National Institute for Health and Clinical Excellence

Neonatal jaundice

Costing report

Implementing NICE guidance

Following a review of the guideline in 2016, the costing tools remain valid to support the implementation of the guideline. There have been changes to the wording of the recommendations but the resource impact is not anticipated to be significant.

May 2010

NICE clinical guideline 98

This costing report accompanies the clinical guideline: 'Neonatal Jaundice' (available online at www.nice.org.uk/CG98).

Issue date: May 2010

This guidance is written in the following context

This report represents the view of the Institute, which was arrived at after careful consideration of the available data and through consulting healthcare professionals. It should be read in conjunction with the NICE guideline. The report and templates are implementation tools and focus on those areas that were considered to have significant impact on resource utilisation.

The cost and activity assessments in the reports are estimates based on a number of assumptions. They provide an indication of the likely impact of the principal recommendations and are not absolute figures. Assumptions used in the report are based on assessment of the national average. Local practice may be different from this, and the template can be amended to reflect local practice to estimate local impact.

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Contents

Executive summary

This costing report looks at the resource impact of implementing the NICE guideline 'Neonatal jaundice' in England.

The costing method adopted is outlined in appendix A; it uses the most accurate data available, was produced in conjunction with key clinicians, and reviewed by clinical and financial professionals.

Supporting implementation

The NICE clinical guideline on neonatal jaundice is supported by a range of implementation tools available on our website www.nice.org.uk/CG98 and detailed in the main body of this report.

Significant resource-impact recommendation

Because of the breadth and complexity of the guideline, this report focuses on recommendations that are considered to have the greatest resource impact and therefore require the most additional resources to implement or can potentially generate savings. They are:

- Measure bilirubin in all visibly jaundiced babies. Use a transcutaneous bilirubinometer (TCB) to measure bilirubin levels where clinically indicated and a TCB is available, otherwise use TSB (total serum bilirubin) test.

Total cost impact

The changes in revenue costs arising from fully implementing the identified recommendations are summarised in the table below.

Estimated costs of implementation

Recommendations	**Non-recurrent Costs £000s**	**Recurrent Costs £000s**
Recurrent net change as a result of implementation – testing costs	-	1200
Estimated total non-recurring costs – purchase of TCBs	5100	-

Recurrent costs are estimated at £1.2 million. In addition TCBs will need to be purchased and this non-recurring cost is assumed to be in the first year.

The time it takes to implement this guideline will vary significantly depending on current local practice. Transcutaneous bilirubinometers are already in use in several areas to test bilirubin levels. We recommend that local health economies use the costing template that accompanies this report to estimate the local cost of implementation.

We anticipate that there will be changes in admission levels as a result of implementing this guideline but don't expect these changes to be substantial.

Benefits and savings

Implementing the clinical guideline may bring the following benefits and savings:

- A study in the US has shown that increased monitoring of bilirubin levels leads to a reduction in the incidence of kernicterus and the use of exchange transfusion to treat hyperbilirubinaemia. It is not possible to estimate the number of cases of kernicterus that may be avoided.

- The estimated lifetime cost of care for cases of kernicterus is £5.5 million per case. •(W versus Cumbria and Lancashire Strategic Health Authority [2006]).Consequently, a reduction in the incidence of kernicterus would lead to a reduction in the social and medical care costs of supporting people with kernicterus
- The use of TCB meters to monitor bilirubin levels, where clinically indicated, presents additional benefits over the use of TSB tests because:
  - transcutaneous bilirubin measurement is less invasive than blood sampling
  - test results are available immediately, avoiding the problems associated with taking and acting on blood samples in the community
  - the procedure is more acceptable to parents and clinical staff.
- Compliance with NICE guidance is one of the criteria indicating good risk-reduction strategies and, in combination with meeting other criteria indicating good risk management, could lead to a discount on contributions to the NHS Litigation Authority schemes, including Clinical Negligence Scheme for Trusts (CNST).

Local costing template

The costing template produced to support this guideline enables organisations in England, Wales and Northern Ireland to estimate the impact locally and replace variables with ones that depict the current local position. A sample calculation using this template showed that additional costs of £12,598 could be incurred for a population of 100,000 which is comprised of £2398 recurrent costs and £10,200 non-recurrent costs.

