

Začiatky resuscitácie a úloha Resusci Anne



Štefan Trenkler

I. KAIM UPJŠ LF Košice

Nemocnica Krompachy - Agel

Smooth Criminal (1987)

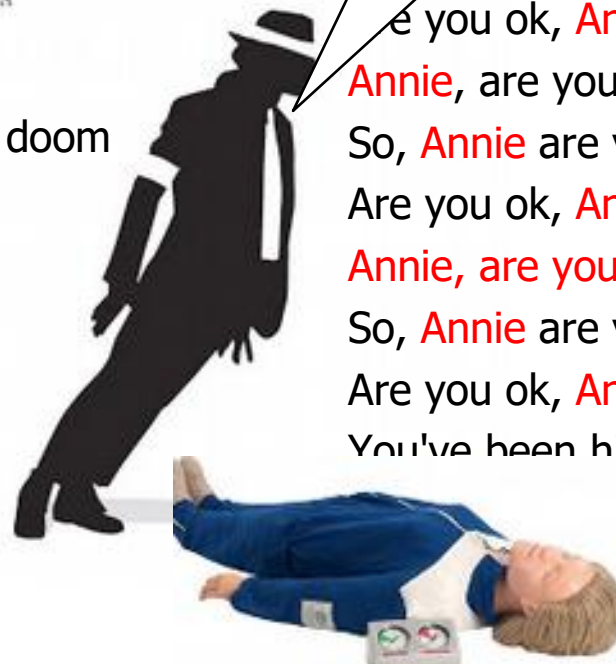
Michael Jackson



As he came into the window
It was the sound of a crescendo
He came into her apartment
He left the bloodstains on the carpet
She ran underneath the table
He could see she was unable
So she ran into the bedroom
She was struck down, it was her doom

Annie, are you ok?
So, Annie are you ok
Are you ok, Annie
Annie, are you ok?
So, Annie are you ok
Are you ok, Annie
Annie, are you ok?
So, Annie are you ok?

Are you OK,
CPR Annie?



Are you ok?
Are you ok, Annie?
Annie, are you ok?
So, Annie are you ok?
Are you ok, Annie?
Annie, are you ok?
So, Annie are you ok?
Are you ok, Annie?
You've been hit by

by
al
to the outway

It was...

UNITED STATES COAST GUARD
TREASURY DEPARTMENT

METHODS of ARTIFICIAL RESPIRATION

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AUG 16 1950
NATIONAL INSTITUTES OF HEALTH

MAY 1949



CG 139

1949



FIG. 6



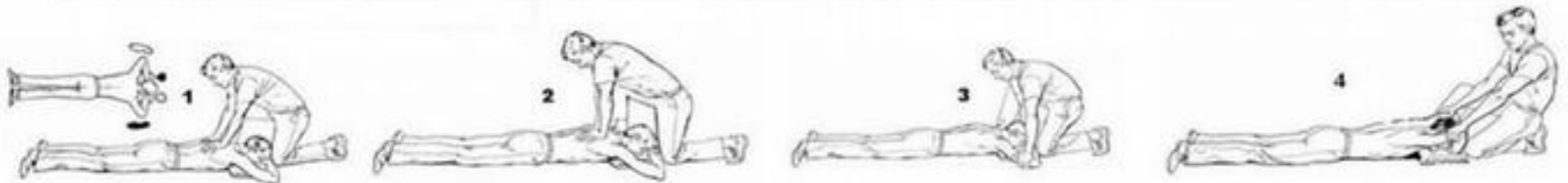
FIG. 7

In the *late 19th century* that Dr H. R. Silvester (1829 – 1908) first postulated a means of artificial respiration which was the '**Silvester Method**'.



SYLVESTER'S METHOD

In early 20th century "**Holger Nielsen technique**" described in the first edition of the *Boy Scout Handbook* in the United States in **1911**.



"Holger Nielsen technique"

Moderná resuscitácia - začiatky



1. Crile GW, Dolley DH (1906)
An experimental research into the resuscitation of dogs killed by anesthetic and asphyxia. *J Exp Med* 8:713-715 (**adrenalín**)
2. *Elam JO, Brown ES, Elder JD, Jr. (1954)*
Artificial respiration by mouth-to-mask method; a study of the respiratory gas exchange of paralyzed patients ventilated by operator's expired air. N Engl J Med 250:749-754
3. Zoll PM, Linenthal AJ, Gibson W et al (1956)
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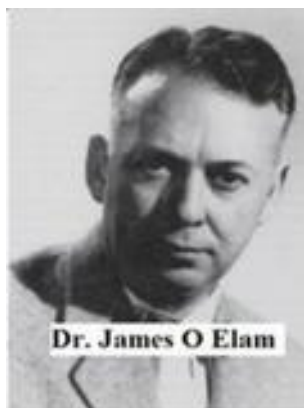


ARTIFICIAL RESPIRATION BY MOUTH-TO-MASK METHOD*

A Study of the Respiratory Gas Exchange of Paralyzed Patients Ventilated
by Operator's Expired Air

