International comparisons of selected service lines in seven health systems

ANNEX 12 – CASE STUDIES: MATERNITY SERVICES IN STOCKHOLM COUNTY, SWEDEN

Evidence Report

October 27th, 2014

Maternity care in Stockholm county – why this case study?

Why this case study?

- Maternity services in Stockholm provide consistent levels of consultant coverage which is considered desirable by RCOG[1]
- Maternity units in Stockholm are relatively large but are clearly differentiated on the basis of the risk profile of deliveries that they are permitted to treat
- Neonatal intensive care beds are available at a little over half of all maternity units and there are clear transfer agreements for units without dedicated NICU beds

Potential impact on costs

- It is not possible to compare costs directly between the NHS and Stockholm given differences in payment systems, case mix and average length of stay
- Risk tiering of maternity units could help deliver efficient utilisation of specialist staff and equipment

Issues of comparability

- Maternity care in Stockholm is broadly similar to the NHS in England, with midwife-led care the norm for all births unless obstetrician care is indicated due to the risk profile of the pregnancy/delivery and/or complications
- Patients have a free choice of maternity provider, including midwife-led birth centres, though there are no freestanding midwife-led units (i.e. which are not co-located with an obstetric service)

Potential impact on quality

- It is not possible to draw causal relationships between the model of maternity care provided in Stockholm and the maternal and neonatal outcomes achieved
- RCOG recommends 24/7 consultant-led services to improve patient safety and experience[1], and the Stockholm model delivers this
- Risk-tiering of providers may support quality of care as higher-risk cases are treated in more specialist centres with staffing tailored to unit tier and specialisation

1 “The RCOG believes that a 24-hour, 7-day-a-week consultant-led service for women requiring obstetric care improves patient safety and enhances women’s experiences. This results from enhanced clinical leadership and decision making with the added advantage of providing better supervision and mentoring of trainee doctors and increased support for midwifery colleagues.” RCOG, Reconfiguration of women’s services in the UK: Good Practice No 15, 2013

Executive summary (1/2)

- The Stockholm county council region covers a population of 2.1 million people (22% of the Swedish population) over an area of 2,517 miles^2. Almost 800,000 people live in the city of Stockholm with the remaining 1.3 million in the surrounding suburban and rural areas.

- There are approximately 29,000 births each year in the county, served by 7 maternity units – an average of 4,150 births per unit compared to a little over 3,000 births on average in the NHS. Units are differentiated based on obstetric risk with 2 units serving a broad range of risk profiles including the highest risk pregnancies, 3 units dealing with medium risk and 2 units with lower risk pregnancies. Of these, one is a midwife led unit, co-located with an acute site. 1% of births take place at home (compared to 2.5% in England).

- Only four maternity units – or one per 7,250 births – have neonatal intensive care units. These have 26 NICU beds on average compared to an average of 11 NICU beds (per NICU) in the NHS. This means the average number of NICU beds per birth is around 50% higher than in the NHS, at 3 per 1,000 births compared to 2 per 1,000 births

- Since 2009, patients have had a free choice of provider (with funding following the patient), though most hospitals continue to serve a predominantly local catchment population

- Although only limited conclusions can be drawn from the available data, indicators of quality and outcomes are good compared to international benchmarks for neonatal mortality, maternal mortality, and Apgar scores. C-section rates are also low at around 16% (compared to 26% in the NHS in England). Rates of obstetric trauma are higher than some peers (3.5% compared to 2.5% in the NHS in England).

Executive summary (2/2)

- The practice of maternity care is quite similar to the NHS:
  - Ante-natal and post-natal care is delivered by midwives working in teams. In some hospitals, midwives providing intrapartum care also provide ante-natal and post-natal care, though this varies by provider
  - Intrapartum care is usually midwife-led unless or until obstetrician-led care is required
  - Women with low-risk pregnancies may elect to give birth in a “birth centre” where care is of a lower medical intensity (no epidurals, fewer interventions) with one-to-one midwife continuity of care available
  - Average length of stay is slightly longer in Stockholm compared to the NHS (2.2 days versus 1.7 days)

- Hospitals providing maternity care face many similar challenges to their NHS counterparts:
  - Workforce shortages create recruitment challenges – in particular in times of peak activity, and in some specialist areas including specialist nursing staff for NICU units
  - Capacity constraints are an issue across the sector as a whole – particularly in times of peak activity

- There are some differences in the delivery model which may offer insights:
  - Staffing rotas are planned on a round-the-clock basis without major variations in staffing levels – including obstetricians – at nights or at weekends
  - Providers are clearly differentiated on the basis of the risk profile of activity they are allowed to undertake
  - Quality is embedded in the payment system

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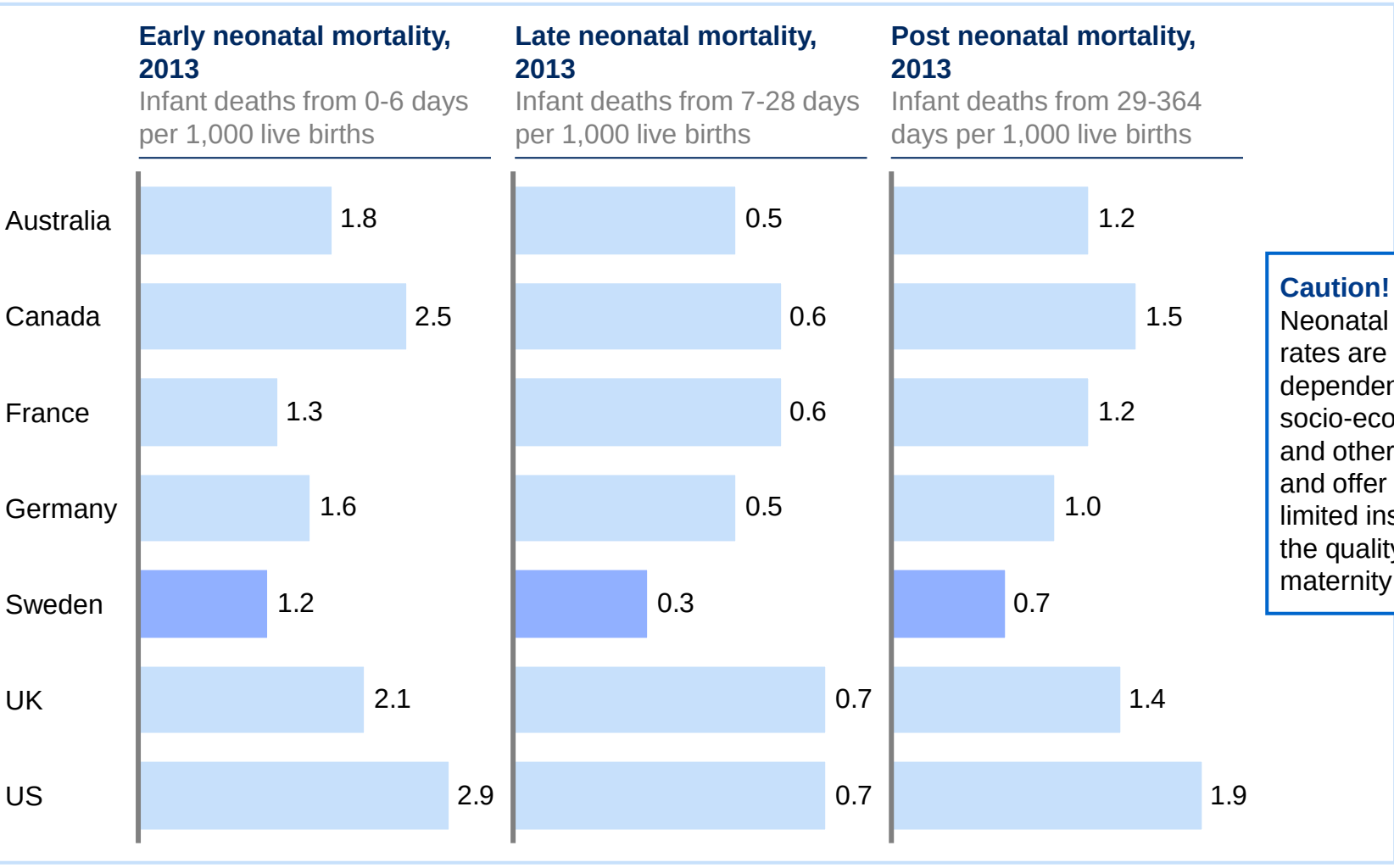
- **Impact – why this case study?**
- Description – what did they do?
- Enablers – how were they able to do this?

