

## Summary: Intervention & Options

Department /Agency: Department of Health	Title: Impact Assessment of Principles for Quality Neonatal Services	
Stage: Final Proposal	Version: 11.0	Date: 22 September 2009
Related Publications: Toolkit for Quality Neonatal Services		

Available to view or download at:

<http://www>.

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**What is the problem under consideration? Why is government intervention necessary?**

In 2007, the total number of registered neonatal deaths in England and Wales was 2,282, a decrease of two per cent since 2000. However, demand for neonatal services has continued to increase with admissions increasing by nine per cent between 2006-07 and 2007-08.

A joint DH and NHS taskforce was set up following an NAO review of neonatal services in England. It is envisaged that national quality principles developed by the taskforce will enable health authorities to work together to implement recommendations made by the NAO and address workforce shortages to reduce neonatal mortalities.

**What are the policy objectives and the intended effects?**

The policy objectives are to improve clinical neonatal outcomes with reductions in neonatal mortality and ensure equity in service provision across the neonatal networks.

The role of the taskforce will be to support and facilitate the development of principles to improve neonatal services for premature and sick newborn babies and their families. National quality principles will address and improve issues concerning workforce, transfers, surgery and data collection. It will also develop a commissioning framework to increase the quality of perinatal and specialist neonatal care across the NHS.

**What policy options have been considered? Please justify any preferred option.**

The following options have been considered:

1. Do nothing - no additional recruitments to add to existing workforce.
2. Preferred option: develop a neonatal toolkit, which includes a set of principles (the Principles) and commissioning guidance, which allow local implementation to meet the needs of the local population and the means to monitor services to determine where improvements are made at a local level.
3. Provide national quality principles for implementation at the national level.

**When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?**

There will be staged costs which will develop following implementation in 2010. Data collections will begin to inform in 2011 and benefits achieved each year with reductions in neonatal mortality.

**Ministerial Sign-off** For SELECT STAGE Impact Assessments:

*I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.*

Signed by the responsible Minister:



Date: 27.10.09.

## Summary: Analysis & Evidence

Policy Option: 2

Description: Develop commissioning framework, supported by national quality principles, allowing local implementation to improve clinical outcomes

<b>COSTS</b>	<b>ANNUAL COSTS</b>		Description and scale of <b>key monetised costs</b> by 'main affected groups' One-off costs include training costs for workforce expansion and backfilling. This is accrued over a period of 3 years. Annual costs include paybill costs and other overheads to deliver workforce measures recommended in the national quality principles, and non-pay costs to the health service to treat additional survivors.
	<b>One-off</b> (Transition)	<b>Yrs</b>	
	£ 102.4m	3	
	<b>Average Annual Cost</b> (excluding one-off)		
	£ 89.4m	<b>Total Cost (PV) £ 996.7m</b>	
Other <b>key non-monetised costs</b> by 'main affected groups' Cost of communicating the Principles and commissioning tools to neonatal networks, Primary Care Trusts and Strategic Health Authorities.			

<b>BENEFITS</b>	<b>ANNUAL BENEFITS</b>		Description and scale of <b>key monetised benefits</b> by 'main affected groups' Estimate of the lifetime benefit of neonates saved using quality adjusted life years measure (based on a 10 per cent annual reduction in mortality rates for neonates with very low birthweight and low birthweight). The value of a life saved is treated as a wider societal benefit rather than a saving to the NHS in this IA.
	<b>One-off</b>	<b>Yrs</b>	
	£ nil		
	<b>Average Annual Benefit</b> (excluding one-off)		
	£ 21.3m	<b>Total Benefit (PV) £ 1.4 billion</b>	
Other <b>key non-monetised benefits</b> by 'main affected groups' Reduced neonatal mortality rates; achievement of greater equity across the neonatal networks in the provision and level of care given to neonates; and attainment of recommended workforce levels to minimise transfers of neonates outside their home unit when the reason for doing so is staff shortage.			

Key Assumptions/Sensitivities/Risks QALY's valued at £60k. The adjusted costs are inflated to 2009-10 prices using the Consumer Price Index to reflect changes over time.

Price Base Year 2009	Time Period Years 10	<b>Net Benefit Range (NPV)</b> £	<b>NET BENEFIT (NPV Best estimate)</b> £ 380.5m
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What is the geographic coverage of the policy/option?		England		
On what date will the policy be implemented?		2010		
Which organisation(s) will enforce the policy?		N/A		
What is the total annual cost of enforcement for these organisations?		£ N/A		
Does enforcement comply with Hampton principles?		No		
Will implementation go beyond minimum EU requirements?		No		
What is the value of the proposed offsetting measure per year?		£ N/A		
What is the value of changes in greenhouse gas emissions?		£ N/A		
Will the proposal have a significant impact on competition?		No		
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	No	No	N/A	N/A

<b>Impact on Admin Burdens Baseline</b> (2005 Prices)		(Increase - Decrease)		
Increase of £	Decrease of £	<b>Net Impact</b>		£

Key: Annual costs and benefits: Constant Prices (Net) Present Value

## Summary: Analysis & Evidence

Policy Option: 3

Description: Provide national quality principles for implementation at the national level.

<b>COSTS</b>	<b>ANNUAL COSTS</b>		Description and scale of <b>key monetised costs</b> by 'main affected groups' One-off costs include training costs for workforce expansion and backfilling. This is accrued over a period of 3 years. Annual costs include paybill costs and other overheads to deliver workforce measures recommended in the national quality principles, and non-pay costs to the health service to treat additional survivors.
	<b>One-off</b> (Transition)	<b>Yrs</b>	
	<b>£ 102.4m</b>	3	
	<b>Average Annual Cost</b> (excluding one-off)		
	<b>£ 89.4m</b>	<b>Total Cost (PV) £ 996.7m</b>	
Other <b>key non-monetised costs</b> by 'main affected groups' Implementing principles at a National level will be difficult since they are not mandatory.			

