INDIAN ASSOCIATION OF PAEDIATRIC ANAESTHESIOLOGISTS

INDIAN ASSOCIATION OF PAEDIATRIC ANAESTHESIOLOGISTS
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FROM THE EDITORIAL DESK

It is a new chapter for the IAPA Newsletter, and we are delighted to introduce a new team of editors - young, enthusiastic and brimming with fresh ideas. With their energy and diverse perspectives, the team has worked towards creating a newsletter that strikes a balance between scientific content and engaging communication. We are also delighted to launch this newsletter at ASPA 2026, bringing the work and contributions of IAPA to the international paediatric anaesthesia community.

One of the key changes this year has been to make our articles shorter and more reader-friendly. Most articles are now limited to around 600 words, allowing readers to grasp the essential messages without losing the depth and relevance of the content. We have also made the newsletter more visual, incorporating images and creative elements to complement the written content and make reading a more enjoyable experience.

We have introduced several new sections and article formats, including Inspiring Journeys, Statistical Shots, Trainee Corner, Article in Focus, Tickle Your Grey Cells, and Wellness Corner. These additions reflect our endeavour to embrace the many dimensions of professional and personal growth. Alongside these newer formats, we continue to bring to you - interesting case reports, updates and activities from our association to keep you connected with the work of the IAPA.

We are thankful to the IAPA leadership - President Dr. M Subrahmanyam, Vice-President Dr. MSRC Murthy, and Secretary Dr. Col. Rakhee Goyal - for their continued support and encouragement. We thank you for your continued readership and encouragement. We also encourage our active readers to share the newsletter with their colleagues and friends, helping us reach a wider anaesthesia community. Your feedback and suggestions are invaluable in helping us understand what you enjoy, what you would like to see more of, and how we can make future editions even better.

A newsletter is truly meaningful only when it is shaped by the community it represents. If you have an interesting idea, an experience to share, a case that could teach us something, or simply a story worth telling, we would love to hear from you. Please feel free to get in touch with any member of the editorial team. Happy reading!

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INDIAN ASSOCIATION OF PAEDIATRIC ANAESTHESIOLOGISTS

IAPA Newsletter Vol. 21 | September 2026

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IAPA SECRETARY'S MESSAGE

Dr. Col. Rakhee Goyal
Madhukar Rainbow Children's Hospital, New Delhi

Hello readers! I am glad you are reading this because this is not AI-generated, nor AI- modified, this is straight from the heart.

Over many years of anaesthetising kids I learnt that we need three things to make it work – thorough knowledge of the subject, clinical expertise and most importantly, empathy. At IAPA we share the same goals - to inculcate this approach in each paediatric anaesthesia care giver, to excel with empathy.

When we care for the little ones, we understand deeply how every small detail matters, whether it is history taking, examination, theatre preparation for a case or monitoring each detail throughout the perioperative period. This approach of attention to detail reflects in other spheres of our life as well, and makes us the persons we are.

IAPA Academics is the part of the organisation that builds the foundation for academic strength. It is a platform where the budding paediatric anesthesiologists grow alongside experienced experts and gain theoretical as well as practical knowledge via regular online classes and several other academic activities. The annual conference and mid-term CMEs also give an opportunity for participation in poster and oral paper presentation, quiz etc.

The IAPA newsletter that you are reading right now is a treasure of knowledge which you may not find in the best of resources. It has information, fun puzzles, quizzes, experience-sharing from others etc.

The IAPA fellowship is a one-year training program conducted in 12 premier paediatric institutes across the country. We now have a large pool of well-trained paediatric anaesthesiologists, and this helps to strengthen our resolve to provide high quality safe anaesthesia to our children.

In paediatric anaesthesia we don't just treat cases, we manage families. An empathetic tone and some words of reassurance change the way our speciality is looked upon. Close communication of the anaesthesiologist with the child's family through their most difficult time adds credibility to the clinical care.

IAPA as an organisation is growing fast and there is an increased interest from different parts of the country via many new state branches that hold together and build the regional training activities.

And we are open to suggestions, to better our services, our care.

Together, we strive to keep our children safe.

WANT TO BECOME AN IAPA MEMBER?

Join IAPA, a professional home for paediatric anaesthesiologists to connect, deliberate, and contribute to the evolving field of paediatric anaesthesia.

For more details CLICK HERE

MEMOIR: A HUMBLING PROFESSIONAL ODYSSEY

Dr. Snehalata Dhayagude
DA, FRCA
Founder President, IAPA

न त्वहं कामये राज्यं न स्वर्गं न पुनर्भवं।
प्रार्थये तप्त दुःखानां प्राणिनां आर्थी नाशनं।

I have no Lust for Empire or Heavenly Pleasure. I have no Desire for another Birth. I Pray, Kindly Bless me with the Ability to Reduce the Misery of my Patients.

As I mark six decades in my professional journey, this 'Shloka' captures the essence of my mind. It is the divine grace, the blessings of my elders, and the unwavering support of family, friends, and colleagues that have propelled me forward. Through the peaks and valleys, my mission has been to ease the suffering of patients and serve my country through my work in 'paediatric anaesthesia'.

I entered this world in Mumbai in 1945, as the first daughter in a family of five children. While I was cherished, I was also instilled with discipline. At the tender age of seven, during a visit to my aunt's home in Pune, I tumbled from a slide and endured a Colle's fracture. The surgeon set the bone without anaesthesia, leaving me to endure the searing pain. That moment etched in me the vital importance of pain management.

My upbringing in a middle-class family instilled in me the value of a good education, paving the way for my admission to the esteemed Seth G. S. Medical College in June 1963. My father, insistent that our family should have a doctor, guided me towards medicine, a decision I never regretted. Further, I chose anaesthesia to partner with my husband, Dr. H. C. Dhayagude, a urologist, whom I married soon after completing my MBBS. Thus began my odyssey in anaesthesia with a brief six-month stint at Tata Memorial Hospital. An opportunity arose to pursue post-graduation in anaesthesia in the UK, but it meant leaving my five-month-old son in India with my in-laws and I took that bold step. In the UK, I honed my skills and broadened my experience under various consultants. With dedication and the support of colleagues at St. Thomas Hospital in London, I achieved DA and FRCA in anaesthesia, gaining further expertise in cardiac and neuro anaesthesia.