The Swedish system performs comparatively well across a wide range of neonatal and maternal outcomes (1/3)



Caution!
Neonatal mortality rates are dependent on socio-economic and other factors and offer only a limited insight into the quality of maternity care

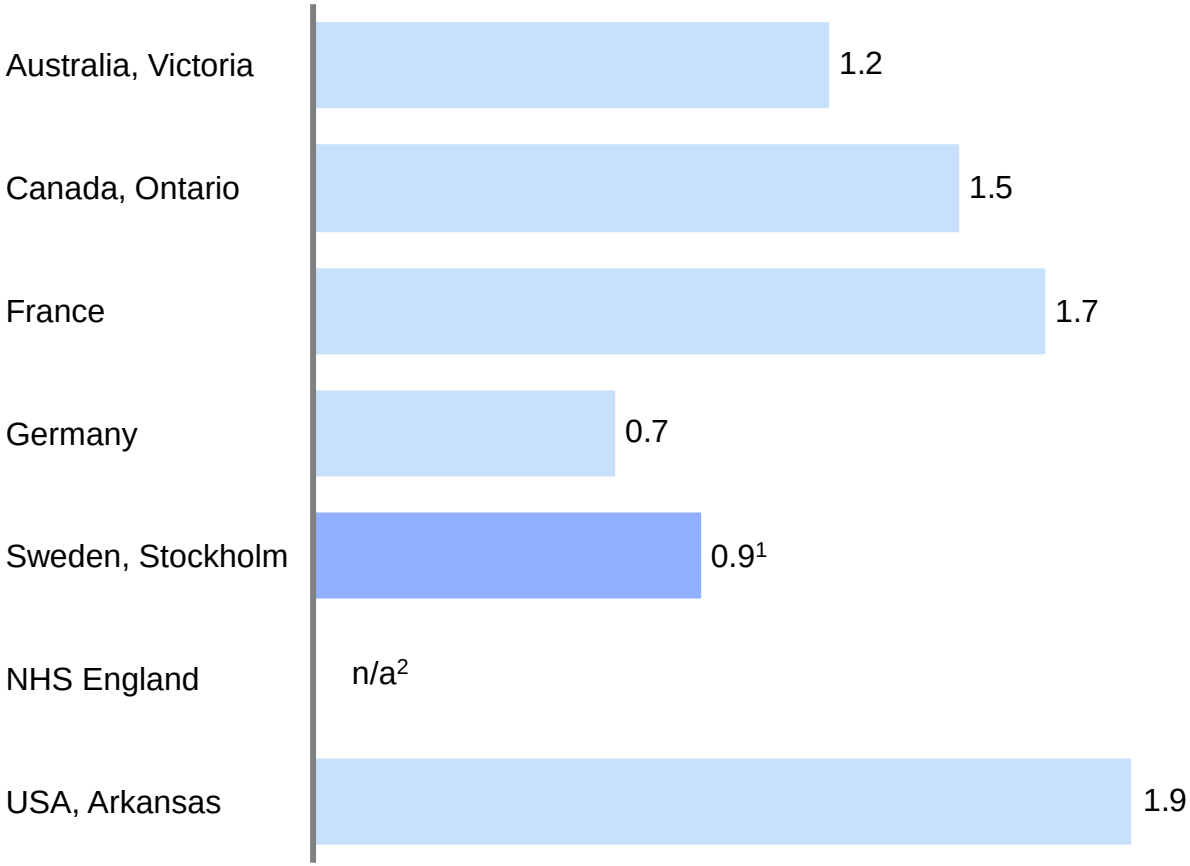
Note: Regional (i.e. state/province-level) data is available for some neonatal mortality indicators but this study provides the most recent, systematic review from a single source, thus avoiding interpretation errors due to methodological differences in data analysis and collection.

SOURCE: Wang et al, 2013, Global, regional, and national levels of neonatal, infant and under-5 mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013, The Lancet

The Swedish system performs comparatively well across a wide range of neonatal and maternal outcomes (2/3)

APGAR score <7 at 5 minutes post birth

% of live births

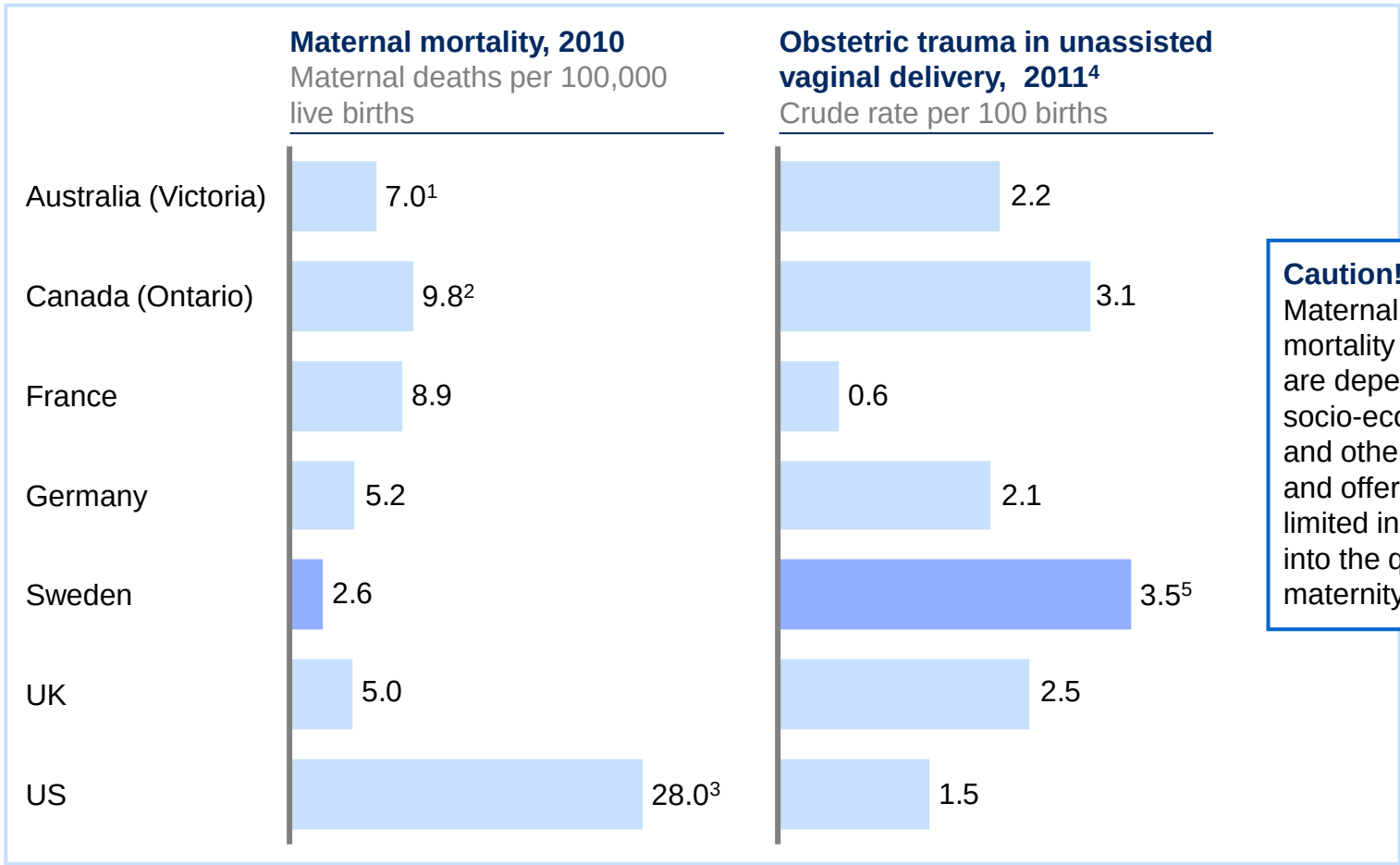


- The Apgar score is a standardised assessment of the vitality of neonates. The risks of mortality and serious neurological damage are greater in neonates with low Apgar scores at five minutes.
- Low scores may be due to complications in pregnancy and/or childbirth but may also relate to broader factors such as maternal health and socio-economic status.

Note: Data is for most recent year available.
1 1.2 for Sweden as a whole.
2 APGAR scores not published for the NHS in England or for the UK as a whole

SOURCES: National Core Maternity Indicators, AIHW, 2009 (Victoria); Provincial Overview of Perinatal Health in 2011-12 (Ontario); Enquête Nationale Périnatale, 2010 (France); Quality and Efficiency in Swedish Healthcare 2012; Maternal and Child Health Statistics, Department of Health, Arkansas, 2003; Straube et al, Arch Gynecol Obstet. Aug 2010; 282(2): 135–141 (Germany)

The Swedish system performs comparatively well across a wide range of neonatal and maternal outcomes (3/3)



1 Data for 2009
2 Pooled estimate for 1996/7 to 2009/10 per 100,000 deliveries. Note the national rate for most recent year (2009) is 7.8 compared to 9.0 over the pooled period 1996/7 – 2009/10
3 Pooled modeled estimate for 2009-2013. Note: all World Bank estimates are higher than OECD equivalents but US is still an outlier (e.g. Germany 7, UK 8, France 12 using World Bank source).
4 Data is for 2011 or latest available year (from OECD Health Data); data is national only (not regional)
5 Higher rates may be linked to relatively low rate of cesarean-section of 16%, as compared to 26% in the NHS in England

SOURCE: OECD Health Data, 2013; Statistics Canada, Births, 2009; CCOPMM Annual Report 2009 (for Victoria, Australia); World Bank (for US maternal mortality); HSCIC (for NHS c-section rate in 2012/13); Quality and Efficiency in Swedish Healthcare 2012

