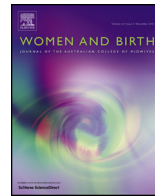




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# Women and Birth

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## DISCUSSION

# Pronurturance Plus at birth: A risk reduction strategy for preventing postpartum haemorrhage

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## ABSTRACT

**Background:** Postpartum haemorrhage (PPH) rates continue to rise in the developed world. A recent study found that any skin-to-skin contact and breastfeeding within 30 min of birth was associated with an almost 50% reduction in PPH rates. Improved oxytocin release is the biological reason proposed to explain this. The combination of skin-to-skin contact and breastfeeding within 30 min of birth is termed 'Pronurturance'. Midwifery theory and research claims that optimal third stage care is more holistic than simple Pronurturance which suggests that further reductions in PPH rates may be possible.

**Question:** What can midwives and women do to minimise blood loss in the third and fourth stages of labour?

**Method:** We present a new theory that describes and explains how to optimise the woman's reproductive psychophysiology in the third and fourth stages of labour to ensure a well contracted uterus which inhibits excessive bleeding regardless of risk status or whether active management was used. In developing the Pronurturance Plus theory we expand upon what is already known about oxytocin in relation to simple pronurturance to integrate concepts from birth territory theory, cognitive neuroscience, mindfulness psychology and the autonomic nervous system to develop an holistic understanding of how to optimise care and minimise PPH.

**Conclusion:** Pronurturance Plus is a psycho-biologically grounded theory which is consistent with existing evidence. It is free, natural and socially desirable.

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## Summary of Relevance:

### Problem/Issue

- In spite of active management of third stage of labour PPH rates continue to rise.

### What is Already Known

- There is some evidence that skin to skin contact and breastfeeding within 30 min of birth may be able to reduce PPH rates.

### What this Paper Adds

- A psycho-biologically based midwifery theory aimed at describing, explaining and predicting how to minimise the risk of PPH for individual women, and the rate of PPH for populations of childbearing women.

## 1. Introduction

Compared with wrapping and/or separating mother and baby at birth, immediate and sustained skin-to-skin contact results in the baby having a smoother adaption to extra-uterine life with good regulation of body temperature, heart and respiratory rates, glucose and cortisol stress levels.<sup>1–4</sup> Skin-to-skin contact between

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**Table 1**  
Key terms and definitions.

Term	Definition
Eulochia	The expected physiologically safe amount of blood loss following the birth of the baby until 6 weeks postpartum.
Eutony	Optimal physiological tone and functioning (contraction and retraction) of the uterus during the third and fourth stage of labour
Third stage of labour	The period of time extending from the birth of the baby until the delivery of placenta and membranes.
Fourth stage of labour	The first hour after the delivery of the placenta and membranes (old definition passed down in the oral tradition)
Pronurturance	Skin-to-skin contact and breastfeeding within 30 min of birth

mother and baby also ensures that only friendly microbes colonise the baby's skin which is associated with infant gut health and optimal immune responses.<sup>3</sup> Breastfeeding rates are known to improve with women and their newborns experiencing skin-to-skin and breastfeeding at birth, which in turn is associated with improved maternal and infant health.<sup>5–7</sup> What was unknown until recently is that skin-to-skin and breastfeeding at birth has a role to play in preventing PPH.<sup>8</sup> The combination of skin-to-skin and breastfeeding at birth has been termed 'Pronurturance' (defined in Table 1). In this paper we present a psycho-biologically based midwifery theory aimed at describing, explaining and predicting how to minimise the risk of PPH for individual women, and the rate of PPH for populations of childbearing women.

In developing the theory we rely, in part, on the bio-medical understanding of the body. The bio-medical understanding of the body is limited; based as it is on cadaver anatomy where physiology is considered at the level of cells, tissues and organs. In contrast to this dis-integrated understanding, our theorising begins from the premise that the only way to fully understand the functioning of the living human body is to consider the whole body/mind/spirit within a particular context. This unification of mind and body is not entirely possible, given the multiplicity and complexity of interactions that affect whole person functioning. In order to describe and explain what is happening holistically, we need to focus on multiple levels that interact with each other. Accordingly, in this paper, we discuss what is occurring at the cellular, organ, body/mind and person-environment levels.

