

1st International Fluid Academy Day 2011

General and knowledge questions (appendix to the papers pp. 5—35)

General questions

Where do you come from?

1. Belgium
2. The Netherlands
3. UK
4. Germany
5. France
6. Other

How many years of experience do you have (specialist training not included)?

1. I'm in specialist training
2. 1-5
3. 5-15
4. >15
5. I'm not a doctor

What is your primary discipline (>50% of the time)?

1. Anaesthesiology
2. Intensive Care Medicine
3. Emergency Medicine
4. Internal medicine
5. Surgery
6. I'm not a doctor

Do you believe hyperchloremic metabolic acidosis is a clinically relevant problem?

1. Yes
2. Probably
3. Probably not
4. No

Do you use colloids in the fluid management of septic shock (without signs of dehydration or anemia)?

1. Yes, just colloids
2. Yes, maintenance fluid (+/- 2L/24h) is crystalloids, rest is colloids.
3. Yes, colloids with a maximum of 50cc/kg/bw, rest is crystalloids
4. Yes, fixed ratio of crystalloids/colloids
5. No, just crystalloids

What type(s) of colloid do you use?

1. Gelatins
2. Tetrastarch in an unbalanced solution
3. Tetrastarch in a balanced solution
4. Older starches
5. Different types depending on the indication
6. I never use colloids

Do you use hypertonic solutions as an (additional) treatment for massive hemorrhage when there is no sign of brain edema?

1. Always
2. Regularly
3. Rarely
4. Never

For which of these indications do you use hyperoncotic human albumin (e.g. 20%)?

1. As a colloid for resuscitation in hypovolemic and/or septic shock
2. For the treatment of hypo-albuminaemia (e.g. septic shock)
3. In patients with intravascular hypovolemia in combination with clinically relevant interstitial edema (lung edema, burns, abdominal hypertension,...)
4. For answer 1 and 2
5. For answer 1 and 3
6. For answer 2 and 3
7. For none of these indications

Do you think the last generation starches have capacities beyond resuscitation?

1. Yes, positive effects
2. Yes, negative effects
3. Yes, positive and negative effects
4. No

What is your opinion about a positive cumulative fluid balance in septic shock?

1. It is just of cosmetic concern
2. It is a biomarker of severity of illness but rather an innocent bystander than a cause for organ dysfunction
3. It is harmful and an independent predictor for

morbidity and mortality
4. Fluid balance must be positive for a successful resuscitation of shock

How do you monitor cardiac output most often

1. I use cardiac ultrasound
2. I use transpulmonary thermodilution calibrated CCI (PiCCO, EV1000)
3. I use lithium calibrated CCI (LiDCO)
4. I use noncalibrated pulse contour CCI (LidCo rapid, Pulsioflex, Vigileo, Pram)
5. I use an indirect Fick principle (NiCO)
6. I use esophageal doppler (CardioQ, Deltex,)
7. I use non invasive CCI (NexFin, Cheetah)
8. I don't use CO

What is your preferred preload parameter

1. I use CVP or wedge
2. I use a volumetric Swan Ganz (RVEDVi)
3. I use transpulmonary thermodilution (GEDVi)
4. I use cardiac ultrasound
5. I trust my clinical exam (capillary refill, urine output,...)
6. I am not interested in preload

What is your preferred index or test for fluid responsiveness

1. I use stroke volume variation (SVV)
2. I use pulse pressure variation (PPV)
3. I use systolic pressure variation (SPV)
4. I use plethysmographic variability index (PVI)
5. I use cardiac ultrasound (vena cava collapsibility, Aortic flow)
6. I use passive leg raising test (PLR)
7. I use tele-expiratory occlusion test (TEO)
8. I use respiratory systolic variation test (RSVT)
9. I don't use functional hemodynamics

How do you use lactate?

1. I always measure lactate in shock
2. I use ScvO₂ or SvO₂ rather than lactate
3. For me lactate/pyruvate ratio is more important
4. I am only interested in lactate in body fluids (ascites, pleural fluids,...)
5. I don't need lactate

How do you most often assess hepatosplanchnic perfusion

1. I measure abdominal pressure and abdominal perfusion pressure
2. I measure gastric pCO₂
3. I use OPS
4. I use ICG clearance
5. I look at lactate
6. I don't assess

What would be the most valuable new technology development in your ICU

1. Continuous urine output monitoring
2. Noninvasive CO monitoring
3. Bedside ventilation and perfusion monitoring
4. Continuous closed loop glucose monitoring
5. Continuous lactate monitoring

6. Continuous transdiaphragmatic pressure monitoring (WOB)
7. I'm happy now, I don't need anything

Knowledge questions

Niels Van Regenmortel

Introduction & Basic Concepts of Fluid Therapy
KQ1. What is the single most important characteristic of a solution regarding its effect on the patients acid-base status?

1. pH
2. SID
3. Chloride content
4. Don't know, that's why I'm here on Saturday morning

Paul Elbers

Stewart Says: Saline Sucks! The Trouble with Hyperchloremic Metabolic Acidosis

KQ2. How many of these fluids for infusion therapy have a Strong Ion Difference of zero

- NaHCO₃ 8,4%
- Glucose 5%
- NaCl 0,9%
- Lactated Ringer's
- HES 6% 130/0.4 (e.g. Voluven®)

1. 0
2. 2
3. 3
4. 5

Eric Hoste

The Clash of the Titans: Crystalloids vs Colloids?

