Burden of Maternal Ill Health and Death

Rural Bangladesh

2007-8

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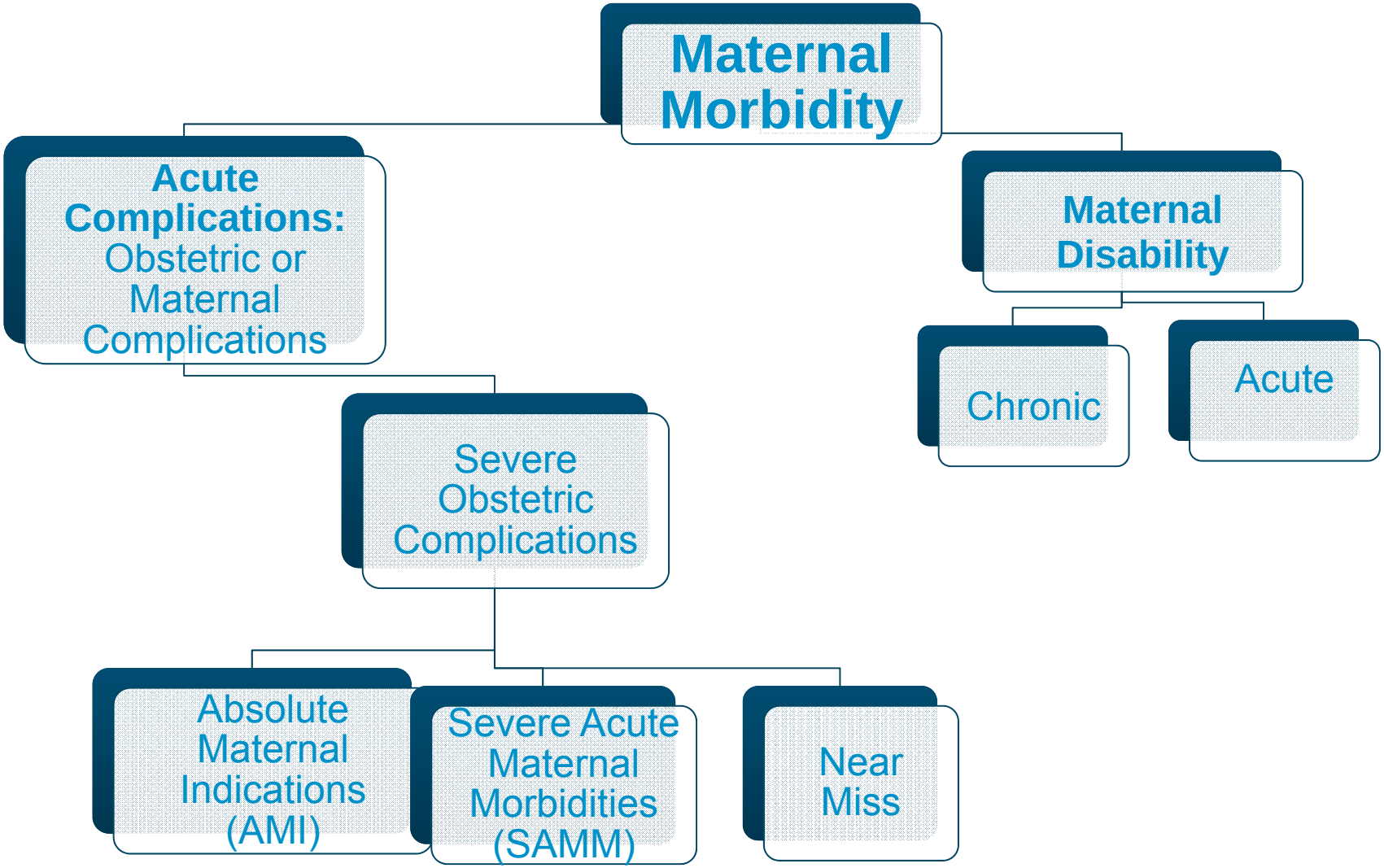
The maternal morbidity Informational vacuum

- **Two major factors contribute to the informational vacuum surrounding maternal ill health—**
  - inconsistent use of terminologies to describe maternal morbidities and their consequences, and
  - the methods used to ascertain them quantitatively.

Definitions of maternal morbidity



Data Collection Methods

- **Self reported complications (e.g., surveys)**

  Reliability poor compared with medical records

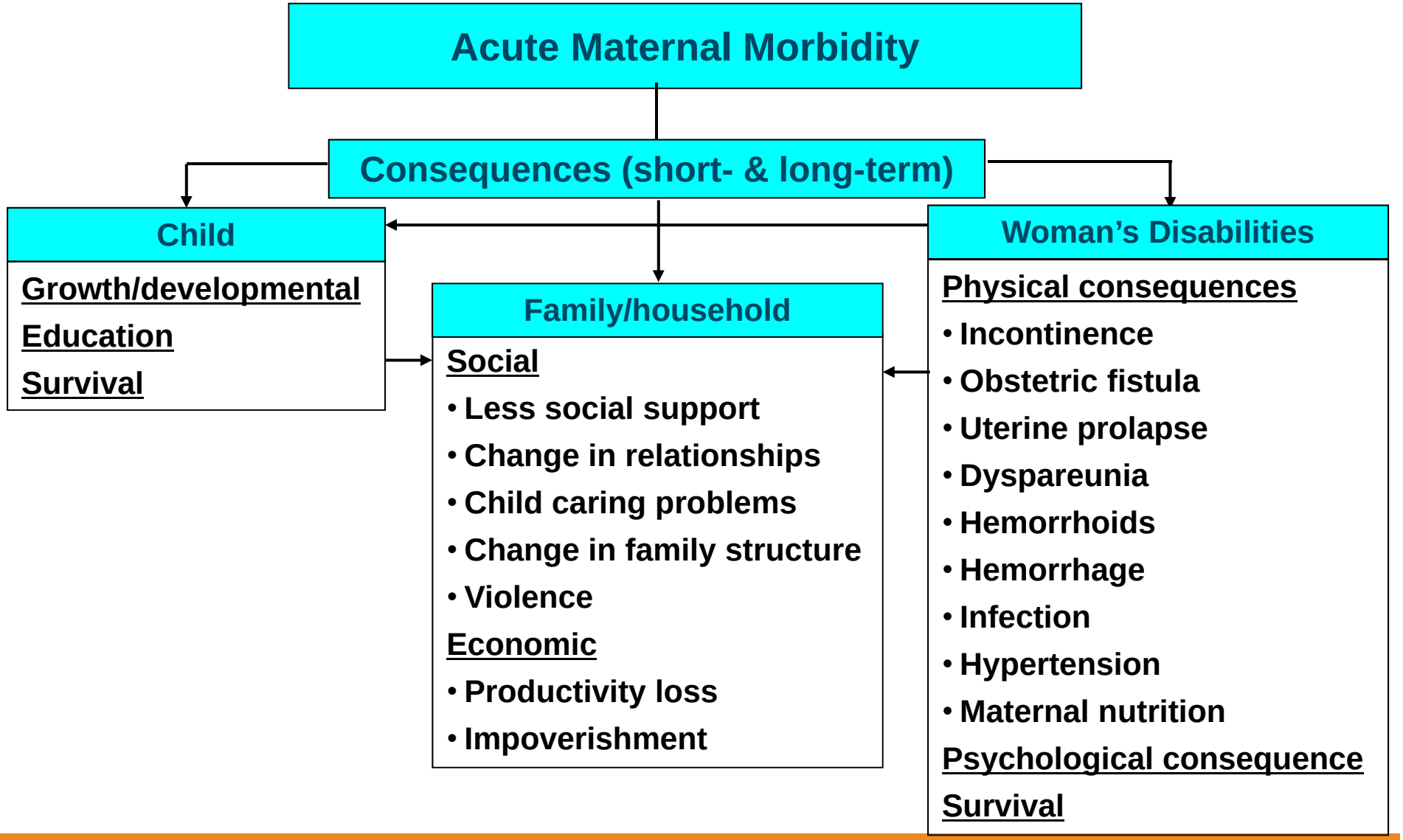
- **Assessment by community-based health providers**

  Providers --different levels of training, supervision, and equipment to diagnose complications. Reliability and validity is unclear.

- **Assessment by skilled providers in facility**

  "Gold" standard for diagnosis; WHO recently identified criteria to determine severe obstetric morbidities **based on …**

Conceptual framework



Specific objectives– Matlab MM project

Determine:

- level of severe and less severe maternal complications of those women who give birth in facilities in Matlab/Chandpur

Compare women with morbidities and those with normal/vag birth for consequences:

- level of physical sequelae cx 6 weeks post-delivery
- newborn outcomes (death, developmental delays)
- Consequences of the consequences: psychological, social and economic impact as well as continued death of children or mother

Study components

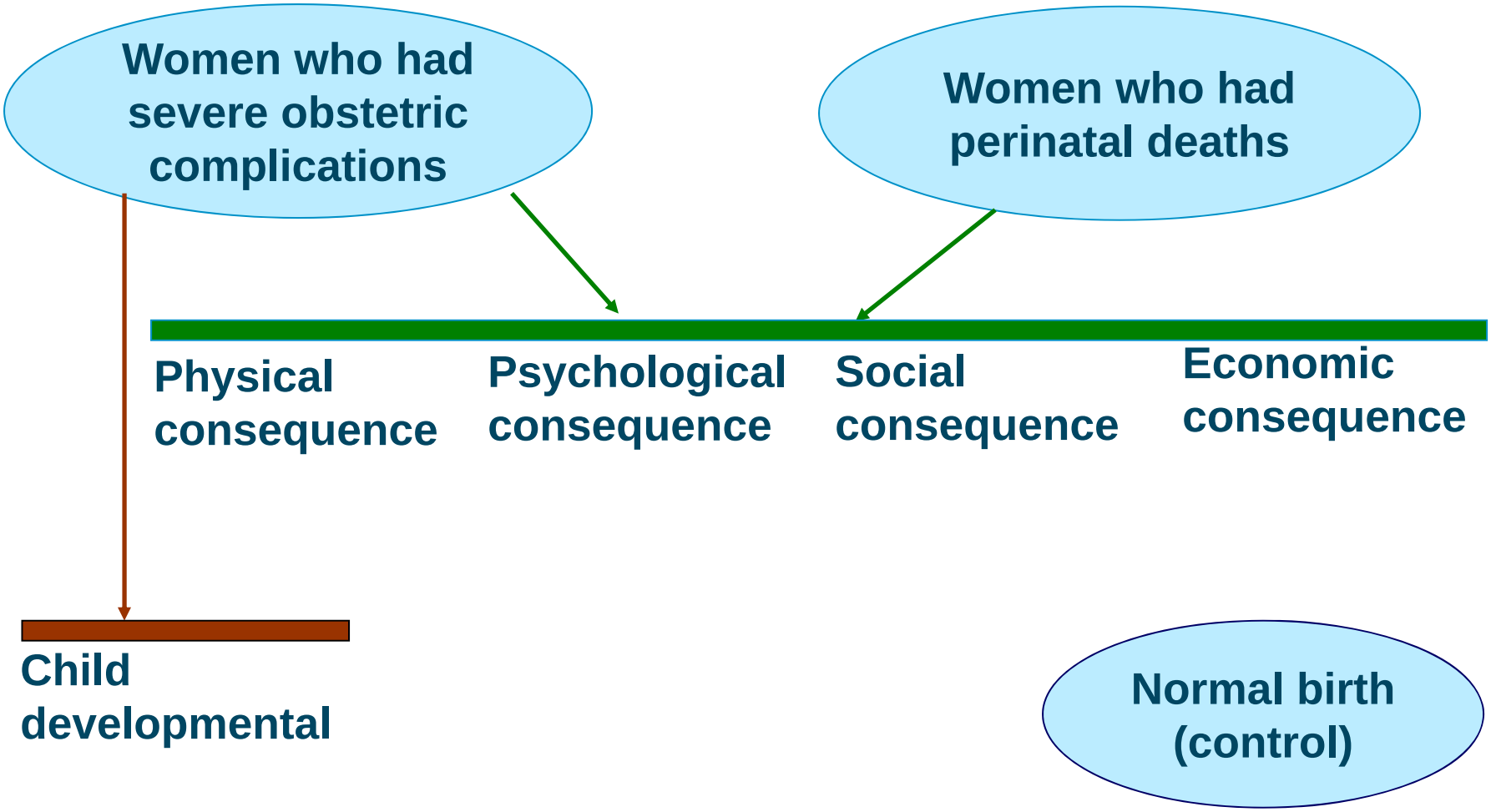
A prospective study examining short-term consequences

