CHAPTER 1

History taking and the newborn examination: an evolving perspective

Claire Evans

1 Warrington and Halton Hospitals NHS Foundation Trust, Warrington, Cheshire, UK
2 Seconded post as Implementation Lead with the UK NSC NIPE Programme Centre, Public Health England, London, UK

KEY POINTS

• The principal aim of history taking is to screen for predictive risk indicators that may predispose the newborn to an adverse postnatal transition or presence of an abnormality that requires an appropriate and timely referral for further diagnostics.
• The newborn examination history-taking process should be mapped to the UK NSC Antenatal and Newborn Screening Programme and be used as a benchmark for screening and assessment of risk factors in the neonatal period and beyond.
• Identification of risk factors within the newborn screen examination can isolate and target health promotion issues.

Introduction

A comprehensive history taking is implicit to all health-care disciplines to aid the diagnostic consultation process and to inform the optimal course of management. The skill of history taking has changed over the decades and has adopted a wider context as a predictive diagnostic tool. In order to facilitate a more holistic approach to the examination of the newborn, a thorough evaluation of the maternal and newborn history is essential. Short-term outcomes, long-term morbidities or even mortality can be influenced by the quality of the history taking in terms of the predictive risk for some adverse clinical conditions.

This chapter outlines the context of the history profile from the maternal, perinatal and familial perspectives. It also addresses history taking as a skill and the potential barriers that may reduce the effectiveness of the process. The aim
of this chapter is not only to address common risk factors but also to embrace the wider context of history taking from a psychosocial and safeguarding perspective. The focus on history taking must be meaningful, achievable and valuable to the newborn examination practitioner. History taking remains the principal standard underpinning the clinical examination; disregarding the importance of history taking may lead to suboptimal practice and outcomes. Gathering a history effectively demands time and should not be rushed as it is a powerful instrument that can influence the quality of the examination.

Several national directives have raised the profile of the newborn physical examination. They stipulate the importance of a thorough and, to some degree, systematic history assessment (Skills for Health, 2004; NICE 2006a, 2006b; NHSQIS, 2004; UK NSC, 2008). In particular, the *UK NSC Newborn and Infant Physical Examination Standards and Competencies* (UK NSC, 2008) outlines a competency statement that addresses the history assessment. The NIPE Standards are currently under development for republication. Following the relaunch, the new standards will be available to view on the UK NSC NIPE Screening Programme website: http://newbornphysical.screening.nhs.uk/. However, for the purposes of this chapter, the NIPE Standards document will be a reference source until updated. This approach should encompass all relevant information from the maternal and newborn medical records, dialogue with the mother and/or father and information from clinical staff.

**Objectives and characteristics of good history taking**

The principal aim of the history-taking exercise is to find predictive risk indicators that may identify those newborns who are at risk of an adverse postnatal transition extending into childhood. Families with newborns who are identified as being at risk will then benefit from early detection, intervention and therapeutic options. To achieve this, the history profile must be factual, accurate, concise, informative and relevant. Discussions with the mother and father, to gather the history, can also offer a platform that targets health awareness and safety issues to promote optimal health in the neonatal period and beyond. A review of maternal and parental lifestyle habits in general, e.g. smoking, addictive behaviours and high-conflict relationships can be identified, and appropriate referrals or support can be arranged. Other health promotion issues include BCG vaccination to high-risk populations.

The quality of the history-taking process is largely dependent on the skill of the practitioner. Health-care professionals who conduct the newborn screen examination are fortunate in having pre-existing skills that are transferable. Doctors and midwives engage in history taking on a regular basis within their daily practice. However, the underlying principles of history taking follow that of all patient groups. Howard (2008) comments upon the role of history taking in
establishing trust which in turn paves the way for the physical examination. Thus, the interpersonal skills of the newborn examiner can influence the quality of the history obtained. Mannerisms, eye contact, body language, patience, listening skills and empathy are all key skills that any health-care professional requires to obtain a good history. If there is any deficiency in these key skills, the level of narrative imparted by the mother or father to the health professional may be negatively affected. Stoeckle and Billings (1987), in their signature work on history taking, refer to the process as a clinical interview and the manner in which it is conducted will influence the communicative processes necessary to generate the clinical picture.

Parallels can be drawn between history taking for the newborn examination and maternal history taking throughout pregnancy (NHS QIS, 2004), which may illuminate any element of risk to the mother/infant dyad. In addition, engagement of mothers and fathers with the history-taking exercise facilitates participation in the decision-making process and the request for consent (NHS QIS, 2008). These aspects of history taking are just as relevant to the newborn.

It is important to note that in the event of any subsequent admission to hospital for the infant, the first point of reference is the history and newborn physical examination. In addition, should anything have been missed during the examination, e.g. cleft palate, a dislocated hip, then this may result in a complaint and possible litigation (see also Chapter 9). A thorough history can identify potential as well as actual risk of an aspect being overlooked, which may later impact upon neonatal and infant outcome.

Concise and thorough history taking will also assist the health-care professional to ascertain whether or not the criteria are met for the examination of a healthy newborn. Some aspects of the history may require midwives or neonatal nurses to refer the newborn to a medical colleague as a more detailed examination may be necessary. For this reason, it is vital that maternity units have local guidelines in place to support all health-care disciplines who undertake the newborn examination.

Paediatric medicine has long since considered family history as key to the clinical examination process. The family profile is informative when screening for common complex and single-gene conditions but includes isolating genetic predispositions in some families (Green, 2007). As a result, several family-history-taking checklists in the form of mnemonics have emerged to guide paediatricians. Such systems may be helpful and indeed insightful, but it cannot be fully applied to newborn history taking. However, it does highlight the importance of gathering information in an ordered manner, and, most importantly, that the family history must be placed at the centre of history taking for the newborn infant.
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Building a history profile: where to start?

When building a history profile, there is a clear identifiable process to follow. Assimilation of the perinatal history can be challenging, and therefore, the first point of reference has to be the maternal medical records. However, knowing what to look for and having some order of assemblage in the gathering of information is crucial if the task is to be efficient and not time-consuming. The maternal booking history often yields the most significant information alongside the serology results. The maternal early booking history will, in the main, provide most of the baseline history. This should provide the medical and surgical history of the mother as well as the maternal well-being so far with the pregnancy. The maternal booking interview should be completed before the twelfth week of pregnancy as proposed by Maternity Matters (DH, 2007), the policy document on maternity care, and endorsed by the UK National Screening Committee (NSC, 2007). Early booking will maximise a woman’s exposure to, and choice of, the screening programmes available, thus identifying those women and families who need interventional support with lifestyle choices.

Reliance upon the maternal medical records alone will not provide all the information needed. It is, therefore, necessary to question the mother and/or father on family history in order to extract the risk factors that parallel the national standards (UK NSC, 2008). The core elements of the national standards for the newborn screen examination have provided a structure for risk assessment through history taking.