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In Stockholm, there are seven maternity units delivering intrapartum and postpartum care – on average these are larger than in the NHS

	NICU beds	Ownership	Risk profile undertaken	Births in 2013	Ave. annual change in births, 2007-2013, %	Delivery Rooms, #
Danderyd Hospital (DS)	24	Public	**≥28+0**	6,711	2.5	13
Söders-jukhuset (SöS)	30	Public	**≥28+0**	6,260	3.2	12
Karolinska Huddinge	24	Public	**≥26+0** Specialist in mothers with HIV/ID[1]	4,955	0.7	11
BB Stockholm	-	51 % private, 49% owned by Danderyd	**≥28+0**	4,111	6.7	7
Karolinska Solna	24	Public	**≥22+0** Specialist in very premature deliveries	3,916	-4.3[2]	9
Södertälje Hospital (STS)	-	Public	≥37+0	1,680	-2.7	5
Södra BB (SBB)	-	Co-located with SöS (public)	≥37+0 Birth centre – low risk deliveries only/no epidurals	1,400		3

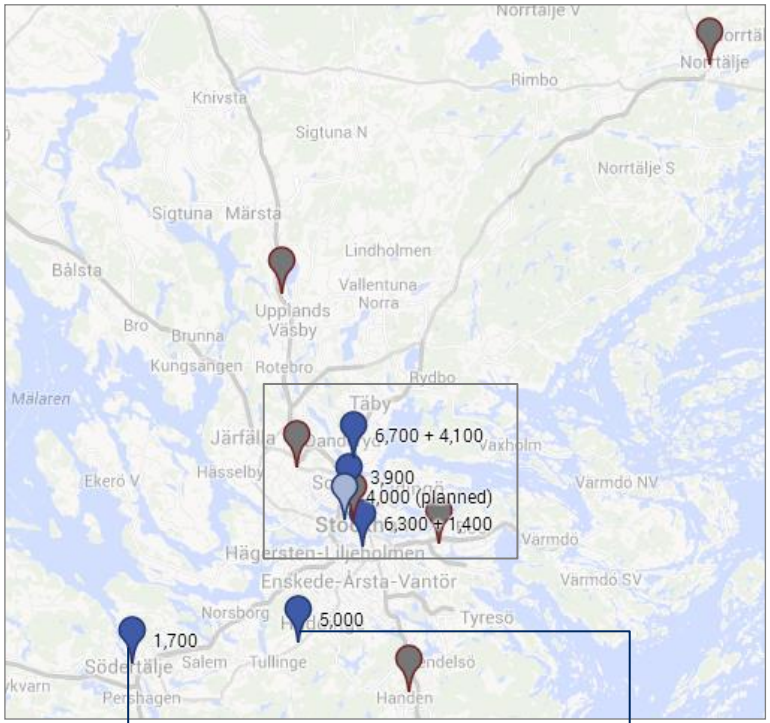
NHS England Mean Unit Size 3,217 deliveries/yr ▲▲ **Stockholm Mean Unit Size 4,148 deliveries/yr**

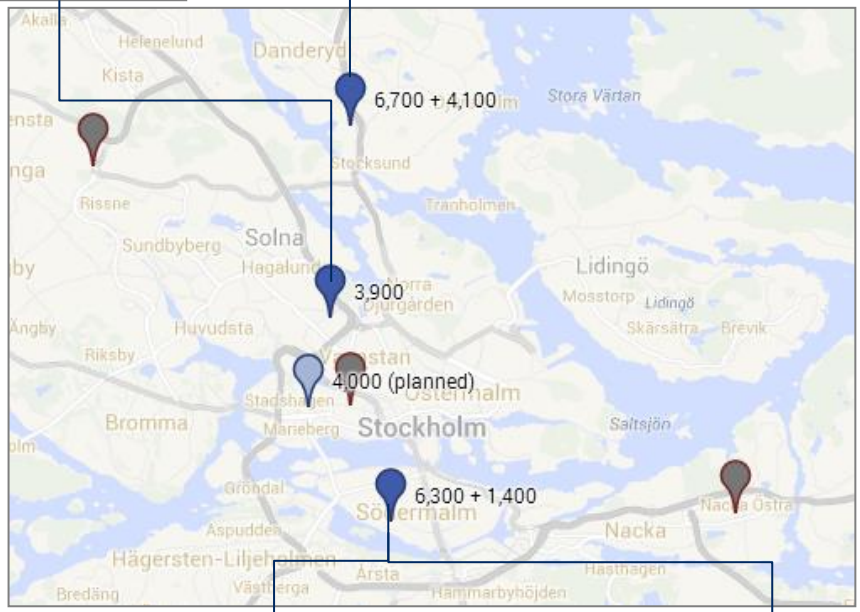
1 Specialist unit for mothers with all complex infectious diseases
2 Births at Karolinska Solna decreased in 2012 due to a water leak, which meant that parts of the maternity ward were closed

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Just under half of all maternity units rely on transfer agreements to access Neonatal Intensive Care Unit (NICU) beds

- Maternity unit
- Planned maternity unit (2018)
- No maternity unit
- # Births per year
- Transfer agreement





Karolinska Solna
- Public hospital
- 3,916 births in 2013 (13% share)
- 22+ wks gestation
- 20 NICU beds
- Specialist unit for very premature deliveries

Danderyd
- Public hospital
- 6,711 births in 2013 (23% share)
- 28+ wks gestation
- 20 NICU beds (run by Karolinska)

BB Stockholm
- Private hospital
- 4,111 births in 2013 (14% share)
- 28+ wks gestation
- Neonatal transfer agreement with Danderyd

Sodertalje
- Public hospital
- 1,680 births in 2013 (6% share)
- 37+ wks gestation
- Transfer agreement for NICU with Karolinska Huddinge

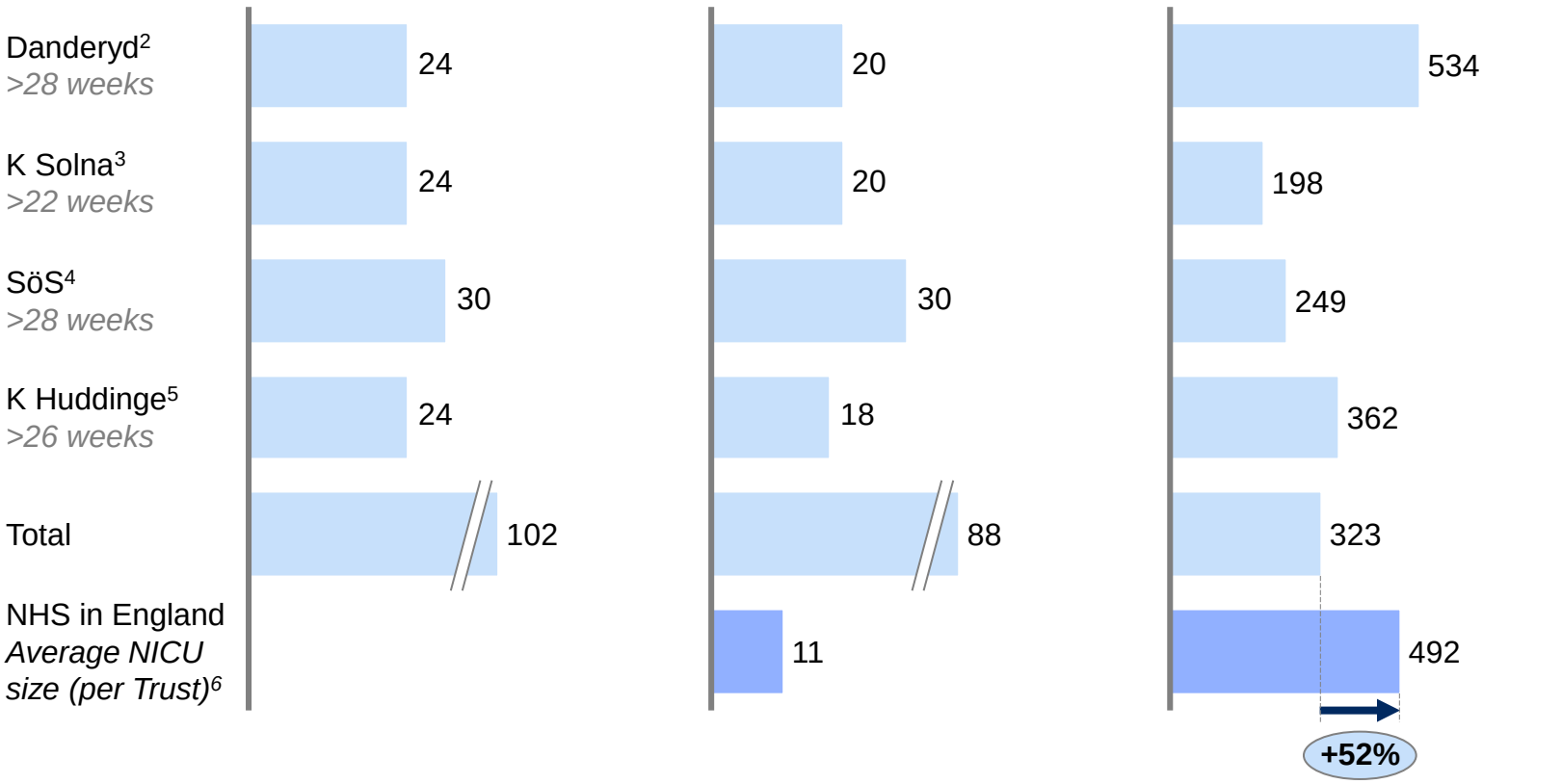
Karolinska Huddinge
- Public hospital
- 4,955 births in 2013 (17% share)
- 26+ wks gestation
- 18 NICU beds
- Specialist for HIV

