Edited version

Critical Care: Keeping it all together

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Declarations

- Honoraria and conference attendance sponsorships:
  - Adcock-Ingram
  - Aspen
  - B Braun
  - Fresenius Kabi

- No remuneration of any kind in last 3 years.

- No conflicts of interest.
Challenges

Everyday life in ICU
What stresses me?

- Lots of patients die – even after ICU.
- What do ICUs actually achieve?
- Who should get in?
- Who do I listen to?
- Complexity & multiplicity
Who needs Critical Care?

What makes a patient “Critically Ill”? 
Critical Illness

- Severe physiological disturbance
- Imminent risk of
  - Death
  - Organ damage
- Potentially reversible

- Usually multiple systems involved.

- Multiple interventions are required.
What induces critical illness?

- **Inherent** problems
  - Age, comorbidities...
  - *Specific therapy*

- **Insult**
  - Acute specific pathology
  - *Specific therapy*

- **Inflammatory response**
  - Innate immune system exceeds regulation
  - *General therapy package*
Every detail matters
The Beagle-2 story
Critically ill patients

- Dozens of problems.
- Many ways to die.
- Avoiding all but one ... isn’t good enough.
A key difference
Law / Conscience

- Carefully considered error
  - Condonable.

- Neglect or omission
  - Not condonable.
How not to omit things?
Possible solutions

- Checklists
  - WHO Surgical checklist has saved lives

- Bundles
  - Common groups of therapy, backed up with checklists
Problems

- **Checklists**
  - Not always physically available
  - Not everyone uses them

- **Bundles**
  - Often too specific, not broad enough
  - Fragmented care
Looking for

- An easily-disseminated common scheme
- An easily-remembered common scheme
- A general protocol that covers many different pathologies
  - Consistency
  - ... do the same thing in everyone
  - ... makes it easier for everyone to work consistently
ICU daily management

TEN FASTHUG SSS
FASTHUG
Jean-Louis VINCENT, Critical Care Medicine, 2005

- F  - Feeding
- A  - Analgesia
- S  - Sedation
- T  - Thromboprophylaxis
- H  - Head Up
- U  - Ulcer Prophylaxis
- G  - Glucose Control
“TEN” FASTHUG SSS (1)

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- A  - Airway
- B  - Breathing
- C  - Circulation
- D  - Delivery of Oxygen
- E  - Electrolytes
- F  - Fluids
- G  - Glomerular Filtration Rate (= Renal)
- H  - Haemoglobin
- I  - Infections
- J  - imiJovo / adJuncts
"TEN" FASTHUG SSS (2)

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- F  - Feeding
- A  - Analgesia
- S  - Sedation + Delirium + Depression
- T  - Thrombosis management
- H  - Head up and head out of bed
- U  - Ulcer prophylaxis and treatment
- G  - Glucose control
- S  - Steroids
- S  - Statins
- S  - Seizure management and prophylaxis
TEN FASTHUG SSS
Intention

- Review checklist: *Have we remembered this?*

- Each point
  - Target = ?
  - Plan
  - Review

- Not in priority order

- Twice a day
TEN FASTHUG SSS
Result

- Very useful common framework for presentation
- Newcomers assimilate quickly
- I believe it has significantly contributed to reduction in medical therapy omissions.
TEN FASTHUG SSS
The bad results

- “Stifles logical thought”
- “Nobody thinks about their patient”
- “Not my way of thinking”

- Used in resuscitation
  - Never the intention
  - Not prioritized
Stabilization

ABCDE PITCHER

Getting the ball going...
Universal Resus Mnemonic

- A  ➡ Airway
- B  ➡ Breathing
- C  ➡ Circulation
- D  ➡ Disability
- E  ➡ Exposure with environmental control
**ABCDE PITCHER**

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- **A** - Airway with C-spine control
- **B** - Breathing and ventilator support
- **C** - Circulation and haemorrhage control
- **D** - Dextrose, DO2, Disability
- **E** - Exposure, “Envenomation”, Environment
- **P** - Pain (+ Delirium + Sedation)
- **I** - Infection management
- **T** - Temperature management
- **C** - Clotting
- **H** - Haemoglobin
- **E** - Electrolytes
- **R** - Rehydration
For each...

