

Herzlich  
Willkommen

# Pädiatrie für Grundversorger Interlaken 2011

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Chefarzt

Departement für Kinder- und Jugendmedizin

Kantonsspital Graubünden Chur

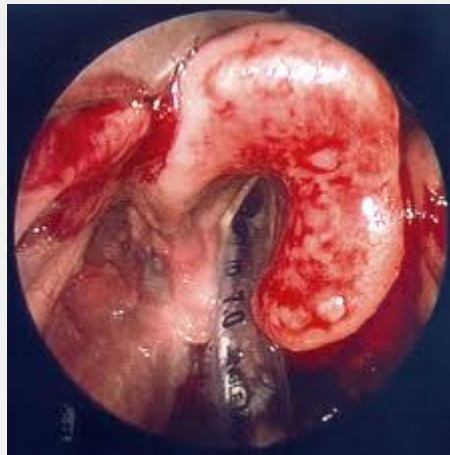
# Content

1. Respiratory
2. Cardiac aspects
3. Neurologic aspects
4. The child with fever
5. Pediatric life support

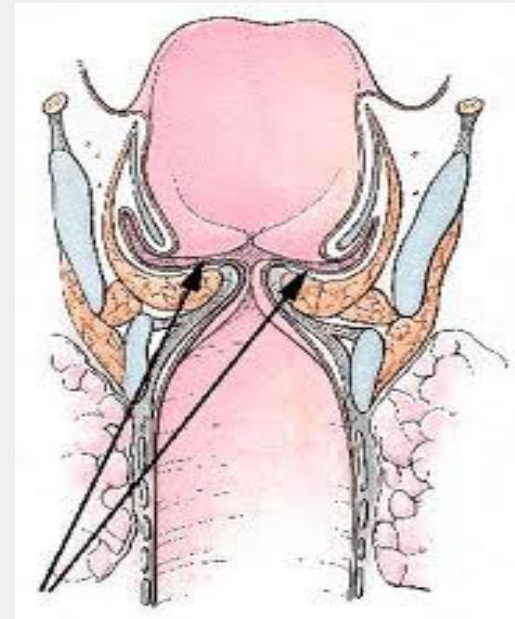
# Acute respiratory distress in childhood

Diseases	Age Years	Cough	Stridor insp/exsp	Voice	Dysphag	Fever	Start	Associated disease	Season
<b>Croup Syndrom (Pseudocroup)</b>			high hoarse	hoarse	-	poss.	night hyperacute (hours)	poss.	heating-period
acute laryngo-tracheitis	½ - 4	barking	+ (+)		(+)	+++	acute (days)	coryza ½ to 3 days	autumn to spring
<b>Epiglottitis</b>	2 - 6	-	+ (+)	-	++	++	hyperacute (hours)	sept.-tox.	-
			stertorous breathing						
<b>Laryngospasmus</b>	¼ - ½	-	+ - clucking	clear	-	-	hyperacute	Rachitis-Tetany	end of winter
<b>Stridor cong.</b>	0 - 1	-	+ - voiced clear by intensified respiration	clear	-	-	"since ever"	-	-
<b>Asthma</b>		raucous to barkend		+	-	-	at all time	infection poss.	kind of illness
bronchiolitis				+					
obstruct. bronchitis		at night		+		poss.	often at night		all-season
<b>Foreign body</b>	½ - 3	initial	(+)	+	(+)	(+)	hyperacute-subacute	aspiration-event	Santa Claus

# Epiglottitis



# Pseudocroup



# Respiratory frequency

age	mean value	+/- 1 SD
preterm neonate	50/min.	10
term neonate	40/min.	10
infant	31/min.	8
1.- 4. years	24/min.	4
5.- 9. years	20/min.	2
10.-14. years	19/min.	3
14.-16. years	17/min.	3

# Acute respiratory distress in childhood

- Laryngotracheitis (croup syndrome)

**severe:** inhalation with **Adrenaline** 2-5mg

CAVE: rebound-effect, monitoring necessary, hospitalisation

**moderate or slight:**

systemic corticosteroids

Prednisolone or Prednisone 1-2 mg/kg

alternatives:

