Deutscher Rat für Wiederbelebung

German Resuscitation Council

Recommended curriculum to teach and train resuscitation to school children in Germany

October 2012

This curriculum is a joint initiative of the following societies and organisations which are members of the „Deutsche Rat für Wiederbelebung – German Resuscitation Council":

ASB Arbeiter-Samariter-Bund Deutschland
BAND Bundesvereinigung der Arbeitsgemeinschaften der Notärzte Deutschlands
Die Johanniter Johanniter-Unfall-Hilfe
DGAI Deutsche Gesellschaft für Anästhesiologie und Intensivmedizin
DGIIN Deutsche Gesellschaft für internistische Intensivmedizin und Notfallmedizin
DGK Deutsche Gesellschaft für Kardiologie - Herz- und Kreislaufforschung
DGU Deutsche Gesellschaft für Unfallchirurgie
DLRG Deutsche Lebens-Rettungs-Gesellschaft
GNPI Gesellschaft für Neonatologie und pädiatrische Intensivmedizin
DRK Deutsches Rotes Kreuz
Malteser Malteser Hilfsdienst

'"Deutsche Rat für Wiederbelebung – German Resuscitation Council (GRC)" is the national body of the „European Resuscitation Council (ERC)", the scientific society for all issues grouped around resuscitation. Further informations may be obtained from http://www.grc-org.de.

ASB, Die Johanniter, DLRG, DRK und Malteser collaborate in the „Bundesarbeitsgemeinschaft Erste Hilfe (BAGEH)" the "national working group for first aid" – http://www.bageh.de.

Members of the working group „School Projekts" of the GRC

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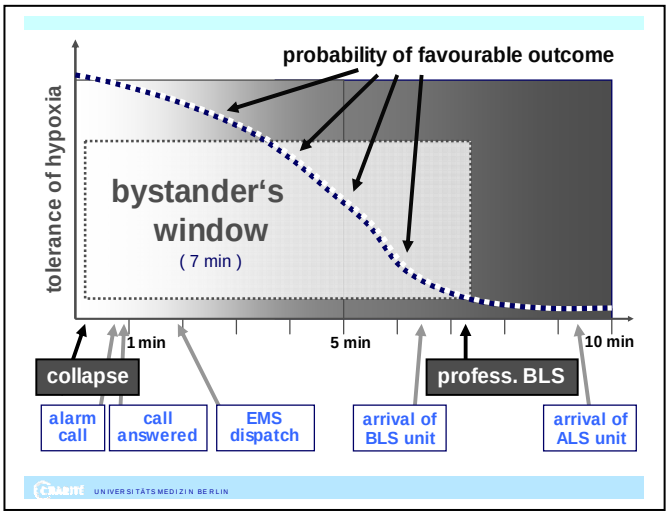
Background