- **Physical**
- **Psychological**
- **Social**
- **Economic**
- **Child development**

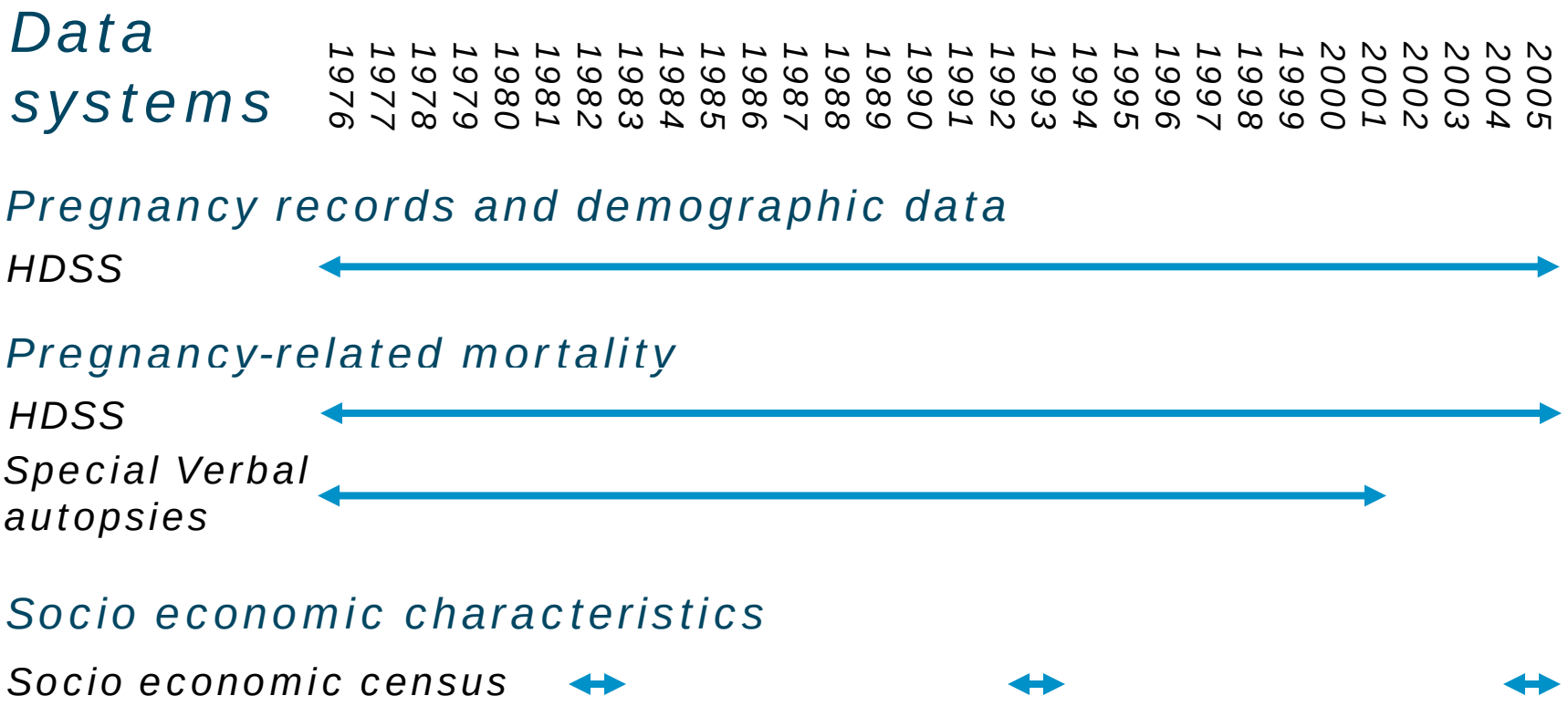
A retrospective study examining long-term consequences

- **Social**
- **Survival**

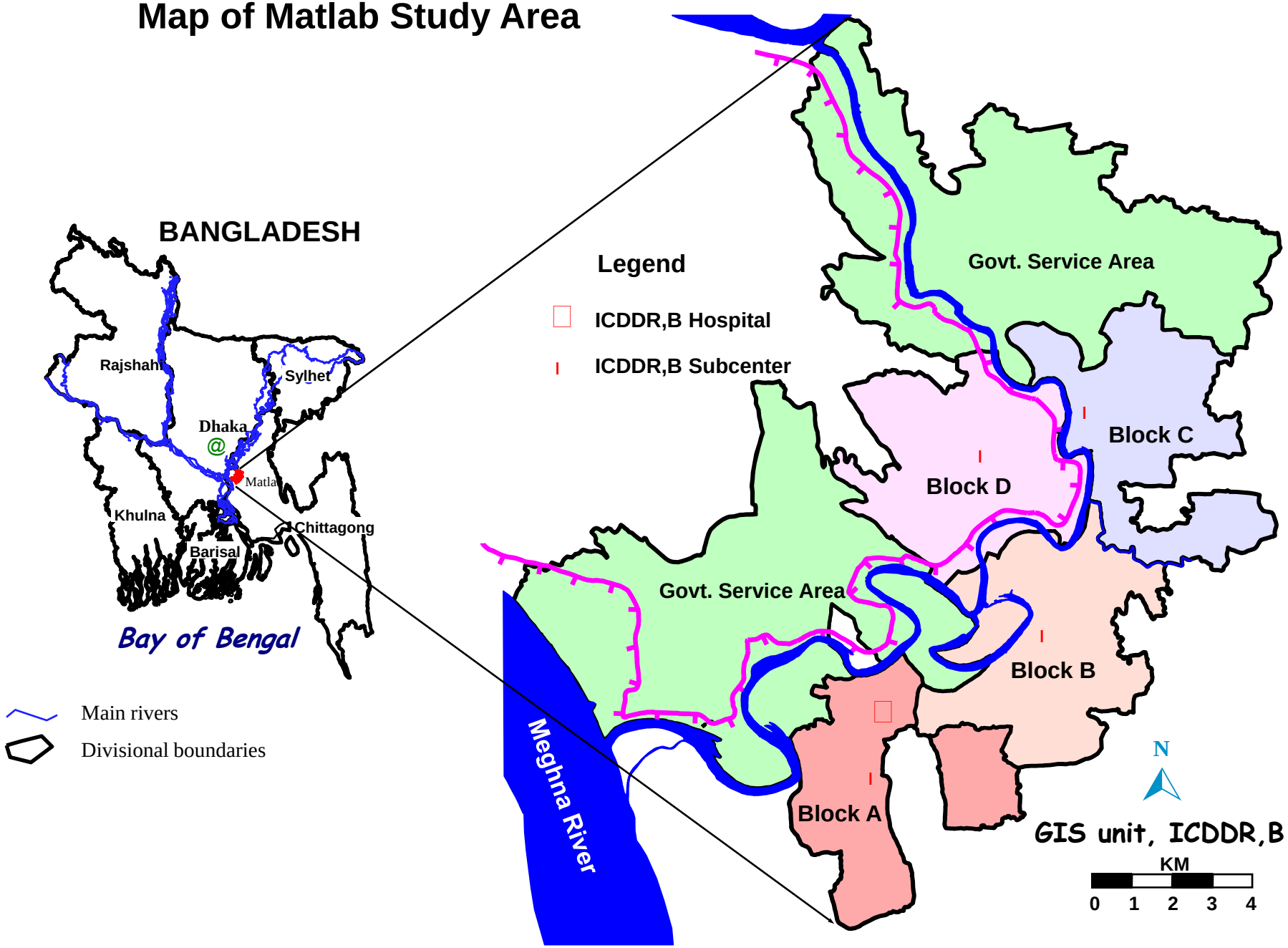
Study design – prospective components
Quantitative & qualitative



