Parenteral nutrition is nutrition given directly into the bloodstream. It was first described in the 1940s (Johnson 2006) and its use has gradually become more widespread. Today it is used for a range of conditions where enteral feeding (via the gut) is not possible. It is important that nurses are aware of the risks associated with parenteral nutrition (PN) and how best to manage them.

In our hospital there has been an increase in the number of children requiring PN for a prolonged period of time. This prompted us to review the care these children were receiving and to consider how we can best reduce the risk of complications associated with PN. A paediatric nutrition support team was developed to respond to the demands of long term PN patients.

A number of conditions can result in prolonged intestinal failure, requiring the support of PN. The largest group of patients that we see are babies and young children with congenital or acquired gastrointestinal anomalies that prevent them from being able to tolerate or absorb adequate enteral nutrition from birth. Age of onset of the child’s condition is a primary factor when looking at the risks associated with administering long-term PN.

Complications of PN arise as a direct result of giving PN and also of not giving enteral feeds. The main complications are parenteral nutrition-related liver disease and those associated with the use of a central venous catheter (CVC).

For those children who continue to be unable to tolerate sufficient enteral nutrition to sustain growth, the option of home parenteral nutrition may need to be considered. These children may also be considered for small bowel and/or liver transplant.

Aims and intended learning outcomes
In this article we will consider the use and clinical management of PN in children. By working through this article you will be able to:
- Define parenteral nutrition.
- Discuss the indications for PN.
- Describe some of the conditions which might lead to abnormal gut function.
- Explain the complications associated with intestinal failure/PN use.
- Discuss the management of central venous catheters (CVCs) and their use to deliver PN.

Parenteral nutrition
PN is a form of nutrition given directly into the venous system, bypassing the gut completely. It is made up of all nutrients which are normally provided in the diet. The gut is a highly specialised organ, and the food we eat is broken down and used by a complex system of mechanical and chemical changes. It can be used immediately for energy, or stored for use as required. It is only when this system is unable to function normally that PN should be considered.

Indications for the use of PN
The decision to start PN should not be taken lightly. Feeding into the gut is always the safest and most effective method of giving nutrition. The reason for giving PN is that the gut is unable to tolerate or absorb sufficient nutrition. The processes which are important in the gastrointestinal tract are digestion, absorption, motility, secretion and excretion (Smith 2007). If any of these processes is unable to function properly, there is a risk of malnutrition, and nutritional support will need to be considered.

In our unit the paediatric nutrition support team reviews each child and may suggest
considering enteral tube feeding, such as naso-gastric or naso-jejunal tube feeding, before making the decision to start PN. Indications for starting enteral or parenteral nutritional support are summarised in Table 1.

The key factors which will influence the decisions of the nutrition support team are clinical history of the condition, duration and severity, bio-chemical nutritional markers such as blood albumin level, measurements of weight, height and head circumference, preferably over a period of time to determine degree and speed of weight loss, and recent feeding history. Often children who cannot tolerate normal feeding will tolerate a low volume of continuous naso-gastric or naso-jejunal feeds. There may be reluctance to pass these tubes, particularly if the child already has central venous access, but giving feeds by a more physiologically correct route may speed recovery, as well as prevent possible complications as will be discussed.

It should be remembered that giving short-term PN is unlikely to be beneficial because the full requirement is built up over the first five days, and that there is a risk of complications; therefore our nutrition support team recommends not starting PN if it is not likely to be required for more than five days. However, smaller children, particularly neonates, will require earlier nutritional support; Johnson and Sexton (2006) report that an adult will survive 90 days without nutrition, whereas a premature infant may only survive four days (Puntis 2002). The main reason for the increased use of PN in our unit has been an increase in children suffering from short bowel (or short gut) syndrome.

