RATIONAL UTILIZATION OF BEDS FOR POSTNATAL MOTHERS IN SECONDARY LEVEL HOSPITALS IN WEST BENGAL

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SITUATION ANALYSIS

- Rate of institutional delivery in West Bengal increased significantly to 71% (2011-12) from 51% (2006-07) after introduction of JSY and JSSK scheme

Recommendation of NRHM
- Postnatal mothers having normal delivery at least 2 days stay in hospital
- For caesarean section 7 days stay
**Crude Reality**

- Overcrowding, crisis of beds, bed sharing, flooring in obstetric wards of Secondary level hospitals
- Discharge of post natal mothers before 48 hours to avoid congestion
- Sometimes beds in other female wards remain vacant
STUDY OBJECTIVES

- To Assess current status of Bed Utilisation (Occupancy, Turnover, ALOS) in different wards of Secondary Tier hospitals of West Bengal.

- To Identify the Gaps and Hindrances for rational utilisation of beds in those hospitals.

- To Recommend Short term and Long term measures to overcome the situation.
MATERIALS AND METHODS
Study type and design

- Mixed Model cross-sectional study

Study Duration

- February to May 2014
## Study Area

<table>
<thead>
<tr>
<th>Presence division</th>
<th>Burdwan division</th>
<th>North Bengal division</th>
</tr>
</thead>
<tbody>
<tr>
<td>North 24 Pgs &amp; Nadia District hospital (DH)</td>
<td>Birbhum &amp; Purulia DH</td>
<td>Uttar Dinajpur &amp; Darjeeling (Siliguri) DH</td>
</tr>
</tbody>
</table>

District hospitals selected based on number of institutional delivery (2011-12) as per data from Health on March.
STUDY POPULATION (KEY INFORMANT INTERVIEW)

- Hospital Superintendent
- Obstetrician
- Nursing Superintendent
- Sister in Charge of Maternity Ward
- Ward Master
TOOLS & TECHNIQUES

Tools

- Pre-Sructured Open Ended Proforma for Interview of Key Informants
- Proforma for Medical Record Analysis
- Observation Check List of Hospital Infrastructure and Location of beds

Techniques

- In Depth Interview
- Medical Record Analysis
**Sampling**

- Data were collected from records of all the wards (Obstetrics, FMW, FSW) for the Month of December 2013.

- Calculation of Bed Occupancy, Bed Turn Over Rate and Bed Turn Over Interval.

- For obstetric cases: month wise data for 2013 collected to ascertain the total load of patients.

- Seven days of December 2013 were selected randomly like 2, 8, 10, 14, 18, 20, 26 December. Data were collected from records for the Mothers who delivered in the hospital and Female patients underwent surgery except Caesarean Section on those days.

- Calculation of Average Length of Stay.
OPERATIONAL DEFINITION OF INDICATORS

- Average length: \( \text{Total patients days during the of stay (ALOS)} = \frac{\text{Total number of discharges (including deaths)} \times \text{days in the month}}{\text{Total number of beds}} \times 100 \)

- Bed occupancy rate: \( \text{Bed occupancy rate (BOR)} = \frac{\text{Total patients days (census at 12 PM) during the month} \times 100}{\text{Total number of beds} \times \text{number of days in the Month}} \)
OPERATIONAL DEFINITION OF INDICATORS

Bed turn over = \[ \frac{\text{Total number of discharges (including Deaths) during the month}}{\text{Number of beds}} \]

Rate (BTR)

Turn over interval (TI) = \[ \frac{\text{Available beds} \times \text{days in the period} - \text{Patient days for the period}}{\text{Number of discharges incl deaths in the period}} \]

Negative result = shortage of beds, positive = under use, short positive = optimum utilization
RESULTS
LOCATION OF OBSTETRIC WARDS

Surgery and Medicine female wards are situated in the same floor with obstetric ward in all DHs except in Darjeeling, Ud Dinajpur and Nadia

In Nadia, the G&O building was 3 kms apart from the building of Medicine and Surgery wards
## Different Hospital Parameters

<table>
<thead>
<tr>
<th>District Hospital</th>
<th>Available beds</th>
<th>Average Deliveries/ month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of beds in obstetric wards</td>
</tr>
<tr>
<td>North 24 Pgs</td>
<td>505</td>
<td>22.4</td>
</tr>
<tr>
<td>Nadia</td>
<td>515</td>
<td>14.6</td>
</tr>
<tr>
<td>Birbhum</td>
<td>478</td>
<td>14</td>
</tr>
<tr>
<td>Purulia</td>
<td>573</td>
<td>12.2</td>
</tr>
<tr>
<td>U Dinajpur</td>
<td>324</td>
<td>17.6</td>
</tr>
<tr>
<td>Darjeeling</td>
<td>435</td>
<td>13.1</td>
</tr>
</tbody>
</table>
## Different Hospital Indicators

