Birth Asphyxiated Newborns-
Cohort analysis
Lessons from India

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Burden

- More than 1.4 million children die annually
- 0.82 million occur in neonatal period

- Million Death Study investigated
  - 10892 neonatal deaths
  - 12260 deaths in 1-59 months

0-28 days – 3 causes (78%)

- Prematurity & LBW 32%
- N. Infections - 26.7%
- B. asphyxia & trauma 18.8%

1-59 months – 2 causes (50%)

- Pneumonia 27.7%
- Diarrheal diseases 22.3%

Ref: Report on causes of Death 2001-2003, RGI 2009

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Decline 2001-2010

Infant Mortality Rate 34.0%

Post Neonatal Mortality Rate 48%

Neonatal Mortality Rate 17.5%

	IMR	NMR	Post NMR
1999	70	45	25
2000	68	44	22
2001	66	40	26
2002	63	40	23
2003	60	37	23
2004	58	37	23
2005	58	37	21
2006	57	37	20
2007	55	36	19
2008	53	35	18
2009	50	34	16
2010	47	33	14

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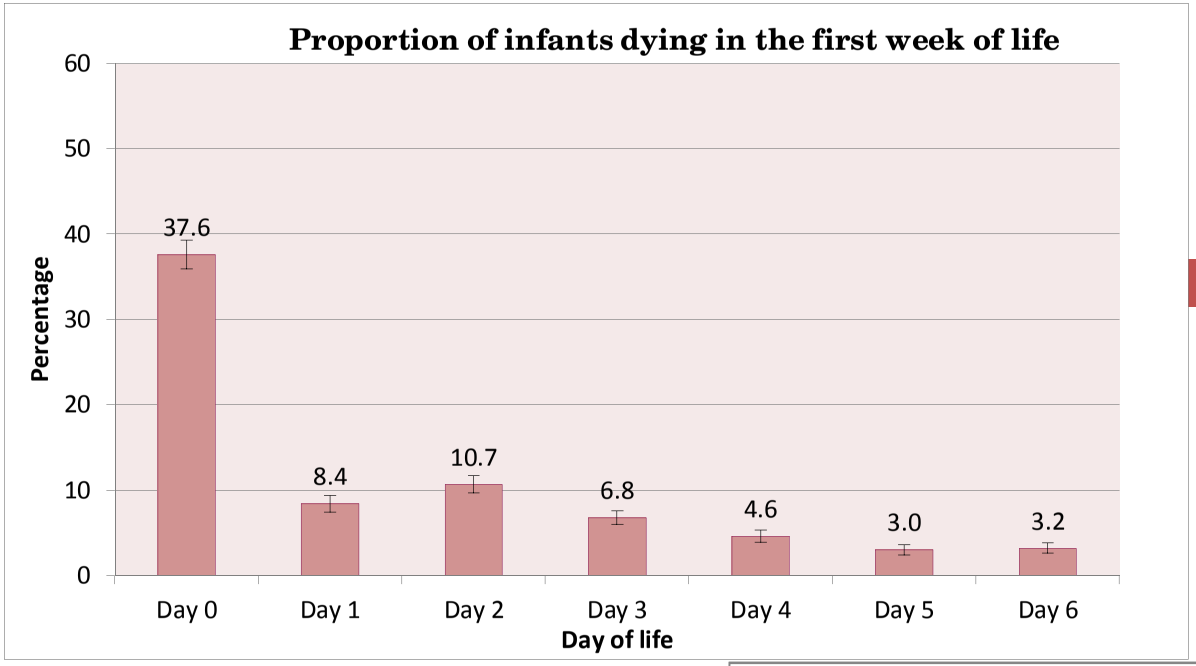
Timing of neonatal deaths

