

UNIVERZITA PAVLA JOZEFA ŠAFÁRIKA V KOŠICIACH
Lekárska fakulta



**Department of
Anaesthesiology & Intensive Care Medicine
Šafárik University Faculty of Medicine, Košice**

http://www.lf.upjs.sk/kaim/pregradualne_vzdelavanie.html

Introduction to Anaesthesiology & Intensive Care Medicine

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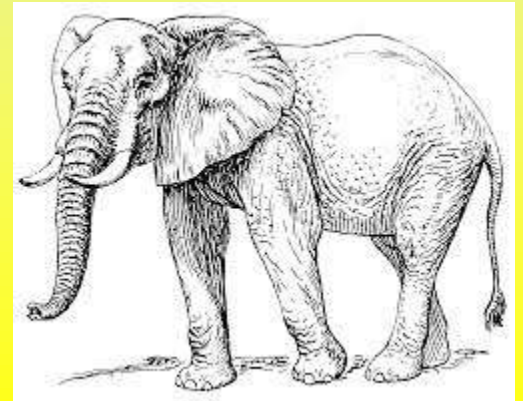
DIFFERENTIAL MEDICAL CARE

(IN SLOVAK REPUBLIC etc.)

1. Intensive (Critical) Care (ICU, CCU, ITU, „ARO“, OAIM)
2. Intermediary care unit (JIS)
3. Standard – ordinary care
4. Long duration and rehabilitation care
5. Nursing care
6. Hospices

COMPONENT PARTS OF ANAESTHESIOLOGY & INTENSIVE CARE MEDICINE

1. Anaesthesiology
2. Intensive (Critical) Care Medicine
3. (Pre-hospital) emergency care,
acute medicine, life-treating
situations
4. Algaesiology



Basic Vital Signs

http://en.wikipedia.org/wiki/Vital_signs

Primary four

There are four vital signs which are standard in most medical settings:

1. **Consciousness**
2. **Pulse rate (or heart rate), blood pressure**
3. **Respiratory rate**
4. **Body Temperature**

The equipment needed is a thermometer, a sphygmomanometer, and a watch.

Though a pulse can often be taken by hand, a stethoscope may be required for a patient with a very weak pulse.



Early warning signs (EWS)

- The best prediction level = **combination**
HR, RR, sBP, AVPU score, Temp, SpO₂, age

HR: < 35, >140/min

RR: < 6, > 32/min

sBP: < 80 mmHg



- Track and trigger

AVPU scale (Alert, Voice, Pain, Unresponsive)

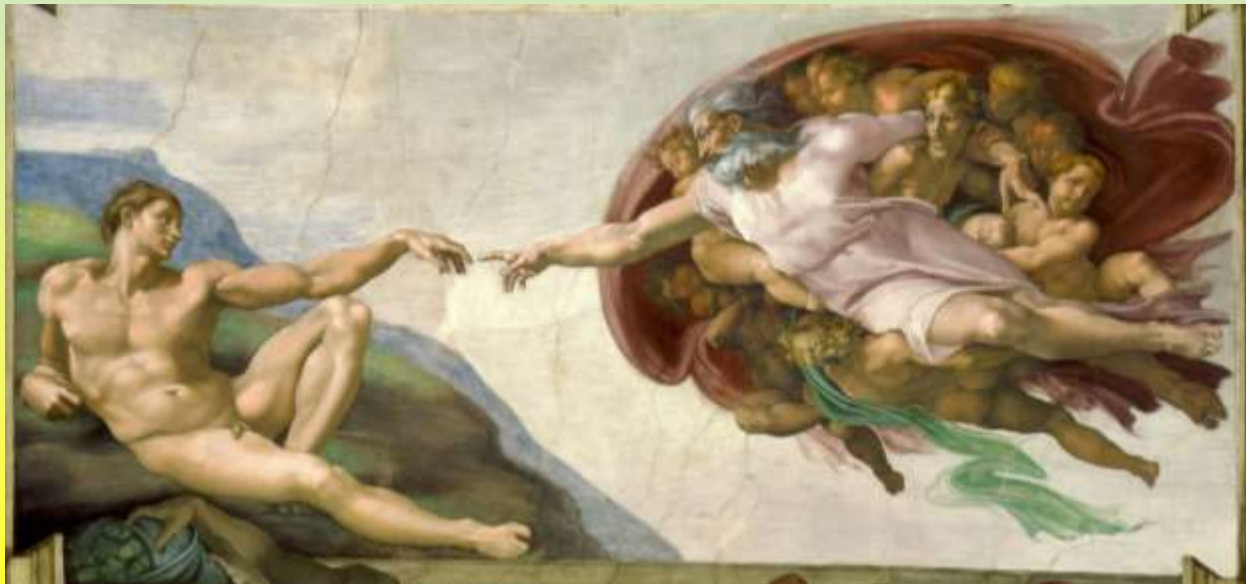


HISTORY

- 3500 BC – Genesis, mouth-to-mouth ventilation
- Antiquity – opium, alcohol, mandragora
- 800 AD – mandragora, opium, hemp
- 1516 – curare
- 1562 – regional compress n. roots
- 1646 – regional anaesthesia by cold
- 1657 – IV opium in dog

Genesis 2:7

And the Lord God formed man of the dust of the ground, and **breathed into his nostrils a breath of life**, and man become a living being.





