

# The Child and Newborn

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This is the 25th year of publication of *The Child and Newborn*. On this occasion the first WBAP *The Child and Newborn* CME was organized on 28 April 2018 in Kolkata. The day started with a post graduate quiz which was contested by 10 teams from different PG teaching institutes of West Bengal. The closely contested quiz was conducted by the quiz masters Dr Anjan Das, Dr Debadatta Mukhopadhyay and the final icing on the cake was laid by Dr Arunaloke Bhattacharyya with his highly innovative medical questions from various popular film clips. “*The Child and Newborn*” Dr Tapan Kumar Ghosh Lecture was delivered by Dr Digant Shastri, President elect of Central IAP and a person very close to Late Dr Tapan Kumar Ghosh, a past editor of *The Child and Newborn*. Dr Dilip Mukherjee, past editor of *The Child and Newborn* released the latest issue of the journal. Other past editors of the journal Dr Subroto Chakrabarty, Dr Sutapa Ganguly, Dr Sumana Kanjilal and Dr Atul Gupta delivered lectures. The session concluded with felicitation of past editors.

The integration of research and practice in the field of pediatrics remains an important goal. In order to focus on academically relevant publication patterns, we are very much interested in encouraging authors to submit clinically relevant research, case reports and series, review articles and studies of clinical effectiveness to *The Child and Newborn*. Such research can have important scientific and clinical impact on the field of pediatrics. For example, analytical studies and clinical case reports have high value and scientific utility in suggesting new directions for research or clinical care by documenting success or failures of interventions in clinical settings, describing the generalizability of research to practice, and evaluating new practice-based interventions.

Increasing the representation of clinically relevant research in *The Child and Newborn* will ultimately enhance the clinical significance, and impact of our research on children’s health. Having been trained as scientist practitioners, many pediatricians have the knowledge and capacity to improve the clinical significance of published work in our field.

I welcome all, students, teachers and practitioners to contribute in this journal and use the platform for healthy discussion and exchange of thoughts which will ultimately enhance our knowledge for better child care.

**Dr Jaydeep Choudhury**  
Editor in Chief

# Combating Antibiotic Resistance : War Against Error

**Tapabrata Chatterjee**

*Professor of Pediatrics, Vivekananda Institute of Medical Sciences, Kolkata*

“War against terror” is considered to be the most difficult war, at this day and age. But there is another war, probably more difficult than above – the war of microbes, the war of infection, the war of microbial resistance to antibiotics<sup>1</sup>.

It was found that *Staphylococcus aureus*, *E. coli* and *Klebsella* species are most common community acquired neonatal and infant bacteremic infections of developed countries. WHO recommended antibiotic regime for neonatal sepsis of penicillin and gentamicin covers just over half of the isolates. The alternative of cefotaxime often used is a cheap and broad spectrum antibiotic does not improve the coverage.

Most antibiotics are derived from naturally occurring microbial product, found in caves which are isolated from the world for four million years and have been shown to possess multiple resistance genes to modern antibiotics<sup>2</sup>. These genes have been evolved to protect against other organisms in their ‘struggle for existence’ against their rivals. This resistance of meta-genome (meta resistosome) is a pool of genes in the commensal and free living bacteria. It represents a rich resource on which the bacterial pathogen can draw when challenged by novel antimicrobial agents<sup>3</sup>.

Antibiotic resistance is an example of Darwinian selection. Misuse of antibiotic leads to what we can call ‘unnatural selection’.

The genes that code these bacterial self defence enzymes are often co-located on mobile genetic elements with other resistant determinants. The co location of diverse resistance gene provides a mechanism by which an antimicrobial of one class may select for bacteria resistance to unrelated agents. Worrying to see highly resistant gram

negative organisms are major cause of even community acquired early onset of neonatal sepsis in India<sup>4</sup>. While, resistant bacteria are rarely more virulent they often necessitate the use of new expensive antibiotics which in turn drives further resistance<sup>5</sup>.

Antibiotics regime<sup>1</sup> prescribed by WHO may not be successful in a particular community, especially when rampant broad spectrum antibiotics use, has made the organisms resistant. So local sensitivity status and on the basis of that, selection of appropriate but narrowest spectrum of antibiotic should be our goal.

National legislation should forbid inappropriate use of antibiotics at all levels and over the counter availability without prescription. Finally many neonatal infections of developing countries can be prevented by early breast feeding, care of umbilical cord, kangaroo mother care and hand hygiene.

We cannot win war against antibiotic resistance. So we should try for peace, by infection preventing measures and by using existing antibiotic responsibly.

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# Isolated Ectrodactyly of Right Hand in a Neonate

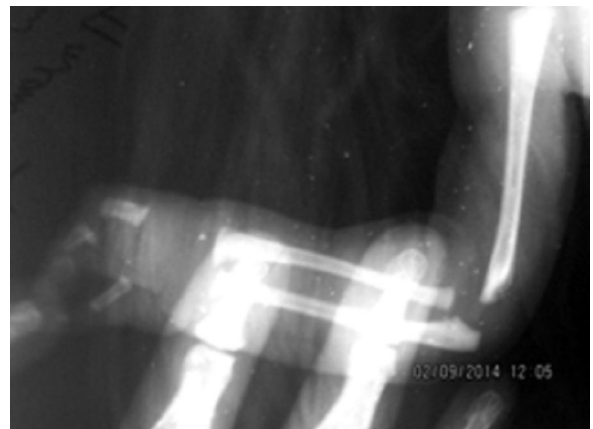
**Sankar Chattopadhyay**

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A female baby born by uneventful LUCS (birth weight 2.600 kg) found to have only two digits in right hand, no other congenital anomaly could be detected. One digit was thumb and the other was little finger. The cord had two umbilical arteries and USG abdomen detected no abnormality. Skiagrams revealed normal development of right radius and ulna. The baby was otherwise normal and a diagnosis of isolated ectrodactyly of right hand was made.

Ectrodactyly is an extreme condition of oligodactyly involving the absence of one or more central digits of hand or foot. It is a rare form of a congenital disorder in which the development of the hand is inappropriate. It is a type I failure of formation – longitudinal arrest. The incidence varies from 1 in 90,000 to 1 in 10,000 births. Many human gene defects can cause ectrodactyly. Commonest mode of inheritance is autosomal dominant with reduced penetrance.



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# A Case of Rapidly Enlarging Pseudopancreatic Cyst - Non Surgical Cost Effective Intervention at the Point of Care.

