

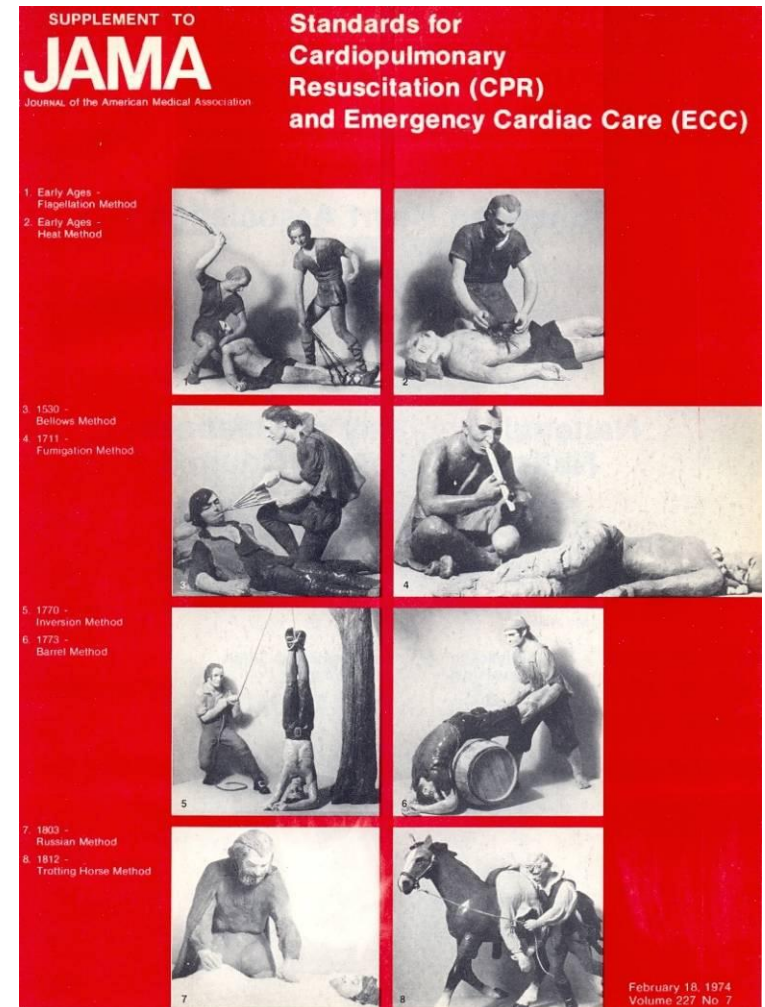


- science – Evidence based Emergency Medicine
- Development of the ERC guidelines
- impact
- training
- implementation – Standard Operations Procedures
- outcome – quality of life

Burkhard Dirks PhD, MD
Section of Emergency medicine University Clinic Ulm

CPR Guidelines / Leitlinien

- **AHA Standards and Guidelines CPR and ECC 1974, 1980, 1986, 1992.**
- **Gründung des ERC 1990**