Betamethasone 0.2 mg/kg

Dexamethasone 0.3 mg/kg

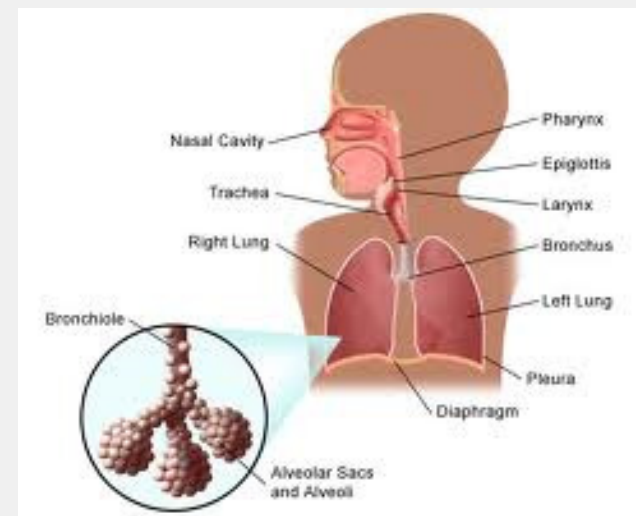
**CAVE:** full clinical effects after 1-2 h

alternative:

topical corticosteroids: Budesonid 2 mg

- Additional measures: air moistening,  
keep calm!

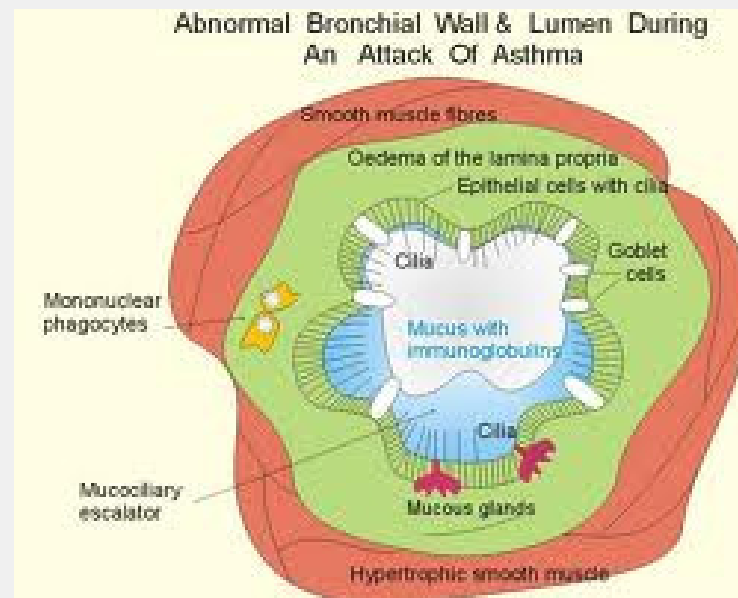
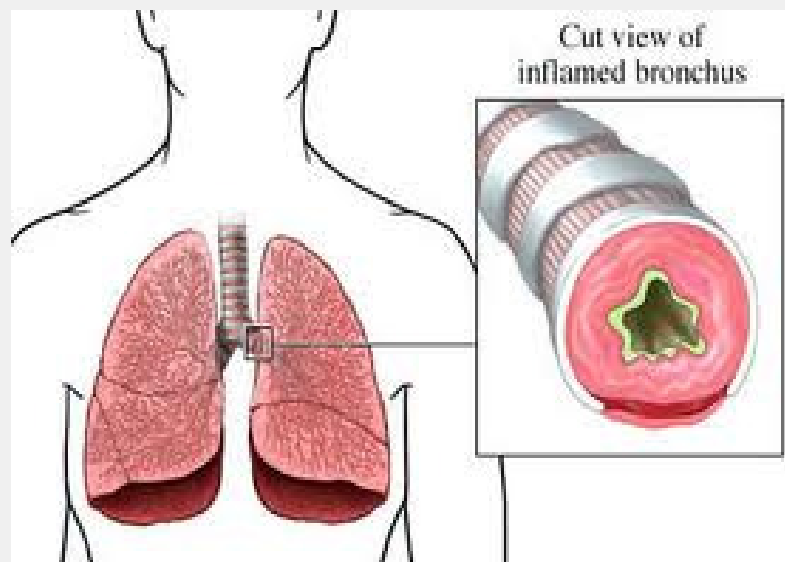
# Bronchiolitis (RSV)



# Bronchiolitis: Treatment

- oxygene
- strict fluid management
- air moistening
- inhalativ betamimetics helpfull, (in primary care often not a fast effect)
- rare necessary: mechanical ventilation
- evidence based **no effect**: steroids, antibiotics, sedatives

# Asthma



# Cardio circulatory diseases

Cardio vascular insufficiency:

Perfusion deficit of tissues in comparison  
to the requirements

## Symptoms:

- thirst, diminished urine output
- prolonged capillary refill
- agitation (child is confused, but not perfused)
- tachypnoe
- tachycardia
- blood pressure ↓

- **Important:**  
**To assess fluid and volume conditions!**

not invasive blood pressure measurement are  
often false normal

# Arrhythmia

- Disturbances in the ECG-rhythms in childhood are rare
- secondary to hypoxemia combined with severe problems in cardiac output (ventricular fibrillation)
- Difficult to assess and not so rare in children: **pulseless electrical activity (PEA)**



