

# International comparisons of selected service lines in seven health systems

ANNEX 6 – REVIEW OF SERVICE LINES: PAEDIATRICS

Evidence Report  
October 27<sup>th</sup>, 2014



# Executive summary for Inpatient Paediatrics

- Delivery models for inpatient **paediatrics internationally vary in the extent to which they are centralised**:
  - In some regions, for example Sweden, inpatient paediatrics is **highly centralised** with very little activity (and no surgical activity) taking place outside of specialist children's hospital and major designated centres, and even paediatric A&E is generally routed to a specialist centre
  - In the majority of regions looked at – including Arkansas, Victoria, Germany and Ontario – we observe **some degree of centralisation** (high in Ontario for example, but lower in Germany). This pathway to centralisation has been more overtly managed in some cases, e.g. Ontario, and more evolutionary in others, e.g. Arkansas. Additionally, health systems are at different stages, with Ontario having broached issues of centralisation a decade ago, while this is viewed as a current challenge in Victoria
  - In some regions where the average hospital is larger, e.g. the Netherlands, inpatient paediatrics is provided by most acute hospitals with **centralisation only beginning to emerge in very specialist areas of care**, such as paediatric oncology
- We have identified some examples where **technology is being used to improve the quality and coordination** of paediatric services:
  - In Ontario, an **electronic Child Health Record** connects almost all provides across all settings (including primary, community and inpatient)
  - In Victoria, **telehealth** is used to get expert paediatric input to locations where this is not available on-site
- **Standards for inpatient paediatric services are significantly more explicit in the NHS** than in the other regions reviewed. These standards are mostly around workforce requirements and are set by a range of organisations, for paediatrics, surgeons as well as nurses. The RCPCH are also establishing a working group to review the evidence around urgent and emergency care for children with the aim of developing guidance for common conditions presenting at the ED (diarrhoea and vomiting / breathing difficulties / fever / constipation) – many of which don't necessarily need to go to the ED and are redirected to the ED by 111 or the GP
- In contrast, **very few other countries have clear, or indeed any, guidelines** on general requirements for paediatric care. There exist paediatric guidelines that focus on clinical practice for specific conditions, but no general process and operations requirements like in the NHS
- Most countries have guidelines for doctors and nurses to be **trained in children's care**, but few state specific qualification requirements



# Paediatrics – NHS core standards

## NHS standards setting bodies

- Royal College of Paediatrics and Child Health
- Royal College of Surgeons
- Royal College of Nurses

## Core NHS standards<sup>1</sup>

### Access

- **All children admitted with an acute medical problem to be seen by a middle grade or consultant paediatrician ≥24hrs and by a consultant ≥24 hrs**
- Paeds patients should not wait ≥12hrs for emergency surgery (if not required immediately)

### Input

- **All SSPAUs have access to paediatric consultant opinion throughout all of the hours that they are open**
- **Paediatric consultant is present during times of peak activity**
- **All general acute paediatric rotas are made up of at least 10 WTEs, all of whom are EWTD compliant**
- Specialist paediatricians are available immediately by phone for all specialties and all paediatricians
- Social care, policy and health care have access to a paediatrician with child protection experience for immediate advice and subsequent assessment
- Children's surgery should be delivered as a network with a regional hub and PICU per 3.5-5 million population
- **Surgeons and anaesthetists must have training to treat children**
- Surgeons must have immediate access to senior paediatric support (≤20 mins) and resources to stabilise and resuscitate 24/7
- **Units accepting acute paed trauma should have co-located paed HDU and PICU or adult ICU which admits children short stay**

### Process

- All children with an acute medical problem referred for a paediatric opinion seen by, or has their case discussed with, a paediatrician on middle grade or consultant rota or a registered advanced practitioner children's nurse
- ≥1 medical handover every 24hrs is led by a paediatric consultant
- All paediatric inpatient units adopt an "attending consultant" system

## Critical standards

	Level achieved
1 Children with acute medical problems seen by paediatrician in 4hr and by consultant in 24hr	77.4% are seen in 4hrs, 87.7% in 24 <sup>2</sup>
2 Paediatric consultant is present during times of peak activity & during opening times in SSPAU	Not available
3 All general acute paediatric consultant rotas are made up of ≥10 EWTD-compliant WTEs	28% of rotas have 10 or more WTE <sup>2</sup>
4 Surgeons and anaesthetists must have training to treat children	Not available
5 Units accepting acute paed trauma should have co-located paed HDU and PICU	Not available

<sup>1</sup> Royal College of Paediatrics and Child Health, Facing the Future, 2011; Royal College of Surgeons – Standards for Children's surgery, 2013

<sup>2</sup> Back to Facing the Future, RCPCH



# Paediatrics – International standards

Topic of standards	Standard specifics						
	England	Victoria	Ontario	Netherlands	Germany <sup>1</sup>	Sweden	Arkansas
<b>Paediatric consultant presence</b>	During times of peak activity & during opening times in SSPAU	Access at all times to a resource person w/ paedics clinical experience	No guideline	No guideline	Paediatric Surgery Specialist availability 24h	No guideline	No guideline
<b>Time to treatment</b>	If acute medical problems seen by paediatrician <4hr and consultant <24hr	No guideline	No guideline	No guideline	No guideline	No guideline	No guideline
<b>Consultant rotas</b>	≥10 WTEs, all EWTD-compliant	No guideline	No guideline	No guideline	No guideline	No guideline	No guideline
<b>Qualifications</b>	Surgeons and anaesthetists must have training to treat children	Staff needs to be specifically trained to meet children's needs	No guideline	Staff needs to be specifically trained to meet children's needs	Surgeon and nurse need to be paediatric specialist	No guideline	No guideline
<b>Co-located services</b>	If accepting acute trauma should have paedics HDU and PICU	No guideline	No guideline	No guideline	Access to PICU	No guideline	No guideline
<b>Minimum volume</b>	No guideline but proposal <sup>2</sup> that units <2,500 adm/yr and within 30 mins of another unit should close or convert SPAU	No guideline	No guideline	No guideline	No guideline	No guideline	No guideline

- While there exist detailed guidelines on treating **specific conditions** in children, **general paediatric standards are rare**
- In **Ontario and Sweden**, centralisation of paediatric care in specialist **paediatric hospitals** cuts the need for staffing and operations standards

<sup>1</sup> If doing standard level paediatric surgery (i.e. not complex nor day cases)

<sup>2</sup> Royal College of Paediatricians and Child Health, Facing the future: a review of paediatric services, April 2011



