUs should have mechanisms for:

- a. Receiving **feedback from children and families** about treatment and care they receive
- b. Involving children and families in decisions about the organisation of the ICU

 Paediatric Intensive
Care Society

Quality Standards
for the Care of Critically Ill Children



5th Edition
December 2015

Critically ill child
in the adult ICU

Impact



Critically ill child in the adult ICU

Colville et al. Children's factual and delusional memories of intensive care.
Am J Respir Crit Care Med. 2008;177:976-982

Interview 102 children (7-17yrs) 3 month
after PICU

Measures: ICU Memory Tool, Impact of
Event Scale

Conclusions: This study indicates that delusional memories are reported by almost one-third of children and are associated both with the duration of opiates/benzodiazepines and risk of post-traumatic stress. More research is needed on the presence of delusional memories and associated risk factors in children receiving intensive care treatment.

TABLE 2. CHILDREN'S MEMORIES*

	Frequency, n (%)
Factual memories	
Any factual memory	64 (63)
Faces	21 (21)
Family	48 (47)
Alarms	23 (23)
Voices	21 (21)
Lights	12 (12)
Dark	12 (12)
Clock	5 (5)
Breathing tube	23 (26) [†]
Suctioning	13 (15) [†]
Tube in your nose	27 (28) [‡]
Ward round	32 (31)
Memories of feelings	
Pain	17 (17)
Uncomfortable	17 (17)
Confused	34 (33)
Anxious/frightened	29 (28)
Panic	10 (10)
Delusional memories	
At least one delusional memory	33 (32)
Hallucination	25 (25)
Dream	16 (16)
Nightmare	14 (14)
Feeling that people were trying to hurt you	5 (5)

Total n = 102.

* Defined by responses to subscale items on ICU Memory Tool (9).

[†] Calculated only for n = 87 children who had an endotracheal tube *in situ*.

[‡] Calculated only for n = 96 who had a nasal tube.

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Parents
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Children visiting
the adult ICU

Parents
in the adult ICU

Parents and Family



Parents
in the adult ICU

Guidelines for Family-Centered Care in the Neonatal, Pediatric, and Adult ICU

23 recommendations

- Communication with family members
- Family presence
- Family support
- Consultations and ICU team members
- Operational and environmental issues



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Davidson et al: Guidelines for Family-Centered Care in the Neonatal, Pediatric, and Adult ICU. *Crit Care Med.* 2017;45(1):103-128

Parents
in the adult ICU

Feedback Parents

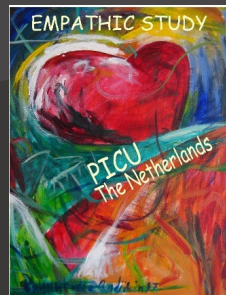
EMPATHIC-30 questionnaire

5 Domains - 30 questions

- Information (5 questions)
- Care and Treatment (8 questions)
- Organisation (5 questions)
- Parental Participation (6 questions)
- Professional Attitude (6 questions)



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Latour JM et al. *Intensive Care Medicine* 2009;35:1082-1089

Latour JM et al. *Intensive Care Medicine* 2011;37:310-318

Latour JM et al. *Intensive Care Medicine* 2011;37:319-325

Latour JM et al. *Pediatr Crit Care Med* 2012;13:554-559

Latour JM et al. *Journal of Clinical Epidemiology* 2013;66:1045-1055

Parents
in the adult ICU

Feedback Parents

High ratings given to satisfaction items

But... items below standard in PICU:

- Daily consultation with the physician
- Discharge planning
- Noise levels and bed space
- Involvement in decision-making on care and treatment
- Differences in information provision by nurses and physicians



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Latour et al. *Pediatr Crit Care Med* 2012;13:554-559

Latour JM et al. *J Clin Epidemiol* 2013;66:1045-1055

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To be or not to be...

Children as visitors in the ICU:

“Great idea, but not during my shift”

“It takes to much time, I am already too busy”

“They upset my patient”



...that's the question

TABLE 1 Guidelines for Visits by Children

- Assess the condition of the patient
- Determine if the child has an infection
- Assess the child's developmental stage
- The child should be accompanied by an adult
- Provide general explanations to the child
- Limit the time of the visit



Yes or No?

- French guidelines provide recommendations on welcoming and informing families of ICU patients
- 5 years after publication...
- **Children allowed to visit a patient in 164/188 ICUs (87.2 %)**
- **regardless of their age in 97/164 ICUs (59.1 %)**



About

My name

I am

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About Intens

The Intens
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be called t

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such as me
You can se

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you may s
the hospite

Things to do:

- Bring photos in of you and your family which you might be able to put up by your special person
- Read a book you like to your special person
- Hold their hand and talk about your day or things that you like doing together
- Talk to your teachers, friends or someone in your family about how you feel
- Make a card or draw a picture for your special person
- Record a message or song to take in



Don't forget to wash your hands when you visit!

