

Medical Education: Bridging the Knowledge Gap in Paediatric Anaesthesia



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ASPA 2024

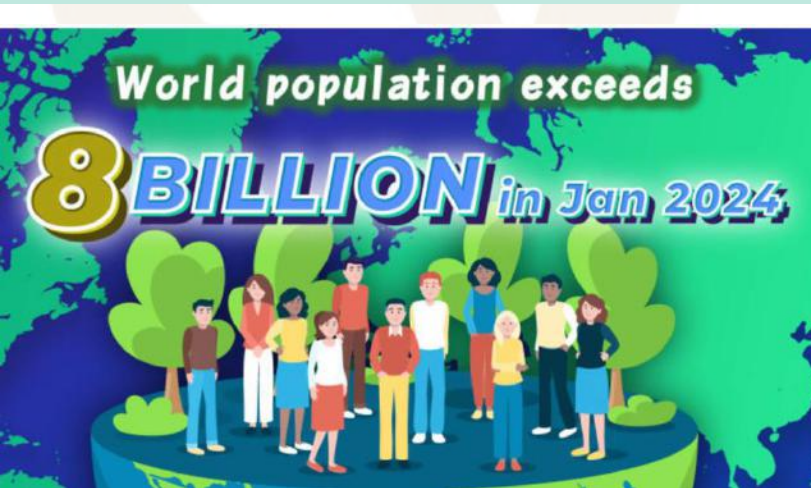


Overview

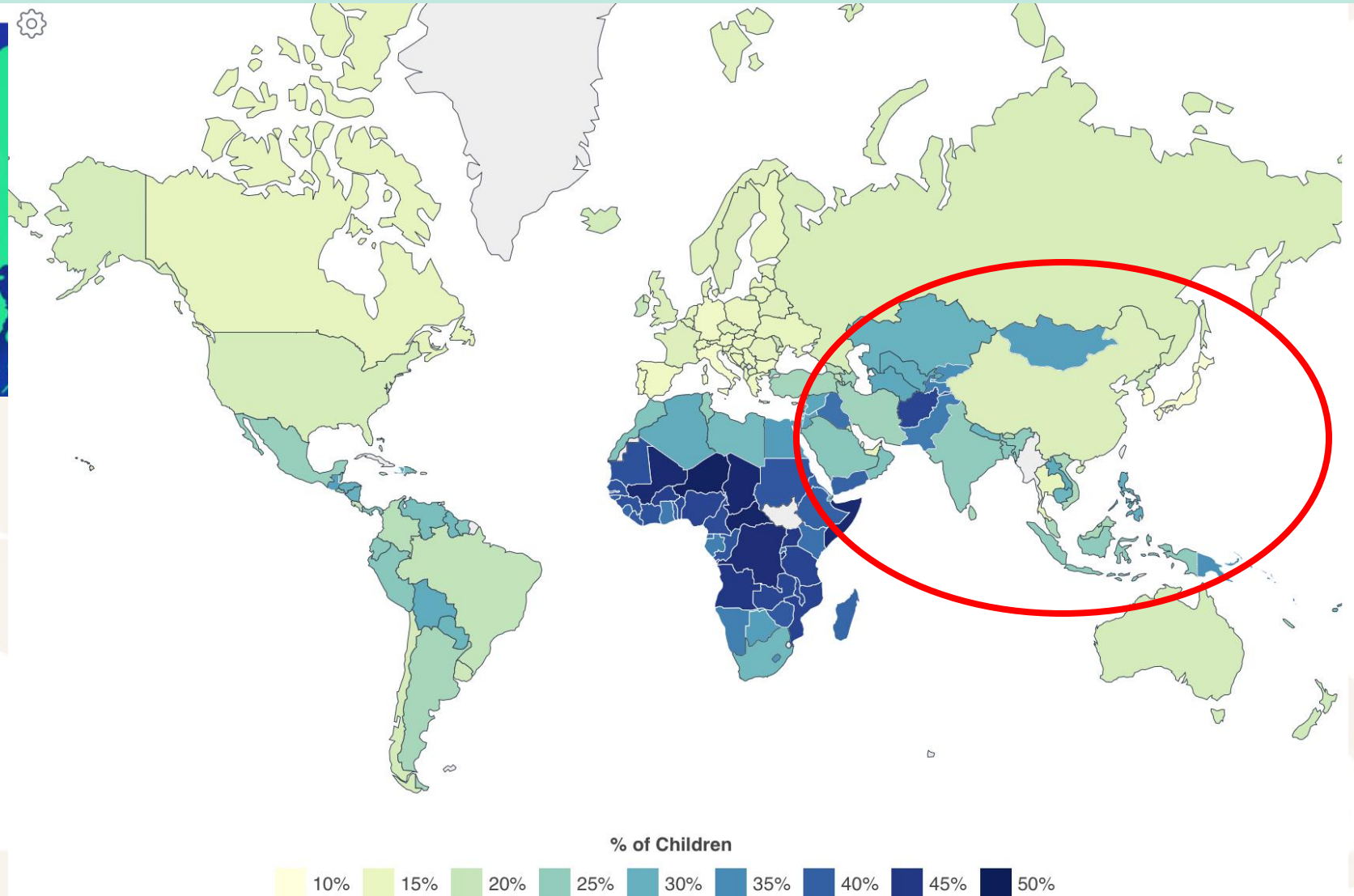
- **Why is paediatric anaesthesia important?**
- **KPI of quality Anaesthesia**
- **Criteria of good Paediatric Anaesthesiologist**
- **Where are we?**
- **Role of medical education**
- **Conclusion**



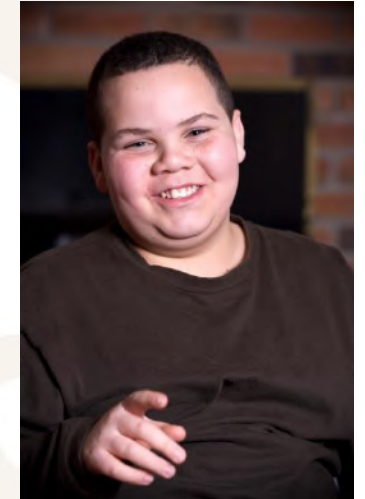
WHY IS PAEDIATRIC ANAESTHESIA IMPORTANT?



