



# Úvod do štúdia predmetu Anestéziológia a intenzívna medicína

prednosta I. KAIM UNLP Košice  
doc. MUDr. Jozef **Firment**, PhD.

odborní asistenti KAIM

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MUDr. Štefan Trenkler, PhD.

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MUDr. Peter **Čandík**, PhD.

prednostka KPAIM DFN Košice

MUDr. Mária **Pisarčíková**, PhD.

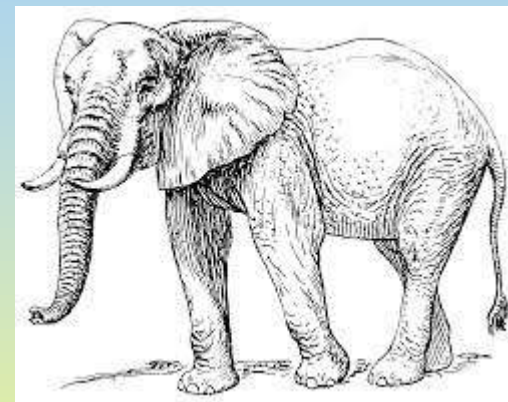
# DIFERENCOVANÁ STAROSTLIVOSŤ

1. Resuscitačná starostlivosť („ARO“, OAIM)
2. Intenzívna starostlivosť (JIS), intermediárna jednotka
3. Štandardná bežná starostlivosť
4. Dlhodobá liečebná a rehabilitačná starostlivosť
5. Ošetrovateľská starostlivosť
6. Starostlivosť o chorých v terminálnom štádiu ochorenia (hospice)

# ANESTÉZIOLÓGIA A INTENZÍVNA MEDICÍNA (KAIM, OAIM)

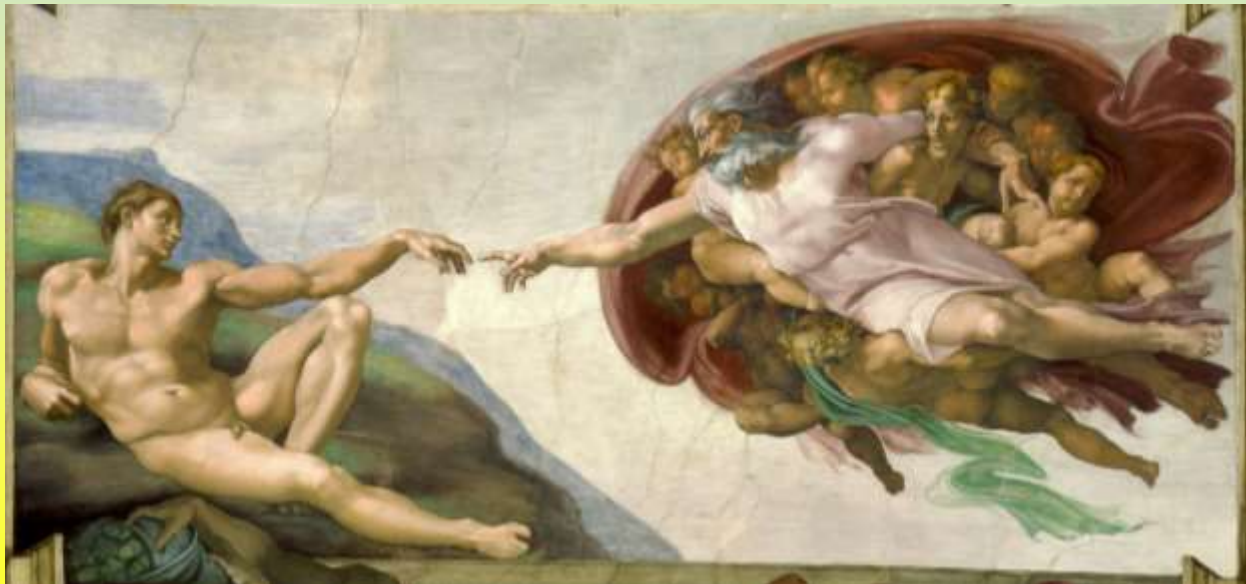
Náplň odboru :

1. Anestéziológia
2. Intenzívna medicína  
(resuscitológia)
3. (Prednemocničná) urgentná  
medicína (RLP)
4. Algeziológia