JAMES O. ELAM, M.D.,† ELWYN S. BROWN, M.D.,‡ AND JOHN D. ELDER, JR. §

BUFFALO, NEW YORK, AND ST. LOUIS, MISSOURI




Dr. James O. Elam

VENTILATION and the respiratory blood gases have recently been measured in apneic adults to determine the relative merits of the manual methods of artificial ventilation.¹⁻⁸ Comparable data have not been reported concerning the simple and apparently effective procedure of mouth-to-mouth insufflation, one of the oldest known means of resuscitation.⁹⁻²² Numerous writers have endorsed the mouth-to-mouth method,¹³⁻²⁰ which obstetricians have long practiced in infants with asphyxia neonatorum. Anesthetists occasionally inflate the apneic patient's lungs with expired air after endotracheal intubation. The five-year survey of Rom²³ indicates that the ancient method is infrequently used by rescue personnel. Whittenberger and Sarnoff²⁴ attribute this neglect to the bystander's reluctance to come into direct contact with the lips of the moribund person. Interposing a mask between patient and operator overcomes this objection. Insertion of a disposable cotton filter would prevent cross-contamination. This mouth-to-mask method deserves consideration because of the inherent efficiency of expiratory inflation for transferring oxygen into the patient's lungs. The "power unit" of this form of resuscitator is as available as the person who discovers the apneic victim; oxygen is instantly restored to the lungs, and the operator is immediately aware whether his attempts are thwarted by airway obstruction. The purpose of this study is to submit mouth-to-mask artificial ventilation to an objective analysis comparable to the investigations recently carried out by others on the several manual methods.

GENERAL CONSIDERATIONS

In 1743 a surgeon, William Tossach,²⁵ reported a successful application of the mouth-to-mouth method. The patient, a coal miner, was rescued after exposure in a mine that had been on fire and closed. He was pulseless and apneic, with cold skin. Tossach applied his mouth to the patient's, occluded the nostrils and inflated the lungs by his breath. A precordial beat, peripheral pulse and respirations were observed immediately. After four hours the patient walked home, and in four days he returned to work.

Fothergill thought this to be the first case in which artificial inflation of the lungs had put the heart in motion and rescued a life.²⁶ He strongly recommended mouth-to-mouth insufflation as a simple, inexpensive, harmless and prompt method that could be instituted by any unskilled bystander. He preferred mouth-to-mouth insufflation to the bellows because of availability and the likelihood that the patient's lungs would not be injured by the force applied.

In 1774 the Royal Humane Society was founded to promote effective artificial respiration.²⁷ At first the earlier Dutch methods were advocated, including warmth, mouth-to-mouth insufflation, fumigation, friction, stimulants and bleeding. According to Keith²⁸ all these but warmth and rubbing were discredited by the Royal Humane Society within fifty years. William Hunter referred to the practice of mouth-to-mouth insufflation to restore stillborn children. John Hunter preferred the bellows and suggested that oxygen, discovered two years before by Priestly, might prove more efficacious than air. In 1782 the Royal Humane Society recommended  by bellows in preference to mouth-to-mouth inflation.²⁸ However, for resuscitation of the newborn, mouth-to-mouth insufflation continued to be used without the official endorsement of medical organizations.

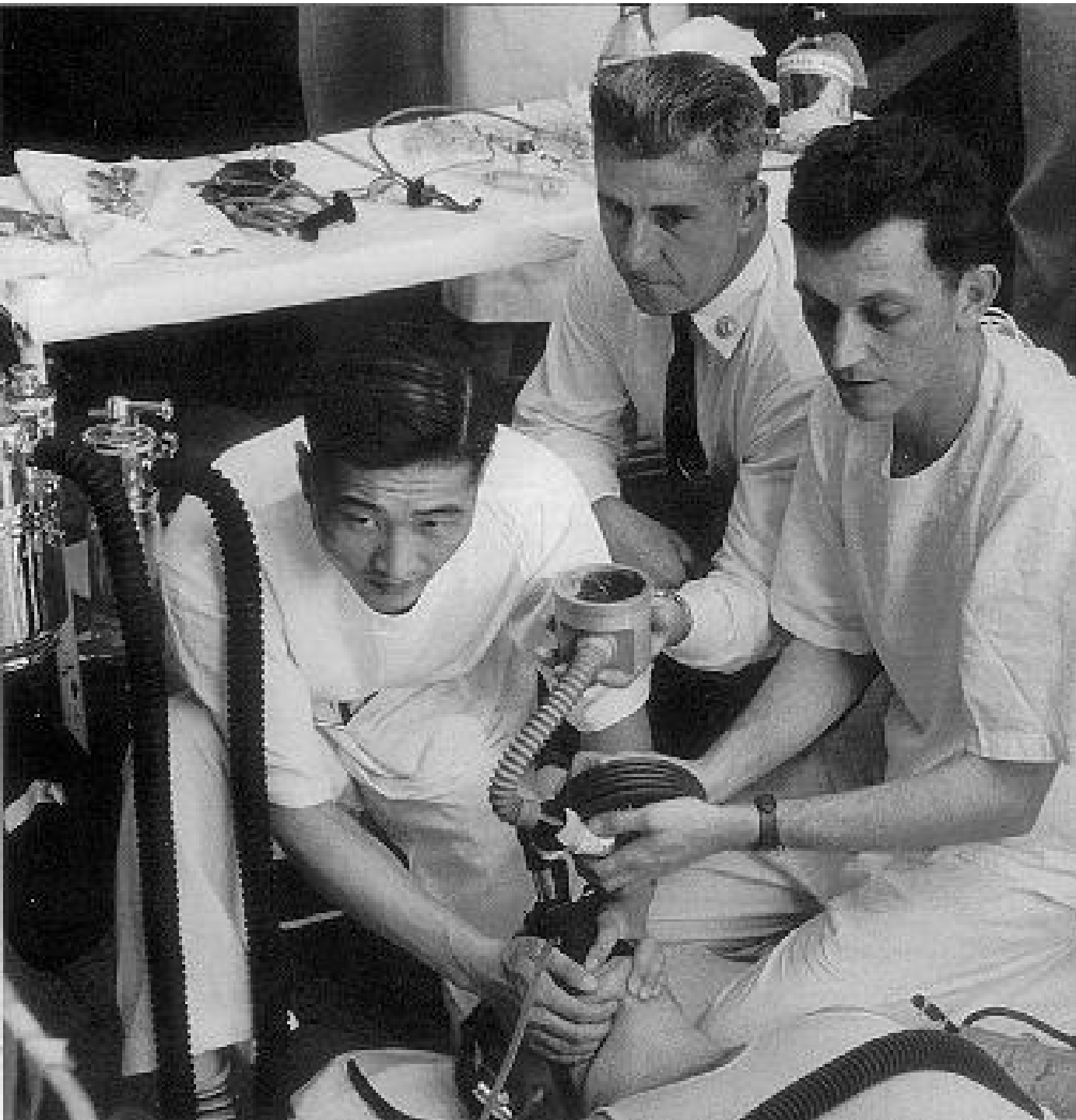
Various mouth-to-mouth methods have been recommended by Heald,²⁹ MacKenzie,³⁰ Waters and