- **Supraventricular tachycardia**

## Supraventricular tachycardia

- most with high heartrates  $>220$  b/min. well tolerated
- **vagus manœuvre**: valsalva, cold bags on forehead and/or face, one sided carotisartery-massage, digital rectal-examination, stomach-tubing or throat-examination  
**no ocular pressure**
- **medications**: Adenosine 0.1 mg/kg, Esmolol 0.5 mg/kg, Amiodarone 25 mcg/kg/min.
- **CAVE**: Bradykardia and Asystolie. No Verapamil in children  $<12$  months, never beta blocking agents primary

# Neurology

- Pediatric patients (same as adults) intubation and intensive care if GCS coma scale  $<8$
- fast changing GCS in situations of intoxication e.g. (liver coma), in doubt rather more intensive treatment

## Neurology

- in contrast in **convulsive status** situations intubation is extremely rare necessary
- first line is always **medication therapy of seizures!**
- treatment of the epileptic (e.g. tonic-clonic) seizure > 2 min. (fever-seizures are in >80% self limited)

soft head underlayment

no attempts to fixate the patient

no tongue-wedge: danger of injuries

## Neurology

# Treatment of convulsions

- resuscitation guidelines:
  - ABC
  - O<sub>2</sub>-application always indicated
  - considered glucose infusion, but never as a volume bolus infusion!
- Diazepam without any i.v. access:

Newborns	½ rectiole à 5 mg
<10 kg	rectiole à 5 mg
>10 kg	rectiole à 10 mg
Single dose 0.5 mg/kg rectal Diazepam alternative 0.3 mg/kg buccal (nasal) Midazolam i.m. Midazolam 0.2 – 0.3 mg/kg	

## Neurology

### Treatment of convulsions

- intravenous or intraosseous access available:  
Lorazepam 0.1 mg/kg  
alternative:
  - Diazepam 0.3 – 0.5 mg
  - Diazepam 0.15 mg/kg



# Situation in the office

- Fever and clear located organ origin
- Fever without any focus – short duration
- Fever of unknown origin – long duration

# Fever causes

- Infection
- Immunology
- Neoplasure

# Warning symptoms

Fever indicates danger,  
if warning symptoms are  
present.

## NICE Guidelines

### National Institute for Health and Clinical Excellence

	low risk	intermediate risk	high risk
Colour	<ul style="list-style-type: none"> <li>• Normal colour of skin, lips and tongue</li> </ul>	<ul style="list-style-type: none"> <li>• Pallor reported by parent/carer</li> </ul>	<ul style="list-style-type: none"> <li>• Pale/mottled/ashen/blue</li> </ul>
Activity	<ul style="list-style-type: none"> <li>• Responds normally to social cues</li> <li>• Content/smiles</li> <li>• Stays awake or awakens quickly</li> <li>• Strong normal cry/not crying</li> </ul>	<ul style="list-style-type: none"> <li>• Not responding normally to social cues</li> <li>• Wakes only with prolonged stimulation</li> <li>• <b>Decreased activity</b></li> <li>• No smile</li> </ul>	<ul style="list-style-type: none"> <li>• No response to social cues</li> <li>• Appears ill to a healthcare professional</li> <li>• Does not wake or if roused does not stay awake</li> <li>• Weak, high-pitched or continuous cry</li> </ul>
Respiratory	<ul style="list-style-type: none"> <li>• Normal</li> </ul>	<ul style="list-style-type: none"> <li>• Nasal flaring</li> <li>• Tachypnoea: RR &gt; 50 breaths/minutes, age 6-12 months RR &gt; 40 breaths/minutes, age &gt; 12 months</li> <li>• Oxygen saturation <math>\geq</math> 95% in air</li> <li>• Crackles</li> </ul>	<ul style="list-style-type: none"> <li>• Grunting</li> <li>• Tachypnoea: PR &gt; 60 breaths/minute</li> <li>• Moderate or severe chest indrawing</li> </ul>
Hydration	<ul style="list-style-type: none"> <li>• Normal skin and eyes</li> <li>• Moist mucous membranes</li> </ul>	<ul style="list-style-type: none"> <li>• <del>Dry mucous membranes</del></li> <li>• <b>Poor feeding in infants</b></li> <li>• CRT <math>\geq</math> 3 seconds</li> <li>• Reduced urine output</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced skin turgor</li> </ul>
Other	<ul style="list-style-type: none"> <li>• None of the amber or red symptoms or signs</li> </ul>	<ul style="list-style-type: none"> <li>• Fever for <math>\geq</math> 5 days</li> </ul>	<ul style="list-style-type: none"> <li>• Age 0-3 months, temperature <math>\geq</math> 38°C</li> <li>• Age 3-6 months, temperature <math>\geq</math> 39°C</li> </ul>
		<ul style="list-style-type: none"> <li>• Swelling of a limb or joint</li> <li>• Non-weightbearing limb/not using an extremity</li> </ul>	<ul style="list-style-type: none"> <li>• Non-blanching rash</li> <li>• Bulging fontanelle</li> <li>• Neck stiffness</li> <li>• Status epilepticus</li> <li>• Focal neurological signs</li> <li>• Focal seizures</li> </ul>
		<ul style="list-style-type: none"> <li>• A new lump &gt; 2 cm</li> </ul>	<ul style="list-style-type: none"> <li>• Bile-stained vomiting</li> </ul>