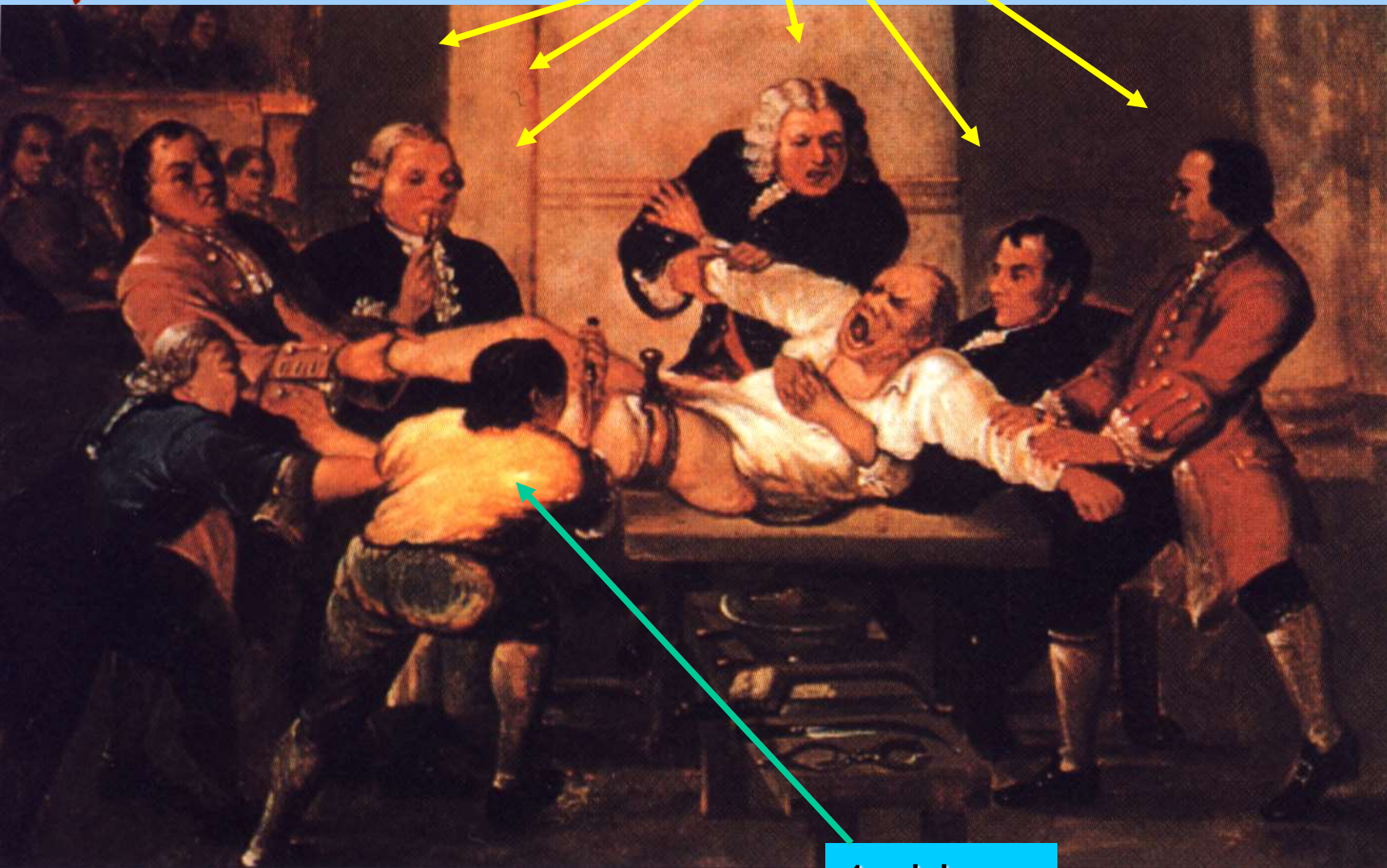
# Genesis 2:7

Vtedy Pán, Boh, utvoril z hlíny zeme človeka a **vdýchol do jeho nozdier dych života**. Tak sa stal človek živou bytosťou.





niekoľko anesteziológov



1 chirurg

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Notwithstanding the very great Success of M HENRY'S ENTERTAINMENT, it most positively be withdrawn, owing to previous Engagements, after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 Apparatus produced, as described by that Gentleman, have been fully entered during the Period of its Exhibition by M H Theatre BURSTON and 61 ARTS &c

**KEAN**

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

**VESTRES** 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 Performers 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. GRIMALDI, 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, JAME will be seen to descend and crown him with a Wreath of Laurel, being one of the finest Optical Illusions ever produced. Previous to which

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

The Evening will conclude with M HENRY's celebrated

DOXES, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

Hours open at Half-past 7, and commence at 7. HALF PRICE, at Half-past 8.