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**Abstract:** Pseudopancreatic cyst is common after an acute attack of pancreatitis, progressive enlargement of cyst causing discomfort sometimes needs urgent intervention. Modern surgical intervention like cystogastrostomy by endoscope is costly and not easily available. Moreover many surgeons prefer a mature cyst for any surgical intervention. We report a case of large pseudopancreatic cyst by simple bedside ultrasound guided aspiration at day 21 and discharged without operative intervention.

14 years old female presented with acute onset upper abdominal pain with vomiting for one day. She was immediately admitted and started standard care. She needed multiple dosages of injection tramadol and codeine for pain abdomen. Blood investigations showed high neutrophilic leukocytosis, high CRP, lipase >3000, amylase >5000 and raised liver enzymes. CT abdomen with contrast showed multiple areas of necrosis and hemorrhage with peripancreatic collection of fluid (Fig:1) with CT activity index of 7/101.

After two weeks of conservative treatment including 7 days of PICU stay she was discharged on day 17 of hospital admission. At home she complained of pain abdomen and progressive enlargement of a cystic mass in the epigastrium, so she was readmitted after 4 days of discharge. Repeat CT scan abdomen showed a huge pseudopancreatic cyst (Fig:2) involving head and neck of the pancreas measuring (8.8×6.8×4.53 cm) with volume of 144.58 cc. Consultation with GI surgeon opined for gastrocystostomy, but as it was not a mature cyst with respect to thickness of cyst wall, operation may lead to leakage and peritonitis. Moreover facilities for endoscopic cystogastrostomy is not available in the hospital. The epigastric mass was gradually enlarging with pain and discomfort, so percutaneous aspiration of cyst was decided under USG guidance



Fig:1. CT abdomen with contrast showing multiple areas of necrosis and hemorrhage with peripancreatic collection of fluid



Fig:2. CT abdomen showing pseudopancreatic cyst

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in the bedside and drained 200 ml of hemorrhagic fluid with lipase and amylase 24000 and 28920 respectively.

#### Discussion

Pseudopancreatic cysts are fluid collections in the pancreatic tissue lined by other than epithelium. There are three different therapeutic approach for such cases: endoscopic transpapillary or transmural drainage i.e. cystogastrostomy, percutaneous catheter drainage, or open surgery. The feasibility of endoscopic drainage is highly dependent on the anatomy and topography of the pseudocyst, but provides high success and low complication rates. Percutaneous drainage is used for infected pseudocysts. Progressive rise of epigastric swelling merits prompt surgical intervention but a surgeon needs a mature cyst histologically to do a percutaneous or laparoscopic or operative cystogastrostomy. The optimum time required for a cyst to mature can vary from 4 to 8 weeks. Any attempt to cystogastrostomy or other bypass before maturation of cyst can lead to peritonitis from spillover of cystic fluid, hemorrhage

and infection from necrotic pancreatic tissue. But pain and discomfort arising out of mechanical compression of pancreatic or other abdominal structure by the cyst made us think about alternative like needle aspiration of cyst under CT guidance.

So it is a message to all pediatrician treating a pancreatic cyst which is rapidly enlarging requiring costly endoscopic surgery, may consider less invasive procedure like aspiration under USG at the point of care.

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# Journal Scan

**\*Reviewers : Soumya Kanti Das, Sanchari Chakravarty, Manas Kumar Mahapatra**

**\*\*Edited by: Sushmita Banerjee**

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## Evidence Update

From this issue of the Child and Newborn, we start a new feature - an update of scientific literature published within the last few months, in Office Pediatrics as well as in the various subspecialties of Pediatrics. The articles are selected and reviewed by post-graduate trainees and edited by a senior pediatrician. We plan to include good quality single articles as well as meta-analyses and guidelines. We invite postgraduate students to send in contributions that may be of interest and relevance to Pediatricians in India. The Readers' comments and constructive criticisms are also welcome.

### **1. Faster clean catch urine collection (Quick-Wee method) from infants: randomised controlled trial.**

Kaufman J, Fitzpatrick P, Tosif S, Hopper SM, Donath SM, Bryant PA, Babi FE. *BMJ* 2017; **357**: j1341 | doi: 10.1136/bmj.j1341

#### **Summary**

This is a RCT designed to assess whether a simple stimulation method can improve the rate of urinary voiding for a clean catch sample within 5 minutes. Infants (between 1-12 months), who were advised a urine test (n=344) were randomized to either gentle suprapubic cutaneous stimulation (n=174) using gauze soaked in cold fluid (the Quick-Wee method) or standard clean catch urine sampling with no additional stimulation (n=170), within 5 minutes.

#### **Quick-Wee method resulted in :**

- (a) A significantly higher rate of voiding within 5 minutes compared with standard clean catch urine sample (31% vs. 12%,  $P < 0.001$ )
- (b) A higher rate of successful urine sample

collection (30% vs. 9%,  $P < 0.001$ )

- (c) Greater parental and clinician satisfaction (median 2 vs. 3 on a 5 point Likert scale,  $P < 0.001$ ).

The difference in sample contamination rate between Quick-Wee and standard clean catch urine was not statistically significant.

The authors conclude that the Quick-Wee is a simple cutaneous stimulation method that significantly increases voiding within 5 minutes and also the success rate of clean catch urine collection.

#### **Reviewer's comments**

Urine collection methods are worth discussing since it is often difficult to rapidly collect an uncontaminated specimen from small children. Yet, UTI must be considered when there is unexplained fever or urinary symptoms, before starting antibiotics, so as to treat effectively, detect underlying anomalies and prevent complications such as renal scarring.

A method which is effective, economical and quick, yet non-invasive is preferable. The Quick-Wee technique discussed in the current study fits such requirements and was associated with greater successful sampling and better parental/carer satisfaction. However it did not decrease the contamination rates of the urine specimens compared to standard clean-catch mid-stream samples.

This study did not include neonates and older children which leaves a large section of the paediatric population out of its ambit. Although well known, that it is more difficult to collect contamination free specimens in girls, this study does not discuss gender specific results. Specifics related to the cleaning of the perineal area have also not been discussed in this study.

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## **2. Treating infant colic with the probiotic *Lactobacillus reuteri*: double blind, placebo controlled randomized trial**

Sung V, Hiscock H, Tang ML, Mensah FK, Nation ML, Satzke C, Heine RG, Stock A, Barr RG, Wake M. *BMJ*. 2014 Apr 1; **348**:g2107. doi: 10.1136/bmj.g2107.