<b>BENEFITS</b>	<b>ANNUAL BENEFITS</b>		Description and scale of <b>key monetised benefits</b> by 'main affected groups' Estimate of the lifetime benefit of neonates saved using quality adjusted life years measure (based on a 10 per cent annual reduction in mortality rates for neonates with very low birthweight and low birthweight). The value of a life saved is treated as a wider societal benefit rather than a saving to the NHS in this IA.
	<b>One-off</b>	<b>Yrs</b>	
	<b>£ nil</b>		
	<b>Average Annual Benefit</b> (excluding one-off)		
	<b>£ 21.3m</b>	<b>Total Benefit (PV) £ 1.4 billion</b>	
Other <b>key non-monetised benefits</b> by 'main affected groups' Reduced neonatal mortality rates; greater equity across neonatal networks in the provision and level of care given to neonates; and attainment of recommended workforce levels to minimise transfers of neonates outside their home unit when the reason for doing so is staff shortage.			

Key Assumptions/Sensitivities/Risks QALY's valued at £60k. The adjusted costs are inflated to 2009-10 prices using the Consumer Price Index to reflect changes over time.

Price Base Year 2009	Time Period Years 10	<b>Net Benefit Range (NPV)</b> £	<b>NET BENEFIT (NPV Best estimate)</b> £ 380.5m
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What is the geographic coverage of the policy/option?		England		
On what date will the policy be implemented?		2010		
Which organisation(s) will enforce the policy?		N/A		
What is the total annual cost of enforcement for these organisations?		£ N/A		
Does enforcement comply with Hampton principles?		No		
Will implementation go beyond minimum EU requirements?		No		
What is the value of the proposed offsetting measure per year?		£ N/A		
What is the value of changes in greenhouse gas emissions?		£ N/A		
Will the proposal have a significant impact on competition?		No		
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	No	No	N/A	N/A

<b>Impact on Admin Burdens Baseline</b> (2005 Prices)				(Increase - Decrease)
Increase of	£	Decrease of	£	<b>Net Impact</b> £

Key:	Annual costs and benefits: Constant Prices	(Net) Present Value
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## Evidence Base (for summary sheets)

[Use this space (with a recommended maximum of 30 pages) to set out the evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Ensure that the information is organised in such a way as to explain clearly the summary information on the preceding pages of this form.]

### **Background – what is the policy problem that needs to be solved?**

The majority of babies born in England do so without requiring medical intervention, but when intervention is needed this normally involves treatment within a neonatal unit. Neonatal units provide care to babies who are born prematurely, have low birth weight, a serious illness or condition that requires specialist care, or multiple births. Specialist care falls into three categories: special care for babies requiring assistance with growth and development following premature birth, or those requiring some care following complex treatment; high dependency care for babies not critically ill but still requiring complex care; and intensive care for the most seriously ill babies.

In 2007-08, the number of babies admitted to neonatal units in England was 68,000<sup>1</sup> (about one in ten live births), of which 19,500<sup>2</sup> were admitted for intensive care. There has been an increase in demand for neonatal services with admissions to neonatal units increasing by nine per cent since 2006-07. However, improvements in technology and health care have contributed to a decrease in neonatal mortalities. Between 2000 and 2007, there was a two per cent decrease in registered neonatal deaths in England and Wales (2,335 in 2000; 2,282 in 2007).<sup>3</sup>

Following a Department of Health (DH) review of neonatal services in 2003,<sup>4</sup> the 180 neonatal units based in NHS Acute and Foundation Trusts in England were structured into 23 managed clinical neonatal networks, providing services for infants and families.

A National Audit Office (NAO) review of the networks in 2007, concluded that the reorganisation into networks had led to improvements in coordination and consistency of services, with increased effectiveness. However, capacity and staffing problems still exist, with a lack of clear data on outcomes and deficiencies in financial management making it difficult to determine the efficiency of the services provided.

In February 2008, a Public Accounts Committee<sup>5</sup> (PAC) also reviewed neonatal care and made recommendations on communication improvements between neonatal networks, Primary Care Trusts (PCT) and Strategic Health Authorities (SHA) via agreement on a set of performance measures of neonatal networks. They also recommended that there should be harmonisation of costs and charges for neonatal units across England, neonatal nurse shortages be addressed and recruitment and retention initiatives developed based on good practice.

### **Why is Government intervention necessary?**

A Neonatal Taskforce with members from DH and NHS was set up in 2008, in part to respond to the recommendations proposed by the NAO and PAC. The role of the taskforce is to develop neonatal quality principles (the Principles) and commissioning tools to ensure greater accessibility for babies to all levels of neonatal care. The Principles provide a resource for Commissioners and Service Providers to plan, deliver and quality assure neonatal services by making recommendations on the following:

- staff-to-baby ratios of 1:4 for special care, 1:2 for high dependency and 1:1 for intensive care;
- provision of Allied Health Professionals;
- provision of a dedicated transfer service;
- supporting the development of neonatal staff through professional training and education;
- provision of specialist staff to support neonatal surgery;

<sup>1</sup> National Audit Office, *Caring for Vulnerable babies: The reorganisation of neonatal services in England*, 2007.

<sup>2</sup> Bliss Baby Report 2008: Neonatal care in England.

<sup>3</sup> Office for National Statistics, DH2 Series, *Mortality Statistics: Cause*.

<sup>4</sup> Department of Health, *Neonatal Intensive Care Review: Strategy for Improvement*, 2003.

<sup>5</sup> Public Accounts Committee, *Caring for Vulnerable Babies: The reorganisation of neonatal services in England*, 2008.

- establishment of robust clinical governance frameworks to monitor quality and outcomes; and improving data collection to facilitate monitoring of neonatal care.

The aim of the Commissioning Framework is to provide a resource for Commissioners to increase the quality of perinatal and specialist neonatal care across the NHS. Its purpose is to:

- inform Providers of the services and Principles required of them;
- provide guidance on responsibilities to improve co-ordination of neonatal services; and
- improve communication between Providers and Users.

The reviews undertaken by the NAO and the PAC confirm that neonatal units in general offer a good standard of care. However, there are areas where performance can improve and Government intervention through the application of the toolkit will lead to improvements in health outcomes by providing a means to address main problems areas. In particular, capacity and staffing problems, lack of consistent data or performance measures and some limitations in the way costs and charges are administered. The NAO's report also called for a more integrated neonatal transport service for optimum response and cost-effectiveness. There is an added benefit of having access to such a service with reduced travel times in transporting newborn babies according to their clinical need.

The argument in this IA is that implementation of policy option 2 at a local level will lead to:

1. further reductions in neonatal mortality rates;
2. recommended workforce ratios for all levels of specialist neonatal care;
3. the possibility of monitoring the quality of care provided to babies and their families;
4. transfer to other neonatal networks due to a lack of capacity at the home unit will be minimised so that overall care due to delay in treatment is not compromised; and
5. high quality data can be collected to facilitate improvements in the outcome of care.