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

Children under 10 are not to be admitted. No Nones issued. Printed by W. GILKINSON, Newport Street, Haymarket.

5. jún 1824  
Doba, keď rajský plyn  
slúžil ešte len pre zábavu



# Chosen-asagao 13.10.1804

- **Seishu Hanaoka** (1760-1835) v Japonsku podal pravdepodobne **prvú celkovú anestéziu** pri operácii nádoru prsníka u 60-ročnej pacientky Kan Aiya. Ako anestetikum použil "Tsusensan" – vo forme nápoja podal anestetikum na rastlinnej báze, kde hlavnou zložkou bol pravdepodobne *Chosen-asagao* (*Datura alba*) durman.

## 'TSUSENSAN': THE RECIPE

The recipe for Hanaoka's anesthetic ('tsusensan') is as follows: one takes 8 parts of *Datura alba* (white angel trumpet or thornapple {*D. stramonium*, editor}), 2 parts of *Aconium japonicum* (Japanese aconite), 2 parts of *Angelica dahurica* (Chinese angelica), 2 parts *Angelica decursiva* (Norwegian angelica), 2 parts of *Ligusticum wallichii* and 2 parts *Arisaema japonicum*. The mixture is ground to a paste, boiled in water, and drunk warm. After 2 to 4 hours one will become impervious to pain and subsequently fall unconscious. Depending on the dosage, this effect will last 6 – 24 hours.

The active ingredients in this concoction are scopolamine, hyoscyamine/atropine, aconitine and angelicotoxin. When combined, these give rise to anesthesia, sleep and paralysis, most important of these substances being the tropane alkaloids atropine (named after *Atropa belladonna* and still currently used by ophthalmologists to dilate pupils), and the powerful scopolamine, both of which are substances which act to inhibit the transmission of stimuli between neurons (as acetylcholine antagonists). (JH van D.)