*From the Division of Anesthesiology, Department of Surgery, Washington University School of Medicine, St. Louis.
Supported in part by the Medical Research and Development Board, Office of the Surgeon General, Department of the Army, under Contract No. DA-49-007-MD-277.

Associate, University of Buffalo School of Medicine; director, Department of Anesthesiology, Roswell Park Memorial Institute.

Principal research scientist, Department of Anesthesiology, and associate in anesthesiology, Roswell Park Memorial Institute.

Assistant professor of anesthesiology, Washington University School of Medicine, associate anesthesiologist, Barnes Hospital.

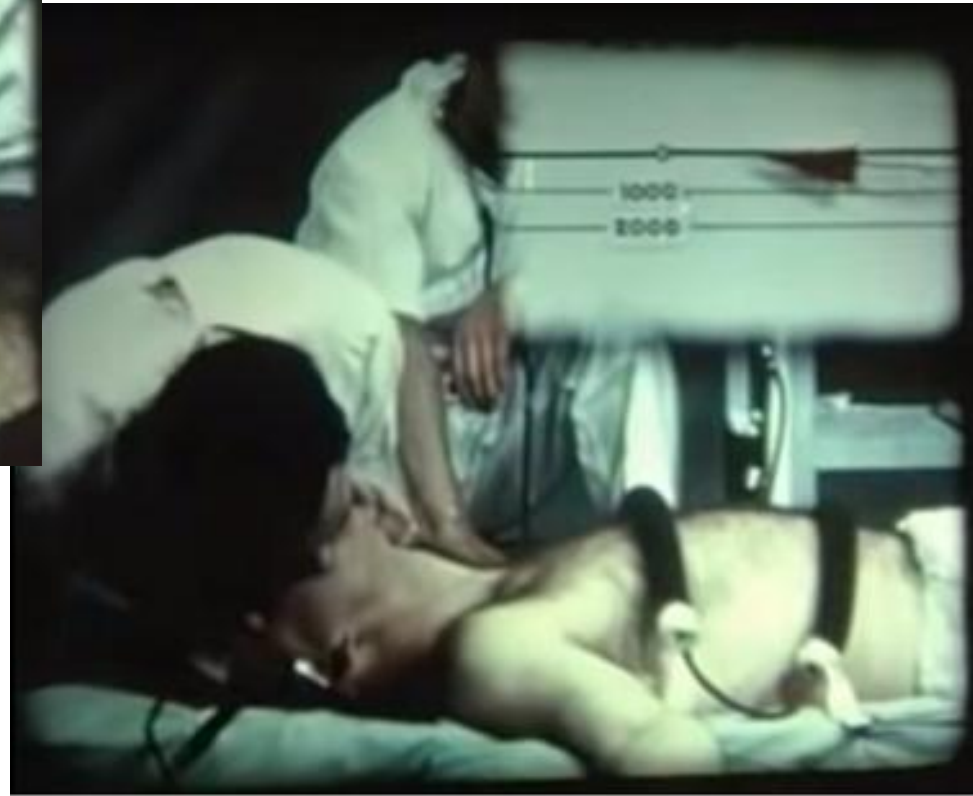


P. Safar
Baltimore
City Hospital
1950'

Peter Safar, 1950'

