Nuchal Cords
Reducing the fear and improving outcomes

Introductions
The presence of a nuchal cord, where the umbilical cord is around the neck during birth is a common occurrence. The association of nuchal cords with danger is embedded in our cultures and influences medical practice and parents' perceptions. Checking for, and managing a nuchal cord has become part of routine midwifery practice. Although there is evidence that a tight nuchal cord is associated with short-term morbidity, it is unclear whether such outcomes are a result of the presence of the nuchal cord itself, or as a result of clamping and cutting the cord. A loose nuchal cord is not associated with morbidity, however midwives often loop a loose cord over the baby's head prior to birth. This action may interfere with the normal physiologic birth of the baby, and as such may be viewed as an unnecessary intervention. Parents are influenced by the cultural belief that a nuchal cord during birth presents a dangerous situation. Midwives may be able to alleviate anxiety by encouraging parents to discuss their concerns and by sharing evidence-based information with them. If parents have an understanding regarding the common practices of looping, or cutting nuchal cords they will be better able to make choices regarding the management they would like if their baby has a nuchal cord during birth.

Abstract
The presence of a nuchal cord, where the umbilical cord is around the neck during birth is a common occurrence. The association of nuchal cords with danger is embedded in our cultures and influences medical practice and parents' perceptions. Checking for, and managing a nuchal cord has become part of routine midwifery practice. Although there is evidence that a tight nuchal cord is associated with short-term morbidity, it is unclear whether such outcomes are a result of the presence of the nuchal cord itself, or as a result of clamping and cutting the cord. A loose nuchal cord is not associated with morbidity, however midwives often loop a loose cord over the baby's head prior to birth. This action may interfere with the normal physiologic birth of the baby, and as such may be viewed as an unnecessary intervention. Parents are influenced by the cultural belief that a nuchal cord during birth presents a dangerous situation. Midwives may be able to alleviate anxiety by encouraging parents to discuss their concerns and by sharing evidence-based information with them. If parents have an understanding regarding the common practices of looping, or cutting nuchal cords they will be better able to make choices regarding the management they would like if their baby has a nuchal cord during birth.

Incidence and significance
Studies report the incidence of a nuchal cord at birth as between 10–34%. The presence of a nuchal cord is also frequency enough to be considered a normal variant. Nuchal cords appear to be more prevalent in male babies, perhaps because male babies tend to have longer cords. The incidence of a nuchal cord is also more likely to be seen in breech presentation. In addition, Rhoades et al. found that the incidence of a nuchal cord was lower at prenatal ultrasound compared to emergency cesarean or vaginal births suggesting that some babies become entangled in their cords during labour.

The majority of studies examining outcome related to a nuchal cord at birth identify an association with fetal heart rate abnor- malities, operative delivery, lower cord pH, lower Apgar scores and admission to special care nursery. However, a number of problems arise when attempting to interpret the findings of research into outcomes associated with nuchal cords. Firstly, there may be a recording bias when reporting nuchal cords. Greenwood and Impett found that birth attendants are more likely to document the presence of a nuchal cord when there is evidence of neonatal compromise. Secondly, most studies did not distinguish between a loose nuchal cord and a tight nuchal cord.

Tight nuchal cords
Studies that differentiate between loose and tight nuchal cords have found that the association with complications is only related to tight nuchal cords. However, the common practice of clamping and cutting a tight nuchal cord may be the actual cause of the reported complications. There are a number of cases associated with clamping and cutting a tight nuchal cord. The woman must be prevented from pushing which may be difficult and uncomfortable, the baby may be muffled and cut, and the nuchal cord is damaged. Once the cord is clamped, blood flow between the baby and placenta ceases, reducing the baby's blood volume and oxygenating the baby's oxygen stores. Therefore, it may be the management of the nuchal cord that causes lower umbilical cord pH, and lower Apgar scores, the need for resuscitation, and asphyxia, rather than the presence of a nuchal cord per se. Mercer and Silcocks suggest that a tight nuchal cord may compromise a baby during the second stage of labour because compression of the cord during contractions can reduce blood flow to the baby. However, they argue that if the cord is left intact, once the baby is born and the cord unwound, the blood flow is resumed. The placental circulation can then improve the baby's blood volume and correct any acid base imbalance resulting from the previous reduced blood flow. Any necessary resuscitation can take place with the assistance of the placental circulation.

Another problem in clamping and cutting a nuchal cord is the possibility of a shoulder dystocia occurring. Once the cord is cut a delay in the birth of the baby may result in morbidity or mortality. It is unlikely that clamping and cutting the nuchal cord will be associated with any other complications.

Loose nuchal cords
The majority of nuchal cords are loose rather than tight, however the practice of clamping and cutting a loose nuchal cord over the baby's head prior to birth is common. Although there is a lack of research examining this intervention, some evidence that it may be harmful. For example, handling and stretching the cord stimulates the umbilical arteries to vasoconstrict, reducing blood flow. Current texts in obstetrics describe the prevention of birth by clamping and cutting the nuchal cord in order to prevent the baby from being born prematurely. The effect of handling the cord, or vasoconstriction during birth is unknown. Loosening the cord will usually involve some traction, and the effect of this traction cannot be predicted. In extreme cases traction may tear the umbilical cord and result in subsequent bleeding.

Conclusion
A nuchal cord is a common occurrence during birth. Although a loose nuchal cord is not associated with complications, studies have shown that the incidence of an umbilical cord with fetal heart rate anomalies, operative delivery, lower cord pH, lower Apgar scores and admission to special care nursery. However, it is unclear whether these outcomes are a result of tight nuchal cords, or the result of the subsequent interventions. There are a number of reasons attributed to clamping and cutting an umbilical cord prior to birth, and insufficient research to support the practice. Leaving a nuchal cord intact reduces chances of the baby developing a shoulder dystocia, and reduces chances of birth complications. A tight nuchal cord is a dangerous situation rather than a normal occurrence.

Preparing parents
Although there is no research carried out specifically exploring women's perceptions of nuchal cords, a study by Melander and Law found some women who had recently given birth expressed concern that their baby might have encountered problems related to a nuchal cord. In addition, media portrayals of birth use the image of a baby with a nuchal cord as a form of trauma and drama. Birth stories will often include the presence of nuchal cord as the cause of poor outcomes even though they may have been coincidental. Parents are sometimes informed that the condition of their baby at birth was a direct result of a nuchal cord, rather than the management of the cord. The implications of this misrepresentation is that nuchal cords are a dangerous situation rather than a normal occurrence.

Because nuchal cords are commonly present during birth, parents need to be prepared for the possibility that they may encounter this situation. It is important to address this issue with parents before labour in an attempt to reduce anxiety and facilitate informed decision-making. In an unprepared environment, regarding the common practices of looping, or cutting nuchal cords they will be better able to make informed choices regarding the management they would like. If the baby is born with a nuchal cord

Recommndations for practice
There is no need to routinely check for a nuchal cord during birth, doing so may be uncomfortable for the woman.

- A nuchal cord (even when tight) is unlikely to hinder the birth of the baby, and can be unwound after the baby is born.
- In the unusual circumstance of a short and tight nuchal cord, clamping and cutting the cord should be the last option, only carried out if the somersault manoeuvre is unsuccessful.
- A baby who has been compromised by a tight nuchal cord during the second stage of labour (i.e. clamping and cutting the cord) should be assessed for placental circulation to assist their recovery and/or resuscitation.
- Parents require evidence-based information about nuchal cords and their management in order to make choices regarding their own birth experience.

This poster presentation is based on an extensive literature review conducted as part of a PhD study exploring midwifery practice during the second stage of labour.