<http://www.general-anaesthesia.com/images/chosen-asagao.html>







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

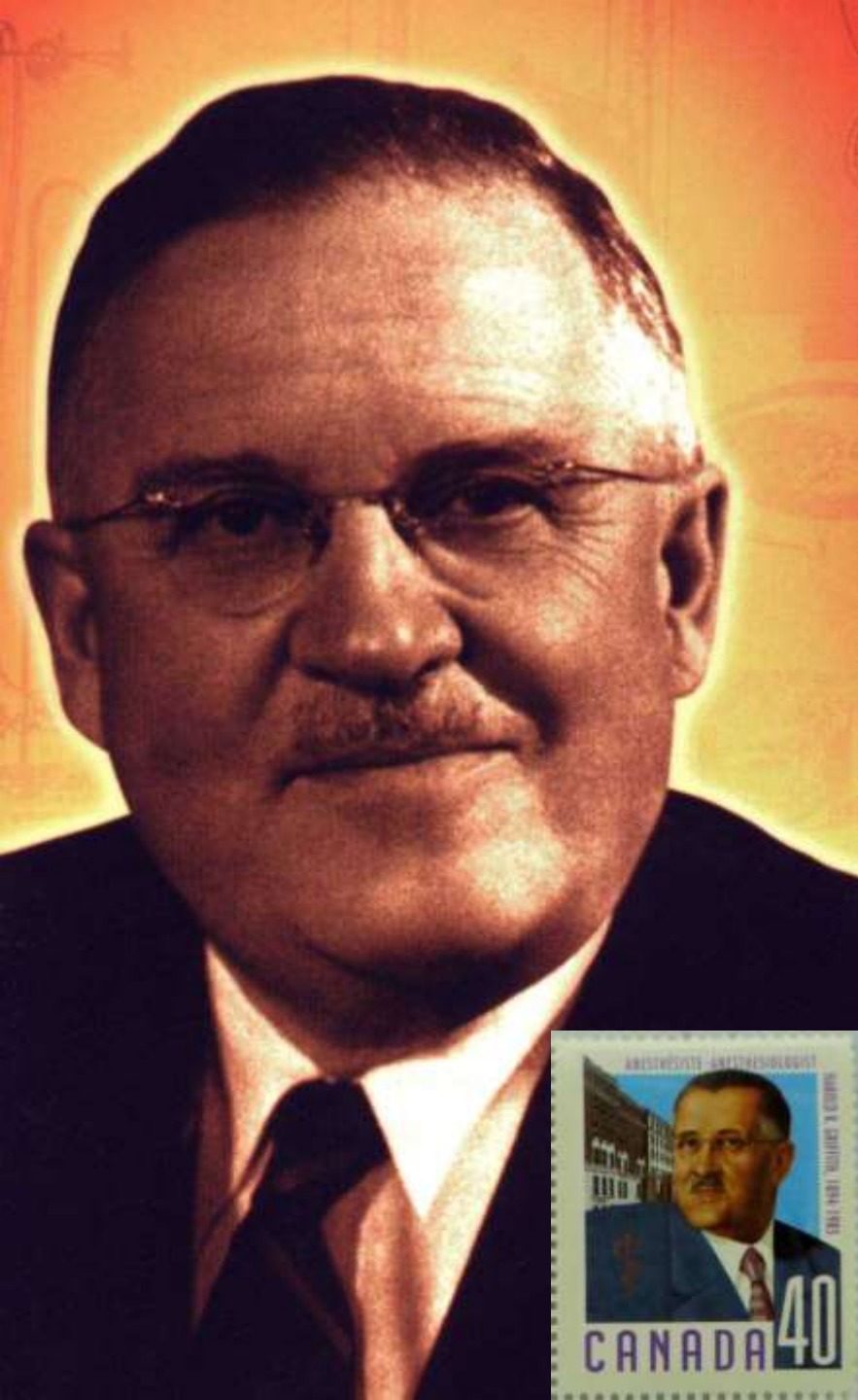
**16. október 1846  
prvá anestézia éterom  
„Deň anestézie“**

Pacient: **Gilbert Abbott**  
Anestéziológ: **William T.G. Morton**  
Chirurg: **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



# Harold Griffith

\* 1894 v Montreale

† 1985

23.1.1942

zaviedol do praxe kurare

od 9.9.1955

prvý prezident WFSA





# 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.



**Anestéziologička,  
v 50. rokoch  
zaviedla  
hodnotenie  
novorodenca -  
APGAR skóre**

Apgar V: A proposal for a new  
method of evaluation of the  
newborn infant.

Anesth Analg 1953; 32:260–7

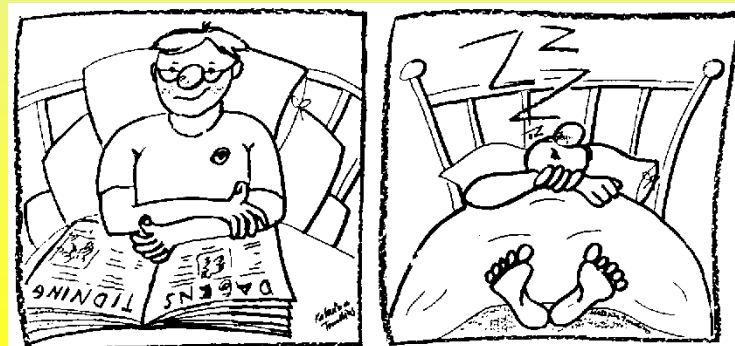


# UPLATNENIE ANESTÉZIE

- Diagnostické procedúry
- Liečebné (operačné) procedúry

# TYPY ANESTÉZIE

- Celková
- Miestna



# INDIKÁCIE PRIJATIA NA KAIM

*Vest. MZ č. 15, 9.10.1998*

- a) ..došlo k zlyhaniu vitálne dôl. orgánov..
- b) ..zhoršenie stavu s akút zlyh. „a“
- c) .. smeruje k zlyhávaniu „a“
- d) ..len vybavením OAIM možno zabrániť „a“
- e) ..anestetické komplik. ohrozujúce život..
- f) ..predop. príprava pre predíjdenie „a“
- g) ..na 24 h na nastavenie liečby bolesti..

