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2019

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### *Citation for published version (APA):*

Thomas, O., Overgaard, M., Heino, A., Alleröd Andersen, S., Holmén, J., & Mikkelsen, S. (2019). *Prehospital paediatric emergencies: observations from Southern Denmark*. Poster session presented at 35th SSAI Congress, Copenhagen, Denmark.

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6

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# Prehospital paediatric emergencies: observations from Southern Denmark

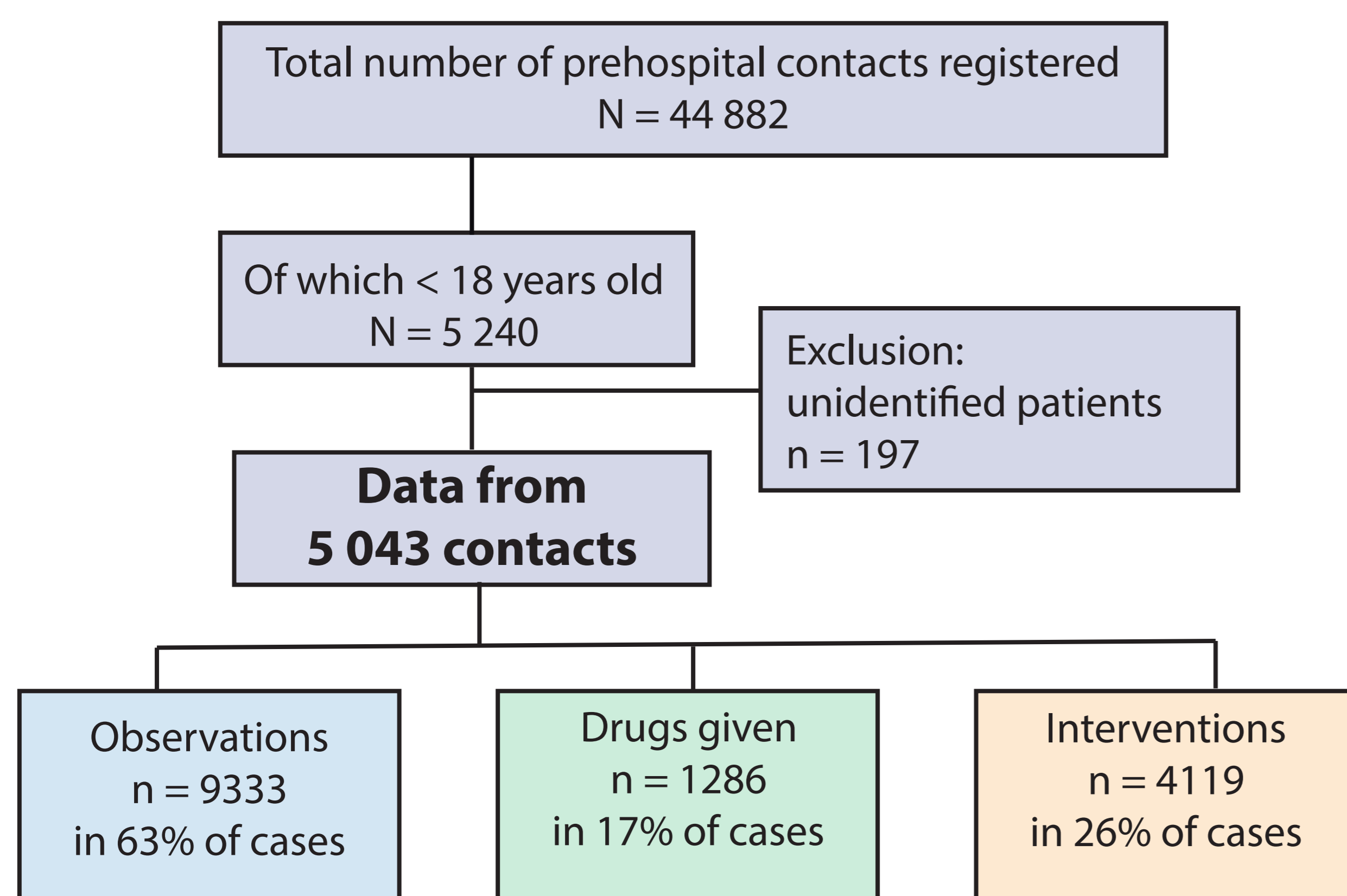
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**Background:** Paediatric emergencies can be challenging for EMS crews: emergency medical services (EMS) providers' experience varies and children are relatively uncommon in the prehospital setting. Improving paediatric prehospital care requires knowledge of actual patient characteristics and EMS' interventions. Published Scandinavian data for children in this context is scarce.