**ESTIMATED 2 BILLION
CHILDREN IN THE WORLD
AGES
ZERO TO 14-YEARS-OLD.**



CHALLENGES IN PAEDIATRIC



- Covers a wide range of patient size and age
- Patients present unique challenges due to anatomical, physiological, and pharmacological differences.

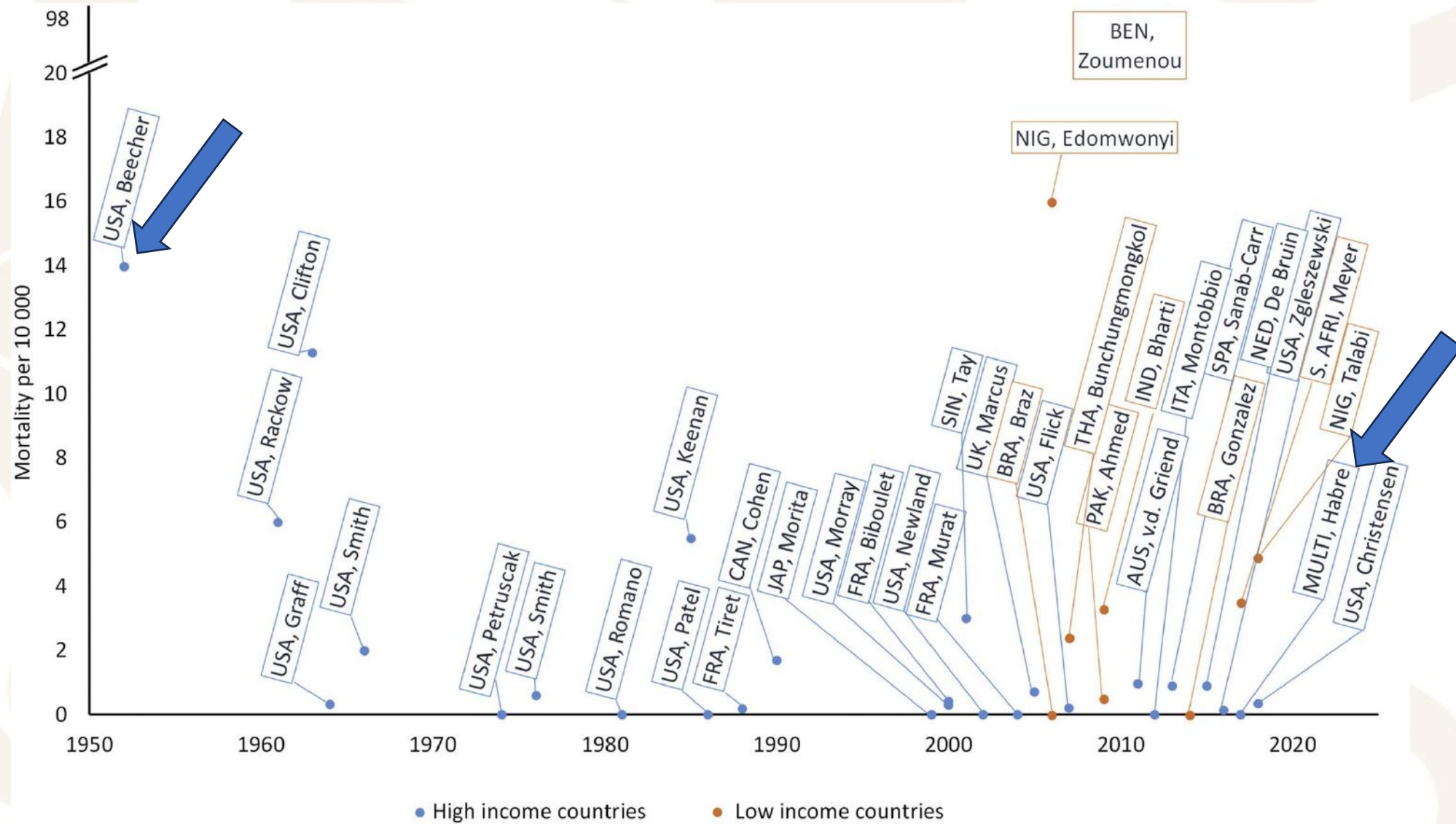
KPI of QUALITY ANAESTHESIA



- ANAESTHESIA RELATED MORTALITY
- CRITICAL INCIDENTS



Mortality in Paediatric Anaesthesia



Mortality in Paediatric Anaesthesia

The decline in mortality is attributed to:

- Advances in diagnostics, medicine & surgery
- Emergence of new and safer drugs: Propofol and Sevoflurane
- Availability of new monitoring equipment: SPO₂ & ETCO₂



Incidence of severe critical events in paediatric anaesthesia (APRICOT): a prospective multicentre observational study in 261 hospitals in Europe

*Walid Habre, Nicola Disma, Katalin Virag, Karin Becke, Tom G Hansen, Martin Jöhr, Brigitte Leva, Neil S Morton, Petronella M Vermeulen, Marzena Zielinska, Krisztina Boda, Francis Veyckemans, for the APRICOT Group of the European Society of Anaesthesiology Clinical Trial Network**



Involving **31,000** children with a mean age of 6.35

- **Critical event in children: 5.2%**
- Respiratory Critical event: 3.1%
- The all-cause 30-day in-hospital mortality rate was 10 in 10,000.