HISTORY (cont.)

- 1844 – nitrous oxide (“laughing gas”)
- 1846 – ether – “*gentleman this is no humbug!*”
- 1846 – ether in Europe
- 1847 – chloroform anaesthesia
- 1848 – the first death under chloroform
- 1885 – cocaine epidurally
- 1898 – subarachnoidal anaesthesia
- 1960 – modern CPR



several anaesthesiologists



1 surgeon

Duin, Sutcliff: História medicíny 1997, s. 41

BE POSITIVELY THE LAST NIGHT.

ADELPHI THEATRE

BY AUTHORITY OF THE STRAND. LORD CHAMBERLAIN

Notwithstanding the very great Success of M HENRY'S ENTERTAINMENT, it most positively be withdrawn, owing to previous Engagements, after

SATURDAY, JUNE 5, 1824.

THE NITROUS OXIDE, OR

LAUGHING GAS

Will continue to be administered to any of the Audience who may chuse to inhale it, the WONDERS of which were first experienced by

SIR HUMPHREY DAVY,

And the exhibiting Artists produced, as described by that Gentleman, have been fully entered during the Period of its Exhibition by M H Theatre BURSTON and 61 ARTISTS &c

KEAN

By some, **PAISIEULS** or **PIROUETTES** &c

VESTRI or **ALBERT,**

Have been commonly performed by others, with BRAVOUR to rival

BRAHAM,

And SCREAMS of Regret, superior to any ever uttered by

Mrs. HATTON or **Mrs. GIBBS,**

As the Loss of the Delight, this Gas alone can give, have been of such frequent Occurrence, that many have supposed those highly gifted

PERFORMERS were **PRESENT** in Disguise.

M HENRY'S ASTONISHING AND MAGNIFICENT DISPLAY OF

Uncommon Illusions, Wonderful Metamorphoses, &c.

Interesting Illustrations in

Experimental Chemistry, Animated Paintings, &c.

IN PARTS I & II of the Entertainment, M. HENRY will exhibit his New and

ASTONISHING ILLUSIONS!

Amazing Combinations, Transformations, &c. &c.

The THREE WISHES. The COIN of DIVINATION. The WONDERFUL FLIGHT. The ENCHANTED FRUIT. Which answers any Question. The SAGACIOUS LIVE BIRD, &c.

PART III: NOVEL AND INTERESTING

EXPERIMENTS on GAS!!

Amongst which, will be introduced the inflation and ASCENT OF A BALLOON in the Theatre, and

THE LAUGHING GAS.

In the Course of the Evening, M. Henry will attempt several Melodies, Popular Airs, &c.

THE MUSICAL GLASSES.

The Evening's late Amusements will conclude with M HENRY's celebrated

OPTICAL ILLUSIONS

In the Course of which, in addition to the CHANGING LIKENESSES of

Mrs STEPHENS, Miss FATON, Mr. MACREADY,

Mrs M. FREE, Mr. YOUNG, Mr. KEAN,

Mr. GRIKALDI, Will be introduced beautiful finished Portraits of

King Henry VIII, Anna Boleyn, and Queen Elizabeth.

A beautiful Portrait of the immortal SHAKSPEARE,

During the exhibition of which, JANE will be seen to descend and crown him with a Wreath of Laurel, being one of the finest Optical Illusions ever produced. Previously which

THE DANCE OF DEATH!! with a Variety of Laughable Figures, &c. &c.

The Evening will conclude with M HENRY'S celebrated

DOXES, &c. &c. GAL. 14. Hours open at Half-past 7, and commence at 7. HALF PRICE, at Half-past 8.

BY This Office, open from 10, till 4, where Places may be taken, and a Private Box had Nightly of Mr. CALLAN.

Children & a more may be admitted. No Nones issued. Printed by W. GILKINSON, Rupert Street, Haymarket.