We returned to Mumbai in June 1973, and within a year, I joined B. J. Wadia Hospital for Children, where paediatric anaesthesia and newborn resuscitation became my calling. My passion for working with children flourished under the mentorship of the esteemed Paediatric Surgeon, Dr. S. J. Dalal. I also collaborated with senior gynaecologist Dr. V. N. Purandare and, of course, my husband, Dr. H. C. Dhayagude. Soon, I was invited as a consultant paediatric anaesthesiologist at Bombay Hospital and Masina Hospital. There, I had the privilege of working alongside two brilliant paediatric surgeons, Dr. Ramadwar and Dr. Rakesh Shah, as we successfully navigated many complex surgeries.

During my journeys to the UK as a locum consultant, I found myself acquiring anaesthesia equipment like an OMV vaporiser, bellows, Ambu bag, and masks, as private nursing homes in Mumbai, lacked Boyle's Anaesthesia machines. After two decades immersed in the world of Paediatric Anaesthesia, I felt a calling to train postgraduates in this delicate art through annual lecture series at Wadia hospital.

A HUMBLING PROFESSIONAL ODYSSEY

This endeavour blossomed into the creation of the “Indian Association of Paediatric Anaesthesiologists” (IAPA) in 2006, where I had the honour of being named the Founder President. The inaugural annual conference of IAPA unfolded in Mumbai in February 2009, and since then, it has grown into a formidable professional body with participation spanning across India. It was my brainchild to honour the luminaries and legends in paediatric anaesthesia through the IAPA oration, and I also contributed the initial funding. This idea was warmly embraced by IAPA and continues to thrive to this day.

Over the past three decades, I have been invited to share my insights on various topics in paediatric anaesthesia at anesthesia society meetings. I have also served as a guest editor for two issues of World Clinics of Anaesthesia, Critical Care & Pain (Paediatric Anaesthesia). At the zenith of my career, I was invited to pen a book on Paediatric Anaesthesia, published in 2016, with Dr. Nandini Dave from KEM Hospital as my co-editor. We recently celebrated the release of its second edition in 2025. In 2020, the “Neonatal Anaesthesia Society” was formed in Delhi, and I was honoured to be invited to join.

Paediatric Anaesthesia is a demanding field, as we hold the lifeline of tiny tots during intricate surgical procedures. My escapes from the stress include concerts, plays, painting exhibitions, gardening, social gatherings, and badminton, which have helped me maintain a harmonious work-life balance for more than 30 years. I wish to express my heartfelt gratitude to elders, associates, loved ones, friends, and definitely my patients for granting me the privilege to be of service to them.

With Dr. HC Dhayagude

Dr. Dhayagude’s oration in IAPA

At my graduation ceremony

Book release of our book on ‘Paediatric Anaesthesia’

ARTICLE IN FOCUS: MEASURING RECOVERY THAT MATTERS - THE PAEDIATRIC SCALE FOR QUALITY OF RECOVERY

Dr. Bhuvaneswari Balasubramanian
AIIMS Nagpur

Article in focus: Graydon C, Stricker PA, Kelleher S, Cravero J, Karim N, Muhly WT, Lee-Archer P. Development of the Pediatric Scale for Quality of Recovery (PedSQoR). Anesthesiology. 2025;143:275–286.

Recovery after surgery in children is often judged by clinical milestones: stable vital signs, pain scores, oral intake, discharge readiness and absence of complications. However, these outcomes may not fully reflect how the child and family experience recovery. A child may be “fit for discharge”, yet remain frightened, tired, nauseated, experiencing disturbed sleep, behaviourally altered or unable to return to normal play. This important gap is addressed by Graydon and colleagues in their development of the Pediatric Scale for Quality of Recovery (PedSQoR), a new patient-centred tool designed specifically for children after surgery and anaesthesia.

The need for such a scale is clear. In adult perioperative medicine, tools such as QoR-40 and QoR-15 are well validated and widely used in clinical trials and quality improvement. Until now, paediatric perioperative medicine has lacked a comparable holistic instrument that captures recovery across developmental stages. Children differ from adults not only in physiology but also in communication, cognition, emotional expression and dependence on caregivers. Therefore, simply adapting adult tools is inadequate.

The authors used a rigorous mixed-methods approach. Item generation began with a comprehensive literature review, which identified 41 relevant instruments containing 216 recovery-related questions. This was complemented by interviews with children, parents and healthcare professionals to identify recovery themes important to families. A Delphi process then refined the item pool, and the resulting questionnaire was tested in 1,162 children undergoing elective surgery across centres in the United States of America and Australia.

The final PedSQoR is a 20-item questionnaire covering two broad domains: physical well-being and mental well-being. Physical items include pain, need for analgesia, mobility, activity, nausea, vomiting, appetite, sleep and tiredness. Mental well-being items include sadness, anxiety, fear, being easily upset, behavioural control, confusion, forgetfulness, nightmares and upsetting thoughts about hospital. Separate self-report and proxy-report versions are available, making the tool usable for children aged 2–17 years. Younger children are assessed through caregiver reports, while older children can self-report or complete the scale with caregiver support.

The scoring system is simple. Items are answered for the preceding 24 hours on a five-point scale, and the overall score ranges from 20 to 100, with higher scores indicating better recovery. Separate physical and mental well-being domain scores can also be calculated. Reliability is excellent, with Cronbach alpha values of 0.906 for the proxy version and 0.922 for the self-report version.

The strength of this article lies not only in the methodology, but also in its philosophy. It shifts paediatric recovery assessment from clinician-observed endpoints to outcomes that matter to children and families. For paediatric anaesthesiologists, PedSQoR offers a potential standardised endpoint for analgesic trials, enhanced recovery pathways, day-care surgery audits, quality improvement projects and comparison of perioperative interventions.

Some caution is needed before widespread adoption. The initial validation was in English-speaking children undergoing elective surgery in tertiary care centres in high-income countries. Further validation is required for emergency surgery, critically ill children, differing cultures, socioeconomic groups and translated versions.

Take-home message: PedSQoR is an important step towards meaningful measurement of paediatric recovery from surgery and anaesthesia. It reminds us that good recovery is not merely survival without complications; it is the child returning physically, emotionally and psychologically towards normal life.