The UK NSC Antenatal and Newborn Screening Programme should be used as the benchmark screening tool for the newborn screen examination (see Table 1.1). The maternal antenatal screen will provide a framework of investigative results for the examiner that will provide the foundation for the history profile. The Newborn and Physical Examination Standards and Competencies document (UK NSC, 2008) found at: http://newbornphysical.screening.nhs.uk/ provides a structure within competency statement 1, which outlines the aspects to be considered when assimilating the history profile. Table 1.2 outlines the content of Competency 1 and can be used as a point of reference.

Evaluation of maternal medical records: biophysical information

The maternal socio-demographic and biophysical details should be assessed. Age must be noted, particularly in the teenage primigravida, as additional health promotion and education by the examiner may be necessary upon completion of the examination. Early and recent evidence suggests that upper and lower margins of maternal age are adversely related to prenatal and perinatal outcome (Haines et al., 1991; Viegas et al., 1994; Battin and Sadler, 2010). However,
Table 1.1 Key elements of the National Antenatal and Newborn Screening Programme.

<table>
<thead>
<tr>
<th>Test</th>
<th>Timing</th>
<th>Biophysical details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serology investigations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood group, rhesus and antibodies status and haemoglobin</td>
<td>At booking</td>
<td>Approximately 15% of the population are rhesus-negative (Salem and Singer, 2009). Anti-D immunoglobulin is offered to all rhesus-negative women at 28 weeks’ gestation to prevent haemolytic disease in the newborn. Maternal antibodies can also cause haemolytic disease.</td>
</tr>
<tr>
<td>Antibodies and haemoglobin</td>
<td>repeated at 28 weeks</td>
<td></td>
</tr>
<tr>
<td>Sickle cell</td>
<td>As early as possible preferably by 10 weeks’ gestation</td>
<td>Inherited genetic condition resulting in the red blood cell forming a sickle cell shape. There are variants of this disease which impacts on the severity. In cases where women are healthy carriers, the baby’s father should be offered screening. The risk of an affected infant is 1:2 where both parents are carriers (NHS ANSP, 2008).</td>
</tr>
<tr>
<td>Thalassaemia</td>
<td>As early as possible preferably by 10 weeks’ gestation</td>
<td>Inherited genetic condition which affects the production of red blood cells. The genes that make haemoglobin are altered causing anaemia. This condition takes two forms: alpha and beta (Ryan et al., 2010).</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>At booking</td>
<td>Some populations of women are at high risk of Hepatitis B infection (HBsAG positive). Transmission of the virus is through sexual contact, vertical transmission or contaminated blood, e.g. needle sharing. Transmission to the fetus can be transplacental. Vaccination of the newborn must be offered to HBsAG positive women and their partners (DH, 2003).</td>
</tr>
<tr>
<td>HIV</td>
<td>At booking</td>
<td>HIV infection is a retrovirus that causes an alteration of the immune system. The virus infects the CD4 cells or the helper T cells which lower the body’s cell-mediated immunity. Infection with HIV-1 can progress to AIDS (Carpenter et al., 2009).</td>
</tr>
<tr>
<td>Syphilis</td>
<td>At booking</td>
<td>Sexually transmitted disease with a risk of transplacental transmission.</td>
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</table>

(continued overleaf)
Table 1.1 (Continued).

<table>
<thead>
<tr>
<th>Timing</th>
<th>Biophysical details</th>
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</thead>
<tbody>
<tr>
<td>Rubella</td>
<td>Viral infection with risk transplacental transmission.</td>
</tr>
<tr>
<td>First trimester combined test</td>
<td>Combined screening test with combination of age, blood profile, nuchal scan measurement and other factors.</td>
</tr>
<tr>
<td>Ultrasonography</td>
<td></td>
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<tr>
<td>Nuchal translucency</td>
<td>11–14 weeks</td>
</tr>
<tr>
<td>(Part of combined test)</td>
<td>Nuchal translucency measurement greater than 3.5 mm in early pregnancy. This finding is significant as associated with cardiac and syndromic pathology. This finding is also part of the 'combined' screening test for trisomy 21.</td>
</tr>
<tr>
<td>Quadruple test</td>
<td>14–2 – 20 + 0 weeks</td>
</tr>
<tr>
<td>Fetal anomaly</td>
<td>Biochemistry tests, which include AFP, BHcG, oestriols and inhibin A.</td>
</tr>
<tr>
<td>(Part of combined test)</td>
<td>This scan can detect certain gross structural anomalies but does have its limitations.</td>
</tr>
<tr>
<td>Newborn and Infant Physical</td>
<td>18 – 20 + 6 weeks</td>
</tr>
<tr>
<td>Examination (NIPE) National</td>
<td>Approximately 45% of cardiac defects can be detected at this particular time.</td>
</tr>
<tr>
<td>Standards</td>
<td>Full physical and behavioural examination of the newborn incorporating the four core condition-related screening standards – developmental dysplasia of the hip, examination of the eye, congenital heart defects and undescended testes.</td>
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</tbody>
</table>

Table 1.2 How Competency 1 of the *Newborn Physical Examination Standards and Competencies* (UK NSC, 2008) can be used to create a history profile.

<table>
<thead>
<tr>
<th>Maternal biophysical data</th>
<th>Antenatal screening results</th>
<th>Pregnancy and labour history</th>
<th>Family history</th>
<th>Psychosocial factors</th>
<th>Newborn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health status</td>
<td>Serology reports</td>
<td>Incidence of infection and bacteria isolate</td>
<td>History of diabetes</td>
<td>Smoking</td>
<td>Resuscitation at birth and response</td>
</tr>
<tr>
<td>Cardiac disease</td>
<td>Rhesus status</td>
<td>Pathologies</td>
<td>Intergenerational Conditions</td>
<td>Substance use</td>
<td>Mode of feeding</td>
</tr>
<tr>
<td>Renal disease</td>
<td>Ultrasound scan profile</td>
<td>Pre-eclampsia</td>
<td>Inborn errors of metabolism</td>
<td>Alcohol dependency</td>
<td>Passage of urine and meconium</td>
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<tr>
<td>Hypothyroidism</td>
<td>Diagnostic investigations</td>
<td>Placental insufficiency, etc.</td>
<td>High-conflict</td>
<td>Depression</td>
<td></td>
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<tr>
<td>Depression</td>
<td></td>
<td></td>
<td>Relationship</td>
<td></td>
<td>General health since</td>
</tr>
<tr>
<td>Nutritional status and BMI</td>
<td></td>
<td>Mode of delivery and presentation</td>
<td>First-degree relative</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Pre-labour length of membranes rupture</td>
<td>with CHD</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>First-degree relative</td>
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<tr>
<td></td>
<td></td>
<td>with DDH</td>
<td>with siblings</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>First-degree relative</td>
<td>Social services involvement with family</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with DDH</td>
<td></td>
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<td></td>
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<td></td>
<td>Parental concerns</td>
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<td></td>
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<td></td>
<td>Symptomatic of illness</td>
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Bornstein et al. (2006) explore this relationship, concluding that varied age groups have differing parenting abilities. Nevertheless, the teenage mothers may require more intensive health promotion advice for themselves, possibly their partners and their newborn infants.

