Packages of antenatal care for low-risk pregnancy

Evolution of knowledge and lessons learnt

A. Metin Gülmezoglu on behalf of Professor Pisake Lumbiganon
Outline

- The background to the WHO antenatal care model
- Results and their interpretation
- Knowledge to action
- Conclusions
Monitor Knowledge Use

Select, Tailor, Implement Interventions

Assess Barriers/Facilitators to Knowledge Use

Adapt Knowledge to Local Context

Identify Problem
Identify, Review, Select Knowledge

Evaluate Outcomes

Sustain Knowledge Use

Identify, Review, Select Knowledge

Tailoring Knowledge

Synthesis

Products/Tools

Knowledge Inquiry

KNOWLEDGE CREATION
Background

- 2 trials in developing countries shaped the current approach to antenatal care in LMIC
- The philosophy of these trials have been
  - to base the number of visits on implementing effective interventions at the best/optimum time
  - Try to implement effective antenatal care with fewer visits
    - Care providers can spend more time with women
    - Care providers can spend time on only the needed activities (and not rituals)
Research synthesis: The case of Antenatal Care

Scientific basis for the content of routine antenatal care. I. Philosophy, recent studies, and power to eliminate or alleviate adverse maternal outcomes.
Villar J, Bergsjo P.

Scientific basis for the content of routine antenatal care. II. Power to eliminate or alleviate adverse newborn outcomes; some special conditions and examinations.
Bergsjo P, Villar J.

How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence

Guillermo Carroli, a Cleone Rooney b and José Villar c
WHO 2001

- Urban antenatal clinics in Argentina, Cuba, Saudi Arabia and Thailand
- 24526 women attending 53 clinics
- All women recruited (with referral for high risk women)
- 4 visits vs standard care
- Goal oriented visits
- Assessed as low-risk of bias
Zimbabwe 1996

- 15994 women attending mainly urban clinics
- Low risk women recruited
- 7 clinics
- 6 visits vs standard care (14... actually 7)
- Goal oriented
- Assessed as low risk of bias
WHO antenatal care randomised trial for the evaluation of a new model of routine antenatal care

José Villar, Hassan Ba’aqeel, Gilda Piaggio, Pisake Lumbiganon, José Miguel Belizán, Ubaldo Farnot, Yagob Al-Mazrou, Guillermo Carroli, Alain Pinol, Allan Donner, Ana Langer, Gustavo Nigenda, Miranda Mugford, Julia Fox-Rushby, Guy Hutton, Per Bergsjø, Leiv Bakketeig, Heinz Berendes, for the WHO Antenatal Care Trial Research Group*

WHO systematic review of randomised controlled trials of routine antenatal care

Guillermo Carroli, José Villar, Gilda Piaggio, Dina Khan-Neelofur, Metin Gülmezoglu, Miranda Mugford, Pisake Lumbiganon, Ubaldo Farnot, Per Bergsjø, for the WHO Antenatal Care Trial Research Group
## Outcomes

- Similar health outcomes
- Likely to cost less
- Women not satisfied with spacing between visits but women and carers satisfied with time spent during visits

<table>
<thead>
<tr>
<th>Outcome</th>
<th>ANC Model</th>
<th>Women N</th>
<th>(%)</th>
<th>Stratified 95% CI</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low birth weight (&lt;2500g)</td>
<td>New Standard</td>
<td>11534</td>
<td>7.68</td>
<td>1.10</td>
<td>(0.95 to 1.27)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11040</td>
<td>7.14</td>
<td></td>
<td></td>
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<tr>
<td>Preeclampsia/eclampsia</td>
<td>New Standard</td>
<td>11672</td>
<td>1.69</td>
<td>1.22</td>
<td>(0.92 to 1.60)</td>
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<tr>
<td></td>
<td></td>
<td>11121</td>
<td>1.38</td>
<td></td>
<td></td>
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<tr>
<td>Postpartum anaemia</td>
<td>New Standard</td>
<td>10720</td>
<td>7.67</td>
<td>1.02</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td>10050</td>
<td>8.72</td>
<td></td>
<td></td>
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<tr>
<td>Treated urinary tract infection</td>
<td>New Standard</td>
<td>11672</td>
<td>5.95</td>
<td>0.90</td>
<td>(0.56 to 1.45)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11121</td>
<td>7.41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The 'new' antenatal care model