American Heart Association®



Fighting Heart Disease and Stroke



European
Resuscitation
Council



InterAmerican
Heart Foundation



HEART
AND STROKE
FOUNDATION
OF CANADA



Australian
Resuscitation
Council

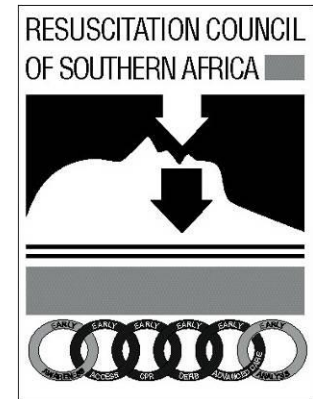


NEW ZEALAND
Resuscitation Council

Whakahauroa, Aotearoa



Resuscitation
Council of
Asia

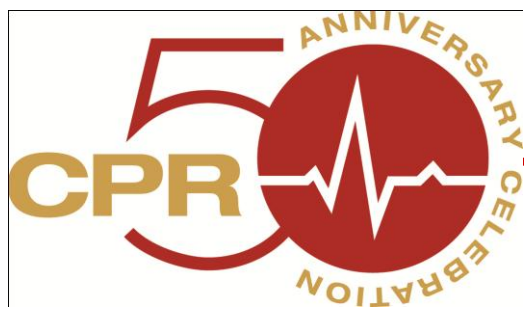


RESUSCITATION COUNCIL
OF SOUTHERN AFRICA

Deutscher
Rat für
Wiederbelebung



German
Resuscitation
Council



Years CPR

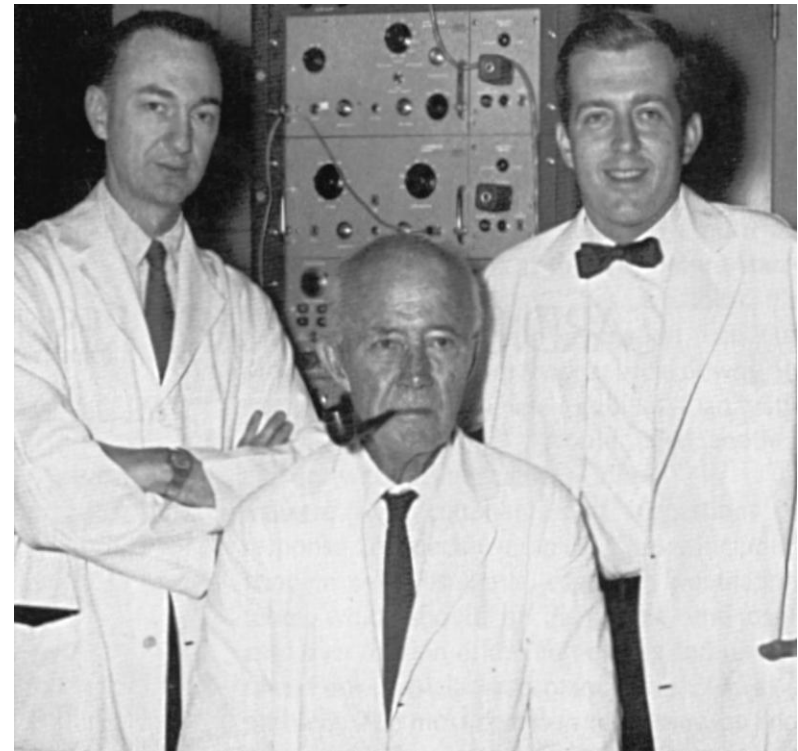
Ventilation

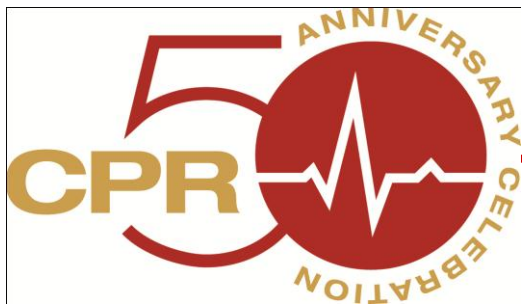
Cardiac Compression

Defibrillation

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

Safar P, Excarraga LA, Elam JO
A comparison of the mouth-to-mouth and mouth
to-airway methods of artificial respiration with the
chest-pressure arm-lift methods.





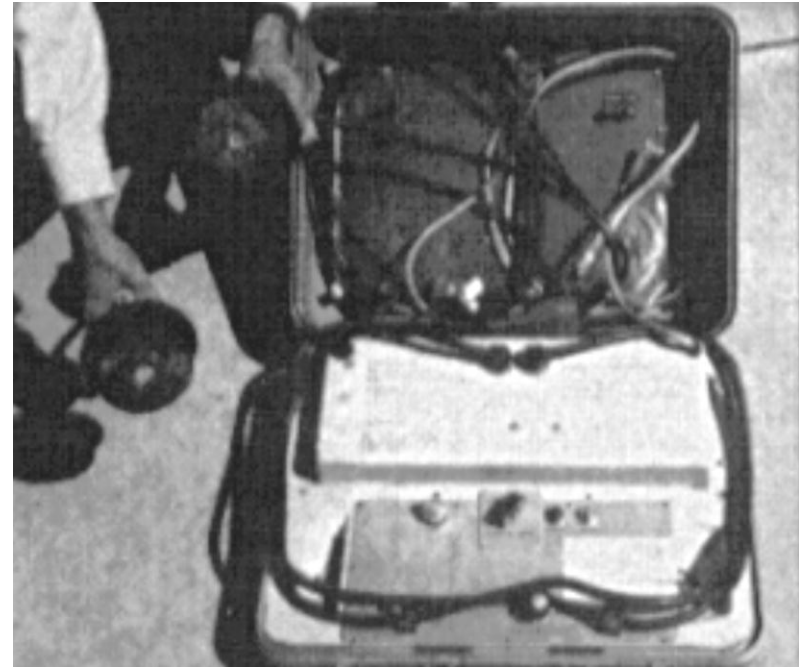
Jahre CPR

ventilation
cardiac compression
Defibrillation

- **Biphasic waveform**
- **166 Ws (Joule)**
- **14 ms duration of shock**
- **Lithium batteries**

Hooker DR, Kouwenhoven WB, Langworthy OR
The effect of alternating current in the heart.
Am J Physiol (1933) 103: 444

Kouwenhoven WB.
The development of a portable defibrillator.
AIEE (1962) 62:283



International Consensus on Science

International Guidelines 2000 Conference on CPR and ECC

Syllabus

February 6-8, 2000 • Wyndham Anatole Hotel • Dallas, Texas

INTERNATIONAL LIAISON COMMITTEE ON RESUSCITATION

INTERNATIONAL CONFERENCE ON CPR & ECC SCIENCE TREATMENT RECOMMENDATIONS

INTERNATIONAL LIAISON COMMITTEE ON RESUSCITATION

2010 INTERNATIONAL CONSENSUS on CPR & ECC SCIENCE

with Treatment Recommendations

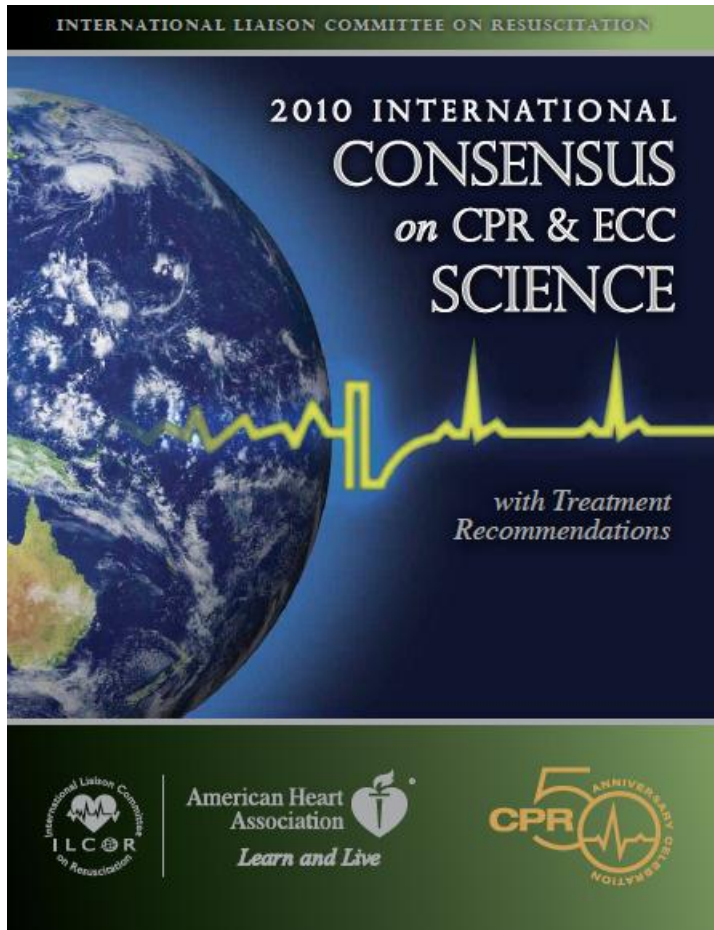
International Liaison Committee on Resuscitation (ILCOR)