Data systems - retrospective quantitative study



Map of Matlab Study Area

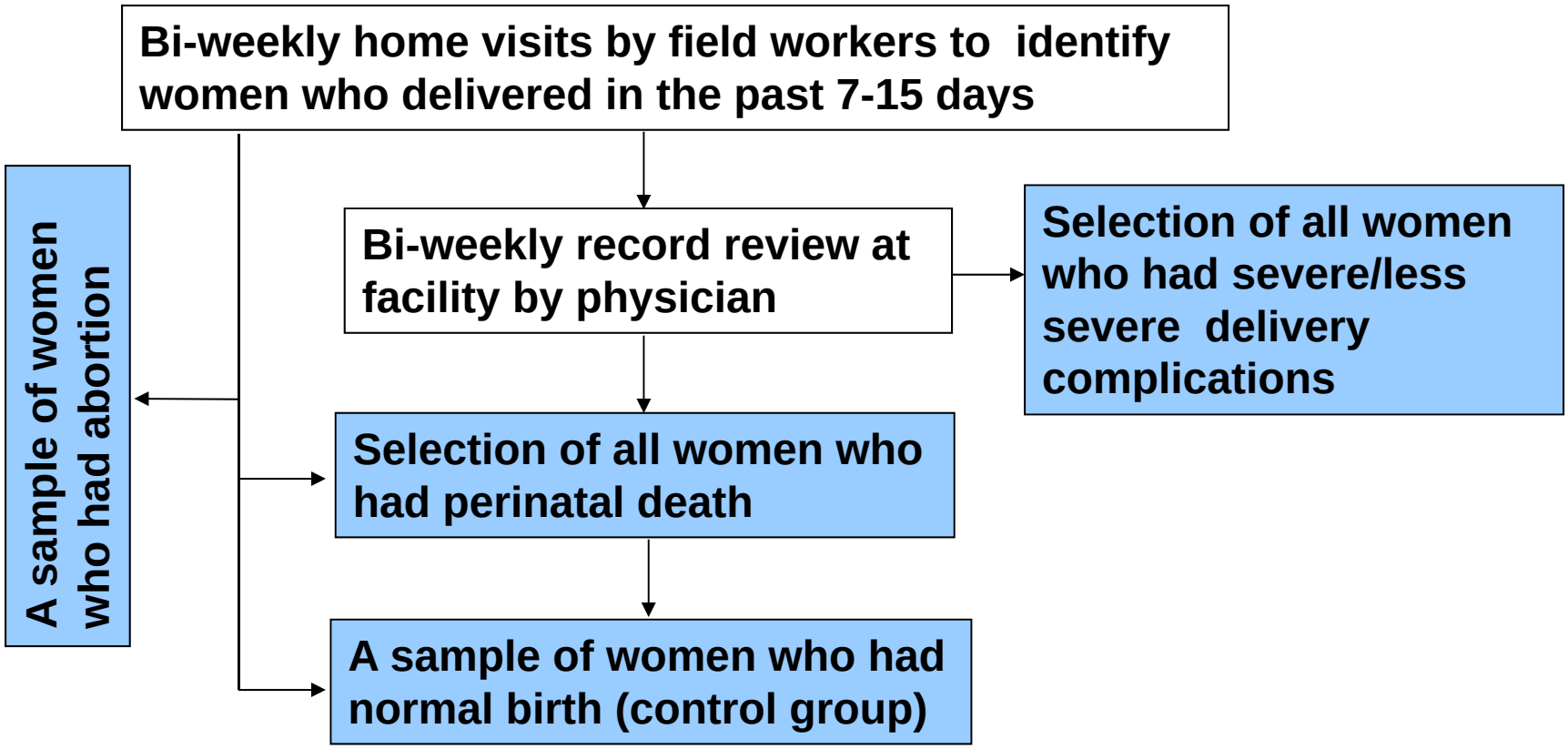


Socio-demographic and health indicators in Matlab and national level 2006

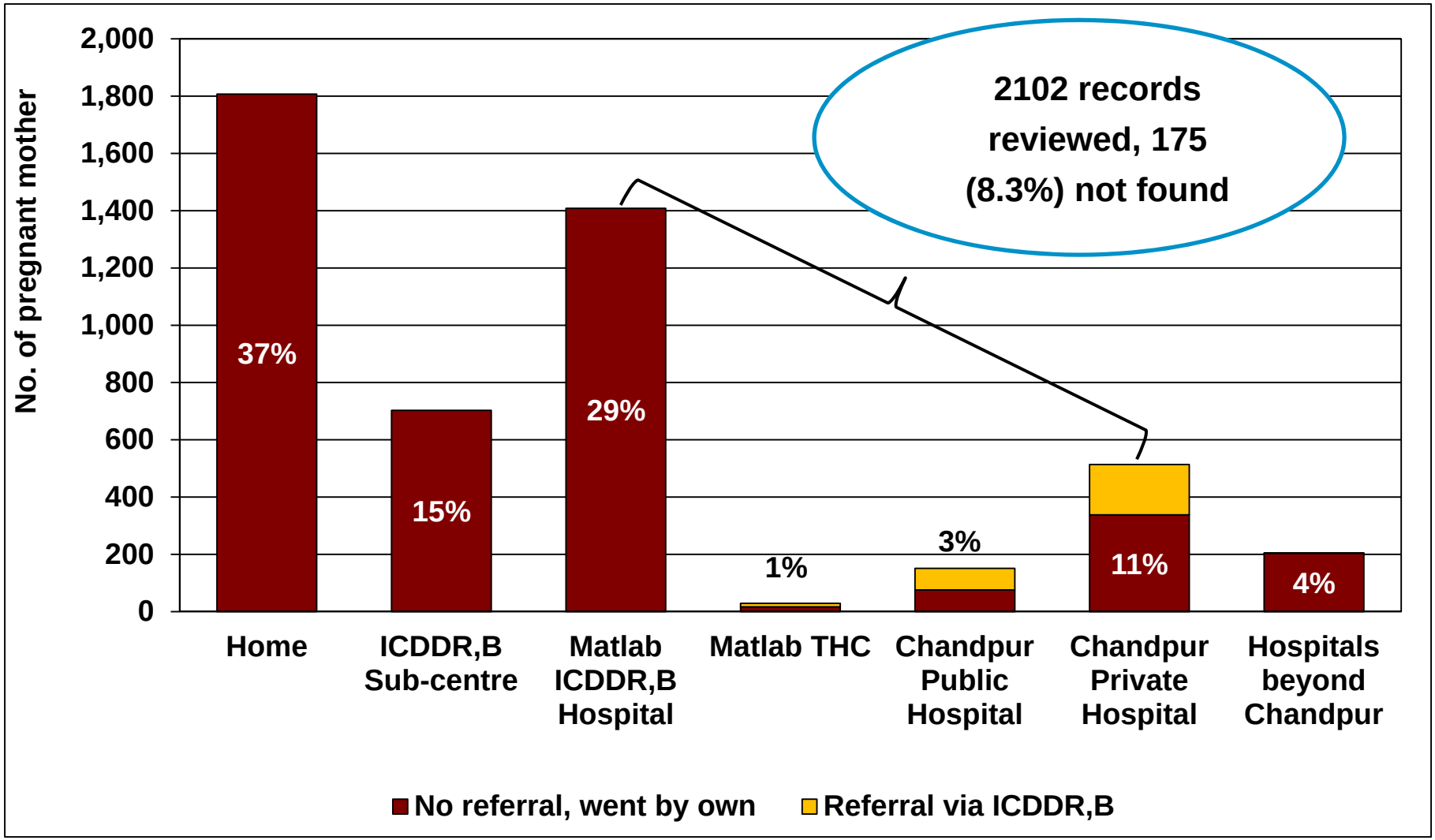
Indicators		Matlab ICDDR,B area	National
Literacy rate (%)	:	52.8	51.6
CPR (%)	:	56.6	55.8
TFR (per woman)	:	2.6	2.7
Skilled delivery (%)	:	77.0	18.0
MMR (per 100,000 lbs)	:	240.0	322.0
CS rate (%)	:	11.8	7.5
NNMR (per 1000 lb)	:	20.3	37.0
Life expectancy (years)	:	71.8	65.1

Acute maternal morbidities and mortality

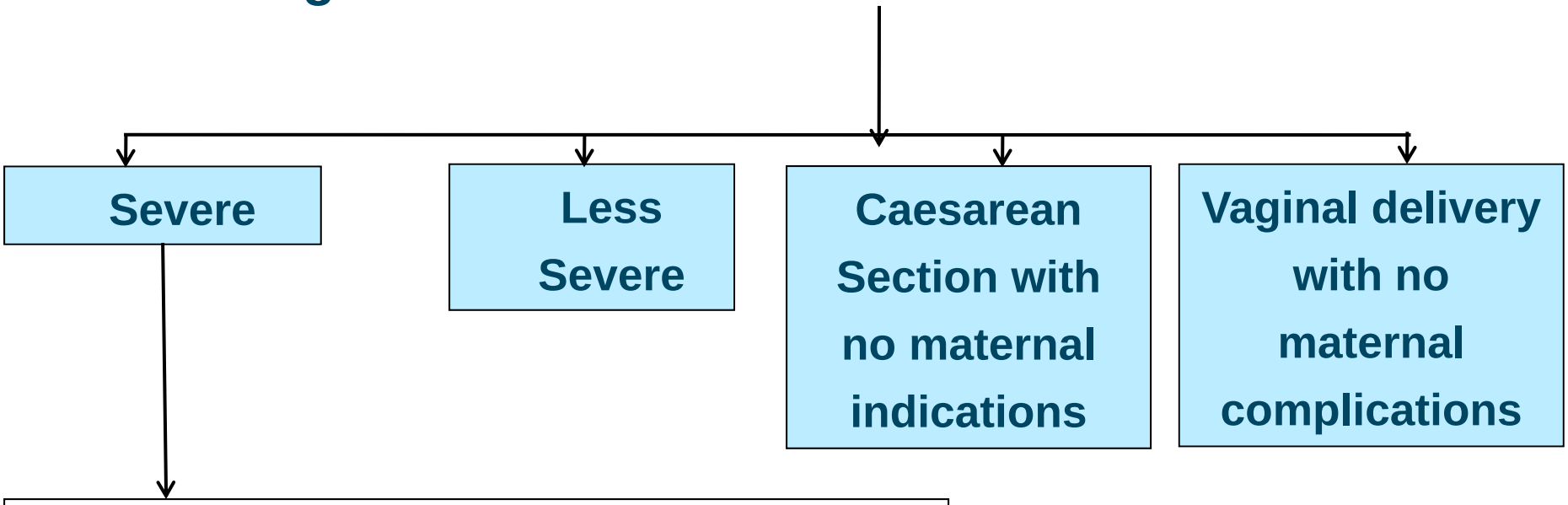
Selection of subjects – prospective study



Delivery place and referral in women giving birth in the Matlab ICDDR,B service area (4817) (2007 - 2008)



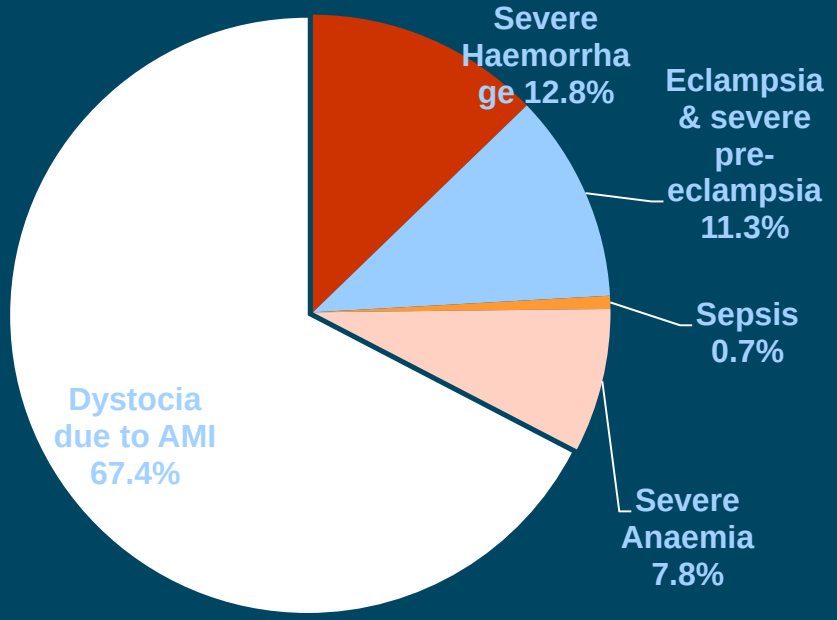
Categorization of Acute Maternal Morbidities



- **Caesarean section due to absolute maternal indications** (placenta praevia, abruptio placenta, major cephalo-pelvic disproportion, severe malpresentation, ruptured uterus, uncontrollable postpartum haemorrhage)
- **Haemorrhage** (bleeding with shock or >=2 units of blood)
- **Eclampsia and severe pre-eclampsia**
- **Septic shock and septicaemia**
- **Severe anaemia** (Hb <7g/dl)