# Paediatrics – Comparison of standards

Stricter target than NHS

Same target than NHS

More lenient target than NHS

No target

	England	Victoria	Ontario	Netherlands	Germany <sup>1</sup>	Sweden	Arkansas	NHS strict?
<b>Paediatric consultant presence</b>	Opening times	All times	✗	✗	24h <sup>2</sup>	✗	✗	
<b>Time to treatment</b>	<4 hr	✗	✗	✗	✗	✗	✗	
<b>Consultant rotas</b>	>10 WTEs	✗	✗	✗	✗	✗	✗	
<b>Qualifications</b>	Paeds training	Paeds training	✗	Paeds training	Paeds training	✗	✗	
<b>Co-located services</b>	PICU	✗	✗	✗	PICU	✗	✗	
<b>Minimum volume</b>	✗	✗	✗	✗	✗	✗	✗	

1 If doing standard level paediatric surgery (i.e. not complex nor day cases); 2. Paediatric surgeon



# Paediatrics – Reasoning behind the critical standards

Topic of standards	Why critical?
<b>Paediatric consultant presence</b>	<ul style="list-style-type: none"><li>▪ In 2013 a sample of trusts were audited against the RCPCH standards, consultant presence and cover was the critical challenge in meeting the standards<sup>1</sup></li><li>▪ It is thought rural and remote hospitals may find it much harder to recruit and retain paediatricians<sup>1</sup></li></ul>
<b>Time to treatment</b>	<ul style="list-style-type: none"><li>▪ A minimum time to consultation by a paediatrician requires continuous and adequate staffing levels, while rural and remote hospitals may find it much harder to recruit and retain paediatricians<sup>1</sup></li></ul>
<b>Consultant rotas</b>	<ul style="list-style-type: none"><li>▪ Few hospitals are able to meet this target: only 28% of all rotas were staffed by 10 or more FTE consultants in 2012<sup>2</sup></li><li>▪ The challenges faced by hospitals to create rotas that comply with the European Working Time Directive led the RCPCH to recommend the closure of 48 or more smaller paediatric units<sup>1</sup></li></ul>
<b>Qualifications</b>	<ul style="list-style-type: none"><li>▪ Paediatric training or other qualification for treating children are the only stated standards for paediatrics in many countries</li><li>▪ 58% of the services used by children in England did not meet the necessary training standards<sup>3</sup></li></ul>
<b>Co-located services</b>	<ul style="list-style-type: none"><li>▪ Requirements for co-located services such as specialised paediatric operation rooms and paediatric ICUs can be difficult for smaller hospitals, where lower volumes do not warrant these investments</li></ul>
<b>Minimum volume</b>	<ul style="list-style-type: none"><li>▪ Although standards do not set minimum volume thresholds, challenges in meeting clinical standards in lower volume units has led to recommendations relating to minimum volume thresholds:<ul style="list-style-type: none"><li>– In more rural areas it may be more difficult to meet the volume requirements due to low demand</li><li>– This can directly lead to reconfiguration by closing service lines in smaller hospitals</li></ul></li></ul>

<sup>1</sup> Expert interviews conducted by research team; <sup>2</sup> Back to Facing the Future, RCPCH; <sup>3</sup> Healthcare Commission (2007) 'Improvement review into services for children in hospital'.



# Paediatrics – Sources

## Sources for standards

### England

- Royal College of Paediatrics and Child Health – Facing the Future, 2011
- Royal College of Paediatrics and Child Health – Back to Facing the Future, 2013
- Royal College of Surgeons – Standards for Children’s surgery, 2013

### Victoria

- Royal Australasian College of Physicians – Standards For The Care Of Children And Adolescents In Health Services , 2008

### Ontario

- N/A

### France

- Haute Autorité de Santé – Enjeux et spécificités de la prise en charge des enfants et de adolescents en établissement de santé, 2011

### Germany

- Deutschen Gesellschaft für Kinderchirurgie – 2006 Visionen Zur Zukünftigen Struktur Der Kinderchirurgie In Deutschland

### Sweden

- N/A

### Arkansas

- N/A



# Paediatrics – Standard setting context

## Standard setting context

### England

- The Royal College of Paediatrics and Child Health has published paediatric care guidelines in their report ‘Facing the Future’
- They have later published an audit based on these guidelines, ‘Back to Facing the Future’, but this does not mention specific trusts

### Victoria

- The Royal Australasian College of Physicians has published guidelines for standards of care in treating children and adolescents
- These standards are not centrally monitored or enforced

### Ontario

- The Greater Toronto Area Child Health Network attempted to rationalise inpatient paediatrics and perinatal services in the period 2005/6 but full implementation was hampered by lack of political mandate (i.e. to close sub-scale services)<sup>1</sup>
- LHINs contract with hospitals to provide services and may set quality/outcomes standards as part of the contractual framework
- Canadian Pediatric Society publish non-mandatory clinical guidance for specific pathways and conditions and manages the Canadian Pediatric Surveillance Programme to monitor rare diseases

### Netherlands

- The Dutch Association for Children’s Medicine (Nederlandse Vereniging voor Kindergeneeskunde) published disease specific guidelines, as well as recommendations around child abuse and mental illness in children, but no general paediatric standards
- There is no monitoring of paediatric-specific targets

### Germany

- The Germany Association for Children’s Surgery (Deutschen Gesellschaft für Kinderchirurgie) has published guidelines around paediatric surgery, but these are not enforced or monitored
- There exist no guidelines for general paediatric acute care

### Sweden

- Swedish Paediatric Society works to promote the development of paediatrics and to keep a high-quality health care for children and adolescents
- The principles of the United Nations Convention on the Rights of the Child are guiding in national regulations
- These standards are not centrally monitored or enforced