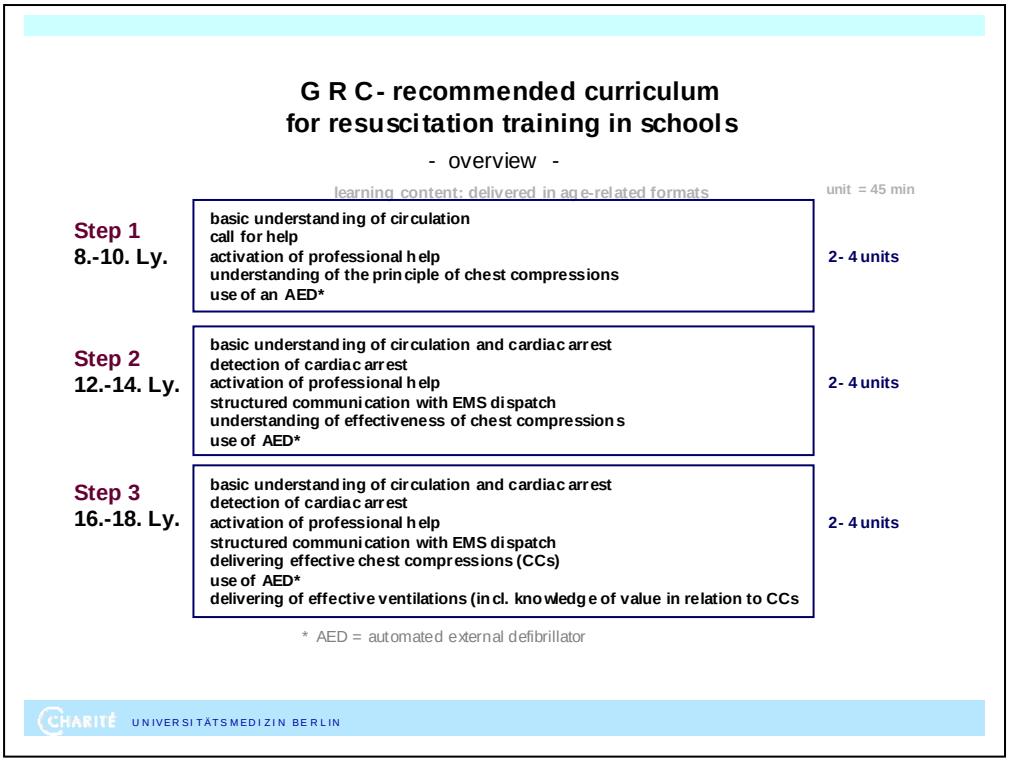
After a sudden cardiac arrest outside of a hospital chances of survival are low. Since brain tissue tolerates no more than 4 to 5 minutes of oxygen deficiency, the emergency medical services (EMS) arrive too late in the majority of cases. In fact, under realistic conditions it takes a minimum of 7 minutes from the moment of collaps until EMS arrival (see figure).



The greatest improvement of survival rates is therefore achieved by provision of basic resuscitation by a witnessing bystander. This has been proven in a great number of studies, stating a 2 to 4-fold rise of survival rates with good neurologic quality.
In Germany the rate of bystander initiated resuscitation is low if compared to other developed countries (Scandinavia 40-70%, US 40-50%, Germany 10-15%). Hence, a substantial potential for development may be stated. From an expert point of view improvements will only be possible, if at least 20% of a population are trained. This may only be accomplished if the competence of basic life support is introduced into the course of life long learning at a very early stage. This has been done since many years in the Scandinavian countries, Great Britain, the US and Canada.
Therefore, the German Resuscitation Council proposes a mandatory basic curriculum for school children. It seems important to repeat teaching of these competencies several times during the school career to anchor them at different ages in the sense of a “spiral curriculum”.

The amount of time needed to teach this social core competency is very modest. Between 6 and 12 teaching units (of 45 min) distributed over the whole school career would serve. Immersion into subject fields as biology, physical education or health seems reasonable, since cardiac arrest do not belong to the typical experiences of children and adolescents.

An overview of the program is shown on the next page (fig 2):



On the following pages suggestions are given for the specific design of teaching sessions, which may serve as an orientation. Contents and learning objectives represent the best possible state of evidence of the current guidelines (in this cases from 2010).
Instructors could well be school teachers, for whom equivalent quality has been shown if compared to emergency physicians [Bohn 2012]. This could be the class teachers as well as teachers in biology or physical exercise.

Literature

See appendix

GRC – curriculum for "Resuscitation training for school children"

Step 1 **8 -10 yrs.** (3rd/ 4th grade), **2 teaching units of 45 min**

General learning objectives / Outcome-orientated competencies:

- Detection / identification of a potential cardiac arrest
- Activating competent and professional help
- Initiation or instruction of high quality chest compressions and adaequate positioning of the victim

Specific learning objectives (knowledge / skills / attitudes)