The paper begins with a summary of the background literature. First, the empirical evidence of the effectiveness of Pronurturance is presented. Neurological and reproductive physiology that explains the mechanisms by which Pronurturance reduces the risk of PPH is then outlined. The review of background literature shows that simple Pronurturance (skin-to-skin and breastfeeding at birth) explains some, but not all, of the psycho-biological responses that women undergo in the first 30 min after birth.<sup>9</sup> Pronurturance Plus theory adds to what is already known by incorporating the effects of (1) the birthing environment, (2) the person of the midwife and (3) the woman's thoughts and feelings on reproductive physiology during the third and fourth stages of labour.

The main part of the paper begins by discussing the role to the role of the woman's attentional networks and how these relate to the functioning of her autonomic nervous system. Next, we describe how mindfulness, for both the woman and the midwife, enables the woman to purposefully focus her attention, which optimises reproductive physiology. Finally the expanded theory of Pronurturance Plus is presented. Pronurturance Plus theory integrates concepts as described above with concepts from Birth

Territory Theory; particularly Midwifery Guardianship. Key terms are defined in Table 1.

## 2. Background

A recent retrospective cohort study involving  $n = 7548$  women compared women and babies who had Pronurturance within 30 min of birth with those who did not.<sup>8</sup> Women and babies who could not have Pronurturance (e.g. low Apgar score at 1 min for the baby) were excluded but women at known risk of PPH were included in the sample. After controlling for confounding variables, women who did not have Pronurturance within 30 min of birth were almost twice as likely to experience a PPH (OR 1.81, 95% CI 1.39–2.43,  $p < 0.001$ ).

Saxton et al.,<sup>9</sup> described the neurological and reproductive physiology relevant to the reduction in PPH rates associated with simple Pronurturance. That paper explains optimal release and uptake of endogenous oxytocin and how this may be blocked.<sup>9</sup> In summary, oxytocin is secreted and released in a pulsatile manner by the posterior pituitary gland.<sup>10</sup> Oxytocin has effects, relevant to Pronurturance, on both the brain and the uterus. In the brain, oxytocin creates calm loving thoughts which translate to nurturing behaviours.<sup>10</sup> When it circulates in the blood, oxytocin binds to myometrial cell receptors and initiates action potentials, which cause uterine contractions.<sup>9,11</sup> Adrenaline, which is released by the sympathetic nervous system in situations of fear, also binds to the same receptor sites as oxytocin. When adrenaline is on the binding site, oxytocin competes with it or, in the worst case, oxytocin is blocked completely. This knowledge, that sympathetic stimulation blocks oxytocin and relaxes the uterus, has been known for decades<sup>12</sup>; it has been the basis of creating drugs to delay the onset of preterm labour; the beta mimetic class of drugs e.g., Terbutaline.<sup>13</sup> In the context of physiological labour and birth however, optimal oxytocin release and uptake is needed. When alertness or fear happens in the third and/or fourth stages of labour, then atonic PPH is the likely result.

### 2.1. The attentional networks

In cognitive neuroscience 'attention' refers to the person's conscious focussing on one or a few of the myriad external and internal cues that flood the brain. Attention is provoked by external cues entering via the five senses and internally by feelings and thoughts.<sup>14–16</sup> The cues are perceived by the deeper brain structures and those that are most relevant to the individual are channelled to the cerebral cortex which brings them to conscious awareness and allows for higher level processing and considered action.<sup>17</sup> For example, the feelings associated with a stone in a shoe leads to the person attending to the sensations, deciding what to do, stopping and removing the stone. Multiple levels of attentional networks have been identified.<sup>14,15</sup> Here we focus on four attentional networks that are relevant to the care of childbearing women in labour. These are: (1) the orienting, (2) the alerting, (3) the fascinating and (4) the executive network.<sup>14,18–20</sup>

The 'orienting network' is used to determine one's position in time and space and maintains a level of constant attention to the environment. The 'orienting network' is operating all the time when the person is awake. This network scans for cues coming from the environment<sup>18</sup> e.g. a phone ringing, bright light or loud noise. If the environmental cues are perceived as potentially comforting or non-threatening then the parasympathetic nervous system remains dominant. If however, cues are perceived as threatening, then the 'alerting network' is also activated which in turn activates the sympathetic nervous system. The link between the brain cells in the alerting network and the autonomic nervous system is that the cells of the alerting network and the autonomic

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