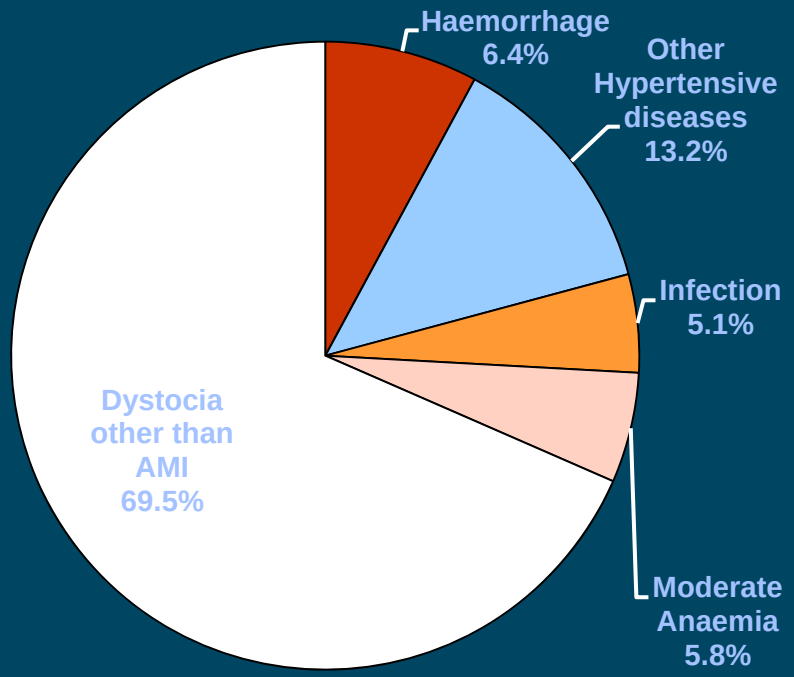
Percentages of women with severe and less severe maternal complications (2007-2008) (N=1927 records)

n = 141



Severe maternal

n = 311



Less severe maternal

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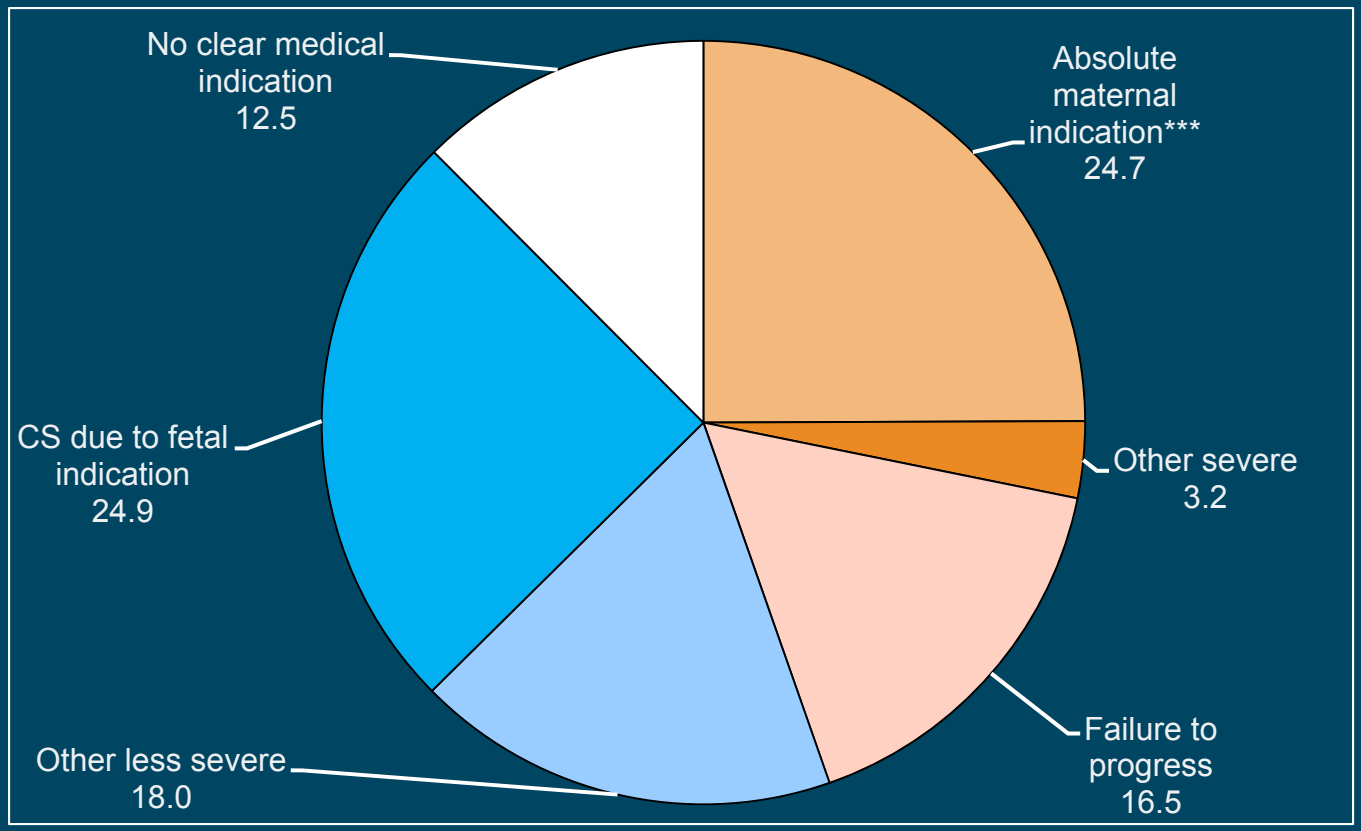
*** Absolute maternal indications include ruptured uterus, brow presentation, transverse lie, foeto-pelvic disproportion (including impending rupture of uterus)

Indications for C sections (n=401) in public and private hospitals, Matlab/ Chandpur 2007-2008



*** Absolute maternal indications include ruptured uterus, brow presentation, transverse lie, foeto-pelvic disproportion (including impending rupture of uterus)

12 maternal deaths in 2007-08

- ✓ **Causes:**
  - Haemorrhage (n=6)
  - Other direct (n=2)
  - Indirect (n=4)

- ✓ **Care seeking prior to death:**
  - Undelivered (n=2)
  - Delivery at home (n=4): 3 went to health facility after delivery, and one woman died on the way
  - Delivery in health facility (n=6)

Summary – Acute morbidites/mortality

- Maternal complications:
  - Only 7% of women who delivered in facilities had a severe maternal complication,
  - Severe dystocia was by far the most common complication among women admitted to health facilities. Admissions for haemorrhage and sepsis were uncommon
  - Caesarean sections:
    - 27.9% for severe cx ; 79% of severe cx cases had csection
    - 18% for less severe cx; 23% of less severe cx cases had csection

- Maternal deaths:
  - 50% of maternal deaths were due to haemorrhage
  - Most women who die seek care from public or private hospitals

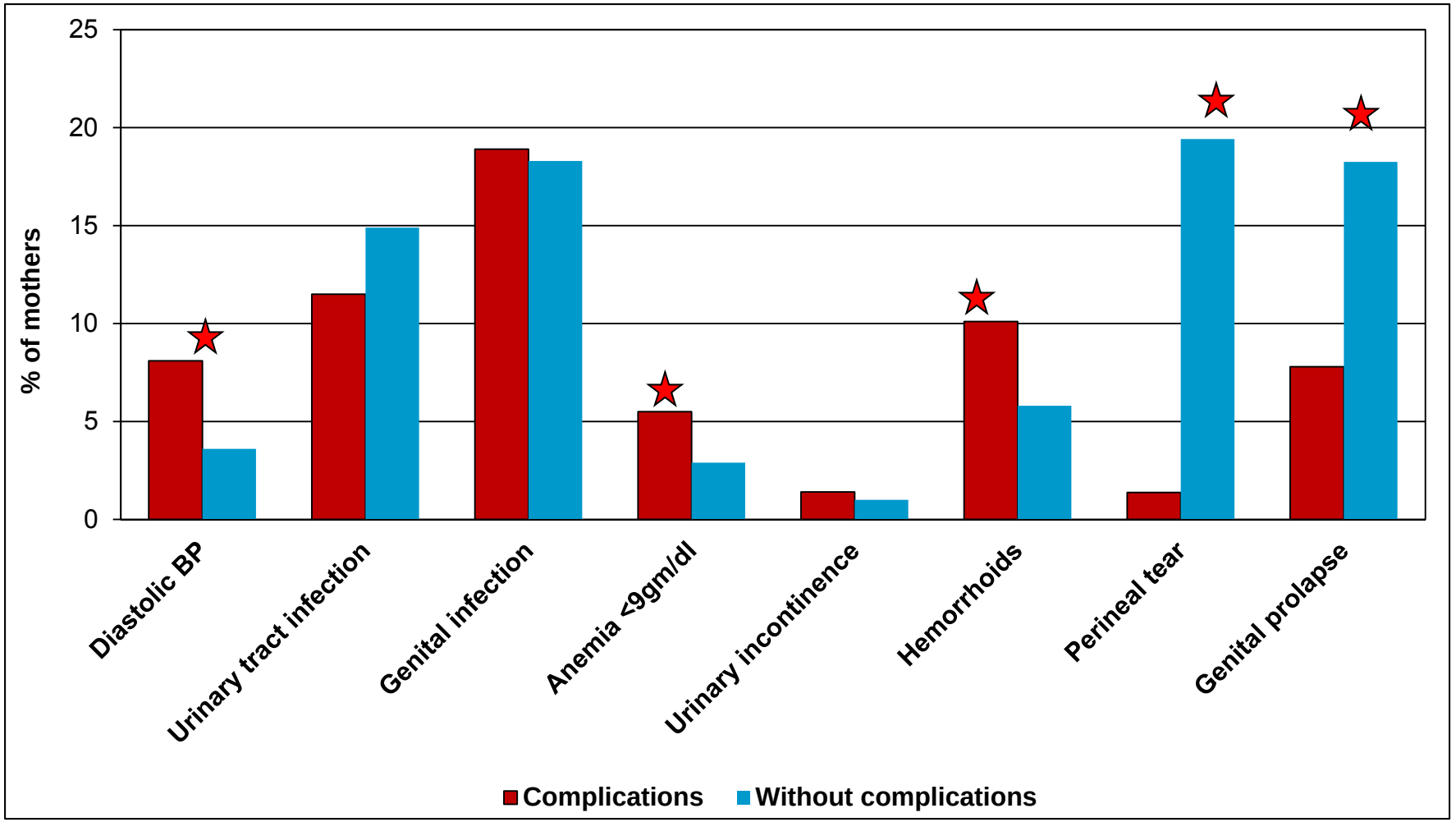
Consequences: Physical postpartum disabilities