# Laboratory examinations

Fever indicates danger, if  
pathological laboratory values  
are found

P.S.  
14 months

fever since  
yesterday

1 x vomiting  
transiently, normal  
activity

Status 11 00 h:  
normal

Lab:  
Leuco 31 000/mm<sup>3</sup>  
CRP 9.0 mg/dl  
Rx-thorax: normal

Jahr 77 Monat 4 Tag 31.3 1.			
Spitaltag / Opstag			
R schwarz 60	P rot 160	T blau 41	Gew. grün
50	140	40	
40	120	39	
30	100	38	
20	80	37	
10	60	36	
	40	35	

Überwachung: BD (24)

BD	mmHg	102/70
KOFI	m <sup>2</sup> /KU cm	
Grösse 76	cm / Gew	8,4 kg
O2-Sättigung		99%
Stuhl		1
Erbrechen, Magensaft	ml	

# Laboratory values

Fever indicates danger, if

- Leucos  $<5.000$  or  $> 15.000/\text{mm}^3$
- Leftshift with 20% band neutrofilis
- Urin with 10 WBC/field
- CRP  $>3,0$  mg/dl

are found

Laboratory values are „only“ supportive

**P.S.**  
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BD		mmHg <i>102/70</i>	
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Erbrechen, Magensaft ml			

**Examination  
14 00 h:**

**pale, grossly  
sunken eyes**

**HR 163 /min.  
AR 27 /min.**

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Erbrechen, Magensaft ml			

**Examination  
14 00 h:**

**pale, grossly  
sunken eyes**

**HR 163 /min.  
AR 27 /min.**

**2 Petechiae**

**Bloodcultures  
positive**

**Pneumococcus**

# NICE Guidelines

Management of a febrile child < 5 years

## Low risk

- Stay at home
- Information of the parents about warning symptoms
- Offer of a next medical consultation possibility

## Intermediate risk

- If diagnosis unclear  
→ create a security net
- Information about warning signs
- Fix the next medical consultation

## High risk

- → Hospitalisation
- If contact by telephone  
→ next medical control in < 2 hours

# Typical Diseases

Fever indicates danger, if symptom combinations suggests typical possible life threatening illnesses