June 5th 1824
Era when laughing gas
was used for night show





1842 Jan.	William Edward Clarke (1819–1898) tooth extraction
1842 Mar.	Crawford W. Long (1815–1878) excision of cyst
1845	Horace Wells (1815–1848)
1846 Sept 9th	William Morton (1819–1868) tooth extraction

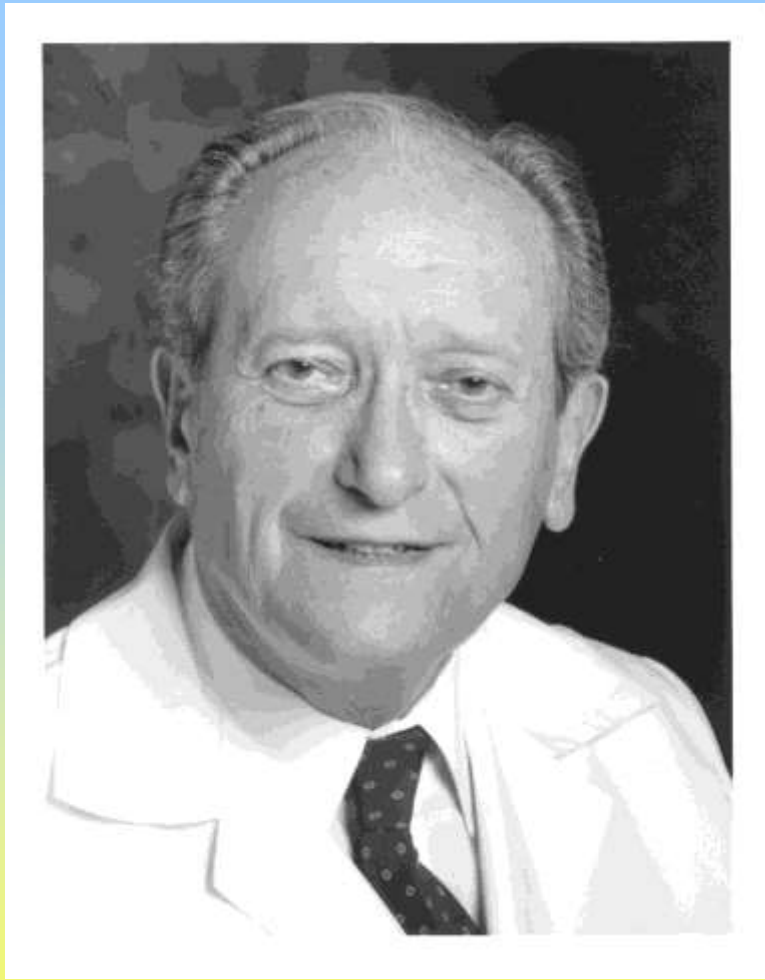
William Morton

October 16th 1846
First ether anaesthesia
„Day of Anaesthesia“

Patient: **Gilbert Abbott**
Anaesthesiologist: **William T.G. Morton**
Surgeon: **John Warren**

Desai SP et al: **A Tale of Two Paintings.**

Depictions of the First Public Demonstration of Ether Anesthesia. *Anesthesiology* 2007; 106:1046–50



prof.. MD. PhD. F.A.C.C.

William Ganz

*7.1.1919 [Košice](#) - †10.11.2009 Los Angeles



- 1937 Košice, school-leaving exam gymnasium
- 1947 Praha UK graduation MD.
- 1947 – 1951 internist Bulovka
- 1966 U.C.L.A.
- 1970 introduced to clin. praxis with Swan S-G catheter
- 1970 ass. professor
- 1972 professor
- 1992 Distinguished Scientist Award

Swan HJC, Ganz W, Forrester J, Marcus H, Diamond G, Chonette D. Catheterization of the heart in man with use of a flowdirected balloon-tipped catheter. N Engl J Med 1970;283:447-51.





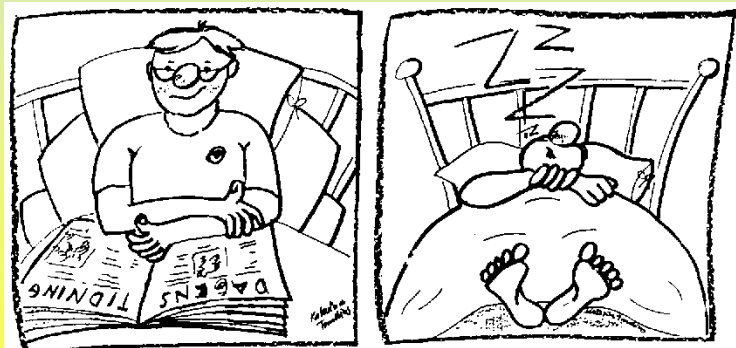
Young girl with polio



Ibsen's life-saving system: a tube supplying oxygen, a cuffed tracheotomy tube, and a *medical student* squeezing the rebreathing bag.