American Heart Association
Learn and Live

CPR 5th ANNIVERSARY CELEBRATION



International Consensus Conference on ECC and CPR Science with Treatment Recommendations, Dallas 1-4th Feb 2010




- 313 delegates from 30 countries,
- 46% non-US
- Treatment recommendations based on science (CoSTR)

Deutscher
Rat für
Wiederbelebung



German
Resuscitation
Council

Supporting evidence table

Good	 Arrich 2009 CD [#] Hypothermia After Cardiac Arrest Study Group, 2002 CD* Tiainen, 2003 E*		Bernard, 1997 C, D	Hovdenes, 2007 CD Wolff, 2009 DE Nielsen, 2009 CD	
Fair	Holzer, 2005 CD [#]	Bernard, 2002 D Holzer, 2006 CD	Knafelj, 2007 CD Busch, 2006 C Belliard, 2007 CD Oddo, 2006 D Sunde, 2007 CD Storm, 2008 CDE Don, 2009 CD Bro-Jeppesen, 2009 D	Oksanen, 2007 C Sagalyn, 2009 #	
Poor	Hachimi-Idrissi, 2001 E Cheung, 2006 CD [#]	Arrich, 2007 CD	Castrejon, 2009 D	Williams, 1958 D	
	1	2	3	4	5
Level of evidence					

A = Return of spontaneous circulation

B = Survival of event

* = overlapping patients

C = Survival to hospital discharge

D = Intact neurological survival

E = Other endpoint

= meta-analysis





Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



Part 1: Executive summary

2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations[☆]

Jerry P. Nolan (Co-chair)^{*,1}, Mary Fran Hazinski (Co-chair)¹, John E. Billi, Bernd W. Boettiger, Leo Bossaert, Allan R. de Caen, Charles D. Deakin, Saul Drajer, Brian Eigel, Robert W. Hickey, Ian Jacobs, Monica E. Kleinman, Walter Kloeck, Rudolph W. Koster, Swee Han Lim, Mary E. Mancini, William H. Montgomery, Peter T. Morley, Laurie J. Morrison, Vinay M. Nadkarni, Robert E. O'Connor, Kazuo Okada, Jeffrey M. Perlman, Michael R. Sayre, Michael Shuster, Jasmeet Soar, Kjetil Sunde, Andrew H. Travers, Jonathan Wyllie, David Zideman

Toward International Consensus on Science

The International Liaison Committee on Resuscitation (ILCOR) was founded on November 22, 1992, and currently includes representatives from the American Heart Association (AHA), the European Resuscitation Council (ERC), the Heart and Stroke Foundation of Canada (HSFC), the Australian and New Zealand Committee on Resuscitation (ANZCOR), Resuscitation Council of Southern Africa (RCSA), the InterAmerican Heart Foundation (IAHF), and the Resuscitation Council of Asia (RCA). Its mission is to identify and review international science and knowledge relevant to cardiopulmonary resuscitation (CPR) and emergency resuscitation

ence in 5-year cycles. The conclusions and recommendations of the 2005 International Consensus Conference on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care With Treatment Recommendations were published at the end of 2005.^{2,3} The most recent International Consensus Conference was held in Dallas in February 2010, and this publication contains the consensus science statements and treatment recommendations developed with input from the invited participants.

The goal of every resuscitation organisation and resuscitation expert is to prevent premature cardiovascular death. When cardiac arrest or life-threatening emergencies occur, prompt and skillful response can make the difference between life and death