Set TARGET
Make a PLAN

REPEAT
  Implement PLAN
  Result = TARGET?
UNTIL Result = TARGET OR TARGET = invalid

Set new TARGET
ABCDE PITCHER

Airway with C-spine control

- Adequate for stage of management
- Own Patient… for sure?
- Stabilized OPA, SGA
- Secured ETT, Tracheostomy
ABCDE PITCHER
Breathing

- Adequate oxygenation
  - SpO₂ > 90%

- Adequate CO₂ elimination
  - Mild hypercarbia for most
  - Normocarbia for raised intracranial pressure

- Relief of work of breathing

- Oxygen, NIV, Ventilation....
ABCDE PITCHER
Circulation with haemorrhage control

- Bleeding stopped, leaks controlled.
- Intravascular volume full
  - Absolute hypovolaemia corrected
- Vasopressors for vasodilation
  - Relative hypovolaemia correction
- Inotropes for cardiac dysfunction
- Relief of obstructive shock

- MAP 65-70mmHg, CI > 2.8 L/min/m²
- Other targets for rICP, ACS...
ABCDE PITCHER
Dextrose, DO$_2$, Disability

- Dextrose = glucose 5-10mmol/L

- DO$_2$
  - Organ function
  - Lactate

- Neurological review
ABCDE PITCHER
Exposure etc

- Expose ... full secondary survey

- Envenomation / Toxins

- Environmental factors
ABCDE _PITCHER_

Pain  + sedation

- Pain control
  - Humane
  - Physiological stabilizer

- Effective, multimodal
  - Regionals
  - Opioids
  - Ketamine
  - Paracetomol
  - NSAIDs

+ Sedation

When pain controlled

To a RASS target
ABCDE PITCHER
Infection

- “Every hour delay of antibiotics in septic shock increases mortality by 7%”

- Source control
  - Surgical drainage

- Early effective empiric antibiotics
ABCDE PITCHER

Temperature

- Trauma
  - Rewarm to 37.5 C

- Brain trauma
  - Rewarm to 37 C
  - Avoid hyperthermia

- Post cardiac arrest
  - Passive hypothermia for 24 hours
ABCDE PITCHER
Clotting

- If bleeding: make clot!
  - Rewarm
  - Tranexamic acid (keep existing clot)
  - Platelets
  - FDP (mixed clotting factors)
  - Cryoprecipitate (fibrinogen)

- Directed if slow bleed, package if massive bleed

- If not bleeding: stop DVT’s
  - LMWH
  - Mechanical devices
ABCDE PITCHER
Haemoglobin

- Enough
- Shock, cardiac ischaemia 10g/dl
- Some midground ?? 8 g/dl
- Stabilized 7 g/dl
ABCDE PITCHER
Electrolytes

- Replace deficits, manage excesses

- Sodium: water balance
- Potassium
  - Hyperkalaemia: eliminate, shift, counter
  - Hypokalaemia: replace
- Magnesium
- Phosphate
- Calcium if bleeding
ABCDE PITCHER
Rehydration

- Baseline fluid: 1 ml/kg/hr
- Ongoing losses
- Rehydrate tissues
- More restrictive:
  - Tissue oedema
  - Tissue sodium loading
Cardiac Arrest

Call – a – CAB DRIVA
Cardiac arrest BLS

ILCOR

- Call
- Call for help
- a
- ..
- C
- Compressions
- A
- Airway
- B
- Breathing
Call a CAB DRIVA

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<th>Call</th>
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<td>V</td>
<td>Vasoconstrict (adrenaline)</td>
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<td>Airway device ... when essential</td>
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Pre-extubation checklist

ROMSHA
ROMSHA pre-extubation

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- R  Reason resolved?
- O  Oxygenation OK? (OI)
- M  Mechanics (≡ RSBI)
- S  Secretions
- H  Heart failure considered, assessed
- A  Airway protection ability
SO WHAT?
Boring mnemonics
Omissions are indefensible.

- Preventing them requires a SYSTEM.
- System ACCESSIBLE to all.
- Mnemonic, checklist ... whatever works.
- DON’T LET PATIENTS DIE BECAUSE YOU FORGOT.