TYPES OF ANAESTHESIA

- General
- Regional



AVAILABILITY OF ANAESTHESIA

- Diagnostic procedures
- Therapeutic (surgical) procedures

SUBJECT: ANAESTHESIOLOGY & RESUSCITATION

- Lectures within Surgery up to 1990
- Independent subject A+R since 1990
- I. KAR established 17.5.1996
- 37 anaesthesiologists
- 54 nurses

Anaesthesiology and Intensive Medicine

Study program: 5. GM

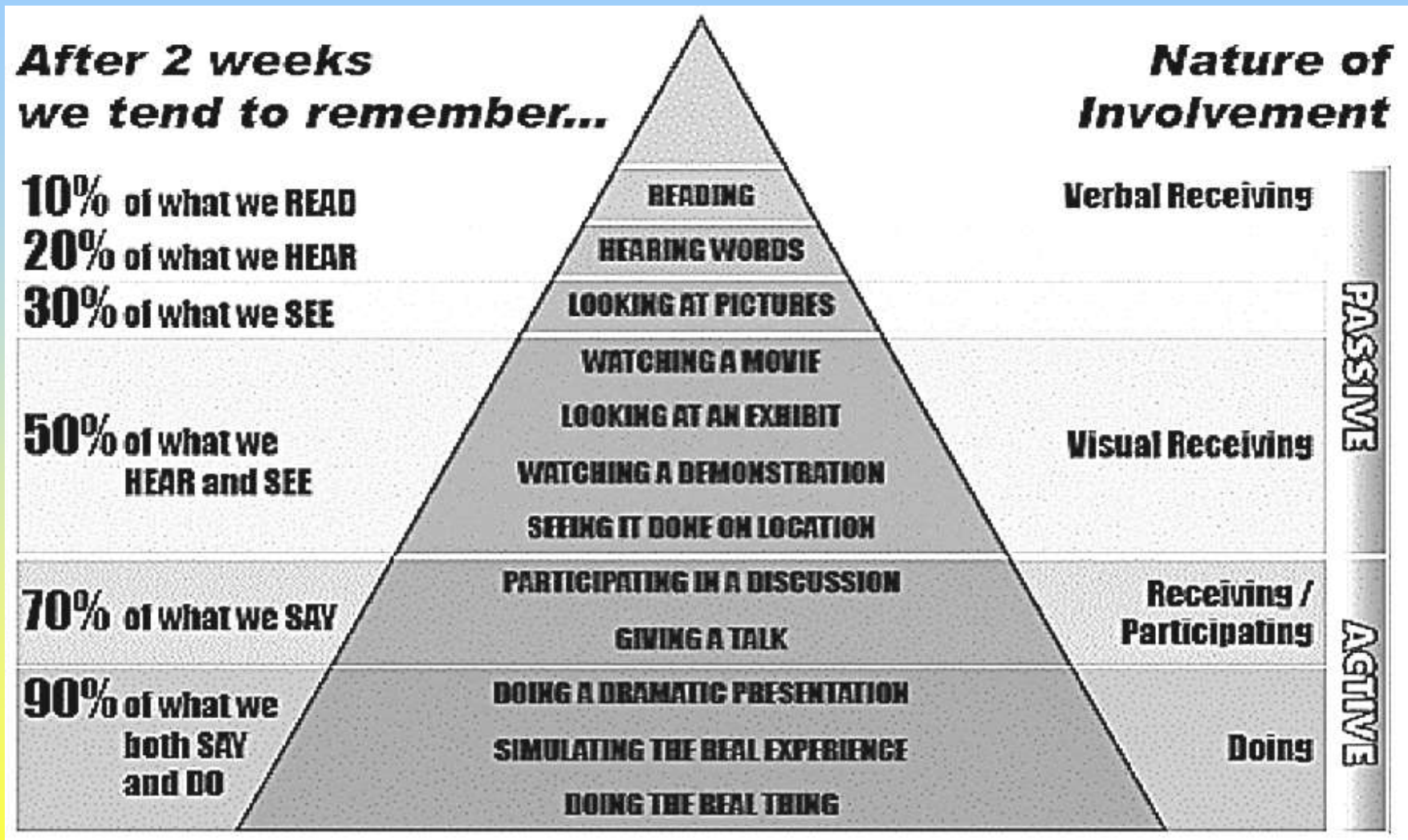
Summer term 2020

30.01.2020

Date	Lecture room	Lecture thesis
10. 02. 2020 9:45 - 11:15	P3	Introduction to A&IM. Instructions for exam organisation. Remarkable Moments from History of A&ICM. Indications for Admission to ICU. Pre-anaesthetic Evaluation & Preparation before Anaesthesia. Premedication. Risk of Anaesthesia. Anaesthetic Chart (Lecturer: Jozef Firment, MD, PhD.)
11. 02. 2020 11:15 - 12:45	PB	Vital Function Failure. Airway management. (Lecturer: Jozef Firment, MD, PhD.)
17. 02. 2020 8:00 - 9:30	P3	Cardiopulmonary resuscitation. (Lecturer: Vladimír Hudák, MD., PhD.)
18. 02. 2020 15:15 - 16:45	PB	Acute Poisoning - First Aid, Elimination methods. Acute Kidney Injury, Renal Replacement Therapy. Specificity of Paediatric Anaesthesia. Specificity of Obstetric Anaesthesia & Analgesia. (Lecturer: Jozef Firment, MD, PhD.)
19. 02. 2020 15:15 - 16:45	PB	General anaesthesia. Inhalational Anaesthesia, Intravenous Anaesthesia, Sedation. Post-Anaesthesia Care in Recovery Room (Lecturer: Jozef Firment, MD, PhD.)
20. 02. 2020 11:15 - 12:45	PB	Regional anaesthesia. Neuraxial Technics of Regional Anaesthesia. Peripheral Neural Blocks. Local Anaesthetics Pharmacology, Toxic Reaction Treatment. Anaesthesia for Day-Case Surgery. Acute & Chronic Pain Treatment (Lecturer: Jozef Firment, MD, PhD.)
21. 02. 2020 9:45 - 11:15	P3	Patient Monitoring During Anaesthesia & ICU. Vascular Accesses, Indications, Complication, CVP measurement (Lecturer: Jozef Firment, MD, PhD.)