Universal Cardiac Arrest Algorithm

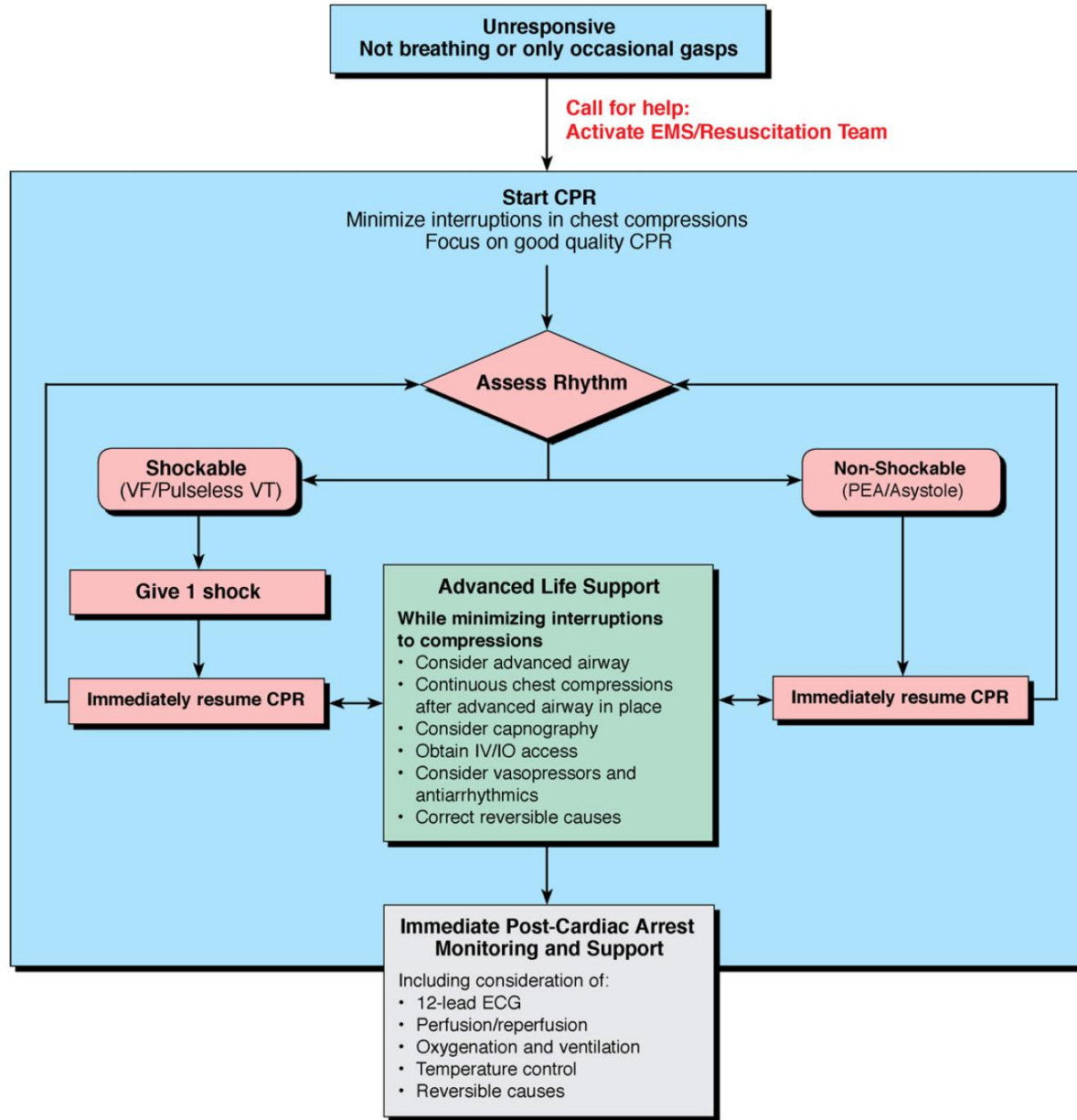
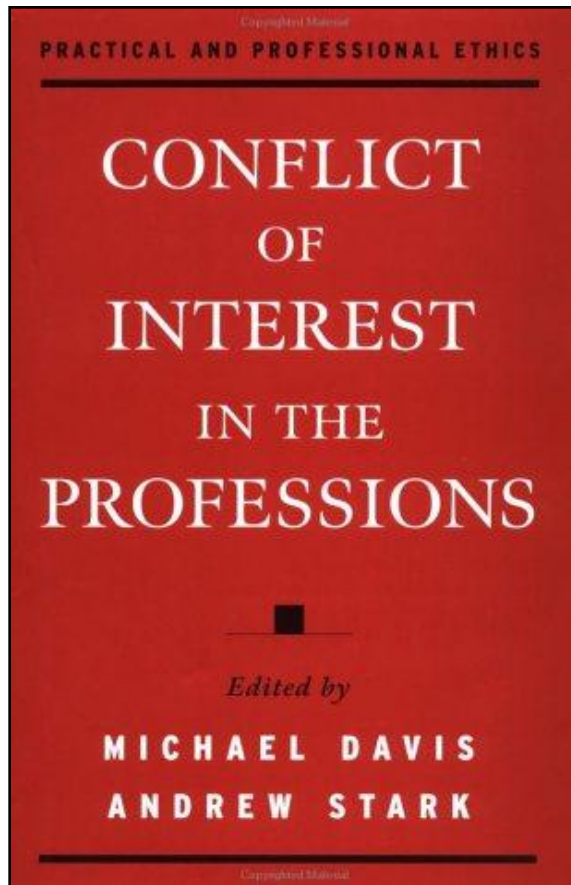


Fig. 1. The Universal Algorithm.

Conflict of Interest - COI



- Intellectual and/or financial
- Heavily influences interpretation of data
- All C2010 participants completed conflict of interest statements on line

Shuster M. Resuscitation 2010;81: in press

search search



CoSTR 2010 documents

Questions 2010

Worksheets 2010

Timeline

Members only

Questions 2010

print

Search for keyword

Task force	Pico title
ALS-SC-078A	For avalanche victims in out of hospital cardiac arrest (P), what factors when present (I), compared with when absent (C), are associated with/predict an increased survival to hospital discharge (O)?















































































map search tasks X

C2010 Dallas

- 2005 CoSTR
- ACS Breakout Discussions
- All C2010 Final worksheets
 - ACS Worksheets
 - ALS Worksheets
 - BLS Worksheets
 - C2010 Final Master worksheets list 15Mar10.xls
 - EIT Worksheets
 - FA Worksheets
 - NRP Worksheets
 - PEDS Worksheets
- ALS Breakout Discussions
- Billi COI 2010 Plenary intro 2Feb 0800.ppt
- BLS Breakout Discussions
- Building Consensus Billi Feb 3 2010.ppt
- C2010 Final Program.pdf
- C2010 Program-Monday Task Force Working Sessions.pdf
- C2010-Agenda at a Glance.pdf
- Conflict of Interest
- EIT Breakout Discussions
- Neo Breakout Discussions
- Peds Breakout Discussions
- Plenary Sessions
- Registration Packet
- Recycle Bin