There is a new general health agenda emerging within society in relation to lifestyle and in particular to maternal diet and weight profile. A raised body mass index (BMI) can influence general health and may also indicate the family unit’s dietary habits. A positive relationship exists between a raised BMI and complications of pregnancy including diabetes, hypertensive disease and thromboembolic disorders (Bhattacharya et al., 2007; CEMD, 2002; CMACE/RCOG, 2010). Pregnancy outcome can be affected, resulting in macrosomia, shoulder dystocia at delivery and hypoglycaemia of the newborn (Sebire et al., 2001; Kalk et al., 2009; Khashan and Kenny, 2009). Maternity units must have a policy in place for the prevention, detection and treatment of neonatal hypoglycaemia to identify those newborns most at risk.

Previous obstetric histories can provide information regarding maternal well-being and pregnancy outcome, which may be of relevance. Particular notice should be taken of the health of existing siblings. Where there has been a previous sudden infant death syndrome (SIDS) sibling, this must be noted.

It is good practice to offer the option of an ECG being performed on the new sibling to rule out any risk of cardiac conduction disorders, e.g. prolonged QT syndrome or Wolff–Parkinson–White syndrome. The newborn would also be on the Care of the Next Infant scheme with the provision of an apnoea monitor prior to discharge.

The medical history can reveal conditions such as maternal hypothyroidism, cardiac disease, blood disorders, e.g. idiopathic thrombocytopenia, haemophilia Von Willebrand disease or maternal depression. The surgical history may not have such a direct impact upon risk for the newborn but does add to the completeness of the history-taking process for the health-care professional.

The intrapartum history is important in terms of identifying risk factors for the newborn. Taking note of the mode of delivery is important as this in itself may impact upon the health of the newborn. If shoulder dystocia presented during the second stage, the infant must be thoroughly examined by a senior paediatrician for evidence of an Erb’s palsy, a clavicle fracture or sternomastoid muscle damage. An examination in the immediate post-delivery period by a paediatrician should be part of the maternity service local shoulder dystocia management guideline.

Breech presentation carries a strong correlative risk of Developmental Dysplasia of the Hip and is, therefore, a nationally recognised risk factor. Breech presentation at birth irrespective of mode of delivery or clinically diagnosed in pregnancy after 36 weeks’ gestation or if external cephalic version performed for breech presentation irrespective of gestational age at delivery requires referral of the newborn in line with the national NIPE Standards (UK NSC, 2008).
A precipitate delivery may cause facial congestion, which can be misdiagnosed as cyanosis. An instrumental delivery may result in the newborn suffering a degree of head trauma, such as bruising, which may require analgesia and can increase the risk of hyperbilirubinaemia (see Table 1.3 and also Chapter 3).

Meconium-stained liquor (MSL) can be problematic for a minority of newborns and, therefore, must be noted from the delivery summary. The presence of MSL is associated with an increased mortality and morbidity, accounting for 2% of perinatal deaths (NICE, 2007). It is relatively common with an occurrence of 15–20% in term pregnancies (NICE, 2007). Although meconium aspiration syndrome is relatively rare, some of these infants may seem well at delivery but rapidly develop signs of respiratory compromise as a result of aspiration. NICE (2007) advocate close observation of the newborn with MSL present at delivery in the immediate postnatal period.

Newborn examiners must be continuously on the alert for possible risk factors for early-onset neonatal sepsis. Early-onset sepsis in the newborn is a significant contributor to mortality statistics. One of the most common bacterial isolates is group B haemolytic streptococcus (GBS) that carries a mortality of 6% in term infants and 18% in preterm infants (NICE, 2007). Maternal infection during the
antenatal period must be actively treated with antibiotic therapy. Treatment with antibiotics for the newborn may also be required but is risk dependent or if the newborn is symptomatic. Ohlsson and Shah (2009) inferred that intrapartum antibiotic therapy does reduce the risk of early-onset GBS in the newborn. Ungerer et al. (2004) reported mortality as high as 50% in untreated infants.

In the case of pre-labour prolonged rupture of membranes, the length of time must be noted (NICE, 2012). The risk of early-onset GBS infection in the newborn is greater in women with PROM (RCOG, 2003; NICE, 2007). In the absence of any other symptoms, true maternal pyrexia in labour must never be ignored. In addition, there was no strong evidence to recommend antibiotic prophylaxis for newborns of women with PROM in labour (NICE, 2012).

Conversely, the symptomatic newborn must commence antibiotic therapy and admission to the neonatal unit for further diagnostics. Every newborn must be treated on an individual basis, depending on the risk factors presenting. Multiple risk factors will necessitate newborn screening for infection and the commencement of antibiotic prophylaxis until blood culture results become available. Local policy on the prevention and detection of early-onset sepsis in the newborn must reflect the red flag and non-red flag risk indicators as detailed in the NICE guidance for antibiotics for early-onset neonatal infection (NICE, 2012) available at http://www.nice.org.uk/guidance/CG149/resources. The NICE guidance advocates the avoidance of routine antibiotic therapy. It is estimated that 90% of newborns with early-onset sepsis will be symptomatic within 12 hours of birth (NICE, 2007). Therefore, all newborns with risk factors for early-onset infection must receive close observation and documentation of an observations regime. The newborn examiner must ensure that the observations are documented and reviewed within the context of the examination and assessment of the overall health of the newborn.

The newborn of the diabetic mother, irrespective of diabetes type, will require blood glucose monitoring. The newborn examiner must review the blood glucose results prior to conducting the examination. Local policy will dictate the monitoring intervals for such newborns. Suboptimal results will require more active management of hypoglycaemia that may necessitate admission to the neonatal unit.

**The UK NSC Antenatal Screening Programme**

The UK NSC Antenatal Screening Programme components (Table 1.1) aim at helping the examiner through the investigations and results and signpost the relevant information within the maternal medical records. Familiarisation with the key components of the programme will enhance this process.

The maternal prenatal serology results must be evaluated, particularly the rhesus status. A maternal rhesus-negative status or the presence of antibodies
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should alert the examiner to the possibility of rhesus incompatibility and the risk of early-onset pathological hyperbilirubinaemia with the first 24 hours of life. A sibling of the newborn with neonatal jaundice requiring phototherapy carries a significant risk (NICE, 2010). Further information on neonatal jaundice management guidelines can be found on the NICE website: http://www.nice.org.uk/guidance/CG98. Surveillance of the newborn should be increased, particularly in the case of an early discharge to the community. The maternal rubella status should be noted as postnatal maternal vaccination may be required.

