

Monitor

Making the health sector
work for patients

Exploring international acute care models



About Monitor

As the sector regulator for health services in England, our job is to make the health sector work better for patients. As well as making sure that independent NHS foundation trusts are well led so that they can deliver quality care on a sustainable basis, we make sure: essential services are maintained if a provider gets into serious difficulties; the NHS payment system promotes quality and efficiency; and patients do not lose out through restrictions on their rights to make choices, through poor purchasing on their behalf, or through inappropriate anti-competitive behaviour by providers or commissioners.

Contents

Summary	3
Our findings	4
Next steps: Sharing local experience across the sector	6
Methodology	7
Our main findings.....	9
Findings at the level of national systems	9
Findings at the level of service models	11
1. Risk tiering in paediatrics and intrapartum maternity care, and the networks to support them.....	11
2. Increasing the use of technology.....	19
3. Increasing use of GPs to deliver urgent out-of-hours care, co-ordinated with A&E	22
Findings related to system-wide factors shaping the way care is provided	27
The role of clinical standards.....	27
The health service workforce	29
Next steps.....	30

Summary

We have looked at acute service line models in countries other than England to help inform and support the current thinking on potential new models of care in the NHS.

Our three main insights are: the value of 'risk tiering' for maternity and paediatric services; the importance of technology, particularly to deliver care remotely; and the role out-of-hours care delivered by GPs can play in providing urgent care. These ideas are already used in some areas of the NHS, but evidence from other health systems suggests that wider use across the NHS could support efficiency or quality improvements.

Our report focuses on how these service models work in other health systems. We recognise that international models might need to be applied differently in the NHS and so alongside this report we have launched an engagement exercise seeking views on their greater use in the NHS.

It is now widely accepted that the way acute care is delivered in the NHS in England¹ needs to change if acute providers are to meet the significant financial and quality challenges ahead. Acute providers are operating within tight financial constraints and are under pressure to deliver more care, as both demand and expectations increase. They also need to adapt care delivery to a population that is ageing and has more complex needs, while tackling constraints such as recruitment difficulties in several specialities.

For providers and commissioners in some local health economies this means re-thinking the way care is delivered across their system. The NHS 'Five Year Forward View'² (the Forward View) recommends that the NHS seeks to learn from examples of the best models of UK and international care.

Our report on smaller acute providers concluded that smaller acute NHS providers in particular are likely to need to adopt new models of care.³ The report highlighted the work that some acute trusts are doing already to move to new models, but also highlighted that more work could be done to identify and adopt alternative models of care.

This research into delivery of acute services in other healthcare systems was launched in response to that report. Our aim was to identify whether any international acute services are able to deliver the same or better quality care more efficiently than the NHS. We also aimed to develop case studies of any models used elsewhere that could potentially deliver benefits for NHS patients. We were particularly interested in hospitals in remote areas, and in finding out whether other

¹ For simplicity, in the rest of this report we refer to the NHS in England as 'the NHS'.

² See www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf

³ Monitor (2014) 'Facing the future: smaller acute providers'. See www.gov.uk/government/uploads/system/uploads/attachment_data/file/320075/smalleracuteproviders-report.pdf

systems deliver quality care at a smaller scale more efficiently. However, the insights gained from this research may be relevant to acute providers of any size.

Our analysis looked at health systems in Australia (Victoria), Canada (Ontario), France (maternity services only), Germany, the Netherlands, Sweden and the USA (Arkansas). We selected these countries either for their similar cultural approach to healthcare or because they seem to provide high quality care across smaller hospitals⁴ and geographically dispersed populations. Within each health system, we looked closely at six service lines likely to be offered as core services by a typical district general hospital (DGH) in England. These were critical care, stroke, A&E, paediatrics, emergency surgery, and intrapartum maternity services (ie relating to labour and birth). We also looked in less detail at acute medicine.

Our findings

The health systems we studied face similar challenges to the NHS, and are also seeking to improve efficiency and reduce variations in quality. No single health system we studied offers a way to deliver consistently higher quality care at lower cost than the NHS. In addition, smaller and remote hospitals in other countries appear to be supported by subsidy, rather than by more efficient operating models.

However, we found three individual service models in use abroad that could offer benefits if used more widely by the NHS. These are:

1. A greater emphasis on **'risk tiering'** in paediatric and intrapartum maternity care, supported by complementary networks of staff and organisations. For example, Sweden's Stockholm County has a three-tier network of intrapartum maternity care, with different units caring for women and babies at different levels of risk. These risk-tiered systems are facilitated through shared clinical governance and formal patient transfers and protocols.
2. **Increased use of technology.** In some systems, technology is used to deliver complex care remotely. For instance, in the state of Arkansas, USA, specialist doctors deliver stroke care remotely to patients using video-links. Similarly, in the USA, spoke sites for intensive care can be supported remotely by an electronic intensive care unit (eICU) hub site. Technology is also being used to share patient records efficiently, leading to better integrated care, as seen in the single comprehensive electronic child health record used across primary and secondary care settings in Canada.
3. **Greater use of GPs to deliver out-of-hours urgent care.** This approach was prevalent in the Netherlands, where GPs are often the gatekeepers for

⁴ Hospitals in England tend to operate on a larger scale than those in the rest of Europe. For example on average, maternity units in France are around half the size of NHS units – see [Annex 8](#) for more detail.

emergency care. A&E attendances in the Netherlands are about 120 a year per 1,000 people, compared with 278 in England. In the Netherlands 39% of patients attending A&E are referred by GPs, compared with 5% in England.

These three service model ideas are already in use in some areas of the NHS. Evidence from other health systems suggests that introducing these ideas more widely could offer improvements in efficiency or quality. In particular, using technology to deliver services remotely, and risk tiering to enable the local delivery of care to lower risk patients, show ways in which smaller or remote providers could benefit.

However, differences between the health systems and the populations they serve mean that the potential costs and benefits of these service models in an NHS context would need to be better understood before they are more widely pursued across the NHS.

When considering the potential impact of these service models in the NHS, we should take account of differences between the system-wide factors that shape the way NHS care is delivered and those that shape other systems, in particular:

- Our review suggests that **clinical standards**, such as specified minimum waiting times and staffing levels for particular services, play a lesser role in driving quality in non-NHS healthcare systems. Other systems use a broader range of levers to support the delivery of high quality clinical outcomes, including patient and other buyer choice, and 'self-certification' by providers of the quality of their services.
- We also found that the service model ideas outlined in this report were in part enabled by differences in the health service **workforce** compared with the NHS. This suggests that within service lines there may be scope for thinking creatively about workforce, for example, by upskilling some staff and asking others to deliver a broader range of services to enable a different mix of staff to deliver services.

Our report does not make recommendations based on adopting the approaches to clinical standards or to the health service workforce used in international health systems. Our aim is to provide insights into the wider factors that shape different healthcare systems, since they are likely to affect how models of care can be implemented in practice.

Next steps: Sharing local experience across the sector

We recognise the limitations and difficulties of making international comparisons. Nonetheless, we believe that looking at how things are done abroad can help spark debate and feed into the improvements in models of care taking place across the NHS. Our research findings are not intended to form recommendations but we hope they will help inform and stimulate wider debate.

We would like to hear from trusts and commissioners who are implementing these models of care in the NHS, and to make their insights available so the sector as a whole can better understand the potential benefits and what can be done to remove any barriers to their wider use.

To promote this debate we have launched an online ‘crowdsourcing’ debate (the sort of questions we are trying to address are outlined at the end of this report). For more details on how to take part in this exercise or to share experiences of using these models in the NHS please contact us at jointhedebate@monitor.gov.uk

Methodology

This project aimed to review whether other countries are able to deliver specific service lines more efficiently than the NHS at the same or better quality of care. From this we sought to identify case studies of care models that could potentially deliver benefits in an NHS context. The supporting research was conducted by McKinsey and Company with Nigel Edwards from the Nuffield Trust.⁵

The research focused on six service lines which represent core services likely to be delivered in a typical DGH in England:

- A&E
- critical care
- emergency surgery
- intrapartum maternity care
- paediatrics
- stroke.