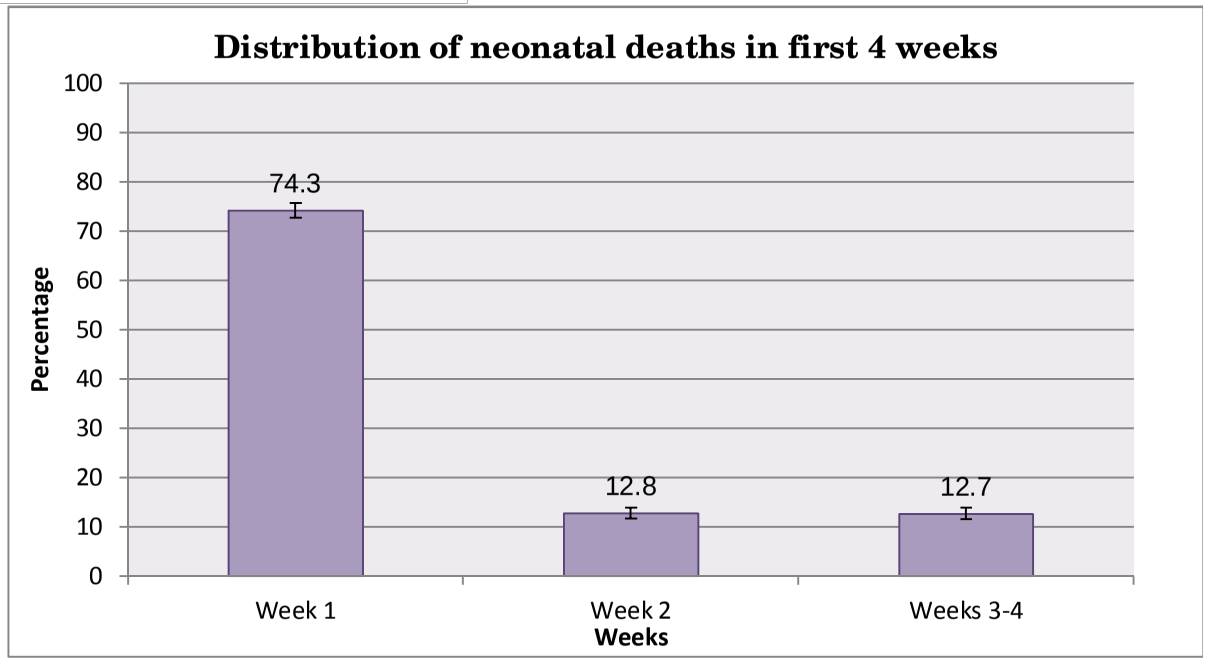


~40% NM in 24 hrs

20% of U5M in 24 hours

~60% NM in 72 hrs

30% of U5 M In <72 hours

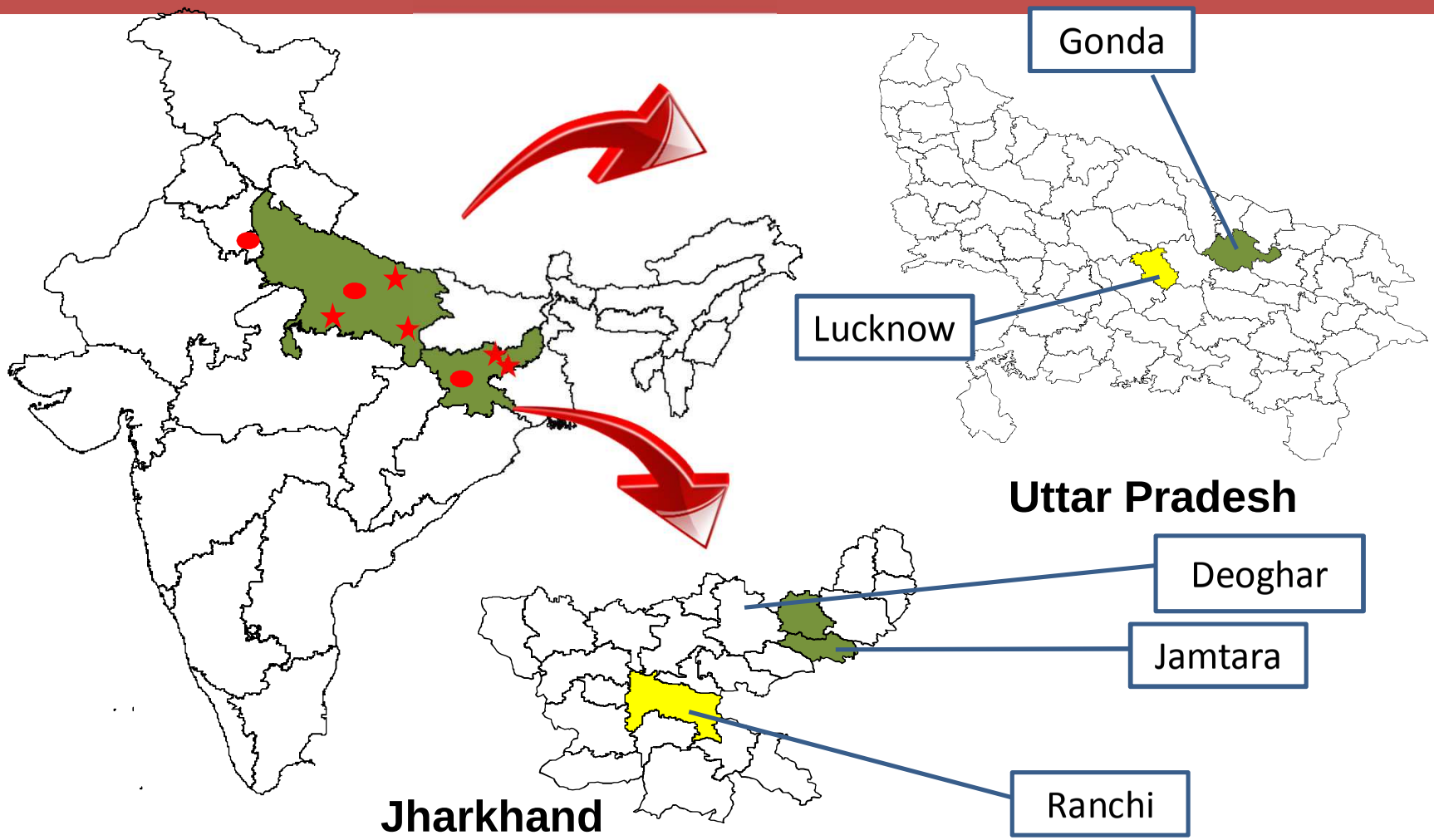


Paul, Agarwal,Sankar 2012

Accelerate Newborn Health Interventions to reduce mortality

ENC/R Goal: Support the MOHFW, State health departments, USAID bilateral health programs and the new National Newborn Care and Resuscitation Initiative (NSSK) to strengthen and expand access to ENC and teach basic resuscitation technique.

Geographic presence- **peripheral cNN Surveillance sites**



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Overall objective

- To document the survival of newborns with “birth asphyxia at birth” managed at the peripheral health facilities

- To understand the “factors” to facilitate improved outcomes.

Process

- Established “working definition” and nomenclature
- Established “standard and uniform” recording and reporting mechanism at the facility
- Monthly line-listing of “ Birth Asphyxia” newborns
- Prospective follow up in community
- Feedback learning into the ENCR program

Record Register

MATERNAL INFORMATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
												Maternal History of									Maternal Complication				