**Methods:** We performed an observational registry-based study of children (age less than 18 years old) attended by the physician-staffed EMS unit in the Odense area of Denmark during the 10-year study period. We screened 44 882 EMS contacts and included 5043 children. Patient characteristics, monitoring and interventions performed by the EMS crews were determined.

**Results:** paediatric patients were in a minority among critically ill patients attended by physician-staffed EMS units: only 11% of patients

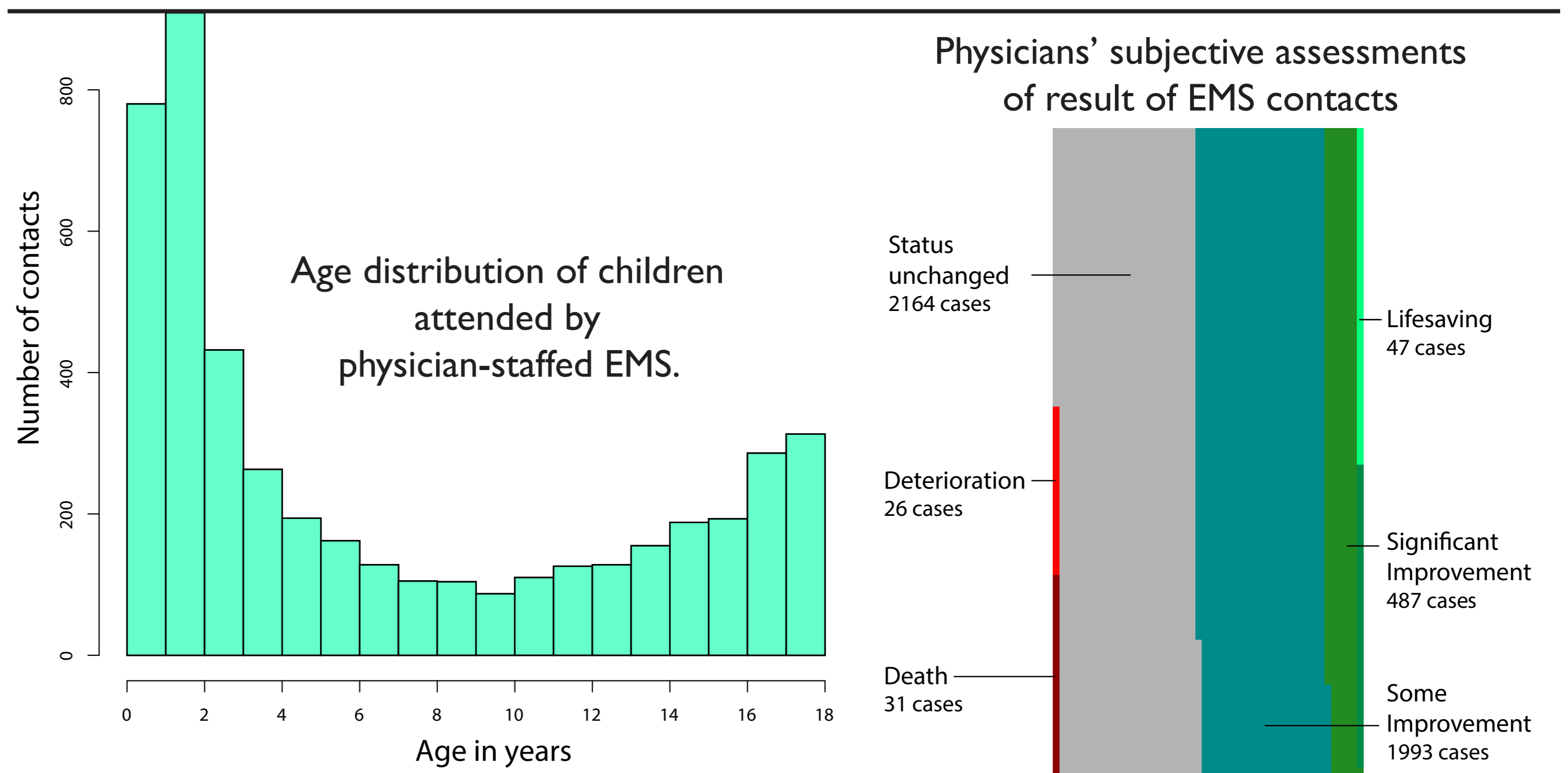
were children. The majority were <5 years old, and one third were <2 years old. Respiratory problems, traffic accidents and febrile seizures were the three most common dispatch codes. 15% of patients were not transported to hospital, while 72% of the remaining patients were transported without a physician. Oxygen administration, intravenous access and cervical collar were the three most commonly undertaken interventions. Oxygen saturation and heart rate were documented in more than half of the cases, but more than one third of the children