We also looked in less detail at acute medicine.⁶

Our analysis looked at health systems in Australia, Canada, France (maternity services only), Germany, the Netherlands, Sweden and the USA. For each country we also conducted more detailed research on sub-regions, to allow us to better understand the configuration of providers and services. Additional information on countries and sub-regions can be found in the [annexes](#) to this report.

These six countries were chosen because they have a similar cultural approach to healthcare to the NHS (eg Sweden or Canada) or because they appeared able to provide high quality care across smaller hospitals and more geographically dispersed populations (eg Australia, the USA or intrapartum maternity care in France).

In planning our research, we wanted to make sure that we understood the health sector context in which different models of care operated. This was important in allowing us to better compare systems and to select those models of care most likely to be relevant to the NHS. To understand this broader context we looked at:

⁵ Annexes 1 to 16 of this report set out more details on the research conducted and the evidence gathered (see <https://www.gov.uk/government/publications/exploring-international-acute-care-models>).

⁶ Acute medicine has emerged as a relatively specialty in the UK. It sits at the interface of A&E and specialty or critical care.

- the different profiles and features of providers across a patient pathway in the health system
- the range of services within a specific service line offered by the different provider types (tiering)
- the relationships between different providers (networks).

We also looked at how workforce models, technology, funding and commissioning models, and patient expectations and behaviours were likely to affect the system of provision. Finally, given the important role clinical standards have in configuring NHS services, we compared the standards for the six service lines. The research involved both desk-based gathering and analysis of information and interviews with experts in each country.

We identified six case studies from the research:

- intrapartum maternity care in France
- intrapartum maternity care in Stockholm County, Sweden
- use of eICU in Arkansas, USA
- GP delivery of out-of-hours urgent care in the Netherlands
- centralised paediatric care in Ontario, Canada
- the emergency pathway in a hospital in Sweden.

The full details of our research findings are in the [annexes](#) to this report.

Our main findings

Our main findings fall into three categories:

- those at the level of national systems
- individual service models
- system-wide factors shaping the way care is provided.

Findings at the level of national systems

We wanted to identify whether systems in other countries that face comparable challenges to the NHS deliver the same or better-quality care more efficiently, and in particular whether they deliver high quality care at smaller scale more efficiently. The findings set out below suggest that, at an overall level, none of the systems we studied provides a complete or simple solution to achieving greater efficiency across the NHS.

Other health systems face similar efficiency challenges as the NHS

Overall, we found that the NHS is not unique in needing to improve financial performance while improving or maintaining quality. Many of the health systems that we looked at are also seeking to improve efficiency and deliver consistently high quality. Some are examining whether greater scale in acute care may help deliver greater quality and efficiency. Often this is from a starting point of much smaller hospitals. In many cases, they are looking to the NHS as an example of a system that has led the way in consolidating services. For example, in Australia, France and Germany, health authorities are looking at ways in which public and government bodies can support and influence service configuration, including looking at the closure of very small providers. In Arkansas, USA, and the Netherlands, insurers are creating incentives to encourage more efficient, high-quality provision.

Evidence does not point to overall greater cost effectiveness in the other systems we studied

We know that comparing costs and outcomes of service lines across different health systems is difficult (due to lack of data and comparability issues between countries). It was outside the scope of this project to do a full literature review of evidence on international comparisons or a systematic comparison of outcomes in national systems. However, we looked at some high-level performance indicators⁷ and reviewed some of the major international comparison studies available. We also compared several service line indicators as far as possible, including utilisation rates, reimbursement levels (as a proxy for costs), mortality and other outcomes measures where appropriate.

⁷ For example, health spending per capita and life expectancy. See [Annex 2: Country overviews](#).

Despite the limitations of such comparisons, we did not identify any countries that consistently deliver significantly better clinical quality at lower cost than the NHS. At an overall level it also appeared that of all the health systems we studied, the NHS in England was the least expensive, with all other systems spending more per capita. Spending per head per year in the NHS was \$3,659 – slightly ahead of the Organisation for Economic Co-operation and Development (OECD) average of \$3,322 but significantly lower than the average of \$6,087 for the countries we examined (ranging from \$4,996 in Germany to \$8,467 in the USA).⁸

Other countries often give subsidies to support remote or smaller providers

Finally, it appears from our research that at least part of the answer to how some other countries' health systems are able to deliver care at smaller scale than the NHS is through subsidies. Our research suggests that there is willingness in other health systems to directly subsidise (to a certain extent) smaller hospitals serving remote and rural populations. For example, in the USA there is enhanced reimbursement for 'critical access hospitals' and in the Netherlands there is a higher capitation rate for GPs serving rural communities. We also found that there was scope for indirect subsidies and differentiated rates of reimbursement in systems where a greater and more flexible proportion of the budget is allocated through block contract commissioning arrangements, as is the case in Ontario.⁹

Similarly, our review suggested that one reason the French system is able to offer maternity care in smaller units on a sustainable basis is because physician salary levels are lower and physicians work longer hours with more night and on-call duties.

Although these insights provide some explanation of how smaller units remain viable in other countries, it is not the focus of this report to make recommendations (for example on overall funding or pay levels) but to identify insights into models of care.

⁸ See [Annex 2: Country overviews](#) (Source data WHO World Health Statistics 2014).

⁹ Although in Ontario there is currently a shift towards allocating a greater proportion of health budget through activity-based funding arrangements.

Findings at the level of service models

Findings from our research into service models suggest that there could be scope in the NHS to make greater use of three models of care:

1. risk tiering in paediatric and intrapartum maternity care, and the networks to support it
2. technology to deliver care remotely (for example, in an eICU) and share patient records
3. GPs delivering out-of-hours urgent care.

In this section we summarise each of these models, the factors that helped them work in other health systems, and why we think they might offer potential benefits to the NHS. We are aware that there may also be costs and risks involved in implementing these models in local health economies in England but believe they should be discussed as part of the wider debate on these models.

Our focus here is to present the evidence on the experiences of other health systems to stimulate debate and feed into work across the sector to develop new models of care. It does not extend to understanding their potential impact on the NHS.

1. Risk tiering in paediatrics and intrapartum maternity care, and the networks to support them

Where health systems use risk tiering, providers, patients and standards are aligned to a set of risk-based tiers and supported within a network of provision. Lower-risk providers offer a narrower set of services, for example a lower tier maternity unit would not provide care to patients expected to have complex needs and a lower tier paediatric unit may only offer short-stay assessment.

Our research suggests that there is scope for greater use of risk tiering in intrapartum maternity and paediatric NHS care,¹⁰ supported by networks and formal patient transfer protocols. The NHS already uses risk tiering, for example in neonatal care, stroke, trauma and A&E, and to some extent in maternity and paediatrics. Risk tiering also reflects the direction of travel in the Urgent and Emergency Care Review.¹¹ However, when we reviewed selected countries' maternity and paediatric services we found greater and more consistent emphasis on tiering. In particular, other systems appear to have risk tiering more clearly calibrated with well-defined tiered roles for smaller providers and clearer responsibilities between providers in different risk tiers.

¹⁰ Risk tiering means that only some providers will be able to treat higher risk patients.

¹¹ www.nhs.uk/nhsengland/keogh-review/Pages/urgent-and-emergency-care-review.aspx

Greater use of risk tiering might be expected to have the following advantages:

- Allowing low-risk patients to be treated close to home but with less intensive use of resources¹² (potentially at a lower cost); this could be particularly important for rural and remote hospitals.
- Enabling specialist staff to be concentrated in fewer high-risk units, relieving workforce shortages in these areas. This could benefit high-risk patients who should see a specialist doctor but cannot at present because there is not a specialist doctor at their local hospital.
- Increasing scale for providers treating high-risk patients, potentially reducing costs or improving quality (but only if there is evidence of economies of scale, or there is evidence of a demonstrable relationship between volumes and better outcomes for patients, respectively).