Method: Physical exam 6-9 weeks pp on specific sample

Study design and sample

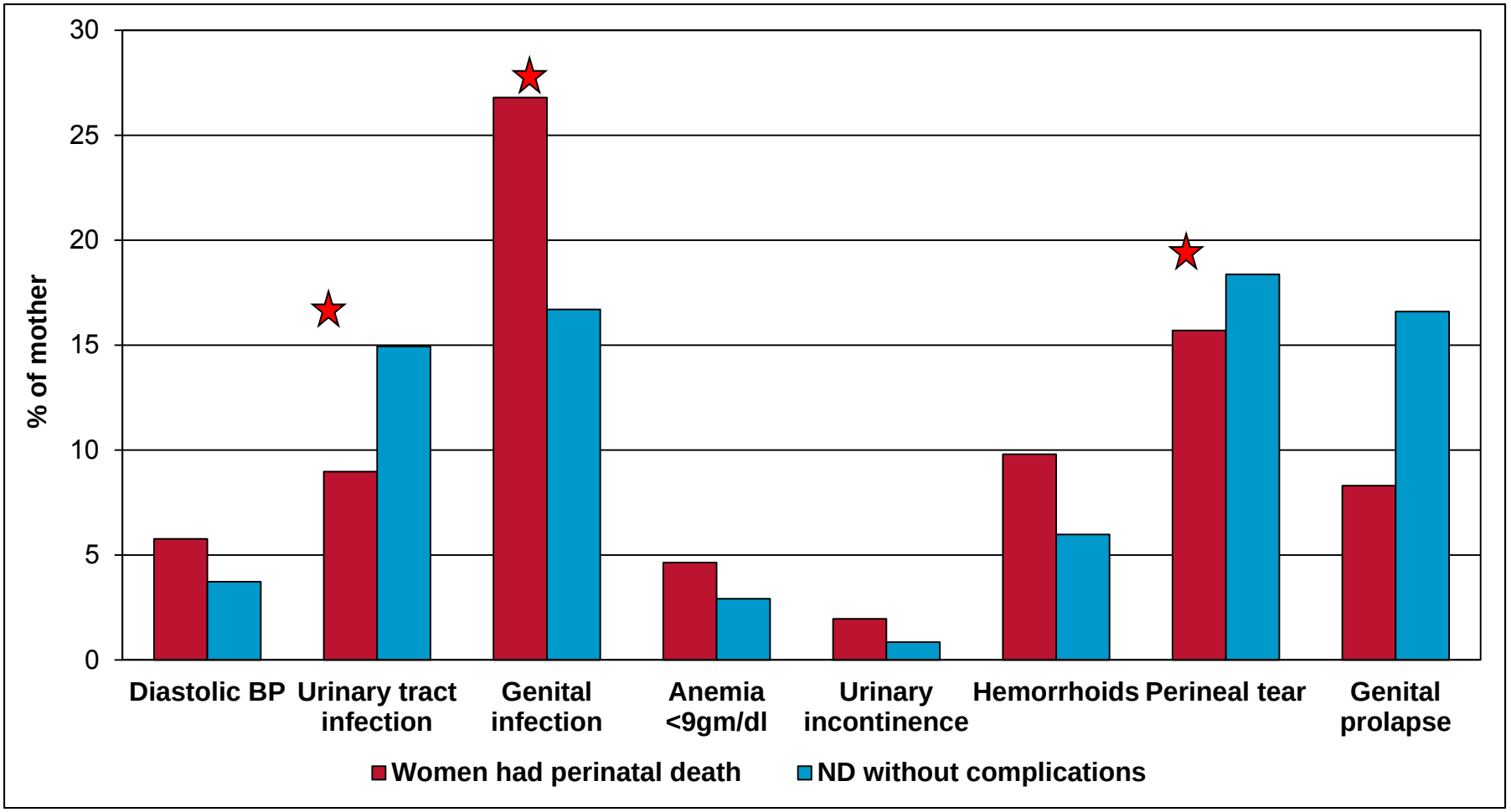
Category	Total sample	Physical exam performed	Facility delivery	Home delivery
Acute obstetric complication (severe + less severe)	321-All severe/ half less severe	295	All	_____
Perinatal death	182 -all	156	111	45
CS without any maternal indication	147- all	125	all	_____
Normal delivery without any maternal complications	538 sample	482	232	250

Morbidities at 6-9-weeks postpartum: acute obstetric complication vs normal delivery cases