The most important risk factors for severe critical events are:



Physical status



Medical history



Age



Seniority of anaesthetist

Specialised training in paediatric anaesthesia: Need of the hour

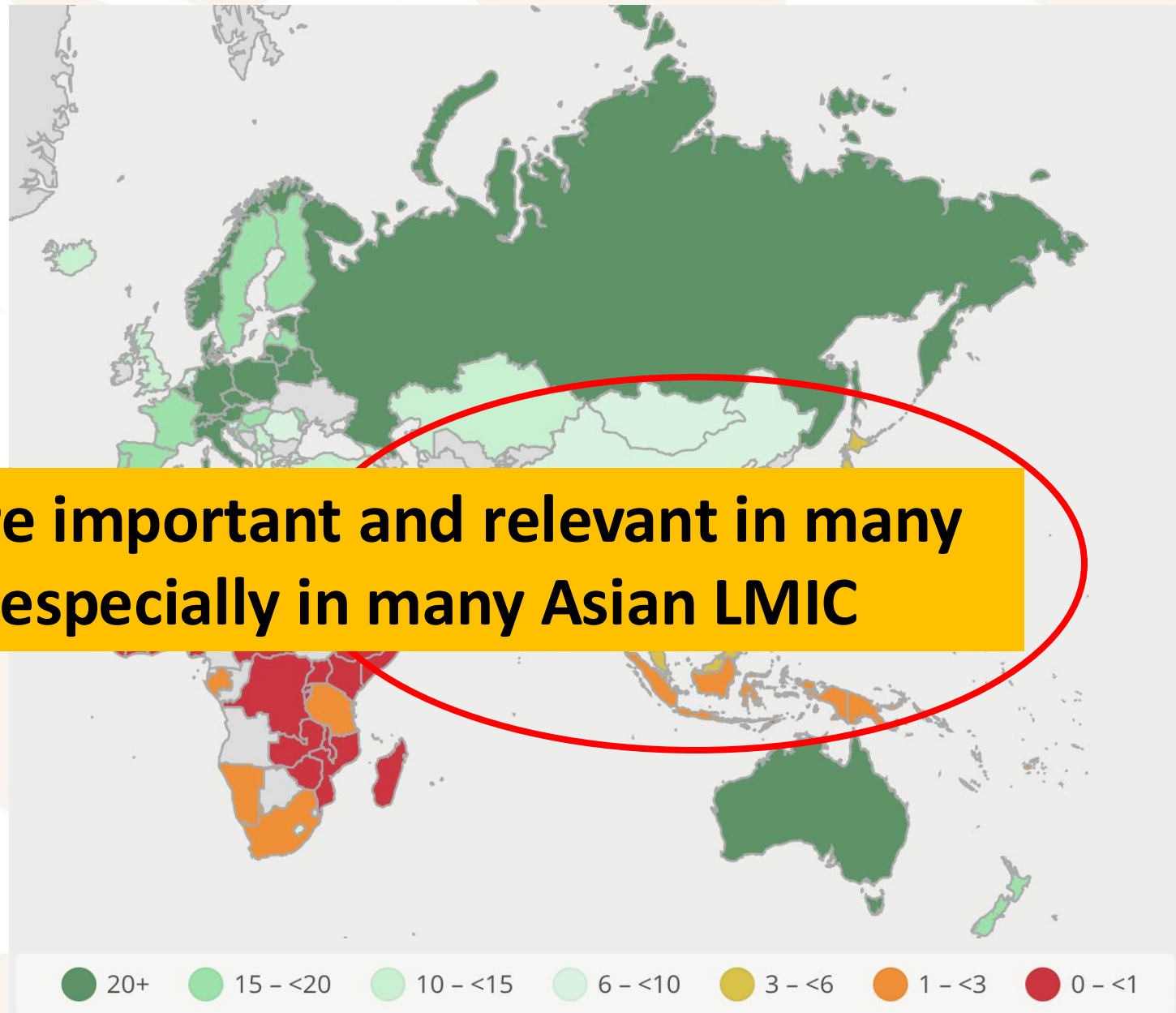
Indu Sen, Nandini Dave¹, Neerja Bhardwaj, Chitra Juwarkar², Shamshad Beegum³

- The incidence of severe complications or adverse respiratory events **is highly dependent on the experience of the anaesthesiologist.**
- Many **variations in anatomy, physiology, and pharmacology,** along with congenital diseases.
- The advancements of **more complex cases** in paediatric surgery.