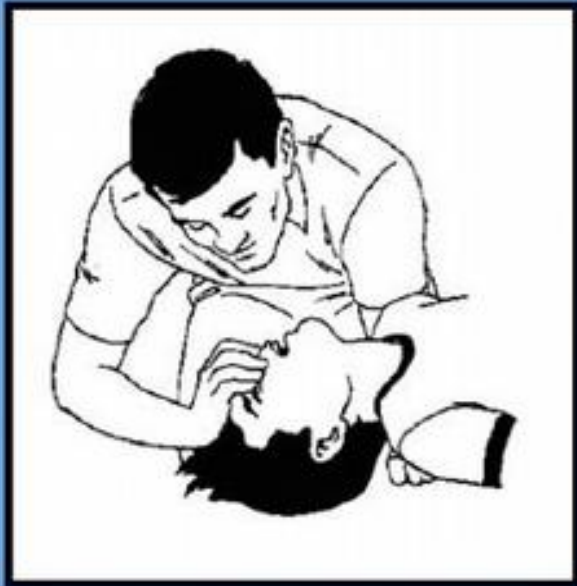
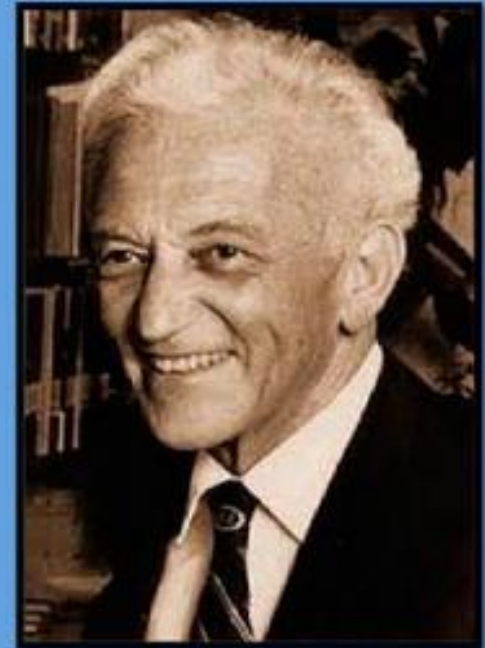


Mouth to mouth/nose breathing



Dr. Peter Safar

Developed Mouth-to Mouth Resuscitation



Dr. James O. Elam

Ako dosiahnuť zmenu



- 1954; James Elam, Peter Safar
- Postupne presviedčajú authority, že
 - metóda dýchania z úst do úst / nosa,
po spriechodnení dýchacích ciest
 - je účinnejšia ako dovtedy používané metódy

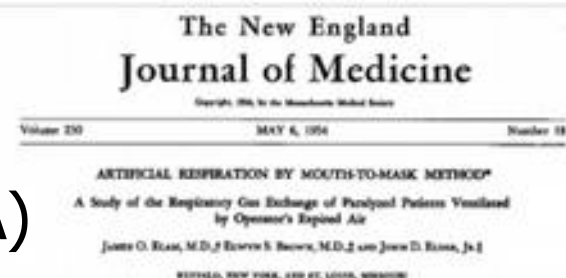


Americký červený kríž

Ministerstvo obrany

Americká kardiologická spoločnosť (AHA)

-



Dýchanie z úst do úst/nosa

- 1957: odporúčanie pre National Research Council
- exspirovaný vzduch je **výhodnejší pre deti a mládež**
- 1958: aj pre resuscitáciu **zastavenia obehu**
- To akceptoval aj Červený kríž a Ministerstvo obrany i ďalší
- P. Safar cestuje po svete
- Úspech aj v zahraničí
- Chýbal ale vhodný model na nácvik



Hľadá sa model na nácvik



- 1958: P. Safar prichádza do Gausdale v Nórsku
- 5. kongres škandinávskych anestéziológov
- V Nórsku obľubujú Holger-Nielson



- V auditóriu sedí Bjorn Lind, anestéziológ zo Stavangeru
- Metóda ho zaujme
- Treba ju cvičiť a šíriť ... Ale ako?



Dostálove dni 2018



1934 ... 1960 ... 2000

Asmund Laerdal



1913 - 1981

- 1940: Malé rybárske mestečko Stavanger
- A. Laerdal má tlačiareň, vydáva pohľadnice a knihy pre deti
- Cez vojnu (okupácia) vyrába drevené hračky
- Po vojne ide do USA, zaujíma sa u umelé hmoty
- Doma experimentuje
- Začne vyrábať plastické hračky
 - bábiky
 - autíčka



Asmund Laerdal



1913 - 1981

- 1940: Malé rybárske mestečko Stavanger

tlačiareň, vydáva pohľadnice a knihy

upácia) vyrába drevené hračky

lo USA, zaujíma sa u umelé hmoty

mentuje

í plastické hračky





With Ann's extra-wide eyes for detail, the Annie doll has been equipped with rollers and Lok soap, encouraging the small owner to take extra good care of Annie's red hair.



