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?

<table>
<thead>
<tr>
<th>Population:</th>
<th>Healthy women with term, singleton pregnancies presenting to hospital in spontaneous labour</th>
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<tbody>
<tr>
<td>Intervention:</td>
<td>Triage to defer hospital admission until active labour</td>
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<td>Comparison:</td>
<td>Usual care</td>
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<tr>
<td>Primary Outcome:</td>
<td>Cesarean section rates</td>
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<tr>
<td>Secondary Outcomes:</td>
<td>Labour augmentation, amniotomy, epidural, assisted vaginal delivery</td>
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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

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Intervention</th>
<th>Findings</th>
<th>Comments</th>
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</table>
| 1 RCT McNiven, 1998, N=209 | Triage vs. admission to the labour ward | **Primary Outcome**  
Cesarean section  
7.6% vs. 10.6%; OR 0.70 (0.27-1.79) | Cochrane Pregnancy and Childbirth Group trials register searched in January 2004 and only one RCT included |
| **Inclusion**  
Nulliparous women  
Singleton fetus  
Low-risk  
Term | | **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) |

### Randomized controlled trials

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| N= 1,459 | Home triage vs. Telephone triage | **Primary Outcome**  
Cesarean section  
27.9% vs. 24.4%; RR 1.14 (0.96-1.41) | Two methods of triage resulted in different rates of admission <3 cm but no difference in C/S rates |
| **Inclusion**  
Nulliparous women  
Low-risk | | **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) |
## Triage for active labour prior to hospital admission

### Systematic Review

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<tr>
<th>Randomized controlled trials</th>
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<th>Intervention</th>
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</table>
| 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  
- Minimum one hour formalized approach to assessment of, and interventions for maternal emotional state, pain, and fetal position | *Structured care vs. usual care*  
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 |
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

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<th>Study</th>
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| 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

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</table>
| 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

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| Hemminki, E. & Simukka, R. 1986. European Journal Obstetrical and Gynecological Reproductive Biology 22 | 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. |

**Inclusion**
- Healthy nulliparous admitted in labour

**N=436**
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<th>Retrospective Cohort Studies</th>
<th>Inclusion</th>
<th>Intervention</th>
<th>Outcomes</th>
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<tr>
<td>Holmes P., Oppenheimer W., Wu Wen, S. 2001. British Journal Obstetrics and Gynecology, 108</td>
<td>N=3220 Nullip =1168 Multip= 2052</td>
<td>Admission at 0-3 cm dilated vs. 4-10 cm</td>
<td><strong>Primary outcome</strong>&lt;br&gt; Cesarean section rate:&lt;br&gt; Nullip: 10.3% vs. 4.2%  &lt; p 0.01&lt;br&gt; Multip: 5.7% vs. 1.3%  &lt; p 0.01</td>
<td>Limitations:&lt;br&gt; Influence of inherent characteristics of participants in labour vs. decision re: when to admit to hospital cannot be separated&lt;br&gt; Components of “structured care” not considerably different from “usual care”, other than 1:1 nursing care for one hour minimum&lt;br&gt; 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</td>
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<td><strong>Secondary Outcomes</strong>&lt;br&gt; Mean dilation @ CS:&lt;br&gt; Nullip: 6.5 cm vs. 7.5 cm  &lt; p 0.01&lt;br&gt; Multip: 6.2 cm vs. 7.3 cm  &lt; p 0.01</td>
<td>Mean dilation @ CS:&lt;br&gt; Nullip: 6.5 cm vs. 7.5 cm  &lt; p 0.01&lt;br&gt; Multip: 6.2 cm vs. 7.3 cm  &lt; p 0.01</td>
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<td>Klein et al. 2004. JOGC, 26</td>
<td>N=3485 n=1406 nullips under care of 62 early admitting FPs n= 2079 nullips under care of late admitting FPs</td>
<td>Early admitting physicians (&gt;50% women admitted ≤ 3 cm dilation) vs. late admitting physicians (&gt;50% women admitted &gt; 3 cm dilation)</td>
<td><strong>Primary outcome</strong> Cesarean section OR 1.34 (1.0-1.65)</td>
<td><strong>Secondary outcomes</strong> Epidural OR 1.34 (1.15-1.55)</td>
</tr>
<tr>
<td>Outcomes of women presenting in active versus latent phase of spontaneous labour. (Vancouver, Canada)</td>
<td></td>
<td><strong>Inclusion</strong> Nulliparous Low-risk Term</td>
<td><strong>Primary outcome</strong> Cesarean section Nulllips 14.2% vs. 6.7% P &lt; .0001 Multips 3.1% vs. 1.4% P &lt; .0001</td>
<td><strong>Secondary outcomes (controlling for parity)</strong> 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)</td>
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<tr>
<td>Bailit J. et al. 2005 Obstetrics and Gynecology, 105(1)</td>
<td>N= 8818 n= 6,121 active phase n= 2,697 latent phase</td>
<td>Latent phase admissions compared with active phase admissions</td>
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<tr>
<td>Outcomes of women presenting in active versus latent phase of spontaneous labour. (Cleveland, Ohio)</td>
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<td>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</td>
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