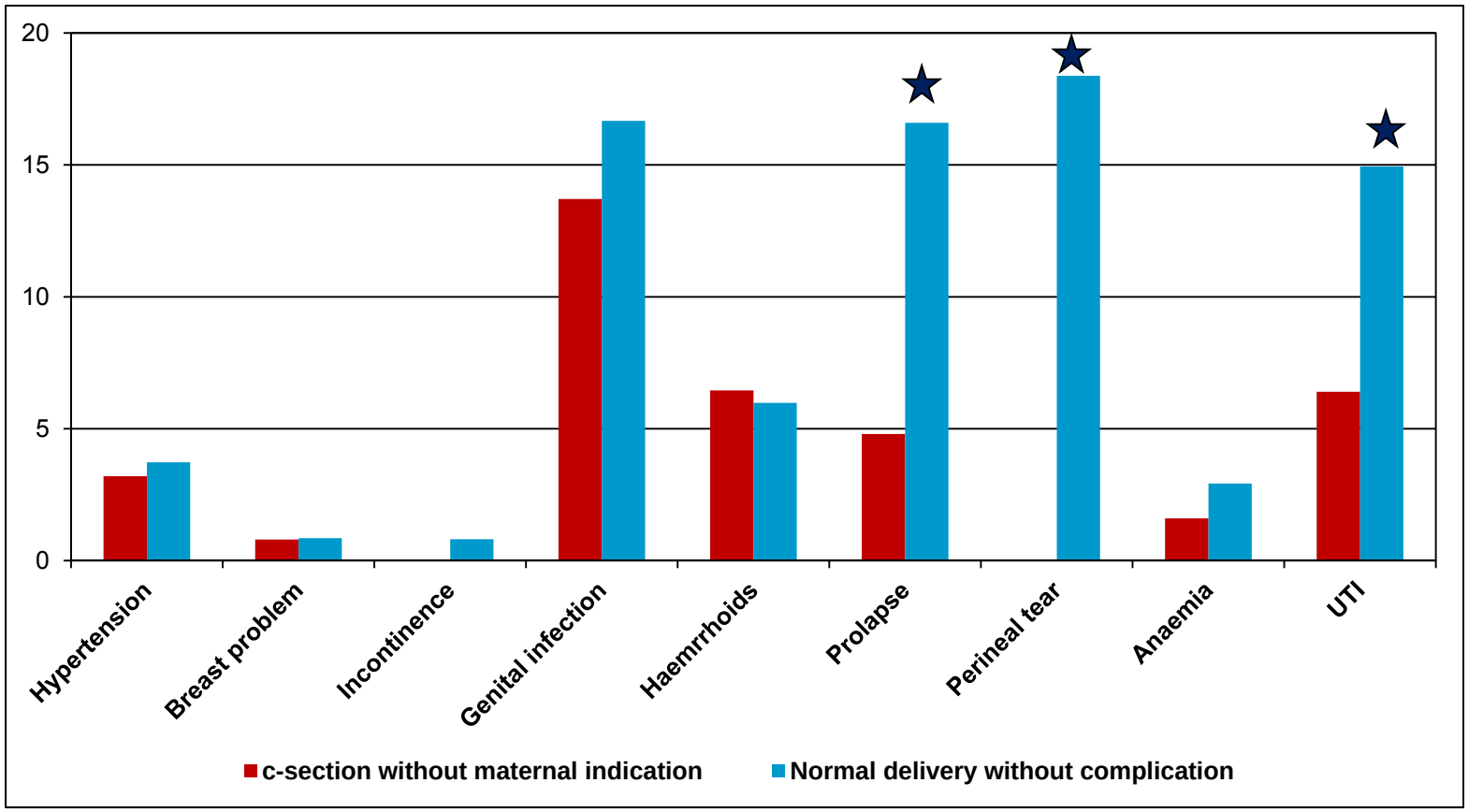
★ *Statistically significant at 5%*

Morbidities at 6-9-weeks postpartum: perinatal death vs normal delivery cases



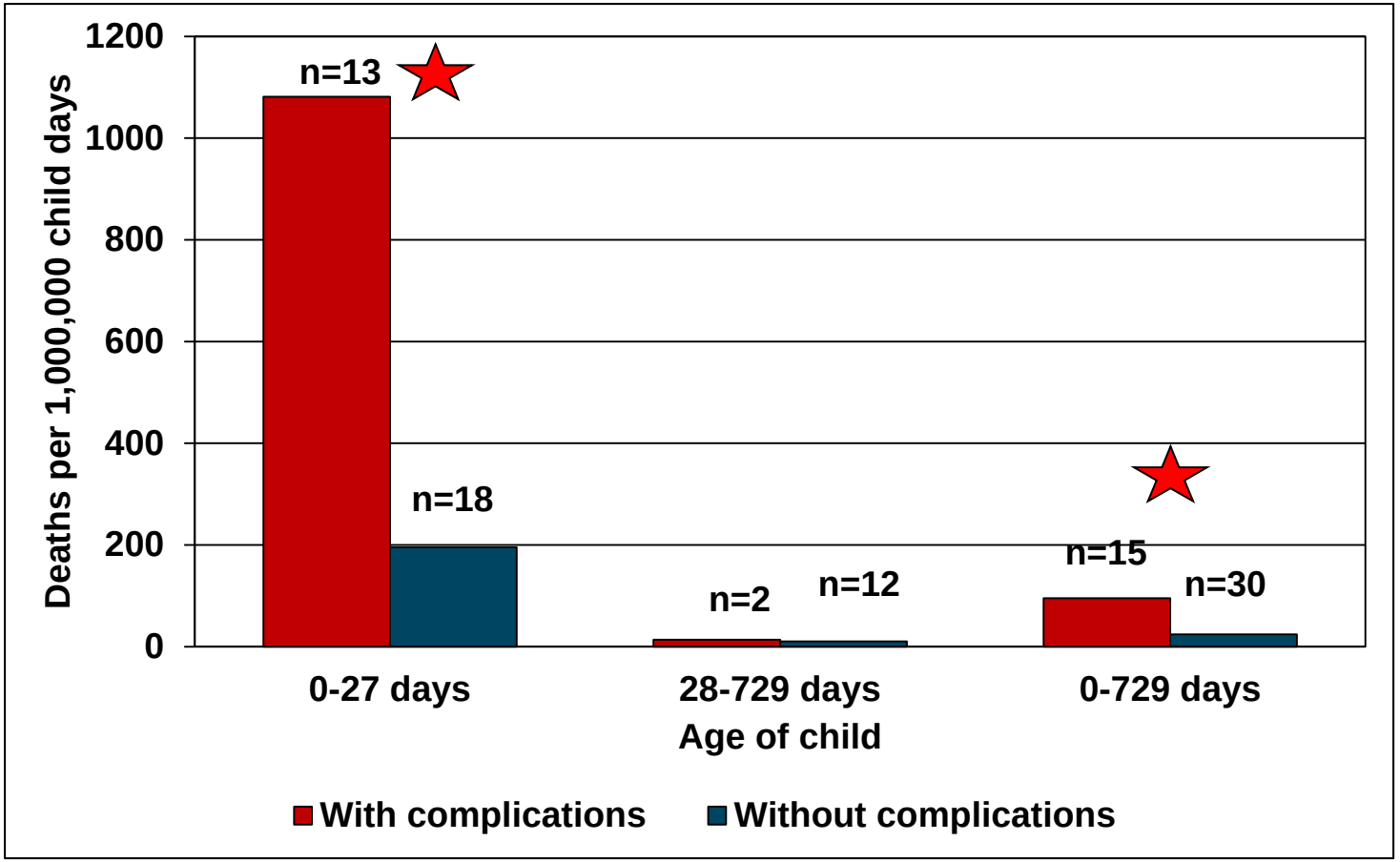
★ *Statistically significant at 5%*

Morbidities at 6-9-weeks postpartum: c-section vs normal delivery cases



★ *Statistically significant at 5%*

Variations in survival of children of mothers with acute maternal morbidities



★ *Statistically significant at 5%*

Summary – Physical Disabilities

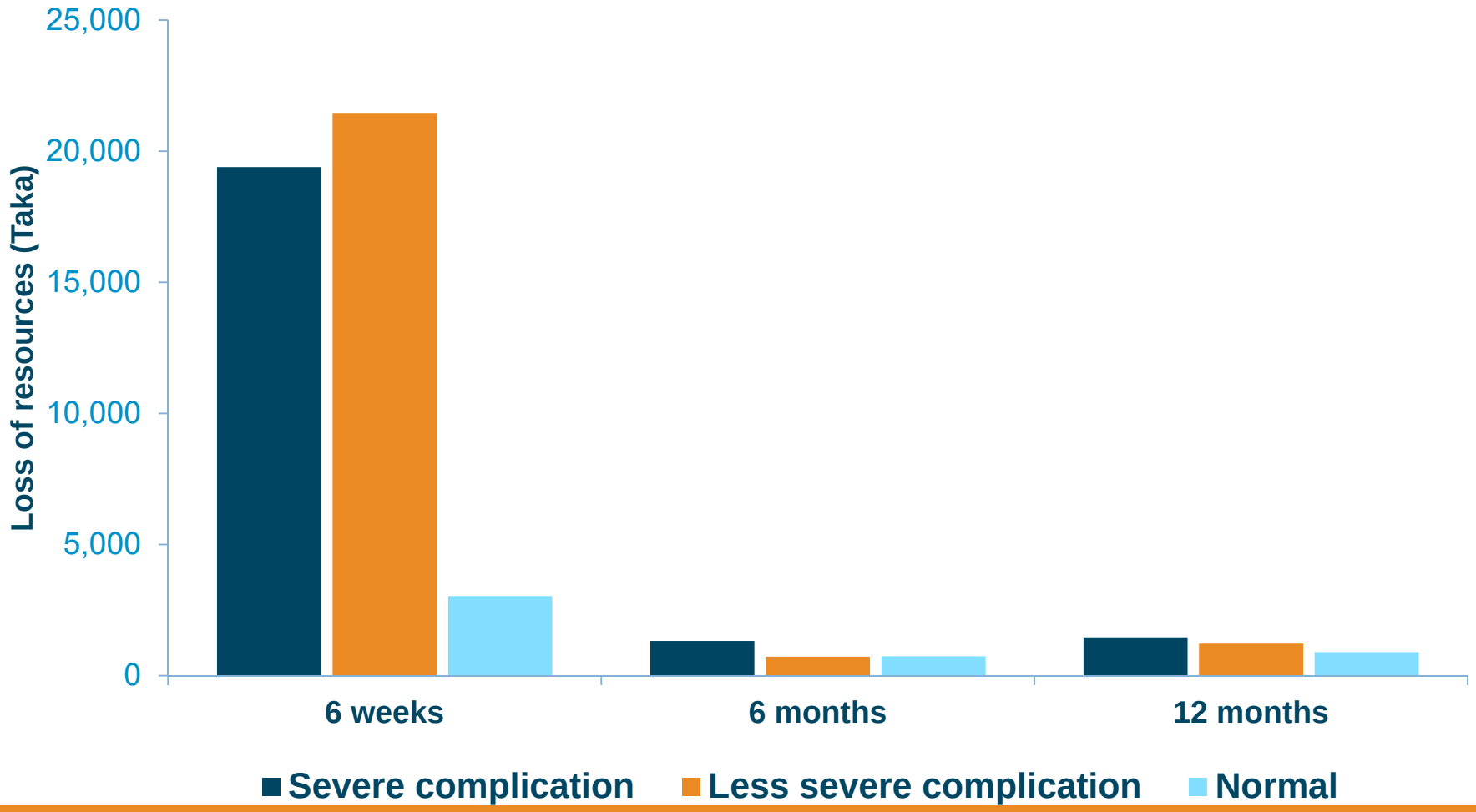
- **Women with complications in childbirth are more likely to experience:**
  - **Hypertension, moderate anemia, hemorrhoids**
  - **Neonatal death**

- **Women with complications in childbirth are less likely (than normal vag births) to experience genital prolapse and perineal tears. This may be related to caesarean section.**

Consequences of the consequences

Consequences: Coping with costs

Household costs of health seeking due to maternal morbidity



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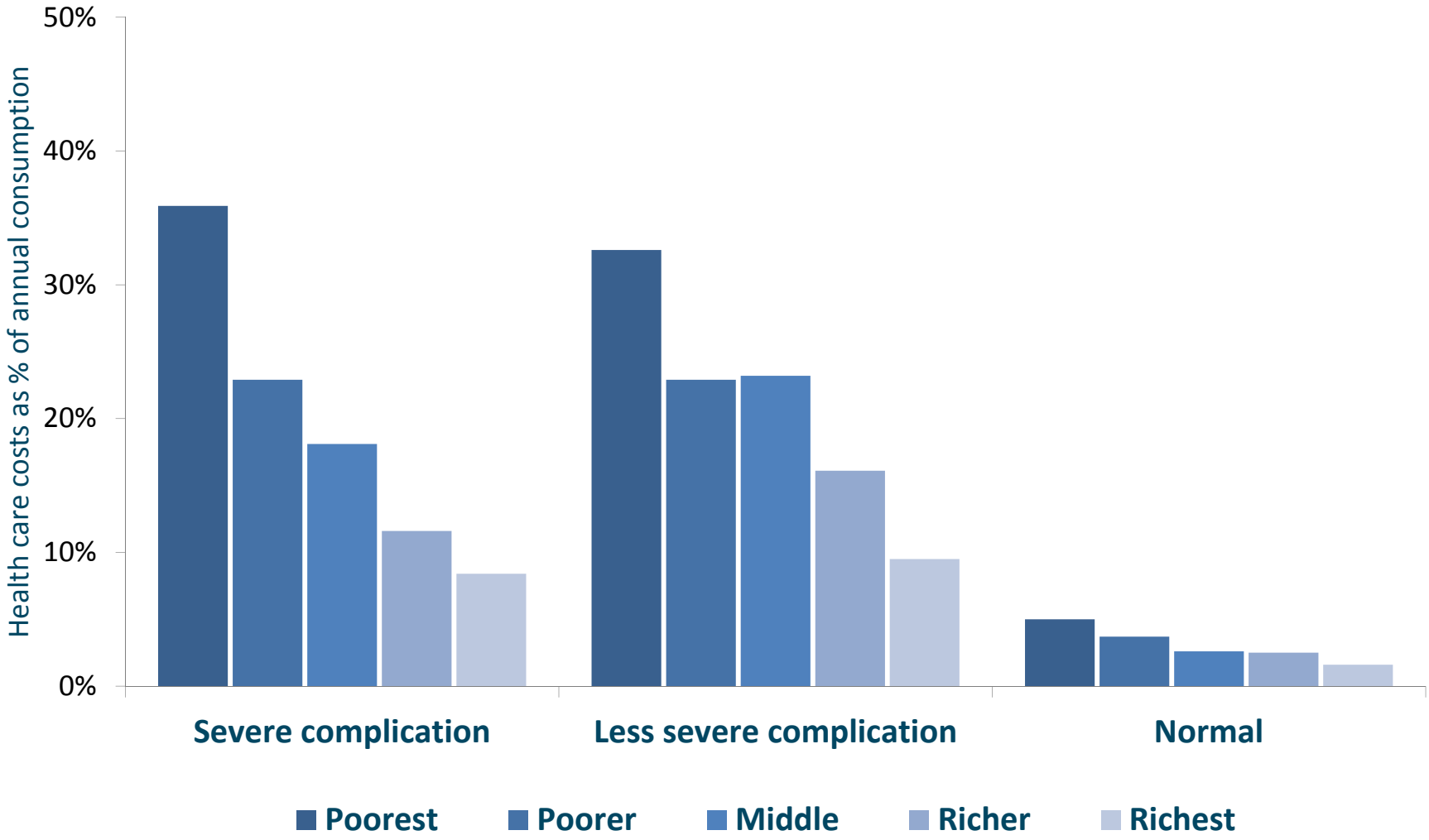
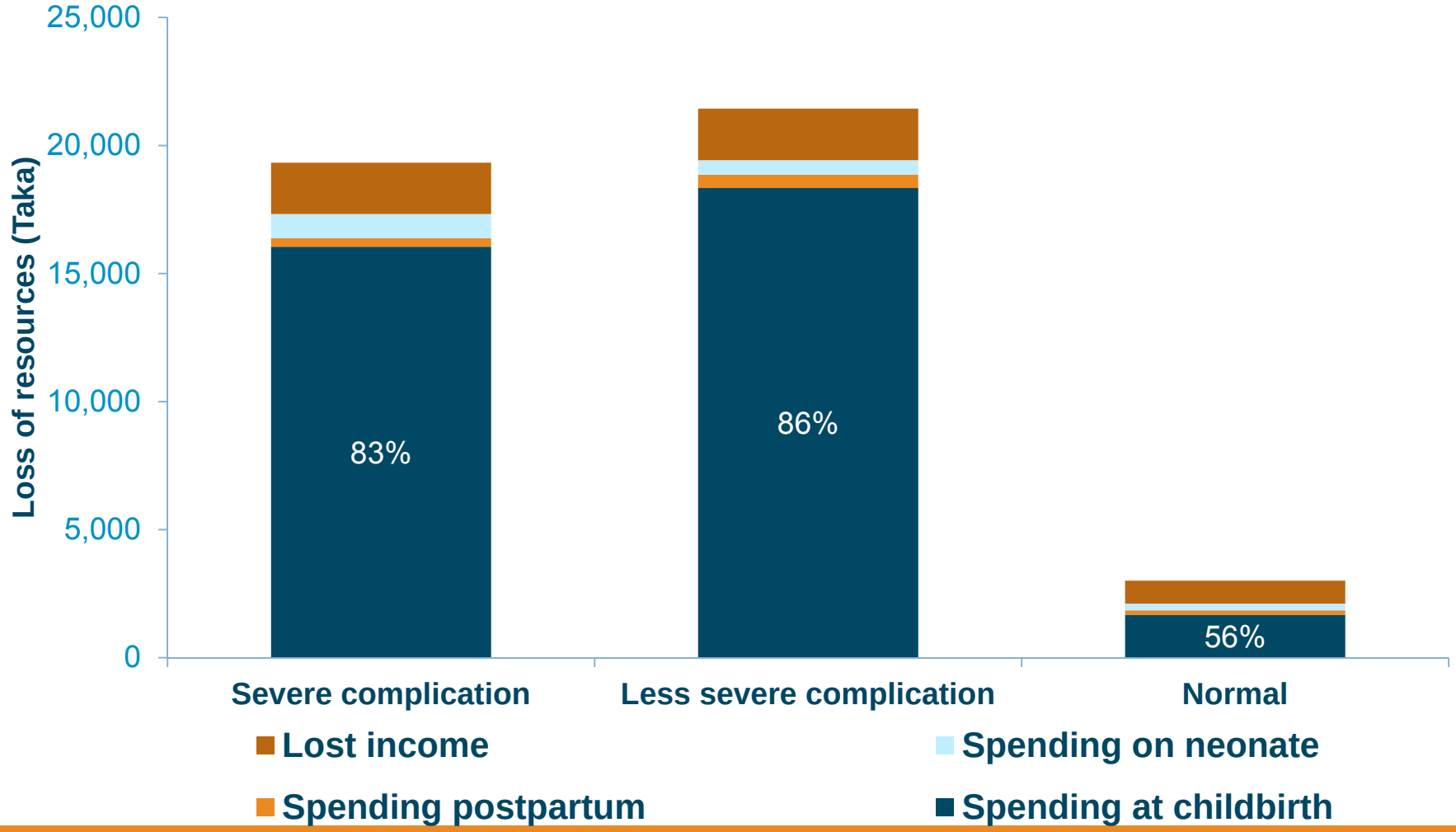
1 US$ = 69 Taka