Tomte





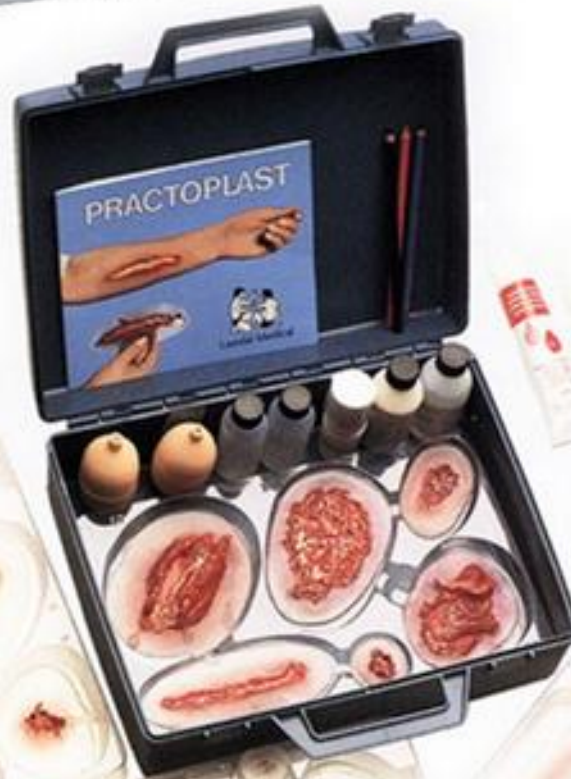
6/2015 Gammelt leketøy
 Førstedagsbrev - First Day Cover



NORGE
14.00



 **Røde Kors**



NORGE
17.00



6/2015 Gammelt leketøy
Førstedagsbrev - First

EUROPA

Kto zhotoví manekína?



- A. Laerdal – Civilná obrana – Nórsky červený kríž – B. Lind
- Vedel by A. Laerdal vyrobiť väčšiu bábiku na nácvik dýchania?
- A. Laerdal je nadšený
 - v roku 1955 zachránil svojho dvojročného syna Tore pri topení
 - vytiahol ho za päty z bazéna a vytriasal z neho vodu.
- A. Laerdal a B. Lind spolupracujú na vzniku modelu





Ako na manekína



- A. Laerdal + B. Lind
 - bezvedomá „osoba“
 - uzáver/otvorenie dýchacích ciest
 - možnosť vdychu/výdychu, nadvihnutie hrudníka
 - jednoduchý, prenosný
 - prijateľný na „bozkávanie“
- Kontakt ústa na ústa sa považoval za vulgárny
 - možnosť získania infekcie
- Aká tvár?

Ako na manekína



- A. Laerdal + B. Lind
 - bezvedomá „osoba“
 - uzáver/otvorenie dýchacích ci
 - možnosť vdychu/výdychu, na
 - jednoduchý, prenosný
 - prijateľný na „bozkávanie“
- Kontakt ústa na ústa sa považoval za vulgárny
 - možnosť získania infekcie
- Aká tvár?

Ako na tvár



The girl from River Seine



Paríž 1880´

Neznáme mŕtvoly sú vystavované na identifikáciu



Paríž 1880´

- Neznáme mŕtvoly sú vystavované na identifikáciu
- V Seine utopená mladá žena so zaujímavou pokojnou tvárou
- Odoberú jej posmrtnú masku
- Tvár sa rozšíri do salónov, domácností ... ako módna ikona
- „L'inconnue de la Seine“
- Tajomný úsmev Mony Lízy, múza z Paríža
- Inšpiruje umelcov
 - Rilke, Nabokov, Aragon ...





L'inconnue de la Seine



- Vyžarovala príjemný, nehroziaci výraz, akoby spala a snívala, každú chvíľu sa mala zobudiť
- Laerdal dal figuríne jej tvár
- Figurínu nazval Rescusi Anne
- Neznáma od Seiny dostala meno
- Tvár smrti sa mala stať tvárou záchrany života



Je rok 1960

- Po dvoch rokoch je figurína hotová
- Má príjemnú, pokojnú tvár, zavreté viečka, akoby ich išla práve otvoriť
- Prirodzené medové vlasy,
- Oblečenie vo farbe modrej oblohy
- Spíňa požadované kritériá na nácvik dýchania



Je rok 1960



otová
ravrete



olohy
nácvik dýchania

- Treba vyraziť za P. Safarom a spol. do USA

Anička v USA



1960: First time in the US

(Photo Archer S. Gordon)



- December 1960, NY
- A. Laerdal ukazuje Aničku
 - pracovníkom Červeného kríža a Mini
 - P. Safarovi, J. Elamovi a A. Gordonovi
- Všetci sú nadšení, že konečne majú svoj nácvik ich novej metódy. A. Gordon: „témor dokonalá“
- Archer Gordon sa ujíma Laerdala, so šéfom Americko-nórskej obchodnej komory H.H.Dahlom
- Dohodli fotenie figuríny, dovoz ďalších vzoriek s cieľom použitia na nácvik dýchania pre masy.
- Naplánovali aj konferenciu o KPR budúci rok v Nórsku.