24. 02. 2020 9:45 - 11:15	P3	What is emergency medicine. (Lecturer: Štefan Trenkler, MD, PhD.)
25. 02. 2020 08:00 - 09:30	PB	Comatose Patient Care. Traumatic Brain Injury. Brain Oedema. Management of Intracranial Pressure Brain Death. Organ Donation. Transplant Programme. Differential Diagnosis of Coma & Qualitative Cerebral Functions Disturbances (Lecturer: Jozef Firment, MD, PhD.)
26. 02. 2020 13:30 - 15:00	PB	Anaesthesia in Trauma Injuries. Patient Management with Multiple Injuries. Specificity of Cardiac anaesthesia. Cardiovascular & Respiratory Complications in General Anaesthesia (Lecturer: Jozef Firment, MD, PhD.)
27. 02. 2020 15:15 - 16:45	PB	Shock – Pathophysiology & Principals of Treatment Cardiogenic Shock. Acute Myocardial Infarction. Hypovolemic Shock. Life-threatening Haemorrhage. Haemorrhagic Shock. Obstructive Shock. Pneumothorax. (Lecturer: Jozef Firment, MD, PhD.)
28. 02. 2020 8:00 - 9:30	P3	Distributive Shock. Anaphylactic Shock. Systemic Inflammatory Response Syndrome, Sepsis, Septic Shock. Multiorgan failure (Lecturer: Jozef Firment, MD, PhD.)

03. 03. 2020 16:00 - 17:30	PB	Oxygen Therapy & Inspiratory Gas Preparation. Acute Respiratory Insufficiency, Principles of artificial Lung Ventilation. Acute Respiratory Distress Syndrome. (Lecturer: Jozef Firment, MD, PhD.)
03. 03. 2020 17:30 - 18:30	AULA	CONTROL TEST
11. 03. 2020 16:00 - 17:30	PB	Parenteral & Enteral Nutrition. Acid-Base Balance & Fluids Disturbances. (Lecturer: Vladimír Hudák, MD, PhD.)

CONE OF LEARNING



Edgar Dale: http://www.foundationcoalition.org/home/keycomponents/collaborative_learningsec.html

Croley WC, Rothenberg DM: Education of trainees in the intensive care unit. Crit Care Med 2007; 35[Suppl.]:S117-S121

