

Very early treatment of Paediatric septic shock: PICU Paediatric Intensive Care Unit with regional network and bundle for treatment and training (2003-2008)

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Background:

Need to improve treatment of paediatric septic shock in children especially Waterhouse-Friedrichsen syndrome.

Materials:

Regional paediatric intensive care network (PIN) coordinated by university PICU Paediatric Intensive Care Unit with 22 children's hospitals in Lower Saxony, Saxony-Anhalt and Nordrhine-Westphaly, Germany created in 2003. Reference population: 3.000.000 inhabitants.

Standardised treatment and training of septic shock including standard resuscitation courses (EPLS European Paediatric Life Support courses - ERC European Resuscitation Council) with recognition of critical ill child, septic shock scenarios and post resuscitation care. Simulation Training has been introduced in 2008.

Methods:

Implementation of emergency training, diagnosis and treatment of Waterhouse-Friedrichsen syndrome with human protein C concentrate (PC) by central symposia, workshops and 6-months training periods for physicians of the network in the PICU of the 3rd level Hospital. 24-hours-Service for transport and consultation by the central PICU for transportable and not-transportable patients. All patients were announced to the reference PICU directly after admission into the network hospitals.

Results:

Treatment of 26 children with septic shock (herein 17 patients with Waterhouse-Friedrichsen syndrome) within the network, one patient was admitted in a non network hospital. The announcement time was 15 minutes - 1 hour (not network patient: 8 hours). First a consultation was asked by the network hospitals via phone call and treatment was induced immediately. Then the transportation team of the tertiary centre went to pick up the patient by ambulance or helicopter and continued the treatment on site and after transfer in the tertiary centre. All patients showed typical signs of Waterhouse - Friderichsen syndrome with purpura fulminans and severe multi organ failure. None of the patient died. One patient had necrosis of skin, already present at admission. The others had a restitution ad integrum. The patient from outside presented several areas of necrosis, needed ECMO and one lower leg was amputated. No adverse effects were observed with the PC concentrate administration. The patients were retransferred in the network hospitals as soon as stable enough.

Conclusions:

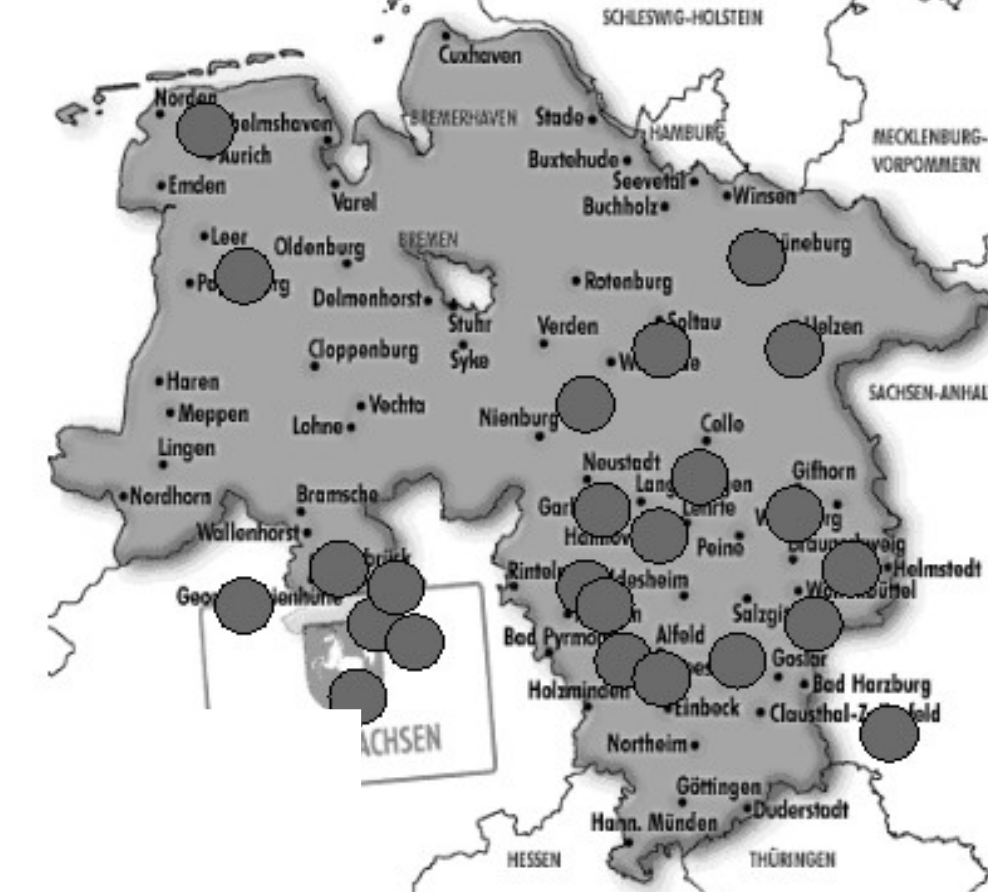
The network system with standard treatment and training with PC worked without problems. The survival rate and the outcome in the study group were excellent. The experience allows us to enlarge the system on other diseases.



