Triage for active labour prior to hospital admission

Clinical question

Among healthy women at term with singleton pregnancies in spontaneous labour, does triage at presentation to hospital reduce rates of cesarean section?	
Population:	Healthy women with term, singleton pregnancies presenting to hospital in spontaneous labour
Intervention:	Triage to defer hospital admission until active labour
Comparison:	Usual care
Primary Outcome: Secondary Outcomes:	Cesarean section rates Labour augmentation, amniotomy, epidural, assisted vaginal delivery

Search strategy

- Time period: 1990 -2009
- Search terms: Labour admission, delayed admission and labour, labour assessment programs, guidelines/practice guidelines, obstetrical triage, triage, obstetrics, obstetrics and triage.
- Databases searched: CINAHL; MEDLINE (Ovid SP); EMBASE; Cochrane CDSR, CENTRAL, & DARE.
- Titles reviewed – 378; abstracts reviewed – 30; papers reviewed – 19; papers meeting eligibility for inclusion - 10

Synthesis of the evidence

Systematic reviews

- There was one systematic review (Lauzon L, Hodnett E. 2009) found with only one RCT that met eligibility criteria. It was underpowered to determine the effect of the early assessment program on CS rates but determined a significantly lower use of oxytocin (22.8% vs. 40.4%; OR 0.45 (0.25-0.80), and analgesia & epidural administration (79% vs. 90.4%; OR 0.42 (0.20-0.89).

Randomized controlled trials

- The four RCTs eligible for inclusion (Janssen et al, 2006; Hodnett et al, 2008; Cheyne et al, 2008; & Spiby et al, 2008) showed no significant difference in rates of cesarean section associated with early triage programs.

Prospective & Retrospective cohort studies

- One prospective (Jackson et al, 2003) and four retrospective cohort studies eligible for inclusion (Hemminki et al, 1998; Holmes et al, 2001; Klein et al, 2004; & Bailit et al, 2005) found significantly higher cesarean section rates and labour interventions (oxytocin augmentation, amniotomy and epidural use) in women admitted in early labour (<3-4 cms) vs. active labour (>4 cms).
- Women who present in early labour may have an inherently higher risk of dystocia and/or may be further exposed to risk by the hospital environment.

Limitations

- In two of the four randomized controlled trials, the components of antenatal assessment in the treatment group did not substantially differ from the “usual care” groups.
- Cohort studies are unable to determine whether the women who present in early labour have an inherently higher risk or labour dystocia or if increased exposure to the hospital environment confers risks.

Conclusions

While cohort studies consistently report that early admission to hospital is associated with a higher risk of cesarean section, randomized controlled trials of triage programs have failed to show benefit in decreasing the cesarean section rate. This could mean that factors inherent in the woman or the hospital environment itself are more strongly associated with cesarean section than the timing of admission. Trials of triage to date have not provided evidence of efficacy in reducing cesarean birth rates.

Systematic Reviews	Inclusion	Intervention	Findings	Comments
Lauzon L, Hodnett E. 2009 The Cochrane Collaboration **Labour assessment programs to delay admission to labour wards** Ontario, Canada	**1 RCT** McNiven, 1998, N=209 **Inclusion** • Nulliparous women • Singleton fetus • Low-risk • Term	Triage vs. admission to the labour ward	**Primary Outcome** Cesarean section 7.6% vs. 10.6%; OR 0.70 (0.27-1.79) **Secondary Outcomes** Oxytocin administration 22.8% vs. 40.4%, OR 0.45 (0.25-0.80) Amniotomy 46.6% vs. 53.8%, OR 0.75 (0.44-1.29) Epidural 79% vs. 90.4%, OR 0.42 (0.20-0.89) Assisted delivery 30.5% vs. 35.6%, OR 0.79 (0.45-1.41)	Cochrane Pregnancy and Childbirth Group trials register searched in January 2004 and only one RCT included
Randomized controlled trials	**Inclusion**	**Intervention**	**Findings**	**Comments**
Janssen, P. et al. 2006. Obstetrics & Gynecology 108(6) **Early labor assessment and support at home versus telephone triage (ELASH)** Vancouver, Canada	N= 1,459 **Inclusion** • Nulliparous women • Low-risk	Home triage vs. Telephone triage	**Primary Outcome** Cesarean section 27.9% vs. 24.4%; RR 1.14 (0.96-1.41) **Secondary Outcomes** Augmentation (oxytocin/prostaglandins) 61.2% vs. 64.5%; RR 0.95 (0.88-1.04) Epidural 65.4% vs. 68.3%; RR 0.95 (0.89-1.01) Assisted vaginal delivery 25.7% vs. 29.8%; RR 0.88 (0.74-1.04) Hosp admission at < 3 cm RR 0.85 (0.76-0.94) Avoidance of hosp admission prior to established labour RR 1.54 (1.23-1.92)	Two methods of triage resulted in different rates of admission <3 cm but no difference in C/S rates