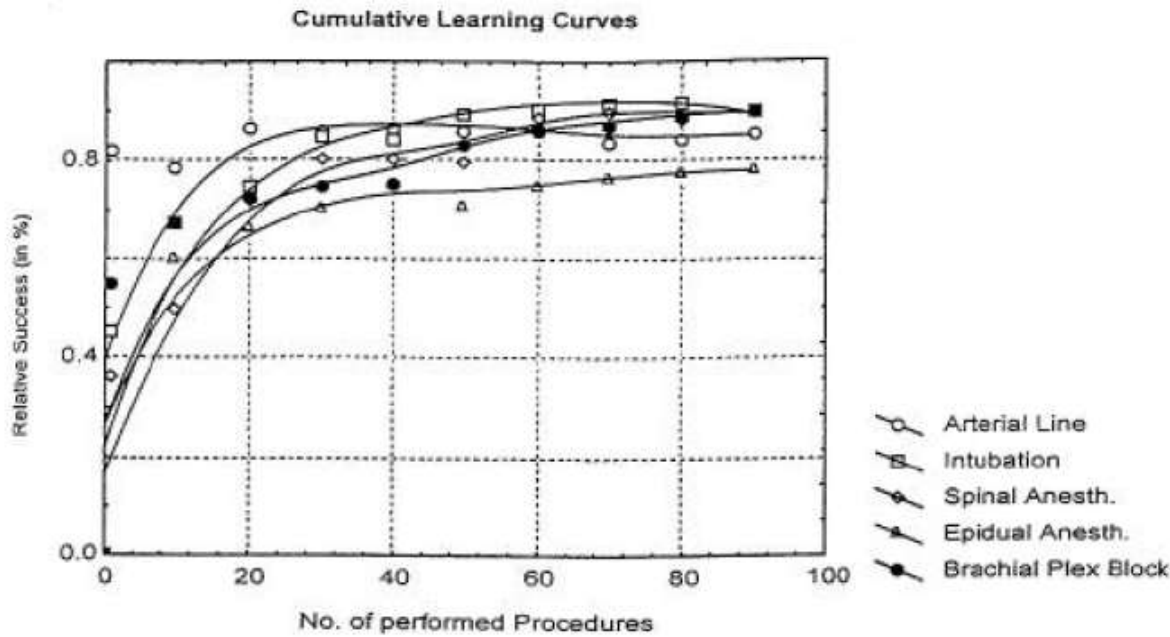


Figure 1. A summary of mean learning curves. The most difficult procedure was epidural anesthesia ($P < 0.05$). Intubation = orotracheal intubation, Anesth. = anesthesia.

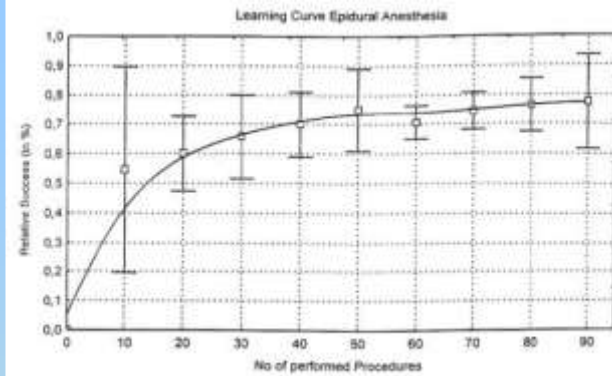


Figure 4. The epidural anesthesia learning curve.

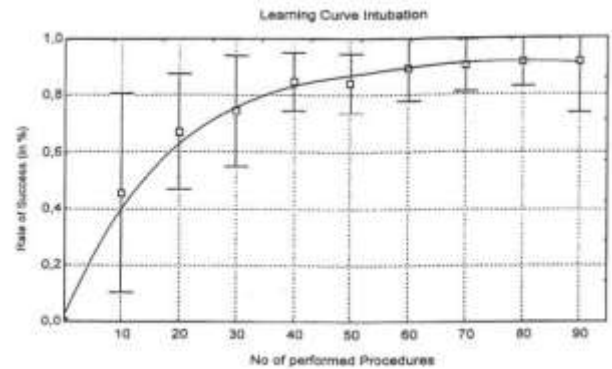


Figure 2. The intubation learning curve.

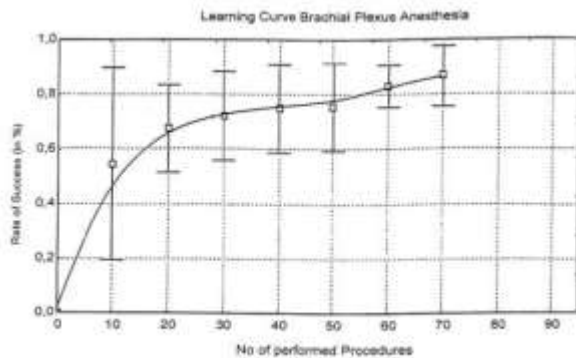


Figure 5. The brachial plexus anesthesia learning curve.

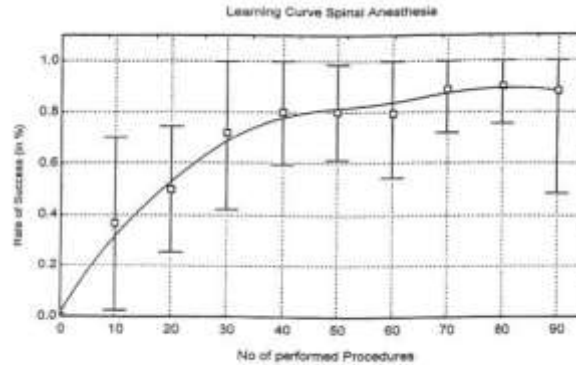


Figure 3. The spinal anesthesia learning curve.

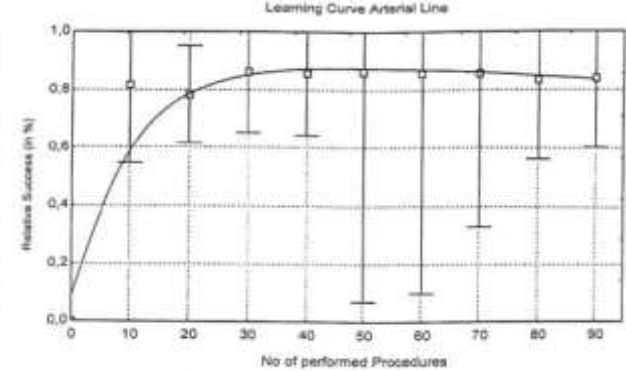


Figure 6. The arterial line learning curve.

