EVIDENCE BASED HEALTH AND THE COCHRANE COLLABORATION

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University of Vermont

Coordinating Editor
Cochrane Neonatal Review Group

Washington, DC 2008
Preparing, maintaining and promoting the accessibility of systematic reviews of the effects of health care interventions
Cochrane Collaborative Review Groups
Cochrane Centers
Cochrane Fields/Networks
The Cochrane Library
Cochrane Collaborative Groups

- Over 50 Collaborative Review Groups
- Most address specific disease entities/health problems
- The Cochrane Neonatal Review Group; one of the rare groups that address the needs of a population
Acute Respiratory Infections Group
Airways Group
Anaesthesia Group
Back Group
Breast Cancer Group
Colorectal Cancer Group
Consumers and Communication Group
Cystic Fibrosis and Genetic Disorders Group
Dementia and Cognitive Improvement Group
Depression, Anxiety and Neurosis Group
Developmental, Psychosocial and Learning Problems Group
Drugs and Alcohol Group…
COCHRANE COLLABORATIVE REVIEW GROUPS

Ear, Nose and Throat Disorders Group
Effective Practice and Organization of Care Group
Epilepsy Group
Eyes and Vision Group
Fertility Regulation Group
Gynaecological Cancer Group
Haematological Malignancies Group
Heart Group
Hepato-Biliary Group
HIV / AIDS Group
Hypertension Group
Incontinence Group
COCHRANE COLLABORATIVE REVIEW GROUPS

Infectious Diseases Group
Inflammatory Bowel Disease Group
Injuries Group
Lung Cancer Group
Menstrual Disorders and Subfertility Group
Metabolic and Endocrine Disorders Group
Movement Disorders Group
Multiple Sclerosis Group
Musculoskeletal Injuries Group
★ NEONATAL GROUP
Neuromuscular Disease Group
Oral Health Group…
COCHRANE COLLABORATIVE REVIEW GROUPS

Pain, Palliative Care and Supportive Care Group
Peripheral Vascular Diseases Group
Pregnancy and Childbirth Group
Prostatic Diseases and Urologic Cancers Group
Renal Group
Schizophrenia Group
Sexually Transmitted Diseases Group
Skin Group
Stroke Group
Subfertility Group (see Menstrual Disorders)
Tobacco Addiction Group
Upper Gastrointestinal & Pancreatic Diseases Group
Wounds Group!
What do we do?

- prepare and disseminate evidence-based reviews of the effects of therapies in the field of neonatal medicine.

- reviews follow a standard method that includes a well formulated question, a comprehensive search for eligible trials, critical appraisal of trial quality and, where appropriate, quantitative synthesis of the results using meta-analysis.

- reviews are regularly updated as new trials are published.
Funding from The National Institute of Child Health and Human Development (USA) supports:

the infrastructure of the Neonatal Review Group and allows the preparation and continuous updating of:

- a classified bibliography of virtually all reports of randomized trials in the field of neonatology, and

- systematic reviews (incorporating meta-analysis) of the results of this body of research.
These Cochrane systematic reviews are published in the Cochrane Database of Systematic Reviews which is contained in the Cochrane Library.

Neonatal reviews can also be accessed on a web page maintained by the National Institute of Child Health and Human Development, USA.

www.nichd.nih.gov/cochraneneonatal.
Have Reviews in Neonatal-Perinatal Medicine Changed Practice and Improved the Outcome of Babies?
Multiple randomized controlled trials (N=18) involving a large number of infants (3735 infants) But…

Not utilized in the vast majority of patients until…
## PROPHYLACTIC CORTICOSTEROIDS FOR PRETERM BIRTH

