The Mystery of Maternal Mortality in Indonesia

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Maternal Health Quiz #1

What percentage of global maternal deaths occur in developing countries?

A. 50%
B. 80%
C. 95%
D. 99%
99% of maternal deaths in developing countries

Maternal mortality is the global health indicator with the largest disparity between developed and developing countries.
Milestones in Maternal Mortality Reduction

• 1985 – “Where is the M in MCH”, *Lancet*
• 1987 – First Global Maternal Mortality Conference, Nairobi, Kenya
• 2000 – Adoption by UNGA of Millennium Development Goals (MDGs) highlighting the importance of Maternal Health
• 2015 – Adoption by World Health Assembly of new targets for Maternal Mortality Reduction 2015 – 2030 (SDGs)
Reduction of Maternal Mortality: Where are we now?

- Global MMR 1990: 385
- Global MMR 2015: 216
  - 44% reduction (MDG goal was 75%)
- Sustainable Development Goal
  - Global MMR of 70
  - No country > 140

MMR = # maternal deaths / 100,000 live births
Indonesia is the largest country in the world.
33 provinces, 500+ districts, 17,000 Islands

And…. 250 Million People
Indonesia Dichotomy

• Economy growing >5-6% yearly since 2000
  – 8th largest economy in the world in 2015!
• Literacy rate: 92%
• Contraceptive prevalence: 60%
• High antenatal care, skilled attendance at birth, facility-based birth
• More than 200,000 midwives

Yet…..

• Under 5 death rate: 40/1000 live births
• Newborn mortality: 19/1000 live births
• Maternal mortality ratio: 359 in 2012

Sources: IDHS 2012, IBI
Maternal Mortality in Neighboring Countries

- Singapore: 7
- Thailand: 40
- Malaysia: 48
- Vietnam: 54
- Philippines: 86
- India: 186
- Cambodia: 308
- USA: 20

(Source: Lancet, 2011)
The EMAS Program

• Expanding Maternal and Newborn Survival
• USAID-funded 5-year, $55 million program
• Working to increase coverage of life-saving interventions by:
  – Strengthening emergency obstetric/newborn care (EmONC) in 150 hospitals and 300 health centers
  – Improving efficiency of referral process between those hospitals and health centers
• Focus on establishing clinical governance processes and systems
Indonesia Context

- Good infrastructure
- Many healthcare workers, many trainings
- Evidence-based national policies in place
- Supplies and equipment available
- Strong political will
- Large financial resources
EMAS RESULTS FRAMEWORK

**Goal:** Contribute to Reductions in Maternal and Newborn Mortality

- Improved quality of emergency MNH services
- Increased coverage of life-saving MNH interventions
- Increased efficiency and effectiveness of referral systems
- High-impact, life-saving clinical interventions implemented through strong clinical governance
- Referral systems functioning optimally and equitably
- Strengthened accountability within government, the community and the health system for supportive policies and resource management
Key Quality Improvement Interventions

• Mentoring cycle with visits to and from mentee facility
• Teams of 2-7 mentors work side-by-side facility staff to:
  – Create shared vision and strategic leadership
  – Strengthen data recording and improve data use
  – Establish use of performance standards
  – Identify emergency teams and introduce emergency drills
  – Establish death and near miss audits
  – Establish use of clinical dashboards
  – Facilitate or strengthen use of service charters
  – Improve or develop facility feedback mechanisms
Referral System Strengthening Interventions

- Identifying multi-stakeholder working groups *(Pokja)*
- Improving Civic Forums *(Forum Madani Masyarakat/FMM)*
- Network MOUs *(Perjanjian Kerjasama)*
- Referral performance standard tools *(Alat Pantau Kinerja)*
- SijariEMAS (Referral Exchange System using ICT)
- Strengthening Maternal-perinatal Audits *(MPA)*
- Raising awareness of social insurance
- Public Monitoring by FMM
- Encourage private facility participation in social insurance schemes
Selected Program Results
Coverage of maternal interventions, Phase 1 and Phase 2 districts

- % of PE/E cases treated with MgSO4 (PHASE 1)
- % of PE/E cases treated with MgSO4 (PHASE 2)
- % of referred PE/E cases treated with MgSO4 before referral (hospital only) (PHASE 1)
- % of referred PE/E cases treated with MgSO4 before referral (hospital only) (PHASE 2)
- % of deliveries that receive a uterotonic in the 3rd stage of labor (PHASE 1)

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<td>% of PE/E cases treated with MgSO4 (PHASE 1)</td>
<td>88%</td>
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<td>% of referred PE/E cases treated with MgSO4 before referral (hospital only) (PHASE 1)</td>
<td>22%</td>
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<td>% of referred PE/E cases treated with MgSO4 before referral (hospital only) (PHASE 2)</td>
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<td>% of deliveries that receive a uterotonic in the 3rd stage of labor (PHASE 1)</td>
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Coverage of newborn interventions, Phase 1 and Phase 2