1.1 Supporting implementation

1.1.1 The NICE clinical guideline on neonatal jaundice is supported by the following implementation tools available on our website www.nice.org.uk/CGX99 :

- costing tools
  - a national costing report; this document
  - a local costing template; a simple spreadsheet that can be used to estimate the local cost of implementation.
- a slide set; key messages for local discussion
- a parent information factsheet
- a neonatal jaundice treatment threshold spreadsheet
- audit support.

1.1.2 A practical guide to implementation, 'How to put NICE guidance into practice: a guide to implementation for organisations', is also available to download from the NICE website. It includes advice on establishing organisational-level implementation processes as well as detailed steps for people working to implement different types of guidance on the ground.

1.2 What is the aim of this report?

1.2.1 This report provides estimates of the national cost impact arising from implementation of guidance on neonatal jaundice in England. These estimates are based on assumptions made about current practice and predictions of how current practice might change following implementation.

1.2.2 This report aims to help organisations plan for the financial implications of implementing NICE guidance.

1.2.3 This report does not reproduce the NICE guideline on neonatal jaundice and should be read in conjunction with it (see www.nice.org.uk/CG98).

1.2.4 The costing template that accompanies this report is designed to help those assessing the resource impact at a local level in England, Wales or Northern Ireland. NICE clinical guidelines are developmental standards in the Department of Health's document 'Standards for better health'. The costing template may help inform local action plans demonstrating how implementation of the guideline will be achieved.

1.3 Epidemiology of neonatal jaundice

1.3.1 In 2008, there were approximately 669,500 live births in England (Office for National Statistics 2009).

1.3.2 Neonatal jaundice refers to the yellow colouration of the skin and the sclerae of newborn babies that results from the accumulation of bilirubin in the skin and mucous membranes. This is associated with a raised level of bilirubin in the circulation – a condition known as hyperbilirubinaemia.

1.3.3 Jaundice is one of the most common conditions requiring medical attention in newborn babies. Approximately 60% of term and 80% of preterm babies develop jaundice in the first week of life, and about 10% of breastfed babies are still jaundiced aged 1 month. In most babies with jaundice there is no underlying disease, and this early jaundice (called 'physiological jaundice') is generally harmless.

1.3.4 Jaundice is caused by hyperbilirubinaemia and is common in the newborn baby. Rarely, if bilirubin levels are sufficiently high, bilirubin can cross the blood–brain barrier and cause a brain damaging condition called kernicterus. Kernicterus is a lifelong disabling neurological problem with manifestations of cerebral palsy

and deafness, and high costs of care. Hyperbilirubinaemia can also cause deafness without cerebral palsy, and other adverse outcomes have been described. Although neonatal jaundice is very common, kernicterus is very rare. Based on expert opinion, there are approximately six to seven cases of kernicterus in the UK every year.

1.4 Models of care

1.4.1 Monitoring the bilirubin levels of visibly jaundiced babies in line with the guideline will involve community midwives and primary care in addition to secondary care.

1.4.2 Increased early identification of neonatal jaundice may lead to a decrease in the number of cases of kernicterus.

2 Costing methodology

2.1 Process

2.1.1 We use a structured approach for costing clinical guidelines (see appendix A).

2.1.2 We developed these assumptions and tested them for reasonableness with members of the Guideline Development Group (GDG) and key clinical practitioners in the NHS.

2.2 Scope of the cost-impact analysis

2.2.1 The guideline offers best clinical advice on the early identification and treatment of neonatal jaundice in babies.

2.2.2 The guidance does not cover:

- primary prevention of jaundice
- jaundice that requires surgical treatment to correct the underlying cause

- management of babies with hyperbilirubinaemia (**Note**: however, we do consider the importance of identifying conjugated hyperbilirubinaemia).

  Therefore, these issues are outside the scope of the costing work.

2.2.3 Due to the breadth and complexity of the guideline, we worked with the GDG and other professionals to identify the recommendations that would have the most significant resource-impact (see table 1). Costing work has focused on these recommendations**.**

Table 1 Recommendations with a significant resource impact

High-cost recommendations	Recommendation number	Key priority?
Do not rely on visual inspection alone to estimate the bilirubin level in a baby with jaundice.	1.2.6	√
When measuring the bilirubin level – use a transcutaneous bilirubinometer in term and babies more than 24 hours of age – if a transcutaneous bilirubinometer is not available, measure the serum bilirubin – if a transcutaneous bilirubinometer measurement indicates a bilirubin level greater than 250 micromol/litre check the result by measuring the serum bilirubin – always use serum bilirubin measurement to determine the billirubin level in babies with jaundice in the first 24 hours of life – always use serum bilirubin measurement to determine the bilirubin level in preterm babies less than 34 weeks gestational age – always use serum bilirubin in babies receiving phototherapy – do not use an icterometer.	1.2.15	√

2.2.4 Nine of the recommendations in the guideline have been identified as key priorities for implementation, and two of these are also the recommendations considered to have significant resource impact.