	At the end of this teaching/learning session students are able to …	*dimension of learning*
1	… understand the time dependency of vital support to help a person in a life-threatening situation	acquire attitude
2	… explain the necessity to act oneself (bearing in mind one's own safety).	explain
3	… recognise the state of conscious of a victim and to detect unconsciousness.	apply [2)]
4	… assess breathing and detect abnormal breathing ("odd" or unusual sounds, slow frequence, change of skin colour) and respiratory standstill.	apply [2)]
5	… explain, that simultaneous occurrence of unconsciousness and abnormal breathing implicates immediate action.	explain
6	… state the correct emergency phone number.	know
7	… conduct and/or advise to undertake an emergency call	apply [2)]
8	… know about the possibility to use an AED [1)].	explain
9	… send someone for getting an AED [1)].	explain
10	… position a person in cardiac arrest in a supine position and on a firm surface and to clear their chest (or to advise an adult to do so).	apply [2)]
11	… perform chest compressions with adaequate depth, frequency and hand position[3)] (or to advise an adult to do)	apply [2)]
12	… maintain a „tilt head" position while performing chest compressions.	apply [2)]
13	… handle an AED [1)].	apply [2)]

[1)] AED: automated external defibrillator
[2)] on a training manikin
[3)] in dependence of own body weight

GRC – curriculum for "Resuscitation training for school children"

Step 1 8 -10 yrs. / course of session: contents and formats

	content	Details on contents	Teaching / learning format	time
1	**introduction**	„Story“ / video (adaequate to age) / definition of learning goals	Presentation or (better) discussion	8 min
2	**Detection of arrest**	Check for safety ! Shake and shout / call for help Assess breathing Related conditions: sudden event, unconsciousness, agonal breathing/ arrest of breathing change of skin colour (cyanosis)	Demonstration and practical training	8 min
3	**Emergency call**	Inform about location first („where“?) further advice is given by dispatcher, hang on until dispatcher ends the call; Dispatch will provide support !	Simulation of emergency call (e.g. via cell phone in another room)	8 min
4	**Chest com-pressions (CC)**	Supine position, firm surface hand position, compression depth 5-6 cm, compression frequency 100-120/min, no pauses, regular change of CC providers	Demonstration and practical training 1 manikin per 2-3 students - ***Feedback***	30 min
5	**Ventilation**	(not reasonable at this point of knowledge, therefore only:) Tilt head while performing CC		0 min
6	**AED**	Principle of function, check for safety, switch on, electrode positions	Demonstration and practical training; 1 training device per 10-15 participants	15 min
7	**Securing Learning results**	What was the most important point I learned in this session ? Alignment with learning objectives of the course	Group discussion blackboard / moderating cards	6 min
8	**Assessment** (Test)	Theoretically and in practice	Scenario assessement, MCQ	6 min
9	**Feedback**	In which skills do I feel competent?	Open questions / questionnaire	5 min
			Total duration	86 Min

Ressources for 25 students / pupils:

1	Adaequate space (possibility to clear from tables and chairs)
1 - 4	Instructors (according to conditions, e.g. involvement of “student first aiders”)
8 - 12	Chest compression manikins (simple torsos)
1 - 2	AED-training module (could also be self made)
1 - 2	Whole body manikins (not essential, but recommended to resemble a more realistic scenario)

GRC – curriculum for "Resuscitation training for school children"

Step 2 **12 - 14 yrs.** (7th /8th grade), **2 teaching units of 45 min**

General learning objectives / Outcome-orientated competencies:

- detection / identification of a potential cardiac arrest
- activating competent and professional help
- initiation or instruction of high quality chest compressions and adaequate positioning of the victim
- handling of AED [1)]
- (if competence level is high enough) application of Mouth-mouth or mouth-to-nose ventilation
- follow instructions of dispatch centre

Specific learning objectives (knowledge / skills / attitudes)