- WHO ANC model
- Basic antenatal care (BANC)
- Focused antenatal care

- 4 visits became an 'indicator'
WHO Antenatal Care Randomized Trial: Manual for the Implementation of the New Model
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โรงพยาบาลจิตราภรณ์ ปรีซิส หนองแย
From research to practice: the example of antenatal care in Thailand
Pisake Lumbiganon, Narong Winiyakul, Chompilas Chongsomchai, & Kamron Chaisiri

Abstract The rationale for providing antenatal care is to screen predominantly healthy pregnant women to detect early signs of, or risk factors for, abnormal conditions or diseases and to follow this detection with effective and timely intervention. The recommended antenatal care programme in most developing countries is often the same as the programmes used in developed countries. However, in developing countries there is wide variation in the proportion of women who receive antenatal care. The WHO randomized trial of antenatal care and the WHO systematic review indicated that a model of care that provided fewer antenatal visits could be introduced into clinical practice without causing adverse consequences to the woman or the fetus. This new model of antenatal care is being implemented in Thailand. Action has been required at all levels of the health-care system, from consumers through to health professionals, the Ministry of Public Health and international organizations. The Thai experience is a good example of moving research findings into practice, and it should be replicated elsewhere to effectively manage other health problems.

Keywords Prenatal care/organization and administration; National health programs/organization and administration; Randomized controlled trials; Meta-analysis; World Health Organization; Evidence-based medicine; Thailand (source: MeSH, NLM).

Mots clés Soins prénataux/organisation et administration; Programme national santé/organisation et administration; Essai clinique randomisé; Méta-analyse; Organisation mondiale de la Santé; Médecine factuelle; Thaïlande (source: MeSH, INSERM).

Palabras clave Atención prenatal/organización e administración; Programas nacionales de salud/organización e administración; Ensayos controlados aleatorios; Meta-análisis; Organización Mundial de la Salud; Medicina basada en evidencia; Tailandia (fuente: DeCS, BIREME).

الكلمات المفتاحية: الرعاية السابقة للولادة، تنظيم وإدارة الرعاية السابقة للولادة؛ البرامج الصحية الوطنية، تنظيم وإدارة البرامج الصحية الوطنية؛ التجارب المعشاة، تايلاند (источник: MeSH, NLM).
Welcome
Affette McCaw-Binns, MPH, PhD
Professor, Reproductive Health Epidemiology
29 November 2017
Further development

- Teaching medical students at KKU
- Successfully implemented in 5 provinces in different regions of the country in 2009
- Evaluation by a team of external evaluator from Mahidol University
  - No obvious significant bad outcomes
  - Women and providers’ satisfactions increase steadily
- Full national implementation in fiscal year 2011
- One of the KPI of MOPH
Cochrane review 2010 update

- Describe differences between old and new reviews
- Set out results of new review
- Raise questions
Zimbabwe 2007

- 23 rural health centres
- 13517 women (all women - with referral for high risk women)
- 5 visits vs standard care
- Goal oriented visits
- High quality study with some loss to follow up (full data for 78%, some data for 98%)
Inclusion criteria

- 7 trials......
- 4 individual randomisation;
  - high income countries;
  - small-medium sample sizes;
  - visit reduction 2.5; 8-12 visits
- 3 cluster randomised trials in low-middle income settings
Was there an intervention?