Medzitým v Nórsku



- B. Lind presvedčil Nórsku národnú banku, aby zakúpila 650 figurín pre základné školy
- Nadviazal na povinný tréning v školách v prvej pomoci
- Pripravil program, školiteľov
- Hodnotil tréning a výsledky
- Dôležité bolo ukázať, že nórske obyvateľstvo metódu akceptovalo

HEART-LUNG RESUSCITATION

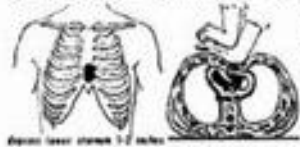
I FIRST AID: OXYGENATE THE BRAIN IMMEDIATELY

Airway - TILT HEAD BACK

Breathe - INFLATE LUNGS 2-5 TIMES,
MAINTAIN HEAD TILT
MOUTH-TO-MOUTH, MOUTH-TO-NOSE,
MOUTH-TO-NOSE, MOUTH-TO-NOSE

CHEK PULSE
• IF PRESENT - CONTINUE LUNG INFLATIONS
• IF ABSENT

Circulate - COMPRESS HEART ONCE A SECOND.
ALTERNATE 2-3 LUNG INFLATIONS WITH
15 STERNAL COMPRESSIONS UNTIL
SPONTANEOUS PULSE RETURNS.



for physicians only

II START SPONTANEOUS CIRCULATION

Drugs - EPINEPHRINE: 1.0mg (1.0 CC OF 1:1000) I.V. OR 0.5mg INTRACARDIAC.
REPEAT LARGER DOSE IF NECESSARY

SODIUM BICARBONATE: APPROXIMATELY 3.75 G./50 CC (1/2 DOSE IN CHILDREN) I.V.
REPEAT EVERY 5 MINUTES IF NECESSARY

E. K. G. - • FIBRILLATION: EXTERNAL ELECTRIC DEFIBRILLATION: REPEAT SHOCK EVERY 1-3 MINUTES UNTIL FIBRILLATION REVERSED
• IF ASYSTOLE OR WEAK BEATS: EPINEPHRINE OR CALCIUM I.V.



Fluids - I.V. PLASMA, DEXTRAN, SALINE

Do not interrupt cardiac compressions and ventilation.
Tracheal intubation only when necessary.
AFTER RETURN OF SPONTANEOUS CIRCULATION USE VASOPRESSORS AS NEEDED,
e.g. NOREPINEPHRINE (Levophed) I.V. DRIP

III SUPPORT RECOVERY

(physician-specialist)

Gauge EVALUATE AND TREAT CAUSE OF ARREST

Hypothermia START WITHIN 30 MINUTES IF NO SIGN OF CNS RECOVERY

Intensive Care SUPPORT VENTILATION: TRACHEOTOMY, PROLONGED CONTROLLED VENTILATION, GASTRIC TUBE AS NECESSARY

SUPPORT CIRCULATION
CONTROL CONVULSIONS
MONITOR

Figure 1. The A, B, C of emergency resuscitation. These instructions have been arranged for the front and back of a billfold card or for a poster which may be obtained from the Pennsylvania Heart Association or the Pennsylvania Department of Health, Harrisburg.

Safar P, Brown TC, Holtey WJ, Wilder RJ.
JAMA 1961;176:574-6.



Peter Safar
(1924 - 2003)

First International Symposium on Resuscitation

Stavanger, august 1961 (Laerdal, Safar, Lind)



P. Safar, J. Elam, A. Gordon, H. Ruben, R. Frey. B. Lind ...

First International Symposium on Resuscitation

- B. Lind: úspešne nasadenie figuríny v tréningu školákov
- Odporúčania sympózia:
 - výcvik celej populácie v dýchaní z úst do úst
 - povinný tréning školákov
 - stláčanie hrudníka iba u profesionálov

- Publikácie:

Lind B. Teaching mouth to mouth resuscitation in primary schools.
Acta Anaesthesiol Scand 1963;9:63.

Lind B, Stovner J. Mouth to mouth resuscitation in Norway.
J Am Med Assoc 1963;185:933.