# SPÔSOB UKONČENIA HOSPIT. NA OAIM

*Vest. MZ č. 15, 9.10.1998*

- a) ..zlepšenie..preloženie podľa  
odboru..urg. príjem pre dané odd..
- b) ..mozgová smrť.., úmrtie



# KUŽEL' UČENIA

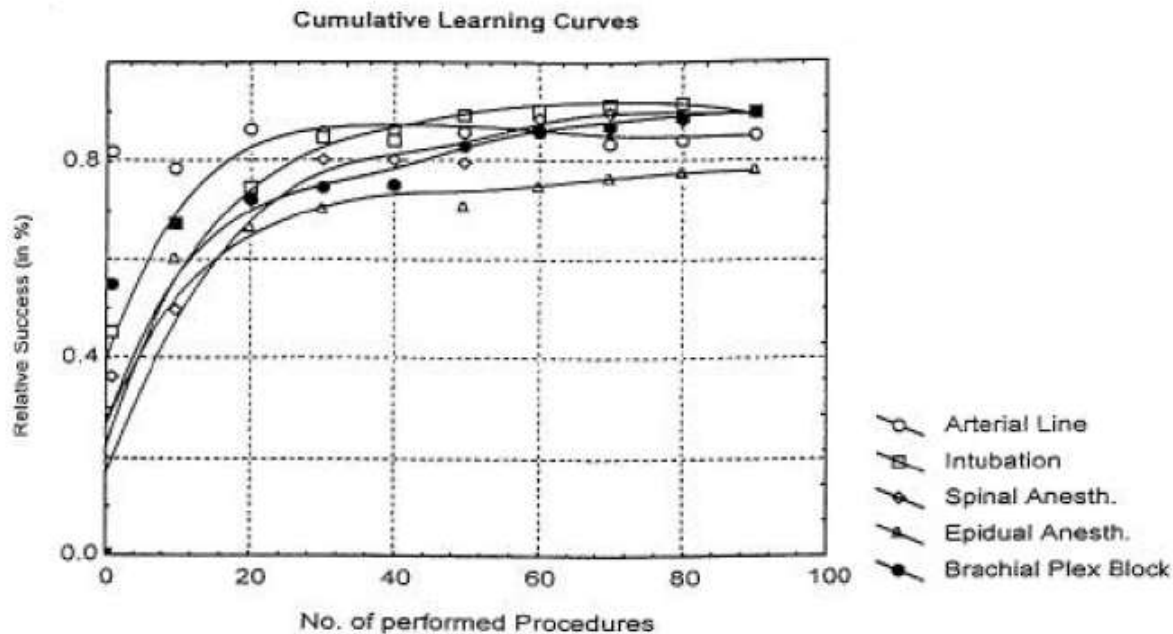
**PO 2 TÝŽDŇOCH**  
SME SCHOPNÍ ZAPAMÄTAŤ SI:

**DRUH**  
**ZAINTERESOVANOSTI:**

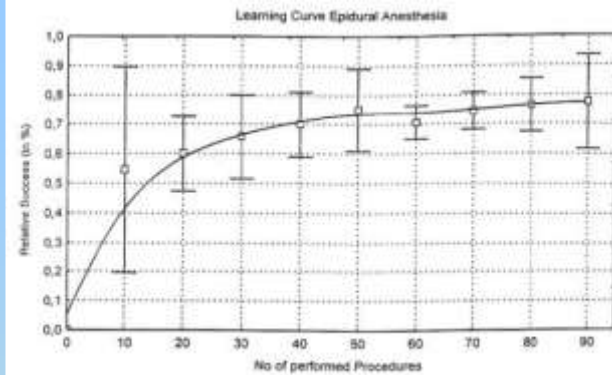
<b>10%</b> čo čítame	<b>ČÍTANIE</b>	<b>Prijímanie slova</b>	<b>PASÍVNE</b>
<b>20%</b> čo počujeme	<b>POČÚVANIE PREDNÁŠKY</b>		
<b>30%</b> čo vidíme	<b>POZERANIE DIAPOZITÍVOV</b>		
<b>50%</b> čo počujeme a vidíme	<b>SLEDOVANIE FILMU</b>	<b>Prijímanie vizuálne</b>	<b>PASÍVNE</b>
	<b>POZERANIE NA EXPONÁT</b>		
	<b>SLEDOVANIE DEMONŠTRÁCIE</b>		
	<b>POZERANIE NA REÁLNU ČINNOSŤ</b>		
<b>70%</b> čo hovoríme	<b>ÚČASŤ NA DISKUSII</b>	<b>Prijímanie a spoluúčasť</b>	<b>AKTÍVNE</b>
	<b>PREDNÁŠANIE</b>		
<b>90%</b> čo súčasne hovoríme a robíme	<b>VYKONANIE DRAMATICKEJ PREZENTÁCIE</b>	<b>Vykonávanie</b>	<b>AKTÍVNE</b>
	<b>SIMULÁCIA REÁLNEJ ČINNOSTI</b>		
	<b>REÁLNA ČINNOSŤ</b>		