ANAESTHESIA WORKFORCE IN ASIA

Country	No of Anesthesiologist : 100,000
S. KOREA	11.25
TURKEY	10.02
SINGAPORE	9.55
SAUDI ARABIA	6.62
CHINA	
INDIA	
JAPAN	
MALAYSIA	3.32
INDONESIA	1.48
THAILAND	1.66
PAKISTAN	1.48

Generalists are important and relevant in many countries-especially in many Asian LMIC





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SAFE: Safe & Sustainable Anaesthesia for Every Child

11 - 14 July 2024

Borneo Convention Centre, Kuching (BCCCK)

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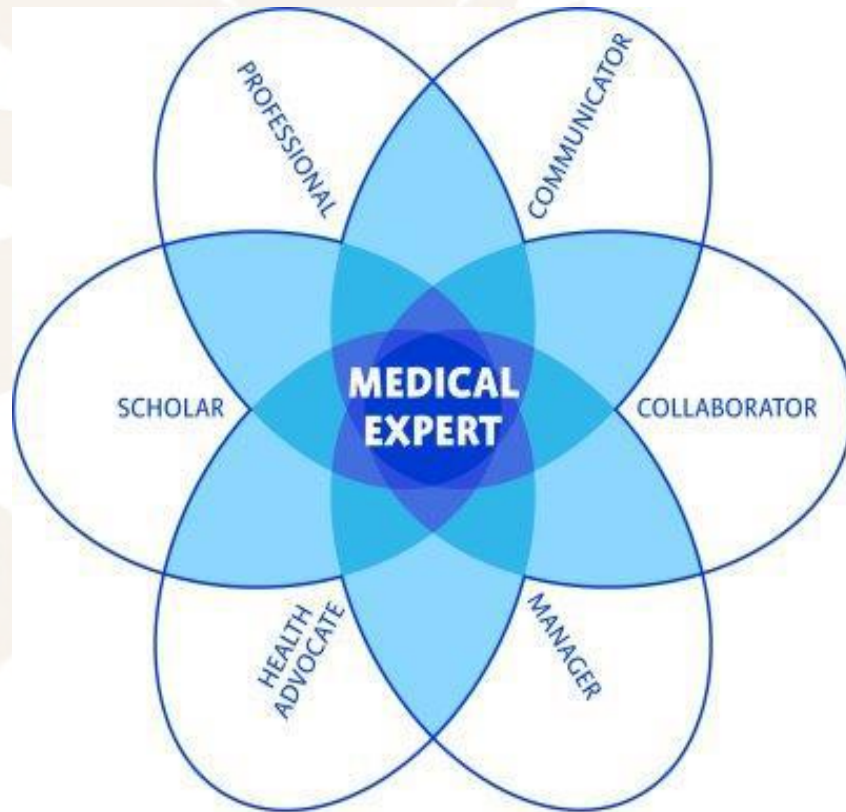
**SO HOW DO WE PROVIDE SAFE &
SUSTAINABLE ANAESTHESIA FOR
EVERY CHILD?**

What are the
CRITERIA of an
ideal paediatric
anaesthetist ?

Begin with the
end in mind



CRITERIA OF IDEAL PAEDIATRIC ANESTHESIOLOGIST



THE
CANMEDS
ROLES FRAMEWORK

- **Good Clinician**
- **Good Clinical Teacher**
- **Good Clinical Leader**
- **Good Clinical Researcher**

Good Clinician

-
- What is definition of good clinician?
 - ? A doctor with
 - Knowledge
 - Attitude
 - Psychomotor skills
 - How do we assess them?