KQ3. Fluid therapy and outcome: when I administer fluid in an ICU patients...

1. Crystalloids are associated with better survival than colloids
2. Colloids are associated with better survival
3. Crystalloids and colloids have same impact on survival
4. I do not know

Sybille Kozek-Langenecker

Some Colloids are More Equal than Others! Does our Choice matter?

KQ4. Exposure to colloids and clinical outcome: which comparison is correct?

1. Macrocirculation: volume efficacy of gelatin 4% > tetrastarch 6%
2. Allergic reactions: frequency after albumin > gelatins
3. Renal failure: old HES ≥6% is safer than newer tetrastarch 6%
4. Blood loss after tetrastarch is less than after pentastarch

Dirk Himpe*The Hypertonic: Lessons from Massive Fluid Administration for Small Volume Therapy*

KQ5. The osmotic power of 7,5 % saline equals:

1. 1026 mOsm/Liter
2. 1100 mOsm/Liter
3. 308 mOsm/Liter
4. 2400 mOsm/Liter
5. 46320 mmHg

Julia Wendon*Hero or Has-Been? Is there still a Place for Albumin?*

KQ6. Which statement is correct regarding albumin?

1. A large meta-analysis has recently shown that the administration of albumin in septic patients increases mortality
2. Besides regulating colloid oncotic pressure albumin has numerous other beneficial effects, one being an important free radical scavenger in sepsis
3. The use of albumin is always safe in patients with traumatic brain injury
4. Isotonic albumin use is preferred over hypertonic especially for volume replacement in cirrhosis (eg in spontaneous bacterial peritonitis) or after large volume paracentesis

Can Ince*Pushing the Boundaries! What's beyond the Final Frontier?*

KQ7. One of the following statements is true. Which one?

1. When using colloids, significantly less fluid is required (compared with crystalloid therapy alone), meaning less haemodilution and better maintained tissue oxygenation.
2. Oncotic pressure is a function of the size of the particle. The higher the MW, the higher the exerted oncotic pressure.
3. The higher the haematocrit, the higher the oxygen transport capacity of the blood will be.
4. Synthetic colloids are potentially harmful for the microcirculation.

Manu Malbrain*Fluid Overload: Poor Cosmetics or Bad Medicine?*

KQ8. Which statement is correct regarding fluid management and fluid overload?

1. Most septic patients admitted to the ICU will proceed spontaneously to the flow phase of shock
2. Peripheral edema is a result of fluid overload and is only of cosmetic concern
3. The combination of PEEP, albumin and diuretics can help to initiate the transition from ebb to flow phase in patients with acute lung injury
4. Capillary leak reaches its maximum within the first 24 hours

Xavier Monnet*Assessment of Fluid Therapy: Get the Right Tool for the Right Job!*

KQ9. Which statement is correct regarding monitoring tools?

1. Although EVLWi can easily be measured at the bedside, studies did not show an outcome benefit when treatment is EVLWi-driven
2. In conditions of changing preload, afterload or contractility calibrated CCO techniques are preferred
3. The precision of TPTD is based on the number of calibrations, (studies show that at least 5 need to be done)
4. Cardiac ultrasound has no value in the ICU because it is a NONcontinuous measurement

Jan Bakker*The search for the Holy Grail continues: Is there a Place for Lactate?*

KQ10. Increased lactate levels are associated with increased morbidity and mortality. Which treatment is NOT associated with a significant decrease in lactate levels

1. increase in cardiac output
2. administration of dobutamine
3. administration of nitroglycerine
4. fluid administration

Frederic Michard*Perioperative fluid optimization: from gut feeling to closed loops*

KQ11. Which statement is correct

1. Cardiac filling pressures are good predictors of preload
2. Volumetric indicators of cardiac preload are good predictors of fluid responsiveness
3. A recent meta-analysis of 29 randomized controlled trials showed that peri-operative hemodynamic optimization does not decrease mortality
4. Intraoperative fluid optimization of stroke volume is useful to decrease post-operative morbidity in patients undergoing major abdominal surgery
5. A majority of anesthesiologists do peri-operative hemodynamic optimization today in the US and in EU

Jean-Louis Vincent*Frank Starling revisited! The importance of Fluid Responsiveness*

KQ12. Which statement is correct regarding fluid responsiveness

1. The passive leg raising test is always positive in fluid responders
2. SVV but not PPV loses its ability to predict fluid responsiveness in patients with increased intrathoracic pressure or increased intra-abdominal pressure
3. Functional hemodynamic parameters cannot be used or interpreted if there is no regular sinus rhythm or if tidal volume is >7 ml/kg
4. The increase in SPV that sometimes can be seen

in patients with acute lung edema after intubation is only related to a delta Up (ΔUp) phenomenon

Michael Bauer

Dry lungs are happy lungs, but a dry liver is a dead liver: How can (dye) dilution techniques help us?

KQ13. Which statement is correct regarding hepatosplanchnic perfusion

1. Indocyaninegreen clearance is always a marker of hepatosplanchnic perfusion
2. New dye dilution techniques could theoretically be used to assess renal function and glomerular filtration rate (GFR)
3. A supranormal ICG-PDR is always a good prognostic sign
4. The dye dose and dilution are independent of serum albumin levels

Azriel Perel

Techniques for the Future: How non-invasive can we go?

KQ14. When you choose to monitor a hemodynamic parameter, which feature is more important to you?

1. accuracy
2. continuity
3. precision
4. other feature