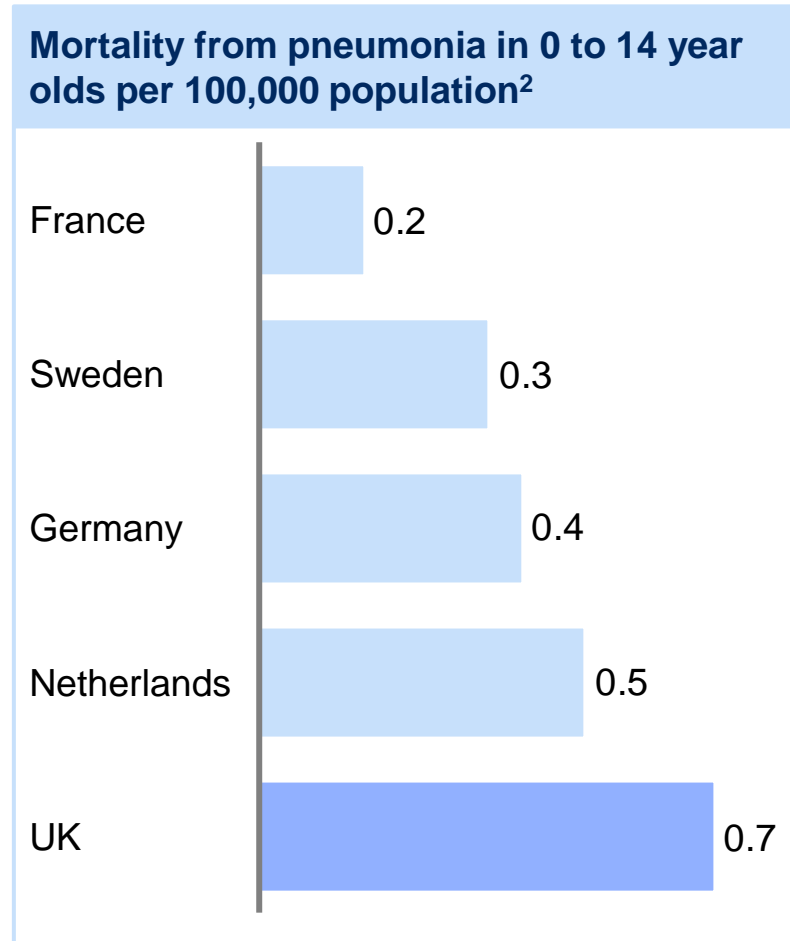
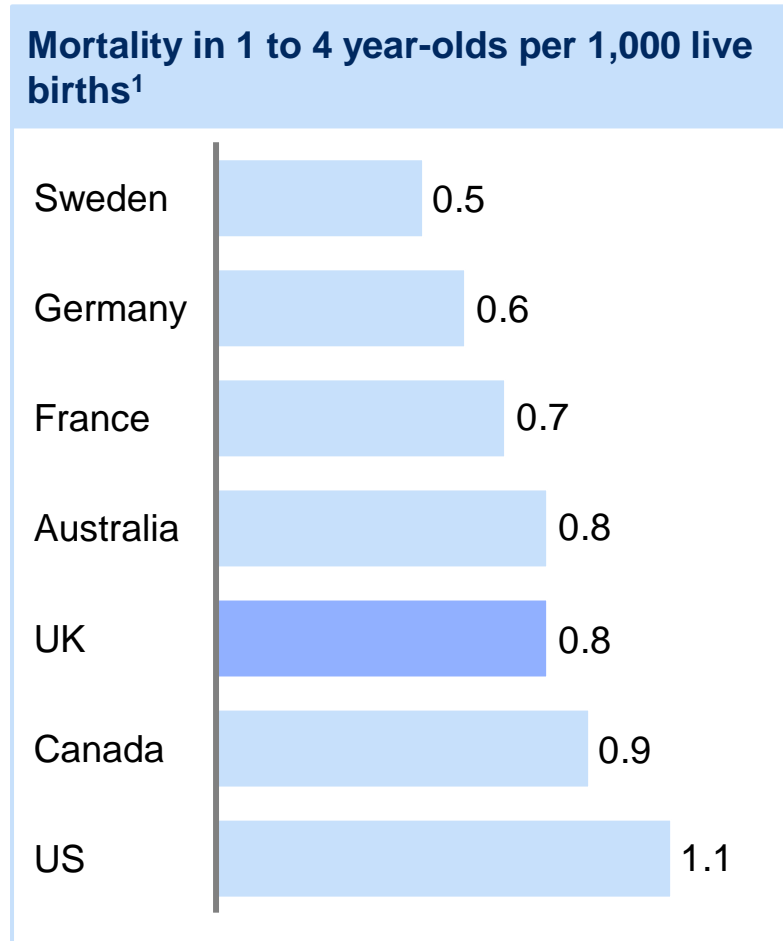
### Arkansas

- The State Health Department’s “Rules and Regulations for Hospitals and Related Institutions in Arkansas”, which hospitals have to comply with to get certification, only sets basic physical/building requirements for paediatric services (e.g. children to be treated separately from adults)
- There is no other monitoring of standards





# Childhood mortality varies by country, but is likely influenced by many other factors besides quality of hospital care





# Paediatrics in the Netherlands

## Service line definition

- Paediatrics is defined in the Netherlands as care for children up until 18 years old

## Service delivery model

- Acute paediatric care is delivered by all hospitals
  - All hospitals generally treat children
  - Care is delivered by paediatric consultants and nurses
  - There are no specialised paediatric GPs
- Specialist paediatric oncology care is being centralised to one centre
  - Although it took many years the 8 AMCs have decided to centralise their specialty paediatric oncology services to one centre
  - A new centre is now being built near the AMC in Utrecht to open in 2016
- The municipal health services provide preventative care for young children
  - Children between 0 and 4 will visit a consultation bureau for up to 13 times
  - Specialised doctors follow the child's growth and development, provide childhood vaccinations and give advice to parents

## Comparison to NHS

- All hospitals in the Netherlands provide paediatric care, which is similar to the English model for paediatric acute care
- Contrary to the NHS, paediatrics in the Netherlands is subject to few specific standards (with the exception of condition-related clinical guidelines)
- Municipal health services monitor development and provide preventative care for younger children in the Netherlands



# Inpatient paediatrics in Ontario

## Service line definition

- The general age limit in use to define paediatric care is up to 18 years but there is no absolute standard and age cut-offs vary by service or provider
- The electronic Child Health Record captures full medical information up to age 19

## Service delivery model

- Primary and out-of-hospital care is provided by Family Practitioners and Primary Care Paediatricians
  - Some of these are organised into multi-specialty polyclinics (e.g. with diagnostics and a wide range of outpatient specialists available at a single community site)
  - Geographic distribution of paediatricians is uneven and higher rates of child A&E attendances have been observed in areas with lower local availability of primary care paediatricians
- Children's Treatment Centres provide a range of out-of-hospital services
  - including speech/language therapy, physiotherapy, audiology, weight management clinics, family and social support, and some outpatient clinics but do not provide primary care or inpatient admissions
- Inpatient care is provided by a limited number of acute hospitals
  - Most specialist secondary/tertiary care is provided at specialist hospitals such as The Hospital for Sick Children in Toronto
  - Most providers (acute hospitals, Children's Treatment Centres and primary care providers) are connected via a single integrated electronic Child Health Record, called the eChild Health Network which captures the full medical history and covers ~80% of Ontario children

## Comparison to NHS

- Inpatient paediatric care is far more centralised in Ontario compared to the NHS
- Specialist providers deliver secondary and tertiary, emergency and elective, service to a large catchment population. This is unlike the NHS, where specialist centres tend to serve a more limited population for secondary care, with larger catchments only for tertiary services
- Unlike the NHS, paediatric services (primary, secondary, tertiary, as well as some social services) are connected via a single integrated patient record