**Short bowel syndrome**

Short bowel syndrome refers to any condition in which there is insufficient gut to maintain adequate digestion and absorption for normal growth and homeostasis. Gupte (2006) has found that 40 to 50 per cent of small bowel can be removed surgically and normal function can still be achieved. Some of the factors influencing the outcome of this syndrome are whether the ileo-caecal valve (where the ileum connects with the colon) has remained following surgery, which part of the bowel has been removed, and the age of the child at surgery. Short bowel syndrome can occur at any age due to conditions such as Crohn’s disease, malignancy or trauma.

In the newborn baby there are other conditions which may lead to this syndrome. The infant may have a congenitally short bowel or intestinal atresia, (in which parts of the bowel have a blind end, causing an obstruction, and surgery will always be required to correct this). Necrotising enterocolitis, can lead to part of the bowel needing to be surgically removed, as can gastroschisis.

Although gastroschisis is rare, the number of children we see has increased. In this condition the foetal abdominal wall has failed to develop properly during pregnancy, and the baby is born with varying amounts of gut protruding out of their abdomen wall. The condition is usually identified during pre-natal ultrasound scans. There are various techniques used to push the gut back into the abdomen. The surgeon will assess the viability of the gut, and assess whether it appears healthy or necrotic. The gut may become necrotic if the blood supply has been compromised due to the tightness of the abdominal opening. The aim of surgery will be to preserve as much of the gut as possible, while removing any that looks necrotic. Often children with this condition make a good recovery and enteral feeding is established in the first few weeks or months. However, in some children the remaining bowel does not function properly and they can take a long time to establish enteral feeds, which will require

### Table 1: Indications for parenteral enteral nutritional support

<table>
<thead>
<tr>
<th>Parenteral nutrition</th>
<th>Enteral tube feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any age group</td>
<td></td>
</tr>
<tr>
<td>Post-abdominal surgery</td>
<td>Unsafe swallow</td>
</tr>
<tr>
<td>Crohns disease</td>
<td>Poor suck-swallow</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>Inability to meet nutritional requirements orally</td>
</tr>
<tr>
<td>Gut dismotility</td>
<td>Gastro-esophageal reflux</td>
</tr>
<tr>
<td>Autoimmune enteropathy</td>
<td>Growth faltering</td>
</tr>
<tr>
<td>Chronic intestinal pseudo-obstruction</td>
<td>Vomiting</td>
</tr>
<tr>
<td>During cancer treatment</td>
<td></td>
</tr>
<tr>
<td>Severe burns</td>
<td>Metabolic abnormalities</td>
</tr>
<tr>
<td>Organ failure</td>
<td>Impaired organ function</td>
</tr>
<tr>
<td>Trauma</td>
<td>Crohn’s disease</td>
</tr>
<tr>
<td></td>
<td>Excessive gastrointestinal losses</td>
</tr>
</tbody>
</table>

**Note:**
- Should not be used in cases of complete intestinal obstruction or perforation, or intra-abdominal sepsis.
- Consider in all children receiving PN depending on individual condition.
prolonged PN to maintain a normal growth pattern.

In short bowel syndrome it is often possible for the gut to adapt itself so that it can increase its absorption of nutrition. The aim of treatment is to encourage adaptation as far as possible and this includes attempts at enteral feeding. Depending on the anatomy of the affected area, it may also be possible to perform a surgical bowel lengthening procedure (Sudan et al 2005).

**Composition of PN**

PN energy is made up of the nutrients which are essential for normal growth and development provided in the form of protein (amino acids), carbohydrate (glucose) and fat (lipids). The actual mixture of these ingredients is usually calculated on an individual basis.

The main source of non-protein calories in PN is glucose. Blood sugar levels need to be monitored as tolerance is established. The concentration of glucose is increased over the first five days from 10 to 20 per cent. This is usually the maximum concentration, although it may be increased if the child is fluid-restricted. Glucose 20 per cent provides approximately 0.8 kcal/ml.

Electrolytes and water soluble vitamins are also added to the mixture, as well as trace elements such as copper, zinc, manganese and selenium, and blood levels need to be monitored regularly so that changes to the prescription can be made (Table 2).