The human immunodeficiency virus (HIV), hepatitis B and hepatitis C status should be reviewed in all cases. However, such infections may be more likely alongside evidence of maternal substance misuse.

A family history of metabolic disease must also be noted particularly following the incident alert with medium-chain acyl-coenzyme A dehydrogenase deficiency (MCADD) (NPSA, 2011). If MCADD is known within the family, then the newborn will require early special rapid bloodspot testing at 24–48 hours of age prior to the standard bloodspot screen in 5–7 days. Further information on bloodspot screening can be obtained from the UK NSC Bloodspot website: http://newbornbloodspot.screening.nhs.uk/ and the British Inherited Metabolic Disease Group at: http://www.bimdg.org.uk/site/index.asp.

Fetus in focus

Ultrasonography in pregnancy is part of the UK NSC Fetal Anomaly Screening Programme (FASP) where two key ultrasound scans are offered as a minimum standard (UK NSC FASP 2010). The first scan is the early dating scan. It is, therefore, important to note the gestational age of the newborn from the earliest ultrasound scan result prior to conducting the examination.

The second is the 18–20-week fetal anomaly scan. Additional serial scans will be performed if and when an abnormality is detected, either with the fetus or with the intrauterine environment, e.g. liquor volume or placental positioning. Fetal growth estimation is the primary parameter assessed. Evidence of intrauterine growth restriction is not an uncommon finding at this stage. There may be evidence in the maternal history that may indicate why the infant is small for gestation age. There may be a pre-existing maternal medical condition that has adversely contributed to placental function resulting in a poor fetal growth profile. Fetal growth restriction may be a feature of an underlying chromosomal abnormality or some other pathology, e.g. transplacental viral transmission or the effect of a toxic substance, e.g. alcohol excess in pregnancy. Further information on the UK NSC FASP Programme can be obtained from the website: http://fetalanomaly.screening.nhs.uk/.

The UK NSC FASP (2010) has set a benchmark for the condition that should be screened for during this particular anomaly scan. Whilst it is useful in many cases, it is prudent to accept that this scan does have its limitations; therefore, the focus lies with a standard for 11 structural conditions where the specificity
for detection is greater than 50% (UK NSC FASP, 2010). Conditions screened for are given as follows:

- Anencephaly
- Open spina bifida
- Cleft lip
- Diaphragmatic hernia
- Gastroschisis
- Exomphalos
- Serious cardiac anomalies
- Bilateral renal agenesis
- Lethal skeletal dysplasia
- Edward’s syndrome (trisomy 18)
- Patau’s syndrome (trisomy 13)

Adapted from the UK NSC Fetal Anomaly Screening Programme

The presence of other findings is significant and, as such, is reportable by the ultrasonographer as listed subsequently.

- Nuchal fold (>6 mm)
- Ventriculomegaly (atrium >10 mm)
- Echogenic bowel (with density equivalent to bone)
- Renal pelvic dilatation (AP measurement >7 mm)

Fetal renal pelvic dilatation will require serial scan monitoring throughout the pregnancy. However, it is particularly important to note this during history taking and to arrange follow-up ultrasound scans and urology clinic referral for the newborn.

The presence of oligohydramnios must alert the examiner to the possibility of the following:

- Prolonged rupture of membranes earlier in the pregnancy
- Urinary tract anomaly or uropathy
- Fetal growth restriction (Baxter et al., 2010)
- Intrauterine infection

Conversely, polyhydramnios will alert the examiner to consider the following:

- Duodenal atresia or stenosis (Rajiah, 2009)
- Oesophageal atresia
  (See also Chapter 5)

Exposure to the effects of intrauterine teratogens has been investigated and publicised over recent decades, but arguably the most common causes of such exposure are smoking and excessive alcohol consumption during pregnancy. Smoking is the most common substance dependency, yet the most preventable. Reduction in maternal smoking during pregnancy remains high on the public health agenda through smoking cessation initiatives as part of maternity care (NICE, 2010). Clinical guidance can be found on the NICE website:
http://www.nice.org.uk/nicemedia/live/13023/49346/49346.pdf. There is compelling evidence highlighting the adverse effects of maternal smoking in both the antenatal and postnatal periods (La Souef, 2000; Gilliland et al., 2001; Landau, 2001; Stocks and Dezateux, 2003; British Medical Association, 2004; Bradley et al., 2005). The adverse health implications for the newborn and older children are numerous and can impact on mortality and morbidity.

Perhaps the most significant, devastating and indeed most publicised adverse effect of parental smoking is the increased risk of SIDS (McMartin et al., 2002; Anderson et al., 2005; Matturi et al., 2006; Sellwood and Huertas-Ceballos, 2008). The hypothesis surrounding this causal relationship is multifactorial ranging from respiratory infection susceptibility to altered respiratory control mechanisms (Hofhuis et al., 2003). This positive association cannot be underestimated nor ignored; therefore, the prevention of SIDS is high on the maternity services’ health education agenda for the newborn examination.

Smoking cessation merits a much higher profile during the antenatal and immediate postnatal period and must be addressed thoroughly at the time of the newborn examination.

Fetal alcohol exposure from excessive maternal consumption is associated with dysmorphic features and varied neurodevelopmental and behavioural disorders ranging from fetal alcohol syndrome to fetal alcohol spectrum disorders (Disney et al., 2008). Maternal alcohol consumption is often associated with an existing suboptimal social environment (Dawson, 2003). The newborn can also suffer withdrawal symptoms from prenatal alcohol exposure, which may result in seizure activity (Lall, 2008).

Admittance to alcohol consumption during pregnancy in excessive amounts is often retrospective (Jacobson et al., 2002); therefore, intervention and preventative strategies must be put in place for subsequent pregnancies. Disney et al. (2008) reports on the long-standing evidence (Olson et al., 1997; Roebuck et al., 1999) to support altered neurobehavioural abilities in infancy through to antisocial behaviour and attention deficit disorders in children from small amounts of alcohol during pregnancy (Jacobson et al., 2002; Sayal, 2007; Sayal et al., 2009). Enquiries into maternal alcohol and units consumed are made by midwives at the prenatal booking interview. For some newborns, the cessation of alcohol use, even early in the first trimester, may be too late.