ALS Worksheets

a folder created by  Jeanette Allison on 25 Jan 10

create				
Name	Modified	Owner	Size	
 ALS BLS-CPR&A-079A 18-Aug-2009 Berkow.doc 	18 Jan 10 14:02	Jeanette Allison	178	k (v1)
 ALS BLS-CPR&A-079B 17-Dec-2009 Shuster.doc 	18 Jan 10 14:02	Jeanette Allison	304	k (v1)
 ALS BLS-CPR&A-080B 01-Oct-2009 Reid.doc 	18 Jan 10 14:03	Jeanette Allison	124	k (v1)
 ALS BLS-CPR&A-081A 08-Dec-2009 Middleton.doc 	26 Jan 10 15:50	Jeanette Allison	179	k (v1)
 ALS BLS-CPR&A-081B 23-Dec-2009 Ali.doc 	18 Jan 10 14:04	Jeanette Allison	119	k (v1)
 ALS BLS-CPR&A-082A 04-Aug-2009 Holzer.doc 	18 Jan 10 14:04	Jeanette Allison	103	k (v1)
 ALS BLS-CPR&A-083A 23-Dec-2009 Ristagno.doc 	18 Jan 10 14:05	Jeanette Allison	84	k (v1)
 ALS BLS-CPR&A-083B 01-Feb-2010 McKendry.doc 	2 Feb 10 13:23	Jeanette Allison	101	k (v1)
 ALS BLS-CPR&A-085A 01-Feb-2010 Morely.doc 	2 Feb 10 00:46	Nina Tran	183	k (v2)
 ALS BLS-CPR&A-085B 21-Jan-2010 lwami.doc 	26 Jan 10 15:55	Jeanette Allison	103	k (v1)
 ALS BLS-CPR&A-086A 31-Jan-2010 Morley.doc 	2 Feb 10 00:47	Nina Tran	183	k (v2)
 ALS BLS-CPR&A-086B 2-Feb-2010 Beiser.doc 	3 Feb 10 15:03	Jeanette Allison	153	k (v1)
 ALS BLS-CPR&A-088A 05-Jan-2010 Middleton.doc 	26 Jan 10 15:56	Jeanette Allison	317	k (v1)
 ALS BLS-CPR&A-088B 12-Oct-2009 Berkow.doc 	18 Jan 10 14:11	Jeanette Allison	121	k (v1)
 ALSBLS-CPR&A-084A 18-Feb-2010 Carli.doc 	22 Feb 10 16:56	Jeanette Allison	321	k (v1)
 ALS-CPR&A-001A 20-Jul-2009 Bigham.doc 	18 Jan 10 14:13	Jeanette Allison	125	k (v1)
 ALS-CPR&A-001B 17-Sep-2009 Leary.doc 	18 Jan 10 14:14	Jeanette Allison	149	k (v1)
 ALS-CPR&A-002A 28-Jan-2010 Sakamoto.doc 	2 Feb 10 01:13	Nina Tran	137	k (v1)
 ALS-CPR&A-002B 21-Jan-2010 Czekajlo.doc 	26 Jan 10 15:08	Jeanette Allison	277	k (v1)
 ALS-CPR&A-003B 08-Feb-2010 Hanson.doc 	15 Feb 10 14:25	Jeanette Allison	93	k (v1)
 ALS-CPR&A-004A 15-Jan-2010 Rubertsson.doc 	22 Jan 10 18:23	Jeanette Allison	233	k (v1)
 ALS-CPR&A-004B 29-Jan-2010 Link.doc 	31 Jan 10 21:26	Jeanette Allison	128	k (v1)
 ALS-CPR&A-005C 29-Jan-2010 Crewdson.doc 	31 Jan 10 21:28	Jeanette Allison	156	k (v1)
 ALS-CPR&A-006A 24-Sep-2009 Garcia-Vega.doc 	18 Jan 10 14:14	Jeanette Allison	121	k (v1)
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 ALS-CPR&A-009A 21-Oct-2009 Dioszeghy.doc 	18 Jan 10 14:15	Jeanette Allison	113	k (v1)
 ALS-CPR&A-009B 08-Feb-2010 Fenici.doc 	15 Feb 10 16:46	Jeanette Allison	168	k (v1)
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 ALS-D&P-015B 28-Aug-2009 Angelos.doc 	18 Jan 10 14:22	Jeanette Allison	199	k (v1)
 ALS-D-016A 01-Oct-2009 Soar.doc 	18 Jan 10 14:17	Jeanette Allison	164	k (v1)
 ALS-D-016B 28-Jan-2010 Jennings.doc 	3 Feb 10 15:05	Jeanette Allison	51	k (v1)
 ALS-D-017 05-Feb-2010 Passman.doc 	9 Feb 10 03:19	Jeanette Allison	357	k (v1)

WORKSHEET for Evidence-Based Review of Science for Emergency Cardiac Care**Worksheet author(s)**

Hermann Brugger, MD
Jeff Boyd, MBBS, ABEM, CCFP-EM

Date Submitted: 2009/08/31
Worksheet identifier: ALS-SC-078A & B
ALS Task Force review: 2009/01/05

Clinical questions.

"For avalanche victims in cardiac arrest (P), does a shorter time of burial (I), compared to longer time of burial (C), predict survival to hospital discharge (O)?"

"For avalanche victims in cardiac arrest that have been buried longer than 35 minutes (P), does the presence of a patent airway* (I), compared to absence of a patent airway (C), predict survival to hospital discharge (O)?"

(*Patent airway - means an airway not obstructed by avalanche debris or by other means.)

"For avalanche victims in cardiac arrest who are found with a core temperature of less than 32 degrees C (P), does the presence of a patent airway (I), compared to absence of a patent airway (C), predict survival to hospital discharge (O)?"

"For avalanche victims in cardiac arrest (P), do lower levels of serum potassium (I), compared to higher levels of serum potassium (C), predict survival to hospital discharge (O)?"

Is this question addressing an intervention/therapy, prognosis or diagnosis? Prognosis.
State if this is a proposed new topic or revision of existing worksheet: New Topic.

Conflict of interest specific to this question

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet?

Commercial/industry: Nil.

Potential intellectual conflicts: Brugger has published studies on avalanche resuscitation examining time of burial and patent airway. He has not published studies focussing on core body temperature or serum potassium. Boyd has not published on prognostic factors.

At the outset Boyd worked independently on "time of burial" and "air pocket" and Brugger worked independently on "core temperature" and "serum potassium". The work has subsequently been combined and submitted as one worksheet as the 4 factors answer the primary PICO question.

Clinical Question

C2010 Worksheet: ALS-SC-078B

Summary of evidence

The Summary of evidence is best considered for “time of burial” and “patent airway” in combination, and then “core temperature” and “serum potassium” separately.

“For avalanche victims in cardiac arrest (P), does a shorter *time of burial* (I), compared to longer time of burial (C), predict survival to hospital discharge (O)?”