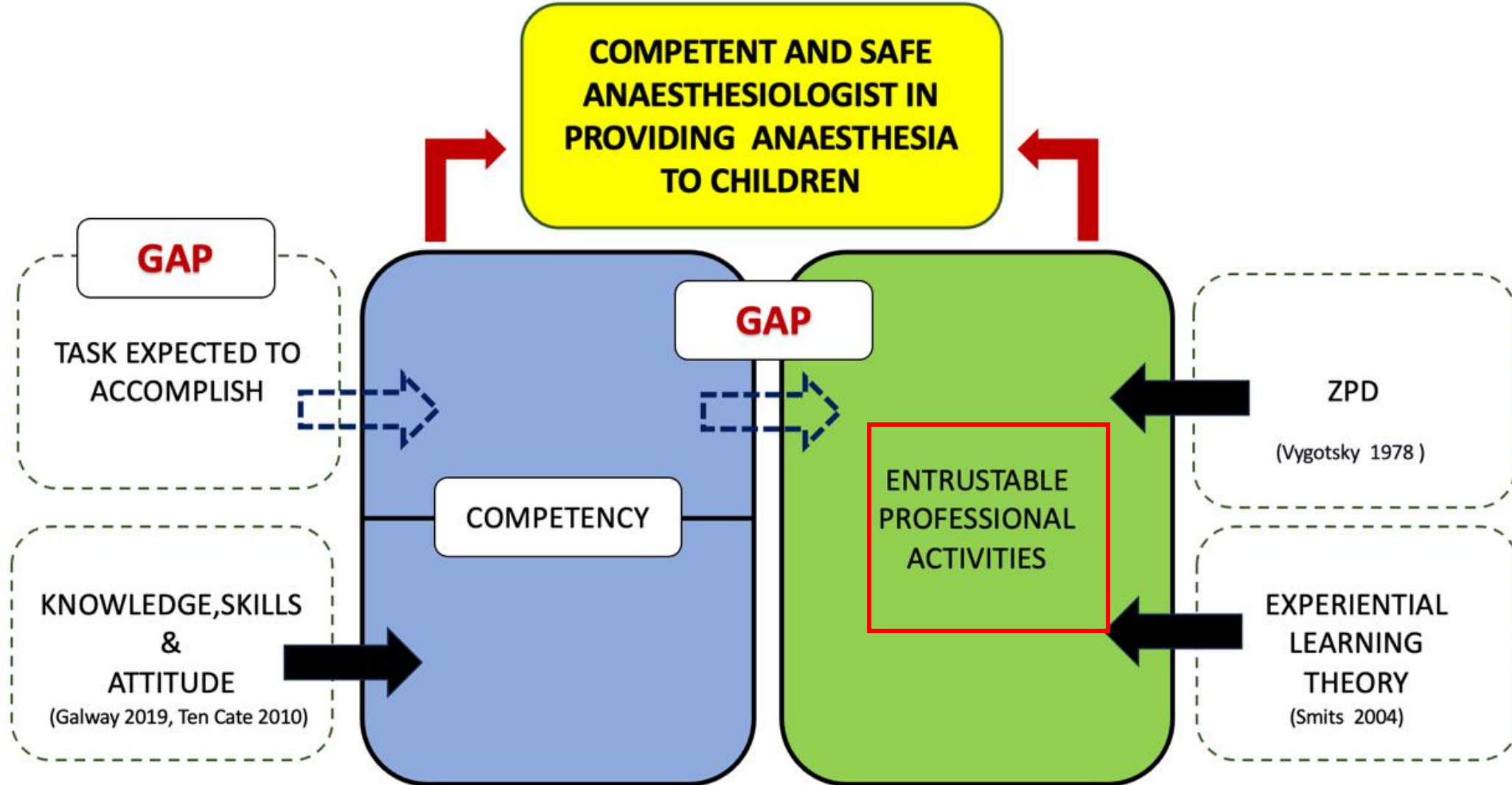


Entrustable Professional Activities (EPA)

- Definition:

“ unit(s) of professional practice that can be fully entrusted to a trainee, once he or she has demonstrated the necessary competence to execute this activity unsupervised” (Ten Cate et al., 2015)

- EPAs are considered as a **foundation for all practicing physicians** and describe **sets of integrated competencies** required by a graduated physician to care for specific patient types in specific patient settings.



GOOD CLINICIAN

- We look at the **53 task of a new graduate** anaesthesiologist should be able to performed when anaesthetizing children.
- **2 rounds of DELPHI**, where the participants were asked **to rank the importance** of each competency.
- Participants were:
 - The EXCO of MSPA
 - The Supervisors of training for Masters in Anaesthesia program of Universities in Malaysia
 - The EXCO of ASPA
- Objectives:
 - To **determine and compare the competencies** to be attained among **anaesthesia trainees of Paediatric Anaesthesia posting** in Masters of Anaesthesia programme in Malaysia and in comparison, to Asian countries.

Tasks with highest importance and strong consensus	Mean score (SD)	Tasks with highest importance and strong consensus	Mean score (SD)
MALAYSIA		ASIA	
Obtain informed consent for procedures.	10.0(0)	Recognise these disease (e.g. URTI, Hyperactive airway disease, heart murmur) and their influence on anaesthesia and surgery	9.8(0.5)
Differentiate the effect of age and weight on size of airway equipment.	9.8(0.8)	Explain and perform paediatric resuscitation (e.g. but not limited to PPLS, PALS, APLS).	9.8(0.5)
Prescribe appropriate fasting time.	9.8(0.6)	Manage normal airway	9.8(0.5)
Reverse and extubate a child after an uncomplicated, low to medium-risk procedure complexity.	9.8(0.6)	Prescribe appropriate fasting time.	9.5(1.0)
Prescribe postoperative oxygen therapy for a child of ASA I-III, and ASA I-IIIIE patient after a low to medium-risk procedure complexity.	9.7(0.9)	Prescribe fluids management including maintenance and replacement fluids	9.5 (1.0)
Provide anaesthesia for children URTI	9.7(0.6)	Identify a 'sick child'.	9.5(1.0)
Perform both types of induction of anaesthesia in children: i. Inhalational induction ii. Intravenous induction	9.6(0.7)	Demonstrate focused past medical history taking.	9.5(1.0)
Manage normal airway	9.6(0.8)	Manage postoperative stridor.	9.5(1.0)
Prescribe fluids management including maintenance and replacement fluids.	9.5(0.8)	Prescribe postoperative fluids for a child of ASA I-III, and ASA I-IIIIE patient after a low to medium-risk procedure complexity	9.5(0.6)
Recognise these disease (e.g. URTI, Hyperactive airway disease, heart murmur) and their influence on anaesthesia and surgery	9.5(0.8)	Prescribe analgesia using multimodal approach	9.5(0.6)

GOOD CLINICAL LEADERSHIP

Definition:

Stereotypic idea:

Individual who is powerful,
charismatic leader with followers
clearly in subordinate roles.

Charismatic Leadership



GOOD CLINICAL LEADERSHIP

A more modern concept:

- **SHARED** leadership
- Where **tasks are more complex and highly interdependent** – as in HEALTHCARE.
- All clinicians **can contribute** to the **leadership task where and when their expertise and qualities are relevant and appropriate** to the context in which they work.



GOOD CLINICAL TEACHER

Clinical Education

Acad Med. 2008; 83:452–466.

What Makes a Good Clinical Teacher in Medicine? A Review of the Literature

Gary Sutkin, MD, Elizabeth Wagner, Ilene Harris, PhD, and Randolph Schiffer, MD

Excellent clinical teaching, although multifactorial, transcends ordinary teaching and is characterized by

- **INSPIRES**
 - **SUPPORTIVE**
 - **ACTIVELY INVOLVE**
 - **COMMUNICATE**
- with students.*

GOOD CLINICAL RESEARCHER

- Do we want our paediatric anaesthetist to be able to produce
 - High end – RCT research
 - Audit that help with quality improvements in our patient care
 - Able to critically appraised research findings



WHERE ARE WE?