Normally the bags of fluid are prepared in special pharmacy areas, with sterile laminar air-flow systems to prevent any contamination. At ward level nothing should be added to the bags of PN fluid.

It is often not possible to deliver all of the child’s requirements in one bag of PN fluid. This is because the components are incompatible in the volume required. Children often need two bags of PN fluid running simultaneously, one of dextrose, containing amino acids, electrolytes and trace elements, and one bag of lipid. The lipid provides a rich source of calories, enriched with fat soluble vitamins. In older children it is often possible to just run one bag of PN fluid.

Now do Time out 1.

**The nutrition support team**

The paediatric nutrition support team reviews children with a nutrition-related problem, who are unable to tolerate adequate nutrition, and who may need support with enteral tube feeds, or with PN. The team is lead by a paediatric consultant gastroenterologist who has experience with all aspects of nutritional support. The pharmacist reviews the PN prescription and advises on changes that need to be made in response to blood monitoring. The dietician will assess the nutritional significance of any enteral nutrition taken, and will advise on the most suitable formula to give the child. The speech and language therapist will assess how well the child’s oral skills, such as suck and swallow, are developed, and will advise on the best way to encourage these skills given that the amount of feeds taken are limited.

The specialist nurse assesses the catheter site and advises on aspects of nursing care. The nutrition support team also has links with micro-biology and biochemistry to call on specialist advice, and also with the surgical team in case it is considered that the child may benefit from surgical involvement. Agostoni et al (2005) has suggested that all children requiring long-term PN should be reviewed by a support team with good experience of the particular issues associated with this therapy.

**Venous access**

Although it is possible to give PN through a peripheral infusion, this should only be done with extreme caution. The mixture will need to be made more dilute, as it is not safe to give a high concentration of glucose peripherally because it is likely to cause inflammation of the vein, and leakage to the surrounding tissues, which can lead to serious damage of the limb. The site needs to be checked hourly, and pressure alarms on the infusion pump need to be set at a low level. For children requiring medium to long-term PN, this is best given through a long line, or preferably a surgically placed tunnelled central venous catheter (CVC).

**Complications of parenteral nutrition**

Complications associated with PN can be considered in two categories, those associated with the CVC and those associated with PN itself. Mahgoub et al (2006) highlight the main complications as CVC related bloodstream infection or venous thrombosis, and intestinal failure associated with liver disease.

**CVC complications:** There are a number of complications associated with CVC access which are common to all children requiring long-term venous access. This includes problems such as accidental line removal or

---

**Time out 1**

Consider what it would be like not to be able to eat any food. How many times in a day do we think about food, either buying, cooking or eating it? Make a list of the special occasions you can think of and consider what role food plays in all of these. Consider then how parents feel when their child is unable to tolerate normal feeds, and can only grow and develop with the use of intravenous feeds.
displacement, blockage of the line or thrombus formation. The risk for CVC infection is the most important to consider for children on long-term PN. CVCs are sited in a large vein, and the parenteral fluid is nutrient rich, dense fluid. This creates an ideal environment for bacteria, and also fungi. Besides the risk from the PN fluid itself, children with gut dismotility are also at risk of bacterial overgrowth. Gupte (2006) reports that when the gut is not working normally, there is a risk of stasis within the gut, which can lead to bacterial overgrowth. It is thought that this can lead to translocation of the bacteria, potentially leading to systemic sepsis.

Johnson and Sexton (2006) also point out that children are likely to scratch or pick at the catheter site, or to pull at or even bite the catheter, and there is a risk of contamination from nappies, or from stoma sites if present. Therefore, there is a high risk of CVC infections, which are the commonest complication of CVCs, and are potentially fatal. In other circumstances if a child has a CVC infection, the line would probably be removed as soon as possible, but in children who require long-term PN, where there is only a limited number of access points, the decision to remove the line may be deferred while attempts are made to clear the infection with high doses of antibiotics. Loss of available central venous access is one of the factors considered when assessing children for small bowel and/or liver transplant.