There is a risk that the level of care provided and outcomes will be compromised if no further action is taken to improve neonatal service provision, given the increasing demands currently imposed on neonatal services.

## Options for improving clinical neonatal outcomes

The broad policy objective is to improve clinical neonatal outcomes and ensure equity in service provision across the 23 neonatal networks. The primary outcome measures for this will be neonatal mortality rates by level of specialist care and workforce capacity by neonatal unit. Whilst clearer performance measures or improved administrative arrangements may have some impact on outcomes at the margins, there is an expectation that improvements from improved staffing ratios will have a significant impact on clinical outcomes. Weakness in this service can lead to deaths of neonatal babies or to serious long-term conditions requiring ongoing care.

The British Association of Perinatal Medicine (BAPM) recommends that one registered nurse to one cot should be a minimum standard for Intensive Care. Results from the 2008 study conducted by Bliss<sup>2</sup> indicate that only 29 per cent of neonatal intensive care units in England achieved the recommended staffing levels for Intensive Care.

Option 2 allows local Commissioners to determine the exact workforce required to deliver the Principles, within the agreed framework. This takes into consideration the capacity variations that exist across the neonatal networks with some networks experiencing a greater degree of staff shortages than other networks. There are also regional differences in the demand for neonatal care given the variations in live births across regions and the differences in the severity of illness of the neonate, which will determine the degree of care required. However, a lack of data at the network level makes it difficult to determine the extent of this variation for the purpose of this IA.

Option 3 is in line with the current DH policy of Subsidiarity, and will allow Commissioners to make local decisions about the configuration of services that best meet their local needs. Implementing this option will ensure that Commissioners all meet the Principles at a national level, which would match the aggregate England requirement of option 2, but allow no room to reflect any local situations. However, implementing principles at a National level will be difficult since they are not mandatory.

The preferred option in this IA is Option 2 to develop a neonatal toolkit for implementation at local level.

## Analysis of costs and benefits

An economic evaluation of neonatal care outlines the increment of health benefits resulting from neonatal care in relation to the increment in costs. The costs include the workforce implications of introducing the recommendations in the Principles on staff-to-baby ratios, healthcare and social care costs from birth to 18 years of age for neonate survivors.

Detailed information on neonatal survival rates by level of specialist care is limited. Survival statistics derived from national registration records, published research studies and hospital charges from PCT and NHS Trust financial records were applied to birth statistics at England and Wales level to determine the discounted Quality Adjusted Life Years (QALY's) and neonatal care costs to hospital discharge, according to birthweights. Incremental healthcare and social care costs from hospital discharge to 18 years of age for preterm child survivors derived from a recent research study were applied to neonatal survivor figures.

A recent study examining the relationship between nurse staffing and mortality rates in very low birthweight or preterm infants in the UK, reported a decrease of 48 per cent in risk-adjusted mortality when the ratio of nurses with neonatal qualifications to intensive care babies is 1:1<sup>6</sup> throughout the clinical neonatal network. Although these findings are encouraging, caution is applied, as this is the only study that has identified such a significantly large decrease in neonatal mortality rates. The benefits that can be derived from a 10, 25 and 48 per cent annual reduction in neonatal mortality when workforce recommendations are met were applied for this IA to take this and any shortcomings in the workforce estimates into consideration.

The methodology applied to produce the workforce estimates have been included in Annex A with details on the modelling of benefits set out in Annex B. The costs have been discounted at 3.5 per cent per annum to convert future values to their equivalent present value, and benefits have been discounted at 1.5 per cent per annum, as they have a long-term impact of more than 30 years.

## Assumptions/baseline data

The key assumptions and evidence used in this impact assessment are as follows:

- In 2007, there were 1,141 neonatal deaths where birth weight was less than 1,500g (very low) and 319 neonatal deaths where birth weight was between 1,500 and 2,499g (low).<sup>7</sup> Rate of survival to hospital discharge for infants born weighing under 1,500g is 87.1 per cent<sup>8</sup>, and for infants weighing between 1,500 and 2,499g it is 98 per cent.<sup>9</sup>
- Average length of stay in neonatal intensive care from birth to initial discharge for infants with very low birthweight is 43 days,<sup>10</sup> and 10 days for infants with low birthweight in a special care unit<sup>7</sup>.
- National average daily unit costs at 2009/10 prices for special care is £442, high dependency care is £788, and intensive care is £1027.<sup>11</sup> The costs include direct patient care (nurse staffing, medical staffing, neonatal equipment), support services (pathology departments,

<sup>6</sup> Hamilton K E Stc, Redshaw M E, Tarnow-Mordi W, 'Nurse staffing in relation to risk-adjusted mortality in neonatal care', *Arch. Dis. Child. Fetal Neonatal Ed.*, 2007; 92: F99-F103.

<sup>7</sup> Office for National Statistics, Mortality Statistics: Childhood, infant and perinatal, DH3 Series, No. 40.

<sup>8</sup> Laing I, Ducker T et al, Designing a Neonatal Unit: Report for the British Association of Perinatal Medicine, 2004.

<sup>9</sup> Draper E S, Manktelow B et al, (1999) 'Prediction of survival for preterm births by weight and gestational age: retrospective population based study'. *BMJ*; 319:1093-1097.

<sup>10</sup> Langley D, Hollis S et al, 'Impact of Community Neonatal Services: A Multicentre Survey', *Arch. Dis. Child. Fetal Neonatal Ed.*, 2002; 87; F204-F208.

<sup>11</sup> Department of Health, NHS Reference Costs 2006-07.

radiology, pharmacy, medical and surgical supplies), and hospital overheads (administration and medical records, domestic staff, laundry).