Joint Meetings, lectures, paediatric critical care workshops (examples: accesses, emergency echocardiography...)



Senior colleagues of PICU are introducing during a 2-month periode colleagues from Network-Hospitals in the PICU-work



**Regional
Paediatric
Intensive Care
Network**
Hannover
Lower Saxony / Germany



Paediatric Life Support courses and Sepsis - EPLS European Paediatric Life Support- and Instructor-courses of ERC European Resuscitation Council has been introduced in 2004 by the Southtyrolean Trainingcenter (Italy) in cooperation with 13 european Countries (Italy, Spain, Portugal, Switzerland, Belgium, The Netherlands, Norway, Malta, United Kingdom, Slovenia, Hungary, Poland, Greece)

EPLS-courses created an Instructor-family in the network between 2004-2008 with strong personal and professional relationships between the hospitals increasing the impact of the Regional Paediatric Intensive Care Network

Cooperation with Paediatric Working Group of GRC German Resuscitation Council & German Paediatric Resuscitation Council

Paediatric Simulation & Paediatric Sepsis in the Network

DRF-Luftrettung
German Air Rescue

White Cross Southtyrol (Italy)

Alpine PLS Trainingcenter
Southtyrol (Italy)

Firebrigade Hannover

Dep. Paediatric Cardiology &
Paediatric Intensive Care
(Medical School Hannover)

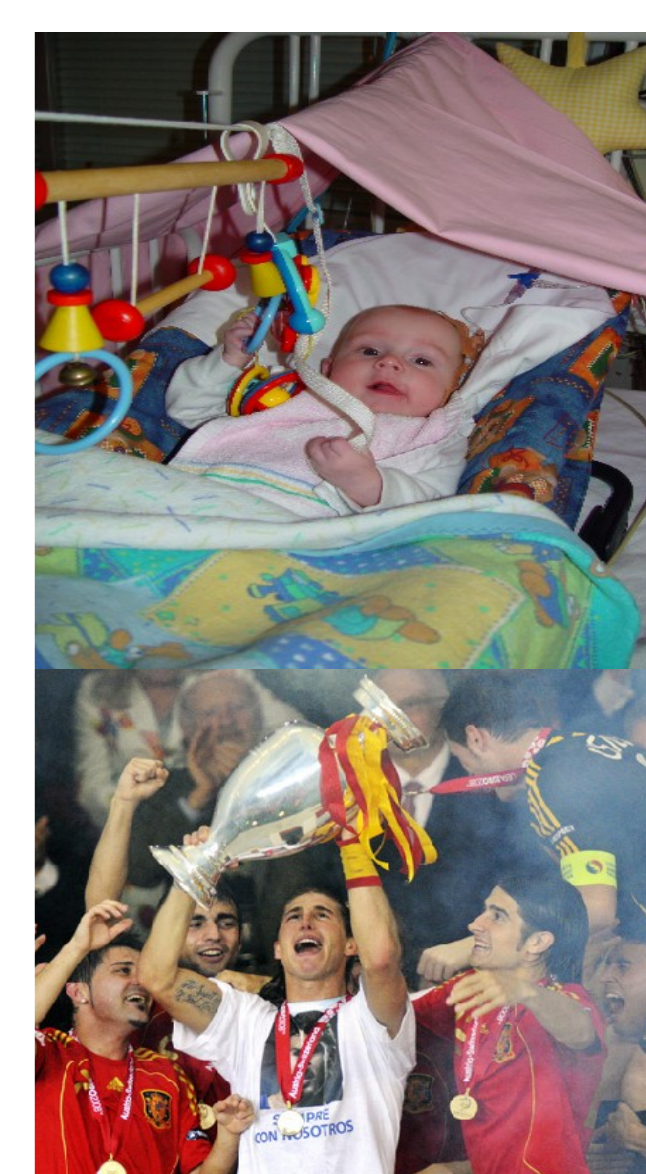


...24h-Service:
consultation /
transportation +
unified diagnostics and
treatments= ...



ICU+ and Emergency Ambulances of Firebrigade Hannover
Regional ICU-Helicopter (HSD-Team DRF German Air Rescue)

... excellent results:



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