S. No.	IPD No/BHT No	Name	W/O	Age (Yrs.)	Address	Contact No/ Name of ASHA	LMP	EDD	ADD	P/G or P0 if Primigravida (P-Parity, G-Gravida, Abortion-A)	Injection TT	PIH	Diabetes	APH	Fever	Any other (Epilepsy, TB)	Mode of Delivery(Normal=1,Forceps=	Episiotomy Yes =1, No=2	PROM > 24 hours (Y/N)	Amniotic Fluid (clear, meconium, foul smelling)	Haemorrhage	High blood pressure	Obstructed labour	Fever	Medications given (Antibiotics, Analgesia, TT, any Other)

NEWBORN INFORMATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20	21	22	23	24	25	26	27	28
Delivery outcome						Immediate Newborn Care						Danger Signs				Resuscitation		Time of recording (____)			Immunization							Referral (Y/N)	
Live birth =1/Still birth=2		DOB	Time	Sex (Male=M, Female=F, Ambigous -A)	Fetal Heart tone	Handwash/ Glove	Wiped dry	Cut cord after 1-3 min	Clean Blade & cord tie	Rooming in/ (skin to skin)	Breast feeding within 1 hour	Meconium present	Baby gasping or not breathing	Less movements or floppy baby	Mother unwell	Simulation -1; suction =2, bag and mask =3, Oxygen =4, Other =5	Term/Preterm	Birth wt (in Kg)	Temperature	Fetal Heart tone	OPV-0	BCG	Any other	Injection Vitamin K	Neonatal Complications (Respiratory =1,Cardiovascular-2, Neurological-3, Surgical -4, Feeding=5, Thermoregulatory -6)	Neonatal Death Y/N	Post Natal Discharge Advice	Mother	Newborn

Universe – cNN sites *(Oct 11- Mar 13)*

Sites	Total registered	Total deliveries	Total Live births	Total Fresh stillbirths	Total neonatal deaths
cNN 1	3625	3583	3456	142	7
cNN 2	1327	1278	1264	14	7
cNN 3	1663	1661	1613	49	1
cNN 4	1216	1198	1171	29	3
cNN 5	2901	2897	2658	30	0
Total	**10732**	**10617**	**10162 (95.7%)**	**264**	**18**