2.3 Recommendations not considered to have a significant cost impact.

2.3.1 The guideline recommends that verbal and written information is provided to parents and carers about neonatal jaundice. Providing written information may incur costs, but it is not included here as it is considered to be already part of current practice.

2.3.2 Identifying babies at risk of developing hyperbilirubinaemia is already considered to be part of the postnatal examination of babies and is consequently not included here.

2.3.3 The guideline details serum bilirubin thresholds for phototherapy or exchange transfusion in babies of differing ages (in hours). Current practice in England is varied, but expert opinion suggests that overall the use of phototherapy and other treatments will not change significantly as a result of implementing the guideline. Therefore, it is not considered to have a significant cost impact. However, as practice is so varied, organisations will need to assess their own practice locally. The use of second-line phototherapy treatment is outlined in the guideline. However, as noted above, expert opinion suggests that the use of phototherapy may not change following implementation of the guideline and so would not have a significant cost impact.

2.3.4 Factors that influence the risk of kernicterus are identified in the guideline. This is considered to be a part of standard clinical assessments/risk management and so will not have significant resource implications.

2.3.5 The guideline recommends a series of tests to be undertaken in babies with hyperbilirubinaemia requiring treatment to assess for underlying disease. It has been assumed that these tests already form part of the clinical assessment that would be undertaken before starting treatment for hyperbilirubinaemia and so would not have any resource implications.

2.3.6 The use of intravenous immunoglobulin as an adjunct to continuous multiple phototherapy is recommended in cases of Rhesus haemolytic disease or ABO haemolytic disease. It has been assumed that this is already part of current clinical practice and so would not have any additional resource implications.

2.3.7 We have limited the consideration of costs and savings to direct costs to the NHS and social care that will arise from implementation. We have not included consequences for the individual, the private sector or the not-for-profit sector. Where applicable, any realisable cost savings arising from a change in practice have been offset against the cost of implementing the change.

2.4 General assumptions made

2.4.1 The model is based on the annual number of births in England.

2.5 Basis of unit costs

2.5.1 The costs for midwife time of £73 per hour included as a component of the unit cost for TCB and TSB tests is taken from PSSRU 2009 (Personal and social services research unit [Curtis 2009]) (see table 3, Section 3).

2.5.2 The cost of TCB meters (shown in table 4) is based on quotes obtained from suppliers. It should be noted that the procurement of medical equipment is complex and prices are driven by a range of factors. Meters may be provided with substantial discounts.

3 Cost of significant resource-impact recommendations

3.1 All babies with jaundice – measure bilirubin

Recommendations

Do not rely on visual inspection alone to estimate the bilirubin level in a baby with jaundice.

How to measure the bilirubin level:

- When measuring the bilirubin level
  - use a transcutaneous bilirubinometer in babies with a gestational age of 35 weeks or more and postnatal age of more than 24 hours
  - if a transcutaneous bilirubinometer is not available, measure the serum bilirubin
  - if a transcutaneous bilirubinometer measurement indicates a bilirubin level greater than 250 micromol/liter check the result by measuring the serum bilirubin
  - always use serum bilirubin measurement to determine the bilirubin level in babies with jaundice in the first 24 hours of life
  - always use serum bilirubin measurement to determine the bilirubin level in babies less than 35 weeks gestational age
  - always use serum bilirubin measurement for babies at or above the relevant treatment thresholds for their postnatal age, and for all subsequent measurements
  - do not use an icterometer.

Background

3.1.1 Bilirubin is a breakdown product of the red cells in the blood. Red-cell breakdown produces unconjugated (or 'indirect') bilirubin, which is partly bound to albumin. Normally this is metabolised in the liver to produce conjugated (or 'direct') bilirubin, which then passes through the gut and is excreted in the stool.