We focus our discussion on intrapartum maternity services in Stockholm County, Sweden and paediatric services in Ontario, Canada. However, we also found evidence of these types of care models for these services in other countries,¹³ including intrapartum maternity care in France.

The examples detailed below appear to show relatively good outcomes overall.¹⁴ For example:

- In Sweden, indicators of quality and outcomes are good compared with benchmarks for neonatal mortality, maternal mortality and Apgar scores¹⁵ in the countries we studied. Caesarean section rates are also low, at around 16% (compared with 26% in the NHS), though rates of obstetric trauma are higher than some peers (3.5% compared with 2.5% in the NHS).¹⁶ It is not possible to compare costs directly between the NHS and the system in Stockholm given differences in payment systems, casemix and average length of stay.

¹² For example a recent report by The King's Fund on the reconfiguration of clinical services noted "it may be possible to sustain obstetric units with lower levels of consultant cover if they focus on low-risk births and have robust transfer arrangements. 'The reconfiguration of clinical services. What is the evidence?' The King's Fund, November 2014.

¹³ Risk-tiered modes are also found in paediatric services in Stockholm County, Sweden, and in intrapartum maternity services in Australia and France.

¹⁴ Our research suggests that there are as good outcomes in France, with maternity quality indicators such as mortality, rates of obstetric trauma in unassisted vaginal delivery and neonatal mortality appearing to be broadly similar to the NHS. See [Annex 8](#) for further details.

¹⁵ Used to evaluate the health of babies immediately after birth.

¹⁶ See [Annex 8: Review of service lines: Maternity](#) for details of evidence of maternal and neonatal outcomes in the countries we studied.

- In Ontario, Canada, rates of paediatric inpatient admissions are low at 31 per 1,000 people in the 0–19 years age group, compared with 112 per 1,000 in the same age group in the NHS in England.^{17,18}

These outcomes suggest that it is reasonable to look to these more fully risk-tiered systems for insights. We are not, however, able to identify what part risk tiering plays in driving outcomes, due in part to other differences between the health systems (discussed briefly below).

Example of a risk-tiering approach in intrapartum maternity care

In Stockholm County, Sweden, risk is partly tiered by the gestational age on delivery that each facility will accept.¹⁹ Only two of the seven maternity units care for women with pre-term deliveries of less than 28 weeks' gestation. In addition, only four of the seven units have neonatal intensive care units (NICUs; see Box 1).

Box 1: Risk tiering for maternity in Stockholm County, Sweden

In Stockholm County there are seven units, risk tiered as follows:

- Two units provide a broad range of services including for higher risk pregnancies. One specialises in very premature deliveries (22 weeks plus).²⁰ The other cares for pre-term deliveries (26 weeks plus) and specialises in mothers with HIV/AIDS.²¹ Both units have NICU beds.
- Three units are medium risk. All these units care for women 28 weeks pregnant and over (two of which have NICU beds).²²
- Two units are lower risk. Both care for only full term pregnancies (37 weeks plus).²³ One is a midwife-led unit²⁴ – co-located with one of the (medium risk) obstetrics unit and does uncomplicated vaginal births with no epidurals. Neither unit has NICU beds.

¹⁷ Excluding admissions where length of stay (LOS) is less than one day, the rate of admissions in the NHS is 74 admissions per 1,000 population. It is not possible to separate the Ontario data in the same way, but even excluding these short LOS episodes from the NHS data (but not the Ontario data), admissions in Ontario are 58% lower than the NHS at 31 versus 74 per 1,000 population.

¹⁸ See [Annex 6: Review of service lines: paediatrics](#).

¹⁹ Antenatal care is largely provided by community clinics, although midwives at the clinics will refer patients to a hospital-based obstetrician during pregnancy if required. Midwives at the clinics provide information on delivery location options but do not have an official role in steering the patient's choice, with a decision on place of delivery normally made at 25-30 weeks.

²⁰ Karolinska Solna, 3,916 births in 2013 (24 NICU beds).

²¹ Karolinska Huddinge, 4,955 births in 2013 (24 NICU beds).

²² Danderyd Hospital, 6,711 births in 2013 (24 NICU beds), Sodertalja Hospital – 6,260 births in 2013 (30 NICU beds) and BB Stockholm, 4,111 births in 2013.

²³ Sodertalja Hospital, 1,680 births in 2013.

²⁴ Sodra BB, 1,400 births in 2013 co-located with Sodertalja Hospital.

Patients have a free choice of maternity provider – although in practice most go to their nearest unit if their individual risk profile does not indicate otherwise.

These units deal with on average 4,150 births each (compared with just over 3,000 in the NHS),²⁵ and have an average length of stay of 2.2 days (compared with 1.7 days in the NHS).

As noted, risk tiering, triage and protocols are already used in maternity services in the NHS. Services range from midwife-led homebirths, freestanding or alongside midwife-led units (FMUs and AMUs), and obstetric units with varying capabilities. However, in the other health systems we reviewed, tiering tends to be more clearly calibrated with greater definition of roles for smaller providers and clearer responsibilities between risk tiers. In Stockholm County, each lower risk unit is aligned to a higher risk unit with agreed protocols on transfer arrangements and responsibilities. We also see this in France, where the maternity networks that connect lower risk units to high risk ones are highly formalised on a regional basis, potentially making smaller low risk units more viable.

Evidence suggests there is scope for greater use of networks within maternity services in the NHS: a recent report²⁶ found fewer than 40% of trusts belong to a maternity network with a paid co-ordinator,²⁷ compared with around 90% of trusts for neonatal networks, suggesting scope for increasing the use of formal maternity networks within the NHS.

There are differences between the types of risk tiering in Stockholm County and the NHS. In Stockholm County FMUs do not exist. All units are overseen by an obstetrician even though care itself may be led by midwives, with all units co-located with obstetric facilities. We see a similar picture in other health systems studied, for example in France where all birth units are obstetric led. Within the obstetric-led units in Sweden, there also appears to be greater risk tiering than the NHS based on gestational age at delivery.

In addition, there appear to be different approaches to neonatal care. In the NHS most obstetric units have some degree of neonatal provision (although more

²⁵ This figure represents an average across all types of maternity unit in the NHS. There is, however, wide variation in unit size both within and across unit types. More information on the distribution of maternity unit size in the NHS can be found in the Birthplace in England report mapping maternity care facilities in England (accessible at <https://www.npeu.ox.ac.uk/birthplace/publications>)

²⁶ House of Commons Committee of Public Accounts: Report into Maternity Services in England, January 2014 (see www.publications.parliament.uk/pa/cm201314/cmselect/cmpublic/776/776.pdf)

²⁷ The presence of a paid co-ordinator in a network may be an indicator of the degree of formality of the networking practices in place. Around 75% of trusts are members of some form of local maternity network with varying degrees of formality, but some 25% of trusts do not belong to any kind of maternity network.

specialised care, level three care, takes place in fewer centres). In contrast, in Stockholm County on-site NICU is more centralised and is available only at the higher and some medium risk units, with transfer arrangements from other units in place. In Stockholm only four maternity units – or one per 7,250 births – have NICUs. These have 26 NICU beds on average compared with an average of 11 NICU beds (per NICU) in the NHS.