- % of newborns breastfed within 1 hour of delivery (PHASE 1)
- % of newborns breastfed within 1 hour of delivery (PHASE 2)
- % of newborns delivered b/w 24-34 weeks whose mothers received antenatal corticosteroids (hospital only)(PHASE 1)
- % of newborns delivered b/w 24-34 weeks whose mothers received antenatal corticosteroids (hospital only)(PHASE 2)
- % of newborns referred w/infection, given antibiotic before referral (hospital only)(PHASE 1)
- % of newborns referred w/infection, given antibiotic before referral (hospital only)* (PHASE 2)
Improved frequency and quality of near-miss and death audits in hospitals

Year 2 – Year 4 Trends: % of maternal and newborn deaths reviewed in EMAS-supported Hospitals, Phase 1 and Phase 2
Percentage of all maternal and newborn deaths reviewed by the MPA process, Phase 1 and Phase 2

PHASE 1 (Year 2 – Year 4)

- Year 2: Oct 2012 - Sept 2013 (Deaths: 338 maternal; 1977 newborn)
- Year 3: Oct 2013 - Sept 2014 (Deaths: 335 maternal; 1513 newborn)
- Year 4: Oct 2014 - Sept 2015 (Deaths: 300 maternal; 1228 newborn)

PHASE 2 (Year 3 – Year 4)

- Year 4: Oct 2014 - Sept 2015 (Deaths: 391 maternal; 1651 newborn)
Institutional Maternal and Very Early Neonatal Mortality Rates

• From 2013-2014, 68% of Phase 1 and 76% of Phase 2 hospitals had decreases in maternal mortality rates or no maternal deaths
• From 2013-2014, 73% of Phase 1 and 62% of Phase 2 hospitals had decreases in very early newborn mortality rates or no newborn deaths
• Not satisfied with results!
In-depth look at contextual factors

• Opted to conduct an external review of medical charts to gain a better understanding of contributing factors to maternal deaths in our target facilities

• Facilities beginning to do audit but quality still insufficient—cultural shift takes time!

• Questions going in:
  – Would we be able to access the charts?
  – Would we be able to draw any conclusions from the documentation?
Review Process

• Reviewed charts of mortality cases from a selection of hospitals
• Developed a synopsis of each case and categorized it according to contextual factor
• Team of 24 obgyns from professional association devoted two days to reviewing the synopses
Sample case

- 31 years old, first pregnancy, 39 weeks pregnant
- Referred from health center due to severe pre-eclampsia with blood pressure (BP) 230/140
- At arrival at hospital, BP 187/120, drowsy, no fever; Fetal Heart rate 60-100.
- #1 OB can't be reached, #2OB says put in ICU. Note it is Saturday midnight.
- Tuesday c-section, status of baby not clear. Mother spikes temps (40 and 41.8 degrees C), dies 2 days post c-section
Sample cases

- 30 years old, third pregnancy, in labor with difficulty breathing for 1 day.
- Patient goes from health center to hospital #1 to hospital #2.
- At hospital #2, noted to be in congestive heart failure with lung edema, also labs show renal failure. BP not recorded
- Plan is ICU and terminate pregnancy.
- 13 hours later, still no c-section, OB says to await stabilization.
- BP does improve, again c-section deferred.
- Delivers stillbirth vaginally.
- Spikes temperature of 40.5 at 19 hours after admission, midwife called for resident, doc unavailable. 23 hours after admission patient dies.
- Noted case occurs on weekend
Sample case

- 16 yo 8 months gestation, shortness of breath for 5 days.
- Plan is to do c-section but anesthesiologist delays saying they want patient more stable.
- Next day, patient lethargic, no fetal heart rate. Anesthesiologist again delays saying they want internal medicine consult, but internist can't be reached.
- 24 hours after admission still waiting c-section.
- C-section done 35 hours after admission, macerated stillbirth. Later same day, T38.6, patient put on ventilator.
- 2 days later patient dies with diagnosis of sepsis.
What did we learn?

Obgyn reviewers concluded:
• Obgyn was either delayed in seeing patient or not available in approximately 70% of cases
• Clinical management and decision making was inappropriate in approximately 50% of cases
• Approx 30% of women experience delay along referral pathway
• 72% of the cases should have survived, and another 24% would have most likely survived with proper care

Findings were compelling enough that we supported the Pediatrics Association to do a similar review
Newborn death Reviews (76 cases)

• 70% deaths were preventable
  – 55% died without having been seen by a pediatrician
  – 51% incorrect clinical management
  – 43% insufficient monitoring
  – 56% insufficient calories
  – 43% insufficient documentation
Take home messages

• Doing only a chart review, conclusions could be drawn regarding contextual factors

• Data can be used to dispel common perceptions that family ignorance, poor quality midwives, and delays in referral are the primary factors contributing to maternal deaths

• Country programs may want to consider a similar exercise to complement existing maternal audit processes
Future directions?

• Investment in secondary and tertiary care
• Innovative financing to remove financial disincentives for specialists to practice in government referral hospitals
• Mechanisms for remote consultation