3.1.2 Newborn babies have more circulating red cells, and a shorter red-cell lifespan than adults, so bilirubin levels are higher than they are later in life. The breakdown and excretion of bilirubin is also slower than in adults. Consequently, degrees of hyperbilirubinaemia occurring as a result of this normal physiological mechanism are common in newborn babies and are usually benign.

3.1.3 Clinical recognition and assessment of jaundice can be difficult. This is particularly so in babies with darker skin. Once jaundice is recognised, there is uncertainty about when to treat and there is widespread variation in the use of phototherapy, exchange transfusion and other treatments. There is a need for more uniform, evidence-based practice and for consensus-based practice where such evidence is lacking.

3.1.4 Kernicterus is a largely preventable disease if severe hyperbilirubinaemia is identified early and treated promptly (using phototherapy or, for more acute cases, exchange transfusion). Therefore, early identification of raised (or rapidly rising) bilirubin levels is the key to reducing severe morbidity.

Assumptions made

3.1.5 Expert opinion suggests that 60% of babies are identified as jaundiced on the basis of visual examination. Currently, 20% of these babies are tested for hyperbilirubinaemia using a TSB test as shown in table 2 below.

Table 2 Estimated number of babies tested for hyperbilirubinaemia

Description	Number
Number of live births – England 2008[1]	669,448
Proportion of babies identified as jaundiced on the basis of a visual examination[2]	60%
Estimated number of babies identified as jaundiced on visual examination	401,669
Current Activity – TSB Testing only	
Proportion of babies currently tested for jaundice on basis of a visual examination[2]	20%
Estimated number of babies currently tested	80,334
Mean number of tests per baby[3]	1.33
Estimated number of TSB tests carried out	**106,844**
Future activity – TCB and TSB testing	
Proportion of babies to be for jaundice on the basis of a visual exam [2]	100%
Estimated number of babies currently tested	401669
Mean number of tests per baby[3]	1.33
Estimated number of TCB tests carried out	**534,220**
Proportion of TCB tests that are positive[4] & require a TSB test	25%
Estimated number of TSB tests carried out	**133,555**
1 Office for National Statistics- Births Statistics 2008 Series FM1 Number 37 2 Expert Opinion 3 See 3.1.7 below 4 A test is positive if the reading is above 250 micromols/L	

3.1.6 The number of TCB/TSB tests that each baby will requires will vary, but data from the US suggests that on average, babies will be tested 1.33 tests per times. The GDG considered this to be a reasonable estimate of the number of tests per baby.

3.1.7 Expert opinion suggests that if all visibly jaundiced babies were to be tested for jaundice using a TCB meter, 25% of these would be positive (above 250 micromol/litre), requiring a TSB test to be carried out.

3.1.8 The unit costs quoted for TSB and TCB tests have been calculated from the component elements as per table 3.

Table 3 Unit cost of TSB/TCB tests

3.1.9 The midwife time required to carry out the TCB/TSB tests is included as an element in the unit costs of each of the tests (as per Table 3 above) this. It has been assumed that the tests can be performed as part of routine checks and so is not shown as a separate element in the costing template

	TSB (total serum bilirubin)	TCB (transcutaneous bilirubin)	
		Meter without calibration tips	Meter with calibration tips
Midwife band 6/7 @ £73 per hour – 10 minutes TSB test/1 minute TCB Test[1]	12.17	1.22	1.22
Venous blood test[2]	7.00	-	-
Gloves[2]	0.06	-	-
Calibration tips – for Bilicheck meter only – @ £134 for 50[3]	-	-	2.68
Flush wipes[2]	-	0.08	0.08
Unit cost per test	19.23	1.30	3.98
1 Table 8.7 2008/09 (Personal and social services research unit [2009]) 2 Health Economics analysis 3 Quote from Inspiration Healthcare August 2009			

Cost summary

3.1.10 The estimated cost of testing babies who are visibly jaundiced with TCB meters is £6.3 million in the first year, which consists of a

£1.2 million increase in the cost of testing and £5.1 million for the purchase of 1500 TCB meters at a cost of £3400 each (see table 4 below). In subsequent years, assuming the number of live births remains unchanged, this cost would reduce to £1.2 million. This is illustrated in table 5 below.