Södersjukhuset
- Public hospital
- 6,260 births in 2013 (21% share)
- 28+ wks gestation
- 30 NICU beds

Södra BB
- Public hospital
- Birth unit (on site of Sodersjukhuset)
- 1,400 births in 2013 (5% share)
- 37+ wks gestation uncomplicated vaginal births only; no epidurals

SOURCE: Hospital websites; Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

In Stockholm county, almost all NICU providers serve >1 maternity unit and NICU units operate at a larger average scale compared to the NHS



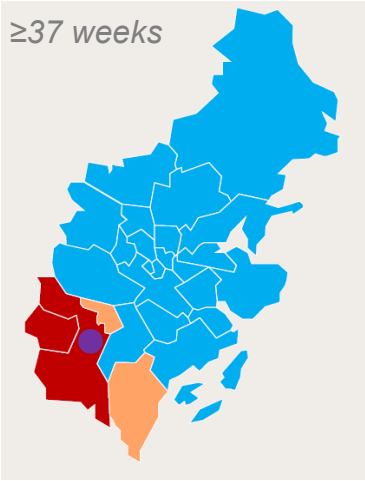
1 Available beds are lower than total NICU capacity (86% overall) because if staffing ratios are not met the unit is required to close the bed
2 Provides NICU beds for BB Stockholm (run by Karolinska Solna but located at Danderyd site)
3 Specialist unit for very pre-term births
4 Provides NICU beds for BB Södra (on the same site)
5 Provides NICU beds for Södertälje (3-5% neonatal transfer rate)
6 Average number of open NICU beds in latest monthly situation reports for Trusts with ≥1 open NICU bed (1,363 beds in total). Note that available beds only reported (not potential capacity)

SOURCES: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014; Hospital Episode Statistics, Maternity dataset, 2012/13; Hospital Activity Statistics (average monthly sit reps for 2012/13)

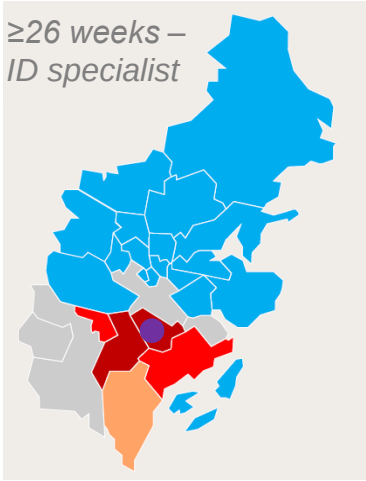
Core catchment populations are largely based on geographical location

The unit's percentage of local births, 2012

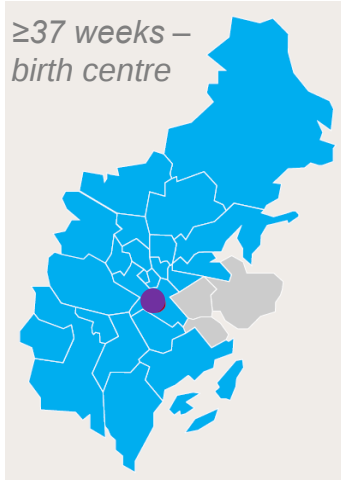
Södertälje (STS)



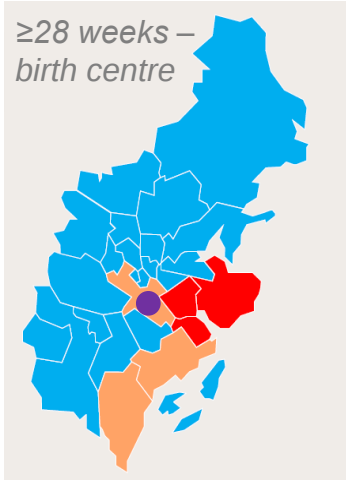
Karolinska Huddinge



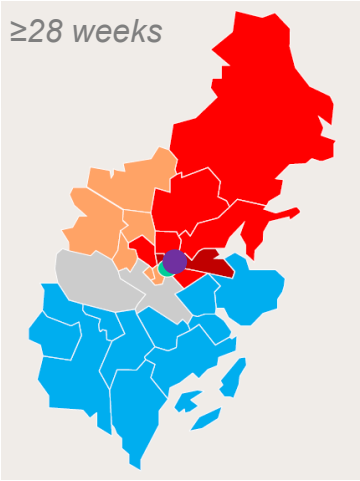
Södra BB (SBB)



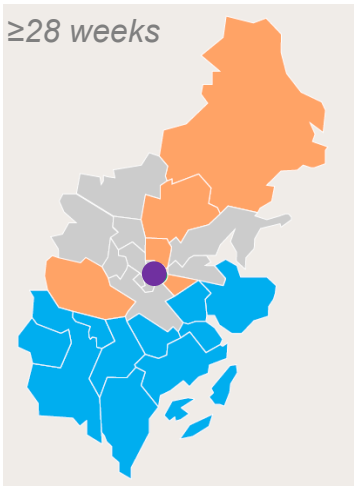
Södersjukhus (SöS)



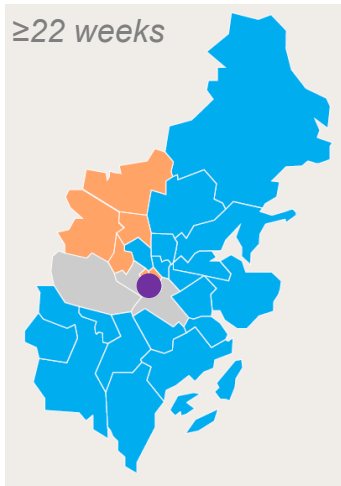
Danderyds (DS)

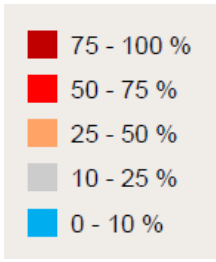


BB Stockholm



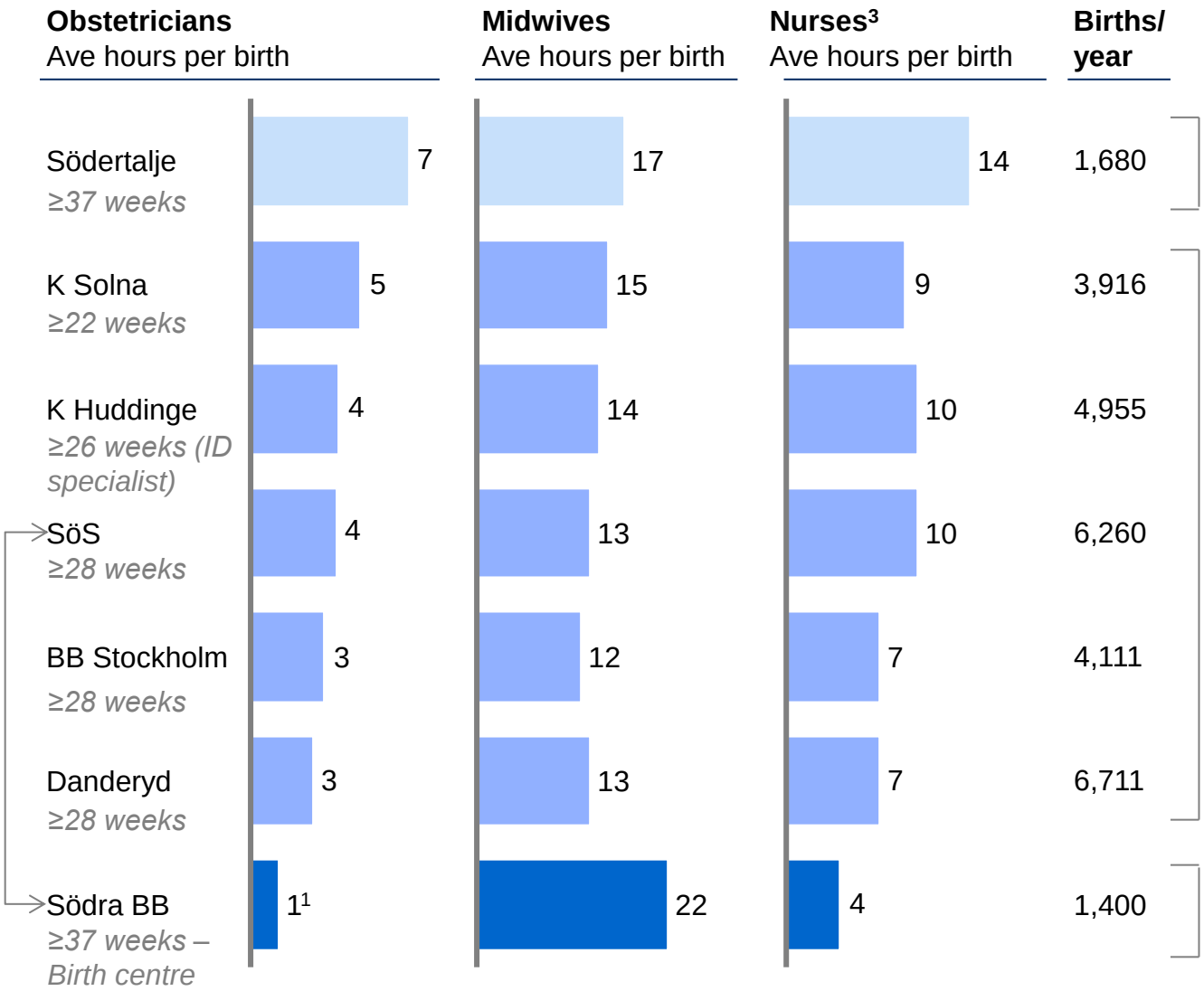
Karolinska Solna





SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Staffing levels align with unit size and specialisation



