Qualities of data from health information systems and consequences

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Use of health information systems

- Burden of disease/maternal morbidities
- Performance monitoring
- Quality of care
- Priority setting, policy-making
Context

- Palestinian context – the West Bank:
  - Health system
  - Maternal and Child Health
  - Areas of concern for Maternal and Child Health
Implementation of eRegistry

- eRegistry initiative
- National implementation in primary healthcare clinics
- Software and infrastructure

Transition of health system
Aggregate data/reporting → individual-level data
Objectives

1. What is the actual prevalence of maternal morbidities identified by the care providers?

2. Where are the biggest gaps in coverage and quality of care to prevent maternal and newborn morbidities?
Mechanism of change

Burden of disease/maternal morbidities

Health information system data for antenatal care (from health facilities)

- Aggregated data
  - Subjective diagnosis
  - Manual classification of conditions and severity
  - Relies on reporting from several health facilities

- Individual-level data*
  - Diagnosis by automated computations using clinical datapoints
  - Reported from source and follows individuals

*Collected and documented at point-of-care
Mechanism of change

Coverage and quality of care

Health information system data for antenatal care (from health facilities)

- Aggregated data
  - Simple count data
  - Limited reporting of data on quality of care

- Individual-level data*
  - Data on screening, managements
  - Number of tests, timing of tests, sequence

*Collected and documented at point-of-care
Methods - study setting

- Clinical documentation in primary healthcare clinics: antenatal record

- 5 districts in the West Bank
  - Primary healthcare clinics (n=156)
  - Referral clinics (n=9)
  - Total number of pregnancies registered=11,000
Methods - study setting

• Routine reports submitted by clinics
  – Maternal morbidities: gestational diabetes mellitus, anemia, multiple pregnancy, malpresentation at term, preeclampsia, Rh negative blood group, fundal height discrepancy

• Available ANC coverage data
  – Average number of ANC visits= 4.7
  – Coverage of 4+ ANC visits= 97%
Data collection

• Paper-based clinical antenatal records
  – Sampling:
    • 17 clinics, probability proportional to size sampling
    • ANC records of all pregnant women registered in 2015, 1369 ANC records
  – Data extraction: trained data collectors

• Data for comparison – Health systems reports from 17 clinics and corresponding high-risk clinics (submitted by care providers)
Analyses

• Datapoints and definitions of maternal morbidities
  – eg. anemia at 36 weeks → hemoglobin, gestational ages
  – eg. pre-eclampsia → blood pressure, urine protein test results, gestational age

• Referral rates for maternal morbidities

• Comparisons with reports submitted by care providers
Analyses

• Crude coverage:
  – Any content
  – Appropriate number of screening tests

• Effective coverage:
  – Timely, sequential screening as recommended in the ANC interventions

- Anemia screening
- At least one hemoglobin test
- Three hemoglobin tests
- Hemoglobin tests at booking visit, 24-28 and 36 weeks
Results

Aggregate reports vs Individual-level data

Maternal conditions

- Rh-negative blood group
- Anemia (Hb<9.5 g/dl)
- Preeclampsia
- Recurrent miscarriages
- Malpresentation at term
Results

- Referral rates are low:
  - Rh-negative blood group: 25%
  - Anemia: 24%
  - Preeclampsia: 78%
  - Recurrent miscarriages: 50%
  - Malpresentation at term: 30%
Interpretation

• Errors in manual computations
• Non-adherence to (referral) guidelines

• Complex health information system → prone to errors in reporting
  – Reporting from referral clinic and NOT from primary healthcare clinic
  – Only one morbidity/woman reported
  – Selective reporting of conditions
Interpretation

• Crude vs. effective coverage for monitoring
  – Choice of indicator for health systems monitoring

• Interventions that need repeat screenings have lower effective coverage (compared to crude coverage)
  – eg. anemia, hypertension in pregnancy

• Importance of timing of testing
  – Gestational diabetes mellitus
Thank you