Ref Source: Facility Records

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Resuscitation details

Sites	Number of newborns NOT CRYING OR BREATHING	Number of newborns with meconium	Number of newborns who had floppiness	Number resuscitated by stimulation only	Number resuscitated by stimulation and suction	Number resuscitated by stimulation ,suction and bag and mask	Number resuscitated by stimulation ,suction and bag and mask and oxygen	Total newborns on whom bag and mask has been used	Total number of newborns with asphyxia or meconium aspiration or floppiness	Total number of newborns resuscitated with any method	Number of still borns resuscitated	Still borns brought back to life
cNN 1	253	151	79	4	72	73	80	153	258	352	142	15
cNN 2	41	34	37	9	11	25	11	36	46	55	14	4
cNN 3	101	42	38	4	22	62	24	86	103	107	49	2
cNN 4	48	25	15	5	15	36	5	41	47	56	29	4
cNN 5	98	111	46	25	17	18	13	31	107	95	30	12
Total	**541**	**363**	**215**	**47**	**137**	**214**	**133**	**347**	**561**	**665**	**264**	**37**

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Resuscitation indicators

Sites	% Newborns resuscitated (ba+sb)	% Of newborns with birth asphyxia (x+y)/h*100	% Resuscitated newborns by stimulation	% Resuscitated newborns by stimulation and suction	% Resuscitated newborns by use of bag and mask
cNN 1	89.1	7.8	1.5	26.9	57.1
cNN 2	100.0	3.6	20.0	24.4	80.0
cNN 3	71.3	6.4	3.9	21.4	83.5
cNN 4	72.7	4.4	9.6	28.8	78.8
cNN 5	74.2	4.1	22.7	15.5	28.2
Total	82.6	5.7	8.1	23.7	60.0

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Key observations

Sites	If Fresh still born (X)=yes and neonatal death(BJ) = yes then "FRESH STILL BORN" =yes	Macerated Still borns	If still born(X)= yes and neonatal death (BJ)=no then "LIVE BIRTH"=yes	If live born(W)= yes and neonatal death (BJ)=yes then "NEONATAL DEATH"=yes
cNN 1	93	42	15	7
cNN 2	5	4	2	7
cNN 3	25	15	4	1
cNN 4	30	2	2	3
cNN 5	30	14	7	0
Total	**187**	**77**	**30**	**18**
	True Dia FSB	True MSB	False Dia SB	True ND

Misclassification rate = 14.1%

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Survival

	Jharkhand	UttarPradesh	Total
Total number of live birth	7504	2658	10378
Total number asphyxiated newborns	443	98	541
Birth asphyxiated newborns discharge alive at birth	432	93	525 (97.4%)
Birth asphyxiated newborns alive on 28 days	342	70	412 (78.4%)