WELLNESS CORNER: HEALING THE HEALER - FINDING BALANCE WHILE CARING FOR OTHERS

Dr. Sujata Rawlani
Shantilal Shanghvi Eye Institute, Mumbai

Every working day, we feel it. A surge that, in our private clinical language, runs through us like an ampule of adrenaline drawn up for a tiny chest. Behind every small patient there is a family standing outside the theatre, holding their breath.

We are trained for this, though not always trained to survive it. Repeated cycles of vigilance and emotional containment slowly thin the skin we work behind, and many of us only notice when sleep, mood, or curiosity has already started to dim. By then, of course, the alarm has been sounding for a while. We watch every parameter on the monitor except the one inside us. Self-care, in this work, is not an indulgence. It is the quiet substrate for safe paediatric anaesthesia. We know this; we still postpone it.

Most of what restores us is small. Slow, long-exhale breathing between cases can nudge the autonomic balance towards the parasympathetic side and has been associated with lower cortisol levels [1]. Brief exposure to calming sounds, whether instrumental music or a singing-bowl recording, has been linked to lower levels of stress [2]. Brief movement, a walk between lists or a stretch at the theatre door, can ease postural strain and lift the mood. The one we most often skip is the smallest: two sentences with a colleague after a difficult case can ease distress and help build resilience (**Fig:1**) [3]. None of these is heroic. They are small acts that, if repeated, keep us present for the next child.

If the healer is healed, the healing becomes kinder, safer, and something we can sustain.

Figure 1: Four small, evidence-aware practices for restoring balance.

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DEEP DIVE: PERIOPERATIVE PRE-DUCTAL AND POST-DUCTAL PULSE OXIMETRY IN NEONATES

Dr. Suruchi Sikarwar, Dr. Col. Rakhee Goyal
Madhukar Rainbow Children's Hospital, New Delhi

Ductus arteriosus (DA) is expected to close after birth as the neonate transitions from serial circulation in-utero to parallel circulation. Functional closure of the DA usually occurs between eight and 72 hours after birth, while anatomical closure may take up to about eight weeks [1]. In-utero, patency of the DA is maintained by low oxygen tension and high levels of prostaglandins, nitric oxide, and carbon monoxide. After birth, higher oxygen tension and reduced prostaglandin levels, mediated by factors such as potassium channels, endothelin-1, and isoprostanes, cause closure of the DA, along with the effects of bradykinin and corticosteroids. In preterm neonates, time to closure may be prolonged: about 71 days in infants born at <26 weeks, 13 days at 26-27 weeks, eight days at 28-29 weeks, and six days in infants born after 30 weeks [2]. Until anatomical closure occurs, circulation can revert to a transitional pattern due to factors such as hypoxia, hypercarbia, metabolic acidosis, hypothermia, and hypoglycaemia.

In recent years, an increase in premature births has led to a growing number of ex-premature infants presenting for surgery. Premature neonates have a raised incidence of necrotising enterocolitis, respiratory distress, cyanotic heart disease, congenital defects, and syndromes. These neonates may be critically ill with higher morbidity [3].

Therefore, it becomes imperative to be vigilant perioperatively in neonates and ex-premature infants. A simple, non-invasive, reliable, and cost-effective method to monitor ductal physiology perioperatively is pre-ductal and post-ductal pulse oximetry. One pulse oximetry probe should be placed on the right hand or wrist for the pre-ductal saturation (SpO_2) reading, and another probe should be placed on a lower limb, preferably the foot, for the post-ductal reading on an additional monitor.

According to the algorithm-based interpretation given by Monnelly et al., to be considered normal, the pre- and post-ductal SpO_2 levels should both be greater than or equal to 95%, with a difference of less than or equal to 3% [4]. During monitoring, if either reading is less than 95% or the difference is more than 3%, causative factors such as hypoxia, acidosis, hypothermia, or ventilation-related issues should be identified and corrected.

Wren et al. reported that one-third of infants with a potentially life-threatening heart defect are discharged with an undetected defect [5]. Monitoring of pre- and post-ductal SpO_2 aids in detecting critical congenital heart disease (CCHD), especially coarctation of the aorta and transposition of the great arteries, which may remain asymptomatic in the early neonatal period and may be missed on physical examination alone [6]. This is particularly relevant in undiagnosed lesions presenting for non-cardiac surgery.

Echocardiography can detect flow reversal, but it may not always be feasible intraoperatively due to training requirements and limited expertise, restricted access to the chest area because of sterile surgical draping, non-availability of an ultrasound machine with an appropriate probe, and time constraints. Thus, monitoring pre-ductal and post-ductal SpO_2 can be a simple solution. It can act as a vital tool during airway management and airway resuscitation, as it helps in early detection of hypoxia and guides oxygen therapy to avoid both hypoxia and hyperoxia, which can be equally harmful in neonates.

During intraoperative ventilation, it can guide titration of inspired fraction of oxygen (FiO_2) and ventilation settings to avoid hypoxia, hypercarbia, or acidosis. It also acts as a means of assessing haemodynamic stability during surgery, as it can help detect a sudden increase in pulmonary vascular resistance or hypotension. This monitoring is equally important during emergence and extubation to ensure adequate oxygenation during transition and to guide oxygen weaning. Post-extubation, it can help detect deterioration or shunt reversal and indicate the need for oxygen support such as CPAP or even reintubation. In conditions such as coarctation of the aorta, post-ductal SpO_2 may be lower than pre-ductal SpO_2. In some cases of transposition of the great arteries, the post-ductal SpO_2 may be normal, while the pre-ductal reading may be subnormal.

