

CASE STUDY PRESENTATION

Traumatic Brain Injury

Presented by
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History

- 0930 21yr male fell 3 meters onto concrete on a building site @ Kiama
- 0950 MRU helicopter dispatched to scene. Severe closed head injury. Patient intubated on scene (GCS 8) and C-spine immobilization. O/G inserted – blood in stomach

Emergency Department

● 1050 Arrived @ TWH/ED

Resp Oxylog FiO_2 100% BR 12

O2Sat 98% EtCO $_2$ 30

Neuro GCS 3. Paralyzed and sedated.
Pupils 4 ERTL.

Vitals Temp 34.7°C ,P 98, BP 161/82

. BSL 11.1



Investigations and Treatment

Large Bore IVC ×2

IV Hartman's 100mls/hr

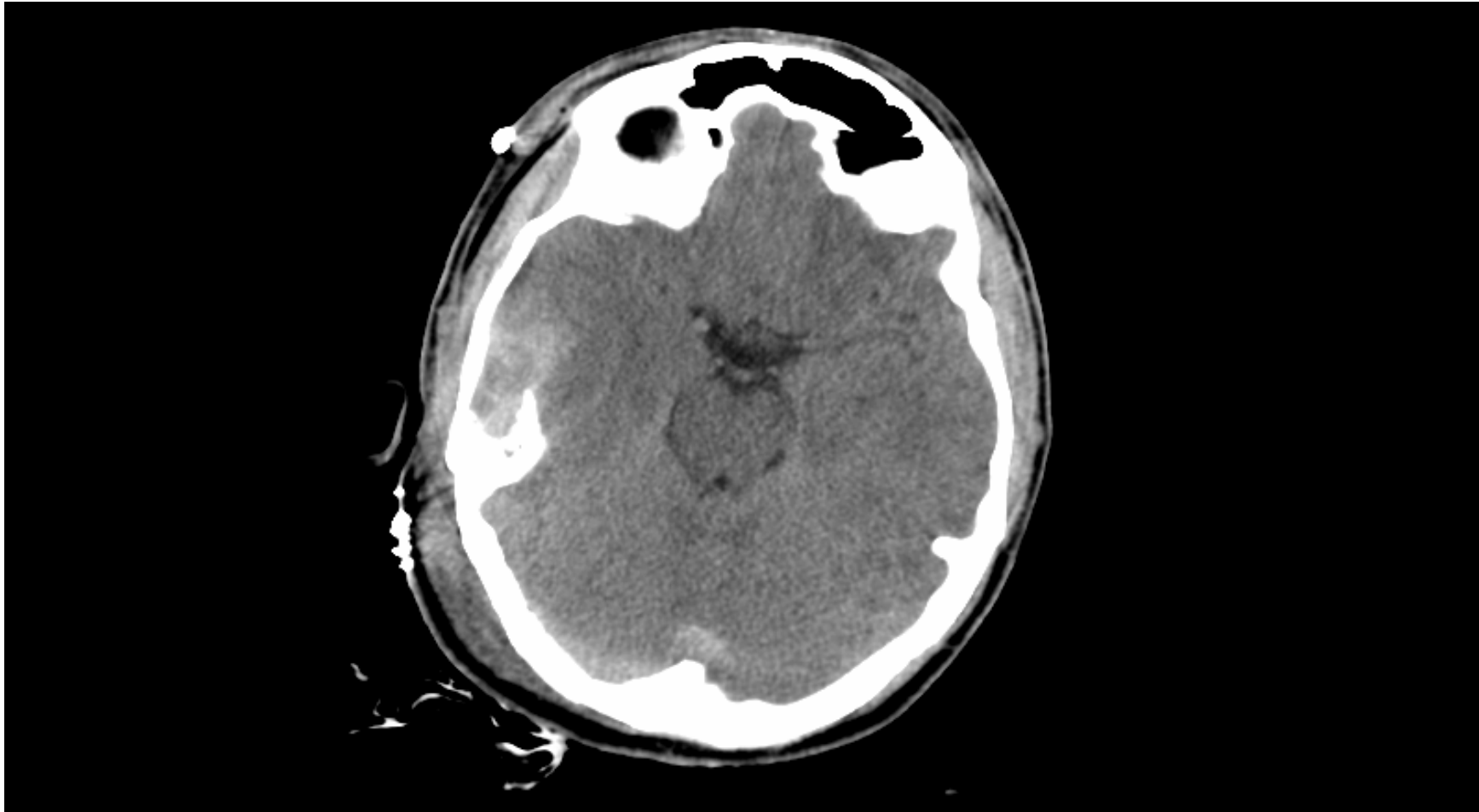
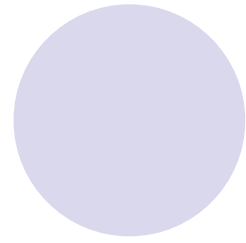
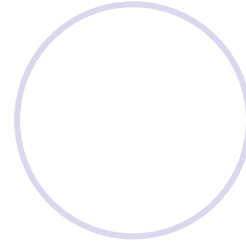
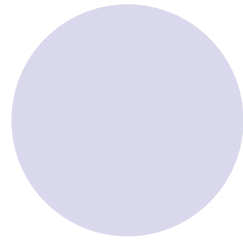
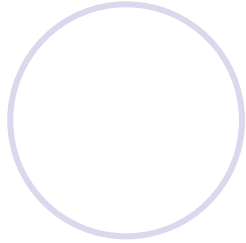
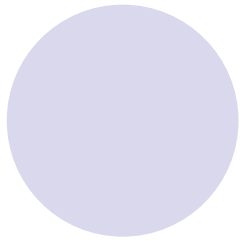
IDC inserted good U/O