Example of a risk-tiering approach in paediatrics

Paediatric care may be more complicated to tier than intrapartum maternity services, as it may be less easy to identify risk levels upfront. Nonetheless, in Ontario, Canada, paediatric care is risk tiered to a greater extent than in the NHS. Specialist providers deliver secondary and tertiary care to a large catchment area and only limited short-stay and minor surgical procedures take place outside of specialist children's hospitals. This means smaller and more remote providers in Ontario offer only an emergency 'stabilise, assess and transfer' service but also have greater integration with more specialised services (see Box 2).²⁸

In practice the proposed risk tiering²⁹ in Ontario has been largely but not fully implemented. That is, some hospitals provide a slightly different set of services from those recommended in guidance. One expert's view is that the proposals were not fully implemented due to the lack of will to make the guidance mandatory.³⁰

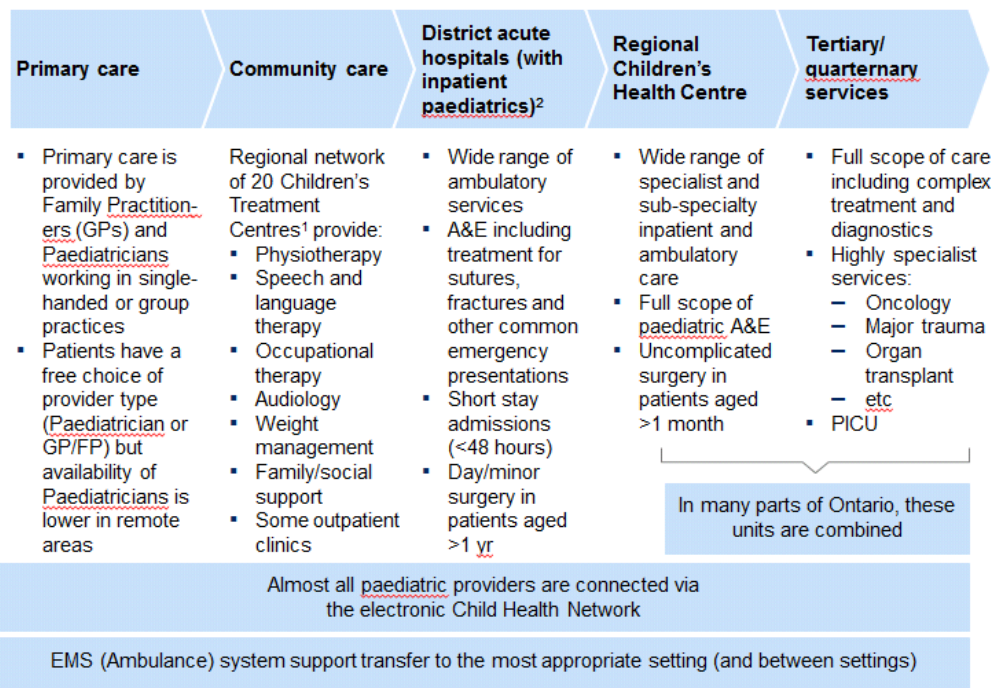
²⁸ Maps of care provision can be found in [Annex 15: Case studies: paediatric care and the electronic child health network \(eCHN\) in Ontario](#).

²⁹ See [Annex 15](#) for more detail on the recommended tiers.

³⁰ This is based on expert opinion gathered during the research.

Box 2: paediatric risk tiering in Ontario, Canada**Spectrum of paediatric provision in Ontario**

EXCLUDING MENTAL HEALTH



¹ Equivalent to 1 CTC per 680,000 population. It is estimated that 58,000 children in Ontario use their services (equivalent to 3,900 per CTC)
² District hospitals (similar to NHS DGHs) are called "community" hospitals in Ontario

SOURCE: Strengthening the maternal, newborn and paediatric system by design, IRC Phase 3 report: Final advice and recommendations of the Internal Review Committee, Child Health Network of the Greater Toronto Area, March 2005

Risk tiering in paediatrics also already exists at a number of levels in the NHS. For example, it is well established in critical care, with four clearly defined levels of paediatric intensive care units (PICUs) categorised by the intensity and/or specialty of services the unit can support. Large, specialised paediatric-only facilities (such as Great Ormond Street Hospital NHS Foundation Trust) already have in place clear protocols and arrangements for accepting higher risk cases. However, there is scope for greater risk tiering in the NHS as the structure and degree of formalisation varies.

Factors that help support and enable risk tiering

Although we focused on Ontario and Stockholm, when we saw risk tiering in other countries we looked at what supported its use. The following were key enablers:

- use of networks and transfers (and appropriate triage protocols)
- clinical standards to match risk profiles
- patients that understood, had confidence in, and accepted the system
- other features within the systems.

Looking at these enablers will help inform whether a similar system might be successful in the NHS.

Networks, transfers systems and protocols

Our research suggests that the most important enabler of the tiered system was the use of networks, facilitated through shared clinical governance and formal patient transfers³¹ and protocols. A recent report by The King's Fund³² also highlighted the role networks can play in supporting best use of resources in specialised care.

One of the challenges to tiering in maternity is identifying women who may shift from low to high risk during labour. For example, in the NHS around 40% of low-risk women who begin labour in a low-risk environment (FMU, AMU or home) will require transport to an obstetric unit during labour.³³ This highlights the importance of clearly defined networks and protocols for the support offered by higher risk units, the communication between units to notify of risk changes, and patient transfer or the transfer of staff in, should a greater degree of risk tiering be introduced in the NHS.

The importance of networks in paediatrics is also recognised in the NHS. A number of paediatric networks are in place for specific disease areas such as cancer and nephrology, which link groups of providers to tertiary referral centres. However, the degree to which networks are used locally to optimise care delivery varies considerably. Some good examples exist in the NHS but a 2010 Department of Health report highlighted as an issue the lack of a joined-up approach to paediatric care in the NHS,³⁴ and subsequently the Royal College of Paediatrics and Child Health (RCPCH) has advocated greater use of networking in paediatrics in the NHS.³⁵

More broadly, in the international examples of tiering and networking that we have reviewed, the networking arrangements were generally not optional. Instead there is an explicit requirement for the more specialised centres to actively support the less specialised centres – to initiate patient transfers and take responsibility for their care. In Stockholm County, each lower-risk unit is aligned to a higher-risk unit with agreed protocols on transfer arrangements and responsibilities. In Victoria, Australia, the highest tier providers are required to initiate emergency patient transfers and provide state-wide clinical leadership. The top two tiers must provide 24/7 senior clinical

³¹ Proximity of hospitals with transfer agreements in place may also be a supporting factor: within Stockholm County, facilities without NICU beds tend to be quite close to the nearest NICU unit, with the furthest apart hospitals with transfer agreements in place being approximately 25 minutes travelling time by road.

³² 'The reconfiguration of clinical services. What is the evidence?' The King's Fund, November 2014.

³³ See Birthplace in England Collaborative Group. (2011) Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study. *BMJ*, 343, d7400. The reasons for transfer are varied, including labour delay and need for analgesia, and many women who transfer may go on to have a normal birth in the obstetric unit.

³⁴ Kennedy, I (2010). 'Getting it right for children and young people: Overcoming cultural barriers in the NHS so as to meet their needs'. Department of Health.

³⁵ 'Bringing networks to life: An RCPCH guide to implementing clinical networks.' Royal College of Paediatrics and Child Health, March 2012.

advice, and the top three tiers are required to provide access to adult intensive care if these are not available at lower tier providers. As part of their clinical leadership role, top-tier providers would be expected to monitor and manage the performance of their network to ensure that expected network behaviours are followed and issues are resolved.

Clinical standards to match risk profiles

In some of the health systems with a risk-tiered model of provision, clinical standards are developed in parallel with provider risk tiers and criteria for patient segmentation according to risk. This means that clinical standards match the risk profile of patients the provider is caring for. For example, in Ontario 24/7 obstetrician presence is needed for higher risk tier maternity units (levels three to seven), GPs with surgical training are required for level two, and a GP or midwife is required for level one.^{36,37}

Although we saw tiered clinical standards in some health systems for maternity services,³⁸ we have not observed this tiering of clinical standards in paediatrics. This may be because, our review suggests, there are less likely to be clinical standards for paediatric care overall in non-NHS health systems. There are no guidelines for paediatric services in Ontario.