Maternal substance-misuse signals a probable newborn withdrawal process and a challenge to the health-care team in establishing the exact nature of the drugs taken. In the first instance, the newborn examiner must establish what illicit drugs have been taken in pregnancy and the immediate pre-labour period. However, obtaining an accurate substance use history is often fraught with imprecise maternal disclosures. Such behaviour can be linked to the social stigmatisation of drug misuse and the fear of the newborn being placed in foster care. Sensitive, but direct, further maternal questioning may be required, especially in cases of polysubstance use.
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The withdrawal timelines for the common illicit substances have been well documented over recent years. Withdrawal from opiates and heroin can be evident in the newborn within hours of birth, whilst the effects of exposure to cocaine and amphetamine begins within 48 hours of birth (Wang 2010) (Wang, 2010) and withdrawal from methadone does not occur until 48–72 hours of age (Leggate, 2008) but it can be as long as 7–14 days before withdrawal is evident (Lall, 2008; Wang, 2010). The longer half-life of methadone is known to prolong and increase the severity of the withdrawal symptoms. Neonatal abstinence syndrome (NAS) is often considered the foremost adverse condition for the newborn of the substance-misuse mother; however, the effects upon fetal brain development have far more significant and long-lasting consequences. Substance use in the first 20 weeks of pregnancy can cause disruption in the cytogenesis and cell migration processes. In the subsequent weeks of pregnancy, cell differentiation and overall brain growth can be disturbed (Wang, 2010), including midline defects and congenital heart defects (Mone et al., 2004).

NAS indicates multisystem involvement, resulting in a cascade of symptoms. Fetal growth is disrupted, resulting in growth restriction which can independently place the newborn at greater risk of co-morbidity (Smith et al., 2006). Normal neurobehavioural function is altered resulting in a display of central nervous system instability, abnormal feeding behaviour, respiratory compromise and gastrointestinal symptoms (Volpi-Wise, 2005; Hamden, 2009). Seizure activity can manifest as a late-onset symptom of diazepine withdrawal.

NAS can occur with prescribed maternal medication. Morphine-based analgesia for long-term protracted pain management and psychotropic drugs for mental illness are the most common. The social context of the mother requiring morphine for long-term pain in many cases differs from that of the illicit substance user. Nonetheless, a sensitive approach is required with these parents when reiterating information about the clinical presentation of NAS, as they will have already received information in the prenatal period.

Where maternal substance use is known, it may be prudent for midwives and neonatal nurses to refer the examination to a senior paediatrician as the newborn will require a more thorough examination to assess for withdrawal symptoms.

Risk factors and the newborn examination

Intergenerational traits may indicate an inheritance risk to the newborn. History taking may elicit such conditions (see Chapter 7). However, they may have already been identified in prenatal period, particularly the haemoglobinopathies, e.g. thalassaemia or sickle cell disease. The UK NSC Antenatal Screening Programme performs well in such cases. Additional risk factors can be isolated through application of the NIPE Standards and Competencies (NSC, 2008). Table 1.4 presents the four screening components from the NIPE Standards document and
demonstrates conditions that carry a predictive risk, as well as other conditions that may have a positive family trait.

It can be argued that some elements of the newborn screening agenda perform poorly in terms of predictive risk based on clinical examination alone. The newborn screen examination does have its limitations. The most common example is current screening techniques for congenital heart defects (CHD) (see also Chapter 2). It is estimated that 50% of CHDs are not detected in the newborn period (Wren et al., 2007; Sharland, 2010). Despite prenatal cardiac screening as part of the fetal anomaly scan and the clinical cardiovascular assessment at the newborn screen examination, current methods of detection do not compete on merit as an effective screening tool. This is particularly the case for critical duct-dependent anomalies (Abu-Harb et al., 1994; Green and Oddie, 2008; Ewer et al., 2012). Sharland (2010) confers that the majority of congenital cardiac anomalies lie within low-risk factions. However, a positive family history does correlate with a higher incidence (Romano-Zelekha et al., 2001).

The use of pulse oximetry as an additional tool in the newborn and screening examination may improve the detection rate of critical CHD for some newborns. There is compelling and increasing evidence to support the use of pulse oximetry as an adjunct to the newborn examination (Knowles et al., 2005; Thangaratinam et al., 2012; Valmari, 2007; Ewer et al., 2012), thereby increasing the sensitivity of this screening tool overall.

Increased risk of cardiac anomalies related to newborn

- **Sibling**: Recurrence of 2–3% in a subsequent sibling increasing to a 50% recurrence rate in three affected siblings.
- **Parental cardiac anomaly**: 2–5% risk to infant.
- **Maternal diabetes**: 2% risk to infant particularly in uncontrolled diabetes.
- **Drug related teratogens**: For example, phenytoin, 2% risk to infant (adapted from Sharland, 2010).
- **Intrinsic fetal anomalies**: Incidence increased in the presence of other fetal structural or chromosomal anomalies, e.g. the triad of trisomies 21, 18 and 13.
- **Transplacental viral transmission**: Increased risk of CHD.
- **Parental consanguinity**: Increased risk of CHD (Ramegowda and Ramachandra, 2006; Khalid et al., 2006).
- Psychotropic drugs: Teratogenic and newborn effects, e.g. paroxetine may increase the risk of ventricular septal defect, lithium may increase the risk of Ebstein’s anomaly.

Other common traits within families are atopy and asthma (Moore et al., 2004; Wadonga-Kabondo et al., 2004). These conditions can be of concern to parents and are often raised at the time of the newborn examination. Devereux et al. (2002) reported that maternal environmental factors could influence the fetal immune system and thus neonatal immunity resulting in an increased risk
## Table 1.4  Predictive risk factors with potential impact upon newborn outcome.

<table>
<thead>
<tr>
<th>The four NIPE Screening elements and others</th>
<th>Risk factors</th>
<th>Specific condition</th>
<th>Intergenerational trait status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination of the hips</td>
<td>First-degree relative with DDH</td>
<td>Developmental dysplasia of the hips</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Risk factors: persistent breech presentation or breech delivery, Local policy risk factors, e.g. oligohydramnios, severe talipes, multiple birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examination of the eyes</td>
<td>First-degree relative with congenital eye condition</td>
<td>Congenital cataracts if associated with syndromes</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glaucoma, retinoblastoma</td>
<td></td>
</tr>
<tr>
<td>Examination of the heart</td>
<td>First-degree relative with CHD</td>
<td>Congenital heart defect</td>
<td>Positive (dependent on cause)</td>
</tr>
<tr>
<td></td>
<td>Major CHD on fetal anomaly scan Previous SIDS</td>
<td>Cardiac conduction mechanism disorders, e.g. prolonged QT syndrome, Wolf–Parkinson–White syndrome</td>
<td></td>
</tr>
<tr>
<td>Examination of the testes</td>
<td>Isolated finding</td>
<td>Unilateral or bilateral undescended testes – bilateral very significant</td>
<td>Positive</td>
</tr>
<tr>
<td>Significant others</td>
<td>Siblings</td>
<td>Chromosomal aberrations Genetic disorders Structural anomalies Syndromes Inborn errors of metabolism</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>First-degree relative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intergenerational</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First-degree relative</td>
<td>Severe congenital hearing defect Jaundice treated with phototherapy</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>First-degree relative (sibling)</td>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First-degree relative</td>
<td>Atopy Dermatitis Eczema Epidermolysis bullosa</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First-degree relative</td>
<td>Asthma</td>
<td>Positive (multifactorial variables – genetic, environmental)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intergenerational</td>
<td>Haemoglobinopathies, e.g. thalassaemia, sickle cell disease</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First-degree relative</td>
<td>Tongue tie Marfan syndrome Myasthenia gravis</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Intergenerational</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intergenerational/first-degree relative</td>
<td></td>
<td>Positive</td>
</tr>
</tbody>
</table>
of atopy and asthma. Similarly, Moore et al. (2004) cited ethnicity, gender, gestational age at birth and family history, particularly maternal, as factors influencing the development of atopic dermatitis within the first 6 months of life. Such findings can confirm the genetic disposition of these disorders.