### EFFECT ON NEONATAL DEATH

<table>
<thead>
<tr>
<th>Study</th>
<th>Expt n/N</th>
<th>Ctrl n/N</th>
<th>Relative Risk (95%CI Fixed)</th>
<th>Weight %</th>
<th>RR (95%CI Fixed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neonatal death (all babies)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMSTERDAM 198</td>
<td>3 / 64</td>
<td>12 / 58</td>
<td>6.1 0.23 [0.07,0.76]</td>
<td>6.1</td>
<td>0.23 [0.07,0.76]</td>
</tr>
<tr>
<td>AUCKLAND 1972</td>
<td>36 / 532</td>
<td>60 / 538</td>
<td>29.0 0.61 [0.41,0.90]</td>
<td>29.0</td>
<td>0.61 [0.41,0.90]</td>
</tr>
<tr>
<td>BLOCK 1977</td>
<td>1 / 69</td>
<td>5 / 61</td>
<td>2.6 0.18 [0.02,1.47]</td>
<td>2.6</td>
<td>0.18 [0.02,1.47]</td>
</tr>
<tr>
<td>DORAN 1980</td>
<td>4 / 81</td>
<td>11 / 63</td>
<td>6.0 0.28 [0.09,0.85]</td>
<td>6.0</td>
<td>0.28 [0.09,0.85]</td>
</tr>
<tr>
<td>GAMSU 1989</td>
<td>14 / 131</td>
<td>20 / 137</td>
<td>9.5 0.73 [0.39,1.39]</td>
<td>9.5</td>
<td>0.73 [0.39,1.39]</td>
</tr>
<tr>
<td>GARITE 1992</td>
<td>9 / 40</td>
<td>11 / 42</td>
<td>5.2 0.86 [0.40,1.85]</td>
<td>5.2</td>
<td>0.86 [0.40,1.85]</td>
</tr>
<tr>
<td>KARI 1994</td>
<td>6 / 95</td>
<td>9 / 94</td>
<td>4.4 0.66 [0.24,1.78]</td>
<td>4.4</td>
<td>0.66 [0.24,1.78]</td>
</tr>
<tr>
<td>MORALES 1986</td>
<td>7 / 121</td>
<td>13 / 124</td>
<td>6.2 0.55 [0.23,1.34]</td>
<td>6.2</td>
<td>0.55 [0.23,1.34]</td>
</tr>
<tr>
<td>MORRISON 1978</td>
<td>3 / 67</td>
<td>7 / 59</td>
<td>3.6 0.38 [0.10,1.39]</td>
<td>3.6</td>
<td>0.38 [0.10,1.39]</td>
</tr>
<tr>
<td>PAPAGEORGIU</td>
<td>1 / 71</td>
<td>7 / 75</td>
<td>3.3 0.15 [0.02,1.20]</td>
<td>3.3</td>
<td>0.15 [0.02,1.20]</td>
</tr>
<tr>
<td>PARSONS 1988</td>
<td>0 / 23</td>
<td>1 / 22</td>
<td>0.7 0.32 [0.01,1.45]</td>
<td>0.7</td>
<td>0.32 [0.01,1.45]</td>
</tr>
<tr>
<td>SCHMIDT 1984</td>
<td>5 / 49</td>
<td>4 / 31</td>
<td>2.4 0.79 [0.23,2.72]</td>
<td>2.4</td>
<td>0.79 [0.23,2.72]</td>
</tr>
<tr>
<td>TAUESCH 1979</td>
<td>8 / 56</td>
<td>10 / 71</td>
<td>4.3 1.01 [0.43,2.40]</td>
<td>4.3</td>
<td>1.01 [0.43,2.40]</td>
</tr>
<tr>
<td>US STEROID TRIA</td>
<td>32 / 371</td>
<td>34 / 372</td>
<td>16.5 0.94 [0.60,1.50]</td>
<td>16.5</td>
<td>0.94 [0.60,1.50]</td>
</tr>
<tr>
<td><strong>Subtotal (95%CI)</strong></td>
<td>129 / 1770</td>
<td>204 / 1747</td>
<td>100.0 0.63 [0.51,0.77]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chi-square 14.00 (df=13)</strong></td>
<td></td>
<td></td>
<td>Z=4.36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Crowley 1992
"Antenatal corticosteroid therapy is indicated for women at risk of premature delivery with few exceptions and will result in a substantial decrease in neonatal morbidity and mortality as well as substantial savings in health care costs"
ANTENATAL CORTICOSTEROIDS

VERMONT OXFORD NETWORK ANNUAL REPORTS 1991-2005

% VLBW INFANTS

NIH CONFERENCE
INTRODUCTION OF ANTENATAL STEROIDS AND POSTNATAL SURFACTANT TREATMENT

EFFECT ON MORTALITY IN ELBW INFANTS
We’re so proud of this, we made it part of our logo...
### EARLY (<96 HOURS) POSTNATAL STEROID THERAPY

#### META-ANALYSIS OF 19 RANDOMIZED CONTROLLED TRAILS

<table>
<thead>
<tr>
<th>Outcome (N)</th>
<th>Typical Risk Difference (95% CI)</th>
<th>Decreased ↓ Risk ↑ Increased</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLD @ 28 DAYS (14)</td>
<td>-0.10 (-0.14, -0.06)</td>
<td></td>
</tr>
<tr>
<td>CLD @ 36 WEEKS (13)</td>
<td>-0.10 (-0.13, -0.06)</td>
<td></td>
</tr>
<tr>
<td>DEATH/CLD @ 36 WKS (15)</td>
<td>-0.07 (-0.11, -0.03)</td>
<td></td>
</tr>
<tr>
<td>MORTALITY (19)</td>
<td>0.01 (-0.02, 0.05)</td>
<td></td>
</tr>
<tr>
<td>HALLIDAY 2001</td>
<td></td>
<td>Typical Relative Risk and 95% CI</td>
</tr>
</tbody>
</table>
EARLY (<96 HOURS) POSTNATAL STEROID THERAPY

NEURODEVELOPMENTAL OUTCOME IN SURVIVORS

<table>
<thead>
<tr>
<th>OUTCOME (N)</th>
<th>Typical Risk Difference (95% CI)</th>
<th>Decreased</th>
<th>Risk</th>
<th>Increased</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVL (3)</td>
<td>0.04 (0.00, 0.07)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BAYLEY MDI &lt; 70 (1)</td>
<td>0.10 (-0.07, 0.26)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAYLEY PDI &lt; 70 (1)</td>
<td>0.17 (0.01, 0.32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABNORMAL NEURO EXAM (2)</td>
<td>0.29 (0.19, 0.39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEVELOPMENTAL DELAY (1)</td>
<td>0.26 (0.11, 0.41)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEREBRAL PALSY (2)</td>
<td>0.25 (0.15, 0.35)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOD/ SEVERE IMPAIRMENT (2)</td>
<td>0.09 (-0.01, 0.19)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HALLI DAY 2001
“On the basis of limited short-term benefits, the absence of long-term benefits, and the number of serious short-term and long-term complications, the routine use of systemic dexamethasone for the prevention or treatment of chronic lung disease in infants with very low birth weight is not recommended.”
POSTNATAL CORTICOSTEROID USE IN VLBW INFANTS

VERMONT OXFORD NETWORK ANNUAL REPORTS 1991-2005

AAP STATEMENT
IMPROVEMENT FORMULA

Generalizable Scientific Evidence + Particular Context → Measured Performance Improvement

Do What?
Evidence Based Medicine

Do How?
Evidence Based Practice

Batalden, PB, Davidoff F. Qual Saf Health Care 2007;16:2-3