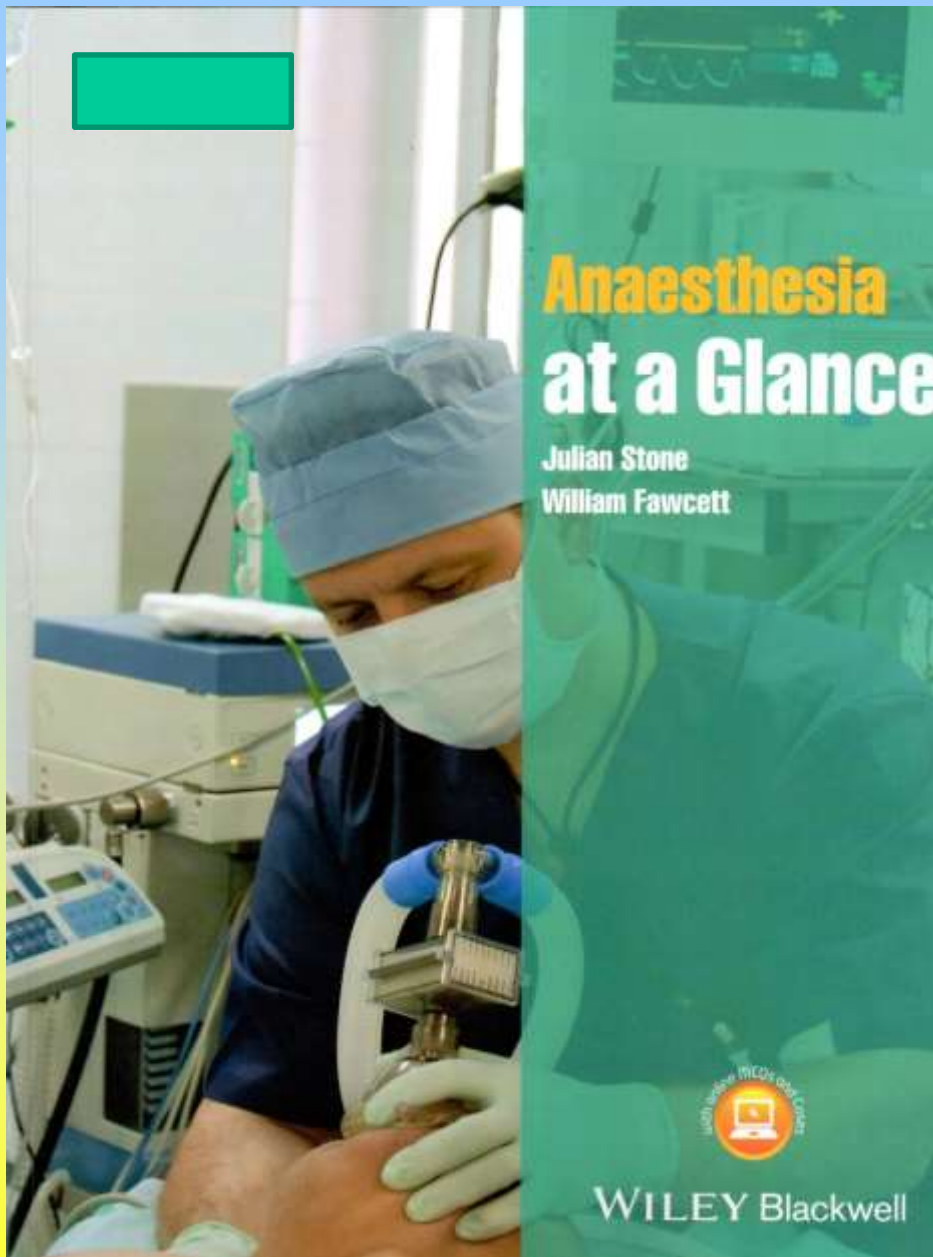
Learning curves

Konrad C et al: Learning Manual Skills in Anesthesiology: Is There a Recommended Number of Cases for Anesthetic Procedures? *Anesth Analg* 1998;86:635-9