This suggests that matching clinical standards to risk tiers may be more important in the NHS than elsewhere, given the important role clinical standards have in driving service design (as discussed below). Allowing standards to match risk profiles is one mechanism through which lower risk tiered providers might be able to reduce costs.

This finding might also suggest that the wider NHS regulatory regime would need to account for differences in risk tiers of providers.

Patients' understanding and supporting the system

We also found that when different units offer different levels of care, patients need to understand how the systems operate and (where relevant) accept different levels of care being provided. For instance, in Ontario, non-paediatric hospitals indicate on their websites that, while they will see a child in A&E, should specialist investigations or an admission be required, the child will be transferred to another unit. There was also some anecdotal evidence that patients supported this specialisation with the specialist children's hospitals reporting that many parents elect to travel further to receive care for their children in specialist centres even for minor conditions (where care could have been provided closer to home).

Other features within the systems

³⁶ See [Annex 10: Review of service lines: details of networks and standards](#).

³⁷ Other examples of tiered clinical standards are from critical care and maternity services in Victoria.

³⁸ Although we also do not observe tiering of the maternity standards in Stockholm County, Sweden. See [Annex 10: Review of service lines: details of networks and standards](#).

More broadly, other features in these systems could also support risk tiering. For example, the Canadian paediatric system uses paediatricians in primary care and a shared electronic record, which links almost all paediatric providers. In Sweden there are several different elements to the system, including higher diagnosis-related group reimbursement rates for maternity services, staffing rotas operating on a round-the-clock basis, resulting in no major variations in staffing at the weekend, and quality outcomes embedded in the payment system.

2. Increasing the use of technology

Our research also suggests that there is scope for increasing the use of technology to improve efficiency and patient outcomes within the NHS. In particular, we identified examples of:

- **Technology that enables care to be delivered remotely.** For example, we found use of electronic intensive care units (eICUs) in the USA.³⁹ In the US system, spoke sites are supported to provide intensive care services through an eICU hub site. The system uses two-way cameras, video monitors, microphones and a smart alarm connected by high speed data lines.⁴⁰ This type of system has also been shown to work for other services such as stroke and dermatology. For example, in Arkansas, we found some stroke care was delivered remotely.
- **Improving patient record sharing across the full patient pathway.** For example, we found use of an electronic child health record in Canada (eCHN). eCHN is a virtual child health network, which provides an integrated and comprehensive electronic patient record across both primary and secondary care.⁴¹ We also observed better use of technology to manage bed capacity (using a system called BedLog) in Capio St Goran, a hospital in Sweden, which appears to achieve high relative levels of efficiency.⁴²

Evaluations of eICU from the USA found clear benefits to its use, with improvements in both clinical outcomes and length of stay.⁴³ Evaluation of the benefits of eICU would be needed in an NHS context before we could reach similar conclusions for the NHS. In particular, in the US context, before the use of eICU there was lower consultant-level coverage at night than there is in the NHS.

³⁹ The terms eICU, tele-ICU, virtual ICU and remote ICU are sometimes found interchangeably in the literature, but all refer to the same concept of a centralised or remotely operated ICU team networked with bedside ICU staff and patients using audio-visual equipment and computerised monitoring.

⁴⁰ See [Annex 14: Case studies: eICU Units in the USA](#).

⁴¹ See [Annex 15: Case studies: Paediatric care and the electronic Child Health Network \(eCHN\) in Ontario](#).

⁴² Capio St Goran appears to perform at least as well as peer hospitals on quality dimensions (including patient experience and waiting times) but at lower costs. See [Annex 16: Case studies: Emergency pathway at Capio St Goran Hospital](#).

⁴³ Kahn, J.M. (2011) 'The use and misuse of ICU telemedicine', *JAMA*, 305 (21), 2227–28.

Technology that improves patient record sharing could also deliver significant benefits. The example of eCHN in Canada suggests:

- reduced duplication of testing and decision making
- faster decision making in an emergency setting
- better chronic disease management and follow-up care closer to home
- better integration of providers and transfer of patients.

This suggests scope for significant efficiencies in the NHS compared with the current system of mixed electronic systems and paper record transfers.⁴⁴

The use of such technology is not new to the NHS. There are examples of telemedicine and telenetworks across the NHS, for example, the telehealth hub run by Airedale NHS Foundation Trust,⁴⁵ telestroke services in Surrey,⁴⁶ and teledermatology services in Bristol.⁴⁷ However, there is still significant scope to increase its use, both within and between trusts.

In theory technology to deliver care remotely has the potential to benefit the NHS by providing the opportunity for units to share senior clinical staff across sites, allowing smaller and/or more remote sites to deliver care where it might otherwise be unviable or more difficult. There could also be clinical benefits through, for example, increased consistency at these units. A recent report by The King's Fund also found evidence of the potential of remote specialist input to improve clinical outcomes.⁴⁸

In the NHS, an evaluation of telehealth and telecare led by the Department of Health⁴⁹ found the potential for telehealth to reduce mortality, time spent in hospital and A&E, and number of bed days, although analysis of the same programme by the Nuffield Trust found less evidence of the ability of telehealth to reduce costs.⁵⁰ The NHS Five Year Forward View highlighted Airedale as an example where virtual consultations delivered by the hospital for nursing home residents has resulted in fewer A&E admissions from these homes.⁵¹

⁴⁴ Holmes, M 2010: Andrew Szende and the development of the electronic Child Health Network, *Healthcare Quarterly*, 13(3) May 2010: 26–28 (www.longwoods.com/content/21810)

⁴⁵ See www.airedale-trust.nhs.uk/services/telemedicine/case-studies

⁴⁶ See <http://n3.nhs.uk/files/documents/NHSSurreyV2N3.pdf>

⁴⁷ See www.networks.nhs.uk/news/teledermatology-diagnosis-triage-and-effective-care-of-dermatology

⁴⁸ 'The reconfiguration of clinical services. What is the evidence?' The King's Fund, November 2014.

⁴⁹ Whole System Demonstrator programme. Headline findings. December 2011. Department of Health. See www.gov.uk/government/uploads/system/uploads/attachment_data/file/215264/dh_131689.pdf

⁵⁰ Evaluating the Whole System Demonstrator trial. Steventon A & Bardsley M, Nuffield Trust June 2012. See www.nuffieldtrust.org.uk/publications/impact-telehealth-use-hospital-care-and-mortality

⁵¹ NHS Five Year Forward View. October 2014. See www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf

Factors that support and enable technology use

We looked at the factors that supported the use of technology in delivering care. Our review found the key enablers were:

- investment in the technology itself
- high levels of clinical engagement
- shared network and governance arrangements
- support from national organisations.

Investment in technology

For eICU and many other innovative technology solutions to be implemented there may need to be upfront capital investment in software, technology and systems support and training. Evidence from the USA suggests that the upfront cost of eICU can vary but suggests that in general it may range from \$2 million to \$5 million.⁵²

Investment may also be needed for electronic sharing of health records. However, in the case of eCHN in Canada, one important benefit was that the technology worked across systems without requiring technology change on the part of the provider. This was achieved through the eCHN software developer working with all major Clinical Information System software suppliers throughout the development phase to ensure compatibility.⁵³ Most providers did not have to make a financial contribution to the technology development, with the bulk of funds being provided by the Ministry of Health and Long Term Care.⁵⁴

Clinical engagement

Both the research into eCHN and eICU show that a high level of clinical engagement, particularly of physicians, is vital to the success of increased use of technology. The eCHN in Canada relied on 'champion users' within organisations to promote uptake and sustain momentum. Physician engagement was also critical to ensure acceptance of the eICU hub. The evidence suggested that those health systems that made greater efforts to engage physicians in the eICU concept

⁵² See 'Effect of a multiple-site intensive care unit telemedicine program on clinical and economic outcomes: An alternative paradigm for intensivist staffing.' Breslow, M.J., Rosenfeld, B.A., Doerfler, M. et al. (2004) *Crit Care Med*, 32(1), 31–8. Finds that the cost varies but states that in general \$2 million to \$5 million is the estimated cost to set up a command centre and install a tele-ICU system. It also found that operating costs may range from \$600,000 to \$1.5 million per year.