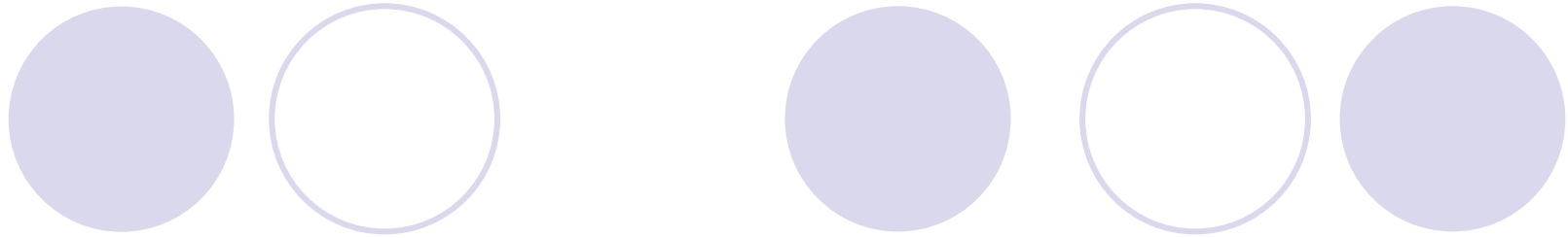
Facial lacerations (R eye and ear) stapled

1120 Urgent CT's – Brain/ Cervical/
Chest, Thoracic Lumbar/
Abdominal & Pelvis attended.

Routine bloods – FBC/UEC/ABG/
GS&H

R) ICC inserted. (S/D/O)





1150 OT- R) Temporal Craniotomy and
E/O Haematoma and wash
out/suture of facial laceration.

Insertion of EVD & ICP monitoring
and insertion of LICOX Catheter.

- 5 litres crystalloid given peri-operatively.
- CVC and Arterial lines insitu.



Intensive Care

1600

Ventilated SIMV PS 50%

UWSD insitu

Sedated with Midazolam/
Propofol/ Fentanyl

ICP monitoring

EVD clamped

LICOX monitoring

IVT - N/S 150mls/hr

Post Op orders



- To remain ventilated
- Licox parameters PbO_2 20-35 .
Brain temp (37-38°C)
- ICP ≤ 20 if higher unclamp EVD & drain CSF @
10mmHg EAM. CCP ≥ 65
- Maintain Hb ≥ 100
- HOB 30-40°
- Monitor urine output. (Urine and serum
Osmolarities).
- Rpt CT morning
- Keep sedated

ICU: (Post –Op) 1600-2400



- ↓ CPP and MAP. IVT ↑150mls/hr.
- O/G feeds commenced as per unit protocol
- ↑ urine output 300-800 mls/ hr.
- Urine osmolality 360.
(300-900mOsm/Kg)
- Serum osmolality 301.
(275-300mOsm/Kg)
- Suspected DI.