Pellowe et al (2005) report that the most frequently implicated micro-organisms associated with CVC infections are coagulase-negative Staphylococcus. This micro-organism is commonly found on the skin. Micro-organisms may contaminate the catheter during insertion, or may be present on the hands of anyone tending for the patient and manipulating the catheter. Heine and Bines (2002) report that there is a strong link between recurrent sepsis and thrombus, and loss of venous access, which may jeopardise the child's survival.

Now do Time out 2.

**TABLE 2**

<table>
<thead>
<tr>
<th><strong>Effects of long term PN on blood levels (based on Lee and Venkat Ramon 1990)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full blood count:</strong> Hb may be low due to frequent blood analysis. Raised white cell count may indicate infection, also low platelets may be an early indicator of infection.</td>
</tr>
<tr>
<td><strong>Urea and electrolytes:</strong> the amount of sodium and potassium in the mixture may need to be adjusted depending on results, issues such as fluid loss through diarrhoea or vomiting may affect these values. Urinary sodium may be tested to measure severity of body sodium loss.</td>
</tr>
<tr>
<td><strong>Liver function tests:</strong> amino acids are synthesised into plasma proteins (such as albumin) in the liver, a low albumin may indicate poor liver function. Liver enzymes (ALT and AST, alkaline phosphate) have a role in metabolic reactions. If there is liver damage, an increased amount of these enzymes are released into the blood, therefore blood levels act as a monitor for the degree of liver disease. Bilirubin is a by-product of normal red cell break-down, where cholestasis occurs it cannot be excreted normally, and builds up in the bloodstream causing the symptom of jaundice. It will also tend to rise in association with infection.</td>
</tr>
<tr>
<td><strong>Blood clotting profile:</strong> many of the clotting factor precursors are synthesised in the liver, therefore abnormalities in clotting screen may indicate increasing liver damage.</td>
</tr>
<tr>
<td><strong>B12 Folate:</strong> deficiency may follow gastric, intestinal and ileal resection, and may lead to pernicious anaemia.</td>
</tr>
<tr>
<td><strong>Vitamin levels</strong> are all present in the PN fluid, but extra may be required. Vitamin K may be given to support blood clotting. Vitamin A deficiency is associated with reduced resistance to infection, and impaired vision. Vitamin D deficiency can lead to rickets, bone pain, short stature and failure to thrive.</td>
</tr>
<tr>
<td><strong>Calcium, phosphate magnesium and glucose</strong> are all provided in the PN solution, and levels need to be monitored, the amount given in PN varies with the age of the child.</td>
</tr>
<tr>
<td><strong>Cholesterol and triglycerides</strong> are monitored and lipids may be reduced if these become high.</td>
</tr>
<tr>
<td><strong>Trace elements:</strong> Initially these are monitored monthly, reducing to every three months when stable. Low levels of some elements can have serious consequences:</td>
</tr>
<tr>
<td>■ Zinc may cause impaired immune response, rash, hair loss, diarrhoea, growth failure, poor wound healing.</td>
</tr>
<tr>
<td>■ Copper may cause neutropenia, anaemia, osteoporosis, soft tissue calcification. ( zinc and copper may be lost in a child with excessive gastrointestinal losses).</td>
</tr>
<tr>
<td>■ Selenium and manganese may cause cardiomyopathy, skeletal muscle myopathy with pain and tenderness reddening of hair, weight loss, hypocholesterolaemia.</td>
</tr>
</tbody>
</table>

Blood clotting profile: Due to the dense nature of the PN fluid there is also an increased risk of occlusion in the
catheter. This can be a serious complication as, if it is not possible to clear the line, it will need to be removed. There is also a risk of embolus breaking away from the accumulated debris. ESPGHAN (European Society of Paediatric Gastroenterology, Hepatology and Nutrition) have produced extensive guidelines for caring for children on PN (Koletzko et al 2005) which recommends flushing with sodium chloride 0.9 per cent after every infusion, and our practise is to use a turbulent flush (short pulsing movements, pushing then pausing to create turbulence) in the lumen to clear any build up of lipid from the CVC. We also discourage blood sampling from the CVC line, as this can add to the build up of debris inside the lumen.