- Lower birthweight means a longer period of hospitalisation in neonatal intensive care and higher treatment costs.
- Health and social care incremental cost per pre-term survivor<sup>12</sup> (gestation age at birth is less than 37 weeks) from hospital discharge to 18 years is £58, at 2009/10 prices. This cost was allocated to infants with low birthweight, taking into account that the primary cause of low birthweight is premature birth. Incremental cost per very pre-term survivor (gestation age at birth is less than 33 weeks) from hospital discharge to 18 years is £113, at 2009/10 prices. This cost was assigned to infants with very low birthweight.
- Neonatal transport services operate emergency transfers for neonates that require specialist treatment at another hospital and elective or back transfers of recovering babies who require transfer to the hospital nearest to their home. Transport costs range from £276 to £531k per annum.<sup>1</sup>
- Expansion in the workforce numbers in terms of full-time equivalents (FTEs) and their respective costings are based on the median number of funded cots available at unit level across the neonatal network. Regional variations exist in the cost to train a qualified nurse (QN) to become qualified in speciality (QIS), paybill pressure (includes salary, National Insurance and pension contributions) for each new QIS (FTE), and the annualised cost of training replacement QIS nurses as a result of natural wastage.

## Costs and benefits

An assessment of the costs and benefits for each option are outlined below:

### Option 1 – Do nothing

No additional recruitments will be made to the existing workforce and transfer of neonates will continue where staff shortages exist within networks. The costs and benefits for this option are, by definition, zero.

### Option 2 – Develop a neonatal toolkit and locally implement

The workforce expansion required in England to deliver the Principles (Table 1, Annex A) in terms of nursing staff, Allied Health Professionals and data clerks is determined from the median number of funded cots at unit level as reported by the National Perinatal Epidemiology Unit (NPEU)<sup>13</sup>. Sickness absence, annual leave, bank holidays and Continuing Professional Development hours have been accounted for in the workforce expansion numbers. The changes in workforce numbers, as outlined in the Principles, are based upon the markers of good practice. These are supported by national and international evidence where it exists and professional judgement and consensus where it does not.

The current staff-to-baby ratio for neonatal care is approximately 1:10. In order to meet the recommended minimum staff-to-baby ratios the estimates (Table 1, Annex A) show a deficit of 1,694 registered and QIS nurses and a surplus of 428 registered nurses not QIS. Therefore, the assumption is that 1,694 of the registered not QIS will undergo training to become QIS, leaving a gap of 1,266 registered nurses FTEs who need to be replaced.

The costs associated with the workforce expansion are outlined in Table 1. Start-up costs associated with registered and QIS include training costs for QNs to become QIS, and temporary cover provided by bank and agency staff when the QNs are on training. The start-up costs for Allied Health Professionals (AHPs) refer to training costs. Additional running costs are costs accrued after the initial expansion and include paybill, annualised costs of training replacements, capital and indirect overheads.

<sup>12</sup> Mangham L J, Petrou S et al, 'The Cost of Preterm Birth Throughout Childhood in England and Wales', *Paediatrics* 2009; 123; e312-e327.

<sup>13</sup> Redshaw M, Hamilton K, 'Neonatal Taskforce Workforce Neonatal Staff Survey Analysis', NPEU, 2009.

Table 1 Start-up and running costs accrued to meet workforce expansion recommendations, at 2009/10 prices (£ million)

	Start-up costs	Additional annual running costs
Nurses:		
Registered and QIS	33.0	4.1
Registered not QIS	53.2	56.0
Unregistered <sup>1</sup>		38.9
Allied Health Professionals:		
Dietician	4.9	4.3
Occupational Therapist	2.2	2.2
Pharmacist	-	-
Physiotherapist	4.2	4.1
Speech & Language Therapist	4.9	4.1
Administration:		
Data Clerk <sup>2</sup>		13.2
<b>Total</b>	<b>102</b>	<b>127</b>

Notes:

Figures may not sum due to rounding

[-] indicates no costs accrued for this staff group

1 Includes Health Care Assistants, Nursery Nurses, Nursing Auxiliaries and Neonatal Technicians.

2 Based on PSSRU unit costs of clinical support workers, due to lack of availability of figures for admin and clerical staff. Costs determined at mid-AfC band scale.

On a national level, options 2 and 3 are assessed as having the same workforce costs.

It is important to note that these costs do not represent cashflow, and therefore do not reflect the likely time profile of spend. This may be important when considering affordability in terms of ringfencing cash to pay for student loans, bursaries and tuition fees.

Other factors contributing to the costs for this IA are the non-pay costs, which include the costs to the health service of a neonate surviving in England, from birth to 18 years of age. In the absence of local level data, this is determined using some of the assumptions and baseline data outlined on pages 6 and 7. Estimated cost of neonatal care per additional survivor at hospital discharge at 2009/10 prices is £50,690 for infants with very low birthweight, and for infants with low birthweight it is £4,513. A benchmark reduction of 10 per cent in the neonatal mortality rate is assumed, which implies that 114 additional neonates with very low birthweight and 32 additional neonates with low birthweight survive each year during the policy operation period. This equates to a healthcare cost of £5.9 million in the first year.

Table 2 sets out the estimated discounted costs and benefits over a 10-year period from 2010-11 to 2019-20 using the workforce expansion costings outlined in Table 1. The key benefit is the value of a neonate surviving and additional benefits derived during the neonate's lifetime that extend beyond the 10-year policy implementation period. A few examples of these are included in the table, highlighted in bold. A neonate with very low birthweight has a value of £785k, in terms of quality adjusted life years (QALY's), estimated at 13.1 years of life using a quality of life coefficient of 0.38, and life year valued at £60k. A neonate with low birthweight has a value of £3.5 million in terms of QALY's estimated at 58.8 years of life using a quality of life coefficient of 0.75. This equates to NPV of benefits of £1.4 billion from hospital discharge to projected death, assuming 114 additional neonates with very low birthweight and 32 additional neonates with low birthweight survive in the first year following policy implementation. The NPV of costs over 10 years of implementing policy option 2 with the recommended workforce levels is £996.7 million.