Observations

The smallest obstetric-led unit has higher levels of staffing per birth for all staff groups compared to other units

Most units operate on a broadly similar staffing model:

- 3-5 obstetrician hrs/birth
- 12-15 midwife hrs/birth
- 7-10 nursing hrs/birth

The two most specialist units (Karolinska Solna and Karolinska Huddinge) operate with slightly higher staffing levels than the general units:

- Specialist: ~29 staff hours/birth
- General: ~23 staff hours/birth (NB: SöS excluded as it also supports Södra BB)

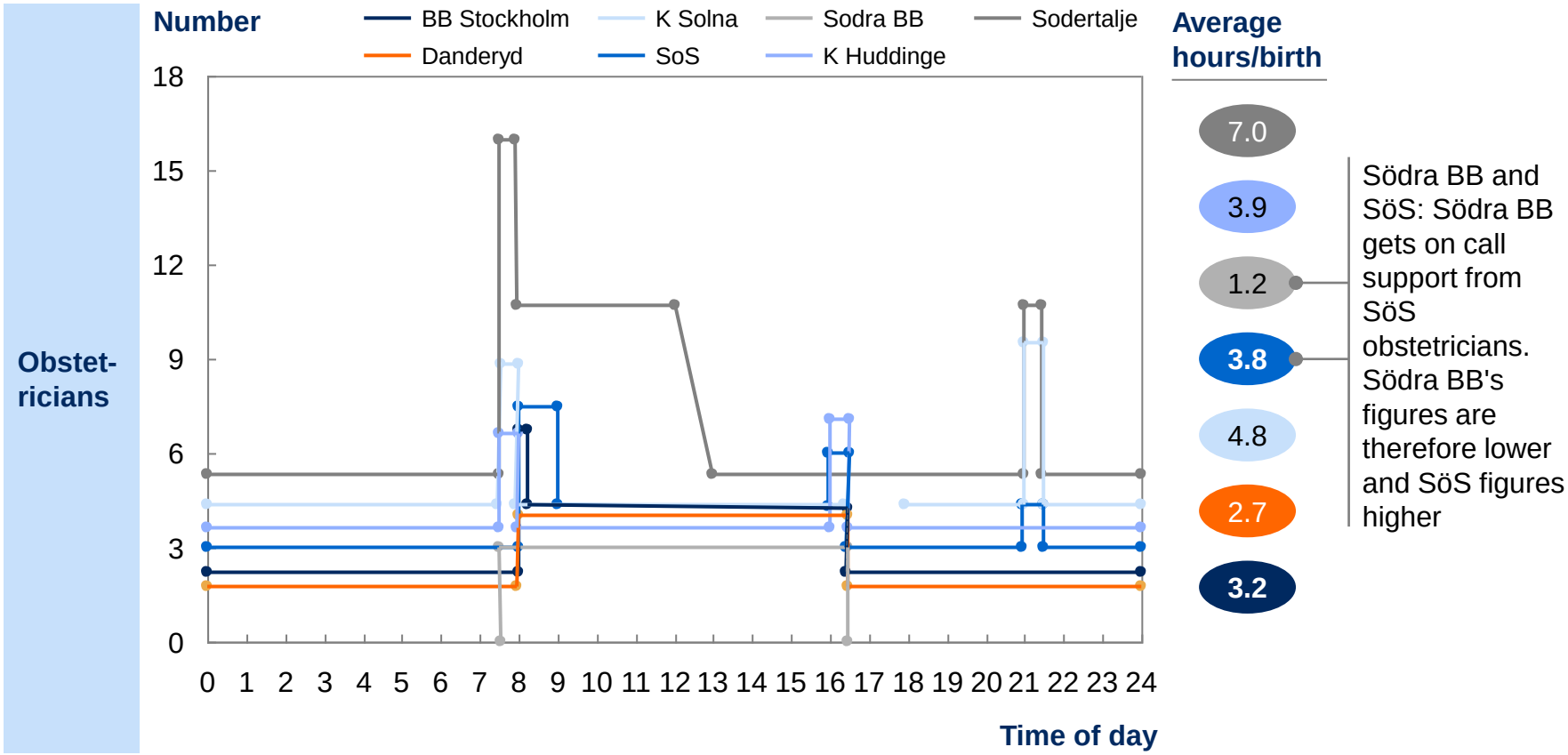
The Södra birth centre (co-located with SöS) offers one-to-one continuous midwife care throughout the delivery episode[2]

Note: Analysis includes birth hours only; does not include antenatal and postnatal duties and care

1 Södra BB unit receives on-call obstetrician support from the SöS unit (so actual staffing is higher in the former and lower in the latter)
2 In other units, a midwife may be caring for up to two women at any one time
3 Excluding healthcare assistants.
SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Obstetrician staffing levels are fairly consistent throughout the day and night, rising during hand-over periods and in the mornings

Number of staff hours for obstetricians (other physicians excluded) per hour of childbirth during an average weekday, 2012

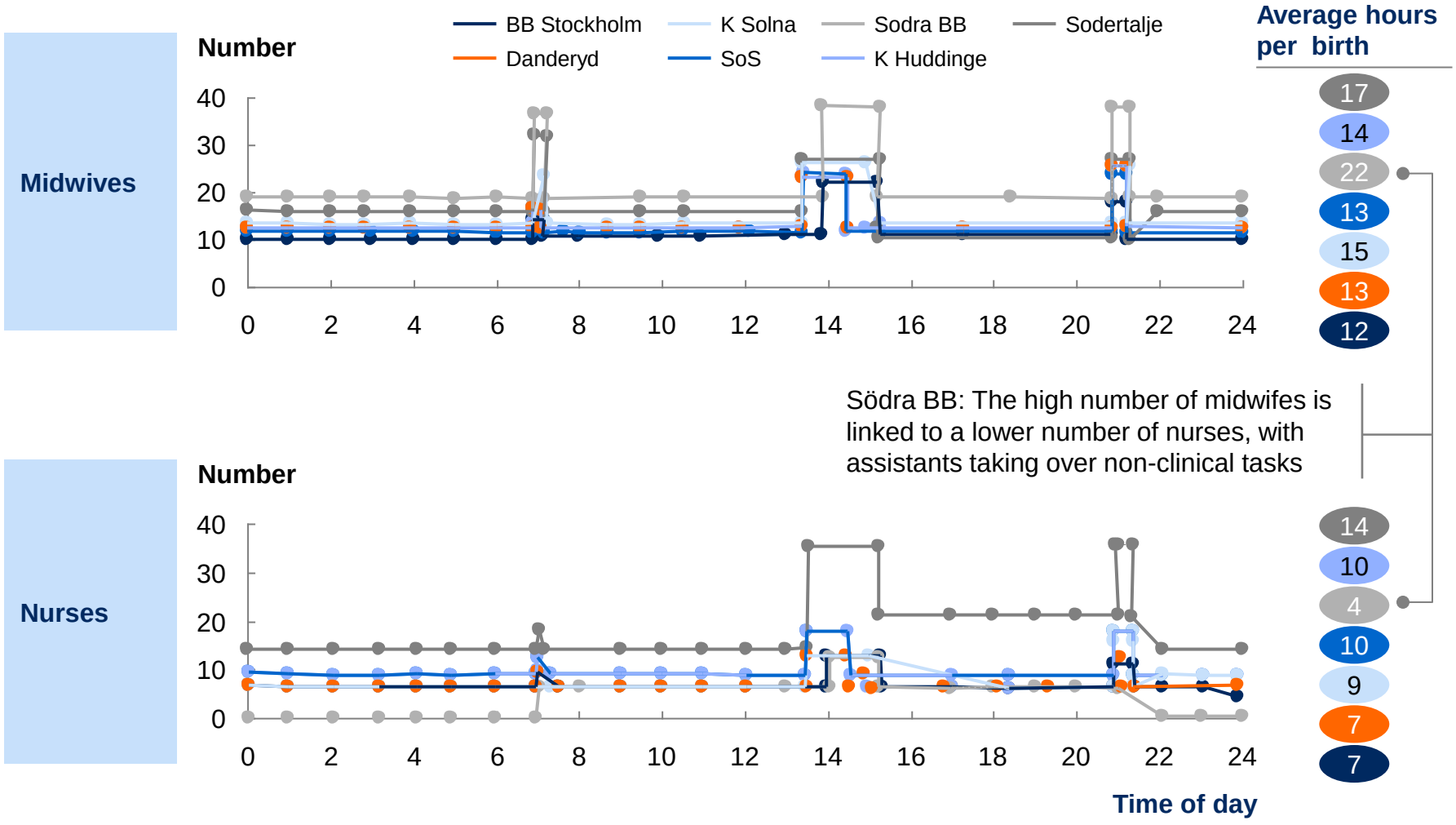


Only doctors who, according to the schedule, worked in the delivery room. Staffing corresponding to basic staffing on a Tuesday night.
The number of hours per birth is the 2012 birth volume evenly spread across the year all hours.
Sodertalje: daytime assumes 50% of physician's time spent on obstetric care, the remaining 50% on aftercare.
Huddinge: Same staffing as Solna but in 2012 a higher birth rate and thus a lower number of physician hours per delivery