### **Summary**

This is a double blind placebo controlled RCT designed to determine whether the probiotic *Lactobacillus reuteri* DSM 17938, reduces crying or fussing in breast fed and formula fed infants with colic, less than 3 months of age. Symptoms were defined by pre-determined criteria. Of the 167 infants included, 85 were randomized to receive probiotic and 82 to receive placebo. The babies were given oral daily *L. reuteri* (1×10<sup>8</sup> colony forming units) and placebo for one month respectively.

The results of the study were: At 1 month the probiotic group cried or fussed more (by a mean of 49 minutes per day) than the placebo group. Fussing was exclusively more among the formula fed infants. There were no adverse effects. The findings of the study indicated that the role of probiotics in reducing infant colic is doubtful. This is at variance with the findings of prior smaller and more restrictive studies related to the same subject. The authors concluded that there is still very little evidence to suggest probiotics can have a beneficial role in infant colic.

### **Reviewer's comments**

Excessive crying in absence of apparent cause in infants is usually termed as colic. It may affect upto 20% of infants and cause significant distress to the family. Probiotic use may help by reducing gas formation from other microorganisms in the gut. This is the largest RCT addressing this issue till date, and the first to include formula fed infants.

The current study mostly focusses on infants attending urgent care settings. So this leaves a large number of well infants out of the ambit of this study. Maternal dietary habits are not clearly covered in this study. Infants on proton pump inhibitors have been included and whether that is a confounding factor is not very clear. Infants with possible cow milk protein allergy have been excluded but whether the mothers have been on dairy-free diet has not been ensured. Since this is a questionnaire-based study, carers not conversant with english could not be included in

the outcome which is another limitation. Several other RCTs are underway and a subsequent metanalysis of all may help to further define this issue.

## **3. Impact of Prolonged Breastfeeding on Dental Caries: A Population-Based Birth Cohort Study**

Peres KG, Nascimento GG, Peres MA, Mittinty MN, Demarco FF, Santos IS, Matijasevich A, Barros AJD. *Pediatrics*. 2017; **140**(1):e20162943

### **Summary**

This oral health study (n = 1303) was part of a birth cohort study, carried out in southern Brazil. The children were investigated at 5 years of age for decayed/missing/filled primary teeth as well as severe dental caries. The presence of these was correlated with the duration of breastfeeding (recorded up to 2 years of age) and sugar consumption (recorded up to 5 years age). The researchers found that the prevalence of severe early childhood caries was 23.9% overall. Children who were breastfed for = 2 years of age had 1.9 times higher number of filled primary tooth surfaces, and a 2.4 times increased risk of having severe dental caries compared to those that were breastfed up to 1 year of age, independent of sugar consumption. The study concluded that preventive interventions for caries must be initiated as early as possible if there is likelihood of prolonged breastfeeding.

### **Reviewer's comments**

In this study, the researchers have demonstrated a significant risk of dental caries with prolonged breast feeding. A higher frequency of nocturnal feedings, when teeth cleansing is not possible coupled with the inherently increased cariogenicity of human milk seem to be instrumental in giving rise to dental caries more often in children breastfed for more than 2 years. WHO recommends breastfeeding up to 2 years of age and beyond, and this is of particular importance in a resource-limited country such as ours. Dental caries is one of the most common causes of pain and suffering in children less than 5 years, affecting their day-to-day lives. Hence, adequate measures for early prevention of dental caries must be taken, that includes providing tooth brushing recommendations to parents and regular dental checkups for breastfed babies. Confounding factors like sugar consumption pattern and maternal



education/socio-economic background have been taken into consideration in this study, however, the remaining dietary history and dental hygiene practices that have not been documented may have significant impact on the study outcome. Also, this study provides limited information about the incidence of dental caries at an age earlier than 5 years.

#### **4. Chorioamnionitis and Management of Asymptomatic Infants =35 Weeks Without Empiric Antibiotics**

Jan AI, Ramanathan R, Cayabyab RG. *Pediatrics*.2017;**140(1)**:e20162744

##### **Summary**

This was a retrospective data review (May '08-Dec '14) of 240 asymptomatic neonates with maternal chorioamnionitis exposure. The majority (67.5%) of these babies remained well in the mother-infant units and were discharged after a median stay of 2 days. The researchers found that 32.5% of the babies needed NICU admission due to abnormal laboratory parameters. Among the babies transferred to NICU, 24% received antibiotics for <72 hours, 60% were treated for culture-negative sepsis and only 15% for culture-positive sepsis. Avoidance of routine use of empirical antibiotics prevented NICU admissions in about two-thirds of these neonates. The researchers thus highlight the importance of clinical observation and laboratory evaluation over immediate empirical antibiotic therapy for asymptomatic babies, although larger studies confirming the safety of this approach are required.

##### **Reviewer's comments**

In an era where antibiotic resistance is on the rise, studies such as this are an absolute necessity. Given the inconsistencies that exist in the diagnosis of maternal chorioamnionitis, risk stratification of the exposed neonate, particularly when asymptomatic is a great challenge. However, choosing to treat these babies on the basis of clinical suspicion of sepsis and suggestive lab parameters appears to be a rational approach that could soon gain wider acceptance. In a large majority of the newborn babies in this study, intensive care admission and its associated burdens could be avoided, which includes avoidance of early antibiotic exposure, interruption to breastfeeding, disruption of mother-

child bonding and increased cost. But adopting this approach would also inevitably involve strict clinical monitoring of the babies for evolving signs of sepsis as well as serial monitoring of blood parameters as demonstrated by this study (serial monitoring of hsCRP was performed here). Among the limitations of the study, the retrospective nature of data collection that limits the availability of clinical data, a relatively small sample size and the lack of a definite definition of maternal chorioamnionitis are prominent.

#### **5. Clinical Trial of Fluid Infusion Rates for Pediatric Diabetic Ketoacidosis.**

Kuppermann N, Ghetti S, Schunk JE, Stoner MJ, Rewers A, McManemy JK, Myers SR, Nigrovic LE, Garro A, Brown KM, Quayle KS, Trainor JL, Tzimenatos L, Bennett JE, DePiero AD, Kwok MY, Perry CS 3rd, Olsen CS, Casper TC, Dean JM, Glaser NS; PECARN DKA FLUID Study Group. *N Engl J Med*. 2018 Jun 14;**378(24)**:2275-2287. doi: 10.1056/NEJMoa1716816.