	At the end of this teaching/learning session students are able to …	*dimension of learning*
1	… explain the necessity to act oneself (bearing in mind one's own safety).	acquire attitude
2	… recognise the state of conscious of a victim and to detect unconsciousness.	apply [2)]
3	… assess breathing and detect abnormal breathing ("odd" or unusual sounds, slow frequence, change of skin colour) and respiratory standstill.	apply [2)]
4	… explain, why simultaneous occurrence of unconsciousness and abnormal breathing implicates immediate action.	explain
5	… conduct and/or advise to undertake an emergency call	apply [2)]
6	… know, that instructions for first aid and resuscitation may be given by the dispatcher	know
7	… know about the functioning principle of an AED [1)].	explain
8	… send someone for getting an AED [1)] and operate an AED [1)]	apply [2)]
9	… position a person in cardiac arrest in a supine position and on a firm surface and to clear their chest (or to advise an adult to do so).	apply [2)]
10	… perform 5 Min. of adaequate chest compressions	apply [2)]
11	… (if adaequate) perform rescue breathing (mouth-to-mouth od mouth-to-nose) [3)], or consider its minor importance if compared to chest compressions	explain, apply [2)]
12	… when performing rescue breathing to keep up a compression – ventilation ratio of 30:2 .	apply [2)]
13	… when performing CPR with rescue breathing to perform the change between chest compressions and ventilations without any time loss.	apply [2)]
14	… handle an AED [1)].	apply [2)]

[1)] AED: automated external defibrillator [2)] on a manikin, during training scenario
[3)] if competence level is adaequate

GRC – curriculum for "Resuscitation training for school children"

Step 2 12 -14 yrs. / course of session: contents and formats

	content	Details on contents	Teaching / learning format	time
1	**introduction**	intro video (adaequate to age) / definition of learning goals	Presentation or (better) discussion	5 min
2	**Detection of arrest**	Check for safety! Shake and shout / call for help Assess breathing Related conditions: sudden event, unconsciousness, agonal breathing/ arrest of breathing change of skin colour (cyanosis)	Demonstration (learning conversation) and practical training	8 min
3	**Emergency call**	Inform about location first („where"?) further advice is given by dispatcher, hang on until dispatcher ends the call; dispatch will provide support: follow instructions of dispatcher	Simulation of emergency call (e.g. via cell phone in another room)	7 min
4	**Chest compressions (CC)**	Supine position, firm surface hand position, compression depth 5-6 cm, compression frequency 100-120/min, no pauses, regular change of CC providers	Demonstration and practical training; 1 manikin per 2-3 students - ***Feedback***	30 min
5	**Ventilation**	Mouth-mouth or mouth-to-nose, head tilt; prompt alternation with CCs (30 compressions, 2 ventilations)	Demonstration and practical training; 1 manikin per 2-3 students - ***Feedback***	10 min
6	**AED**	Principle of function, check for safety, switch on, electrode positions	Demonstration and practical training; 1 training device per 10-15 students	10 min
7	**Securing Learning results**	What was the most important point I learned in this session ? Alignment with learning objectives of the course	Group discussion blackboard / moderating cards	5 min
8	**Assessment** (Test)	Theoretically and in practice	Scenario assessement, MCQ	6 min
9	**Feedback**	In which skills do I feel competent?	Open questions / questionnaire	2 min
			Total duration	83 Min

note: The **recovery position** has no value for resuscitation. Therefore recovery position should be taught only after all evidence based interventions have been understood well.

Ressources for 25 students / pupils:	
1	Adaequate space (possibility to clear from tables and chairs)
1 - 4	Instructors (according to conditions, e.g. involvement of "student first aiders")
8 - 12	Chest compression manikins (simple torsos)
1 - 2	AED-training module (could also be self made)
1 - 2	Whole body manikins (not essential, but recommended to resemble a more realistic scenario)

GRC – curriculum for "Resuscitation training for school children"

Step 3 **16 -18 yrs.** (11th/12th grade), **2 teaching units of 45 min**

Grob-Lernziele / Outcome-orientierte Kompetenzen:

- detection of a potential cardiac arrest
- have an understanding of circulation and ventricular fibirillation
- activation of professional help
- principle knowledge of the working process within a dispatch centre
- understanding of the significance of chest compressions
- initiation or instruction of high quality chest compressions over 10 Min time
- adaequate positioning of the victim
- handling of AED [1)]
- application of Mouth-mouth or mouth-to-nose ventilation
- follow instructions of dispatch centre

Specific learning objectives (knowledge / skills / attitudes)