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Midwife and nursing staffing levels are fairly consistent throughout the day and night, rising during hand-over periods

Number of staff hours per hour of childbirth during an average weekday, 2012



The number of births per hour is the 2012 birth volume evenly spread across the year all hours.

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Approach to staffing at weekends

Staffing for weekends

- Staffing rotas are designed and adapted to the weekend schedule, which means that they may have more staff than necessary during the week, in order to ensure that the burden of weekend shifts is not too high per person
- This practice is relatively uniform across hospitals in the county

Shift work

- Staff are scheduled to work morning, afternoon and evening/night shifts with relatively uniform staffing throughout the day and night
- This practice is relatively uniform across hospitals in the county

Cross-department staffing models

- Smaller units – including BB Stockholm, Södertälje Hospital and Södersjukhus – use the same pool of staff (midwives and nursing staff) to staff the delivery area and post-natal wards, with staff routinely rotating through intrapartum and post-delivery care. This is possible because the two areas occupy adjacent physical spaces within the hospitals. This model is perceived to have several benefits where it is employed, though is not generally used in the larger units:
  - Improved communications and flow of patients
  - Better flexibility to adapt capacity to where it is most needed

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Initial triage and referral

Admission process

- A woman in labour, or requiring other emergency maternity care, can contact the maternity unit
  - Each maternity unit has a 24/7 telephone line, staffed by midwives, to answer calls and assess whether patients should and can come in
  - If a patient needs to be referred to another unit, it is the midwife's responsibility to call other units and refer the patient

Role of admission and referral coordinator

- There are three general ways to coordinate this process:
  - **Dual coordination:** Two experienced midwives share responsibility on coordination of patient intake and space availability
  - **Coordinator and telephone midwife:** In contrast to the model above, one midwife is responsible for answering the phone, and one coordinates intake on the ward
  - **Single midwife with ad-hoc support:** One midwife coordinates the phone and intake, and can call upon others if needed – however in case of high demand both the intake coordinator and the other midwives will be busy

Assessment process

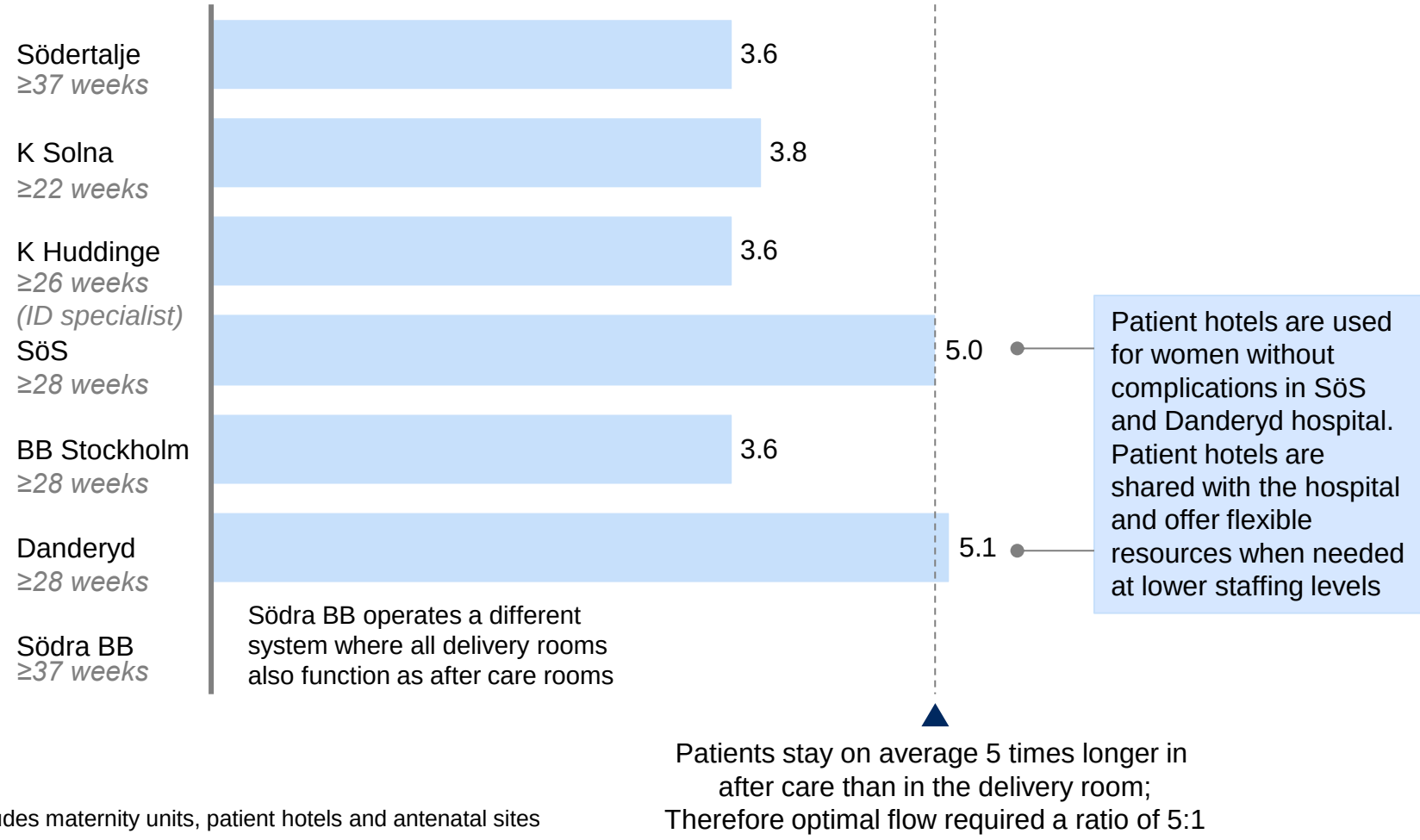
- **The model for the initial examination** varies on two main points:
  - **Who** conducts the examination: In some units the midwife who will also be delivering the baby conducts the exam, whereas in other units the exam is done by any midwife available
  - **Where** the exam takes place: Some units will examine patient in the delivery room, while others have dedicated, consultation rooms for this (lower level of resources compared to a delivery room)
- The trade-off generally is in efficiency on the one hand, and continuity of care for the patient on the other

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Ensuring good access to after care can free up delivery resources, and in Stockholm both after care wards and patient hotels are used

After care

Ratio of after care beds[1] vs. a delivery bed



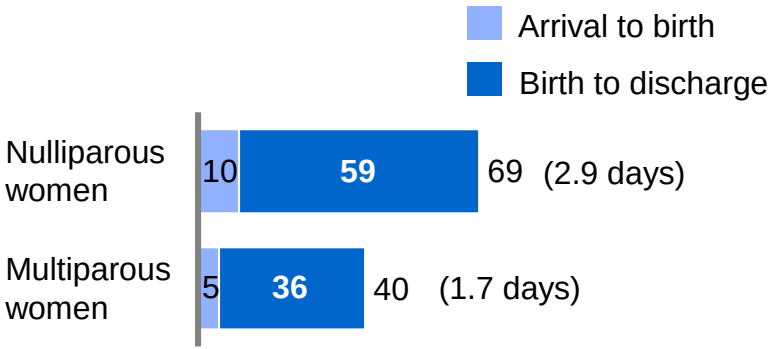
1 Includes maternity units, patient hotels and antenatal sites

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Average length of stay (ALOS) for a normal delivery is 23% lower in the NHS compared to Stockholm