Edgar Dale: [http://www.foundationcoalition.org/home/keycomponents/collaborative\\_learningsec.html](http://www.foundationcoalition.org/home/keycomponents/collaborative_learningsec.html)

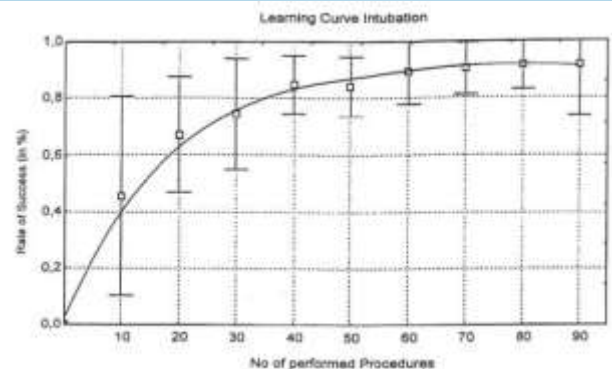
Croley WC, Rothenberg DM: Education of trainees in the intensive care unit. Crit Care Med 2007; 35[Suppl.]:S117-S121



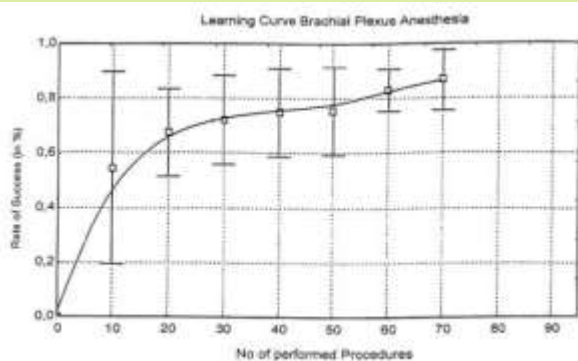
**Figure 1.** A summary of mean learning curves. The most difficult procedure was epidural anesthesia ( $P < 0.05$ ). Intubation = orotracheal intubation, Anesth. = anesthesia.



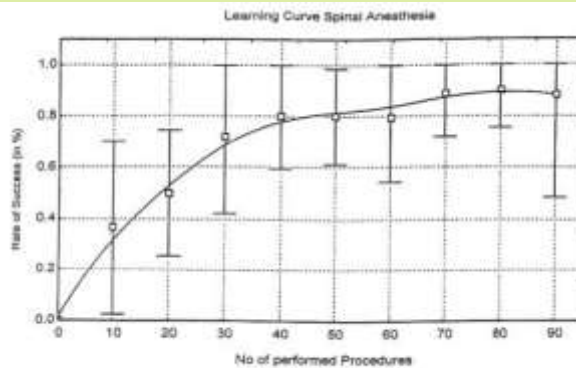
**Figure 4.** The epidural anesthesia learning curve.



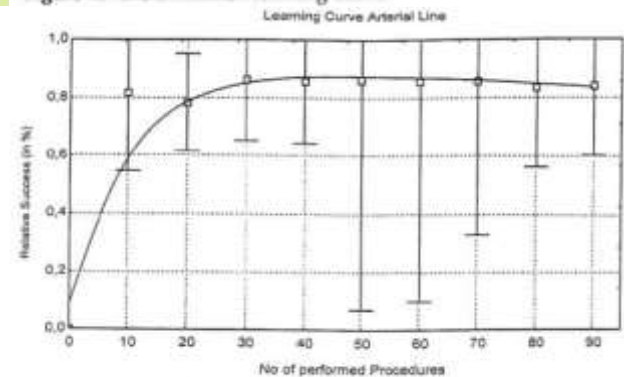
**Figure 2.** The intubation learning curve.