# Inpatient paediatric care is highly centralised around a single secondary/tertiary hospital serving a 6-14 million catchment population



**Hospital for Sick Children**

- Secondary provider to **5.5m** Greater Toronto Area population
- Tertiary/quarternary provider to **13.5m** Ontario population
- All providers have transfer protocols/affiliation to Sick Kids (only PICU provider)

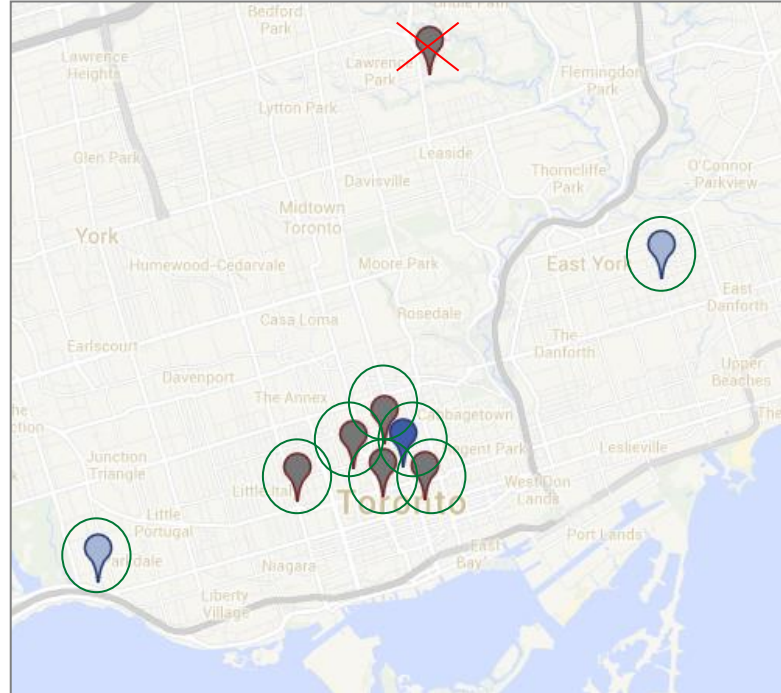
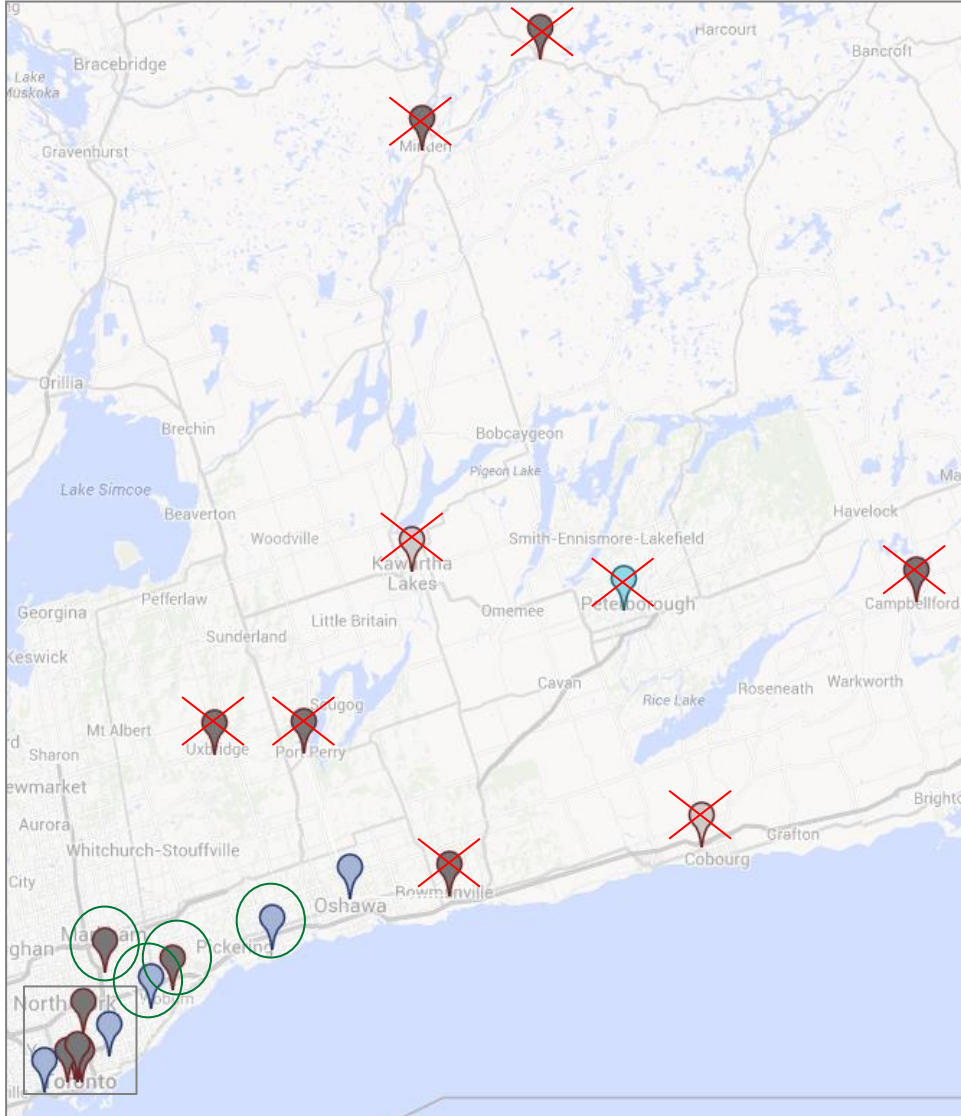


- Paediatric ICU + other departments
- Paediatric inpatient + other departments
- Paediatric A&E and OP
- Limited paediatric services<sup>1</sup>
- No paediatric services
- # Beds (where available)

1. **Ross Memorial Hospital:** Paediatric Decision Unit, staffed by Emergency Medicine specialists, admits for up to 24hrs for observation before transfer or discharge; **Northumberland Hills Hospital:** No specialist paed unit but some IP paed minor surgery available



# The eChild Health Network connects most providers of paediatric care via a single integrated electronic health record system



- Ontario has a single, integrated electronic Child Health Record used by most providers across all settings of care that offer paediatric services. Roll-out is voluntary and ongoing with continued efforts to reach non-participating providers
  - The eChild Health Network was created to improve Safeguarding/Protection but is increasingly used to improve medical care quality
- Connected to the Child Health Network  
✗ Not connected



# Inpatient paediatrics in Sweden

## Service line definition

- Paediatrics in Sweden is concerned with children and adolescents under the age of 18 years that seek health care
- Paediatric surgery is a sub-specialty within surgery
- There is no age limit when a child is allowed to participate and decide in a care situation. The child's right to decide for itself is related to the child's maturity, how difficult the decision is and what significance it has for the child's continued health