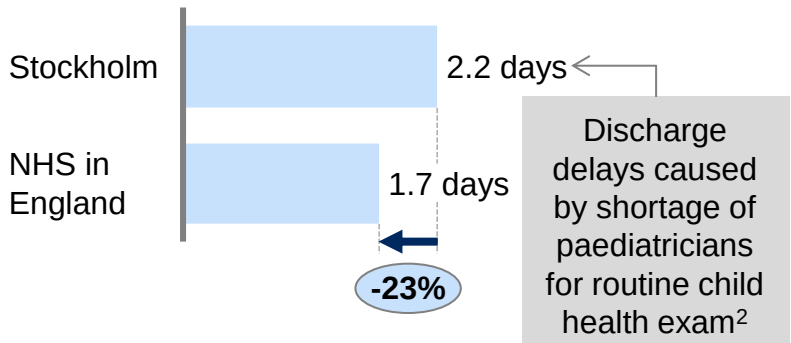
ALOS for normal delivery, all maternity units in Stockholm, 2012

Hours (days)



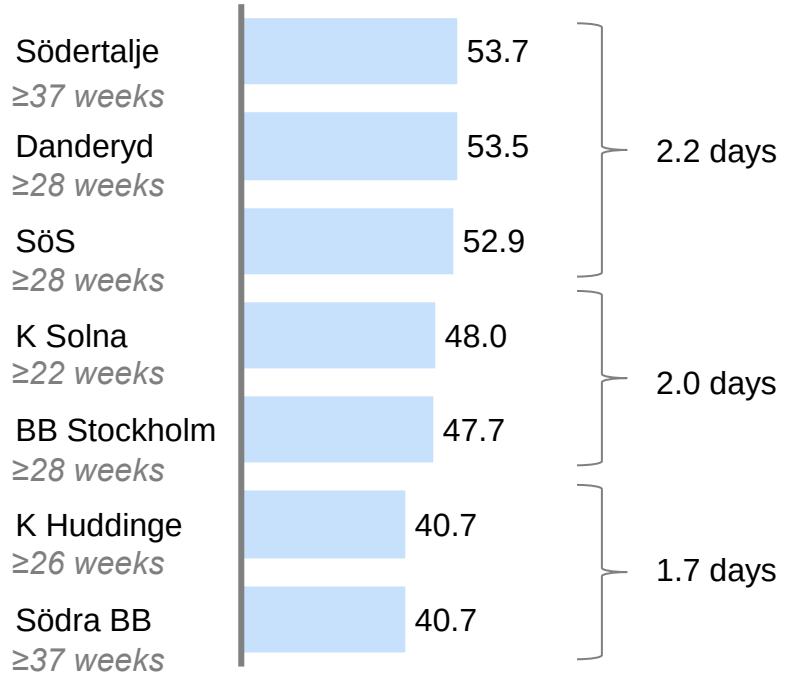
ALOS for a normal delivery, Stockholm and NHS in England[1], 2012

Days



ALOS for normal delivery, variation between maternity units, 2012

Hours (days)



- Units with most staff cross-over/integration between delivery suite and post-natal ward have in general lower ALOS (BB Stockholm and Södra BB)
- Higher ALOS at Södertalje may be due to lower utilization leading to lower pressure on beds

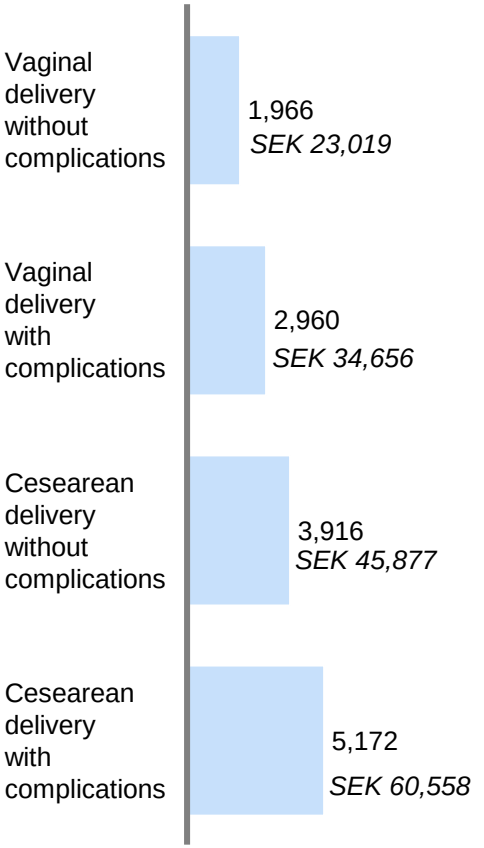
1 ALOS for all NZ11 HRGs (NZ11A-NZ11G) in 2012/13
2 Guidelines require that all newborns receive a medical check from a paediatrician prior to discharge. Resident paediatricians often have on call duties which can delay or limit their availability for routine medical exams

SOURCES: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014; Hospital Episode Statistics, 2012/13

Both Stockholm and the NHS use activity-based funding but the approach to payments is quite different …

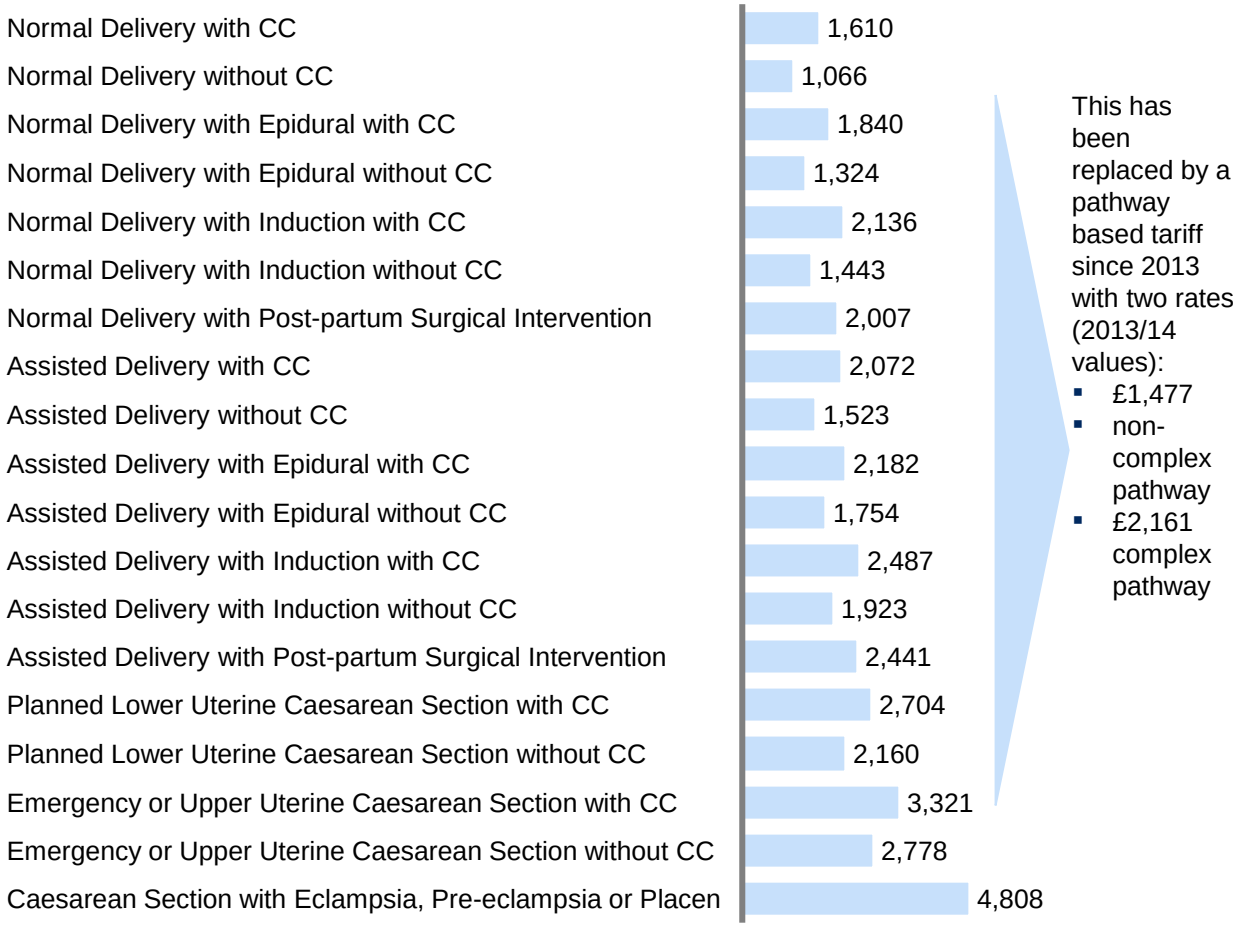
Stockholm DRG values for intrapartum admissions, 2012/13

£ (converted from SEK)



National Tariff values for intrapartum admissions, 2012/13 (excluding MFF)

£



This has been replaced by a pathway based tariff since 2013 with two rates (2013/14 values):

- £1,477 non-complex pathway
- £2,161 complex pathway

Currency conversion rate: SEK1 = £0.0854

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014; National Tariff, 2013/14 accessed online: https://www.gov.uk/government/publications/payment-by-results-pbr-operational-guidance-and-tariffs

… in Stockholm, full reimbursement is dependent upon meeting a wide range of quality criteria