The NIPE Screening Monitoring and Reporting Tool (SMART) IT system provides a field containing the seven national risk factors mapped to the UK NSC Antenatal and Newborn Screening Programme. The NIPE Standards stipulate that ‘family history’ should be confined to a first-degree relative (UK NSC, 2008). Additional local risk factors, e.g. BCG vaccination requirement, maternal GBS infection, sibling with jaundice at birth, can be added to the risk factor menu for each individual maternity unit (see Introduction). The system provides data collection for audit purposes and the provision of key performance indicator (KPI) data against the NIPE national standards screening elements for quality assurance purposes and local performance monitoring. Most importantly, the system provides a ‘failsafe’ process to ensure that mothers and fathers are offered the newborn screen examination to avoid reportable incidents of ‘missed’ examinations.

The safety net for additional screening remains with the examiner at the time of the newborn physical examination to determine any further element of risk with the clinical assessment.

The psychosocial and safeguarding agenda

Parental psychosocial influences and adverse lifestyle choices have consistently demonstrated an impact upon the outcome for newborn infants, throughout childhood and into adulthood in terms of psychopathology morbidity (Hien and Honeyman, 2000; Maughan et al., 2001; Dawson, 2003; Disney et al., 2008) and mortality in extreme cases (Victoria Climbié Inquiry (Lord Laming Chair, 2003)). There are extensive and varied socio-demographic variables incorporated, which indicate the complexity of the subject matter (see the website that accompanies this book for more information on safeguarding). Co-morbidities exist between smoking, alcohol and substance misuse, domestic violence, maternal depression and adverse social environments, which place the newborn at a greater risk of maladaptive behaviours in childhood and adulthood that can replicate that of the parents (Leonard et al., 2007). Therefore, the aim of social support and intervention strategies in the prenatal period and beyond is to break the cycle. Previous discussions in this chapter surrounding all forms of substance addiction leave the newborn examiner in no doubt as to why women with such addictions require targeting in the immediate postnatal period as much as the antenatal period. See Table 1.5 for a summary of fetal and newborn outcome adverse effects related to lifestyle.

Maternal depression will be of significant interest to the newborn examiner. The use of psychotropic drugs can have an effect upon the newborn in relation to withdrawal symptoms (NICE, 2007; Wang 2010). In comparison to withdrawal
behaviours in the newborn from illicit substances, the effects from antidepressant medication, particularly the selective serotonin reuptake inhibitors (SSRIs), are perhaps better defined (Sanz et al., 2005; Wang, 2010). The NICE Antenatal and Postnatal Mental Health guideline quick reference guide (National Collaborating Centre for Maternal Health, 2007) provides a useful table which contains the pertinent drug therapy for each psychopathological condition. This is very helpful to the newborn examiner who is perhaps unsure of the significance of such drugs taken during pregnancy. In summary of this document, the following drugs do have a known teratogenic effect upon the embryo in the first trimester:

- **Lithium**: Increased risk of fetal cardiac anomalies including Ebstein’s anomaly. High levels in breast milk.
- **Valproate**: Increased risk of neural tube defects, altered cognitive development in childhood.
- **Carbamazepine**: Increased risk of neural tube defects, major fetal malformations including gastrointestinal tract and cardiac anomalies.
- **SSRIs**:
  - **Paroxetine**: Fetal cardiac anomalies
  - **Fluoxetine**: Lowest known risk during pregnancy but high levels in breast milk
- **Benzodiazepines**: Cleft palate and other fetal anomalies, ‘floppy baby’ syndrome in the neonate.
- **Tricyclic antidepressants (TCAs)**: For example, amitriptyline has the lowest level of risk in pregnancy.

Adapted from NICE (2007).

Within the antidepressant medication range, the SSRIs demonstrate the lowest level of risk in terms of withdrawal in the newborn period (Wang, 2010). Nevertheless, paroxetine, which is an SSRI, does cause mild withdrawal symptoms, which include jitteriness and signs of respiratory distress (Sanz et al., 2005;
Murray et al., 2007). Sanz et al. (2005) reported a higher incidence of withdrawal from paroxetine compared to fluoxetine (Prozac). Paroxetine is also associated with a higher incidence of ventricular septal defects (Stiskal et al., 2001; Health Canada, 2005).

The newborn examiner must firstly establish when the mother commenced the medication, and, secondly, check if the mother is still taking medication. There is an associated risk to the mother if she has abruptly stopped taking the medication at any point without seeking medical advice. This is particularly relevant in the immediate postnatal period and may predispose her to active postnatal depression. If the mother is still taking medication, then the newborn must have a thorough neurological examination. There is some debate as to whether withdrawal from antidepressant medication in the newborn is more of a toxicity reaction (NICE, 2007; Wang, 2010) to the drug as opposed to active drug withdrawal, which would increase the severity and prolong the severity of the symptoms.

Maternity services may have local guidelines in place for postnatal observation on newborns of mothers who have been prescribed antidepressant medication in pregnancy particularly during the latter stages.

In summary, the newborn examiner has the opportunity to observe the behavioural interactions between a mother and her newborn at the time of the newborn examination. Any concerns about abnormal attachment behaviour must be relayed to the midwife caring for the mother and newborn, in the first instance. The level of concern may necessitate the activation of the ‘Safeguarding’ pathway.

Public policy, with reference to Safeguarding, has rapidly changed the landscape of history taking. Having been brought into sharp focus on a national scale over the last 20 years since the advent of the Cleveland Report (1988) and the Children’s Act of 1989, this issue is high on the agenda within maternity and paediatric services (DH, 2004). Evaluation of the family psychosocial background is an important facet of the newborn examination as it is at any other time in childhood. It is the responsibility of the newborn examiner to raise any concerns that have not already been addressed with the Safeguarding named midwife. Once this process is activated, the safety of that newborn will become paramount.

