MEDICINE

Research Letter
Pediatric Emergencies—Worsening Care Bottlenecks as Exemplified in a Major German City

Children and adolescents are entitled to the best possible medical care (1). According to a survey of more than 50 pediatric hospitals in Germany, resources and staffing levels are increasingly scarce—resulting in critical shortfalls in the necessary staffing levels and risk to clinical inpatient care that cannot be compensated (2). The timely delivery of care for children with life threatening illness who potentially require intensive care is only the tip of this particular iceberg.

Data documenting emergency care for time-critically and life-threateningly ill children in Germany are lacking.

This retrospective analysis aims to explain emergency care for children with life-threatening illness, using the major city of Munich as an example. As the primary endpoint we analyzed the forced centralized allocation to pediatric emergency departments for patients at maximum risk—which happens although the hospitals are officially registered with the emergency medical services as temporarily "closed" because of lacking treatment capacity (for example, because beds are unavailable as a result of staff shortages).

Method
Since 2013, centralized allocations in Munich have been arranged by the emergency medical services Munich with the help of a web based IT system (IVENA eHealth, mainis IT, Frankfurt) and triaged into three defined sighting categories:

- SC1: emergency treatment
- SC2: inpatient treatment

In the context of a retrospective data collection we analyzed the data collected by IVENA eHealth from 1 January 2015 to 31 December 2019 for all persons aged <18 years as regards SC 1 triaged emergencies and the proportion of centralized allocations to pediatric intensive care departments. A more detailed description of the methods is given by Rittberg et al (3).

For the emergency treatment of time-critically and life-threateningly ill children in the state capital Munich and the adjacent rural district, four pediatric intensive care departments are available (1× pediatric only, 2× mixed neonatal-pediatric, 1× pediatric cardiology). Designated emergency trauma rooms for children as the first port of call are set up in three of these. We defined as the primary endpoint the number of forced centralized allocations and as the secondary endpoint the rate of notifications to emergency medical services’ control centers from departments unable to accept any further patients for emergency care.

Results
In the 5 year observation period, a total of 49 193 pediatric patients were allocated to a hospital by the emergency medical services. Of these, 2694 children (5.5%) were triaged to the highest and most urgent category SC1, of whom 1554 (58%) required immediate intensive medical care.

An analysis of the rates of forced centralized allocations in the emergency category SC1 by age group, a continuous increase with the highest values was seen in toddlers in 2019 (Table).

The Figure shows the rate of notifications for the five year period (2015–2019) from pediatric intensive care departments of Munich’s pediatric hospitals to emergency medical services’ control centers that they are unable to accept any further patients for emergency care. In this time period, forced centralized allocations to Munich’s pediatric intensive care departments notably increased.

In 2015, 5.6% of forced centralized allocations were to a pediatric intensive care department, whereas by 2019 this had risen to 27%. In 2019, one in four forced allocations of a time-critically ill or seriously injured child to a pediatric intensive care department had to be undertaken as a forced centralized allocation.

Discussion
In 2015–2019 in Munich, the rate of forced centralized allocations by the emergency medical services for pediatric patients triaged as the highest category of urgency (SC1) had substantially increased. Simultaneously the rate of notifications from pediatric intensive care

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**TABLE**

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<thead>
<tr>
<th>Centralized allocations relative to total allocations by age group and for the total population in category 1</th>
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<tbody>
<tr>
<td><strong>Age group</strong></td>
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<td>0–2 years</td>
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<td>12–14 years</td>
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<tr>
<td>15–17 years</td>
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<td><strong>Total</strong></td>
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SC, sighting category/triage category

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The real pressure on existing capacities became even more notable if one remembers that the catchment area of Munich’s pediatric intensive care units includes the surrounding area and the pediatric hospitals located there, which have no pediatric intensive care departments themselves.

This study confirms that the requirement for sufficiently available medical care for children that—as Germany’s social code (SGB V § 12) stipulates—the funding bodies are to guarantee is not even met in time-critical life-threatening emergencies. Forced centralized allocations in order to deliver care to critically ill or injured children is a last resort that places a high burden on all directly involved parties. For the affected children it is more than that—a structurally exponen-tiated emergency. Better funding for pediatric medicine and making nursing in highly qualified and specific pediatric care more attractive as a profession could be important solution strategies.

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Conflict of interest statement
The authors declare that no conflict of interest exists.

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References

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