<table>
<thead>
<tr>
<th>District hospital</th>
<th>Bed Occupancy Rate (%)</th>
<th>ALOS (in hrs)</th>
<th>Turn Over Interval (TOI) in obstetric ward</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obstetric ward</td>
<td>Female surgery ward</td>
<td>Female Medical ward</td>
</tr>
<tr>
<td>North 24 Pgs</td>
<td>98</td>
<td>119</td>
<td>121</td>
</tr>
<tr>
<td>Nadia</td>
<td>290</td>
<td>73.4</td>
<td>102.2</td>
</tr>
<tr>
<td>Birbhum</td>
<td>145</td>
<td>71.1</td>
<td>85.7</td>
</tr>
<tr>
<td>Purulia</td>
<td>75</td>
<td>81.5</td>
<td>68.2</td>
</tr>
<tr>
<td>U Dinajpur</td>
<td>110</td>
<td>55</td>
<td>62.8</td>
</tr>
<tr>
<td>Darjeeling</td>
<td>113</td>
<td>53.7</td>
<td>26.2</td>
</tr>
</tbody>
</table>
DISTRIBUTION OF LOS IN NORMAL AND ASSISTED DELIVERY CASES

![Bar Chart showing the distribution of LOS in normal and assisted delivery cases across different locations. The chart is color-coded to indicate different LOS categories: <48 hours, 48 to <168 hours, and ≥168 hours.]

- North 24 pgs: <48 hours
- Purulia: <48 hours (60%), 48 to <168 hours (30%), ≥168 hours (10%)
- U Dinajpur: <48 hours (50%), 48 to <168 hours (25%), ≥168 hours (25%)
- Siliguri: <48 hours (40%), 48 to <168 hours (40%), ≥168 hours (20%)
- Nadia: <48 hours (40%), 48 to <168 hours (40%), ≥168 hours (20%)
- Birbhum: <48 hours (60%), 48 to <168 hours (20%), ≥168 hours (20%)
DISTRIBUTION OF LOS IN CAESAREAN SECTION CASES
### Average Length of Stay (in Hours) of Pre-Operative Patients

<table>
<thead>
<tr>
<th>LOS (hours)</th>
<th>North 24 Pgs</th>
<th>Purulia</th>
<th>U Dinajpur</th>
<th>Darjeeling</th>
<th>Nadia</th>
<th>Birbhum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>All patients</td>
<td>38.58 ± 89.10</td>
<td>65.3 ± 59.7</td>
<td>43.3 ± 69.1</td>
<td>64.5 ± 78.9</td>
<td>16.19 ± 54.67</td>
</tr>
<tr>
<td>Female patients</td>
<td>72.53 ± 160.48</td>
<td>122.1 ± 76.7</td>
<td>37.3 ± 54.1</td>
<td>42.7 ± 35.5</td>
<td>17.85 ± 60.85</td>
<td>7.3 ± 9.1</td>
</tr>
</tbody>
</table>
TIME OF CAESAREAN SECTION IN DIFFERENT DISTRICT HOSPITALS

- After 6 pm to 12 midnight
- After 12 noon to 6 pm
- After 6 am to 12 noon
- After 12 midnight to 6 am
SWOT analysis
STRENGTH

DHs conducting average deliveries/ month--- 408- 1056 and CS---65- 477 with existing resources

ALOS for normal delivery >48 hours in 50% DHs

Average pre operative length of stay for all surgery patients ----10.8 to 65.3 hours and for female surgery patients----7.3 to 122.1 hours

Majority healthcare providers were aware of Govt guidelines of laid down criteria of hospital stay of post-natal mothers
STRENGTH

Motivated management: already increased beds in Purulia, Nadia and Siliguri (through RKS)

Flexibility in Purulia, U Dinajpur: already using unutilised beds for keeping post CS patients

Enthusiastic and cooperative attitude of all category of staff
WEAKNESS

ALOS for CS > 168 hours only in Nadia

BOR > 100% in obstetric wards in 4 DHs led to double sharing and flooring

BOR < 100% in female medical wards in 4 DHs

BOR > 100% in female surgical wards only in North 24 Pgs
WEAKNESS

Maternity ward not segregated into antenatal, postnatal or high risk parts only in Nadia, U Dinajpur

No separate waiting hall for antenatal mothers in Nadia, all are in the lobby

Corridor with AN mothers waiting
WEAKNESS

Rational decision for CS non existent---- 45% CS rate in Nadia and 6% in Siliguri, rest were in between

Lack of adequate number of secondary tier hospitals in Purulia, Birbhum, Nadia districts

Absence of lift, ramp in Purulia, North 24 Pgs, Siliguri

No vacant space in other female wards except in Burbhum

Shortage of all category of staff according to case loads
OPPORTUNITY

Administrative commitment from highest policy makers to solve the problem of unnecessary referral from lower tier hospitals

Existing BOR of 75% can be increased in Purulia

Construction of MCH hub
THREAT

- Increased demand for institutional childbirth through different health schemes without creating enough infrastructure
- Long standing convention of discharging postnatal women at the earliest
- Reported sub-optimal functioning of sub-district secondary and primary tier health institutions.
ACKNOWLEDGEMENTS

- Principal secretary, Dept. of Health & FW, Govt. of WB
- Director of Medical Education, Dept. of Health & FW, Govt. of WB
- Director of Health Services, Dept. of Health & FW, Govt. of WB
- State Mission Director, NRHM, Govt. of WB
- All CMOHs of the respective Districts
- All Superintendents of selected study Hospitals
- All Investigators
- All Key Informants