## Service delivery model

- The larger acute hospitals have specialised children's hospitals with paediatric A&Es to deliver paediatric care. In the Stockholm county region, serving a population of ~2 million, two acute hospitals provide inpatient paediatrics:
  - Sodersjukhuset has Sachska Children and Adolescents Hospital
  - Karolinska has united the paediatrics services of both locations into one hospital, Astrid Lindgren Children's Hospital
- These specialised children's hospitals also run local clinics to provide specialist care close to home
- Other acute hospitals will provide limited paediatric services, with often no inpatient care
  - Some hospitals have paediatric outpatient or A&E services
- A significant portion of paediatric health care is conducted in primary care institutions
  - All families with children in Sweden are offered preventative health care with health examinations and vaccinations for children at Child Health Centers<sup>1</sup>, which is free

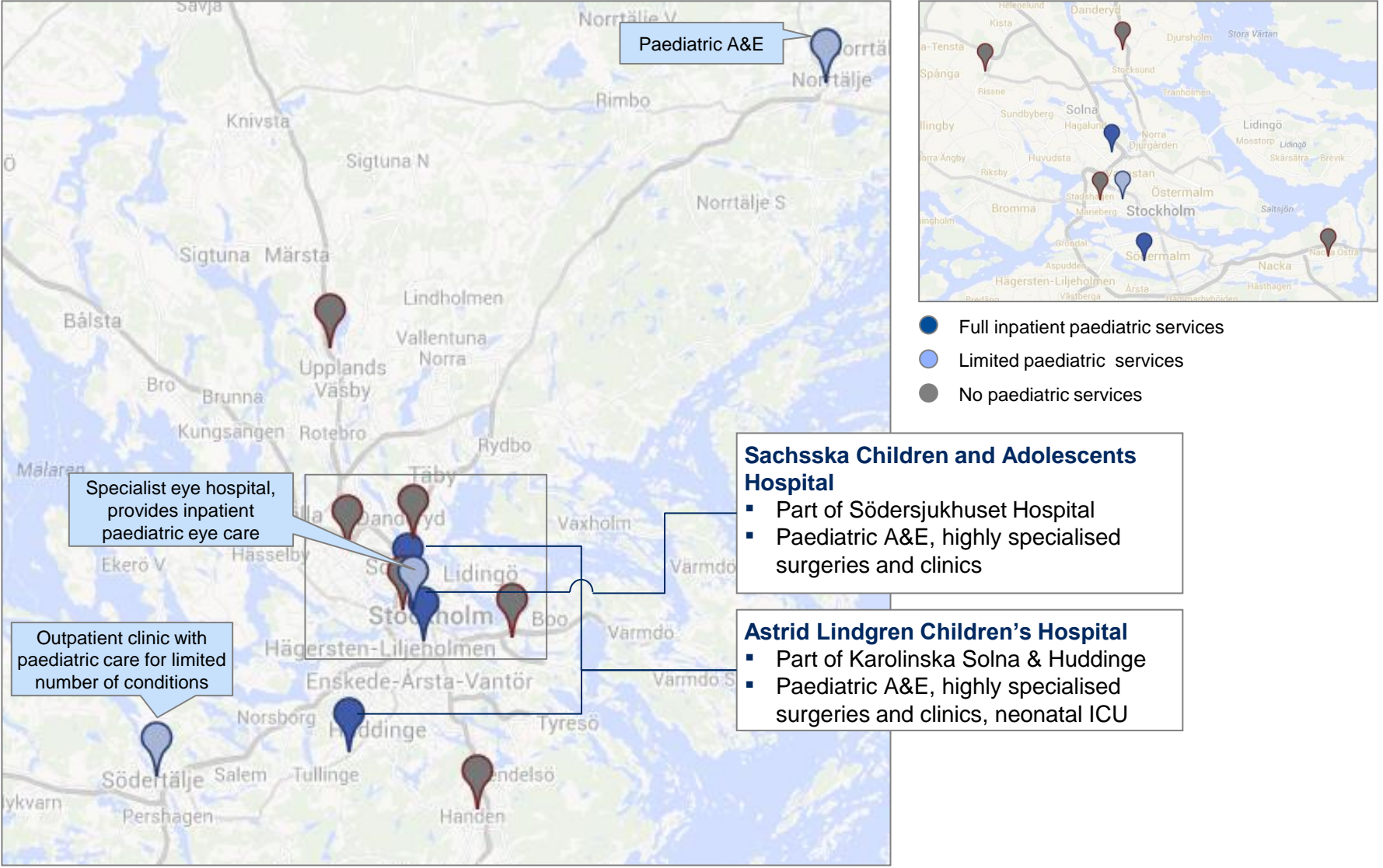
## Comparison to NHS

- Paediatric care in Sweden is highly centralised, with only two providers taking inpatient paediatric admissions, compared to the NHS where centralisation is limited
- Outpatient paediatric care is provided in local clinics, but run by the specialised hospitals

<sup>1</sup> In Sweden referred to as "BVC" (barnvårdscentraler)