“For avalanche victims in cardiac arrest that have been buried longer than 35 minutes (P), does the presence of a *patent airway (I), compared to absence of a patent airway (C), predict survival to hospital discharge (O)?”**

****Patent airway* - means an airway not obstructed by avalanche debris or by other means, equivalent to air pocket.**



Supporting evidence table

Good			Brugger, 1992 BC* Brugger, 2001 BC* Burtscher, 1994 BC Buser, 1993 BC* Falk, 1994 BC* Hohlrieder, 2005 BE Locher, 1991 AC* Mair, 1994 AD	Kornberger, 1996 BC	Brugger, 2003 E Swiss, 1998 CD
Fair			Grosse, 2007 BCD Stalsberg, 1989 BCD	Swiss, 1972 CD Oberhammer, 2008 CD Radwin, 2002 BCD Sumann, 2002 E	Grissom, 2000 E
Poor					
	1 LOE P1 include prospective comparative studies	2 LOE P2 include algorithm performance studies	3 LOE P3 include retrospective comparative studies and meta-analyses	4 LOE P4 include retrospective descriptive studies	5 LOE P5 studies not directly related to the specific patient/population
Level of evidence					

A = Return of spontaneous circulation
 B = Survival of event
 * = overlapping patients

C = Survival to hospital discharge
 D = Intact neurological survival

E = Other endpoint
Italics = Animal studies



Neutral evidence table -

Good					
Fair					
Poor					
	1 LOE P1	2 LOE P2	3 LOE P3	4 LOE P4	5 LOE P5
Level of evidence					

Opposing evidence table

Good					
Fair					
Poor					
	1 LOE P1	2 LOE P2	3 LOE P3	4 LOE P4	5 LOE P5
Level of evidence					



CPR Gu

Notfall + Rettungsmedizin

Zeitschrift für präklinische und innerklinische Notfallmedizin

Organ der Deutschen Interdisziplinären Vereinigung für Intensiv- und Notfallmedizin (DIVI) | Organ des German Resuscitation Council (GRC) | Organ des Austrian Resuscitation Council (ARC)

ERC-Leitlinien 2010: Kardiopulmonale Reanimation

Autorisierte deutschsprachige Übersetzung

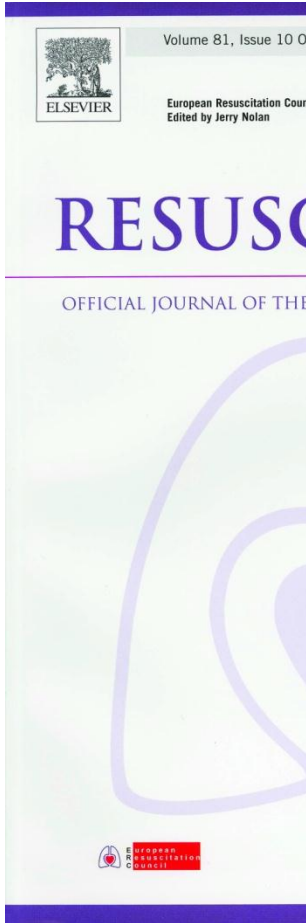
Indexed in Science Citation Index Expanded