Randomized controlled trials	Inclusion	Intervention	Outcomes	Comments
Hodnett, E. et al. 2008. BMJ 337 **Effect on birth outcomes of a formalised approach to care in hospital labour assessment units: international, randomised controlled trial** Ontario, Canada	N= 5002 **Inclusion** • Nulliparous women with contractions but not in labour	*Structured care vs. usual care *Minimum one hour formalized approach to assessment of, and interventions for maternal emotional state, pain, and fetal position	**Primary Outcome** Cesarean section 22.4% vs. 24.2%; OR 0.90 (0.71-1.10) **Secondary Outcomes** Oxytocin augmentation 62.2% vs. 63.5%; OR 0.95 (0.77-1.12) Epidural 84.6% vs. 86.4%; OR 0.85 (0.62-1.08) Assisted delivery 13.7% vs. 14.5%; OR not reported	Components of "structured care" not considerably different from "usual care", other than 1:1 nursing care for one hour minimum Nearly 60% of participants were not in active labour at time of admission to labour ward and intrapartum interventions (epidural and oxytocin augmentation) are high in both groups
Cheyne, H. et al. 2008. BMJ 337 **Effects of algorithm for diagnosis of active labour: cluster randomised trial** Stirling, Scotland	N= 4503 **Inclusion** • Nulliparous women • Term • Low risk • Cephalic presentation	Algorithm vs. usual care to diagnose active labour	**Primary Outcome** Cesarean section 10.3% vs. 12.5%; 0.0(-4.3 to 4.3) p=1.0 **Secondary Outcomes** Oxytocin augmentation 31.3% vs. 33.4%, p=0.9 Amniotomy 37.2% vs. 39.8%, p=0.1 Epidural 20.5% vs. 29.5%, p=0.7 Instrumental delivery 19.9% vs. 25%, OR not reported	Components of algorithm not considerably different from usual care used by midwives to diagnose labour

Randomized Controlled Trials	Inclusion	Intervention	Outcomes	Comments
Spiby, H. et al. 2008 (Conference abstract). **Early labour support and assessment trial (ELSA Trial)** United Kingdom	N= 3474 **Inclusion** • Nulliparous women • Term • Low risk	Home visits in early labour by a community midwife vs. usual care at the hospital or birth centre	**Primary Outcome** Cesarean section & Instrumental delivery 39% vs. 37%; RR 1.03 (0.95-1.12) **Secondary Outcomes** Labour duration and interventions No difference Delayed final admission to LDR No difference	Maternity assessment and care at home in early labour vs. usual care in hospital resulted in no difference in C/S rates
Prospective Cohort Studies	**Inclusion**	**Intervention**	**Outcomes**	**Comments**
Jackson D. et al. 2003. JOGNN **Impact of collaborative management and early admission in labour on method of delivery**	N=2196 **Inclusion** • Low-risk • Singleton • Vertex presentation • Spontaneous labour (includes women with previous CS, only nullip outcomes included here)	Admission < 4 cm vs. ≥ 4 cm within two methods of care delivery: a) collaborative care with nurse-midwives and obstetricians b) obstetricians only	**Primary Outcome** **Cesarean Section** Admit < 4 cm vs. ≥4 cm (Collaborative care) 17.1% vs. 6.7%; OR 6.6 (5.4-30.2) Admit < 4 vs. ≥ 4 cm (Obstetrician care) 20.2% vs.10.1%; OR 8.1 (1.1-15.1) **Secondary Outcomes** **Assisted delivery** Admit < 4 cm vs. ≥4 cm (Collaborative care) 21.9% vs. 10.8%; OR 8.6 (1.2-11.7) Admit < 4 cm vs. ≥4 cm (Obstetrician care) 34.2% vs. 22.2%; OR 12.3 (1.7-22.9)	Admission <4 cm and management by obstetricians alone increased the risk of operative delivery

Retrospective Cohort Studies	Inclusion	Intervention	Outcomes	Comments
Hemminki, E. & Simukka, R. 1986. European Journal Obstetrical and Gynecological Reproductive Biology 22 **The timing of hospital admission and progress of labour** (Helsinki, Finland)	N=436 **Inclusion** • Healthy nulliparous admitted in labour	Early comers to hospital (regular contractions ≤ 4 hours prior to admission) vs. late comers to hospital (regular contractions > 4 hours prior to admission) with either slow or quick intrinsic speed of labour, adjusted for intrinsic speed of labour (estimated from the status of cervix at the time of admission in relation to the period from when regular contractions started)	**Primary outcome** **Cesarean section:** Late vs early Difference of means, 1.2 hrs, p <.05 **Secondary outcomes** **Amniotomy**: Late vs early RR = 0.89, ns **Oxytocin augmentation:** Late vs early RR = 0.71, ns **Instrumental delivery:** Late vs early RR = 1.13, p<.05	Women coming early had more interventions during labour and more C/S than those coming late after adjustment for intrinsic speed of labour. This is the first study to suggest that early hospital admission is associated with obstetric interventions.

Retrospective Cohort Studies	Inclusion	Intervention	Outcomes	Comments
Holmes P., Oppenheimer W., Wu Wen, S. 2001. British Journal Obstetrics and Gynecology, 108 **The relationship between cervical dilation at initial presentation in labour and subsequent intervention**. (Ottawa, Canada)	N=3220 Nullip =1168 Multip= 2052	Admission at 0-3 cm dilated vs. 4-10 cm	**Primary outcome** Cesarean section rate: Nullip: 10.3% vs. 4.2% < p 0.01 Multip: 5.7% vs. 1.3% < p 0.01 **Secondary Outcomes** Mean dilation @ CS: Nullip: 6.5 cm vs. 7.5 cm < p 0.01 Multip: 6.2 cm vs. 7.3 cm < p 0.01 Oxytocin use: Nullip: 43.9% vs. 27.2% < p 0.01 Multip: 20.0% vs. 8.5% < p 0.01 Epidural use: Nullip: 82.0% vs. 60.9% < p 0.01 Multip: 58.1% vs. 39.6% < p 0.01 Assisted delivery: Nullip: 26.6% vs. 25.0% p 0.56 Multip: 8.0% vs. 6.4% p 0.14	Limitations: Influence of inherent characteristics of participants in labour vs. decision re: when to admit to hospital cannot be separated Components of “structured care” not considerably different from “usual care”, other than 1:1 nursing care for one hour minimum Nearly 60% of participants were not in active labour at time of admission to labour ward and intrapartum interventions (epidural and oxytocin augmentation) are high in both groups

Retrospective Cohort Studies	Inclusion	Intervention	Outcomes	Comments
Klein et al. 2004. JOGC, 26 **The effect of family physician timing of maternal admission on procedures in labour and maternal and infant morbidity**. (Vancouver, Canada)	N=3485 n=1406 nullips under care of 62 early admitting FPs n= 2079 nullips under care of late admitting FPs **Inclusion** • Nulliparous • Low-risk • Term	Early admitting physicians (>50% women admitted ≤ 3 cm dilation) vs. late admitting physicians (>50% women admitted > 3 cm dilation)	**Primary outcome** Cesarean section OR 1.34 (1.0-1.65) **Secondary outcomes** Epidural OR 1.34 (1.15-1.55)	
Bailit J. et al. 2005 Obstetrics and Gynecology, 105(1) **Outcomes of women presenting in active versus latent phase of spontaneous labour.** (Cleveland, Ohio)	N= 8818 n= 6,121 active phase n= 2,697 latent phase **Inclusion** • Low-risk • Term • Singleton • Vertex presentation • Presenting in active or latent labour	Latent phase admissions compared with active phase admissions	**Primary outcome** Cesarean section Nulllips 14.2% vs. 6.7% *P* < .0001 Multips 3.1% vs. 1.4% *P* < .0001 **Secondary outcomes (controlling for parity)** Oxytocin use OR 2.3 (2.1-2.6) Epidural OR 2.2 (1.5-4.7) Low forceps OR 1.2 (0.8-1.8) Mid forceps OR 0.3 (0-2.1) Vacuum OR 1.1 (0.9-1.4)	Retrospective studies cannot determine whether women who present in early labour have an inherently higher risk or labour dystocia or if increased exposure to the hospital environment confers risks