⁵³ See www.echn.ca/about-media-details.php?id=4; 'Andrew Szende and the development of the electronic Child Health Network', *Healthcare Quarterly*, 13(3), 26-8.

⁵⁴ Total costs over the first 10 years of operation have been around £33m (CAN\$60m). The main source of funding is the Ministry of Health and Long Term Care, although the main paediatric provider in the region (Sick Kids Toronto) provided £4m (CAN\$7.5) of start-up capital that was matched by the Ministry. See Holmes, M (2010) 'Andrew Szende and the development of the electronic Child Health Network', *Healthcare Quarterly*, 13(3), 26-28 (www.longwoods.com/content/21810)

reported better outcomes than those with voluntary participations and more limited engagement efforts.⁵⁵

Our case study into Capio St Goran in Sweden also emphasised that it was the engagement and use of the bed management technology (BedLog) that was important to its success. We found that this IT was available at most hospitals in Stockholm County– but was used more effectively by ward sisters and clinicians in Capio St Goran – enabling it to provide real-time information.

Shared network and governance arrangements

In the case of technologies that enable care to be delivered remotely, such as eICU, there is a need for all those participating in the network to have clear protocols and agreements for sharing responsibility.

Our research into eICU in the USA suggests that there might be a number of different ways to organise cross-site governance. For example, in some models the on-site physician leads and in other models the eICU physician leads. We also found that some systems rotate eICU staff between hub and spoke sites, which may enhance implementation but requires additional levels of collaboration.

Support from national organisations

Implementing new technologies may need wider system support from national organisations. The eICU spoke sites in the USA do not provide consultant-level cover at night but rely on the eICU hub to provide it. For this to be implemented in the NHS, our standards would need to recognise remote consultants as an acceptable way to meet standards concerning consultant cover.

Our research also suggests that the implementation of eCHN in Canada has relied on backing both through funding and policy support from the Ministry of Health and Long Term Care. In the NHS this support from system oversight bodies might entail actions such as ensuring that the payment system allows providers to unbundle or split the tariff across multiple organisations or provide incentives or rules for providers in relation to the sharing of records electronically.

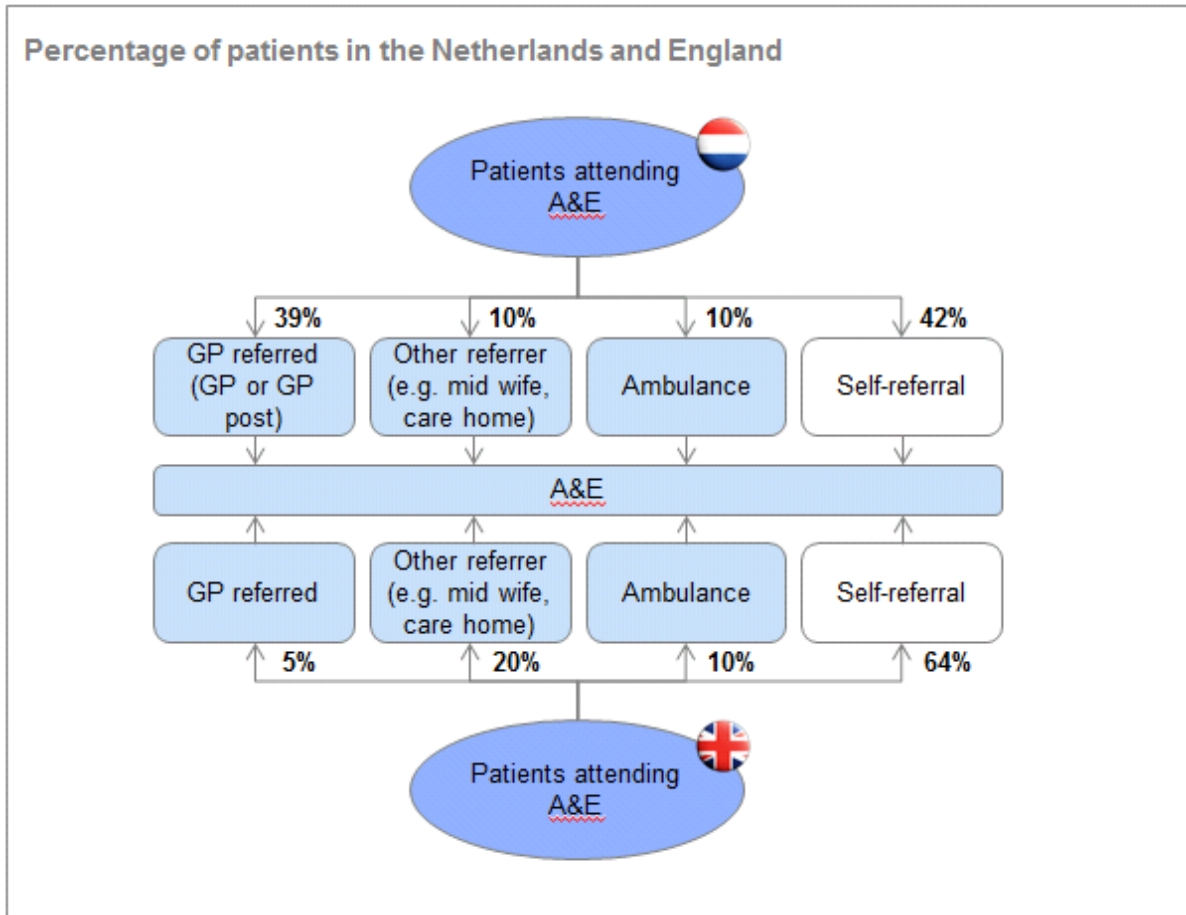
3. Increasing use of GPs for urgent out-of-hours care, co-ordinated with A&E

In the Netherlands, GPs are the gatekeepers of both urgent care as well as elective care, with 39% of A&E referrals coming through GPs in the Netherlands compared with just 5% in the NHS (see Figure 1). A&E attendance rates in the Netherlands are also significantly lower than in the NHS at 119 per year per 1,000 population compared with an average 278 per 1,000 population in England. Despite the limitations of comparing countries (for example, due to differences in casemix and need), evidence suggests that urgent out-of-hours care in the Netherlands is

⁵⁵ Kahn, J.M. (2011) 'The use and misuse of ICU telemedicine', *JAMA*, 305 (21), 2227–28.

delivered by fewer or at least a similar number of GPs per population than in England.⁵⁶

Figure 1: A&E referral methods



Sources: Gezondheidsraad: De basis moet goed! Feb, 2012; HSCIC: Focus on Accident and Emergency, December, 2013

To some extent, these lower A&E attendance rates could be driven by the financial incentives that patients in the Dutch system face. Patients are required to pay a compulsory deductible (or excess) if they use any health service (including A&E) except for GP-provided care. However, as this is a fixed deductible, once it is incurred in the year, the incentive is removed for patients who access care most frequently.