Basismaßnahmen und erweiterte
Maßnahmen bei Erwachsenen und Kindern

Elektrotherapie und automatisierte
externe Defibrillation

Akutes Koronarsyndrom

Ethik und Entscheidung am Lebensende



ation 2010

Resus

Deutscher
Rat für
Wiederbelebung



www.NotfallundRettungsmedizin.de

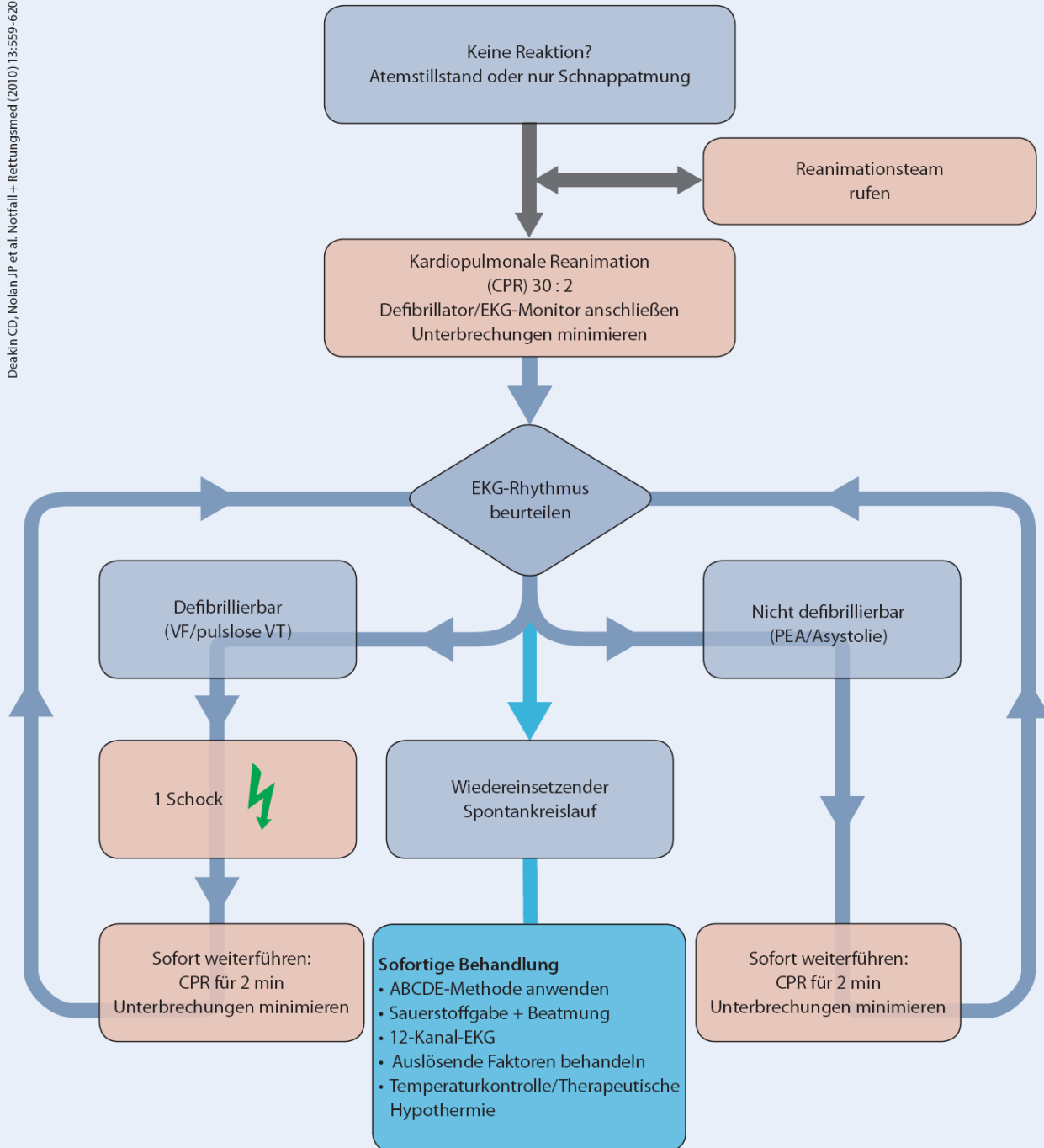
 Springer Medizin

- Section 1 Introduction and summary of main changes
- Section 2 Adult basic life support and use of automated external defibrillators
- Section 3 Electrical Therapies - Automated External Defibrillators
Defibrillation Cardioversion and Pacing
- Section 4 Adult Advanced Life Support
- Section 5 Initial Management of Acute Coronary Syndromes
- Section 6 Paediatric Life Support
- Section 7 Resuscitation of Babies at Birth
- Section 8 Cardiac arrest in special circumstances
- Section 9 Principles of education in resuscitation
- Section 10 The ethics of resuscitation and end-of-life decisions



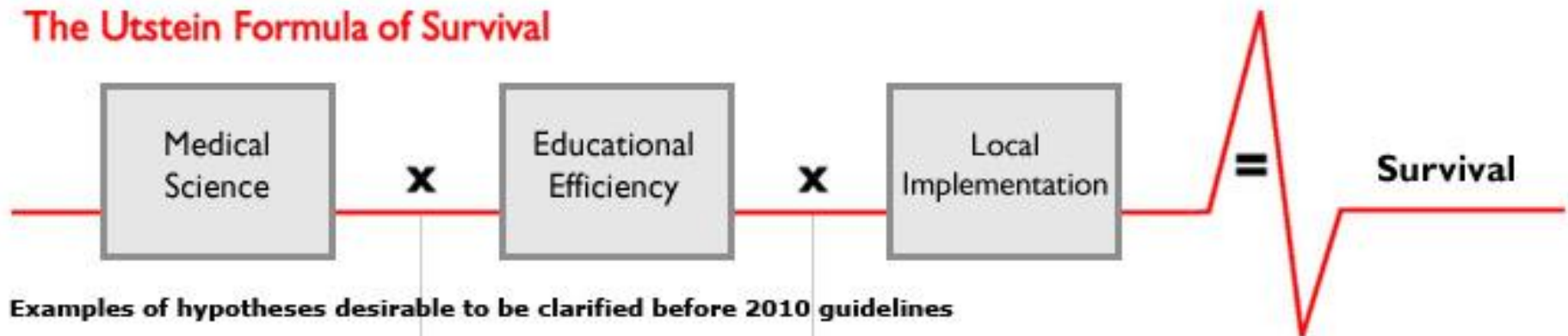


Advanced Life Support



The importance of implementation

The Utstein Formula of Survival



Examples of hypotheses desirable to be clarified before 2010 guidelines

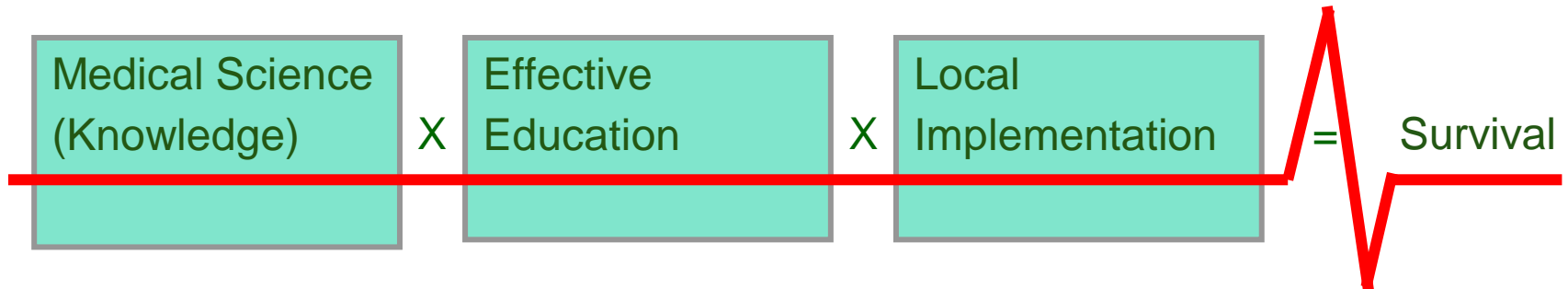
- | | | |
|--|--|--|
| <ul style="list-style-type: none"> - "Tailored" treatment - Impedance Threshold Device - Mechanical chest compressions - Immediate CPR performance feedback - Early hypothermia - ECG waveform analysis shock/no shock | <ul style="list-style-type: none"> - New strategies for increased public education - Value of e-learning | <ul style="list-style-type: none"> - Medical emergency teams - CPR process monitoring - Hypertonic IV fluid |
|--|--|--|

Examples of practical research areas relating to implementation of MDG 4 and 5 measures

ILCOR Guidelines

- | | |
|--|---|
| <ul style="list-style-type: none"> - Evidence based and culturally sensitive training material - Time-efficient course model | <p>Cascade dissemination model</p> <p>Low barriers and incentives to attract instructors/facilitators</p> <p>Intergration with other MDG 4 and 5 programs</p> <p>Reach into the communities</p> <ul style="list-style-type: none"> - plans to scale up the health care work force - Incentives for health care facilities (resuscitation kits?) - Incentives for mothers (baby clothing, napkins?) <p>Government financing of training and equipment</p> <p>Reporting/QA</p> |
|--|---|