- WHO, median from 8 to 4
  - 51% of low risk women had < 5 visits
  - 37% of women with at least one risk factor had < 5 visits
- Zimbabwe 1996, median from 6 to 4
- Zimbabwe 2007
  - 77% in reduced visits < 6 visits
  - 69% in standard care < 6 visits
Results

- Was there a difference between groups?
- Was there a difference between trials?
- Was there a difference between reviews?
Hypertensive disorders

- WHO pre-eclampsia (hypertension with proteinuria) ... higher in the reduced visits group

- Zimbabwe 1996: hypertension referred to hospital .... lower in reduced visits group

- Zimbabwe 2007: hypertension referred to hospital... lower in reduced visits group
Maternal bleeding in pregnancy

- WHO RR 1.41 (0.98 to 2.01)
- Zimbabwe RR 1.15 (0.40 to 3.30)
- Zimbabwe RR 0.73 (0.18 to 2.92)

- Overall RR 1.33 (0.98 to 1.85)
UTI and PP anaemia

- No differences between groups
- UTI (treated) RR 0.80 (0.64 to 1.00)
- PP anaemia RR 0.88 (0.75 to 1.03)
LBW and SGA

- LBW RR 1.04 (0.97 to 1.11)
- SGA RR 1.01 (0.90 to 1.14)
Admission to NICU

- WHO (for more than 2 days)
- Zimbabwe 1996 admission to NICU (approx 0.5% in both trials)
- RR 0.85, 95% CI 0.73 to 0.98
Perinatal mortality

- WHO 234/11672 vs 190/11121 (RR 1.17, 0.96 to 1.44)
- Zimbabwe 1996 162/9394 vs 88/6138 (RR 1.20, 0.86 to 1.68)
- Zimbabwe 2007 185/6614 vs 161/6384 (RR 1.11, 0.89 to 1.39)
Overall perinatal mortality

- RR 1.15 (1.01 to 1.32)
  - With conservative ICC. I² = 0%
  - With ICC=0 RR 1.16 (1.02 to 1.31)
Perinatal mortality in Khon Kaen Province using the new ANC model

<table>
<thead>
<tr>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
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<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total birth</td>
<td>19271</td>
<td>17136</td>
<td>20091</td>
<td>19937</td>
<td>19019</td>
<td>18357</td>
<td>19298</td>
<td>19150</td>
<td>19482</td>
<td>18797</td>
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<tr>
<td>Livebirths</td>
<td>19163</td>
<td>17028</td>
<td>19964</td>
<td>19829</td>
<td>18903</td>
<td>18239</td>
<td>19194</td>
<td>19064</td>
<td>19401</td>
<td>18714</td>
</tr>
<tr>
<td>Stillbirths</td>
<td>108</td>
<td>108</td>
<td>127</td>
<td>108</td>
<td>116</td>
<td>118</td>
<td>104</td>
<td>86</td>
<td>81</td>
<td>83</td>
</tr>
<tr>
<td>Early neonatal death</td>
<td>49</td>
<td>27</td>
<td>20</td>
<td>31</td>
<td>44</td>
<td>49</td>
<td>23</td>
<td>28</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td><em>Perinatal mortality rate</em></td>
<td>8.15</td>
<td>7.88</td>
<td>7.32</td>
<td>6.97</td>
<td>8.41</td>
<td>9.10</td>
<td>6.58</td>
<td>5.95</td>
<td>5.24</td>
<td>5.16</td>
</tr>
</tbody>
</table>
WHO response and conclusions

- Updated Cochrane review (Oct 2010)
- Convened technical consultation (Nov 2010)
- WHO Statement to be published in coming days (March 2011)
- Secondary analyses currently being conducted
- WHO Evidence-based guidelines work initiated
Conclusions

- It is crucial to monitor the evolution of the evidence - especially for a complex intervention package
- The knowledge flow
  - from research to guidance,
  - from guidance to adaptation and implementation, and
  - from implementation to monitoring and evaluation is essential
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Select, Tailor, Implement Interventions

Knowledge Synthesis

Select, Tailor, Implement Interventions