# Inpatient paediatric care in Stockholm County is provided by two paediatric hospitals

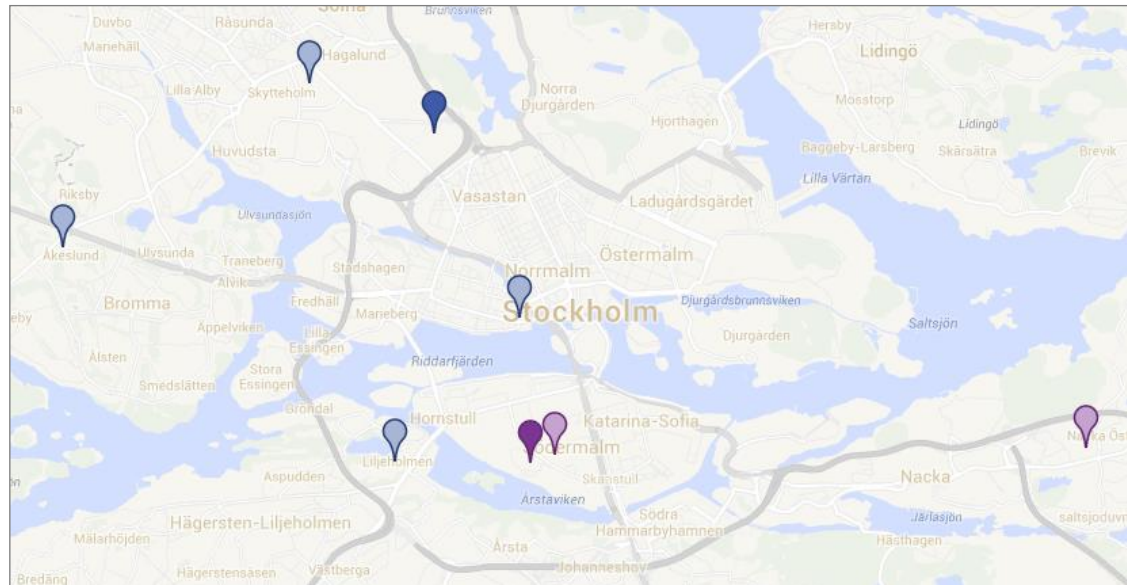
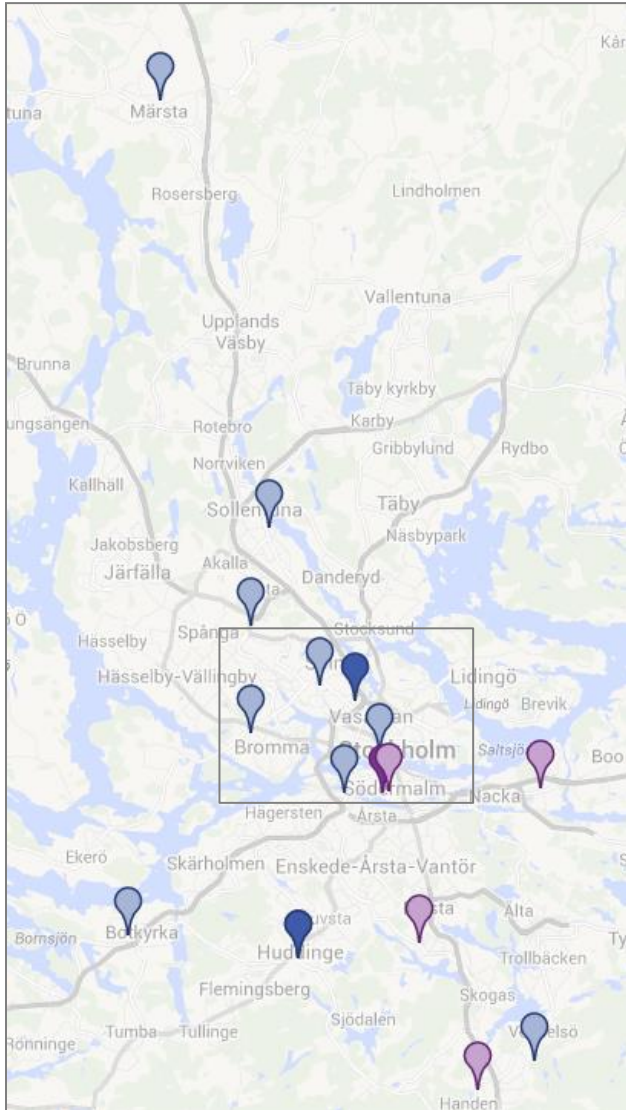


SOURCE: Hospital websites



# Both Astrid Lindgren and Sachsska provide specialised paediatric care through a network of clinics

- The clinics are staffed with paediatric specialists and nurses, and provide specialist paediatric care on conditions such as ADHD, asthma, psychosomatic illnesses and obesity
- They are open during normal hours
- The clinics and doctors have close links to the hospitals and can refer patients there if needed



- Astrid Lindgren Children's Hospital (Solna & Huddinge locations)
- Astrid Lindgren clinics
- Sachsska Children and Adolescents Hospital
- Sachsska clinics





# Inpatient paediatrics in Germany

## Service line definition

- Germany has a large number of out-of-hospital paediatric consultants, delivering out-patient-type paediatric care
- Until recently, hospitals only did inpatient paediatrics, but they are now allowed to provide out-patient care as well

## Service delivery model

- Paediatric care in Germany is highly centralised
  - Only focus care hospitals and higher level hospitals have paediatric departments
  - The exception is specialty clinics with a paediatric focus, e.g. focusing on children with epilepsy
- This is driven by the fact that paediatric departments are generally loss making (partly due to very high physician salaries), making it unattractive for smaller hospitals
- All paediatric departments have ICU beds for children (24 hours)
- Focus care hospitals with paediatric departments usually also offer paediatric emergency services
  - However, not cost-covering revenues lead to reduced opening hours, e.g., in AMC Kiel

## Comparison to NHS

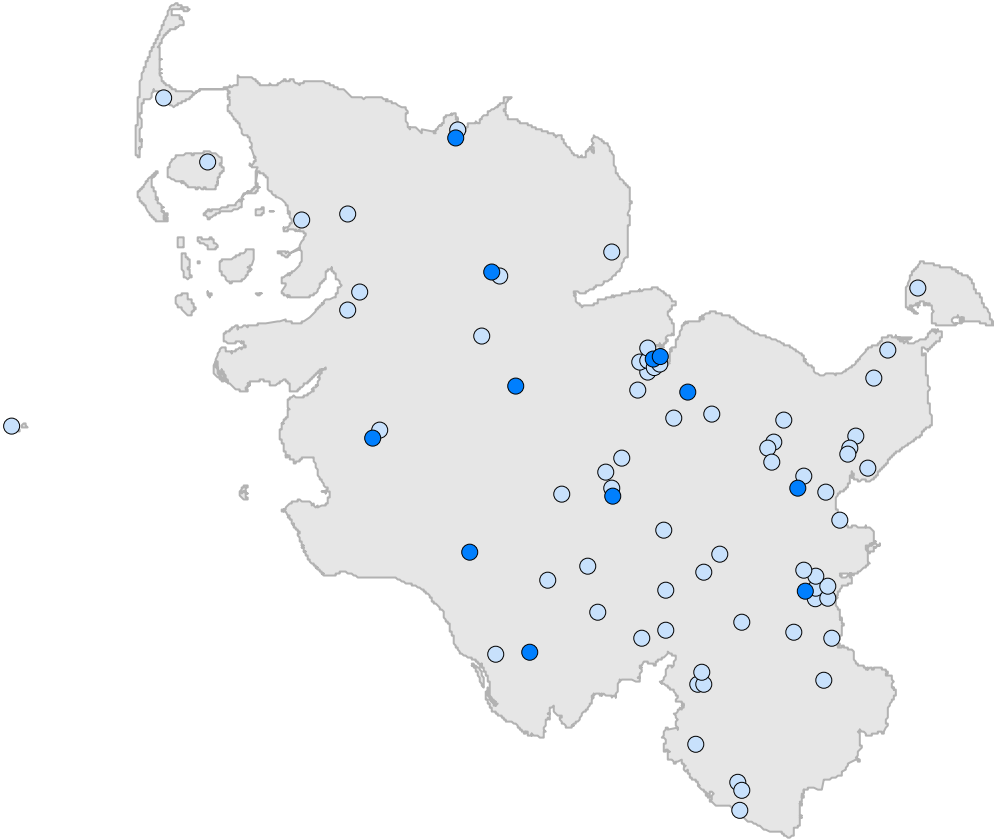
- Contrary to the NHS, inpatient paediatric care is highly centralised in Germany, where only the most advanced hospitals have a paediatric department
- Outpatient paediatrics on the other hand is delivered by a large number of ambulatory specialists



# Only a small proportion of hospitals provide paediatric services: in Schleswig-Holstein, 12 out of 78

## Hospitals with paediatrics

- Paediatric services
- No paediatric services





# Inpatient paediatrics in Arkansas - Introduction

## Service line definition

- The American Academy of Pediatrics sets the age boundaries of paediatric care as from birth or 21 years of age. This guidance is not mandatory and different hospitals and providers may operate using different definitions.