**DO WE PROVIDE THE TRAINING TO
ACHIEVE ALL THESE CRITERIA?**



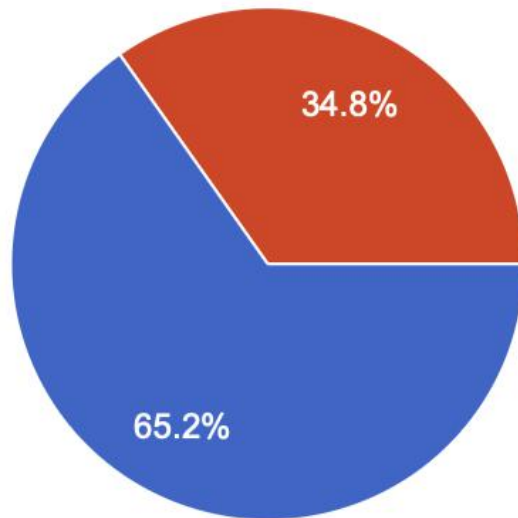
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PAEDIATRIC SUBSPECIALTY TRAINING PROGRAMME

Does your country offer a paediatric anaesthesia subspecialty training programme?

23 responses



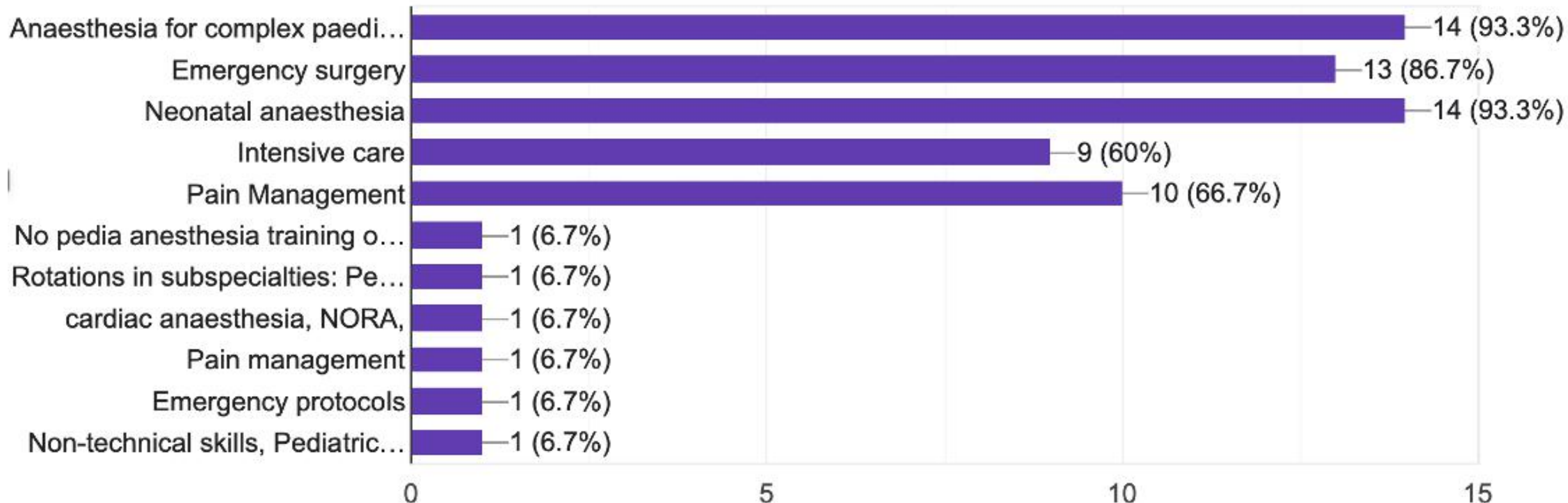
YES

1. Hong Kong
2. India
3. Indonesia
4. Japan
5. Malaysia
6. Philippines
7. South Korea
8. Thailand

NO

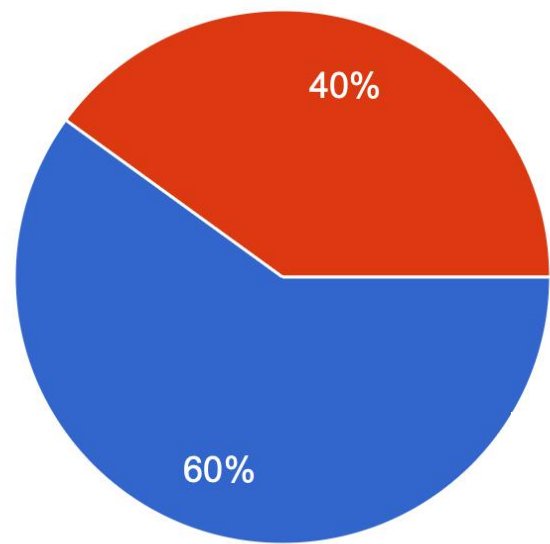
1. Brunei Darussalam
2. Cambodia
3. Nepal
4. Pakistan
5. Turkey

