Reaching MDG 5: How to achieve maternal survival

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Overview

- The MDG 5
- 2011 indicators
- Why do more women die in childbirth in the developing world?
- Focus on 3 evidence-based interventions:
  - Antenatal care
  - Facility Birth
  - Family Planning
- Activity!
MDG 5

A: Reduce MMR by 75% between 1990 and 2015

B: Universal Access to Reproductive Health by 2015
MDG progress at a glance

The World Bank: Global Monitoring Report 2011
Improving the Odds of Achieving the MDGs
MDG performance

2011 World Bank Monitoring Report

Blue = on track
Green = close
Orange = far

Source: World Bank staff calculations based on data from the World Development Indicators database.
Maternal Deaths per 100,000 Live Births

Developed World = 17
Developing World = 290
Developing World (excluding China) = 330

Population Reference Bureau 2011 Data Sheet: The World’s Women and Girls
Why do more women die in childbirth in the developing world?

MAMMA’S STORY: MATERNAL MORTALITY IN SIERRA LEONE

PHOTOGRAPHED BY LYNSEY ADDARIO / VII NETWORK/ HTTP://WWW.TIME.COM/TIME/PHOTOGALLERY/0,29307,1993805,00.HTML
The Three Delays
household to health system

Delay 1: Recognition and decision to seek care
- Community Mobilization
- Birth preparedness
- Stabilization and community "first aid"

Delay 2: Transport to care
- Maternity Waiting Homes
- Antenatal risk screening

Delay 3: Receiving quality care
- BEmOC Facility
- Financial incentives
- Communications technology
- Transport/referral systems

PROVISION OF CARE
- Skilled attendance
- Emergency obstetric care
- Neonatal resuscitation
- Post-resuscitation management (consider alternate cadres)

QUALITY OF CARE
- Perinatal audit
- Training and drills for obstetric care and resuscitation

Evidence based interventions to reduce intrapartum-related stillbirths and neonatal deaths.

Focus on 3 evidence-based interventions:
- Antenatal care
- Facility Birth/skilled obstetric care
- Family Planning

Consider how to support each from the community to the facility levels to achieve our goals
Who are Skilled Birth Attendants?

- Midwives
- Nurses
- Doctors
- Years of formal education
- Located in a health facility
- Urban >>> Rural

Who delivers women now and where?

Darmstadt, GL et al, IJOG, 2009
Skilled Birth Attendance: % Women Delivering with Doctor, Nurse, or Midwife by Wealth

Population Reference Bureau 2011 Data Sheet: The World’s Women and Girls
Who are Traditional Birth Attendants?

- Low education (3-4 yrs formal schooling)
- Low literacy
- Little to No formal training in childbirth
- Services Free or in kind payment
- Located IN communities

Traditional birth attendant Josephine Achen attends to a pregnant woman. Josephine received only basic training seven years ago, when there was no one else in the village to act as a midwife. She is now involved in training other birth attendants. Photograph: Guardian/Dan Chung www.guardian.co.uk
Can TBA’s Change Maternal Mortality?

- Controversial!!!
- Training TBAs can result in:
  - Improvements in knowledge
  - Increased use of Antenatal Care
  - Improved attitudes and behaviours of TBAs
  - Reduction in perinatal mortality ([Sibley and Sipe, 2004]; [Sibley et al., 2004] and [Sibley et al., 2004b]).
  - Increased prompt referral of high risk cases (Schaider et al., 1999; Walraven and Weeks, 1999).
- Need training and annual retraining (SCC Chen et al, 2011)
- Improvements most marked when have defined roles integrated in health system (Byrne A and Morgan A, 2011)
Who are Community Health Workers?

Younger than TBAs

More educated than TBAs

Live in community and accountable to it

Less bound to traditional care practices

Usually volunteer, sometimes paid in health care system

Men or women

Typically do NOT attend births alone, but may work with a TBA
Can Lay Health Care Workers change Maternal Mortality?

- Systematic review: Lay health workers likely...
  - Increase number of women who breastfeed
  - Child immunizations rates and up to date immunizations
  - Fewer deaths under 5
  - Fewer children suffer from fever, diarrhea, and pneumonia
  - Increase number of parents seeking care for sick child
  - NO studies on impact of LHW on maternal mortality

- RCT in India, CHW clusters had improved:
  - Prenatal care attendance
  - Birth prep indicators (money for transport, site, attendant)
  - Care seeking in pregnancy
  - Improved asphyxia related mortality

Antenatal Care: A Solution in the Community....
How do you increase Antenatal care uptake?

http://www.cafod.org.uk
With mothers, ask: How much can one move to a village? And to what advantage?