Table 4 Calculation of the number of TCB meters required to implement the guideline

Number of births	669,448
Approximate births per day ('Number of births' divided by 365)	1834
Allowing 1 TCB meter per community midwife plus one for each maternity unit and for settings not geographically close to a maternity unit	
Approximately two-thirds will be in the community (born at home or discharged)	1222 meters
Number of providers with maternity facilities (per Department of Health Bed Census September 2009)	151 meters
Meters for healthcare settings not geographically close to a maternity unit for example, some Accident and Emergency (A&E) units	127 meters
Estimated number of TCB Meters required to implement guidance	1500 meters

3.1.11 It was difficult to estimate the number of TCB meters that would be required to implement the guidance nationally. We expect that the meters will be available for use in both primary and secondary care settings. There is no data available on the number of midwives who work in the community – some midwives work between primary and secondary care. So the number of meters needed for use in the community has been based on an estimate of two-thirds of the number of births. Assuming this equates to the number of community midwives who will need a meter each, 1222 meters will be required for use in the community. In addition, a meter would be required for each secondary care maternity setting, which is based on the number of NHS providers with maternity facilities. Calculating this on this basis of one meter per maternity unit gives a result of 151 meters. The remaining 127 meters are to cover healthcare settings that do not have maternity facilities and are not geographically close to a maternity unit for example, some A&E units.

Table 5 Estimated cost of using TCB Meters to measure bilirubin levels in preference to TSB testing (where clinically appropriate)

	Current			Proposed		Change	
	Unit cost (£)	Numbers of tests	Cost (£000s)	Numbers of tests/meters	Cost (£000s)	Numbers of tests/meters	Cost (£000s)
TSB test	19.23	106,844	2055	133,555	2568	26,711	514
TCB test (excluding calibration tips)	1.30	0	0.00	534,220	694	534,220	694
Recurrent costs – testing		106,844	2055	667,775	3262	560,931	1208
Non-recurrent costs – purchase of TCBs	3400	0	0	1500	5100	1500	5100

Other considerations

3.1.12 It has been difficult to obtain data about the use of TCB meters in the primary care settings. However, expert opinion suggests that 1500 meters should be sufficient to provide testing facilities in both primary and secondary care settings and for other settings not geographically near to a maternity unit. This equates to approximately two meters per every 1000 births. However, the exact number required will be determined by local conditions and service delivery strategies. The number of TCB meters required has been calculated as shown in table 4 above.

3.2 Benefits and savings

Implementing the clinical guideline may bring the following benefits.

3.2.1 A study in the US has shown that increased monitoring of bilirubin levels may lead to a reduction in the incidence of kernicterus and the use of exchange transfusion to treat hyperbilirubinaemia.

3.2.2 The estimated lifetime cost of care for cases of kernicterus is £5.5 million per case. Consequently, a reduction in the incidence of kernicterus would lead to a reduction in the social and medical care costs of supporting people with kernicterus. (W versus Cumbria and Lancashire Strategic Health Authority [2006]).

3.2.3 The use of TCB meters to monitor bilirubin levels, where clinically indicated, confers additional benefits to the use of TSB:

- transcutaneous bilirubin measurement is less invasive than blood sampling
- test results are available immediately, avoiding the problems associated with taking and acting upon blood samples in the community
- the procedure is more acceptable to parents and clinical staff.

3.2.4 It is challenging and subject to uncertainty to estimate how many cases of kernicterus could be avoided by implementing the guideline.

3.2.5 Compliance with NICE guidance is one of the criteria indicating good risk reduction strategies and, in combination with meeting other criteria indicating good risk management, could lead to a discount on contributions to the NHS Litigation Authority schemes, including the Clinical Negligence Scheme for Trusts (CNST).

4 Sensitivity analysis

4.1 Methodology

4.1.1 There are a number of assumptions in the model for which no empirical evidence exists. Because of the limited data, the model developed is based mainly on discussions of typical values and predictions of how things might change as a result of implementing the guidance and is therefore subject to a degree of uncertainty.

4.1.2 As part of discussions with practitioners, we discussed possible minimum and maximum values of variables, and calculated their impact on costs across this range.

4.1.3 It is not possible to arrive at an overall range for total cost because the minimum or maximum of individual lines would not occur simultaneously. We undertook one-way simple sensitivity analysis, altering each variable independently to identify those that have greatest impact on the calculated total cost.

4.1.4 Appendix B contains a table detailing all variables modified and the key conclusions drawn are discussed below.

4.2 Impact of sensitivity analysis on costs

Cost of TCB meters

4.2.1 As outlined in 2.4.2 above, the procurement of medical equipment is complex and prices are driven by a range of factors. Meters may be provided with substantial discounts.