	At the end of this teaching/learning session students are able to …	*dimension of learning*
1	… explain the necessity to act oneself (bearing in mind one's own safety).	acquire attitude
2	… recognise the state of conscious of a victim and to detect unconsciousness.	apply [2)]
3	… assess breathing and detect abnormal breathing ("odd" or unusual sounds, slow frequence, change of skin colour) and respiratory standstill.	apply [2)]
4	… explain, why simultaneous occurrence of unconsciousness and abnormal breathing implicates immediate action.	explain
5	… conduct and/or advise to undertake an emergency call.	apply [2)]
6	… know, that instructions for first aid and resuscitation may be given by the dispatcher	Wissen
7	… know about the functioning principle of an AED [1)].	explain
8	… send someone for getting an AED [1)] and operate an AED [1)]	apply [2)]
9	… position a person in cardiac arrest in a supine position and on a firm surface and to clear their chest (or to advise an adult to do so).	apply [2)]
10	… perform 10 Min. of adaequate chest compressions.	apply [2)]
11	… instruct unskilled helpers to perform high quality chest compressions.	explain, apply [2)]
12	… (if adaequate) perform rescue breathing (mouth-to-mouth od mouth-to-nose), or consider its minor importance if compared to chest compressions.	explain, apply [2)]
13	… when performing rescue breathing to keep up a compression – ventilation ratio of 30:2 .	apply [2)]
14	… when performing CPR with rescue breathing to perform the change between chest compressions and ventilations without any time loss.	apply [2)]
15	… handle an AED [1)].	apply [2)]

[1)] AED: automated external defibrillator [2)] on a manikin, during training scenario

GRC – curriculum for "Resuscitation training for school children"

Step 3 16 -18 yrs. / course of session: contents and formats

	content	Details on contents	Teaching / learning format	time
1	**introduction**	intro video (adaequate to age) / definition of learning goals	Presentation or (better) discussion	8 min
2	**Detection of arrest**	Check for safety! Shake and shout / call for help Assess breathing Related conditions: sudden event, unconsciousness, agonal breathing / arrest of breathing change of skin colour (cyanosis)	Demonstration (learning conversation) and practical training	8 min
3	**Emergency call**	Inform about location first („where"?) further advice is given by dispatcher, hang on until dispatcher ends the call; dispatch will provide support: follow instructions of dispatcher	Simulation of emergency call (e.g. via cell phone in another room) competence level of real life dispatch	8 min
4	**Chest com-pressions (CC)**	Supine position, firm surface hand position, compression depth 5-6 cm, compression frequency 100-120/min, no pauses, regular change of CC providers; guidance of further helpers	Demonstration and practical training; 1 manikin per 2-3 students - ***Feedback***	30 min
5	**Ventilation**	Mouth-mouth or mouth-to-nose, head tilt; prompt alternation with CCs (30 compressions, 2 ventilations)	Demonstration and practical training; 1 manikin per 2-3 students - ***Feedback***	10 min
6	**AED**	Principle of function, check for safety, switch on, electrode positions Adaequate immersion into BLS	Demonstration and practical training; 1 training device per 10-15 students	10 min
7	**Securing Learning results**	What was the most important point I learned in this session ? Alignment with learning objectives of the course	Group discussion blackboard / moderating cards	5 min
8	**Assessment** (Test)	Theoretically and in practice	Scenario assessement, MCQ	6 min
9	**Feedback**	In which skills do I feel competent?	Open questions / questionnaire	5 min
			Total duration	90 Min

note: The **recovery position** has no value for resuscitation. Therefore recovery position should be taught only after all evidence based interventions have been understood well.

Ressources for 25 students / pupils:	
1	Adaequate space (possibility to clear from tables and chairs)
1 - 4	Instructors (according to conditions, e.g. involvement of "student first aiders")
8 - 12	Chest compression manikins (simple torsos)
1 - 2	AED-training module (could also be self made)
1 - 2	Whole body manikins (not essential, but recommended to resemble a more realistic scenario)

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