As well as infection in the CVC, it is also possible to have infections at the exit site of the catheter. Tunnelled CVCs have a dacron cuff near the exit site, which encourages granulation. This is to help secure the catheter, and also to act as a barrier against any organisms tracking up along the side of the catheter. The site should be observed on each shift, this is aided by using a transparent dressing so that the site can be seen without disturbing the dressing. Pellowe et al (2005) recommends a transparent semi-permeable polyurethane dressing, and that the site should be cleaned weekly with alcoholic chlorhexidine 2 per cent solution, using strict aseptic technique.

Liver disease

One of the most serious side effects of long-term PN is the development of liver disease. Kumpf (2006) reports that the pattern of liver disease in children is very different to that seen in adults, and this is related to a number of factors such as degree of prematurity, length of remaining bowel, septic events and feeding history. Gupte et al (2006) report that 40 to 60 per cent of children with intestinal failure on long-term PN will develop liver disease. The rate is higher among children started on PN early in life, and particularly those born prematurely, due to the immaturity of the liver. It also progresses more quickly in children who suffer from repeated CVC infections, and in those unable to tolerate any enteral feeds.

Blood tests need to be taken regularly; these include liver function tests, in particular the bilirubin levels. The bilirubin level can be seen to rise in episodes of infection. This is often apparent as the child will start to look increasingly jaundiced. Knafelz et al (2003) found that the bilirubin may rise by up to 30 per cent, and cholestasis may develop in 90 per cent of children after their first episode of CVC infection.

Cholestasis means an interruption of bile flow within the liver (Smith 2007). Bile, which is formed in the liver, flows into the common bile duct. Some is stored in the gall bladder, and is triggered to enter into the small bowel in response to food travelling through the gut. If no food is travelling through the gut the bile will tend to stay in the liver. Gupte et al (2007) has suggested that this is one of the causes of parenteral nutrition associated liver disease. It is now recognised that even if the child is unable to tolerate enteral feeds, if they are given a small amount of feed it can help the bile flow and reduce cholestasis. In our unit we attempt to feed via a naso-gastric or naso-jejunal tube continuously for 20 hours. The child may only tolerate 1-2mls, but this may be enough to reduce the toxic effects on the liver.

The term TPN, or total parenteral nutrition, has been used widely in the past but we are trying to move away from this term as it is now recognised that we should always be aiming to restore enteral nutrition, so that PN is not total if it can be avoided.

One element of PN which has often been thought to contribute to liver disease is lipids. Lipids provide a valuable source of calories in a low volume, as well as the fat soluble vitamins. The important aspect of caring for PN dependant children is ensuring that they grow, this means ensuring they receive sufficient calories, but the high density of the lipids may contribute to cholestasis. Gura (2008) describes recently research which is reviewing the role of lipids in liver disease. A new mixture of lipids has been developed which have a base of fish oil, rather than the traditional soya oil base. It is hoped that these will have a less harmful effect on the liver.

Nursing care

In our unit we use an aseptic, non-touch technique when handling a child’s CVC and keep handling to a minimum. Alternate practises are used in different hospitals but it is important that a standard technique is used within an area, so that all nurses are carrying out the same procedure. It is also important that parents are aware of how to handle the child safely, with careful hand-washing for all visitors. They should be shown how to lift and carry the child without accidentally pulling on the catheter.
There are a number of evidence-based guidelines available to support local standards and policies: Pellowe et al (2005) guidelines for preventing hospital acquired infections; RCN (2008) guidelines on handling CVCs; ESPGHAN’s guidelines on all aspects on paediatric PN (Koletzko et al 2005).

The child should have their temperature recorded four-hourly and any pyrexia reported so that blood for cultures can be obtained from the CVC and from a peripheral vein. Blood glucose monitoring will be necessary, especially in initial stages when the concentration of glucose is being increased, but also if the child is being weaned off PN. It is often recommended that the rate is reduced over the last hour to prevent a rapid drop in the amount of glucose they are receiving.