D 0

Codman

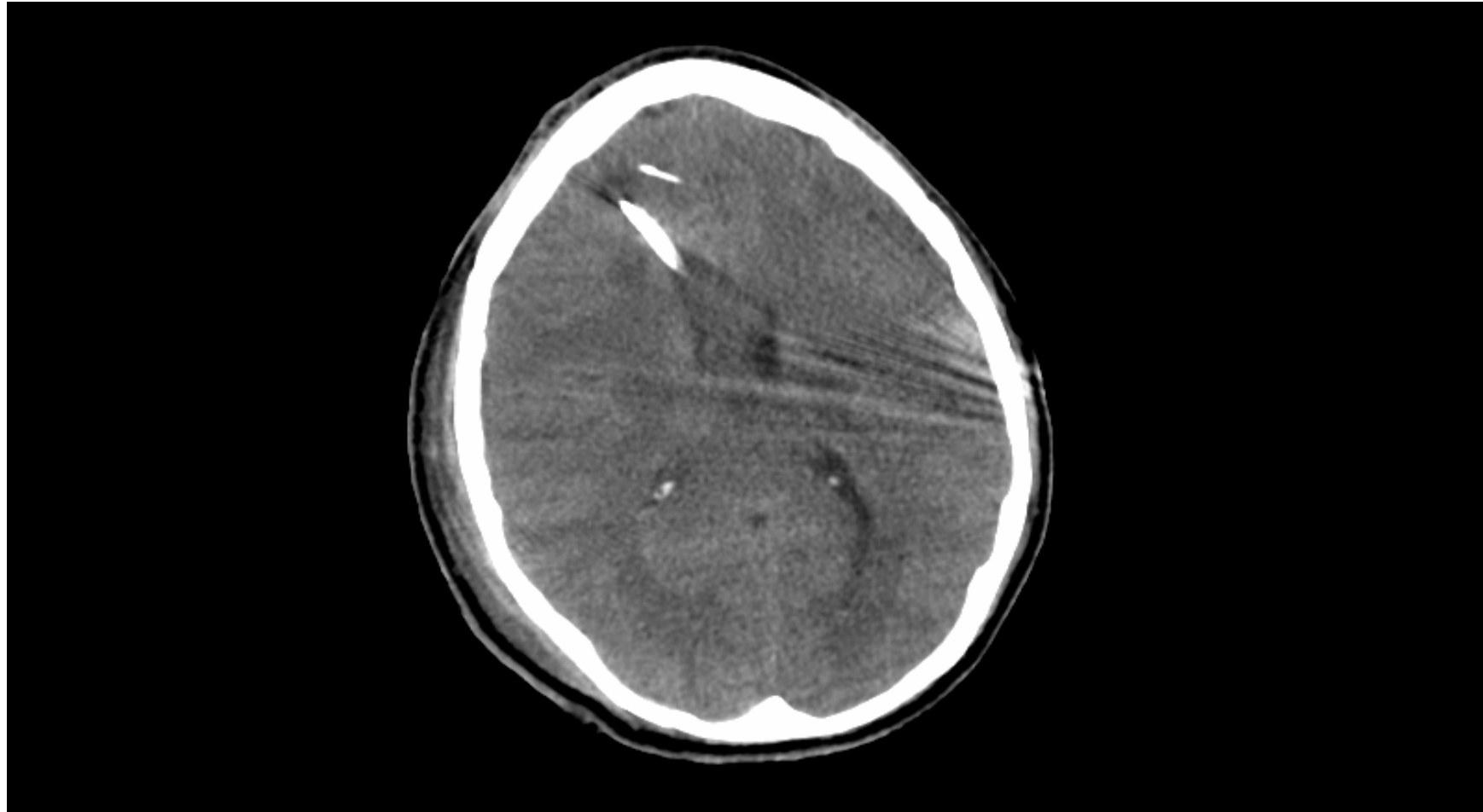
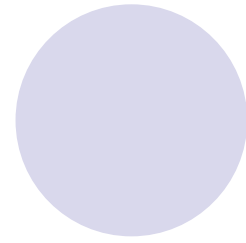
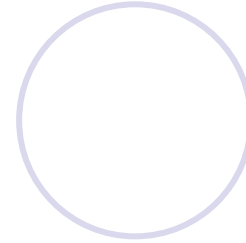
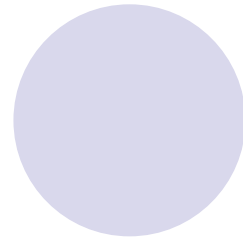
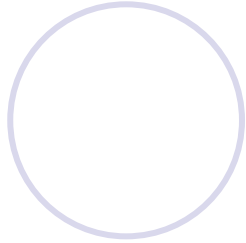
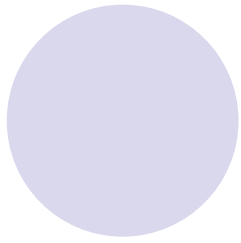
/ LICOX