##### **Summary**

Cerebral edema is one of the main complications causing morbidity and mortality in patients with Type I diabetes mellitus and ketoacidosis. This multicenter prospective study performed across 13 centres, randomized children presenting with DKA into 4 groups: patients who received 0.9% NaCl vs. 0.45% NaCl for deficit correction + maintenance fluids, and again patients who received fast vs. slow rehydration.

- (i) In the fast rehydration group, upto 20 ml/kg was given as initial 0.9% NaCl bolus followed by deficit correction of 10% body weight, half in the first 12 hours and the rest over 24 hours.
- (ii) In the slow rehydration group, a maximum bolus of 10ml/kg 0.9% NaCl was followed by deficit correction of 5% body weight over 48 hours.

All patients received insulin infusion of 0.1 IU/kg/hour after initial fluid bolus, and glucose was added to maintenance fluids when serum glucose <200-300mg/dl.

A total of 1389 DKA episodes occurring in 1255 children were included. Reduction of GCS during treatment, requirement for hyperosmolar therapy or intubation, tests of short term memory, electrolyte abnormalities, as well as tests for memory and IQ after recovery -were not statistically different between

groups. The lowest rate of decline in mental status occurred with rapid rehydration using 0.45% NaCl, but the difference did not reach levels of statistical significance. The authors conclude that neither the rate of administration of intravenous fluid, nor the saline concentration significantly influenced neurologic outcomes in children with DKA.

### Reviewer's comments

In current DKA protocols, aggressive rehydration regimes have been largely replaced by lesser and slower volume replacement because of fears of causing cerebral oedema. However this has not resulted in a reduction in incidence of cerebral edema, as this large multicenter trial emphasizes. Recent thinking suggests that cerebral edema may result due to the effects of cerebral hypoperfusion followed by reperfusion injury, mediated by inflammatory cytokines. In this study, patients in all groups experienced a significant number of adverse effects, emphasizing the high risk status of this condition and the requirement for close clinical and biochemical monitoring and individual tailoring of therapy. The study did not include the sickest of patients, i.e. those with GCS<11 or with severe dehydration, and the effects may have been significantly different in them.

### 6. Honey for acute cough in children.

Olabisi Oduwole, Ekong E Udoh, Angela Oyo-Ita, Martin M Meremikwu. Cochrane Database of Systematic Reviews 2018, Issue 4. Art. No.: CD007094. DOI: 10.1002/14651858. CD007094. pub5.

### Summary

This update on previous Cochrane reviews, aims at evaluating the effectiveness of honey for acute cough in children. Six RCTs involving 899 children aged 12 months to 18 years and three studies (331 children) conducted between 2007 to 2016 were analyzed in this update. Studies compared honey with dextromethorphan, diphenhydramine, bromelin, salbutamol, no treatment, and placebo, 6 studies used point scales to measure symptomatic relief of cough – low score indicated better cough symptom relief.

The results indicated that for reducing cough symptoms, honey -

(i) is probably better than no treatment or placebo.

- (ii) may have a similar effect as dextromethorphan.
- (iii) may be better than diphenhydramine.
- (iv) when given for up to three days is probably more effective than placebo or salbutamol, beyond which it probably had no advantage.
- (v) salbutamol was probably more effective in reducing cough impact (in first 3 days) on the quality of sleep of children and their parents.

Adverse events including nervousness, insomnia, and hyperactivity affected 9.3% treated with honey and 2.7% treated with dextromethorphan. Twelve percent in the honey group vs. 11% in the placebo group complained of gastrointestinal symptoms. Four children who received salbutamol had rashes compared to one child in the honey group, and 7.5% in the diphenhydramine group experienced somnolence.

According to the author these are low to moderate quality evidences, hence not enough to conclude for or against the use of honey to relieve cough in children. However using honey for infants aged up to 12 months is not advised because of poor immunity against bacteria that may be present, which can cause paralysis.

### Reviewer's comments

Pediatric acute cough arises mostly from upper respiratory tract infection or allergy. It is a very common symptom, leading to frequent doctor visits. It can impact on quality of life, cause anxiety, and affect sleep of children and their parents. This protective response is seen in viral (most common) or bacterial infections, and in presence of an irritant or allergen in the respiratory tract.

There is frequent use of over-the-counter (OTC) cough medications (containing dextromethorphan hydrobromide, phenylephrine hydrochloride, chlorpheniramine maleate, and methylparaben), which are also prescribed by physicians; but good evidences regarding their efficacy is lacking. In children, OTC cough medications may rarely be associated with serious adverse events such as altered consciousness, arrhythmias and even death. Thus identification of an effective yet safe cough preparation is necessary. Honey is a sweet, viscous liquid; contains carbohydrates, free amino acids, vitamins and trace elements. It claims antioxidant (?avonoids, carotenoids, polyphenol, phenolic acids,

vitamin C, and glucose oxydase enzymes) antiviral, antifungal and anti-inflammatory properties. Honey has been used in traditional medicine to treat cough and in modern medicine to treat infected wounds; it is also an ingredient in some cough syrups. If effective, honey may save significant annual expenditure on OTC cough medications.

This meta-analysis update found that honey probably relieves cough symptoms to a greater extent than no treatment, diphenhydramine, and placebo, but may make little or no difference compared to dextromethorphan. It probably reduces cough duration better than placebo and salbutamol. This review does not include complementary and alternative medicine studies for analysis. Most of the children received honey for just one night, which is a limitation. Higher quality RCTs using honey for longer periods are required to assess its effect as a cough relieving remedy.

## **7. Paracetamol (acetaminophen) for patent ductus arteriosus in preterm or low birth weight infants.**

Ohlsson A, Shah PS. Cochrane Database of Systematic Reviews 2018, Issue 4. Art. No.: CD010061. DOI: 10.1002/14651858. CD010061. pub3.

### **Summary**

This is a meta-analysis of published (till November 2017) RCTs to evaluate effectiveness and safety of paracetamol (PCM) compared with placebo, no intervention or non-steroidal anti-inflammatory drugs (indomethacin and ibuprofen) used for treatment of PDA in preterm, low birth weight babies.

A total 8 studies (916 infants) were selected and GRADE approach was used to assess the quality of data for outcomes like failure of ductal closure after the first course of treatment; neurodevelopmental impairment; all-cause mortality during initial hospital stay (death); gastrointestinal (GI) bleed or stools positive for occult blood; and serum levels of creatinine after treatment. Echocardiography was used to diagnose PDA.

The results indicated that-

- (i) There was no significant difference between paracetamol and ibuprofen, or between paracetamol and indomethacin for failure of ductal closure after the first course of treatment.