- **Reach every mother**! (mapping; door to door registry of women by CHW’s) for invitation; preg. registration.
- Introduce “under the mango tree” checkups by CHW’s + tech. support team: (CHW + TBA or CHW/TBA + SBA supervisor)
- Care delivered: Gen. exam + blood pressure check, Hb check, edema, fundal height; Iron, antimalarials
- Creating continuity of care: *use home based hand carried records*
### Facility based skilled care?

- **Often not** in village.
  - Prepare: What is nearby?
  - What is the emergency plan for getting there?
  - Referral criteria
  - Which institution and WHY?
  - Agreement on transport provision: who pays and how?

### Accessible in village:

- Provided by CHWs, TBAs
  - Prenatal, Postnatal care, Newborn care
  - Family planning
  - Danger signs of pregnancy
  - Community mapping

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**Plan to Decide with Community...**
How lay health workers assist: Peru

Antenatal and Postpartum moms map

Gorgas course 2011: visit to malaria study village

Pregnancy warning signs poster
Getting consensus in each village

- **Multiple meetings**: exercises to discover “What is killing mothers?” CAN WE HELP?
- Who comes to meetings? Local volunteers seek participation/representation from “all corners”! prerequisite: simple mapping; invitations
- Reach consensus: “what are 3 delays” to saving mom’s lives here?
  - -- at family/household level (decision to plan)
  - -- at community (?volunteer committee)
  - -- at institution (delays in system lead to death)
- Bottom line: Need a maternal death audit!
Toolbox: Maternal Death Audit

Communities keep track of deaths or illnesses of mothers by cause and review them annually with help of resident home visitors (CHW'S).

Reach consensus on preventable problems—and who and how to fix them.

Use aids: Pregnancy histories/pregnancy outcomes with questionnaires

Maternal Death Audit package available from Maternal Health Task Force: MaiMwana project, Jan 2012
Activity:

Use what you learned today!

Practicing Health care providers raise your hands

Divide in groups

Number your card with your group number

You have 5 minutes

• Design an intervention to bring prenatal care and family planning to a rural village in Africa. Who will you use and for what tasks?

• The group that names the highest number of activities that can be moved from the clinic to the community, with the most feasible design will win the prize.

• Write and enumerate the activities and include who will deliver each activity. Give to us, we will review and announce winner.
### Cost effectiveness...

<table>
<thead>
<tr>
<th>TBAs</th>
<th>SBAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>○ 11% reduction in IPR-NMR attributable to TBAs</td>
<td>○ No equivalent measure</td>
</tr>
<tr>
<td>○ baseline rate of 10/1000 NMR (low!)</td>
<td>○ One study estimated cost $42 per IPR-N Death averted over a 5 year period</td>
</tr>
<tr>
<td>○ At a Cost of $110 US/yr to train and retrain a TBA doing 30 deliveries/yr</td>
<td>○ Trained community midwives only in Postnatal care and Neonatal resuscitation</td>
</tr>
<tr>
<td>○ SAVES 1 neonate per TBA every 33 years at a cost of 3630$ (too much!)</td>
<td></td>
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</table>
Cost effectiveness CHWs

- 150.5$ US for each death averted for home based care
- No Cost Effectiveness Estimates for intrapartum-related hypoxia deaths averted
- Quality of data better than for SBAs and TBAs
- % reductions in IPR-NMR are higher for CHW interventions than for TBAs and SBAs (36-42% in some studies)
Putting it all together...a health system

- Evidence is needed for the impact of systems where:
  - Birth care is provided by the TBAs in close concert with
  - CHWs providing prenatal and postnatal/newborn care with
  - Early referral to SBA sites such as birthing centers who have
  - Rapid referral of complications to CEmOC centers

- Human resource constraints and cultural factors will probably not allow for 100% SBA in facilities any time soon

Byrne, A and Morgan A. 2011
Moving toward facility birth...
Interventions in Facility Delivery

- Few obstetric interventions with specific data from low resource settings, and none with strong evidence
- Expert opinion recommends:
  - Partograph
  - External Cephallic Version
  - Emergency C/S for Breech, uterine rupture, placental abruption
  - Therapeutic maneuvers for shoulder dystocia
  - In utero resuscitation
  - Symphysiotomy

Lawn, JE et al. 2009
Focus on Cesarean Section

Whose life does a CS save? What maternal conditions does a CS treat?