Observations recorded	
Blood pressure	1749
Heart rate	2769
Pulse oximetry	2849
Respiratory rate	1966
<b>Number of patients monitored with:</b>	
All 4 observations	1127
3 modes	930
2 modes	706
1 mode	389
No observations recorded	1891

List of drugs given	
<b>Airway/ allergy</b>	<b>344</b>
adrenaline inhalation	151
ipratropium/salbutamol	79
methylprednisolone	59
dexamethasone	10
clemastine	45
<b>Likely tracheal intubation</b>	<b>185</b>
alfentanil	37
esketamine	24
propofol	31
thiopentone	24
suxamethonium	41
rocuronium	17
ephedrine	5
phenylephrine	6
<b>Likely seizures</b>	<b>389</b>
diazepam rectal	123
diazepam injection	8
midazolam	239
valproate	19
<b>Cardiac</b>	<b>54</b>
adenosine	1
adrenaline injection	35
atropine	6
amiodarone	5
lidocaine injection	3
nitroglycerine subling.	3
verapamil	1
<b>Antibiotic</b>	<b>27</b>
ceftriaxone	11
meropenem	5
penicillin	11
<b>Pain / antiemetic</b>	<b>267</b>
fentanyl	233
aspirin	2
morphine injection	5
ondansetron	26
paracetamol	1
<b>Poisoning</b>	<b>11</b>
flumazenil	5
naloxone	6
<b>Diabetes</b>	<b>9</b>
glucose 50%	6
glucagon	2
insulin	1

List of interventions	
<b>No intervention</b>	<b>3746</b>
<b>Basic interventions</b>	<b>2621</b>
"Oxygen"	1583
Neck brace / collar	443
Spineboard	434
Rebreathing technique	52
Compression dressing	37
Fracture stabilisation	32
Vacuum mattress	16
Fracture reduction	11
Hyperventilation	8
Scoop stretcher	5
<b>Advanced interventions</b>	<b>1498</b>
IV access	1041
Maintenance of patent airway	102
Ventilation	90
Tracheal intubation	74
Suction	73
Anaesthesia	51
CPR	31
Intra-osseous access	22
Defibrillation	9
Pleura drain	2
Surgical airway	2
Gastric decompression	1



had no vital parameter documented. Only 22% of the children had all of respiratory rate, saturation, heart rate and BP documented. Prehospital invasive procedures such as tracheal intubation (n=74), intraosseous access (n=22) and chest drain placement (n=2) were infrequently performed.

10 most common, and selected serious call codes		
1	Breathing difficulties	840
2	Transport	721
3	Febrile seizures	704
4	"Injury"	678
5	"Illness"	636
6	Seizures	635
7	Unconscious	294
8	Foreign body in airway	92
9	Poisoning	81
10	Asthma	72
Meningitis		24
Cardiac arrest		22
Haemorrhage		21
Burn injury		20
No code		35
Total number of cases		5043

10 most common, and selected serious actual diagnoses		
1	Febrile seizures	935
2	Observation after traffic accident	623
3	"Observation for suspected disease"	403
4	Unspecified seizures	368
5	Observation after accident	346
6	"Examination and observation"	78
7	Pseudocroup and epiglottitis	248
8	Unspecified fever	190
9	"Epilepsy"	167
10	Hyperventilation	118
Concussion		108
Respiratory failure		106
Fainting		105
Foreign body in airway		97
Multiple injuries		79
Asthma		76
Fracture		42
Total number of cases		5043

Result of physician's assessment	
Transport to hospital without physician	3092
Transport to hospital with physician	1078
Case ended at home no transport to hospital	743
Level of priority changed	70
Other	34
Patient declared dead	26
Total number of cases	5043

**Conclusion:** Prehospital paediatric emergencies are rare, and more frequently involve smaller children. Monitoring, or at least documentation of basic vital parameters is infrequent in our material and may be an area for improvement. Advanced and potentially life-saving prehospital interventions provide a dilemma since they likely occur too infrequently to allow service providers the chance to maintain technical skills in the prehospital environment.

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**Conflicts of interest:** None to declare.

**Funding:** this project was carried out as part of SSAI's two year fellowship programme, paid for the authors' employers (other than Dr Mikkelsen). Data was provided for free by The Southern Danish Prehospital Registry through Dr Mikkelsen.

August 2019