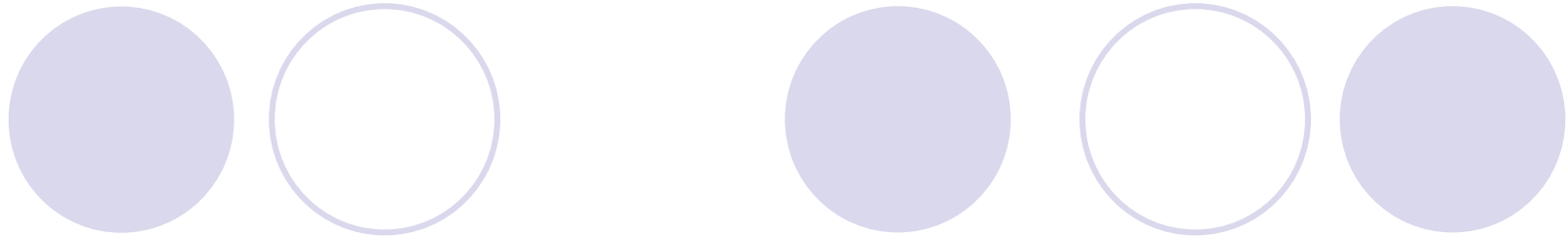
TIME	ICP (>20 mmHg)	CPP (<65mmHg)	PbtO2 (25-35)	Temp (37-38°C)
1600	8	79	71.9	35.8
1800	10	64	38.5	37
2000	10	65	43.9	38
2200	12	55	41.4	39
2400	15	58	41.6	39.2



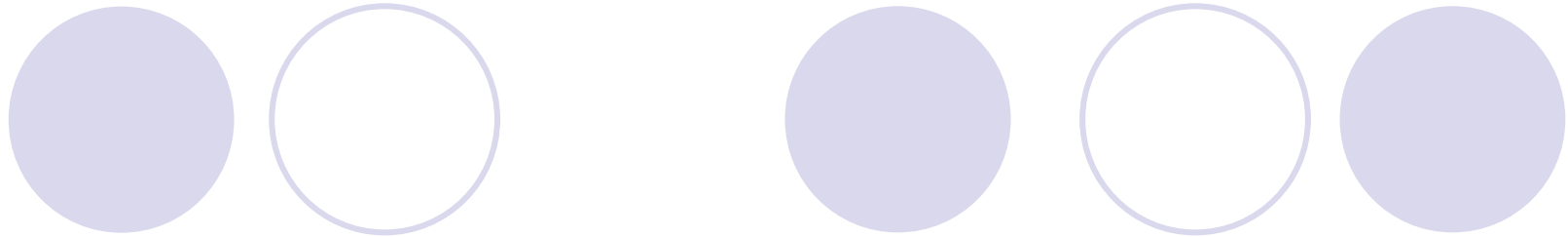
Day One

- @ 0200 ICP \uparrow temporarily – bolus dose sedation/ analgesia given
- U/O \uparrow / CPP \downarrow 1 litre colloid given. Minimal \uparrow . IV Noradrenaline commenced 0500
- Post op head CT attended 0900

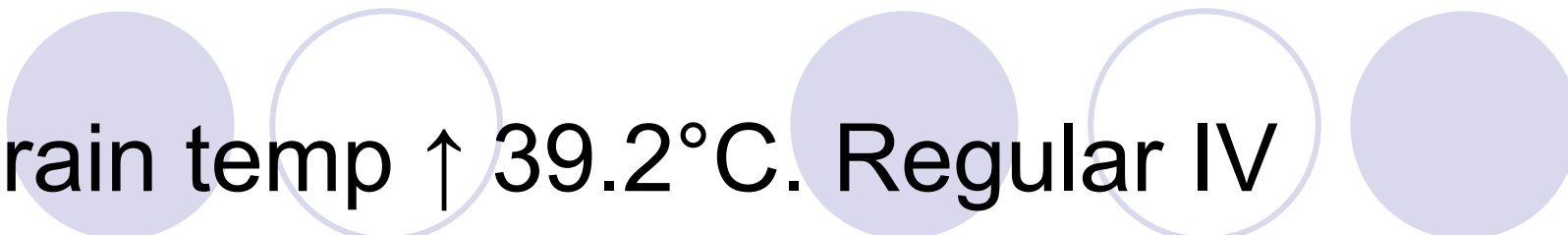




- IV Propofol is commenced 0900 (due to \uparrow PbtO₂ and \uparrow brain temp.)
- 1400 ICP \geq 20 EVD unclamped – drained 20mls (ICP \downarrow 14)
- 1430 Hb 91 - Given 2 units PC's.
- INR 1.5 (0.8 -1.1) APTT 40 (25-35 sec) - 4u FFP & 10mg IV Vitamin K