- (ii) In studies assessing PCM vs. ibuprofen :
  - (a) Use of PCM was associated with lower GI bleeding (4 studies; n = 537), lower serum bilirubin levels (2 studies, n = 290), lower serum creatinine (4 studies), higher platelet count and higher daily urine output.
  - (b) There was no significant differences in the neurological outcomes at 18 to 24 months follow up (n = 61).
- (iii) Two studies (n=80) revealed lower rate of failure of ductal closure after 4 to 5 days of treatment with PCM compared to placebo or no intervention.
- (iv) In studies assessing PCM vs. indomethacin (2 studies, n = 277), significantly lower serum creatinine levels, higher platelet counts and daily urine output were found in the paracetamol group

The authors concluded that PCM is as effective as ibuprofen (moderate-quality evidence), more effective than placebo or no intervention (low-quality evidence); and as effective as indomethacin (low-quality evidence) in closing a PDA. Though PCM has fewer side effects, concerns have been raised regarding neurodevelopmental outcome.

### **Reviewer's comments**

PDA is essential for the intrauterine survival of the fetus and needs prostaglandin for its patency. In premature and low birth weight babies sometimes it fails to close spontaneously after birth and may lead to life threatening complications needing medical or surgical intervention. Prostaglandin synthesis inhibitor ibuprofen and indomethacin both are recommended for medical treatment of PDA but have reported incidence of gastrointestinal bleeding, abnormalities in liver and renal function. This meta-analysis found PCM to be equally effective for PDA closure; having fewer adverse effects.

However, in view of these being moderate to low quality trials, limited in number, and with cognizance of previously reported possible association between perinatal paracetamol and autism spectrum disorder / language delay in girls, more good quality studies with long-term follow-up of at least 18 to 24 months are needed before making definitive recommendations for PDA therapy in preterm infants.

# The Child and Newborn PG Quiz

## Round 1

Quiz Master : Dr Anjan Das

- Q.1. A term baby on day one of life was tested for suspected early onset sepsis, and showed an absolute neutrophil count of 100/cmm. What is the likely diagnosis?
- Q.2. What is “Plus disease” of ROP?
- Q.3. What is the “Back to Sleep” recommendation for the newborns?
- Q.4. Which is the first bone in human fetus to ossify?
- Q.5. At what gestational age the sense of smell develops in a human baby?
- Q.6. In a case of omphalocele, which is the most crucial determinant of mortality?
- Q.7. Which condition is most commonly associated with intra-abdominal calcifications in a newborn?
- Q.8. When does the switch from fetal to adult hemoglobin synthesis occurs in a human baby?
- Q.9. What treatment is available for subsequent pregnancies of a mother, who has had a baby affected with NAIT?
- Q.10. What is the treatment option in a rare case of treatment failure with medical management in a case of refractory hypoglycemia?
- Q.11. A baby born through MSAF showed meconium staining of the toe nails of both feet. How long has meconium been present in the amniotic fluid?
- Q.12. In a term neonate, what is the pH value of the gastric fluid at 6 to 8 hours of life?
- Q.13. Name a phototherapy – Condition in which is contraindicated.
- Q.14. What is the predicted chance of blindness in a case of “Threshold ROP”?
- Q.15. When do PT and APTT values reach the normal adult level?
- Q.16. Which neonatal condition is associated with the following names? 1) Berrens, 2) Biles, 3) Batty, 4) Gambino, 5) Gonzales

## The Child and Newborn PG Quiz

### Round 2

Quiz Master : Dr Anjan Das

- Q.1. Modified Porto criteria is related to which Pediatric GI disease?
- Q.2. An Autoimmune Hepatitis related 8 year old cirrhotic girl is admitted with decompensation as ascites. Her ascitic fluid study shows 1000 cells/cmm, 90% neutrophils. No organism could be grown on bed side inoculation of the fluid. What is the diagnosis in relation to the ascites?
- Q.3.. What is the drug of choice for Cryptosporidium diarrhea in immunocompetent children?
- Q.4. At what age gastric acid secreting capacity reaches that of adult value?
- Q.5. According to AASLD guidelines, how many portal tracts should be there in an optimally sized liver biopsy sample?
- Q.6. Which is the most common type of primary immunodeficiency?
- Q.7. Which hematological condition is related to Favism and Bite cells?
- Q.8. This class II Direct Thrombin Inhibitor (DTI) is a synthetic small molecule drug, usually cleared hepatically, used in conditions where heparin is contraindicated. Name it.
- Q.9. Name one anatomic variant which predisposes individuals to venous thrombosis.
- Q.10. A 6 year old boy presents with a hypothalamic tumor and has features as emaciation, euphoria and emesis. What is the condition called?
- Q.11. A 14 month old child presents with symptoms including marked cyanosis, lethargy with normal oxygen saturation on pulse oxymetry after drinking from a neighbor's well. What is the most likely agent that unmasked the condition?
- Q.12. Infection with this organism can lead to a very low reticulocyte count in a setting of shortened RBC survival. Name it
- Q.13. A child undergoing induction chemotherapy for leukemia having absolute neutrophil count <1000/cmm, develops severe right lower quadrant abdominal pain and tenderness. What is the most serious diagnosis?
- Q.14. Which is the most definitely associated Transplacental carcinogen known to cause cancer in the offspring?
- Q.15. Which chemotherapeutic agent has been most commonly implicated in causing secondary leukemia earliest after exposure?
- Q.16. If osteosarcoma or pinealoblastoma is the secondary neoplasm, what was the most likely primary tumor?

# The Child and Newborn PG Quiz

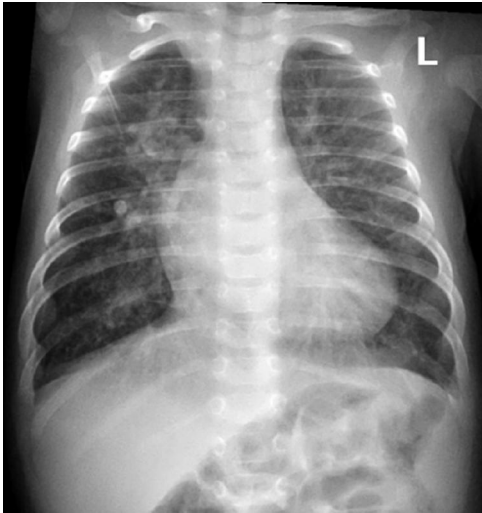
## Round 3

Quiz Master : Debadatta Mukhopadhyay

### Scenario 1

D2, boy, term, 3.6 kg, tachypneic and dusky, NVD, uneventful pregnancy

1. CRT 3 swc, HR190, RR 68. SpO<sub>2</sub> 72%.
2. S1,S2, 2 cm liver edge
3. Transferred to NICU , perfusion becomes poor
4. Despite I+V -sats <80% at FiO<sub>2</sub> 100%