One of the best ways that you can help everyone in the hospital is to remember to wash your hands, or use special hand gel, before you go on to the Intensive Care Unit and when you leave. Make sure your hands are **SUPER-CLEAN** because it's very important not to let germs into the hospital!



Children
in the ICU

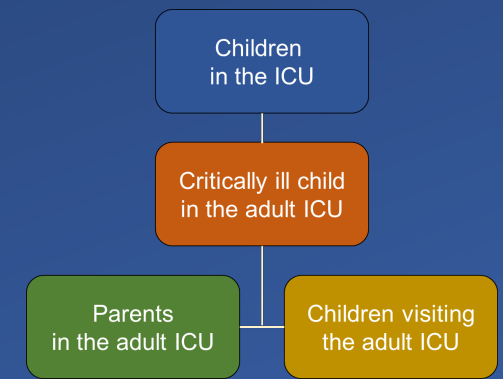
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Parents
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Children visiting
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The next frontiers...

What we don't know

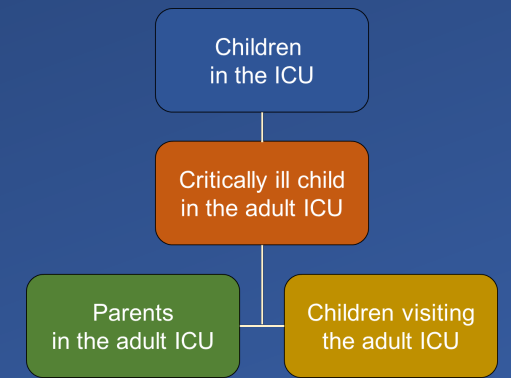


BMJ Open Study protocol for a multicentre longitudinal mixed methods study to explore the Outcomes of ChildrEn and fAmilies in the first year after paediatric Intensive Care: the OCEANIC study

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To cite: Manning JC, Latour JM, Curley MA.Q, *et al.* Study protocol for a multicentre longitudinal mixed methods study to explore the Outcomes of ChildrEn and fAmilies in the first year after paediatric Intensive Care: the OCEANIC study. *BMJ Open* 2020;**10**:e038974. doi:10.1136/bmjopen-2020-038974

The next frontiers... What we don't know



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PROTOCOL



Singapore's health outcomes after critical illness in kids: A study protocol exploring health outcomes of families 6 months after critical illness

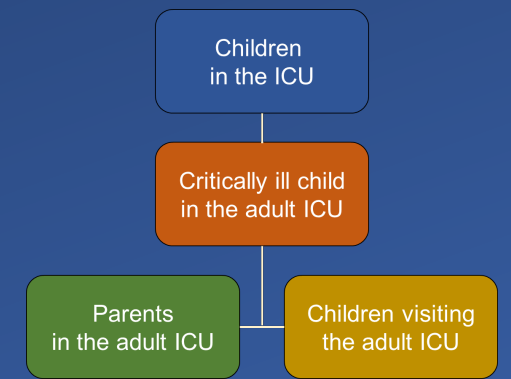
Pei-Fen Poh^{1,2}   | Jan Hau Lee^{2,3}   | Joseph C. Manning^{4,5}   |
Matthew C. Carey⁶  | Rehena Sultana³ | Jos M. Latour^{1,7}  

In Summary

Creating a safe environment for children and family members in the adult ICU starts with a trained team respecting each individual expertise

Identifying children's responses of an ICU admission and responding appropriately reduce negative long-term effects

And this refers also to the support of parents

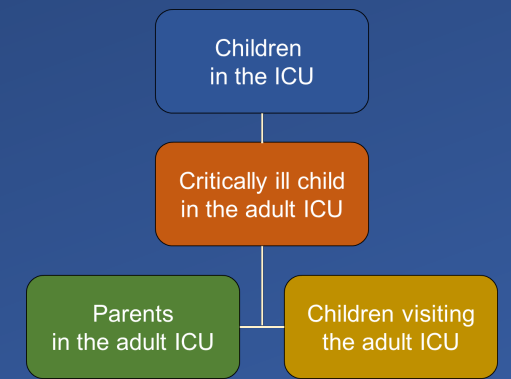


This painting was inspired by the **death** of the artist's **son** and the **professional care** of Dr Gustavus Murray who treated him. However, this painting shows the moment when the child shows the **first sign of recovery**. The light of dawn filters through the shutters behind the **anxious parents** who have **sat up all night**.

The image of an ordinary doctor's quiet heroism was a huge success with the public.



Sir Luke Fildes
The Doctor
1891
Tate Britain Museum



Thank you

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