CLINICAL TRAINING IN PAEDIATRIC SUBSPECIALTY TRAINING PROGRAMME IN YOUR INSTITUTION

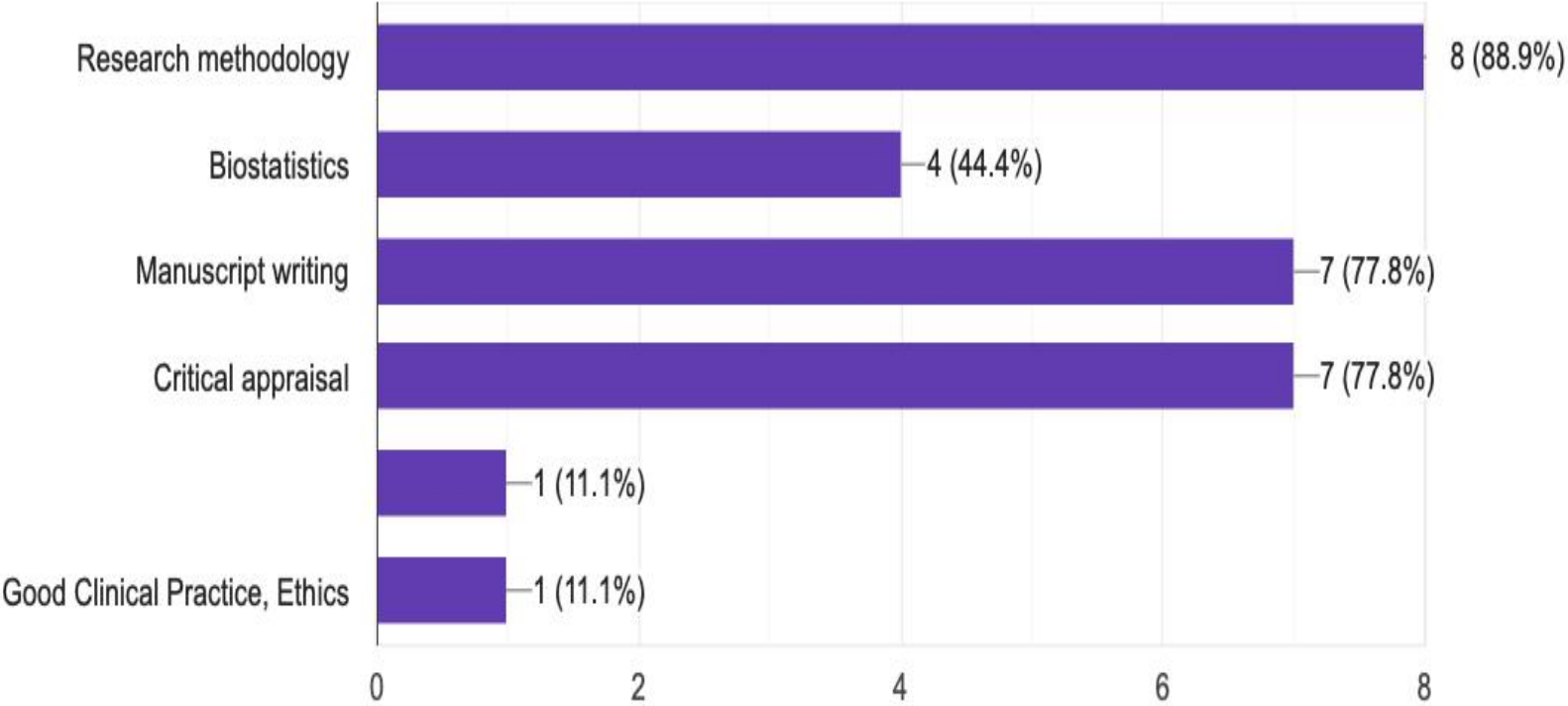


Is "Research Training" covered in your programme?

15 responses

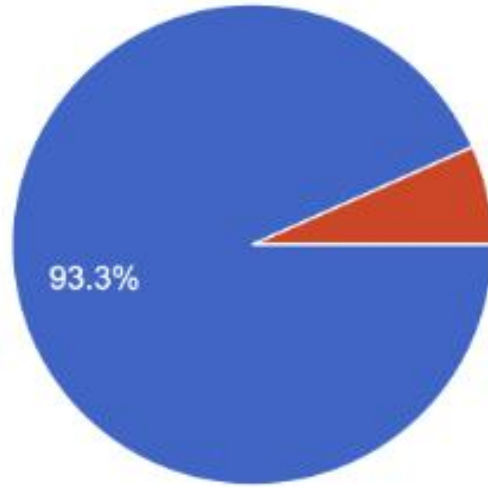


Yes
No



Is "Clinical Teaching" covered in the training ?

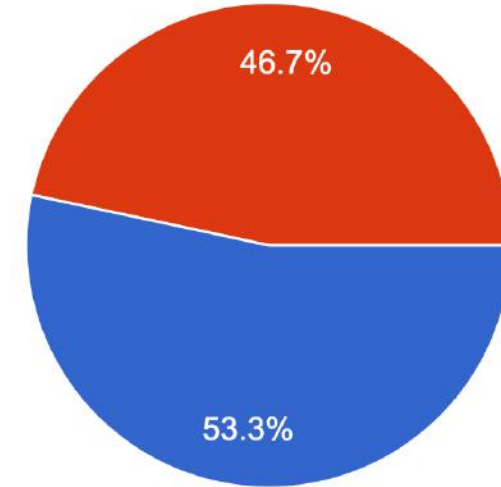
15 responses



Is "Clinical Leadership" covered in the training?