Therefore, pre-ductal and post-ductal pulse oximetry should be considered as a routine perioperative monitoring tool in neonates and ex-premature infants until ductal closure is established

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TICKLE YOUR GREY CELLS: LITTLE CLUES, BIG CONCEPTS (PICTURE PUZZLE)

Dr. Nisha Sara M. Jacob
Kasturba Medical College,
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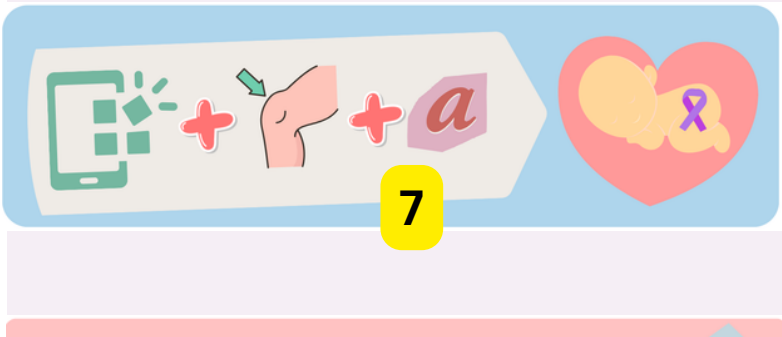
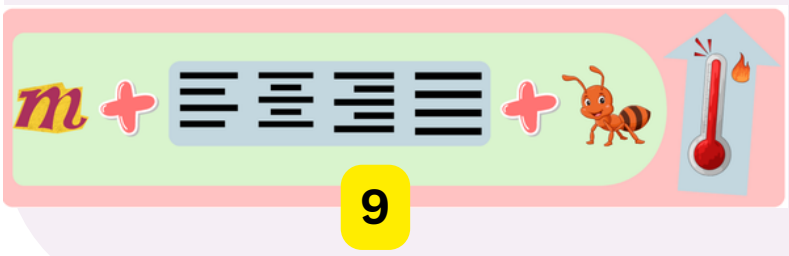
DICLOSURE
All pictures are original and created using Canva (not AI generated).





ANSWERS ON PAGE 24

REPORT: CME BY IAPA MAHARASHTRA

Dr. Poonam Bhadlikar
MRR Children's Hospital, Mumbai

The Department of Anaesthesia, MRR Children's Hospital, successfully organized a Continuing Medical Education (CME) on Sunday, May 31st, 2026 in collaboration with the Indian Society of Anaesthesiologists (ISA) Thane city branch and the Indian Association of Paediatric Anaesthesiologists (IAPA) Maharashtra state branch. The program focused on the unique and timely topic: Approach to Perioperative Anaesthesia Care for Children with Special Needs.

The academic event received participation from nearly 100 delegates and covered various clinical and practical aspects of managing this vulnerable group of patients. We were honored to host national and local faculty experts, including:

- Dr. Rujuta Mehta, Head of Department and Paediatric Orthopaedic surgeon, B.J.Wadia Children's Hospital, Mumbai
- Dr. Kavya, Paediatric Neurologist, MRR Children's Hospital, Thane
- Dr. Sandeep Kelkar, Director of Paediatric Department, MRR Children's Hospital, Thane
- Dr. Chandrika YR, ex-Head of Department of Anaesthesia, Indira Gandhi Institute of Child Health, Bangalore
- Dr. Jayanthi R, Senior Consultant, Kanchi Kamakoti CHILDS Trust Hospital, Chennai

Renowned paediatric anaesthesiologists such as Dr. Snehlata Dhayagude, Dr. Bharti Kulkarni, Dr. Pradnya Sawant, Dr. Nandini Dave, Dr. Manisha Ghosh, Dr. Jayanti Bhate, Dr. Sunil Katkade, Dr. Rochana Bakhshi, Dr. Yatin Khairnar and others also shared their expertise. The CME was inaugurated by Dr. Uday Andar, Clinical Head of MRR Children's hospital, Thane.

The event was appreciated for addressing an area that is often under-discussed, making it both unique and highly relevant for clinical practice. We are happy to share glimpses from the CME.

STASTICAL SHOTS: DIAGNOSTIC ACCURACY- ONCE UPON AN ROC CURVE

Dr. Anvi Gupta
PGIMER Chandigarh

Dr. Aditi Jain
PGIMER Chandigarh

Investigations help augment decision-making. It is important to understand their accuracy and how clinical contexts can influence result interpretation (**Fig:1**).

The parameters are measured against a reference standard, and these include **sensitivity** and **specificity** - intrinsic properties of a test that are independent of the clinical context.

Sensitivity: A highly sensitive test tells us that the subject is unlikely to have the disease if the test result is negative. It may overdiagnose, i.e., individuals without disease may test positive. This is desirable when you do not want to miss the condition - for example, a test which detects residual neuromuscular blockade should be highly sensitive.

Specificity: A highly specific test is one in which you are confident of the presence of disease if the test is positive. This is important in those conditions in which a positive result can have significant clinical and psychological consequences - for example, specific tests are desired for confirmation of malignancy.

Positive predictive value (PPV) and **negative predictive value (NPV)**: PPV indicates the probability of having the disease when a test is positive. Conversely, NPV is the probability of not having the disease when the test is negative. A high disease prevalence increases the chance of having the disease if the test is positive. For instance, a lung ultrasound detecting atelectasis in the intensive care unit is more likely to reflect true disease than if performed in the general healthy population.

Likelihood ratio: It helps estimate how much a test result changes the probability of disease.

Receiver operating characteristic curve (ROC curve): It tells us about the global performance of the test across all points. A good test is one that stays close to the left and upper border of the graph.

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Call for articles

We invite academic articles and non-academic writeups for the upcoming editions of the IAPA Newsletter
Please write to newsletter.iapa@gmail.com for submission or queries

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DIAGNOSTIC ACCURACY- ONCE UPON AN ROC CURVE

Figure 1: Diagnostic accuracy of investigations

TRAINEE CORNER: RETHINKING ANAESTHESIA FOR A SUSTAINABLE ENVIRONMENT- SMALL STEPS WITH LASTING IMPACT

Dr. Sivasangavi S
Madhukar Rainbow Children's Hospital, New Delhi.

Mentor: Dr. Col. Rakhee Goyal

"That's one small step for a man, one giant leap for mankind."
- Neil Armstrong

Over the past two centuries, volatile inhalational agents have evolved from ether to desflurane with improved efficacy over time. However, their occupational and environmental hazards have often been overlooked. Volatile anaesthetics (VA) are potent greenhouse gases with significant global warming potential (GWP), as shown in **Table 1**[1].

Gas	Lifetime in atmosphere (years)	100-year GWP	Ozone depletion potential	Greenhouse warming potential
Isoflurane	2.6–5.9	350	+	+
Sevoflurane	1.1–5.2	575	-	+
Desflurane	8.9–21	1526	-	+
Nitrous oxide	114	296	+	+

Table 1: Inhalational agents and their atmospheric lifetime and global warming potential (GWP)

VA are used in day-to-day practice across the world. It is not practical to completely stop using these agents. Instead, we should know our agents well, so that we balance clinical efficacy and patient safety with environmental stewardship. We all know the context-sensitive half-time, blood gas partition coefficient etc. of VA, but do we know their atmospheric lifetime? Nitrous oxide (N_2O) stays in the environment for 114 years and desflurane for 21 years with a high GWP. With the better understanding of volatile agents we can use them with care in these ways-

- Minimal to metabolic flow anaesthesia with CO_2 absorbents and closed circuits – reducing total consumption and cost.
- Scavenging systems – active scavenging systems that remove VA from the operating room (OR), reducing occupational hazard; however, the VA are ultimately released into the atmosphere.

Alternatively, choose another technique such as total intravenous anaesthesia (TIVA) with or without regional anaesthesia.

Many developed nations like the United Kingdom are now moving away from VA towards TIVA-Target Controlled Infusion for maintenance of anaesthesia. Scotland was the first nation to ban desflurane, followed by several nations who have stopped its use. In our institute we stopped procuring N_2O and desflurane six years ago.

However, we need to address the question - is TIVA truly 'green'? The infamous "Syringe Tide" of 1987, when large quantities of hospital waste washed onto beaches of the United States of America and forced widespread closures, remains a stark reminder of the environmental consequences of improper plastic waste disposal - a concern that continues to surface even today [2].

In hospital settings, a significant proportion of plastic waste comes from the OR, and TIVA further increases this burden. Although many plastic syringes are made from recyclable materials such as polypropylene and polyethylene, recycling back to healthcare remains limited because of improper segregation of infectious waste and other systemic barriers. These materials can be processed and repurposed for other commercial applications, thereby balancing safety with sustainability [3,4].

We can reduce the overall environmental burden through promoting education and awareness, and by embracing simple sustainable practices such as using drugs and devices that are environmental friendly, reusing or recycling materials whenever possible, and choosing reusable alternatives like sterilizable supraglottic airway devices and linen gowns, repurposing those that cannot be reused, and ensuring proper waste segregation and disposal (**Fig:1**).

Figure 1: Strategies for sustainable anaesthesia practice [5]

Our duty as anaesthesiologists does not end with patient safety in the operating room. It extends to protecting the environment and preserving a healthy world for the generations that follow. Let's make an effort to change our mindset towards integration of clinical and environmental safety.

"Great change is never the result of one effort, but of many small actions united."

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CASE REPORT: NOT ALL FRACTIONS ARE EQUAL- DYNAMIC PROPOFOL REQUIREMENTS DURING REPEATED PAEDIATRIC RADIOTHERAPY SEDATION

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Introduction

Propofol (2,6-diisopropylphenol) is a potent intravenous hypnotic drug. Rapid and smooth induction with nearly no excitation phenomena, short context-sensitive time, rapid terminal half-life time and low incidence of postoperative nausea and vomiting make it suitable for non-operating room anaesthesia. Repeated procedural sedation within a short interval has not been extensively described, particularly in paediatric patients undergoing radiotherapy. Understanding how propofol requirements change across repeated sessions may help optimise sedation strategies and improve patient safety. We describe a child undergoing multiple radiotherapy sessions within a 34-hour time span, demonstrating changing propofol requirements.

Case Description

A five year old boy (17.5 kg) with acute lymphoid leukaemia underwent total body irradiation as a part of stem cell transplant conditioning. Four radiotherapy sessions were planned over a 34-hour period under intravenous sedation. The child had no comorbidities and remained haemodynamically stable, except for baseline sinus bradycardia with a heart rate of 55–60 beats/min.

Sedation was achieved using intravenous (IV) propofol bolus (1-2 mg/kg) followed by continuous IV infusion (50-250 mcg/kg/min). He was premedicated with IV midazolam 0.1 mg/kg and IV glycopyrrolate 0.005 mg/kg before each session. Ramsay Sedation Score (RSS) was used to monitor the sedation depth. Sedation was titrated to achieve an RSS target score of 5 to 6. When the RSS score was below 5, supplementary doses of propofol (0.5-2 mg/kg/dose), ketamine (0.5-1 mg/kg/dose) and fentanyl (1-2 mcg/kg/dose) were administered sequentially, and the propofol intravenous infusion rate was increased accordingly. Oxygen was administered via nasal prongs throughout, with continuous monitoring of heart rate, oxygen saturation, and respiratory pattern during the procedure. The details of the four sessions are described in **Table 1**.

Unlike the first session, the second session required an increase in the propofol dose. During the third session, there was a further increase in the infusion rate required, accompanied by multiple interruptions that necessitated rescue doses of propofol and ketamine. During the third session, the patient developed relative tachycardia, with the heart rate increasing to 110 beats/min. Arterial blood gas analysis was unremarkable. The child remained clinically stable and recovered completely, although recovery was prolonged to 30 minutes, during which the heart rate returned to baseline. The sedation strategy was modified after the third session by adding fentanyl boluses to reduce propofol requirement.

	Session 1	Session 2	Session 3	Session 4
Time	Day 1 08:30 – 10:00	Day 1 16:00 – 17:30	Day 2 08:00 – 9:30	Day 2 15:00 – 16:30
Duration (min)	90	90	90	90
Propofol bolus (mg)	35	40	50	30
Propofol infusion rate	50 – 100	95 – 143	95 – 240	95
Cumulative rescue doses	Propofol 60 mg (30+30) Ketamine 15 mg (15+0)	Propofol 40 mg (20+20)	Propofol 90 mg (20 mg in 1st, 2nd , 3rd ; 10 mg in 5th, 6th , 8th interruptions respectively) Ketamine 30 mg (10 mg at 1st 4th and 7th interruptions)	Propofol 20 mg Fentanyl 30 mcg
Total dose(mg)*	~ 150	~ 225	~ 500	~ 180
Disruptions	2 times	2 times	8 times	Once
Recovery time (min)	15	5	30	5

Table 1: Summary of anaesthetic agents used during four radiotherapy sessions

Discussion

This case illustrates dynamic changes in anaesthetic requirement across repeated sedation sessions, attributable to multiple interacting pharmacokinetic and pharmacodynamic factors. Repeated procedural sedation within a short interval requires awareness of evolving drug response patterns and need for individualised dose adjustment.

Pharmacokinetic considerations

Propofol exhibits multicompartment pharmacokinetics which is commonly described using a three-compartment model. Repeated exposure may result in progressive saturation of peripheral compartments, leading to slower redistribution of propofol back into the circulation and potential persistence of the pharmacologic effect. This phenomenon may resemble the pharmacokinetic behaviour observed during prolonged continuous infusion and may contribute to an increase in context-sensitive half-time. However, despite repeated or prolonged exposure, recovery from propofol sedation generally remains rapid because redistribution from slow compartments occurs more gradually than hepatic metabolism and systemic elimination.

Pharmacodynamic Variability

The increased drug requirement observed during the third session may have resulted from a combination of factors, including possible acute tolerance and stress-related sympathetic activation with increased catecholamine release.

This may have produced a pharmacokinetic–pharmacodynamic mismatch, wherein drug exposure was adequate but the observed sedative effect was reduced. The associated tachycardia in the absence of metabolic abnormalities may support this physiological response.

Transition Towards Equilibrium

By the fourth session, the anaesthetic requirement decreased compared with the third session. One possible explanation is the development of a relative steady state–like redistribution pattern, whereby residual drug effects contributed to the overall sedative state. Additionally, modification of the sedation strategy with adjunctive fentanyl may have improved sedative efficiency through opioid-propofol synergism.

Clinical Implications

Repeated administration of sedation over short intervals may alter both pharmacokinetic and pharmacodynamic responses. Context-sensitive half-time may become clinically relevant even with intermittent dosing schedules. Autonomic changes such as heart rate variability suggest a need for reassessment of anaesthetic depth and dosing strategy. Therefore, repeated sedation sessions should not rely on fixed infusion expectations from prior sessions. A multimodal sedation strategy may help in reducing cumulative propofol dose due to synergism. However, the addition of other sedatives or analgesics also increases the complexity of titration and the potential for adverse effects, necessitating careful patient selection and close monitoring.

A limitation of this case report is that sedation depth was not monitored using an objective modality utilising processed electroencephalogram signals such as bispectral index, and was instead assessed clinically. Additionally, using target controlled infusion might have provided a smoother titration, more stable effect-site concentration, and fewer dose adjustments and fluctuations.

Conclusion

We observed dynamic changes in propofol requirement across repeated radiotherapy sedation sessions over a short interval. This case emphasises that anaesthetic response is individualised and requires continuous reassessment and tailored modification of sedation strategies. It further highlights the need to transition from protocol-based sedation to physiology-guided anaesthetic management.

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As members of the association, it is essential to familiarize ourselves with the Bye-laws that govern its operations. These Bye-laws serve as the foundational legal and procedural framework that outlines members' rights, responsibilities, and the overall structure and functioning of the association. Understanding them ensures that members can actively participate in decision-making processes, comply with requirements, and contribute effectively to the association's objectives.

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TICKLE YOUR GREY CELLS: RIDDLES

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RCH, Bengaluru

Riddle 1: I am the reason why neonates turn blue much faster than adults during induction. I am low in babies because of their small lungs. Do you know what I am?

Riddle 2: I am a biological rule for the first few months of life. If you block my favourite path, I struggle to find another until I cry. Can you name me?

Riddle 3: I am a mathematical trick named after a paediatrician for securing an oral endotracheal tube at an adequate length. Though I am accurate in term neonates, I am not in very low birth weight babies. What am I?

Riddle 4: In an adult, my spinal cord ends high at L1-L2 vertebra. But in a neonate, I'm a ‘’low-rider’’ending at L3, and the dural sac stretches all the way to S3. If you poke too high, you'll find me. Any guesses?

Riddle 5: I am the "bread and butter" block of all paediatric minimally invasive abdominal surgeries. To find my space, you must feel two distinct "pops" through the fascia: first the external, then the internal. What block am I?

Riddle 6: I am an antibiotic often used for "dirty" surgeries. However, you should never give me to a jaundiced neonate. I am a bully - I kick bilirubin off its transport protein (albumin), sending it straight to the brain to cause kernicterus. Name me?

Riddle 7: I am a law of physics. I am the reason a child with "floppy" tissues (laryngomalacia) has stridor when they breathe hard. What am I?

Riddle 8: Baby came with a full stomach and metabolic alkalosis. If you put this little one to sleep before fixing the chemistry, he/she might stop breathing after surgery. What will be the sign shown in an ultrasound abdomen image when an elongated, thick pylorus indents into the stomach?

Riddle 9: I am the heart rate of a newborn. If I drop below 80, what is the first cause you must look for immediately?

Riddle 10: I am a six-year-old scheduled for an elective hernia repair. I have been fasting since midnight. On induction of anaesthesia, I suddenly vomit a large amount of undigested food. I neither have an obstruction nor did I cheat on my fast. What is this “physiological state’’ of my stomach?

ANSWERS ON PAGE 24

RIDDLES

Riddle 11: I have a tiny chin, a tongue that falls back, and often a cleft palate. When you try to intubate me, my tongue is the biggest piece in the way. Which syndrome am I?

Riddle 12: I am a toddler who was eating peanuts. Now, I have a wheeze only on the right side. On the chest X-ray, the lung looks “hyper-inflated even when I exhale”. What is the enigma for the anaesthesiologist during induction?

Riddle 13: I am a three-year-old with a sudden high fever. I am sitting up, leaning forward in the “tripod position”, and drooling because it hurts too much to swallow. My breathing sounds like a high-pitched whistle. If you try to look in my throat with a tongue depressor, my airway might shut forever. What condition do I have and how will you anaesthetise me?

Riddle 14: As a neonate, I have a massive surface area but very little insulation. I cannot shiver to stay warm, so I burn my special "brown fat" stores instead. Guess what method I use to stay warm?

ANSWERS ON PAGE 24

IAPA 2026 National Conference Award Winners

Best Poster winners

1st prize- Dr. Adwin P Varghese

2nd prize- Dr. Srinivasan R

IAPA best paper award- Dr. Ananya Raju

Best Paper awards

1st prize- Dr. Shikha Jain

2nd prize- Dr. Sarath Kumar MS

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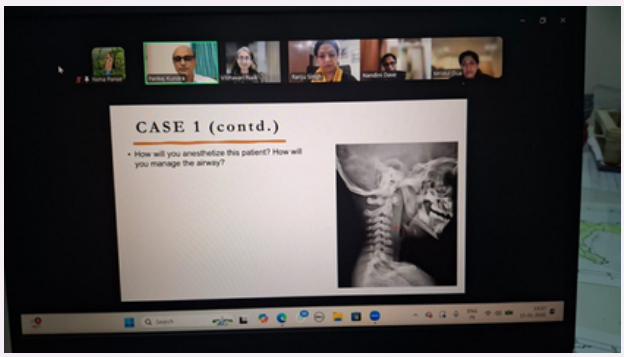
REPORT: SAP-SAMS-IAPA MAHARASHTRA WEBINAR ON DIFFICULT PAEDIATRIC AIRWAY

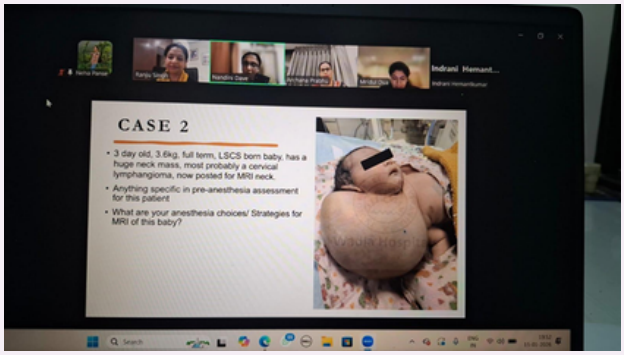
Dr. Bhuvaneswari Balasubramanian
AIIMS Nagpur

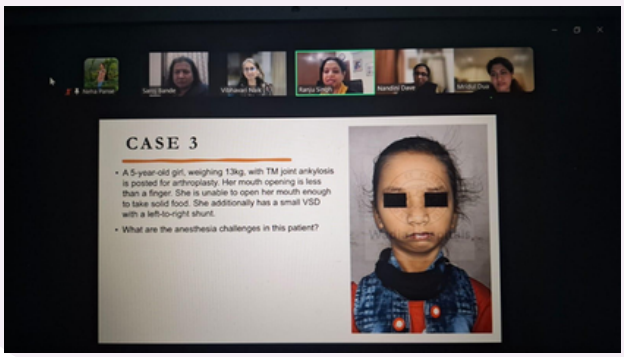
Society of Anesthesiologists Pune (SAP), in association with SAMS and the Indian Association of Pediatric Anaesthesia (IAPA) Maharashtra State Branch, successfully conducted a webinar on “Difficult Pediatric Airway” on 15th January 2026.

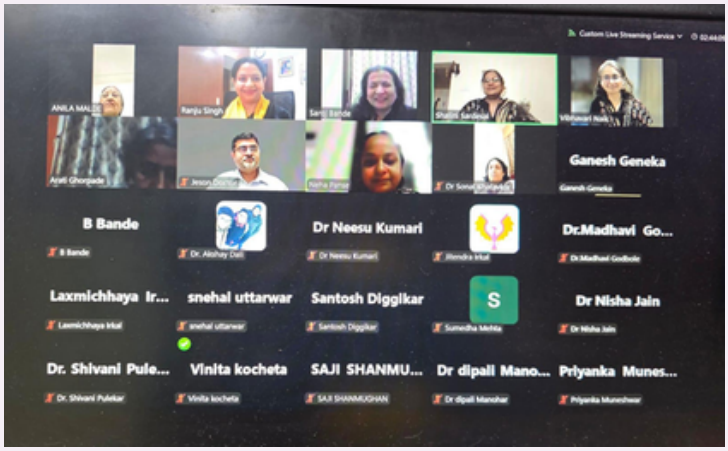
The webinar commenced with two invited talks:
“Preoperative airway assessment in pediatric patients” by Dr. Anila Malde, and
“Guidelines for management of difficult pediatric airway” by Dr. Jeson Doctor.

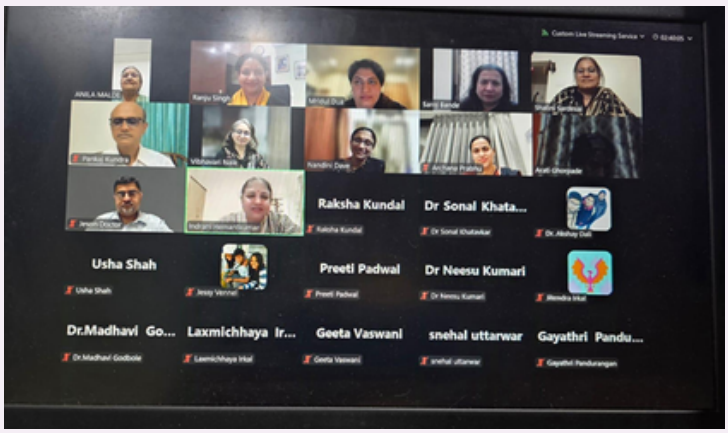
These were followed by an engaging and insightful case-based panel discussion featuring stalwarts of pediatric anaesthesia, including Dr. Pankaj Kundra, Dr. Ranju Singh, Dr. Nandini Dave, and Dr. Vibhavari Naik. The discussion was expertly moderated by Dr. Mridul Dua and Dr. Archana Prabhu. The session was very effectively chaired by Dr. Indrani Hemantkumar and Dr. Saroj Bande, ensuring a smooth and academically enriching program. The webinar was attended by approximately 380 delegates, with many participants remaining logged in until the end of the nearly three-hour session, reflecting the high level of interest and engagement. The ’Vote of Thanks’ was delivered by Dr. Neha Panse, Hon. Secretary, SAP. The webinar was accredited with 1 MMC credit hour point.











CASE REPORT: FROM TREE TO THORAX: ANAESTHETIC MANAGEMENT OF A RARE PAEDIATRIC PENETRATING NECK AND THORACIC INJURY

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Keywords: Paediatric penetrating neck injury, low-resource setting

I**ntroduction:** Trauma is a leading cause of morbidity and mortality in children [1]. Penetrating injuries of the neck and thorax are potentially life-threatening due to the proximity of major vascular, airway, and pulmonary structures [2]. Anaesthetic management plays a crucial role in preventing secondary injury, thus ensuring favourable outcomes. We describe a case of paediatric penetrating neck and thoracic injury caused by a falling coconut tree branch, highlighting anaesthetic, surgical and airway management concerns associated with managing such an injury.