Table 2 Costs and benefits over 10 years of policy implementation with an increased workforce (Discounted)<sup>1,2</sup>, assuming 10 per cent reduction in neonatal mortalities

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	...	2043-44	2087-88
<b>Costs (£millions)</b>														
Transition cost	102.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Staff running cost	0.0	40.8	78.9	114.3	110.5	106.7	103.1	99.6	96.3	93.0	-	-	-	-
Healthcare cost from birth to 18 years of age for additional survivors	5.9	5.7	5.5	5.4	5.2	5.0	4.8	4.7	4.5	4.4	-	-	-	-
<b>Total Costs (NPV)</b>	<b>108.3</b>	<b>46.6</b>	<b>84.4</b>	<b>119.7</b>	<b>115.6</b>	<b>111.7</b>	<b>107.9</b>	<b>104.3</b>	<b>100.8</b>	<b>97.4</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Benefits</b>														
<b>Very low birth weight (114 additional survivors per year)</b>														
QALY's gained (yrs)	43.3	86.0	128.0	169.5	210.3	250.5	290.1	329.2	367.6	405.5	399.5	-	283.7	-
Value of QALY gained (£millions)	2.6	5.2	7.7	10.2	12.6	15.0	17.4	19.7	22.1	24.3	24.0	-	17.0	-
<b>Low birth weight (32 additional survivors per year)</b>														
QALY's gained (yrs)	24.0	47.6	70.9	93.9	116.5	138.8	160.7	182.4	203.7	224.7	221.3	-	157.2	81.1
Value of QALY gained (£millions)	1.4	2.9	4.3	5.6	7.0	8.3	9.6	10.9	12.2	13.5	13.3	-	9.4	4.1
<b>Total Benefits (NPV)</b>	<b>4.0</b>	<b>8.0</b>	<b>11.9</b>	<b>15.8</b>	<b>19.6</b>	<b>23.4</b>	<b>27.1</b>	<b>30.7</b>	<b>34.3</b>	<b>37.8</b>	<b>37.3</b>	<b>-</b>	<b>26.4</b>	<b>4.1</b>
<b>Net Benefit (loss)</b>	<b>(104.3)</b>	<b>(38.5)</b>	<b>(72.5)</b>	<b>(103.9)</b>	<b>(96.0)</b>	<b>(88.4)</b>	<b>(80.9)</b>	<b>(73.6)</b>	<b>(66.5)</b>	<b>(59.5)</b>	<b>37.3</b>	<b>-</b>	<b>26.4</b>	<b>4.1</b>

**Total benefits over the lifespan of additional neonatal survivors £1.4 billion**

**Net Benefit (NPV) = 1,377 - 997 = 380 million**

- 1 Discount rate of 3.5 per cent applied to costs and 1.5 per cent to benefits.
- 2 Figures may not sum due to rounding.

A 25 per cent reduction in neonatal mortalities equates to discounted NPV benefits of £3.4 billion from hospital discharge to projected death with an assumption that 285 very low birthweight and 80 low birthweight neonates survive in the first year of policy implementation. A 48 per cent reduction results in discounted NPV benefits of £6.6 billion with an assumption that 548 neonates with very low birthweight and 153 neonates with low birthweight survive.

Option 3 – Implementation of the national quality principles at a national level. The costs and benefits apportioned to option 2 also apply to option 3, as they are not dependent on the policy approach to be taken.

## Next steps

The Toolkit for Quality Neonatal Services will be published and launched to the healthcare community and stakeholders during the Autumn 2009.

Networks and Strategic Health Authorities are planning events following its release to review the implications for their areas of the documents and to formulate an action plan for their locality based against current standards and resources.

Specialised Commissioning Groups will also complete designation of units against the principles to meet the PAC commitment of completion by 2010/11.

Data is being collected over the Summer 2009 from all NHS Acute and Foundation Trusts against the Neonatal Critical Care Minimum Dataset, which will provide information to support the production of a revised reference cost guidance for costing which will be published in February 2010.

## Equality Impact Assessment Screening template for Commissioning Framework and Principles for Quality Neonatal Care Services.

The majority of babies born in England do so without requiring medical intervention, and are cared for as part of the normal maternity care pathway. When the baby is ill or shown to be at risk, treatment is provided by a specialist neonatal team of doctors and nurses. Neonatal units provide care to babies who are born prematurely, have low birth weight or have a serious illness or condition that requires specialist care. Such care falls into one of three categories: intensive care for the most seriously ill babies, high dependency care for babies not critically ill but still requiring complex care and special care for babies requiring assistance with feeding, growth or development. Specialist neonatal care can be delivered either within a neonatal unit or on a postnatal ward, by providing extra support to mothers.

In 2007-08, the number of babies admitted to neonatal units in England was 68,000<sup>□</sup> (about one in ten live births), of which 19,500 were admitted for intensive care. Improvements in technology and care have contributed to a decrease in neonatal mortality and morbidity. For example, between 2000 and 2007, there was a two per cent decrease in registered neonatal deaths in England and Wales (2,335 in 2000; 2,282 in 2007). This has been accompanied by an increase in demand for neonatal services (admissions to neonatal units increasing by nine per cent since 2006-07) and an increase in length of stay associated with improved survival.

These demographic shifts need to be reflected in the provision and organisation of a complex high technology, low throughput, highly specialised service.

The neonatal taskforce addressed three areas raised in the National Audit Office (NAO) report 2007, "Caring for Vulnerable Babies: The reorganisation of Neonatal care in England": Transport/Transfer, Workforce and Data for Commissioning. In addition the Taskforce considered the provision of Neonatal Surgery and as cross-cutting themes, communication and family centred care.

The neonatal taskforce has produced these documents to provide a basis for equitable, high quality neonatal services across England. The principles provide a resource for commissioners and providers to plan, deliver and quality assure neonatal services. They complement existing published policy documents or clinical guidelines.

### Negative impact

- Disability – there is no negative impact on disabled people and access to neonatal services within these documents
- Ethnicity – neonatal services are available to all areas of society and all ethnic groups, however, several ethnic groups are more likely to have need of neonatal services than others.
- Gender – neonatal services are available and open to all who may require it regardless of gender of baby or parent(s)
- Sexual orientation - neonatal services are available and open to all who may require it regardless of sexual orientation of parent(s)
- Age – there is a high proportion of newborn babies who are born to teenage mothers and women over 40 who access neonatal services, therefore there is no discrimination based on age.
- Religion or belief - neonatal services are available and open to all who may require it regardless of religion or belief.

<sup>□</sup> National Audit Office, *Caring for Vulnerable babies: The reorganisation of neonatal services in England*, 2007.

## Positive impact

The Commissioning Framework and Principles for Quality Neonatal Care Services have been written to promote and optimise quality care for all babies and their families who access specialised neonatal services.

In assessing the need for neonatal services the commissioning framework has highlighted the need to ensure that any needs assessment should be informed by:

- demographic projections
- prematurity rate for its specific population
- immigration trends
- indices of deprivation or social disadvantage

There is also recognition that parents and families accessing neonatal services may not have English as their first language, or even that they are literate. It is recognised that this period of specialised care can be very alien and frightening and there is a need to ensure that parents and families are offered information in languages and formats suitable to them and where appropriate to visit the unit.