### Question

1. Name the drug used in the treatment
2. Life saving procedure definitely indicated here

### Scenario 2

2 year old baby boy/ 12 kg, came with h/o fever for last 2 days

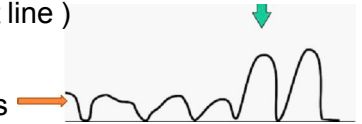
1. Sats 98% with face mask O<sub>2</sub>
2. HR 167/min, low volume pulses, BP 90/64 mmHg
3. Given 2 fluid boluses and started on adrenaline.
4. Tachypneic, HR 182/min, low volume pulses

### Question

What is the next step ?

### Scenario 3

1. Child came in shock... resuscitated with fluid boluses and inotropes
2. Apneic/ intubated and ventilated
3. PEA ( ECG straight line )
4. CPR
5. EtCO<sub>2</sub> curve shows



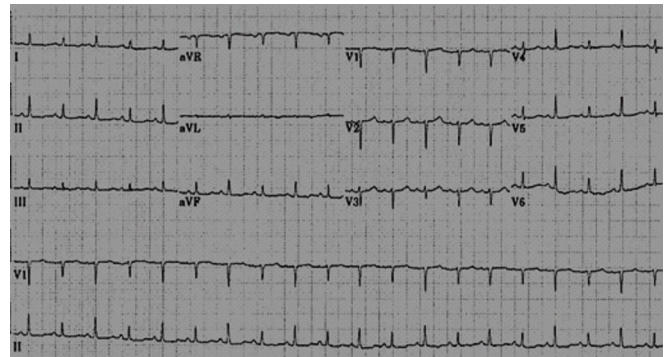
### Question

What does the curve signify?

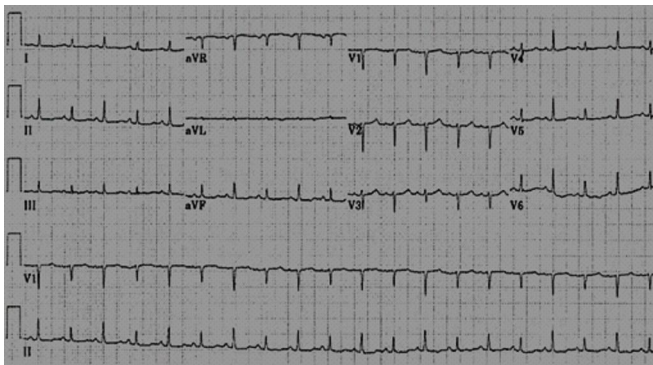
### Scenario 4

5year old child came to ER in shock, fluid refractory, catecholamine refractory, received hydrocort, normal electrolytes

1. Thready pulses, cold extremities
2. CVP 9, HR 186/m, BP 76/42mmHg, ScvO<sub>2</sub> <70 %
3. Cardiomegaly on CXR few crackles in the chest...



## ECG



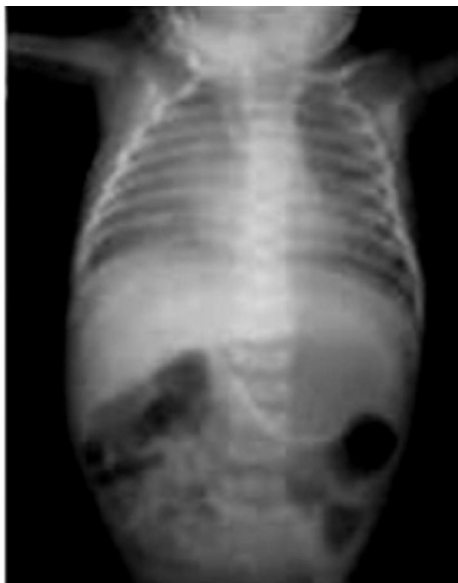
### Question

Diagnose the condition

### Scenario 5

6 day old term neonate comes with

1. Cyanosis, respiratory distress
2. Severe metabolic acidosis
3. large liver and no murmur
4. Ground glass appearance CXR
5. Sepsis screen negative
6. Clue : No pulmonary cause

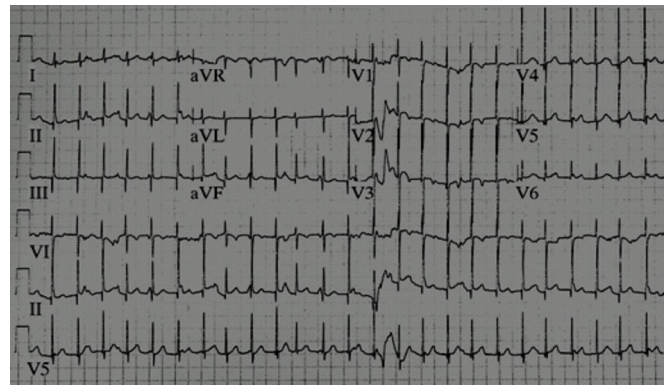


### Question

Name the condition

### Scenario 6

1. 8month old boy underwent total correction for TOF
2. 6 hours post surgery becomes tachycardic, BP low, high temperatures



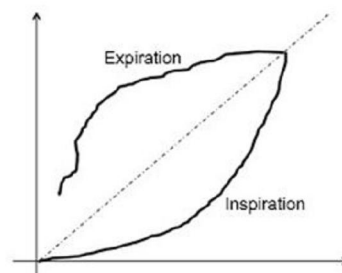
### Question

Identify the condition

### Scenario 7

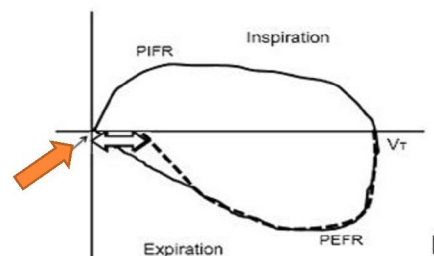
1. 4 year old child collapsed in ER and was intubated (4 uncuffed ETT) started on inotropes.
2. Pulses palpable, HR 126/m,
3. BP maintained , fair air entry B/L
4. 100% FiO<sub>2</sub>, Sats are 92-93%, requiring higher pressures
5. Normal CXR, DOPE R/O