GH: Necrotic Uterus 2009: Rwanda
Cesarean section: finding the sweet spot

U.S. seeks to DECREASE C/S rate

- Currently 32.8% (2011)
- Contributing to maternal mortality
- Electronic Fetal Monitoring increases C/S rate without changing neonatal outcomes

Developing world seeks to INCREASE C/S rate

- Optimal C/S rate: 8% (Goldenberg and McClure) or 10-15% (WHO)
- Prevents stillbirth
- Prevents maternal mortality and morbidity

CDC. Births: Preliminary Data for 2010

Darmstadt, GL et al. BMC 2009
Skilled Attendance and Perinatal Mortality

- **Still Birth Rate (SBR):**
  - Decreased sharply as Caesarean section rates increased from 0 to about 10%, (same for MMR).
  - No significant reductions associated with skilled attendance until coverage rates ~40%.
  - No reductions associated with complete ANC until 60% coverage was achieved (modest reduction).

- **Perinatal Mortality Rate (PMR):** Significant reduction even without access to C/S (quality OB care)

Conclusion: More than just a C/S

- **BASIC EMERGENCY OBSTETRIC CARE**
  - Parenteral Antibiotics, Oxytocics, anticonvulsants
  - Manual placental removal, retained products
  - Assisted delivery (vacuum, forceps)

- **COMPREHENSIVE EMERGENCY OBSTETRIC CARE**
  - Access to Cesarean section, hysterectomy
  - Blood banks, transfusions

- Coverage rates of proven interventions in the communities must surpass 40-60% in order to affect Perinatal mortality, and likely Maternal Mortality
Where to put the money first?

Obstetric care packages presumptively have the largest mortality benefit for intrapartum deaths (maternal and neonatal)

20-60% by the Lancet Neonatal Series 2007
60-85% via the Delphi process

Modest reductions with other strategies

Community skilled birth attendants, TBAs, facility based therapeutic hypothermia

Lawn, JE et al. 2009
Post natal care and family planning
Family Planning

- Unsafe abortion accounts for 13% of Maternal Mortality and causes significant morbidity
- Family Planning can decrease the number of unintended pregnancies and abortions

Russian Federation: % change in abortion with concurrent increases in use of modern family planning (Westoff, 2005)
Family Planning:

- Average fertility levels
  - World-wide: 2.5
  - Developed: 1.7
  - Developing (excluding China): 3.1
  - Sub-saharan Africa: >5
- Secondary School education, higher income associated with smaller family size
- Men want larger families than women

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>CHILDREN PER WOMAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niger</td>
<td>7.4</td>
</tr>
<tr>
<td>Mali</td>
<td>6.6</td>
</tr>
<tr>
<td>Somalia</td>
<td>6.5</td>
</tr>
<tr>
<td>Uganda</td>
<td>6.5</td>
</tr>
<tr>
<td>Congo, Dem. Rep.</td>
<td>6.4</td>
</tr>
<tr>
<td>Zambia</td>
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</tr>
<tr>
<td>Chad</td>
<td>6.2</td>
</tr>
<tr>
<td>Burkina Faso</td>
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<tr>
<td>Malawi</td>
<td>6.0</td>
</tr>
<tr>
<td>Liberia</td>
<td>5.9</td>
</tr>
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Worldwide Rates of Family Planning

Use of modern family planning methods has risen throughout the developing world, but is still very low in Africa.

- Birth spacing vs. Birth limiting
- Unmet need for both is high in Sub Saharan Africa

Guttmacher Institute and UNFPA, 2009; Prata, N, 2007
<table>
<thead>
<tr>
<th>Old</th>
<th>New</th>
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<tbody>
<tr>
<td>• Antenatal care available only at clinics, institutions; geog. &amp; $$ barrier to access.</td>
<td>• Mini antenatal care available thru CHW’s at village level with tech support team visits; less cost to mothers.</td>
</tr>
<tr>
<td>• No village preparedness to get mother to clean delivery site; no phone communication.</td>
<td>• Village committee to help mothers to clean delivery site; cell phone communication</td>
</tr>
<tr>
<td>• Post-natal care and family planning available at clinic site only</td>
<td>• CHW’s can help with post-natal follow-up mini checkups; distribute condoms, other FP methods</td>
</tr>
</tbody>
</table>
Sources:

- Articles:
  - Byrne, A and Morgan A. How the integration of traditional birth attendants with formal health systems can increase skilled birth attendance. IJGO. 115; 2011. 127-134.
  - Lim, SS. Dandona, JA et al. India’s Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. Lancet 2010; 375:2009-23
- Web References: