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Dangers of the Supine Position

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Back to basics: avoiding the supine position in pregnancy

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The Journal of Physiology © 2017 The Physiological Society Maternity care provider clinicians have been aware for many decades that maternal supine position and pregnancy are not a good mix. This is probably because when the woman lies on her back the gravid uterus is known to compress the inferior vena cava (Kerr et al. 1964). This can result in a range of negative sequelae such as maternal hypotension and reduced

blood flow to the fetus (Holmes, 1960). Because this phenomena is so well known, standard practice is for clinicians to avoid placing the woman in supine position for routine examinations and procedures, moving the woman into left lateral if there are signs of fetal distress in labour and also advising her to avoid the supine position herself, at least during the day (Thurlow & Kinsella, 2002). More recently there is emerging evidence that if the woman sleeps on her back that this puts her at increased risk of stillbirth (Stacey et al. 2011; Owusu et al. 2013; Gordon et al. 2015). This is biologically plausible because of what is already known about negative sequelae of the woman adopting this position during the day. In this issue of *The Journal of Physiology* Stone and colleagues (2017) have added an important piece to the puzzle of understanding the physiology of maternal supine position and fetal response, by conducting a controlled experiment monitoring both the mother and fetus during the day. In this ground-breaking study they avoided 'high risk' women with comorbidities and also did not monitor their participants during sleep. In doing so they had probably as clean a look as is currently possible at the human fetus's response to the maternal supine position when compared to the same fetus spending the same time with the mother lying in other positions. It is very interesting that they found an increased likelihood of fetal quiescence in the supine position especially as this was in a group of normal healthy late third trimester pregnancies. As they show, this finding suggests that the well fetus is able to mount an adaptive response to this potential stressor by shifting to a lower oxygen consuming state. If they have found this in the well fetus, during a 30 min period in the supine position, with the mother awake, one can only speculate as to what might occur in a vulnerable fetus, whose mother is sleeping supine for several hours during the night. Stone et al. conclude, 'The supine position may be disadvantageous for fetal wellbeing and in compromised pregnancies may be a sufficient stressor to contribute to fetal demise.' This fits well with the triple risk model for stillbirth, illustrated below (Fig. 1), whereby a vulnerable fetus (perhaps one that is growth restricted) with maternal comorbidities such as age, obesity, parity, gestational diabetes, gestational hypertension, etc., encounters a fetal stressor such as supine sleep position and cannot adapt to repeated nightly exposure to this stressor and ultimately dies as a result.