### Pressure-Volume Loop



### Flow-Volume Loop

FLOW-VOLUME LOOP



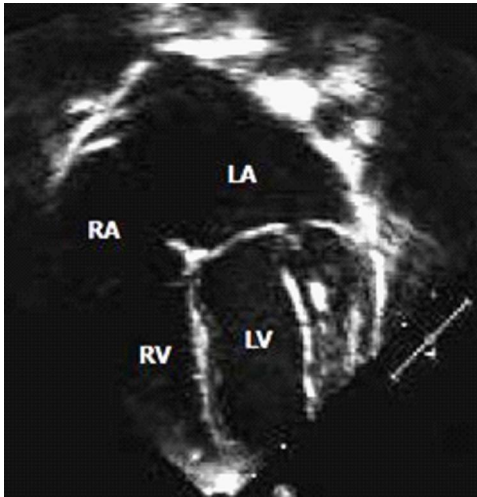
### Question

Identify the problem

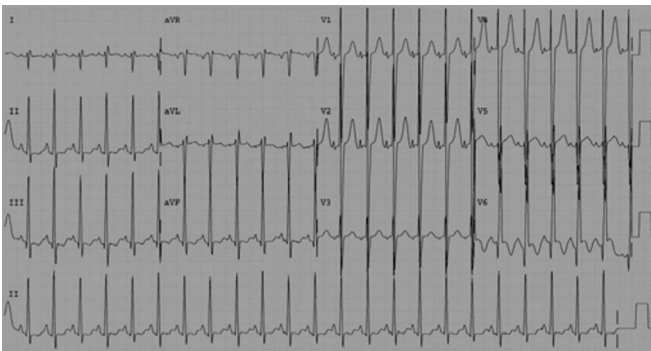
#### Scenario 8

2 month old boy with

1. Episodes of incessant cry/ poor feeding
2. Gross dilatation of LV / global dyskinesia
3. FTT
4. Hyperdynamic precordium/ gallop rhythm
5. Large liver
6. Gross dilatation of LV / global dyskinesia



ECG



#### Scenario 9

1 year 2 month old baby, seizures since 3 months of age, GTCS

Tt with phenytoin – seizures cont. phenobarb added, later levitiracetam ABG acidosis. ?Sparse hair on the scalp

1. Milestones inappropriate for age
2. Hypotonia, Deep tendon jerks – brisk
3. Mouth ulcers and rash over base of neck and posterior scalp



### Question

Name the disorder

#### Scenario 10

4 year old child on ventilation for > 7days, severe and worsening ARDS

1. SpO<sub>2</sub> drops to 75% ( DOPE and correctable / obstructive causes excluded ), ABG persistent resp acidosis, pH 7.3 and hypoxia PaO<sub>2</sub> 45 mmHg
2. ScvO<sub>2</sub> < 70%, on inotropes, maintaining reasonable HR and BP , good myocardial contractility
3. FiO<sub>2</sub> 100%, PIP 32-35, PEEP 14, RR 30

### Question

Next BEST option?

#### Audience Question

What is the drug of choice for fetal heart block ?

- Qs A. 1. What is delta-delta gap ?  
2. Where is it used ?

Qs B.

Name 2 contraindications for ECMO in children

Qs C.

What are the drugs used in CPR in case of pulesless VT/ VF and at what time/ cycle of CPR are they administered ?



Qs D.

1. What is oxygenation index ?
2. What is the normal value in a spontaneously breathing child ?

Qs E

What are the care bundles in PICU ( name 3 ) and how do they help ( 2 points ) ?

Qs F

What are the advantages of NAVA over conventional ventilation

Qs G

What is the cut off level of glucose in hyperglycemia in critically ill children ?

Qs H

Targets for quantitative resuscitation in septic shock at the end of 6hrs are :

Qs I

What should be the normal cerebral perfusion pressure in children ?

Qs J

3 Lab values for Tumour lysis syndrome

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Members are requested to submit News, Views, Reviews, Case Reports, Articles for The “The Child and Newborn”

Contact :

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## Answers to the Quiz

### Round 1

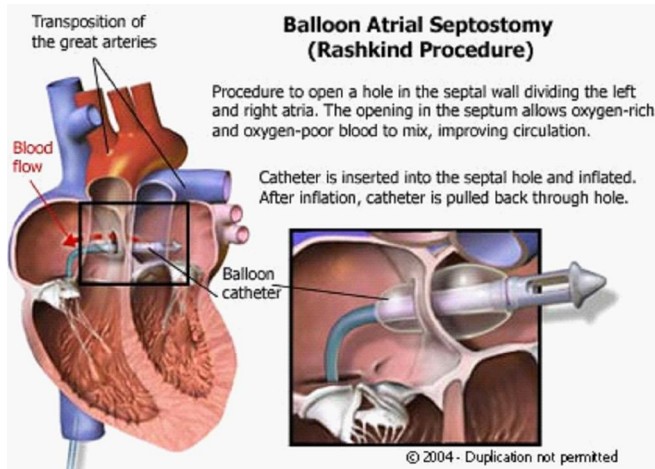
- A.1. Kostmann syndrome
- A.2. Abnormal dilatation and tortuosity of posterior retinal vessels
- A.3. Non-prone positioning of the babies to reduce SIDS (1994, Europe, Australia)
- A.4. Clavicle
- A.5. 32 weeks
- A.6. Associated cardiac defects (80%)
- A.7. Meconium peritonitis
- A.8. 32 weeks
- A.9. Weekly infusions of IVIG
- A.10. 18F-L-DOPA PET scan to identify focal lesion in pancreas followed by subtotal pancreatectomy
- A.11. At least 4 to 6 hours
- A.12. <3
- A.13. Family history of light-sensitive porphyria
- A.14. At least 50%
- A.15. PT After 1 week. APTT 2 to 9 months
- A.16. Infrequent antigens implicated in Hemolytic Disease of the Newborn

### Round 2

- A.1. Inflammatory Bowel Disease
- A.2. Culture Negative Neutrocytic Ascites (CNNA)
- A.3. Nitazoxanide
- A.4. 2 years
- A.5. 11
- A.6. Selective IgA deficiency
- A.7. G6PD deficiency
- A.8. Dabigatran
- A.9. May-Thurner syndrome (left lower extremity) or Paget-Schroetter disease (upper extremities)
- A.10. Diencaphalic syndrome
- A.11. Nitrates (Methemoglobinemia)
- A.12. Human Parvovirus B19
- A.13. Typhlitis (necrotizing infection of ileocolic junction)
- A.14. Diethylstilbestrol (used to prevent spontaneous abortion)
- A.15. Etoposide (in 2 to 3 years)
- A.16. Retinoblastoma