Case Report: A 12 year old boy, weighing 35 kg was brought to the casualty after being struck by a falling coconut tree branch from a height of 20 feet. The branch struck his right neck and shoulder embedding wooden fragments and trapping his steel chain against his neck (**Fig:1**). He was conscious, but disoriented with a Glasgow Coma Scale of E3V5M6, heart rate of 120/min, blood pressure of 106/64 mmHg, respiratory rate of 24–26/min and 96% saturation in room air. Airway was patent, but since he was disoriented, tests for difficult airway could not be performed. Breathing was spontaneous, with bilateral equal air entry and no stridor or wheeze. A penetrating wound with mild oozing was observed over the right supraclavicular region with embedded wooden fragments and metal chain. Chest radiograph ruled out pneumo-/haemothorax (**Fig:2 Left panel**). Computed tomography of neck & chest demonstrated penetrating wooden fragments and chain into the thorax, without evidence of major vascular or tracheobronchial injury. Extended-FAST was not done due to unavailability.

Anticipating occult airway injury, the child was shifted urgently to the operating theatre. A difficult airway cart was kept ready. Intravenous access was secured with two 18 G cannulae, standard anaesthetic monitors were attached and general anaesthesia was induced after preoxygenation with titrated doses of propofol (total - 50 mg), 20 mg ketamine, 15 mg atracurium, 3 mg dexamethasone and lidocaine 30 mg. Intubation done with 5.5 mm cuffed endotracheal tube. A double-lumen tube was deferred as it was an emergency and respiratory status was satisfactory not requiring lung isolation. A temperature probe was placed and the child was catheterized. Right anterior thoracotomy with neck exploration was performed after careful positioning and padding of pressure points. Wooden fragments and the chain were removed under direct vision (**Fig:2 Right panel**), and an intercostal drain was placed. Intraoperative fluid replacement was achieved using the Holiday-Segar formula. Packed red cells (300 mL) was transfused. Analgesia was provided with intravenous paracetamol (600 mg), fentanyl (30 mcg) & local infiltration with 20 mL of 0.125% bupivacaine.The trachea was extubated uneventfully and shifted to intensive care unit. Haemodynamic and respiratory parameters remained stable. Postoperative multimodal analgesia was achieved with oral paracetamol (15 mg/kg) and intravenous ketorolac 0.5 mg/kg every six hours. Adequate chest physiotherapy and psychological support were provided. The child was discharged on the fourth postoperative day.

Figure 1: Penetrating neck injury with foreign body in situ at presentation

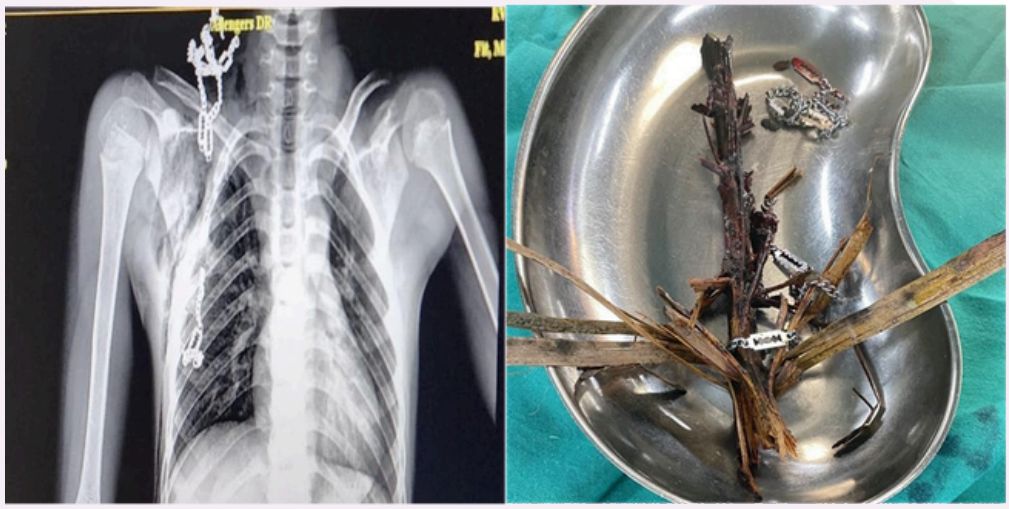

Figure 2: (L) Neck chain in the right thorax, (R) The branch with the neck chain

Discussion: Penetrating neck & thoracic injuries in children require anaesthetic planning [1,2]. Early airway control, preparedness for haemorrhage, multidisciplinary coordination, and effective pain & ventilator management are essential [1]. Removal of penetrating foreign bodies under direct vision minimizes catastrophic complications.[3] Falling branches can result in complex injuries involving zone 1 of the neck, which are challenging due to proximity to great vessels, trachea & oesophagus. Principles of management include oxygenation, difficult airway management & adequate ventilation without hypoxia, hypercarbia & readiness for massive transfusion [4,5].

Early airway management using a cuffed endotracheal tube was critical given his potential deterioration, while maintaining readiness for difficult airway. Use of available airway devices to the maximum leads to successful outcomes. An intercostal drain was inserted as a prophylactic strategy. Controlled removal of fragments minimized complications & thus the need for post-operative mechanical ventilation, which is very important in a resource-limited setting.

Conclusion: This case highlights the importance of multidisciplinary collaborations to achieve favourable outcomes in a resource-limited setting.

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1. Functional Residual Capacity (FRC).
2. Preferential nasal breathing.
3. Tochen rule
4. The conus medullaris.
5. The TAP block (Transversus Abdominis Plane).
6. Ceftriaxone.
7. The Bernoulli principle (or Venturi Effect). Related to dynamic airway collapse.
8. The cervix sign
9. Hypoxia. In babies, bradycardia is almost always due to a lack of oxygen unless proven otherwise.
10. Anxiety-induced gastroparesis. Extreme stress or pain can completely halt gastric emptying, turning an "elective" stomach into a "full" stomach.
11. Pierre Robin Sequence.
12. Ball-valve effect with foreign body aspiration; positive pressure ventilation can worsen air-trapping.
13. Epiglottitis. The solution is inhalational induction in the theatre by the most experienced person available, keeping the child calm and upright, until they are asleep.
14. Non-shivering thermogenesis.

PICTURE PUZZLE ANWERS:

1. Pierre Robin Sequence
2. COLDS score
3. Jackson Rees circuit
4. Colorado Paediatric Airway Score
5. Sip 'Til Send
6. Stop Before You Block
7. Apnoea of prematurity
8. Cole's formula
9. Malignant hyperthermia
10. Child is not a miniature adult