The commissioning framework and principles also aim to promote parental and family involvement in the care and routines of their baby and on a wider scale for parents to have an input into the design and improvement of services. Network boards are encouraged to ensure that they have parent representatives on them.

Network based parental surveys will be encouraged to help inform and shape neonatal services for the future and there is the potential for development of a national parental survey.

The Framework and principles have been developed in consultation with the National Neonatal Taskforce members representing Commissioning, Neonatal Network managers, clinicians, nurses, and Bliss (the special care baby charity). The information concerning data, transfers, surgery and workforce was contributed by focused workgroups. The draft Framework and *Principles for Quality Neonatal Care Services* were widely available for comment. A formal event to discuss the draft Framework and Principles was held on 4 March 2009 to which representatives of all Specialised Commissioning Groups (SCG), neonatal networks, professional groups, Bliss and a group of volunteer parents were invited. Comments received were taken into consideration in the final version.

## Evidence

Some of these risk factors for prematurity are known, for example, lifestyle influences such as smoking and recreational drug use and are conveyed in public health advice to pregnant women. Also, through the "Better Care for All" PSAs announced in October 2007, we have developed a new maternity indicator aimed at ensuring that women have early access to maternity care, so that they have seen a midwife or a maternity healthcare professional for a health and social care assessment of needs, risk and choices by 12 completed weeks of pregnancy. This will enable those women who can be identified as being at increased risk of having a preterm baby to be identified at an early stage and the progress of the pregnancy to be closely monitored.

## Teenagers

DH and DCSF jointly published *Teenage Parents Next Steps: Guidance for Local Authorities and Primary Care Trusts* in 2007, which sets out a range of measures to address the poor outcomes experienced by teenage parents and their children, including:

- o Tailored antenatal services to address the vulnerability of teenage parents, including work around smoking cessation; encouragement to breastfeed and advice on diet/nutrition during pregnancy.
- o Intensive health visitor support, including through the Family Nurse Partnership for first time young mothers in the areas in which it is operating.
- o Intensive support for teenage parents (including fathers) provided through a lead professional working with local Targeted Youth Support services.

Teenage mothers (aged less than 20 years) had the highest neonatal mortality rate of 4.4 per 1,000 live births compared to other maternal age groups. This may be due to a number of associated factors such as social deprivation and a higher rate of preterm delivery in this age group. In 2007, teenage pregnancies contributed 9.5% to overall neonatal mortality in England, Wales and Northern Ireland.

## Weight

Body Mass Index (BMI) is a useful measure of obesity. Maternal pre-pregnancy BMI has been shown to be a risk factor for stillbirths and neonatal deaths for women who are underweight (BMI less than 18.5), overweight (BMI 25-29.9), obese (BMI 30-34.9) and very obese (BMI 35+) compared to normal weight (BMI 18.5-24.9).

Table 7.5  
Proportions of stillbirths, perinatal and neonatal deaths by maternal BMI; England, Wales, Northern Ireland, Channel Islands and the Isle of Man: 2007

Year	Proportions <sup>a</sup> of stillbirths <sup>b</sup> (%)					Proportions <sup>a</sup> of perinatal deaths <sup>b</sup> (%)					Proportions <sup>a</sup> of neonatal deaths <sup>b</sup> (%)				
	<18.5	18.5-24.9	25-29.9	30-34.9	35+	<18.5	18.5-24.9	25-29.9	30-34.9	35+	<18.5	18.5-24.9	25-29.9	30-34.9	35+
2005	2.2	40.3	27.2	12.2	18.1	2.6	41.3	25.8	12.3	18.0	3.8	44.6	22.2	12.3	17.3
2006	2.7	43.7	27.7	14.7	11.2	3.0	43.7	28.5	14.5	10.2	3.8	45.2	29.2	13.9	8.2
2007	2.9	44.3	28.8	15.6	10.4	3.1	44.8	26.5	14.9	10.7	3.9	46.5	26.0	13.1	10.5

BMI missing: 32% in 2005, 18% in 2006 and 17% in 2007

<sup>a</sup> Percentages are calculated removing missing values

<sup>b</sup> Second and subsequent deaths from pregnancies with multiple losses excluded from this table

Source: CEMACH

## Health Inequalities

The Department is concerned about health inequalities in infant mortality and disability among ethnic minority communities. Such inequalities arise from a number of factors associated with poverty and disadvantage. Higher rates of congenital anomaly are found in communities that traditionally practice cousin marriage. There is a need to increase awareness in these communities of the risks which may be associated with cousin marriage and of the availability of genetic services which can provide impartial advice and counselling about genetic risk.

The Department of Health has funded research and service development projects under the genetics White Paper looking at these issues. Two examples are cited in the recently published *Implementation Plan for Reducing Health Inequalities in Infant Mortality - A Good Practice Guide*, produced jointly with DCSF and CLG. The plan focuses on what can be done to reduce these inequalities at local level by building on the good practice that already exists. The first project is research being undertaken in Bradford and reports the interim findings of a local study that emphasised the need to improve information pathways and outreach to reach the most vulnerable groups to raise awareness. The second based in Blackburn piloted a service employing a genetic nurse counsellor to support local families to provide information and assess risks, and provide health support from professionals of similar cultural backgrounds to improve engagement and access. This service has now been rolled out as a mainstream service in the local PCT.

## Ethnicity

A further genetic White Paper project in Leicester has also looked at raising awareness of genetic disorders in ethnic minority communities and of the services available to provide advice and counselling about genetic risk to families.

We have also funded a project in North Kirklees examining barriers to families from ethnic minorities accessing cancer genetic services which will provide relevant information about improving communication and access, as well as research that looks more generally at how best to raise awareness and communicate genetic risk within families, and thus improve access to services.