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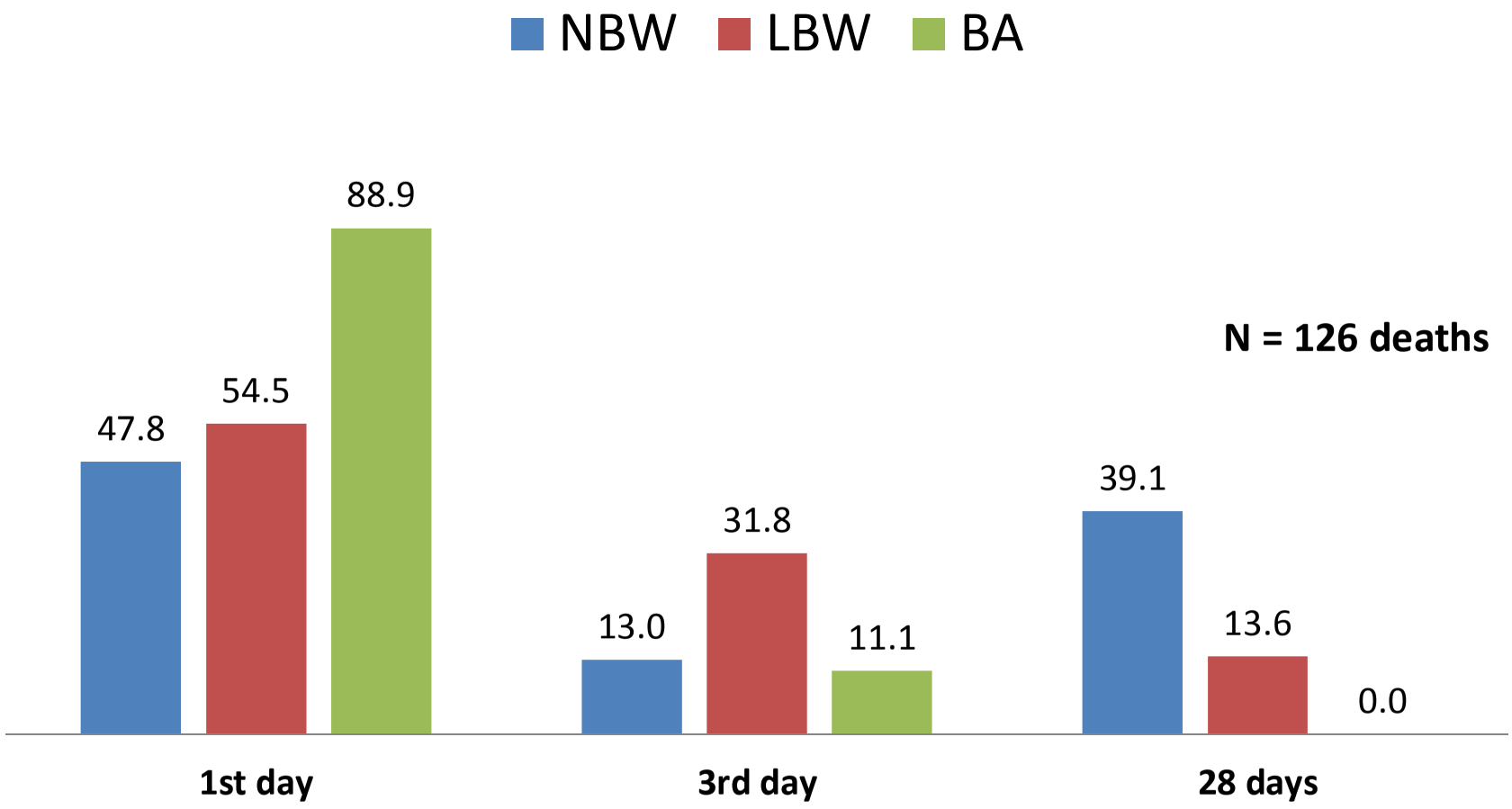
Follow up Verbal autopsy



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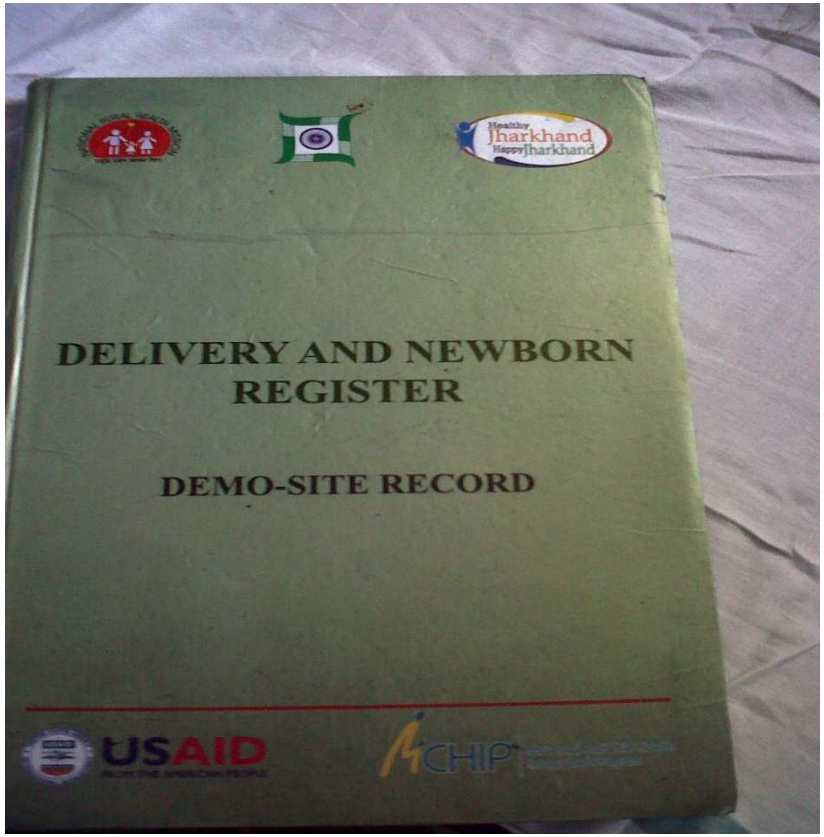
Reducing early neonatal mortality is the *litmus test*

- Fetal heart tone addition
- Misclassification rates
- Discharge record condition
- Post observation care of BA managed newborns at the facilities
- Linkages with community follow up quantification

Our Text Book



Learning by doing

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Then

Now

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