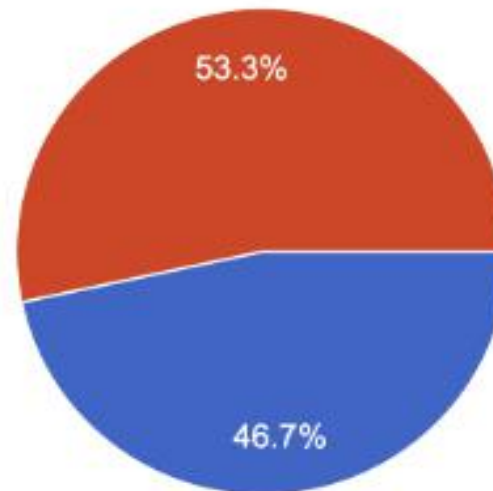
15 responses

● Yes
● No



Is "Medicolegal Aspects in Paediatric Anaesthesia" covered in the training?

15 responses



What are the
CRITERIA of an
ideal paediatric
anaesthetist ?

Begin with the
end in mind



**We need to determine our local
needs of what paediatric
anaesthetist should be able to do?**

CONTINUOUS MEDICAL EDUCATION

Specialization and Training

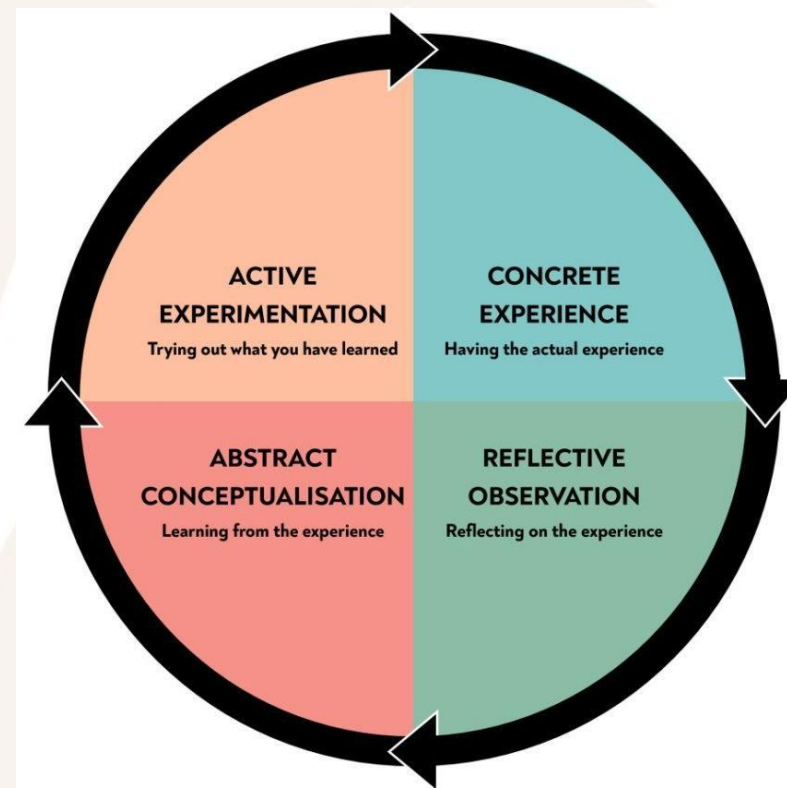
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Generalist

A **trained** anaesthesiologist in paediatric **can enhance safety** and **quality of perioperative care** thus improving surgical outcomes in neonates, infants and children.

How do we close this gap?

- Enforce training
- Ideally **structured** training
- Emphasise on **Experiential learning** by providing
 - Appropriate knowledge & Skill training
 - Volume of cases to experience
 - Constructive feedback from mentors
 - Reflective practices





Teaching & Learning

- Fellowship training
- Continuous Medical education
- Mentorship program
- Interprofessional education



Traditional Educational Approaches	Modern Educational Approaches
Outcome based Education: Focuses on broad learning outcomes that students should achieve by the end of the program.	Competency Based Education: Focuses on specific competencies that are necessary for professional practice.
Clinical rotations, Logbook	Clinical experiential learning Workplace assessment EPA
Conventional Clinical apprenticeship	Clinical Apprentice with constructive feedback
See one, Do one	Reflective practice

Modern Educational Approach

1. Competency Framework:

- Curriculum is structured around a framework of competencies required for practice.

2. Individualized Learning:

- Allows for personalized learning pathways and pacing based on individual student needs and progress.

3. Performance-Based Assessment:

- Assessment is based on direct observation of skills and performance in clinical settings.

4. Mastery Learning:

- Students must demonstrate mastery of each competency before progressing.

CONTINUOUS MEDICAL EDUCATION PROGRAM



WFSA
WORLD FEDERATION OF SOCIETIES OF
ANAESTHESIOLOGISTS

PRESENT



ASPA FLEX
WEBINAR SERIES

ASPA:
PPLS



- Paediatric Analgesia and Anaesthesia workshop
- Teaching day
- PPLS

Safer anaesthesia
from Education



Where do we go from here?

- To close gap between level of care and competency of anaesthesiologist
- Using **modern approaches** and **optimizing access to resources**
- ASPA-unite our member countries
- We can share resources
 - We have good role model from program like-BART
 - Having an **accredited training** programme

CONCLUSION

- Paediatric anaesthesia is **growing in need**.
- A **trained anaesthesiologist in paediatric** can **enhance safety** and **quality of perioperative care**
- **Identifying the local criteria** of the Paediatric Anaesthesiologist is important in determining the training.
- Use of **Modern Educational approaches** is the way to go, in bridging the knowledge gap in paediatric anaesthesia.

THANK YOU

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