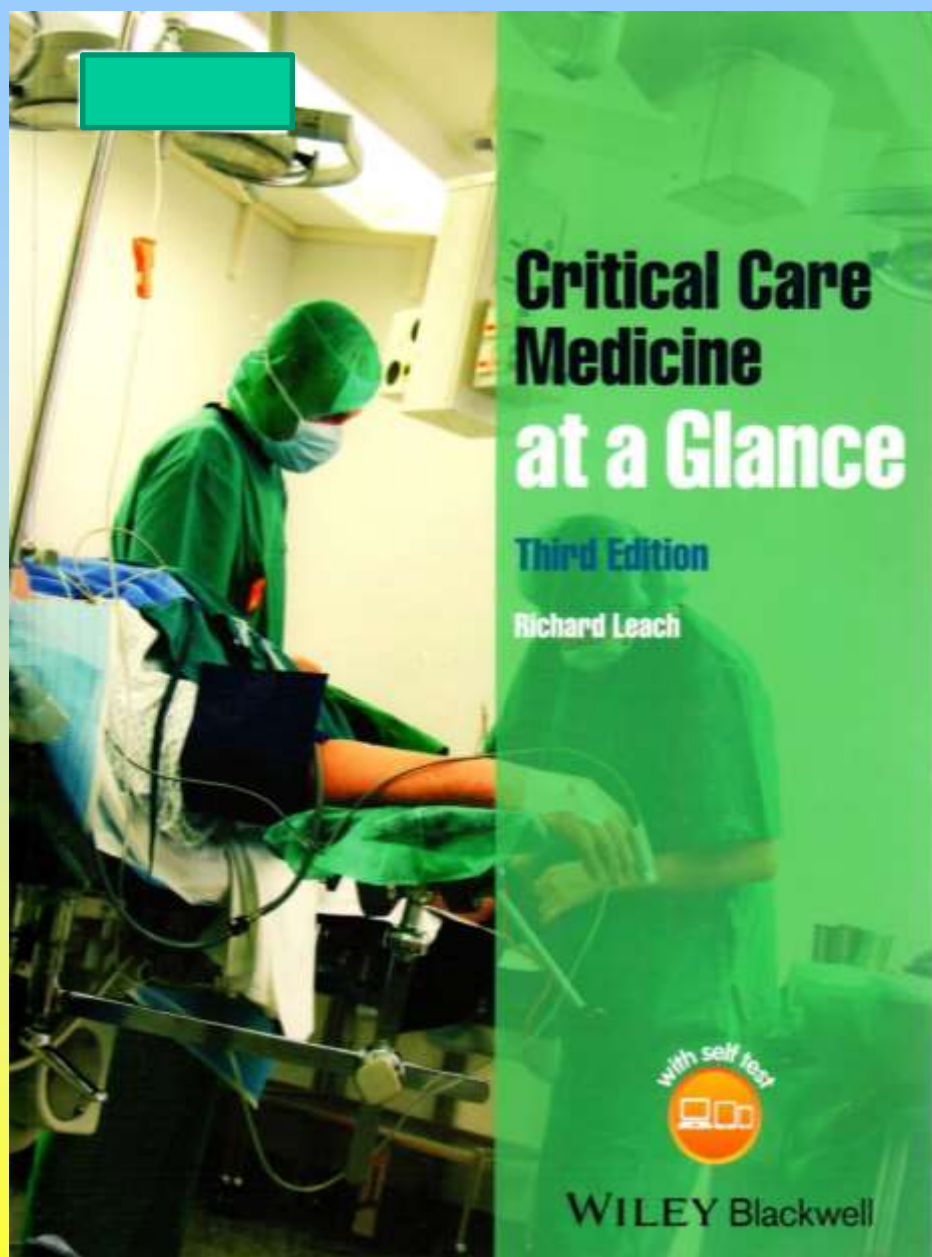
Success Rate and Recommended Case Load

Procedure	Success rate (%)	Recommended case load (Mean)	95% confidence interval for success rate ^a
Intubation	90	57	0.80–0.99
Spinal anesthesia	90	71	0.75–1.0
Epidural anesthesia	78	90	0.71–0.85
Brachial plexus block	87	62	0.76–0.97
Arterial line	84	60	0.60–1.0

Konrad C et al: Learning Manual Skills in Anesthesiology: Is There a Recommended Number of Cases for Anesthetic Procedures? *Anesth Analg* 1998;86:635-9



1st ed 2013 88 pp



3rd ed 2014 172 pp

STUDY LITERATURE FOR ANAESTHESIOLOGY & INTENSIVE CARE

- **Stone J, Fawcett W:** Anaesthesia at Glance. Wiley Blackwell, First ed 2013, 88 pp
- **Leach R:** Critical Care Medicine at Glance, Wiley Blackwell, Third ed 2014, 172 pp
- **Adams AP, Cashman JN:** Anaesthesia, Analgesia and Intensive care (1991)
- **Leach R.:** Acute and Critical Care Medicine at a Glance, 2. vyd 2009
- **Ehrenfeld JM, Urman RD, Segal S:** Anesthesia Student Survival Guide. Springer 2010, 519 pp.
- **Euliano TY, Gravenstein JS:** Essential Anesthesia, Cambridge University Press 2004, 250 pp.
- **Gwinnutt CL:** Lecture notes Clinical Anaesthesia druhé vydanie 2004.