SUMMARISED

Quality factors monitored and considered by Stockholm's commissioner

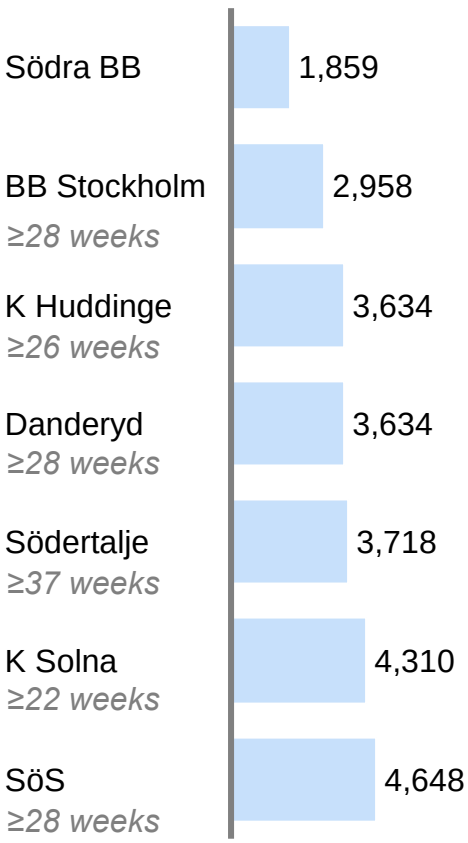
- Evidence-based appropriate clinical care:
  - Maternal complication rate
  - Infant complication rate
  - Robson 1 c-section rate (% of c-sections for singleton, spontaneous deliveries in nulliparous women at full term, defined as ≥37 weeks, with head presentation)
- Safety (measured as deviation from case-mix adjusted expected event rate):
  - Infections
  - 3rd/4th degree perineal tears
  - Bleeding
- Efficiency:
  - Length of stay
  - Costs and profitability
- Equal treatment of women from different socio-economic groups or other groups (e.g. LGBT identity)
- Access and timeliness: % of women referred to another unit
- Patient-perceived quality of care
- Preventive care
- Proportion of women participating in discharge discussions
- Drug training and amount of nitrous oxide used

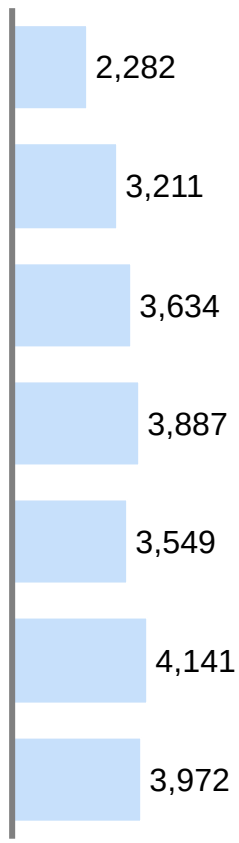
Data is collected in several information systems:

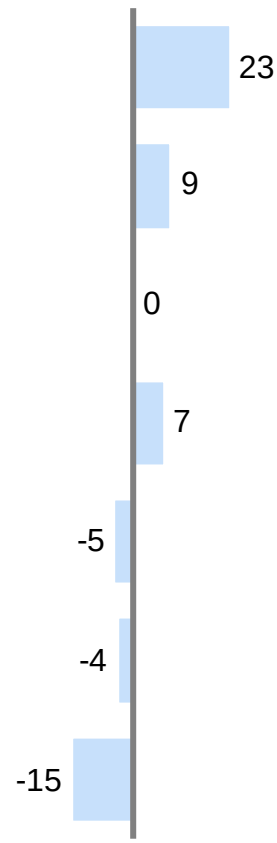
- VAL – county council care dataset
- Obstetrix – maternity care dataset
- Lex Maria – patient safety reporting database

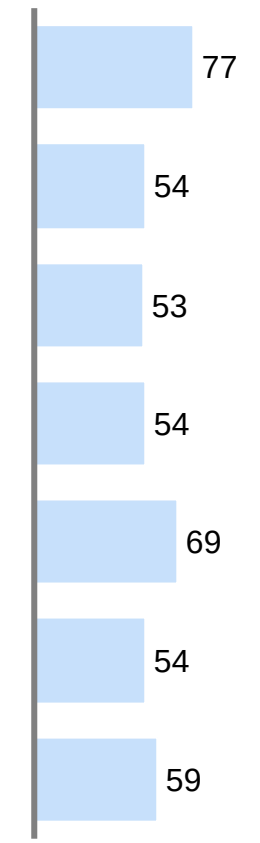
SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Overall, healthcare spending is higher per capita in Sweden compared to the UK.[1] Despite this, almost half of Stockholm's maternity units lose money









Observations on cost profile

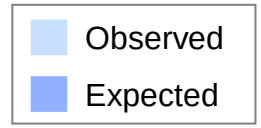
- Normal, low-risk births – least complex case-mix
- No epidurals
- Relatively low staffing compared to other units
- More complex case mix
- Newly-renovated unit (may be more efficient)
- Smaller unit with lower utilization (less efficient)
- More complex case mix and higher drug use
- Older premises (may be less efficient)

1 The UK spends 9.4% of GDP on healthcare, compared to 9.5% in Sweden. This equates to US$3,659 and US$5,419 per capita, respectively.

Currency conversion rate: SEK1 = £0.0854

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014; WHO World Health Statistics, 2014

Outcomes are consistent across all units with rates of low Apgar scores slightly higher at providers treating higher risk profiles



Case mix adjusted[1] rates of complications and outcomes, 201

% of births

Maternity unit	Risk profile	Emergency c-section	Bleeding	3rd/4th degree tears[4]	Infections	Apgar <7 at 10 minutes
Danderyd Hospital	≥28 weeks	13.3 / 11.6	8.8 / 9.3	4.1 / 4.2	9.2 / 9.0	0.9
Söders-jukhuset[2]	≥28 weeks	11.4 / 11.7	8.8 / 9.3	5.5 / 4.3	8.1 / 9.0	1.0
Karolinska Huddinge	≥26 weeks - ID specialist[3]	10.4 / 11.3	12.2 / 9.1	3.6 / 4.2	8.1 / 9.0	1.1
BB Stockholm	≥28 weeks	9.1 / 11.1	8.3 / 9.2	3.8 / 4.2	9.0 / 8.8	0.5
Karolinska Solna	≥22 weeks	12.5 / 11.6	8.4 / 9.3	3.7 / 4.3	12.4 / 9.0	1.7
Södertalje Hospital	≥37 weeks	10.0 / 9.8	8.7 / 8.9	3.2 / 4.3	9.9 / 8.9	0.7

1 Case mix factors include co-morbidities, socio-economic status, age, and previous obstetric history
2 Includes rates for Södra BB birth centre (statistics not collected separately)
3 Specialist centre for mothers with HIV or complex infectious diseases
4 Percentage of vaginal deliveries only

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Maternity care in Stockholm - challenges

- **The number of child births varies significantly over time and with the seasons**
  - The number of child births has increased by 1.3% annually over the last 6 years
  - While most countries observe seasonality trends, in Stockholm this even more pronounced, where the number of deliveries is more than 20% in summer compared to winter
  - Some units bring in additional staff at times of peak activity, but state that this additional recruitment is a challenge and the workforce is not available to continuously staff to peak demand levels. This has a negative impact on staff perceptions of stress and workload at peak times.

- **Capacity has remained at the same level despite the introduction of free choice**
  - In 2009, the Country introduced free choice of provider for maternity care
  - It was expected that a change in demand would lead to increased supply, however the number of maternity places has not increased

- **In addition to more deliveries, outpatient activity has also increased**
  - Visits during and after pregnancy have increased by 6 and 9% per year respectively
  - More than 30% of outpatient visits are acute, which is complicating resource planning
  - However, the number of visits to the maternity unit varies by provider

SOURCE: Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Contents

- Impact – why this case study?
- Description – what did they do?
- **Enablers – how were they able to do this?**

A range of factors allow the system to operate in this way

Proactive commissioning and planning	▪ As regional commissioner, the Swedish County Council plays a strategic planning role across a broad area (2 million population) determining which providers may deliver services (for all service lines, not just maternity) ▪ The County Council is able to design a quality-based funding model whereby full reimbursement is tied to a wide range of transparency and quality factors
Patient choice within defined limits	▪ Patients have a free choice of provider but the range, type and scope of available providers is determined by the commissioning system ▪ "Birth centre" type care is available for women with low-risk pregnancies, but there is only one unit per 2 million population
Workforce practices	▪ Shift work (day/night) is routine for all staff groups with similar levels of staff available throughout the 24 hour period ▪ Staffing rotas are designed to provide sufficient weekend coverage without over-burdening staff with weekend duties – even if this results in some over-capacity during the week
Willingness to pay	▪ The DRG cost per delivery is higher than in the NHS, despite the average unit size being higher ▪ Even with a higher base DRG, almost half of providers have higher costs than income for maternity care ▪ Overall, the UK spends 9.4% of GDP on healthcare, compared to 9.5% in Sweden. This equates to £2,159 (US$3,659) and £3,917 (US$5,419) per capita, respectively

Note: Currency conversion rate used US$1 = £0.59.
SOURCE: Expert interviews conducted by the research team; WHO World Health Statistics, 2014