American Heart Association - písomné materiály

- Anička – preniká do tréningu zdravotníkov i laikov

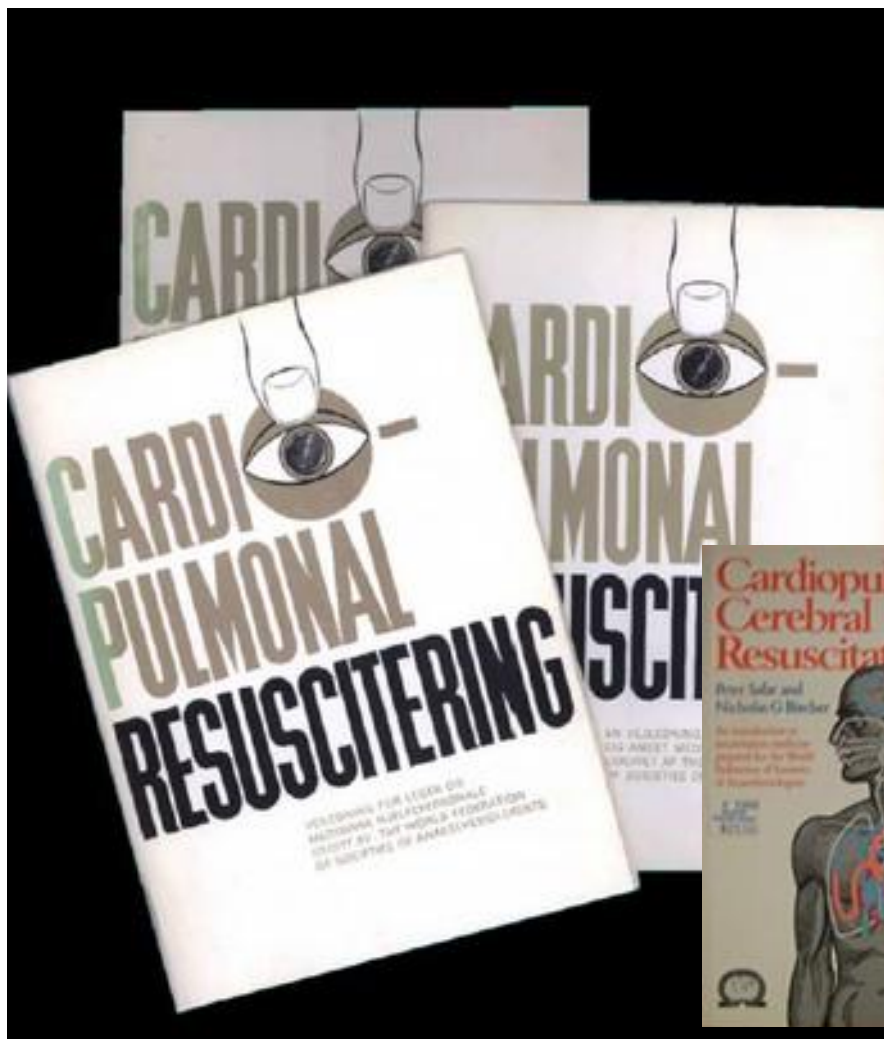
Ďalší vývoj



- 1966, Washington: First Conference on Cardiopulmonary Resuscitation of the National Academy of Sciences - National Research Council.
- Publikované odporúčania pre všetky aspekty KPR - všetci profesionáli majú byť trénovaní v KPR
- 1967, Stavanger: Second International Symposium on Resuscitation
- Odporúčanie: dýchanie z úst do úst ako techniku pre každého

WFSA 1967 – príručka KPR

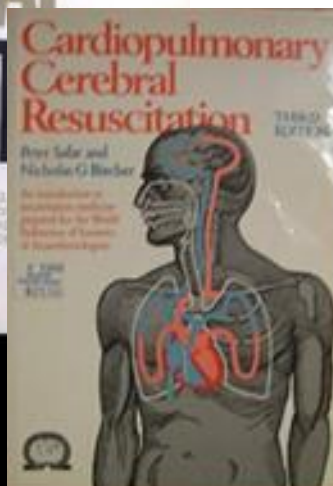
P. Safar, A. Laerdal



300 000 výtlačkov

16 jazykov

Ďalšie vydania: 1981, 1987



B. Lind a P. Safar

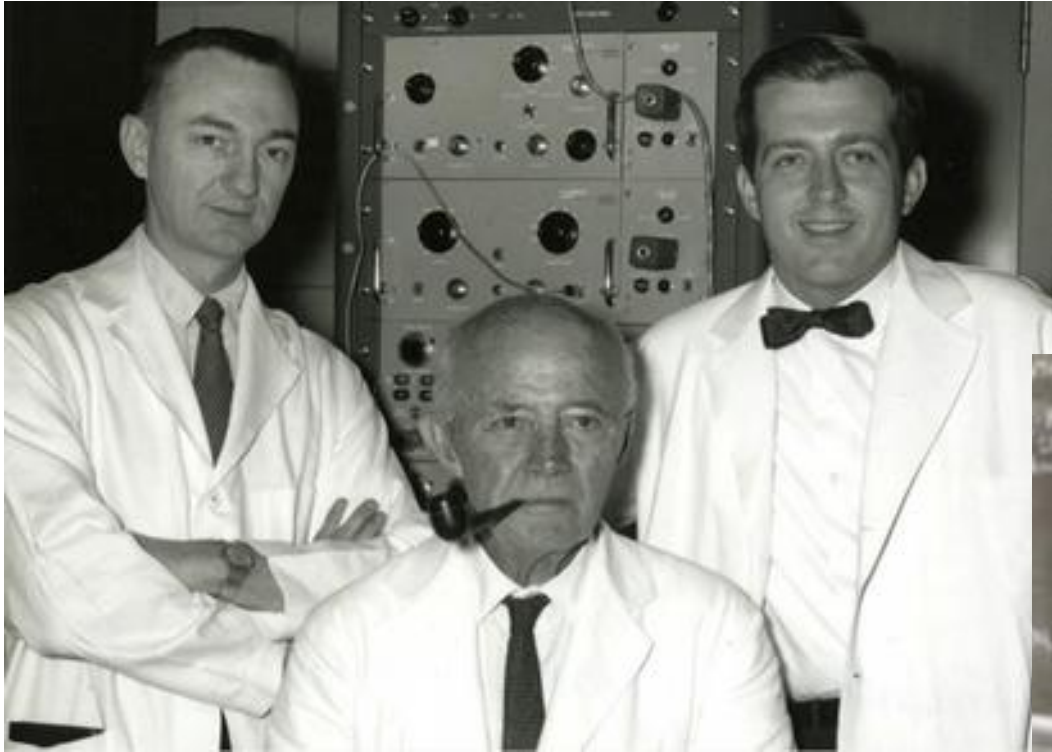


Moderná resuscitácia - začiatky



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4. **Kouwenhoven WB, Jude JR, Knickerbocker GG (1960)**
Closed-chest cardiac massage. JAMA 173:1064-1067

Jude JR; Kouwenhoven WB; Knickerbocker GG



1958. Jude, Kouwenhoven, Knickerbocker

Stláčanie hrudníka



- Safar navrhol Laerdalovi, aby do hrudníka vložil pružinu, aby bolo možné trénovať aj stláčania hrudníka.
- 1969: figurína pre kompletnú KPR
- Laerdal pridal aj srdcový vak, aby bolo možné na „cieve“ na krku kontrolovať účinnosť stláčania a cirkulácie.