Accurate fluid intake and output charts are necessary to monitor the child’s progress. An important aspect of care is to monitor how much the child is able to tolerate enterally; this may be feed given through a naso-gastric or naso-jejunal tube or orally. A record and description of stool output is also important as it helps to monitor how well the gut is functioning.

Growth monitoring is necessary for all children receiving PN. One of the main differences between children and adults is that children require sufficient nutrition for brain development and for growth. In our unit we weigh children twice weekly, and monitor head circumference weekly. Length is usually measured monthly. As Johnson and Sexton (2006) state, there are no guidelines for nutritional requirements of children on long-term PN, requirements are usually calculated on weight, and the main way to assess whether the child is receiving the correct amount of PN is to monitor their growth pattern.

Weaning off PN
The speed at which children can be weaned from their PN depends on the reason why they are receiving it. If the child’s condition improves rapidly, and she or he is able to progress to normal full feeds, the PN can be reduced and stopped quickly. For children on long-term PN who are building up enteral feeds very slowly, this will need to be done much more gradually. We aim to gradually bring down the number of hours the child receives PN. When enteral intake is low they may receive PN for 20 hours a day. As enteral tolerance improves we reduce to 18 then 16 hours, and so on gradually down. It is important to remember that children with poor gut function may not absorb all of the enteral feed, so that even when they are receiving an adequate amount, they may still fail to gain weight without their PN.

For children who are unable to tolerate enteral feeds it is still possible to gradually reduce the hours they spend on PN, but in this case the mixture will be gradually concentrated to give them the same calories over a shorter time. As previously discussed, they will require blood sugar monitoring over this period as high concentrations of dextrose are more likely to cause a rebound hypoglycaemic episode. Again when making these changes, the child’s rate of growth is closely monitored.

Ongoing PN
Koeglmeier J (2005) estimated that approximately 200 children in the UK needed PN for more than 28 days. Holden (2001) reported that the British Artificial Nutrition Survey (BANS) registered 81 children for home PN between 1996 and 1999. A registry has now been set up by the British Society of Paediatric Gastroenterology, Hepatology and Nutrition (BSPGHAN) to collect data on the number of children in the UK treated with long term PN for intestinal failure. Called the British Intestinal Failure Study (BIFS) it is looking at the number of children receiving PN for over 28 days, long term outcomes and any complications such as CVC infections, and other side effects following prolonged PN. Researchers from across the UK send details of patients to the co-ordinators in Birmingham (once consent has been obtained from parents) (Gupte 2006).

Children who continue to be unable to tolerate any enteral feeds for more that a few months will need to be considered for referral to a unit where liver and small bowel transplant can be performed on children. At the present time this is only available at Birmingham Children’s Hospital. Children are assessed, indications for either liver and small bowel transplant, or isolated bowel transplant are: Irreversible intestinal failure with either, impaired venous access, progressive liver disease, ascites, encephalopathy or life threatening episodes of sepsis. However Gupte (2006) has said that it is difficult to obtain sized matched organs for smaller children, and 50-60 per cent of children die on the waiting list for transplant,
the majority of these being under one year old, and less than 10kgs. Now do Time out 4.

**Home parenteral nutrition**

For children who remain unable to tolerate adequate enteral feeds for growth, the best option may be to train parents to give PN at home. Children in this situation may be able to tolerate some enteral feeds, and this is to be encouraged. They will often have been assessed in a specialist centre before home PN is considered. Holden (2001) has shown that children receiving home PN generally suffer from fewer CVC infections compared with being in hospital, and home care companies, which provide PN and equipment to the patient’s home, are increasingly willing to become involved supporting families. PN-dependent children can be offered a far more ‘normal’ lifestyle if cared for at home, and their overall physical and psychological development will improve.