4.2.2 Quotations were also obtained from the manufacturers.

4.2.3 Varying the cost of TCB meters results in implementation costs ranging from £4.6 million to £6.3 million.

Number of meters

4.2.4 As outlined in table 4, it has been difficult to estimate the number of TCB meters that would be required to implement the guidance nationally.

4.2.5 The health economics report in the main guideline explores the effects of implementing the guideline using 1000 or 9200 meters.

4.2.6 Using this range, the implementation costs range from £4.6 million to £32.5 million.

TCB test unit costs

4.2.7 There are two types of TCB meter on the market. One uses disposable calibration caps, which are replaced after each test and the other does not require calibration caps.

4.2.8 The unit cost for a TCB test of £1.30 is based on the use of a TCB meter that does not require calibration caps. If a meter using calibration caps were to be used, then the unit cost would increase to £3.98 per test.

4.2.9 Using a TCB meter requiring calibration caps would increase implementation costs to £7.7 million.

Proportion of babies currently tested for hyperbilirubinaemia

4.2.10 About 20% of babies are currently tested for hyperbilirubinaemia (using either TSB or TCB tests).

4.2.11 Opinion was varied as to the proportion of babies currently tested. This ranged from 10% to 30%.

4.2.12 Implementation costs are reduced by increasing the estimated number of babies currently tested. An estimate of 10% to 30% of babies currently tested results in implementation costs ranging from £5.3 million to £7.3 million.

Estimated percentage of TCB tests that would be positive and would require a TSB test

4.2.13 Expert opinion suggested that 25% of TCB tests would be positive (above 250 micromols/litre) and would consequently require a TSB test to determine bilirubin levels.

- Implementation costs varied according to the estimated proportion of TCB tests that would be positive and would require a TSB test. A range of 15% to 35% of positive TCB tests results in implementation costs ranging from £5.3 million to £7.3 million**.**

5 Impact of guidance for commissioners

5.1.1 The guideline covers the recognition, assessment and treatment of babies with neonatal jaundice. It is assumed that most tests will be carried out in the community and therefore outside the scope of 'Payment by results'.

5.1.2 Expenditure on neonatal jaundice will fall under the Programme Budgeting category of 218X Maternity and reproductive health.

6 Conclusion

6.1 Total national cost for England

6.1.1 Using the significant resource-impact recommendations shown in table 1 and assumptions specified in section 3 we have estimated the cost impact in year 1 of fully implementing the guideline in England to be £6.3 million. This includes the cost of purchasing 1500 TCB meters.

