WHO recommendation on the use of intravenous fluids with the aim of shortening the duration of labour

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Recommendation

The use of intravenous fluids with the aim of shortening the duration of labour is not recommended. (Strong recommendation, very low-quality evidence)

Publication history

First published: May 2014

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Assessed as up-to-date: May 2014

Remarks

- The GDG did not recommend this intervention on the basis of no clear evidence of benefits over harms. The group noted that the risk of maternal fluid overload, particularly when intravenous oxytocin infusion becomes indicated during the course of labour, may become accentuated.
- The GDG agreed that low-risk women should be encouraged to drink fluids during labour (see Recommendation No. 10 on oral fluid intake in labour).
- The GDG acknowledged that intravenous (IV) fluid may become necessary for other indications and for supportive care in labour even for low-risk women.
- The GDG puts its emphasis on the widespread and unnecessary use of routine administration of IV fluids for all women in labour in many health-care facilities in low-, middle- and high-income settings that increases cost, has considerable impact on the resource use and reduces women’s mobility, and therefore made a strong recommendation against this intervention.

Background

Difficult labour (or dystocia) is characterized by abnormally slow labour progress arising from inefficient uterine contractions, abnormal fetal presentation or position, inadequate bony pelvis or abnormalities of the pelvic soft tissues of the mother. (1, 2) Evidence suggests that up to one third of first-time mothers
experience delay in the first stage of labour.(3)

Augmentation of labour is the process of stimulating the uterus to increase the frequency, duration and intensity of contractions after the onset of spontaneous labour. It has commonly been used to treat delayed labour when uterine contractions are assessed to be insufficiently strong or inappropriately coordinated to dilate the cervix. Labour augmentation has traditionally been performed with the use of intravenous oxytocin infusion and/or artificial rupture of amniotic membranes (amniotomy). The procedure aims to shorten labour in order to prevent complications relating to undue prolongation, and to avert caesarean section. There is evidence that a significant proportion of women with uncomplicated pregnancies are subjected to routine augmentation of labour with oxytocin.(4)

While augmentation of labour may be beneficial in preventing prolonged labour, its inappropriate use may cause harm. Augmentation with synthetic oxytocin may result in uterine hyperstimulation, with adverse effects such as fetal asphyxia and uterine rupture, and thus increase the risk of a cascade of interventions during labour and delivery.(5)

Methods

The recommendation was developed using standardized operating procedures in accordance with the process described in the “WHO handbook for guideline development”, guided by the GRADE approach.(6) Outcomes used for this recommendation were aligned with the prioritized outcomes from the WHO recommendations on augmentation of labour (2014).(7)

A Cochrane systematic review was conducted, on use of IV fluids for reducing the duration of labour in low-risk nulliparous women.(8) In the review, randomized controlled trials relevant to the key question were screened by review authors, and data on relevant outcomes and comparisons were extracted. Evidence profiles (in the form of GRADE tables) were prepared for comparisons of interest, including the assessment and judgments for each outcome, and the estimated risks.

WHO convened a Guideline Development Group (GDG) meeting on recommendations on augmentation of labour in September 2013, where this recommendation was developed. The GDG comprised of a group of independent experts, who used the evidence profiles to assess evidence on effects on the pre-specified outcomes. GDG members discussed the balance between desirable and undesirable effects, overall quality of supporting evidence, values and preferences of stakeholders, resource requirements, cost-effectiveness, acceptability, feasibility and equity, to formulate the recommendation. Remarks were added to clarify the recommendation, and aid implementation.

Further information on procedures for developing this recommendation are available here.

Recommendation question

For this recommendation, we aimed to answer the following question:

- In pregnant women in labour (P), does the use of intravenous fluids (I), compared to no intervention, (C), improve reduce duration of labour (O)?

Evidence Summary

Evidence relating to the use of IV fluids for reducing the duration of labour in low-risk nulliparous women
was drawn from a Cochrane systematic review of nine trials (approximately 1700 women). (8) The trials were carried out in the USA (four), Iran (three), Ireland (one) and India (one). The trials examined a range of different comparisons; for most outcomes only one or two trials contributed data.