Financial burden of cost of health care



Loss of resources by morbidity group up to 6 weeks postpartum



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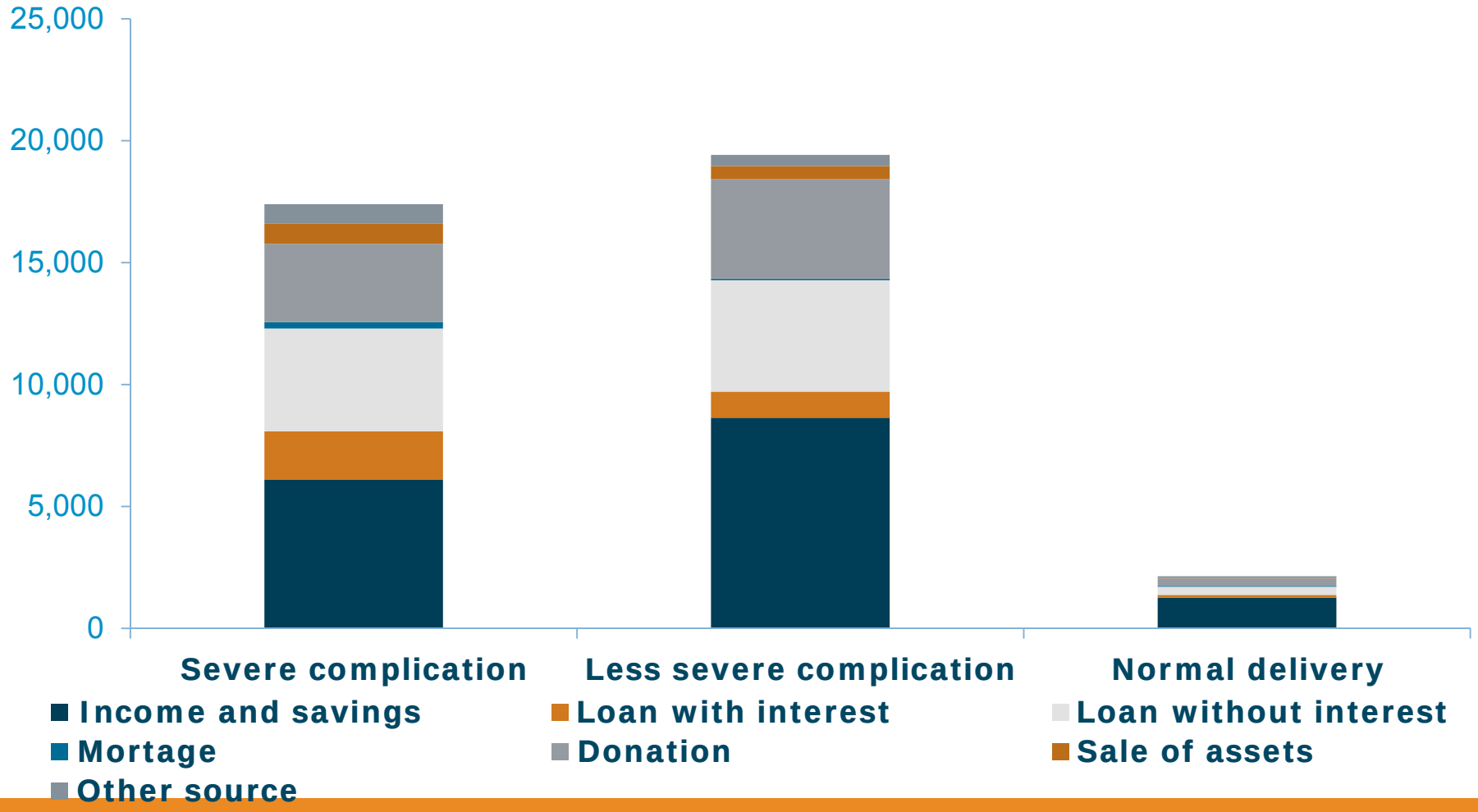
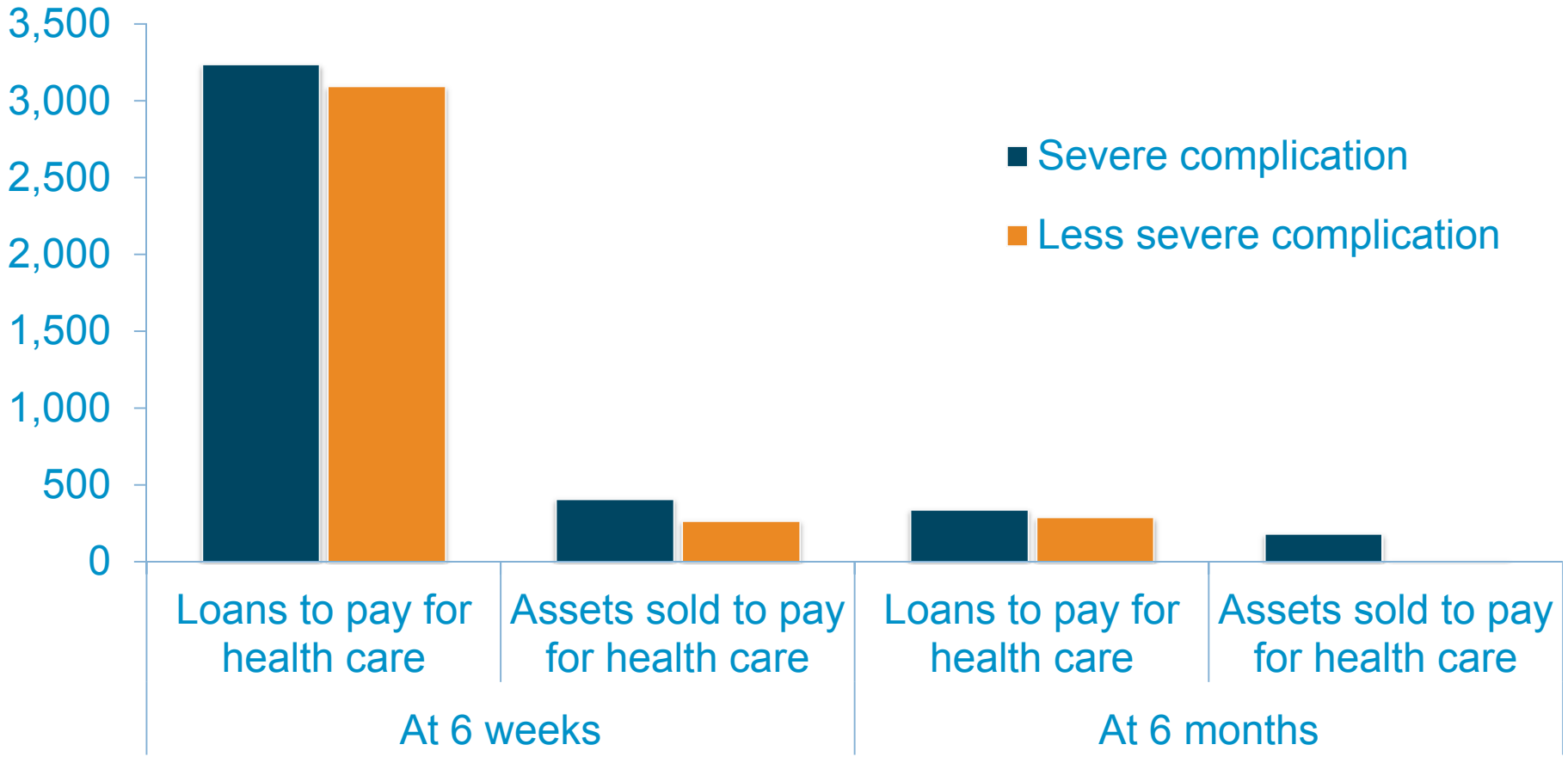
Source of OOP expenditure 6 weeks postpartum

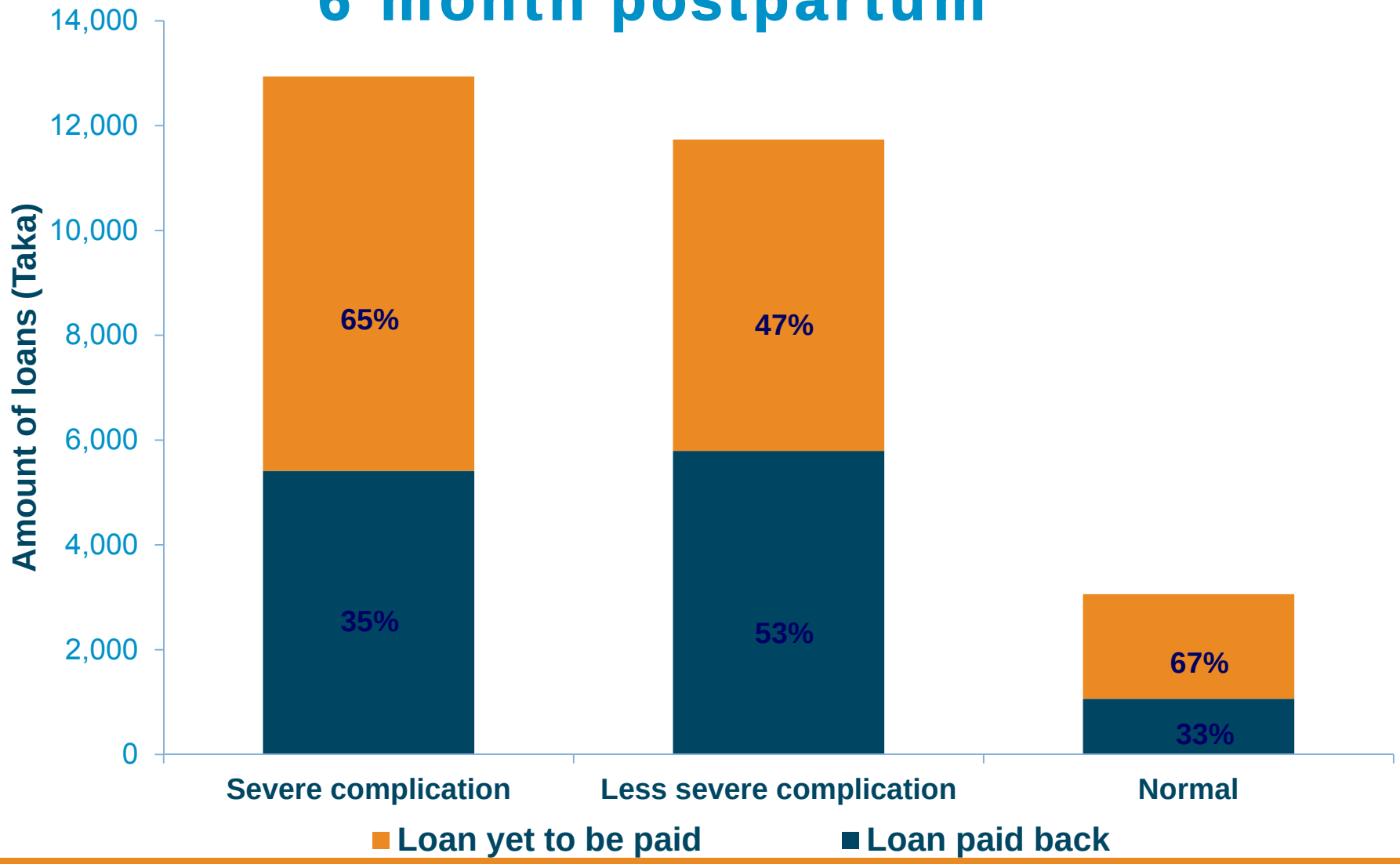


Coping strategies : loans and sale of assets (Taka)



Note: Comparison group is women with a normal delivery

Loan paid back by morbidity group 6 month postpartum



Summary - Costs and Coping

Household costs of maternal health seeking are high (nearly $300 if have complications) and the financial burden is greatest among the poorest

Households with an obstetric complication appear to cope – they do not cut back on consumption.