Table 7.9  
Neonatal mortality rates and rate ratios by ethnicity: England: 2007

Ethnicity	2005 <sup>a</sup>		2006 <sup>a</sup>		2007 <sup>a</sup>	
	Rate [95% CI] <sup>b</sup>	Rate ratio [95% CI] <sup>c</sup>	Rate [95% CI] <sup>b</sup>	Rate ratio [95% CI] <sup>c</sup>	Rate [95% CI] <sup>b</sup>	Rate ratio [95% CI] <sup>c</sup>
White	2.7 [2.5, 2.8]	..	2.4 [2.3, 2.5]	..	2.3 [2.2, 2.5]	..
Black	5.6 [4.7, 6.3]	2.0 [1.8, 2.4]	5.4 [4.7, 6.2]	2.3 [1.9, 2.8]	5.1 [4.4, 5.9]	2.2 [1.9, 2.6]
Asian	4.7 [4.1, 5.3]	1.8 [1.5, 2.0]	4.4 [3.9, 5.0]	1.8 [1.6, 2.1]	4.6 [4.1, 5.2]	2.0 [1.8, 2.3]
Chinese	3.4 [1.9, 6.4]	1.3 [0.7, 2.4]	2.6 [1.4, 5.1]	1.1 [0.6, 2.1]	2.3 [1.2, 4.6]	1.0 [0.5, 1.9]
Mixed	3.2 [2.2, 4.7]	1.2 [0.8, 1.8]	2.3 [1.5, 3.5]	0.9 [0.6, 1.5]	3.4 [2.4, 4.8]	1.5 [1.0, 2.1]
Other	3.4 [2.7, 4.2]	1.3 [1.0, 1.6]	2.9 [2.3, 3.6]	1.2 [1.0, 1.5]	2.7 [2.0, 3.6]	1.2 [0.9, 1.6]

<sup>a</sup> Second and subsequent deaths from pregnancies with multiple losses excluded from this table

<sup>b</sup> Rate per 1,000 maternities

<sup>c</sup> Rate ratios are calculated using White as the reference group

Sources: CEMACH, HES, ONS

### Infant Mortality

England's neonatal mortality rate is within a similar range to other comparable countries. We are better than the USA and Canada, but not as good as Australia or Germany. However, social factors have a greater impact than neonatal critical care on the incidence of neonatal mortality. Only 10 per cent of babies are admitted to neonatal critical care units. Of these, sadly approximately 15 per cent will die. Even a significant reduction in the number of deaths within a neonatal unit, which given the increasing number and complexity of the conditions of the babies being cared for is unlikely to be achievable, would have a limited affect on the overall neonatal mortality rate.

Neonatal mortality also needs to be seen in the wider context of infant mortality. The infant mortality rate for England and Wales in the period 2004-06 is at an all time low of 5.0 per 1,000 live births. However, there are still variations between different classes and a target has been set that: *starting with children under one year, by 2010 to reduce by at least 10% the gap in mortality between the routine and manual group and the population as a whole.*

Meeting the target remains a challenge, but it is encouraging that the latest figures show a further slight narrowing of the IM gap from 19% in 2002-04 to 18% in 2003-05 and 17% in 2004-06. This shows that the rate among the target group – the routine and manual group – has fallen from 5.9 per 1,000 live births in 2002-04 to 5.7 in 2003-05 and 5.6 in 2004-06. (Note: This gap is still wider than at the 1997-99 baseline (13%)).

We have undertaken a review of the infant mortality target to identify key interventions and sharpen local delivery. The results of this review were published in February 2007 - *the Review of the Health Inequalities Infant Mortality PSA Target.*

The review identified and modelled the impact of the evidence-based interventions on the routine and manual group that were most likely to meet the target. These interventions were reducing teenage pregnancy, smoking in pregnancy, sudden and unexplained deaths in infancy and maternal obesity. Subsequently, action on child poverty and on housing and overcrowding have also shown to have an impact on the target. Meeting the child poverty target – to halve the number of children in relative low-income households between 1998-99 and 2010-11 – by increasing the income in the routine and manual group by an average of 18% would narrow the infant mortality gap by three percentage points.

**Table 7.11**  
Stillbirths, perinatal, and neonatal mortality rates by maternal deprivation; England: 2007

Deprivation quintile	Stillbirths <sup>a</sup>		Perinatal deaths <sup>a</sup>		Neonatal deaths <sup>a</sup>	
	Rate [95% CI] <sup>b</sup>	Rate ratio [95% CI] <sup>c</sup>	Rate [95% CI] <sup>b</sup>	Rate ratio [95% CI] <sup>c</sup>	Rate [95% CI] <sup>b</sup>	Rate ratio [95% CI] <sup>c</sup>
1 (least deprived)	3.6 [3.3, 4.0]	..	5.2 [4.8, 5.6]	..	1.9 [1.7, 2.2]	..
2	4.5 [4.1, 4.9]	1.2 [1.1, 1.4]	6.4 [6.0, 6.9]	1.2 [1.1, 1.4]	2.5 [2.2, 2.8]	1.3 [1.1, 1.6]
3	4.8 [4.4, 5.2]	1.3 [1.2, 1.5]	6.9 [6.5, 7.4]	1.3 [1.2, 1.5]	2.7 [2.4, 3.0]	1.4 [1.2, 1.7]
4	5.4 [5.0, 5.8]	1.5 [1.3, 1.7]	8.0 [7.6, 8.5]	1.5 [1.4, 1.7]	3.3 [3.1, 3.7]	1.7 [1.5, 2.1]
5 (most deprived)	6.5 [6.1, 6.9]	1.8 [1.6, 2.0]	9.5 [9.1, 10.0]	1.8 [1.7, 2.0]	3.9 [3.6, 4.2]	2.0 [1.7, 2.4]

<sup>a</sup> Second and subsequent deaths from pregnancies with multiple losses excluded from this table

<sup>b</sup> Rate is number of deaths per 1,000 maternities

<sup>c</sup> Rate ratios are calculated using least deprived (1) as the reference group

Sources: CEMACH, ONS

## Conclusion

There are many factors that have an impact on the requirement for neonatal care services, which are being dealt with under other policy drivers. The introduction of the commissioning framework and principles is the starting point of a unified approach to providing and optimising high quality services for babies and their families.

## Screening assessment

A positive impact is explicitly intended and very likely as the framework and principles have been written to ensure a national level of equity. This will promote useful benchmarking across units, networks and nationally.

## Next steps

The introduction of the commissioning framework and principles in 2009 allows units and networks to assess where they are against their designated level and to work with commissioners to produce an action plan for further development.

Maternity Matters states that to enable provision of high quality, safe and accessible services the Government has renewed its commitment, so that by the end of 2009 every woman will be supported by a midwife she knows and trusts throughout her pregnancy and afterwards so as to provide continuity of care.