## Service delivery model

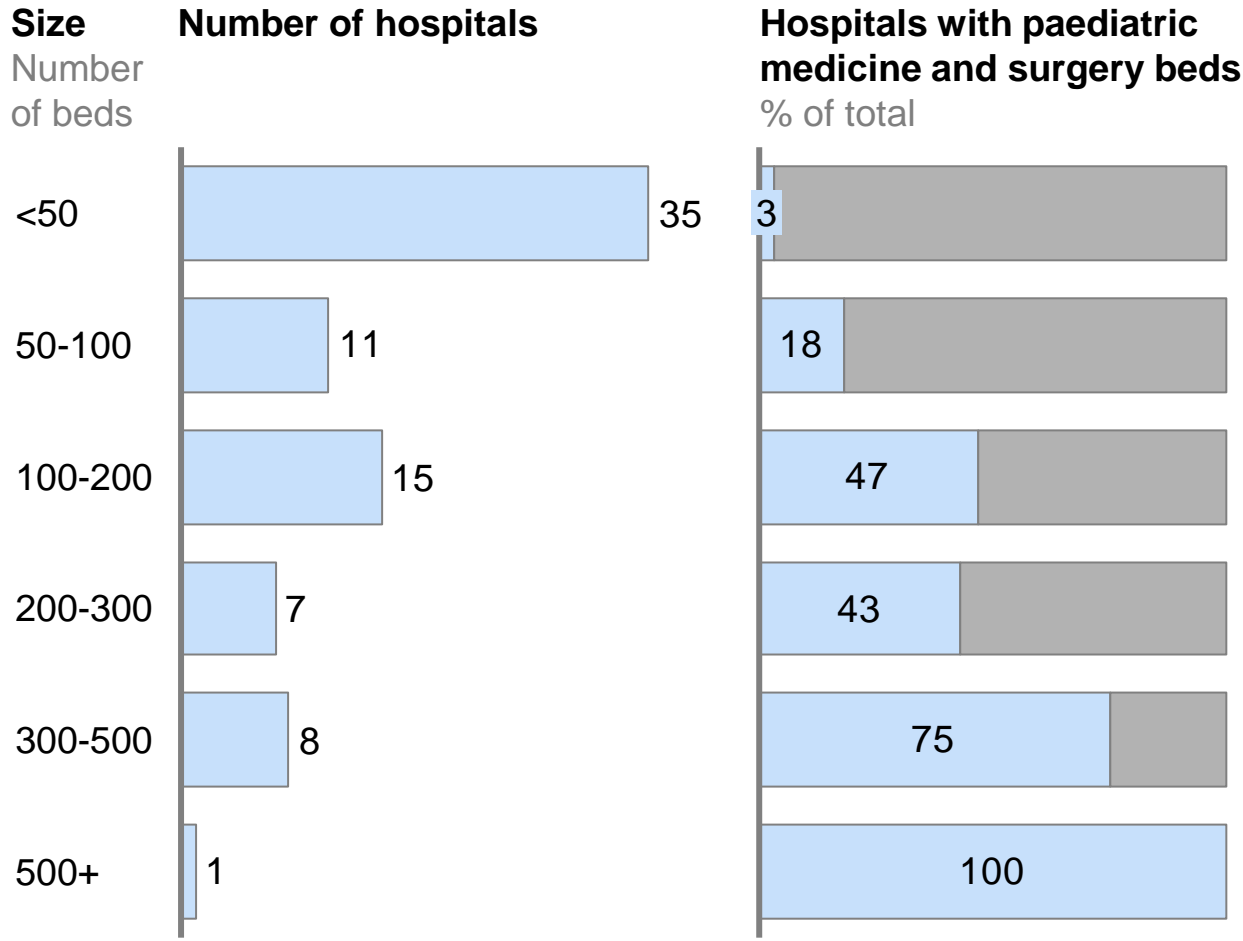
- Primary care is provided by self/group-employed Paediatricians based in the community.
  - Many children will be registered with a Paediatrician as their General Practitioner, rather than a GP or Family Physician.
  - Both public and private insurers are increasingly encouraging patient to enroll in Patient-Centered Medical Home type health insurance policies, and under these, the parent can elect to have a Paediatrician (rather than a GP) as the core care provider for their child(ren).
- As a consequence of the primary care model which allows children to be seen by a specialist more quickly and directly, including urgent and out-of-hours care, there is likely to be less pressure on A&E services
- Specialist secondary and tertiary care is provided by a single specialist provider – Arkansas Children’s Hospital – which serves the state’s 2.9 million population
- In addition, number of other larger providers offer paediatric A&E and inpatient services while most smaller providers offer no paediatric inpatient care
- Patients can choose where they receive care – e.g. they can elect to be treated at ACH for secondary care if they wish – subject to any provisions within their insurance coverage

## Comparison to NHS

- Compared to NHS, more specialist paediatric care is available more directly in the community (through Primary Care Paediatricians)
- Specialised inpatient paediatric care is concentrated at a single AMC



# Only a small number of smaller hospitals have any paediatric beds, with paediatric care generally provided in the larger hospitals