⁵⁶ Although there may be limitations to comparison (for example due to differences in definition) our review suggests in the Netherlands there are 0.53 GPs (headcount) per 1,000 population and 0.41 full time equivalents (FTEs). (NIVEL 2013). This compares with headcounts of 0.75 (all practitioners) and 0.66 (excluding registrars and retainers) per 1,000 population and FTEs per 1000 population of 0.68 (all practitioners) and 0.60 FTE (excluding registrars and retainers) in NHS England (HSCIC 2013). OECD numbers suggest a similar picture. For the latest mutually available year (2011) there were 0.73 (headcount) per 1,000 population in the Netherlands and 0.81 (headcount) per 1,000 population in the UK (rather than England). See http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT

This form of payment conflicts with the NHS principle that care should be provided free at the point of delivery to patients and is therefore not relevant to England. But other elements of the Dutch system could potentially help to reduce A&E attendances in the NHS. In particular, our research suggests that it might be possible to make greater use of GPs to deliver urgent out-of-hours care, a finding consistent with the NHS Five Year Forward View, which discusses the critical role of out-of-hours access to GPs and nurses in supporting urgent and emergency care networks.

Evidence of potential benefits in the Dutch system

In the Netherlands out-of-hours urgent care is delivered primarily through GP posts.⁵⁷ These GP posts appear to offer benefits, including:

- Lower costs (with fewer A&E attendances). In the Netherlands, GP post attendances are cheaper than A&E attendances for low urgency/complexity cases - costing EUR92 compared with EUR267 for an A&E visit. Lower costs in the Netherlands are driven by lower overheads, lower rates of investigations and diagnostic tests, fewer referrals and fewer follow-up appointments. We would need to understand whether similar reductions could be expected within the NHS, dependent on casemix.
- Reduced A&E attendances could also benefit the NHS by reducing workload and capacity pressures at A&Es. In addition, where GP posts are co-located in hospital premises, there might be cost efficiencies resulting from shared use of resources and infrastructure, particularly X-ray availability, simple suturing, and so on.
- Good workforce outcomes. The Dutch system reports good GP job satisfaction and work–life balance improvement. Average time on call out-of-hours for a GP was reduced from around 19 hours per week to an average of 4 hours per week when GP posts were introduced.
- There is also evidence of good access to care in the Dutch system. The average waiting time is 30 minutes. Nearly 90% of all patients needing a home visit are visited within 1 hour. In case of life-threatening conditions, 70% of patients are reached by the GP post within the time target of 15 minutes.

⁵⁷ GP posts provide out of hours care only: 5pm – 8am on weekdays; 5pm Friday – 8am Monday on weekends; 8am – 8am on bank holidays.

Important features of GP posts in the Dutch system

There are several elements to GP posts but some main features can be identified.⁵⁸ GP posts typically:

- **operate from physical locations.** Around half of all patients get an appointment and visit the GP post at their purpose-built offices.
- **operate at large scale.** In the Netherlands since 2001 GPs have started forming larger consortia to cover out-of-hours care. An average GP now works out-of-hours for only 209 hours a year, but covers a larger population.
- **use telephone triage.** Patients need to call the GP post for a telephone triage, based on which they may get an appointment or a home visit.⁵⁹ Of those that call the GP post, around 49% of patients go to the GP post, 10% receive a home visit and 41% are dealt with over the phone.
- **are often are co-located with the hospital (66%), with many co-located with A&E.**⁶⁰ There are four models of co-location:
 - **separate from the A&E.** The GP post is in the hospital but the two are separate physical departments
 - **before the A&E.** The GP post can function as a first contact, triaging all emergency patients and referring urgent cases to A&E
 - **together with A&E.** Care is delivered as one department, staffed by A&E doctors and GPs
 - **replacing A&E** - where a hospital does not have an A&E the GP post can fill in that function.

The co-location of GP services with A&E services could be more attractive to patients who do not need to change site should a referral on to A&E be required.

Each of these features of GP posts could provide useful insights for the NHS and may contribute to lower A&E attendance rates and costs as in the Netherlands. In particular co-location of GP services with A&E services could be even more important in the NHS given that, unlike in the Netherlands, patients will not have a financial incentive to report to GP posts first. More broadly, there might be scope for this principle of co-location and integration between GPs and A&E to extend from out-of-hours services to the whole week.

⁵⁸ See [Annex 11: Case studies: GP posts in the Netherlands](#).

⁵⁹ (2007) Huisarts en Wetenschap: Medische zorg buiten kantooruren, 5, 202-06.

⁶⁰ Those not co-located include where co-location is not possible as there is no A&E in the area.

In many places, aspects of this model are already in use in the NHS, for example, in Cambridgeshire, an out-of-hours network (Urgent Care Cambridgeshire) is GP led and, following telephone triage with a nurse, offers face-to-face GP appointments at either standalone clinics or GP-led clinics co-located with acute facilities.⁶¹

Nationally, however, there is a great degree of variation in how out-of-hours care is provided.

Other system-wide features that appear to support and enable the use of GP posts in the Netherlands

Other features of the wider system are also found to support the use of GP out-of-hours care in the Dutch system. These include:

- **GPs being mandated to provide care out-of-hours.** GPs in the Netherlands cannot opt out of out-of-hours care. If they are not part of a larger GP consortium⁶² or GP post (only 1% to 2% of GPs do not belong to larger consortia) they must provide out-of-hours care themselves.
- **Financial incentives for patients.** As already noted, financial incentives could have a role in supporting patients' use of GP posts. In the Netherlands patients are required to pay a compulsory deductible (or excess) if they use any health service (including A&E) with the exception of GP-provided care. This provides patients who have not already paid the fixed deductible with an incentive to see a GP rather than go to A&E.
- **IT systems.** Although we found that there was room for improvement in the use of IT in the Dutch system, our research suggests that IT systems could have an important role in enabling this model of care.

This report has set out some of the evidence on factors that support these models of care in other health systems. Not all of these factors may be applicable to the NHS. Before the system can decide whether these models should be implemented more widely in the NHS, if at all, we need to debate and discuss this evidence in an NHS context.

⁶¹ See www.urgentcarecambridge.co.uk for more detail on the service configuration.

⁶² Around 98% of GPs in the Netherlands belong to large-scale organisational groups (HDS) of which there are currently around 53. On average each HDS has around 150 GP members although this ranges from 10 to 900. See [Annex 11: Case studies – GP posts in the Netherlands](#) for more details.

Findings related to system-wide factors shaping the way care is provided

These three ideas are already in use in some areas of the NHS. However, this research suggests that introducing them more widely in the NHS could offer benefits by improving efficiency or quality. In particular, technology and risk tiering could enable more care to be delivered to lower risk patients locally, suggesting that smaller and more remote providers may benefit from these models. However, they would be affected by differences between the NHS and the systems they come from. For instance, there are specific service line differences, some of which have been highlighted above, such as different funding levels, different access to IT and different patient incentives. In addition, system-wide differences could affect their uptake and the realisation of their potential benefits in the NHS. In particular, our research suggests that two key differences could have an impact on implementation in the NHS. These were:

- the nature of clinical standards and the role they play in driving quality
- the health service workforce.

This report does not make recommendations based on adopting the approaches to clinical standards or to the health service workforce used in international health systems. Our aim is to provide insights into these wider factors that shape different healthcare systems, since they are likely to affect how models of care can be implemented.

The role of clinical standards

Clinical standards have a greater role in driving quality in the NHS than in other systems. In the NHS, clinical standards often play an important part in shaping service design and configuration. Clinical standards are recommendations that aim to define the level of service a patient should receive. They include, for example, recommended times before a patient sees a consultant, access to drugs or diagnostics, the training/qualifications of the lead clinician providing treatment, or the staff required to deliver a particular service. These requirements can end up determining the minimum economic scale of a service, based on the volume of patients that would need to be treated to ensure efficient use of minimum requirements for staff and equipment. In addition, if there are not currently enough trained staff to meet the staffing recommendations in all locations, standards may also drive configuration via workforce availability.