Households cope through use of income and savings and donations, but also by the use of loans and selling assets. These may have economic consequences beyond our study period

Families with obstetric morbidity struggle to pay back loans

The poorest are in need of financial protection

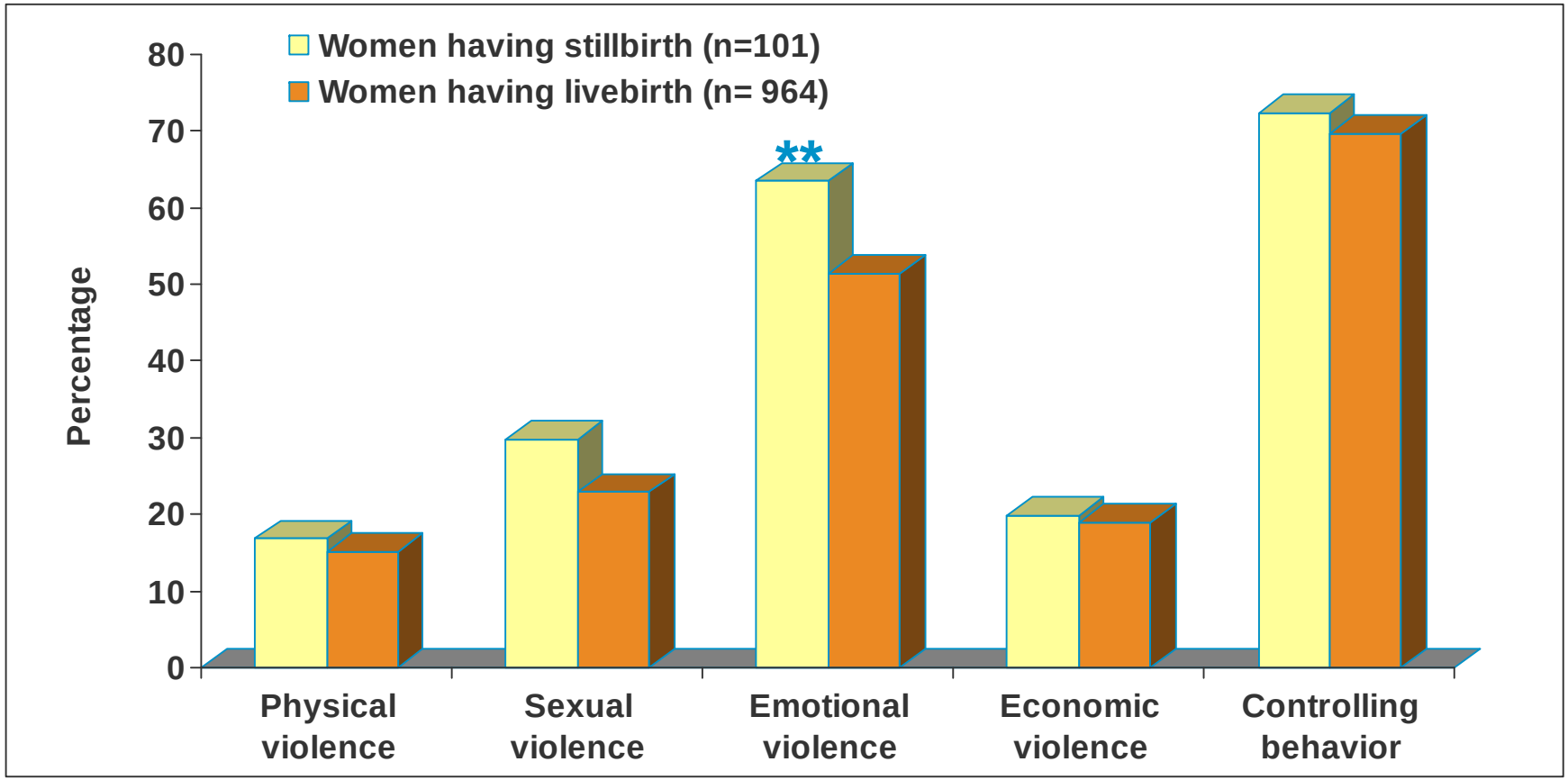
Depression and social consequences in women with and without Perinatal deaths

	Odds Ratios	
	Crude (95% CI)	Adjusted (95% CI)
Depression at 6 week	**3.72 (2.45 – 5.66)**	**3.83 (2.39 – 6.15)**
Depression at 6 month	**1.14 (0.64 – 2.04)**	**0.55 (0.28 – 1.10)**
Negative social consequences**	**3.34 (2.18 – 5.12)**	**2.90 (1.80 – 4.69)**

- Adjusted for age, parity, maternal education, residential area and asset quintile.

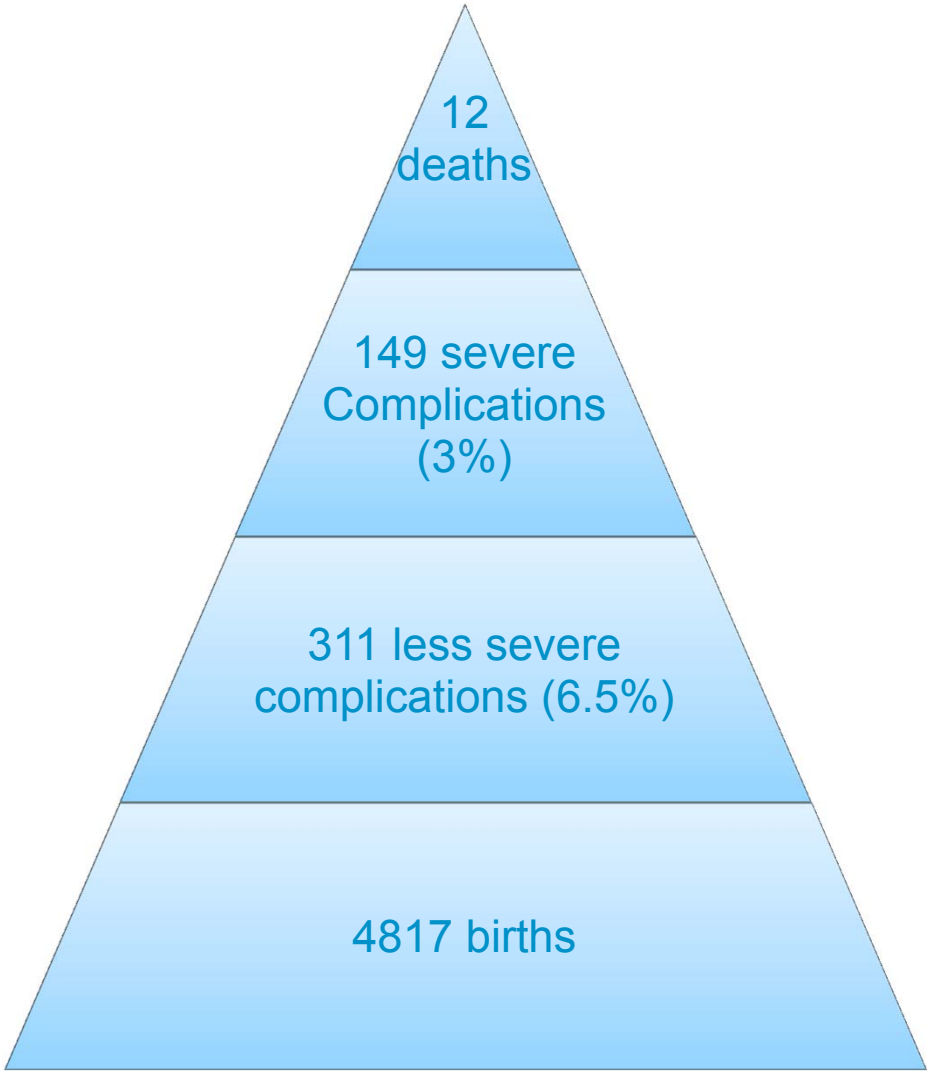
** Includes: Negative life changes; worse relationship with marital family, with husband

Exposure to VAW since delivery by birth outcome
6m survey, Matlab, 2007-2008



***p<0.001; *p<0.01*

Tip of the iceberg-Bangladesh



1 maternal death=12 severe cx; 26 less severe cx or 38 cx total (about 20 mill worldwide)

Consequences:

Over 40% of all women who deliver have a physical disability over first 6-9 weeks

Hypothesis and results

- **Women with severe obstetric complications suffer more long-term consequences (physical, social, mental) or death compared to those with normal deliveries with no complications**

  - Physical:
    - Severe complications lead to maternal death
    - Physical consequences are common (over 40%) but relatively mild—e.g., first degree prolapse, hemorrhoids, and hypertension

  - Social: The few women with very severe consequences, e.g., fistulas, stress incontinence, 2nd/3rd degree prolapse, experience devastating social repercussions—stigma, verbal abuse, suicidal ideation.

  - Mental: There is no significant and lasting depression.

Hypothesis and results

- **Women with severe and less severe obstetric complications and those who die have poorer pregnancy outcomes (stillbirths, neonatal death, infant death) compared to those with normal deliveries with no complications**
  - Perinatal deaths are twice as likely and neonatal deaths five times more likely among women with severe and less severe complications
  - Infant mortality is about eight times higher in the case of a maternal death
  - If a mother dies, eight of ten children under of age 10 are likely to die compared with 1 of 10
  - The consequence of a perinatal death on the mother includes postpartum depression, and emotional violence and controlling behavior from the family and community.

Hypothesis and results

- **A child of a mother suffering consequences of severe ob complications is at higher risk of death, poorer growth and development than those of women without such consequences**
  - No evidence of developmental delays in relation to maternal morbidities

- **Families of women who suffered severe ob complications (and/or poor pregnancy outcome) are at higher risk of impoverishment**
  - Cost of intrapartum care is very high in relation to HH income, especially amongst the poorest, but on average family's cope through loans and to a lesser degree by selling assets.

Recommendations

1. **Strongly encourage facility delivery with good quality care to ensure good outcomes for both mother and newborn at delivery and beyond.**
2. **Ensure that any woman with a severe or less severe complication remains in the facility for at least 24 hours with appropriate CEmNC**
3. **Those with hemorroids and prolapse could be attended to during the facility stay.**
4. **Improve community level knowledge about specific danger signs and sites of EmOC must continue, and at facility level, efforts need to be initiated to improve appropriate referral and linkages**

Policy recommendations

1. **Promote postpartum follow up by 6 weeks of all women, not only for newborn care and family planning, but also for hypertension, hemorrhoids and anemia (especially for those with complications) and for prolapse and perineal tears (especially if they delivered at home, are of higher parity and age). Continue follow up for up to one year to avert further maternal and infant death.**

2. **Target households/women with a perinatal death for family counseling for postpartum depression, domestic violence, social impact.**

3. **Financial protection is needed for the poorest to encourage use of facilities for delivery and prevent families being further impoverished.**

Thank You!

And thanks to ICDDRB staff, Natasha Massouda, USAID, DFID, MCHIP and JSI