Note: Excludes Central Arkansas Veterans Healthcare System

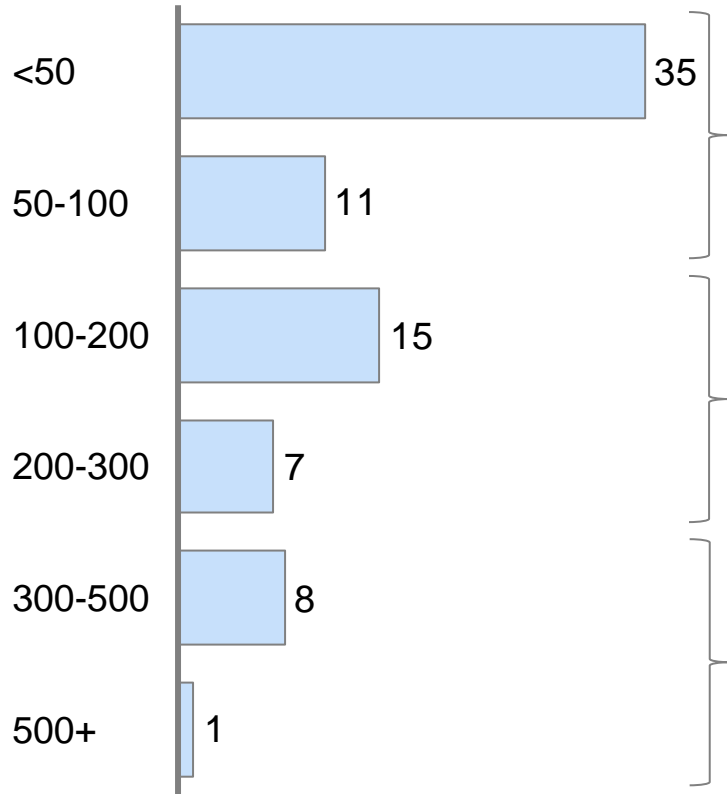
SOURCE: AHA Annual survey, 2013



# The vast majority of paediatric beds are situated in large hospitals

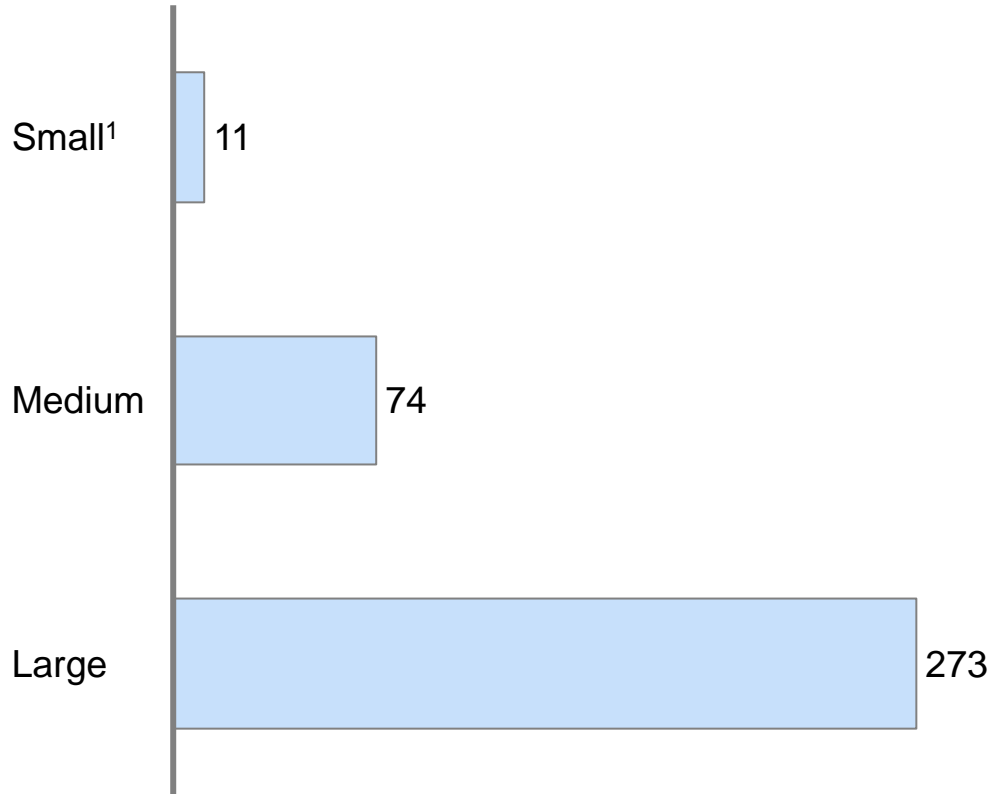
## Size Number of hospitals

Number of beds



## Paediatric medicine and surgery beds

Total number of beds in Arkansas



Note: Excludes Central Arkansas Veterans Healthcare System

<sup>1</sup> Small is used within the context of hospital provision in Arkansas where there are a large number of providers with <50 beds

SOURCE: AHA Annual survey, 2013



# Paediatrics in Victoria, Australia

## Service line definition

- Paediatric health services, as defined in Victoria's Strategic Framework for Paediatric Health Services, cover the provision of health care for babies, young people, adolescents, and transition to adult care<sup>1</sup>

## Service delivery model

- Paediatric services are provided across a range of facilities including specialist tertiary centres, secondary and community hospitals, and GPs
  - The specialist tertiary centres in Victoria are the Royal Children's Hospital (RCH) and Monash Medical Centre (MMC), both located in Melbourne<sup>1</sup>
  - In rural Victoria, regional and the larger sub-regional health services are the principal providers of specialty paediatric services<sup>1</sup>
  - GPs can specialise in paediatrics providing private paediatric services<sup>2</sup>
- A paediatric network was initiated to implement the paediatric framework<sup>1</sup>
  - The Paediatric Clinical Network (PCN) was established in July 2009 with the aim to improve coordination, planning, development and delivery of paediatric services
- Several telemedicine projects are being funded to bring quality paediatric care to rural areas<sup>3</sup>
  - In 2011 and 2012, the PCN has funded 18 health services to undertake telehealth-based projects
  - In May 2013, the Minister for Health announced funding to embed consistent Statewide paediatric telemedicine practice as a standard paediatric service delivery model

## Comparison to NHS

- Most acute hospitals have some paediatric services, like in the NHS
- In Victoria there are private hospitals and GPs that also offer paediatric care





# A stand-alone community hospital Paediatric Short Stay Unit (SSU) has proven very successful in Maroondah Hospital

## Maroondah's Paediatric SSU

- Maroondah is an outer metropolitan hospital without inpatient paediatrics, but with 13k paediatric presentations per year at the ED
- When the ED was expanded, they decided on a paediatric SSU within the ED because
  - Children generally require a lower length of stay (average 0.9 days)
  - The ED was considered the safest place to treat children in a hospital without paediatric registrars
- The ED has
  - 4 Acute Paediatric cubicles
  - Paediatric procedure & resuscitation room
  - 4-8 Paediatric SSU Beds (flexibility to open up to 12)
  - 4 paediatricians and 14 EFT emergency physicians
- While referral structures are in place, 80% of admissions can be catered for at Maroondah
  - Ca. 1,200 admissions in 2011-12, with 10-20 transfers per month
  - Referrals to paediatric wards go to Box Hill Hospital, or to a tertiary centre
- Both safety and satisfaction scores are high