**Figure 5.** The brachial plexus anesthesia learning curve.



**Figure 3.** The spinal anesthesia learning curve.



**Figure 6.** The arterial line learning curve.

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

# ŠTUDIJNÁ LITERATÚRA

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- Firment J., Studená A.: Anestéziológia a intenzívna medicína. Vysokoškolské učebné texty, UPJŠ Košice, 2016.
- Firment J., Capková J.: Jednodňová anestetická starostlivosť. Aprilla, Košice, 2008, 92 s.
- Trenkler Š., Grochová M., Firment J.: Kardiopulmonálna resuscitácia podľa odporúčaní ERR 2010, Hanzlúvka 2011.
- Larsen R.: Anestezie. Grada, 2004.
- Ševčík P., Černý V., Cvachovec J.: Intenzivní medicína, Praha: Galén, 2015.
- West J. B.: Fyziológia dýchania, základné fakty. 9. vydanie. UPJŠ v Košiciach, 2015.
- Stone J, Fawcett W: Anaesthesia at Glance. Wiley Blackwell, First ed 2013, 88 pp
- Leech R: Critical Care Medicine at Glance, Wiley Blackwell, Third ed 2014, 172 pp
- Leach R.: Acute and Critical Care Medicine at a Glance, 2. vyd 2009
- Gwinnutt CL: Lecture notes Clinical Anaesthesia druhé vydanie 2004.

Dátum	Čas	Téma prednášky
10. 02. 2020 Pondelok	11:30 – 13:00	Koncepcia odboru AIM. Predoperačné vyšetrenie a príprava pacienta pred operáciou. Riziko anestézie (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Utorok 11. 02. 2020	13:30 – 15:00	Zabezpečenie dýchacích ciest (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Štvrtok 13. 02. 2020	9:45 – 11:15	Liečba kyslíkom. Umelá ventilácia pľúc. Indikačné kritériá. Respiračné zlyhanie v intenzívnej medicíne (Prednáša: doc. MUDr. Pavol Török, CSc.)
Pondelok 17. 02. 2020	11:30 – 13:00	Celková anestézia. Definícia a rozdelenie. Lieky, pomôcky a prístroje používané pri celkovej anestézii. Simulátor celkovej anestézie (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Utorok 18. 02. 2020	9:45 – 11:15	Regionálna anestézia. Lokálne anestetiká, spinálna anestézia pri cisárskom reze (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Streda 19. 02. 2020	8:00 – 9:30	Kardiopulmonálna resuscitácia dospelých a detí (Prednáša: MUDr. Judita Capková, PhD.)
Štvrtok 20. 02. 2020	13:30 – 15:00	Monitorovanie v anestéziológii v intenzívnej medicíne (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Piatok 21. 02. 2020	11:30 – 13:00	Akútne intoxikácie eliminačné postupy. Ambulantná anestézia (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Pondelok 24. 02. 2020	11:30 – 13:00	Koncepcia urgentnej medicíny (Prednáša: MUDr. Štefan Trenkler, PhD.)
Utorok 25. 02. 2020	13:30 – 15:00	SIRS, sepsa. Infúzna liečba (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Streda 26. 02. 2020	15:15 – 16:45	Pooperačná starostlivosť. Algéziológia - liečba akútnej a chronickej bolesti (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Piatok 28. 02. 2020	13:30 – 15:00	Monitorovanie hemodynamiky a šok kardiogénny, hypovolemický, obštrukčný, distribučný (Prednáša: doc. MUDr. Jozef Firment, PhD.)
Pondelok 02. 03. 2020	15:45 – 16:15 16:15 – 17:15	Poruchy acidobázickej rovnováhy. Umelá výživa enterálna a parenterálna (Prednáša: doc. MUDr. Jozef Firment, PhD.) <b>TEST (poslucháreň P1 a P2)</b>
Štvrtok 05. 03. 2020	15:45 – 17:15	Poruchy vedomia, edém mozgu a vnútrolebečná hypertenzia. Smrť mozgu, darcovstvo orgánov (Prednáša: MUDr. Judita Capková, PhD.)