Paternal information is often viewed as a lesser priority. However, the father’s date of birth is an important demographic in tracing any previous safeguarding issues or domestic violence should concerns be raised. With the date of birth, the police protection services can investigate any previous convictions or concerns. With the movement of some population groups around the country and the fluidity of family units within society, male partners may move from one family unit to another and not disclose any information about previous relationships, e.g. SIDS, congenital anomalies or previous child deaths. It is also important to know the names and dates of birth of other siblings even when not biologically belonging to the mother of the new infant.
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It is vital that all aspects of Safeguarding are considered and applied during the history-taking process for the newborn screen examination. All significant information must be made available and shared between health professionals including neonatal and paediatric community teams and other multidisciplinary organisations involved in the protection of children. Lack of communication has been cited as a common and sadly repetitive failing of the ‘Safeguarding Children’ systems (The Victoria Climbié Inquiry Report) (House of Commons Health Committee, 2003; CEMACH, 2008; Haringey Local Safeguarding Children Board, 2008; CQC, 2009; NPSA, 2009).

Parental dialogue and involvement with the newborn assessment process

Women and their partners may already have concerns about their newborn at the start of the examination. These concerns may have a physical or behavioural focus. The history-taking process must include discussion with the mother and father, if present, prior to commencing the examination and invited to share those concerns. Some of these concerns may be delayed until the examination is completed. The dialogue regarding family history or worries demonstrates a collaborative approach to the examination and many mothers and fathers welcome the opportunity to engage with this aspect of their newborn’s care. The history-taking interview for some parents can be therapeutic as they have a staff member who is more than willing to listen.

History taking following the NIPE Standards (UK NSC, 2008) for the examination of the newborn can be used to gain more information from the mother and father if present as detailed in Table 1.6. If the mother or father was adopted, then gaining a thorough family history will be problematic; therefore, a sensitive approach will be required.

The involvement of mothers and fathers in such conversations will not only engage them with the examination but also engender an early sense of responsibility for their newborn. Blake (2008) advocates the empowerment of women to examine their newborns, thereby making an active contribution to the assessment of the neonate. This level of participation can enhance the women-centred care experience for many mothers as well as helping to lessen the incidence of abnormalities which are missed at the newborn screen examination. Many women and their partners examine their newborn in detail and can often be the authority on many aspects of their newborn’s external appearance and behaviour.

The culture within maternity care services requires implementation of the concept by Blake (2008) from a health promotion perspective. In the first instance, a time line exists within those initial stages of newborn care and surveillance where mothers and fathers must assume responsibility for the
### Table 1.6 Maternal/paternal lifestyle and psychosocial influences.

<table>
<thead>
<tr>
<th>Lifestyle</th>
<th>Fetal effect</th>
<th>Potential neonatal and childhood outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Spontaneous abortion</td>
<td>Abnormal newborn neurobehaviour</td>
</tr>
<tr>
<td></td>
<td>Altered placental morphology</td>
<td>Increased risk of infant irritability</td>
</tr>
<tr>
<td></td>
<td>Chronic hypoxia</td>
<td>Hypertonia</td>
</tr>
<tr>
<td></td>
<td>Intrauterine growth restriction (IUGR)</td>
<td>Childhood behavioural problems</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>Fetal alcohol syndrome (FAS)</td>
<td>Lowered immunity</td>
</tr>
<tr>
<td></td>
<td>IUGR</td>
<td>SIDS, RSV infection</td>
</tr>
<tr>
<td>Substance misuse</td>
<td>Risk of transplacental transmission of</td>
<td>Hypertension</td>
</tr>
<tr>
<td></td>
<td>Hepatitis B and C</td>
<td>Childhood asthma</td>
</tr>
<tr>
<td></td>
<td>Congenital anomalies</td>
<td>Increased risk of tobacco dependency in adulthood</td>
</tr>
<tr>
<td></td>
<td>Symmetrical IUGR</td>
<td>Lower respiratory tract infections</td>
</tr>
<tr>
<td></td>
<td>Prematurity</td>
<td>Altered pulmonary function</td>
</tr>
<tr>
<td></td>
<td>Meconium liquor</td>
<td>Childhood asthma</td>
</tr>
<tr>
<td>High-conflict relationships:</td>
<td>Intrauterine death</td>
<td>Increased risk of infant in care system</td>
</tr>
<tr>
<td>domestic abuse</td>
<td>Increased risk of acute obstetric complications which impact on newborn outcome</td>
<td>Increased risk of child neglect</td>
</tr>
<tr>
<td>Parent in care system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


welfare of their newborn. Therefore, they must be advised of the signs of illness and indicators for concern prior to discharge. This could have the following advantages:

- Possible earlier detection of CHD in the postnatal period.
- Probable earlier recognition of illness and a medical review by the general practitioner sought more promptly.
- Potential to prevent sudden infant death syndrome in infants with subtle symptoms of illness.

Currently, maternity services facilitate early and very early discharge options for mothers and newborns; therefore, parental awareness of the signs of illness and points of contact must be reprioritised within the health promotion agenda for the newborn screen examination.

Parental concern during the examination in relation to the cosmetic aspects of any minor findings and is often of great significance to them. The practitioner
must be able to recognise what is a minor variant in comparison to possible clinical dysmorphology. There are some physical findings, which may be a familial trait, e.g. syndactyly or polydactyly. See Table 1.7 for a list of common parental concerns found at the newborn screen examination. The practitioner must keep an open mind to the possibility of ‘subtle’ dysmorphic findings indicating a possible syndrome in the presence of other abnormal clinical features. There may be a contextual basis for this result, e.g. familial; therefore, examiners must assess the complete prenatal and postnatal history before seeking a senior paediatric option or expert review.

**Interpretation of the information**

Aside from the psychosocial skills of history taking, the ability of the examiner to interpret the information being given in a relevant way is just as significant. The history profile is only as good as the facts that are given and acknowledged as pertinent. The mother and father of the newborn may not recognise the significance of the questions being asked specific to family history. Some may be unaware of intergenerational traits within the family or of its significance to the newborn if there was. Romitti (2007) commented on the accuracy of reporting family history by relatives. Interestingly, some mothers did not always disclose that they had a previous child with a birth defect, and also the nature of the defect was not always accurately named. Socio-demographic variables did influence the accuracy of detail given. However, factual details from the family are often confounded by their own understanding of the condition and their description of the condition or defect when medical terminology is not used. Indeed, they may not
be clear on the exact position of the affected member in the family tree. It is not uncommon for a mother or father to contact other family members at the time of the newborn screen examination to obtain more information about conditions within the family.

As with many families who do have a positive trait for congenital anomalies or conditions, constructing the aetiology of the family from the environmental or genetic predisposition is often difficult. If a detailed family history is needed in the case of a positive intergenerational trait, then it may be desirable for the examination to be conducted by a senior paediatrician.