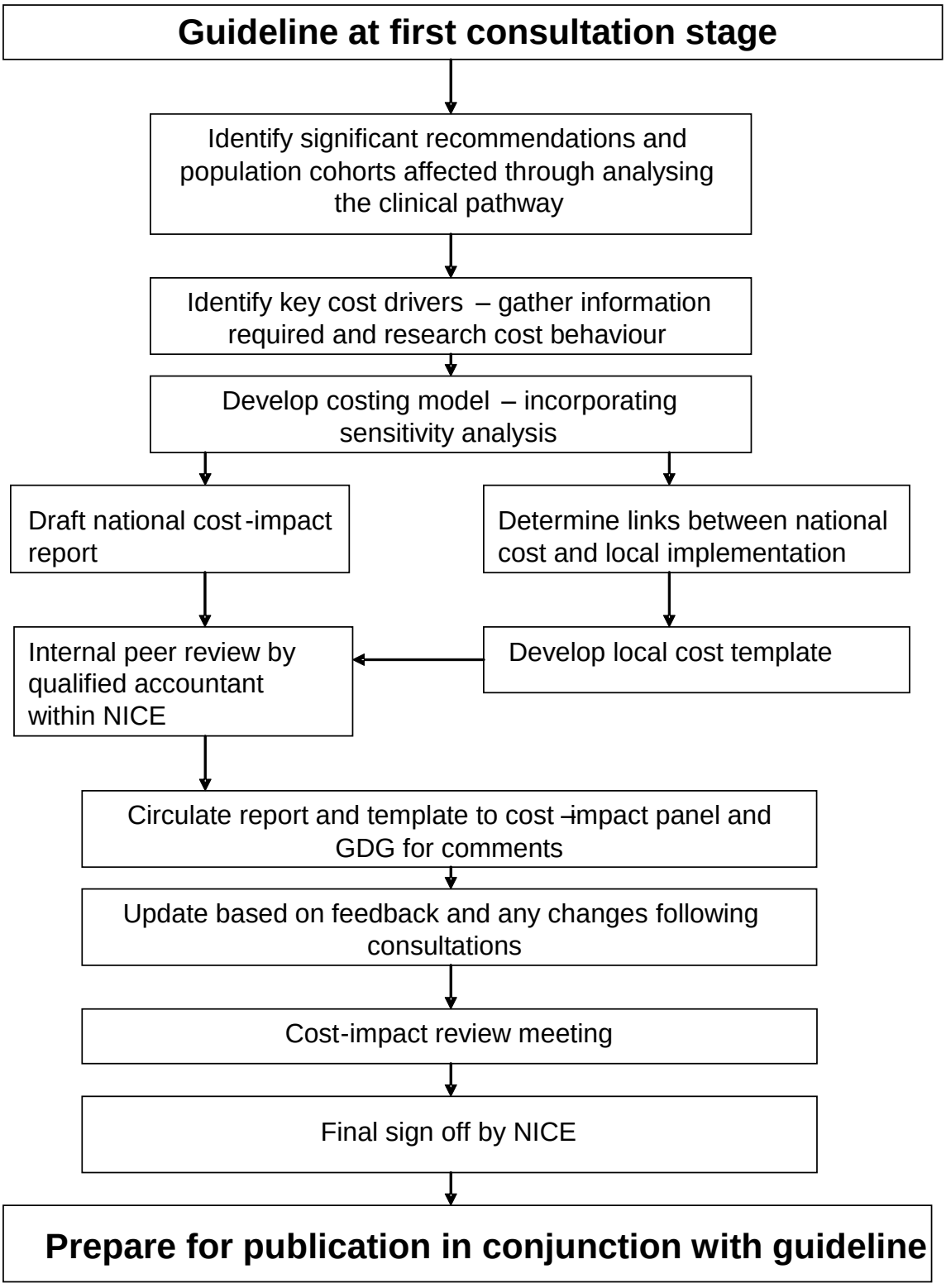
6.1.2 In subsequent years, assuming the annual number of births remains unchanged, the figure of £6.3 million above would decrease to £1.2 million. If the implementation of the guidance reduced the incidence of kernicterus by 1.2 fewer cases per annum, this would result in a cost saving for the NHS and social care.

6.1.3 We applied reality tests against existing data wherever possible, but this was limited by the availability of detailed data. We consider this assessment to be reasonable, given the limited detailed data regarding the number of midwives employed in secondary and primary care. However, the costs presented are estimates and should not be taken as the full cost of implementing the guideline.

6.2 Next steps

6.2.1 The local costing template produced to support this guideline enables organisations such as primary care trusts (PCTs) or health boards in Wales and Northern Ireland to estimate the impact locally and replace variables with ones that depict the current local position. A sample calculation using this template showed that a population of 100,000 could expect to incur additional costs of £12,598, which comprises a £2398 increase in the cost of testing and £10,200 for the purchase of three TCB meters. Use this template to calculate the cost of implementing this guidance in your area.

Appendix A. Approach to costing guidelines



Appendix B. Results of sensitivity analysis

Sensitivity analysis

Assessment of sensitivity costs to a range of variables

Parameter varied	Baseline value	Minimum value	Maximum value	Baseline costs (£000s)	Minimum costs (£000s)	Maximum costs (£000s)	Change (£000s)
Cost of TCB meters	£3,400	£2,300	£3,400	6,308	4,658	6,308	1,650
Number of TCB meters	1500	1000	9200	6,308	4,608	32,488	27,880
Proportion of babies currently tested for bilirubin	20%	10%	30%	6,308	7,335	5,281	-2,054
Unit cost of TCB tests - calibration caps	£1.30	£1.30	£3.98	6,308	6,308	7,740	1,432
Estimated percentage of TCB tests that would be positive and require a TSB test	25%	15%	35%	6,308	5,281	7,335	2,054

Appendix C. References

W versus Cumbria and Lancashire Strategic Health Authority (2006) High Court of Justice. Available fromwww.jmw.co.uk/kernicterusbilirubinaemia

Office for National Statistics 2009 Table 1.1a (Based on 2008 Births) 708711 Live Births for England & Wales - 94.46% England only = 669448