We found that the health systems we studied set similar standards for services that had clearly defined disease pathways, such as acute stroke. For example, all of the countries we studied had guidelines on maximum time to administer clot-busting drugs (thrombolysis), although this time did vary.⁶³ However, for services with risk-

⁶³ See [Annex 4: Review of service lines: Stroke](#).

tiered systems, some clinical standards varied according to the risk tier of patients treated by providers. In service lines that encompass a wide range of activity, such as inpatient paediatrics, emergency surgery, acute medicine and A&E, we found that overarching standards were less common, although clinical protocols and guidance for particular procedures or conditions are more common. Some health systems are recognising the challenge of ensuring consistent delivery of quality care in some service lines, particularly emergency surgery and acute medicine. However, they are all at the early stages of developing initiatives to address these issues.

The degree to which standards are enforced also affects their influence on care organisation. We found that the NHS relies more heavily than many other health systems on standards set and enforced through provider obligations to be licensed or registered with national regulators. Where clinical standards are used in other health systems, the rigour and weight of centralised monitoring and enforcement are often flexible. For example, A&E waiting times in other health systems often had only minor sanctions for non-compliance and participation may be voluntary. For example, in Sweden A&E targets are not nationally set or enforced, in part driven by a belief that a specific waiting time target may be more or less appropriate to different segments of the patient population. For example, a longer observation period may be required to effectively triage or diagnose elderly patients.

We also found that some non-NHS health systems rely more on mechanisms other than clinical standards set and enforced by national regulators to achieve quality outcomes. We found that:

- Patient and other buyers choice is more relied upon as a powerful force in driving quality in some systems. This was particularly the case in systems with more independent-sector provision and in systems where providers compete for patients on the basis of quality of care, their credentials (including staff credentials) and accreditations.
- Providers and provider networks in other health systems are sometimes more likely than those in the NHS to seek specialist designation or set their own standards higher than the national minimum to differentiate their services and signify excellence.
- Litigation threat is also often cited as a strong driver of conformity to guidelines, particularly in systems in which physicians are self-employed, rather than employed and therefore to some extent shielded by a provider, or where features of the local legal system more readily facilitate larger claims for damages in cases of medical negligence.

The role that clinical standards appear to have in driving quality in England means local commissioners and providers, national regulators and standard setting bodies will need to work together to understand how standards can best enable new models of care to work without compromising the quality of care patients receive.

The health service workforce

Approaches to workforce also have an important role in shaping models of care. We found during the course of our review that in other health systems there were different approaches both to employment arrangements and the use of specific roles.

Employment arrangements for clinicians can give providers more flexibility

In many systems, a greater proportion of clinicians operate in group practices. This means they are not directly employed by a single hospital but have admission rights at one or more hospitals. Examples of this contractual model exist in France, Germany, US, and Canada. Expert interviews suggested that this may provide greater flexibility to the acute providers for ensuring sufficient clinical cover in and out of hours. Further, the flexibility offered by group practice arrangements may enable clinicians to look after higher volumes of patients across a wider geographical area within a specialty, and so enable better skill development opportunities.

However, our research also found that both the USA and Australia are moving towards greater reliance on models where physicians are directly employed by hospitals. This suggests potential risks as well as potential benefits to these types of arrangements.

Different role definition could also allow for greater flexibility

During our research we also found examples of some types of care being delivered by different clinical roles. For example, we found that in some health systems, a greater share of specialist care is delivered in primary care settings, making it easier for patients to access more specialist care. This was the case in outpatient paediatrics in Ontario, Canada, Arkansas, USA, and Germany, France, and Sweden.

In maternity care we came across two examples of clinical roles that are not common in the NHS, and extend the range of procedures offered by a certain grade of clinician:

- Qualified nurses can administer epidurals in the USA.
- GPs provide care during the period of labour and birth in Canada, Australia and the USA. This is generally more common in remote settings where obstetrician-led services are not available.

Our research suggests that telemedicine-supported networks can also drive changes and adaptations to clinicians' roles. For example, in an eICU, a physician assistant may perform clinical tasks under the guidance and instruction of the hub-based intensivist; and in a telestroke location, an Emergency Room doctor can administer thrombolysis (and other aspects of care), under the guidance of the hub-based stroke specialist.

Our research does not conclude that these specific examples should necessarily be taken forward in the NHS, especially where they do not reflect the direction of travel for the NHS workforce. However, it does suggest that in service lines there may be some scope for thinking creatively. Given significant constraints and shortages in some areas of clinical recruitment, allowing more flexibility in workforce models (within certain parameters, such as clinically appropriate staffing levels) may provide significant benefits in the NHS.

Next steps

Overall our review of acute care in international health systems suggests that they offer important service model ideas for the NHS. To some extent these models are already in use in the NHS but there could be benefits to greater or more extensive use of such models. However, we are aware that differences between health systems mean that the potential costs and benefits of these service models in an NHS context need to be better understood before their use can be advanced more generally in England.

We have launched an online debate to facilitate discussion on this topic. We would like to hear views from experts across the sector. In particular, we would like to receive information and generate discussion on the following:

- **What are the potential benefits of these models in the NHS?** For example, the impact such models could have on patient outcomes, patient ability to access services and on costs in the system.
- **What are the potential risks, limitations and trade-offs?** For example, what are the implications for patient choice and access in risk tiering models, where high-risk patients potentially have to travel further and have less choice?
- **What incentives or rules would be needed for these models to work across local (or even regional) health economies and across different types of providers?** For example, in risk tiering models, do specialist providers (potentially in different commissioning areas) need incentives or rules to support lower risk providers within the same networks? What incentives would GPs and acute trusts need to optimally manage the patient flow if GP services are organised to reduce unnecessary A&E attendances? There may also be questions around whether some organisational forms or management structures (such as those being considered by the forthcoming Dalton review into securing the clinical and financial sustainability of providers of NHS care through offering new options for organisational forms) would better support the delivery of some of these models of care.

- **Could the features that appear to support and enable the success of such models in other countries apply in the NHS? What might be barriers to success?** For example, could the network arrangements for successful risk tiering be put in place? Would existing clinical standards enable these models to work? How could the pricing system support such models? What workforce considerations will be important? For example, would eICU hubs be able to recruit anaesthetists?
- **What are the different implications of these models in urban, suburban and rural settings?** For example, in a rural risk tiered system, would providers accepting low risk patients need to offer different services from their urban counterparts, where patient access to providers accepting higher risk patients would be less likely to be an issue? Are there any other differences in features between providers or provider settings that might have implications for these models?

We are particularly keen to hear from trusts and commissioners that have implemented similar models in the NHS context.

We see these findings as informing the wider debate about the future vision for the NHS and we seek to improve the evidence base to support conversations across the NHS about new models of care.

To some extent these findings are already reflected in the models of care outlined in the NHS Five Year Forward View and are being explored as part of our work with the Integrated Care Pioneers,⁶⁴ the New Models of Care programme⁶⁵ and Monitor's recent work on how a range of new provider models might be regulated and reimbursed,⁶⁶ among others. Many features of the care models we looked at, such as sharing records across patient pathways, co-locating GP practices on acute hospital sites, and networked providers and shared governance arrangements, resonate with these programmes. The findings of this report, alongside the views we gather from our online debate, will continue to feed into the future vision for the NHS.

Beyond this we recognise that support, encouragement and co-operation from players across the sector are needed to enable these models of care, including from standard-setting bodies, commissioners and national policy makers. Monitor already works with a range of national partners to offer this support. We are also working with local areas to build the evidence base and to provide support as they take their plans forward.

⁶⁴ See www.gov.uk/enabling-integrated-care-in-the-nhs#integrated-care-pioneers for more information.

⁶⁵ See <http://futurehospital.rcpjournals.org/content/1/2/84.full.pdf> 'How Monitor's strategy supports new models of care' for background.

⁶⁶ Reforming the payment system for NHS services: supporting the Five Year Forward View. Monitor, November 2014. See www.gov.uk/government/publications/reforming-the-payment-system-for-nhs-services-supporting-the-five-year-forward-view



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