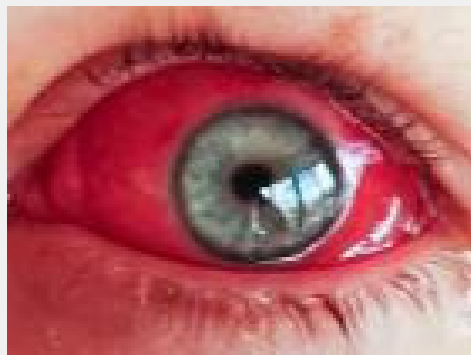
# Meningococces



# Kawasaki

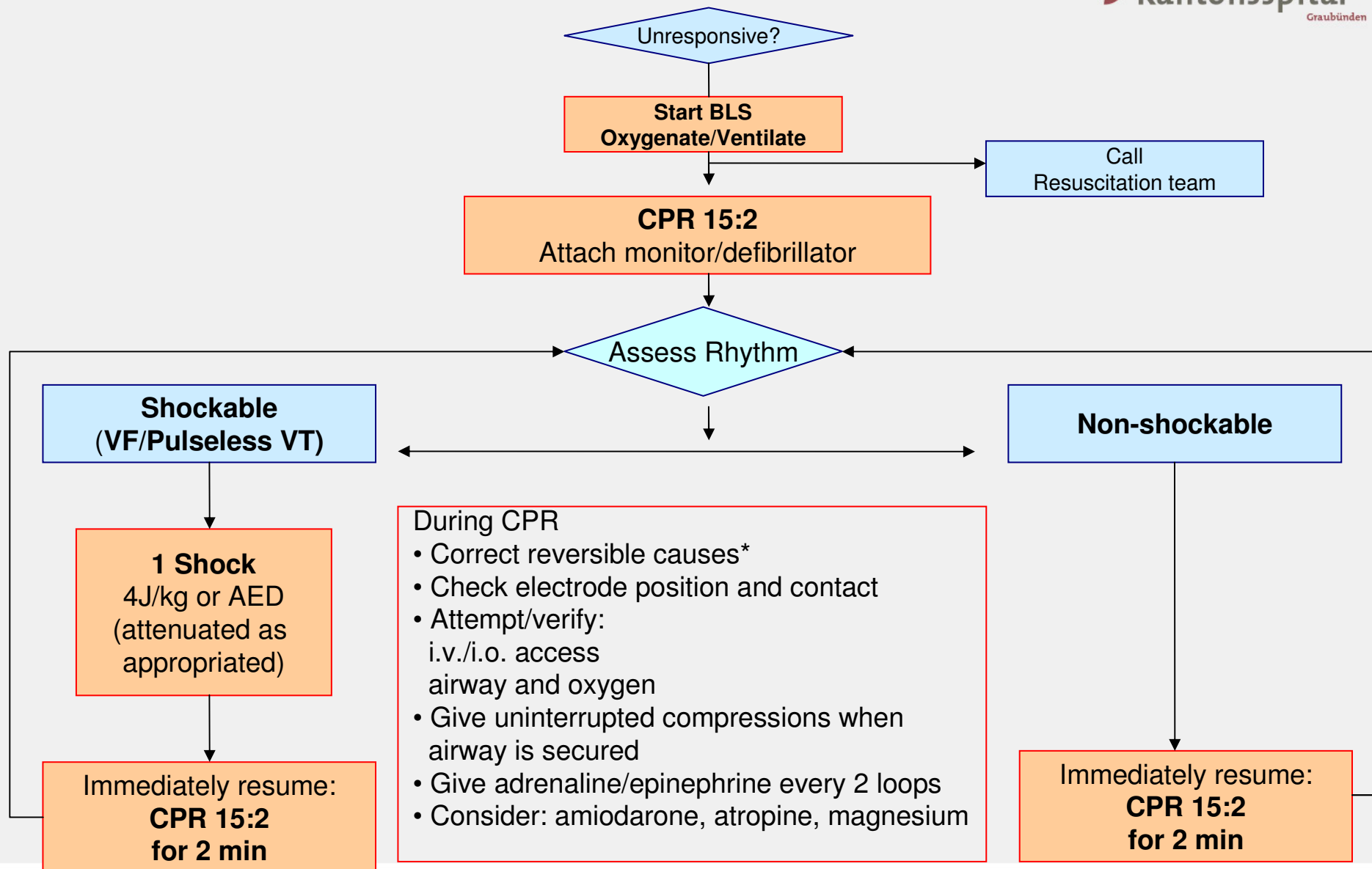


- Fever  $\geq 5$  days  
+ 2 off the followings symptoms
- Konjunktivitis, bilateral
  - palmar and plantar erythema
  - Ecthyma of hands and feeds
  - Exanthema
  - Enanthema, Strawberry tongue
  - Swelling of the cervical lymph nodes, most unilateral