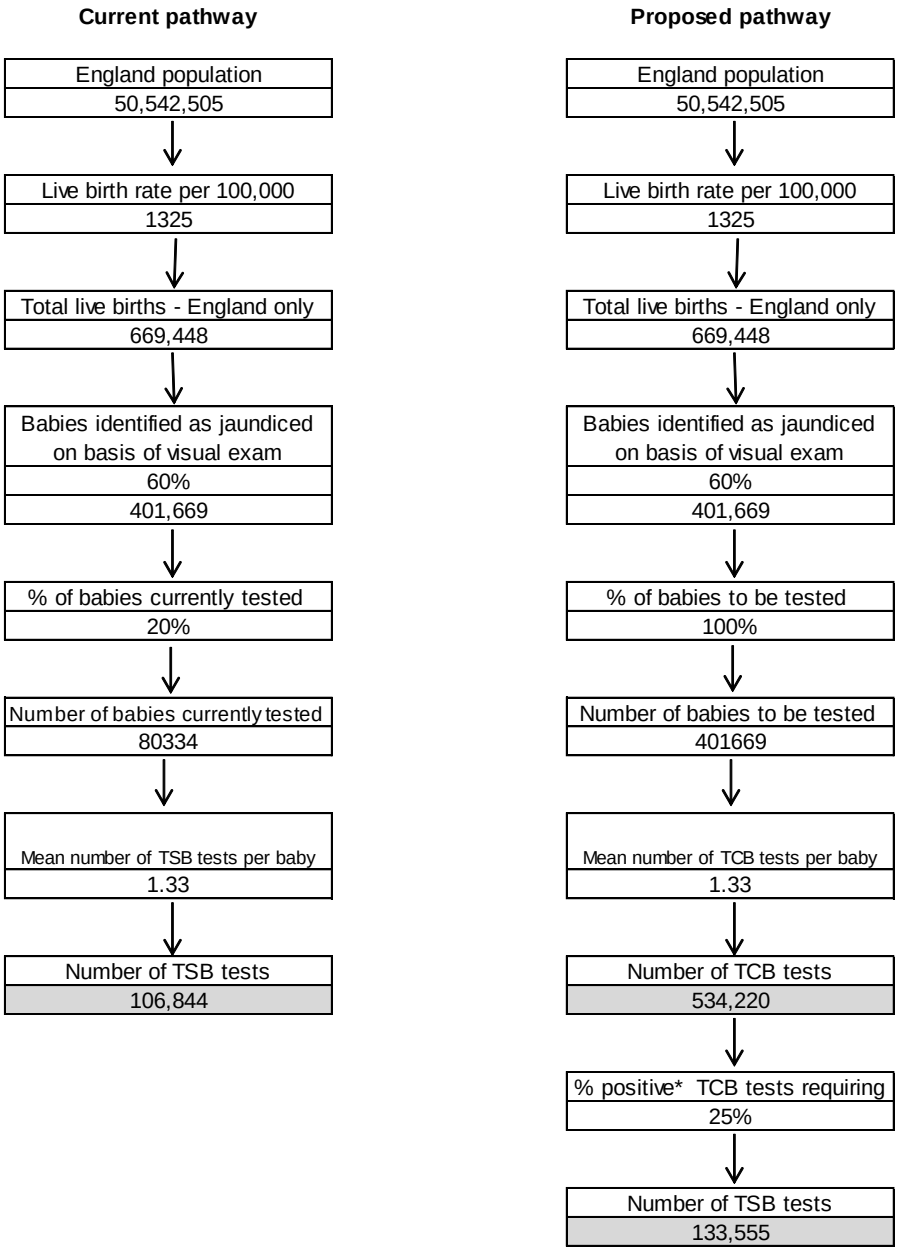
Personal and social services research unit (2009) Unit Costs of Health and Social Care 2009. Canterbury: The University of Kent

Kuzniewicz M, Escobar GJ, Soora WI et al (2008) Risk Factors for Severe Hyperbilirubinaemia among infants with borderline bilirubin levels: A Nested Case-Control Study. Journal of Paediatrics 153 (2): 234–40

Ogundele M, Waterson M (2010) When should we be conducting thyroid function tests in newborns and young infants? Archives of Diseases in Childhood 95: 151–2

Appendix D. Patient pathway

Number of TCB (transcutaneous bilirubin) and TSB (total serum bilirubin) tests required to implement the guideline



* A positive test is above 250 micromols/L