**IV fluids plus oral intake versus oral intake alone: maternal and infant outcomes**

- Two trials were included in this comparison.
- The mean duration of labour was reduced by almost half an hour in the women receiving IV fluids (Ringer’s lactate) (MD –28.86 min, 95% CI –47.41 to –10.30; two trials, 241 women).
- Compared with oral fluids alone, there was no statistically significant evidence that IV fluids in addition to oral intake affected the rate of caesarean section (RR 0.73, 95% CI 0.49 to 1.08).
- There were no estimable data for maternal fluid overload, and other maternal outcomes were not reported.
- There were no estimable data for low Apgar score at five minutes.
- The event rates for infant admission into NICU were very low and there was no significant difference between comparison groups (RR 0.52, 95% CI 0.05 to 5.59). Other infant outcomes were not reported.

**125 ml of IV fluid/hour plus oral intake versus 250 ml IV fluid/hour plus oral intake: maternal and infant outcomes**

- The mean duration of labour was reduced by approximately 24 minutes in the group receiving more IV fluid (250 ml) (MD 23.87 min, 95% CI 3.72 to 44.02; three trials, 256 women).
- There were no differences in the number of women undergoing caesarean section (RR 1.00, 95% CI 0.54 to 1.87), although one trial involving 80 women reported fewer assisted vaginal births in the group receiving 125 ml of IV fluid (RR 0.47, 95% CI 0.27 to 0.81).
- There were no estimable data for maternal fluid overload.
- There were no estimable data for low Apgar score at five minutes. The event rates for infant admission into NICU were very low and there was no significant difference between comparison groups (RR 0.56, 95% CI 0.15 to 2.06). Other infant outcomes were not reported.

**125 ml IV fluid/hour versus 250 ml IV fluid/hour (restricted oral intake in both arms): maternal and infant outcomes**

- The duration of labour appeared shortened in the group receiving more IV fluid (250 ml/hr) (MD 105.61 min, 95% CI 53.19 to 158.02; four trials, 632 women).
- The group receiving more fluid also had a reduced rate of caesarean section (RR 1.56, 95% CI 1.10 to 2.21; four trials, 748 women), although there was no significant difference between groups in the number of assisted vaginal births (RR 0.78, 95% CI 0.44 to 1.40).
- There was one case of fluid overload.
- The event rate was low for low Apgar scores at five minutes, and there was no significant difference between groups. There appeared to be a trend towards more babies with low Apgar scores in the 125 ml/hour group (RR 4.35, 95% CI 0.97 to 19.51; three trials, 689 infants).
- There was no evidence to indicate that the amount of IV fluid affected rates of admission to NICU (RR 0.48, 95% CI 0.07 to 3.17).

**Normal saline versus 5% IV dextrose: maternal and infant outcomes**

- This comparison included two trials and there were no significant differences between women receiving IV normal saline versus IV 5% dextrose for mean duration of labour (MD –12.00 min, 95% CI –30.09 to 6.09), rate of caesarean section (RR 0.77, 95% CI 0.41 to 1.43) or assisted vaginal birth (RR 0.59, 95% CI 0.21 to 1.63). There were no estimable data for maternal fluid overload.
- In one trial (91 women), maternal hyponatraemia (sodium level < 135 mmol/L) was much more likely in the dextrose group (RR 0.06, 95% CI 0.00 to 0.94).
- There were no significant differences between groups for low Apgar score at five minutes, or
admission to NICU. Event rates for both outcomes were low.

- Neonatal hyponatraemia (cord sodium level < 135 mmol/L) was less likely in the normal saline group (RR 0.40, 95% CI 0.17 to 0.93; one trial, 93 infants). There was no difference between groups for neonatal hypoglycaemia.
- Other maternal and neonatal outcomes were not reported.

Further information and considerations related to this recommendation can be found in the WHO guidelines, available at: http://apps.who.int/iris/bitstream/handle/10665/112826/WHO_RHR_14.15_eng...

Implementation considerations

- The successful introduction of this recommendation into national programmes and health-care services depends on well-planned and participatory consensus-driven processes of adaptation and implementation. The adaptation and implementation processes may include the development or revision of existing national guidelines or protocols based on this recommendation.
- The recommendation should be adapted into a locally appropriate document that can meet the specific needs of each country and health service. Any changes should be made in an explicit and transparent manner.
- A set of interventions should be established to ensure that an enabling environment is created for the use of the recommendations (including, for example, the availability of augmentation agents and monitoring capacity), and that the behaviour of the healthcare practitioner changes towards the use of this evidence-based practice.
- In this process, the role of local professional societies is important and an all-inclusive and participatory process should be encouraged.

Research implications

The GDG did not identify further research priorities on this topic.

Related Links

WHO recommendations for augmentation of labour (2014) – full document and evidence tables

Supporting systematic review:


References


Citation

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