# Appearance – visual diagnosis

Fever indicates danger if the child looks „toxic“



## \*Reversible Causes

### 4 H's

Hypoxia

Hypovolaemia

Hypo/hyperkalaemia/Metabolic

Hypothermia

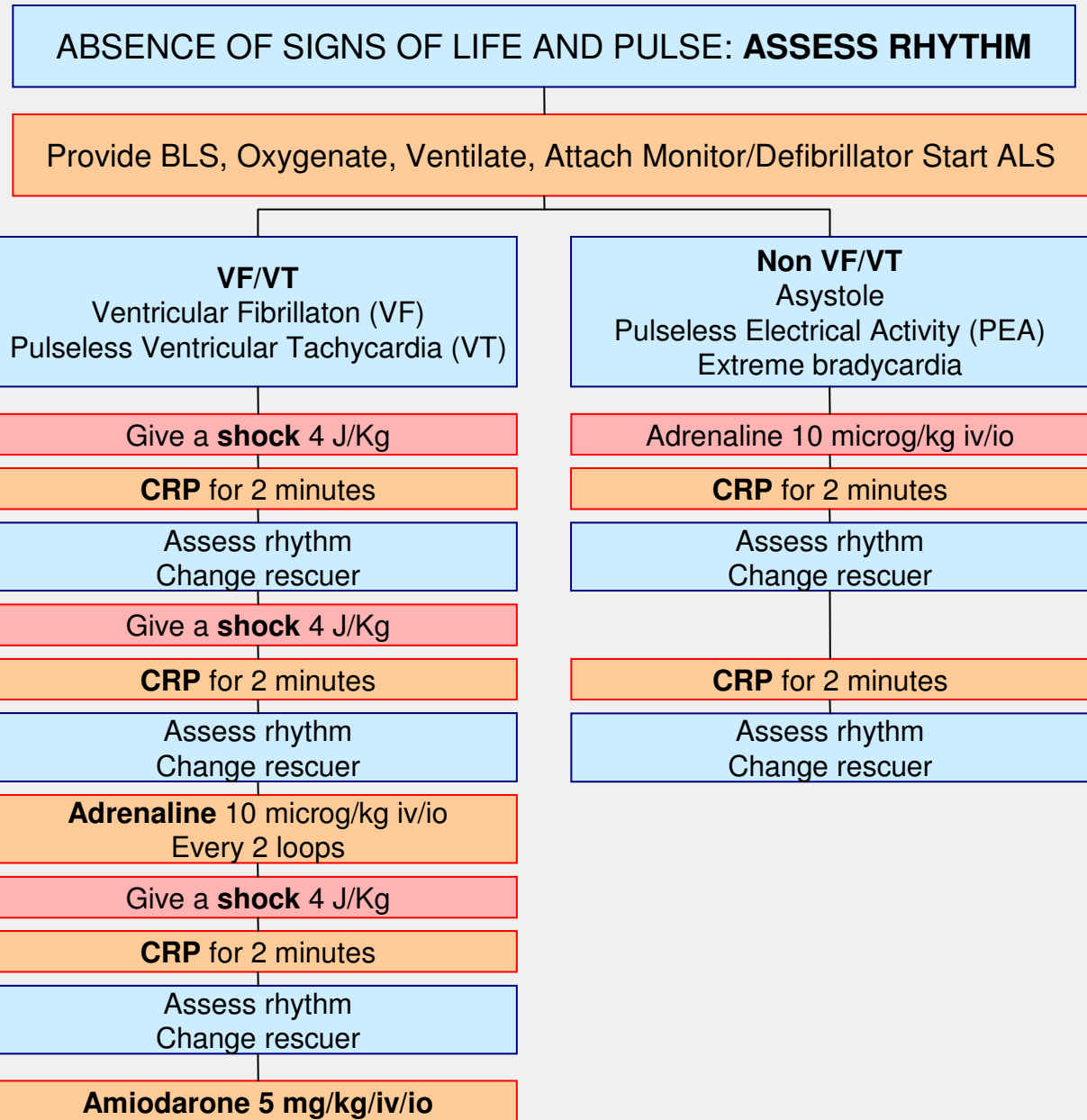
### 4 T's

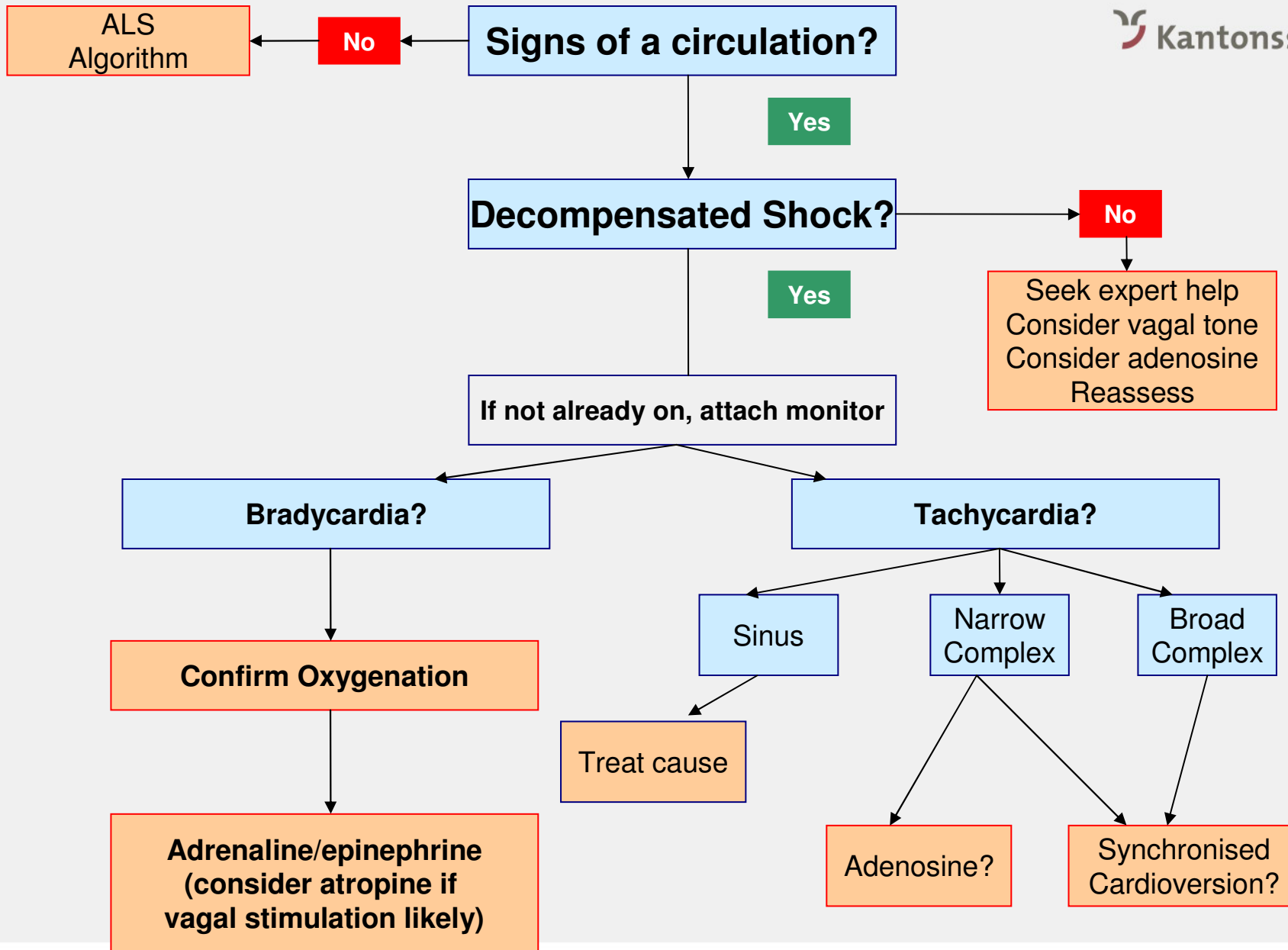
Tension Pneumothorax

Tamponade, cardiac

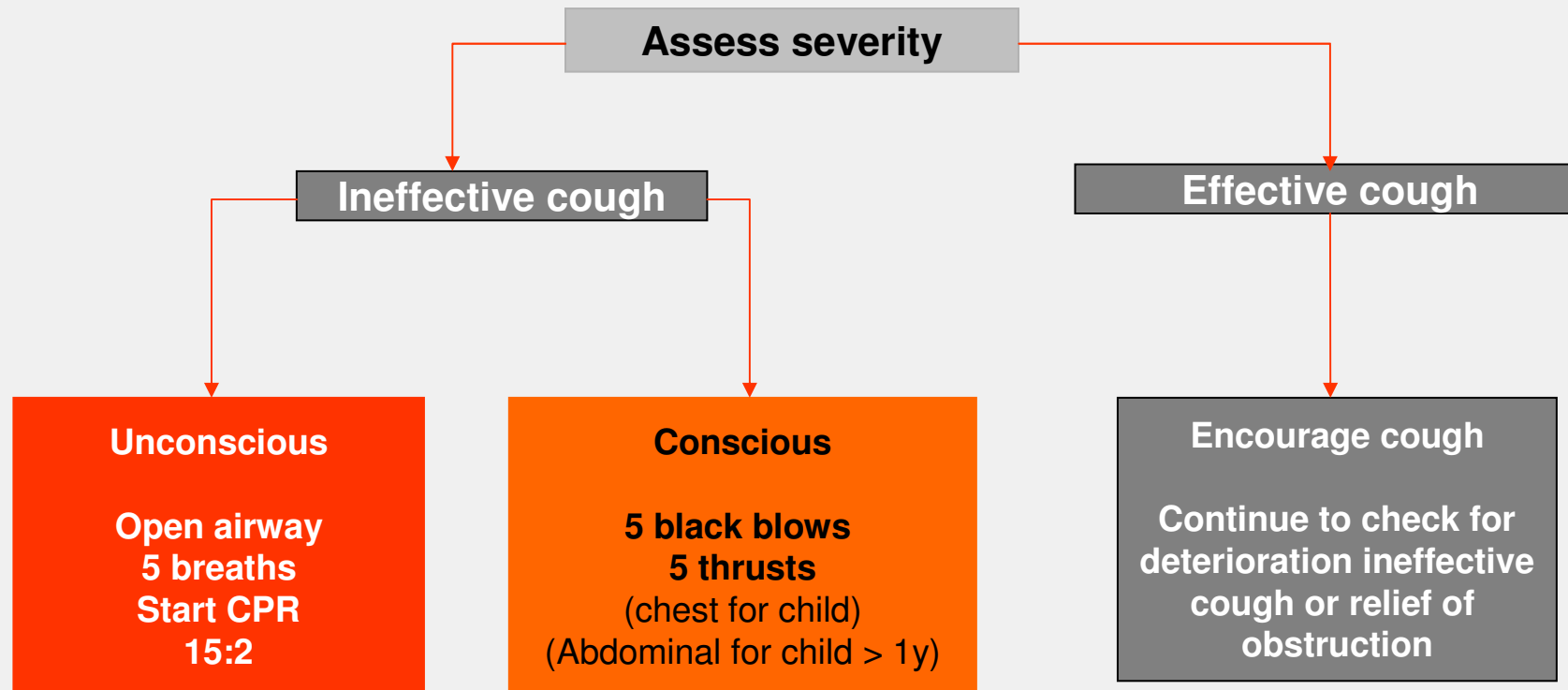