- Remains polyuric despite fluid replacements- more DDVAP given.
- Urine replacement regime commenced (U/O – 100mls)
- 1500 LICOX PbtO₂ 37.2- 48.1 (aim 20-35) Breath rate 12 ↑14 ↑16. Pt. respiratory effort noted. EtCo₂ 32 - 46 mmHg

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- Brain temp ↑ 39.2°C. Regular IV Panadol commenced. IV sedation ↑
 - ↑OG aspirates (200-300mls 4/24) Commenced on antimetic protocol
 - Family conference attended.
 - Stat dose 200mg Hydrocortisone given 2230

D 1

Codman

/ LICOX

TIME	ICP (>20 mmHg)	CPP (<65mmHg)	PbtO2 (25-35)	Temp (37-38°C)
0300	14	55	36.8	38.4
0600	16	71	44.3	38.2
1000	18	57	48.1	37.3
1200	13	65	41	38.2
1500	14	66	34.7	38.4
1800	16	71	47.1	39.4
2100	17	62	34.9	39.2
2400	16	71	41.5	39

Day 2



- Remains sedated. GCS 3, ICP < 16 CPP 67-82 PbtO₂ 37.2 – 52.7 Brain Temp 37.2-39 °C
- High U/O 160-800mls/hr. Serum osmolarity 294. Urine osmolarity 553.
- ↑ Na 149mmols . K⁺ 3.5
- 5% Dextrose commenced with a urine replacement regime
- 200mls H₂O via OG 4/24
- Family conference attended



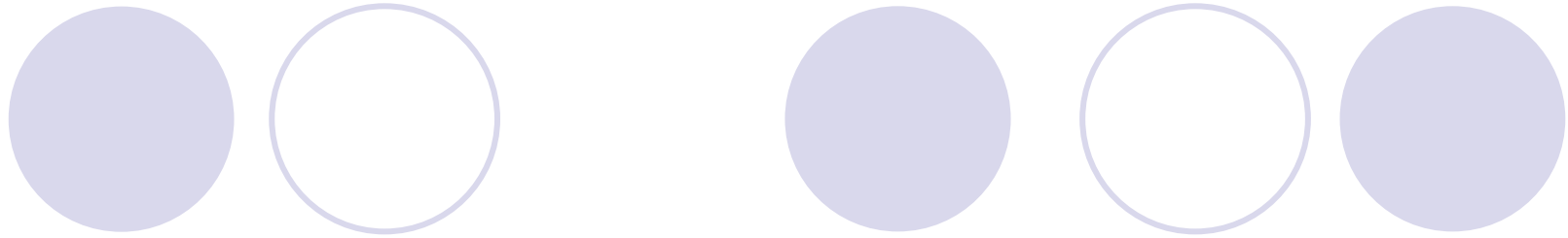
Day 3

- Na ↑150 mmols
- DI confirmed. Regular DDAVP administered.
- Progression CT cancelled. All other parameters within limits.
- Slow weaning of sedation (1ml every 2/24)
- pCo₂ 39.4 mmhg SIMV rate 16 ↑ 18 bpm



Day 4 'Turn around day'

- Noradrenaline ceased 0800
- LICOX and EVD/ICP removed in ICU 1000
- N/S commenced
- Becoming more restless. Family concerned.
- Pt. remains on IV Propofol only
- UWSD removed 1030



- Vomiting large amounts (O/G feeds and H2O flushes ceased) Regular Ondansetron given.
- U/O becoming more stable throughout day (30-150mls/hr)
- SIMV changed to PSV 2330



Day 5

- Extubated successfully

Day 6

- HDU re-classification.

Day 7

- Transferred to ward

Day 17

- MRI attended

Day 23

- Transferred Brain Injury Unit - Liverpool



Thank you all for
listening to our
ramblings

REFERENCES

- Schell, H.M., Puntillo, K.A.(2006) Critical Care Nursing Secrets (2nd Ed.) Mosby Elsevier, Missouri.
- Product Information Fact Sheets for **Minirin** – Desmopressin Acetate and **Konakion** – Phytomenadione (Vitamin K1)
- Bersten, A.D., Soni, N.2003 Oh's Intensive Care Manual (5th Ed.) Butterworth-Heinemann Elsevier, Edinburgh.