However, the decision to start home PN needs to be taken with a great deal of thought about the impact this will have on the whole family, and each patient needs to be considered on an individual basis. As well as home PN, most of these children will also receive overnight naso-gastric feeds. The amount of equipment and training required is considerable. Mahgoub et al (2006) found that although children benefit from having their PN given at home, the impact on family life, particularly on parents was significant.

**Conclusion**

The care for children on long-term PN is often a fine balancing act. The most important aim is for them to grow normally, and for them to be able to take food enterally wherever possible. It is still relatively rare for children to require PN for a prolonged period of time, but it is experience gained from looking after children with intestinal failure which is now beginning to have an impact on the way we care for all children who require PN, (even those who will only need it for a short time).

Complications such as CVC infections can be life threatening, and can speed up the condition of PN associated liver disease.

Nurses caring for children with a CVC should be experienced and consistent with the care they give, and policies should be in place to ensure that procedures are carried out in a uniform way. Monitoring of enteral intake is an important aspect of nursing care, as the aim will be to gain full enteral nutrition as early as possible. Children with prolonged intestinal failure should be cared for by a paediatric nutrition support team, with extensive, multidisciplined knowledge of all aspects of nutritional care. Now do Time out 5.

**References**


Practice profile

What do I do now?

> Using the information in section 1 to guide you, write a practice profile of between 750 and 1,000 words – ensuring that you have related it to the article that you have studied. See the examples in section 2.
> Write practice profile at the top of your entry followed by your name, the title of the article, which is ‘Intestinal failure and long-term parenteral nutrition in children’, and the article number, which is PN195.
> Complete all the requirements of the cut-out form provided and attach it securely to your practice profile. Failure to do so will mean that your practice profile cannot be considered for a certificate.
> You are entitled to unlimited free entries. Using an A4 envelope, send for your free assessment to: Practice Profile, RCN Publishing Company, Freepost PAM 10155, Harrow, Middlesex HA1 3BR by June 2009. Please do not staple your practice profiles to practiceprofile@rcnpublishing.co.uk. You can also email practice profiles to practiceprofile@rcnpublishing.co.uk. You must also provide the same information that is requested on the cut-out form. Type ‘Practice Profile’ in the email subject field to ensure you are sent a response confirming receipt.
> You will be informed in writing of your result. A certificate is awarded for successful completion of the practice profile.
> Feedback is not provided: a certificate indicates that you have been successful.
> Keep a copy of your practice profile and add this to your professional profile – copies are not returned to you.

1. Framework for reflection

> Study the checklist (section 3).
> What have I learnt from this article?
> To what extent were the intended learning outcomes met?
> What do I know, or can I do, now, that I did not/could not before reading the article?
> What can I apply immediately to my practice or client/patient care?
> Is there anything that I did not understand, need to explore or read about further, to clarify my understanding?
> What else do I need to do/know to extend my professional development in this area?
> What other needs have I identified in relation to my professional development?
> How might I achieve the above needs? (It might be helpful to convert these to short/medium/long-term goals and draw up an action plan).

2. Examples of practice profile entries

Example 1
After reading a CPD article on ‘Communication skills’, Jenny, a practice nurse, reflects on her own communication skills and rearranges her clinic room so that she will sit next to her patients when talking to them. She makes a conscious decision to pay attention to her own body language, posture and eye contact, and notices that communication with patients improves. This forms the basis of her practice profile.

Example 2
After reading a CPD article on ‘Wound care’, Amajit, a senior staff nurse on a surgical ward, approached the nurse manager to discuss her concerns about wound infections on the ward. Following an audit which Amajit undertook, a protocol for dressing wounds was established which led to a reduction in wound infections in her ward and across the directorate. Amajit used this experience for her practice profile and is now taking part in a region-wide research project.

3. Portfolio submission

Checklist for submitting your practice profile

1. Have you related your practice profile to the article?
2. Have you headed your entry with: the title practice profile; your name; the title of the article; and the article number?
3. Have you written between 750 and 1,000 words?
4. Have you kept a copy of the practice profile for your own portfolio?
5. Have you completed the cut-out form and attached it to your entry?
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