Toxins

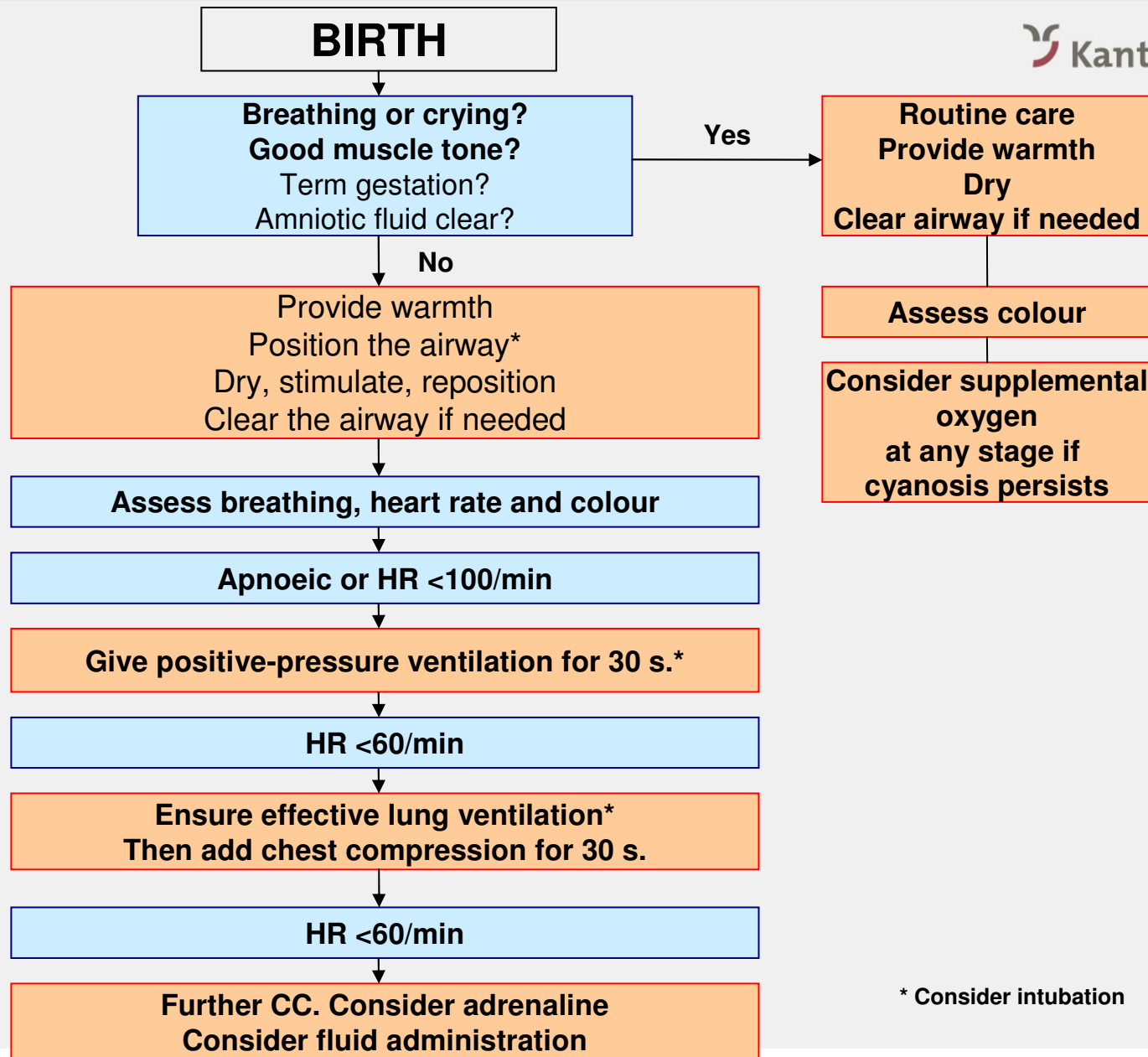
Thromboembolism





# Paediatric FBAO Treatment





\* Consider intubation



Thanks, Doc!

Herzlichen

Dank für Ihre  
Aufmerksamkeit