Formula of survival



Chamberlain et al. Resuscitation 2003

utopian	100 %	x	100 %	x	100 %	=	100 %
best practice	70 %	x	70 %	x	70 %	=	35 %
sad but true	70 %	x	30 %	x	30 %	=	6 %



German national consensus on resuscitation

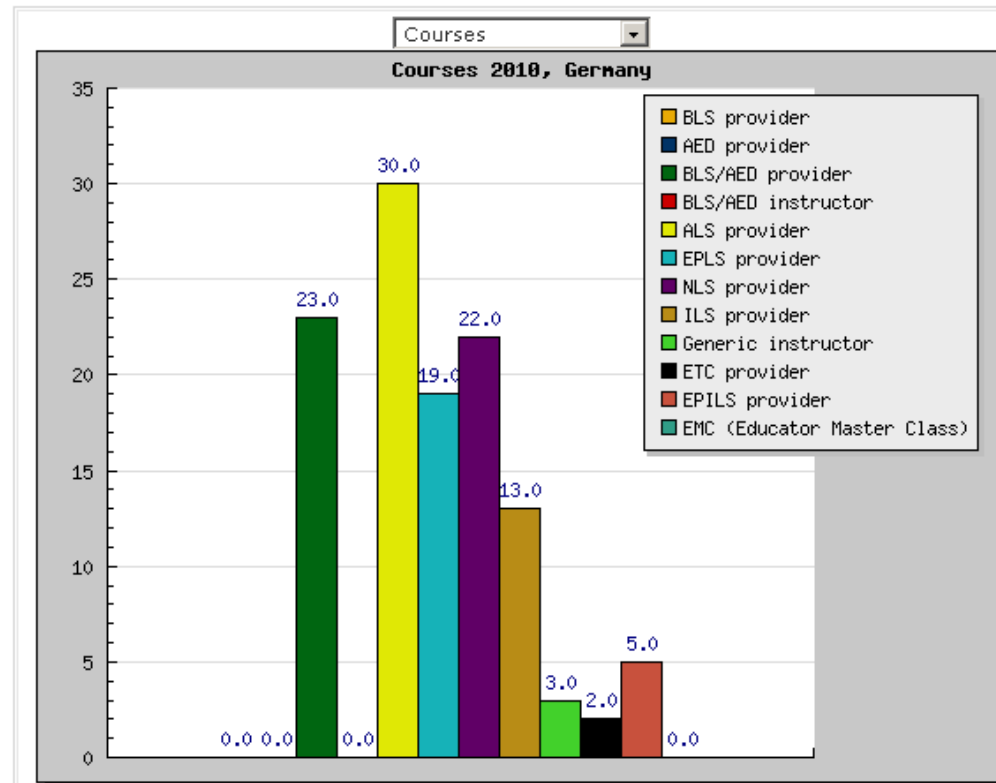
10.11.2010 Deutsche Beirat für Erste Hilfe und Wiederbelebung bei der Bundesärztekammer:

The guidelines of the European Resuscitation Council (ERC) 2010, edition 18.10.2010 constitute the basis of Resuscitation for Germany.



education

	Courses	Certificates		Instructors	Directors
		Passed	Failed		
BLS provider	0	0	0	22	4
AED provider	0	0	0	21	4
BLS/AED provider	23	221	0	21	4
BLS/AED instructor	0	0	0	2	1
ALS provider	30	526	0	232	22
EPLS provider	19	479	0	102	21
NLS provider	22	483	0	42	10
ILS provider	13	220	0	0	0
Generic instructor	3	59	0	62	12
ETC provider	2	48	0	16	2
EPILS provider	5	56	0	0	0
EMC (Educator Master Class)	0	0	0	0	0
TOTAL	117	2092	0	520	80
Total unique				342	46



SOP's and Quality management

Analyse präklinischer Myocard-Infarkt

Dezember 2010

Uniklinik Ulm
Klinik für Anästhesiologie/ Sektion Notfallmedizin

GKZ / Ort	Protokoll	Einsatzdatum	Uhrzeit	NACA > 4	O2	ven. Zug.	Monitor	TZ-AggH	Heparin	12K-EKG	Lyse	Analg.	Klinik Ranking	Tprähosp. (min)	Items OK	Kommentar
002 / Ulm-Böfingen		02.12.2010	15:11:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	22	OK	
		29.12.2010	22:40:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	26	OK	
		20.12.2010	10:40:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	46	OK	
008 / Ulm-Eselsberg		16.12.2010	06:58:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	34	OK	
		17.12.2010	20:39:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	33	OK	
		24.12.2010	23:14:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	48	OK	
		20.12.2010	13:23:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Ja	A	139	-	Zeitdauer bei CPR
013 / Ulm-Jungingen		17.12.2010	01:58:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	57	OK	
022 / Ulm-Stadtmitte		04.12.2010	15:33:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	38	OK	
		30.12.2010	11:40:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	23	OK	
		15.12.2010	17:58:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	38	OK	
		13.12.2010	13:27:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	21	OK	
		03.12.2010	16:05:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	36	OK	
		08.12.2010	17:55:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	41	OK	
023 / Ulm-Söflingen		25.12.2010	21:07:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	38	OK	
		28.12.2010	05:10:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	44	OK	
025 / Ulm-Weststadt		31.12.2010	20:44:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	36	OK	
		25.12.2010	23:17:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	38	OK	
026 / Ulm-Wiblingen		04.12.2010	14:22:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	29	OK	
		01.12.2010	09:51:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	32	OK	
		30.12.2010	14:37:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	35	OK	
026 / Ulm-Wiblingen		02.12.2010	15:41:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	32	OK	
		01.12.2010	04:08:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	40	OK	
		08.12.2010	22:54:00	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Ja	A	18	OK	

After all - to answer the question

- its a lot of work - ask yourself, if it's worth the effort
- What are the problems, you have to solve, possibly a review is sufficient
- What is the state of the literature, is it mainly grade 4 and 5 or is there grade 1 and 2, too
- Is ist mainly a problem of science or does education and implementation contribute essentially



Thanks

Questions?