### Answer : Scenario 1

1. TGA with intact septum
2. Prostaglandin 50 to 150 ng/kg/min
3. Balloon atrial septostomy

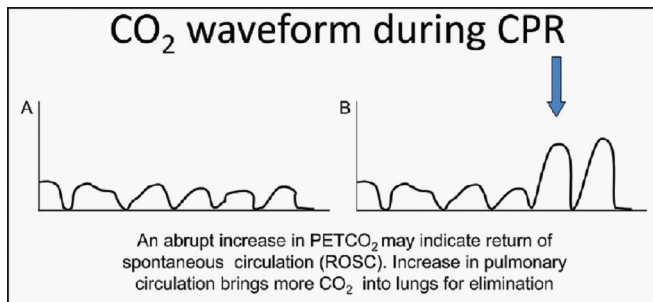


### Answer : Scenario 2

1. Assess fluid responsiveness- palpable liver, IVC status
2. Functional Echo ( R/O myocarditis )

### Answer : Scenario 3

ROSC ( Return of spontaneous circulation )



### Answer : Scenario 4

1. Cardiac Tamponade (electrical alternans)
2. Tension pneumothorax or any cause of obstructive shock has to be R/O

### Answer : Scenario 5

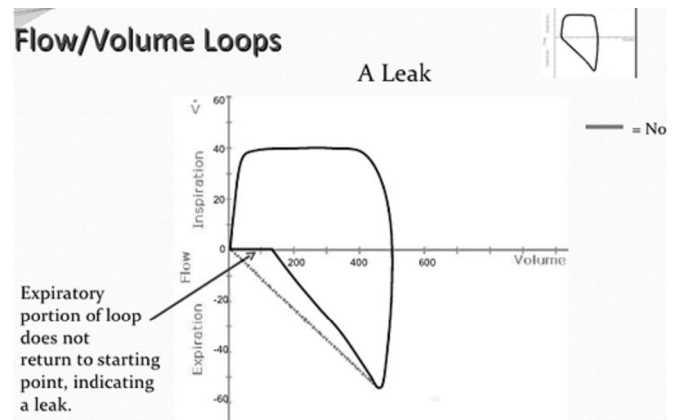
Infracardiac TAPVC

### Answer : Scenario 6

1. JET (Junctional ectopic tachycardia)
2. DOC Amiodarone
3. Prevent by cooling and not allowing rise of temperature, keeping electrolytes in normal range

### Answer : Scenario 7

Air leak from a smaller size tube



### Answer : Scenario 8

#### ALCAPA

1. Chest pain ?Heart failure ?DCM
2. Deep Q waves in left sided leads I, avL, V5, ALCAPA V6
3. ST elevation, T inversion
4. Tt- surgery : intrapulmonary aortocoronary tunnel (Takeuchi procedure/repair)

### Answer : Scenario 9

Biotinidase deficiency (MCD)

### Answer : Scenario 10

#### ECMO

1. Resp failure : Severe ARDS OI > 40, Pplat > 30
2. catecholamines, vasopressors, hydrocort and obstructive
3. LCOS resulting from right, left, and biventricular failure
4. Congenital heart defect leading to severe hypoxemia, low
5. As a bridge to cardiac transplant

### Answer : Audience

Terbutaline /

Dexamethasone/ IVIg given to mother

when HR<55, CHB associated with cardiac dysfunction/ features of hydrops / underlying CHD

**Answer : QA**

(AG – 12)

$(24 - [HCO_3^-])$

reflects either an incr in the anion gap or a decr in the bicarbonate concentration

1. < 0.4 - pure Normal AG Met Acidosis
2. (0.4 - 0.8 ) - mixed Normal AG Met Acidosis + High AG MetAcidosis
3. (0.8 - 2.0 ) - pure High AG MetAcidosis
4. >2.0 - mixed High AG MetAcidosis + metabolic Alkalosis

**Answer : QB**

C/I for ECMO

1. Lethal chromosomal abnormalities ( Trisomy 13, 18 )
2. Irreversible Brain damage ? Uncontrollable hemorrhage
3. Extremes of prematurity/ ELBW ( <30wk /<1kg)

**Answer : QC**

1. Adrenaline ( after 2nd shock )
2. Amiodarone ( after 3rd shock and 5th )

**Answer : QD**

$$OI = \frac{MAP \times FiO_2 \times 100}{PaO_2}$$

**Answer : QE**

PICU liberation project ABCDEF bundles of care ... Days on MV, length of ICU stay and hospital stay is

positively impacted.

1. VAP bundle
2. Care of c.lines and catheters
3. Sepsis bundle

**Answer : QF**

1. Decreased asynchrony + Lower mean airway +++ (good evidence)
2. Decreases WOB + Better oxygenation ++ (average)

**Answer : QG**

>180mg/ dl

**Answer : QH**

1. CVP > 8
  2. ScvO<sub>2</sub>>70%
- ?Normalization of lactate

**Answer : QI**

1. 40- 60mm Hg ( normal ICT <20mmHg )
2. >60mmHg adults

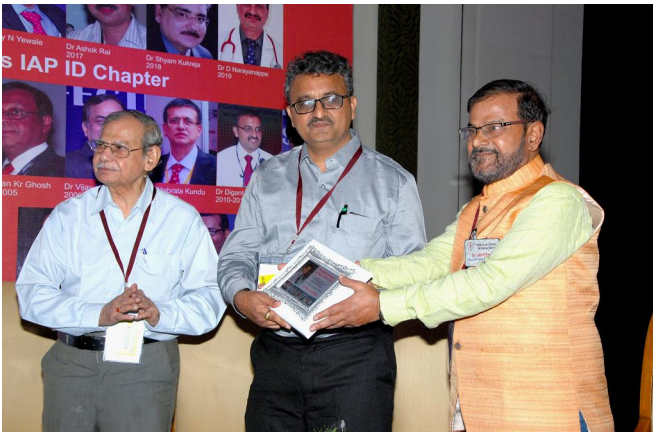
**Answer : QJ**

TLS

1. Uric acid > /=476micromol/L, ( 25% inc) ?K+ >/ = 6 mmol/ L ( 25% inc )
2. Phos > /=2.1mmo/L ?Ca </= 1.75mmol / L
3. >/=2 of these 4

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