**Importance of location for the newborn physical examination**

The location of the examination is crucial to the quality of the history-taking discussion with the mother or both parents. The postnatal ward is not a benign environment as the majority are bustling and noisy and not conducive to a history interview. Women may not disclose sensitive information in this environment for fear of being overheard by other patients and health-care workers. Disclosure of domestic violence within the high-impact family relationship can be prohibited due to lack of privacy. Indeed, the presence of the father or other family members may also prevent disclosures of abuse. Patient confidentiality is paramount within the health service. Equally, noise is a distracting feature for both the examiner and the mother. The maternity services of the future may need to revise the existing provision for the examination of the newborn to accommodate an environment that provides privacy and quietness.

Electronic as well as written documentation should acknowledge and reflect that a detailed history has been taken. The use of a history sheet to record the pertinent history themes and significant risk factors can be used. The history sheet can then be placed in the newborn’s medical records as evidence of the history-taking process.

**Limitations to history taking**

This chapter has addressed the elements of the history-taking assessment in order to inform the newborn screen examination. However, there are obstacles that may present and complicate the process. The two most common problems are time and the environment. These two elements alone can have a significant impact upon the quality and outcome of the history-taking exercise. The workload pressures endured by many newborn examiners impact upon the time available to perform the examination (Table 1.8).
Table 1.8  Limitations to effective history taking.

<table>
<thead>
<tr>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints in relation to excessive workload</td>
</tr>
<tr>
<td>Inappropriate questions</td>
</tr>
<tr>
<td>Questioning technique, e.g. manner</td>
</tr>
<tr>
<td>Misrepresentation of facts given about family history</td>
</tr>
<tr>
<td>Environment in which history is being obtained, e.g. noise</td>
</tr>
<tr>
<td>Confidentiality</td>
</tr>
<tr>
<td>Lack of privacy</td>
</tr>
<tr>
<td>Suppression of disclosure due to partner presence</td>
</tr>
<tr>
<td>Equality and diversity issues, e.g. language barriers, understanding, cultural diversity, disability, maternal deafness</td>
</tr>
<tr>
<td>Misinterpretation of information given</td>
</tr>
</tbody>
</table>

There are other barriers that can compromise the quality of history taking. The questioning technique, manner and general communication skills of the examiner can compromise the level of information imparted by the mother or both parents who may interpret the line of questioning as invasive, particularly at a sensitive time after childbirth. Conversely, they may have something to hide and fear probing questions. The language barrier has become an increasing problem for many minority groups. All maternity units have access to interpretation services and the ‘Screening Tests for You and Your Baby’ booklet is available in a variety of languages. Mothers with hearing disabilities must also be accommodated with a sign language representative.

The evidence base to support the varied facets of the newborn examination may be developing, but examination of the newborn practitioners must continue to acknowledge the importance of an evidence base to underpin and validate practice. Therefore, practitioners must engage with current empirical evidence and embrace the research process. As the body of midwives and neonatal nurses who are trained to conduct the newborn screen examination is relatively small, in comparison to our medical colleagues, it is important that we contribute to the evidence in order to take practice initiatives forward.

**Conclusion**

Good history taking has always underpinned effective medicine. However, the nature of the history profile has changed through the incorporation of government directives and a public policy agenda. The UK NSC Antenatal and Newborn Screening Programme can be mapped to the history-taking process to help guide the practitioner towards gathering the relevant information. Whilst the maternal obstetric, surgical and medical history remains firmly implicit with the history-taking process, the psychosocial agenda now reflects the challenges
History taking and the newborn examination: an evolving perspective

facing families coupled with today’s parental lifestyle choices. It can be strongly argued that parental psychosocial influences can impact directly upon not only the newborn period but also childhood and indeed adulthood. The newborn physical examination provides a platform to address some of these issues so that interventional measures can be implemented at an early stage. This may go some way to help direct parents and safeguard the vulnerable newborn, thereby protecting the health of a future generation. History taking remains an active element of the newborn examination. Without it, the clinical validity of the newborn examination itself could indeed be negligible.

This chapter provides an overview and context of the changing and dynamic nature of history taking as part of the newborn physical examination. The following websites will provide additional specific information and resources:

<table>
<thead>
<tr>
<th>Clinical Condition</th>
<th>Useful website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital heart defect</td>
<td><a href="http://www.nhs.uk/conditions/congenital-heart-disease/Pages/Introduction.aspx">http://www.nhs.uk/conditions/congenital-heart-disease/Pages/Introduction.aspx</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://newbornphysical.screening.nhs.uk/">http://newbornphysical.screening.nhs.uk/</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://pathways.nice.org.uk/pathways/structural-heart-defects?fno=1">http://pathways.nice.org.uk/pathways/structural-heart-defects?fno=1</a></td>
</tr>
<tr>
<td>Developmental dysplasia of the hips</td>
<td><a href="http://newbornphysical.screening.nhs.uk/">http://newbornphysical.screening.nhs.uk/</a></td>
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<tr>
<td></td>
<td><a href="http://www.steps-charity.org.uk/">http://www.steps-charity.org.uk/</a></td>
</tr>
<tr>
<td>Eye conditions</td>
<td><a href="http://newbornphysical.screening.nhs.uk/">http://newbornphysical.screening.nhs.uk/</a></td>
</tr>
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<td><a href="http://www.mlib.org.uk/?gclid=CIOEfMnopsACF5SXKsAodUEcAWg">http://www.mlib.org.uk/?gclid=CIOEfMnopsACF5SXKsAodUEcAWg</a></td>
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<td><a href="http://www.nhs.uk/Conditions/retinoblastoma/Pages/Introduction.aspx">http://www.nhs.uk/Conditions/retinoblastoma/Pages/Introduction.aspx</a></td>
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<td></td>
<td><a href="http://www.childrenwithcancer.org.uk/News/retinoblastoma?gclid=CPKz6I3ppsACFabLtAodbBwANA">http://www.childrenwithcancer.org.uk/News/retinoblastoma?gclid=CPKz6I3ppsACFabLtAodbBwANA</a></td>
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</tr>
<tr>
<td>Metabolic diseases</td>
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</tr>
<tr>
<td>NICE and national guidance documents</td>
<td><a href="https://www.nice.org.uk/Guidance/CG45">https://www.nice.org.uk/Guidance/CG45</a></td>
</tr>
<tr>
<td>Antenatal and postnatal mental health: Clinical management and service guidance</td>
<td></td>
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</tbody>
</table>
Chapter 1

Neonatal jaundice
http://pathways.nice.org.uk/pathways/neonatal-jaundice?fno=1
http://pathways.nice.org.uk/pathways/
Reducing differences in the uptake of immunisations
http://www.nice.org.uk/guidance/PH21
Drug misuse – opioid detoxification
http://www.nice.org.uk/guidance/CG52
UK NSC Antenatal and Newborn Screening Programmes
http://fetalanomaly.screening.nhs.uk/
http://infectiousdiseases.screening.nhs.uk/
http://sct.screening.nhs.uk/
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