National Support teams are in place to assist health and social care economies to realise their opportunities in reducing health inequalities and in particular infant mortality as part of the PSA target.

SHAs are required to assess the workforce at a strategic level for both maternity and neonatal service and PCTs are required to ensure that adequate workforce teams are in place for both services as outlined within the Operating Framework.

Research is in short supply for neonatal care services and the principles will allow for benchmarking and some research base in the future. Recent centrally managed Government research funding in this area has been running at around £4 million per year. Over and above this, the health research strategy the Government launched two years ago [*Best Research for Best Health*] means we now have more research programmes and significant new funding opportunities for researchers. Four new research projects to do with premature birth - total cost £1.1 million - have started in the last year or are due to start soon. And the new NHS Biomedical Research Centres plan to spend £3m on relevant research over the next 5 years.

## Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

**Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.**

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	No	No
Small Firms Impact Test	No	No
Legal Aid	No	No
Sustainable Development	No	No
Carbon Assessment	No	No
Other Environment	No	No
Health Impact Assessment	Yes	Yes
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	No	No



## Annex A

**Table 1 Workforce estimates to deliver Principles and gaps identified to current workforce**

Staff Group	Current WF (FTEs)	Requirement (FTEs)	Gap (FTEs)
<b>Nurses:</b>			
<i>Registered and QIS</i>	3,268	4,962	-1,694
<i>Registered not QIS</i>	2,554	2,126	428
<i>Unregistered</i>	783	2,235	-1,452
<b>Allied Health Professionals:</b>			
<i>Dietician</i>	37	128	-91
<i>Occupational Therapist</i>	8	53	-45
<i>Pharmacist</i>	36	23	13
<i>Physiotherapist</i>	18	103	-85
<i>Speech &amp; Language Therapist</i>	8	93	-85
<b>Administration:</b>			
<i>Data Clerk</i>	0	609	-609

Note:  
Negative gap numbers indicate that the workforce requires expansion.

### Costing Methodology

1. These figures are based on a survey of neonatal units across England. The survey response rate was 68 per cent (120 out of 177 units) and data quality was considered poor, mainly due to missing answers and miscoding of staff groups. However, this survey still represents the best available data on current neonatal workforce numbers.
2. The method of estimating the average national workforce requirements (Table 1) for introducing the Principles may mask some geographic variation. However, this is an issue of equity of distribution of the workforce, rather than a consideration of the aggregate size. Therefore, gap estimates (and related costings) are largely considered to be unaffected by this issue.
3. Workforce Directorate Analytical Team used these estimates to calculate the likely workforce costs of introducing the Principles. For ease of analysis, the expansion was split into five broad groups: converting qualified nurses (QNs) to become qualified in specialty (QIS); recruiting qualified nurses; recruiting unqualified nurses; expanding the Allied Health Professional (AHP) workforce; and recruiting data clerks.
4. The adjusted costs are inflated to 2009/10 prices using the Consumer Price Index and weighted further by 3 per cent to reflect changes over time.

### Recruiting Qualified Nurses

5. The start-up costs associated with recruiting qualified nurses are driven by the costs of degree and diploma based training. Running costs are due to the increased paybill pressure (i.e. earnings plus on-costs) and the annualised cost of training replacement nurses. WDAT have used PSSRU unit costs inflated to 2009/10 prices to estimate running costs, and the average student tariff plus student support costs inflated to 2009/10 prices to calculate start-up costs.

## Converting QNs to QIS

6. In order to cost the conversion of QNs to QIS, the cost of training, the loss of service delivery and the annualised cost of replacement's training needed to be considered. Given the estimated surplus of QNs it was assumed that the QN posts would not be backfilled in the long term, although there would be some measure of extra backfilling whilst QNs completed their training. This short-term backfilling was assumed to come from agency & bank staff, and increases to overtime, rather than increasing the substantive QN workforce for one year only.
7. Advice from clinicians indicated that once QNs became QIS, they would have a marginal pressure on the paybill of between £0k and £2k per FTE.

## Recruiting Unqualified Nurses

8. When considering the costs associated with an expansion in unqualified nurse numbers, the only pressures arise from paybill and other overheads. This results in the only costs for unqualified nurse expansion being running costs (i.e., there are no start-up costs)

## Training AHPs

9. NHS Workforce Review Team (WRT) analysis indicated that an expansion in the number of Dieticians, Occupational Therapists, Physiotherapists and Speech and Language Therapists would be required to deliver the Principles. The costing of such an expansion must include additional paybill pressures, training costs and other overheads. It is important that such costings include the effects of attrition whilst trainees study at degree level.
10. Information from the Education and Training Branch of Workforce Directorate was used to cost the additional trainees flowing through the system, including bursaries, student loans and tariff costs.
11. Data from WDAT paybill modelling and PSSRU Unit Costs of Health and Social Care<sup>13</sup> were used to determine the additional running costs associated with the expansion in each AHP staff group.
12. The PSSRU unit costs include overheads such as capital costs and paybill costs all include salary costs, pension costs and national insurance contributions.

## Recruiting Data Clerks

13. Estimating the costs of recruiting data clerks follows a similar methodology to recruiting unqualified nurses. There are no associated training costs, and therefore no start-up costs. The only workforce cost pressures come from running costs, due to paybill (i.e. earnings plus on-costs)

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<sup>13</sup> Curtis L. (compiler) (2008) *Unit Costs of Health & Social Care 2008*, Canterbury: Personal Social Services Research Unit (PSSRU), University of Kent

## Annex B

### QALY's

1. This an ethical method of allocating finite resources in times of increasing pressures on health care budgets. QALY takes a year of healthy life expectancy to be worth one, and a year of unhealthy life expectancy to be worth less than one. The worse the quality of life, the lower the value obtained. The general idea is that a beneficial health care treatment will generate a positive number of QALY's and that an efficient treatment will be one where the cost per QALY is as low as possible.<sup>14</sup>

2. Quality adjusted survival = actual survival x coefficient

where quality of life coefficient is dependent on severity of disability, so a child that dies scores 0, normal birthweight scores 1, low birthweight scores 0.75, very low birthweight scores 0.38.

Life-years gained per live birth = survival rate x life expectancy

Quality-adjusted life-years gained per live birth = quality-adjusted survival rate x life expectancy

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<sup>14</sup> National Institute for Health and Clinical Excellence - Measuring effectiveness and cost effectiveness: the QALY