Wolf Creek Conference 1975

P.Zoll

A.Laerdal

P.Safar

J.Elam

J.Jude

Knickerbocker

1980



Laerdal Foundation

helping save lives

Utstein 2015



CPR guidelines

- Standards for CPR and ECC JAMA 1974
- Standards and guidelines... JAMA 1980
- Standards and guidelines... JAMA 1986
- Guidelines... JAMA 1992
- International guidelines Resuscitation 2000
- ERC Guidelines for Resuscitation 2005, 2010, 2015



SLOVENSKÁ
RESUSCITAČNÁ
RADA



© 2013

Tvár sa zmenila....



2017

#RESTARTAHEART
YOUR HANDS CAN SAVE LIVES!



EUROPEAN
RESTART A HEART

— DAY —

2.162.792

people learned CPR so far in 2013 and can now save a life!

I would like to learn CPR too!

Viedeň 2012



16 october 2013 = European resta

Let's save more than 100,000 lives!

The very first 'European Restart a Heart Day' - to teach members of the public how to help restart the heart of someone who has suffered a cardiac arrest - will be held this autumn, organised by the European Resuscitation Council (ERC). The initiative, which takes place on October 16, is aimed particularly at Europe's younger people: aims to improve the very low numbers of people surviving

To put these numbers in context, the estimate of 350,000 OHCA deaths is equivalent to 1,000 deaths per day every day of the year across Europe: **2 full jumbo jets crashing with no survivors each and every day.** By comparison, 28,000 people die across Europe each year in road accidents, but despite this the figure invested in road and car safety each year is much higher than that invested in CPR.

KIDS save LIVES

100 PRO RESUSCITATION

ACT FACTS FAQ

PROJECTS STORIES

DOWNLOAD KIDS SAVE LIVES STATEMENT

16.10.2013

YOU ARE HERE: HOME | PROJECTS | MAKING A WORLD RECORD — GERMANY IS A LIFESAVER



MUNSTER MAKING A WORLD RECORD — GERMANY IS A LIFESAVER

With the watchword "Check – Call – Compress," 12,000 school students in Münster have notched up a new world record for simultaneous resuscitation training. In the space of half an hour, they learned the right thing to do in an emergency. The event was supported by Germany's Minister of Education and Research.

1. CHECK

Does the patient react? Are they breathing / are they breathing normally?

2. COMPRESS

Push down firmly and quickly on the middle of the chest: at least 100 times per minute. Do not stop until help arrives.

PUBLISH YOUR PROJECT

Student-teacher projects

Anyone who has carried out a project can share their experience here. Just e-mail a short description with two or three pictures if possible to PROJECT@KIDS-SAVE-LIVES.EU

We'll always give you feedback! Your project will appear here on this web page under the **PROJECTS** heading.

PUBLISH YOUR STORY

Resuscitation stories on our website

Resuscitation after sudden cardiac arrest: courageous helpers take a life saved. Anyone who has a story to tell that will encourage other people can share it here. Just e-mail your resuscitation story, along with a picture if possible, to STORIES@KIDS-SAVE-LIVES.EU

We'll always give you feedback! And the resuscitation story will appear here on this web page under the **STORIES** heading.



12 000 študentov



Prof. V. Aken
Münster, Nemecko



Anička do vesmíru

HS metóda



SM metóda

Alexander Gerst übt Reanimation auf der ISS



▲ Post von Alexander Gerst auf
Twitter und Facebook

Astronaut Alexander Gerst trainiert an einem Phantom die Reanimation an Board der ISS und ruft gleichzeitig dazu auf, dass alle Menschen dies lernen sollen. Das Onboard-Training bietet Crewmitgliedern die Möglichkeit, Sicherheitsverfahren und Kommunikationsmethoden zu üben, die für die Bewältigung eines medizinischen Notfalls erforderlich sind. Die Kenntnisse in Anästhesiologie und Intensivmedizin der Uniklinik Köln unter der Leitung von Professor Böttiger bildet die Grundlage für die Astronauten vor ihrem Aufbruch auf der ISS in Notfallmedizin aus. So erhielt auch Alexander Gerst in Köln sein Training und hat eine wichtige GRC-Botschaft von der ISS an die Erde gesendet. Herzdruckmassage sollte jeder können.







Lekesøy forteller
Et med oss i fabrikkene og butikkene som laget og selgte leketsøy.



Good luck
MMC team

Záver

- Vizionári, zmenili svet
- Kvalita, vzdelávanie výskum, inovácie, zanietenosť, vytrvalosť, potreby pacientov, praktické veci .
- Implementácia KPR
- The most kissed face of all time
- 300 000 000 precvičených
- Inovácie....
- Magický príbeh ostáva



Asmund S. Laerdal's Dream

by Alexandra G



Ďakujem za pozornosť

stefan.trenkler@upjs.sk

