

# Health Systems

## The Problem

Indian healthcare sector has evolved both in terms of quality and quantity overtime. This sector has a vital role in both the wellbeing of the community and the development of the nation. India has made significant progress, not only in health infrastructure and resources but also in various health indicators. The mortality rate has declined from 27 per 1000 population to less than 7 per 1000 population, life expectancy has increased from a low of 32 years to the current 69 years. There has been a phenomenal decline in the infant mortality rate (~200/1000 live births) and maternal mortality rate (~500/100,000 live births) to 37 per 1000 live births and 167 per 100,000 live births (Govt. of India). According to NFHS 4, only 30.3% pregnant women received full antenatal care. In rural areas, only 16.3 % of pregnant women received full antenatal care, in contrast to their urban counterparts (31.1%). Further, on average women had INR3,198 of out-of-pocket expenses in public health facilities. Almost one -fourth of the women (22.9%), were undernourished with of BMI less than 18.5 kg/m<sup>2</sup>. Half the pregnant women were anaemic. An even larger proportion of children (58.5%) had anaemia. Malnutrition among children under age 5 was rampant, with 38.4% being stunted and 21.0 wasted. Full immunization coverage among children 12-24 months was only 62.0% (NFHS 4 India, 2015).

India faces serious challenges in the implementation of policy intentions and strategies. There are gross inequities in access and availability of health services, especially for the poor and disadvantaged. Despite a vast network of public-sector healthcare institutions, a large health workforce and resource mobilization, almost 70% people use a private health facility for outpatient care. They incur about 70% of total health expenses out of pocket (Nandi et al., 2017)(T et al., 2015).

Rajasthan belongs to a group designated as High Focus States under the National Rural Health Mission (2005-12). The State’s health indicators – infant mortality rate (41 per 1000 live births), maternal mortality rate (244 per 100,000 live births) and total fertility rate (2.4 children per woman) – are poor (NFHS 4). About one-third of the population of the state belongs to Scheduled Castes/Scheduled Tribes, which traditionally have lower health indicators. Also, the western Rajasthan is desert, which has a low population density. This makes healthcare delivery quite a challenging task in this part of the State. At current levels of health indicators, the State has an uphill task to achieve SDG goal 3 in the next 12 years.

This study analyses three interventions namely Strengthening Basic and Surgical Capacities to reduce Maternal and Neonatal deaths, improving emergency referral management using 108 ambulance services and family planning.

## Solutions

Interventions	BCR	Benefit (INR Crores)	Cost (INR Crores)
<b>Maternal and Neonatal health</b>	9.7	111,563	11,495
<b>Ambulance (Urban)</b>	8.8	9,645	1,093
<b>Ambulance (Rural)</b>	3.3	39,762	12,076
<b>Family planning (per capita-years)</b>	32	19,728	614

Total costs and benefits are discounted at 5% & Benefits and Cost values are in crores of INR except family planning which are in per capita-years.

The full paper by **PR Sodani, Neeraj Sharma, Md Mahbub Hossain, SD Gupta and DK Mangal** of IIMR University, Jaipur is available on [www.rajasthanpriorities.com/healthsystems](http://www.rajasthanpriorities.com/healthsystems)

## Strengthening basic and surgical capacities for reducing maternal and neonatal deaths

### The Problem

Most recent data on key health indicators such as maternal mortality ratio (244 per 100,000 live births in 2011-13), infant mortality rate (41 per 1000 live births) and under-five mortality rate (51 per 1000 live births) suggest that the state is far behind the targets set in the Sustainable Development Goals (SDG).

Complications during pregnancy and childbirth cause 4,267 maternal deaths and almost 30,000 neonatal deaths per year in Rajasthan. Coverage of all 4 ANCs was 38.5% in Rajasthan (NFHS 4 Rajasthan, 2015). The maternal and child health indicators in Rajasthan are lower than the national average; hence the state needs to redesign its interventions to accelerate improvement in these indicators and address the issues of quality, access, and equity.

### The Solution

The key focus was on reducing maternal mortality by strengthening the service quality of maternal health interventions. The intervention will work in a prospective manner initially for 20 years. The benefits will be same for next 19 years as in the first year as per the assumptions. The goal of this intervention is a decrease of 66% in the Maternal Mortality Rate (MMR) compared to the pre-intervention status.

### Costs

The total cost includes investments in physical and human infrastructure (building, renovation, and equipping medical facilities; training and retaining staff; improving the referral and medical supply system) as well as demand creation, outreach, supervision, monitoring and evaluation activities

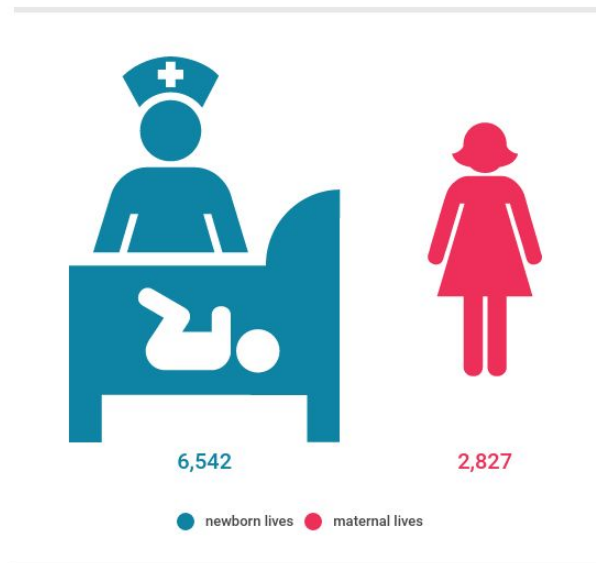
The total cost of the intervention is estimated as INR 11,495 crores at a 5% (annual) discount rate.

### Benefits

These interventions are estimated to result in a reduction of MM by 66%, saving 2,827 maternal lives per year. They would also reduce neonatal mortality by 20%, saving 6,542 new-born lives per year.

It is estimated that 6,542 neonatal deaths per year could be averted due to this intervention, out of a total of 29,833. By reducing these deaths 136,473 DALYs per year could be averted at 5% discount rate. Total benefits of the intervention are estimated at INR 111,563 crores at 5% discount rates.

### Averted deaths per year



## Improved emergency referral using 108 ambulance services

### The Problem

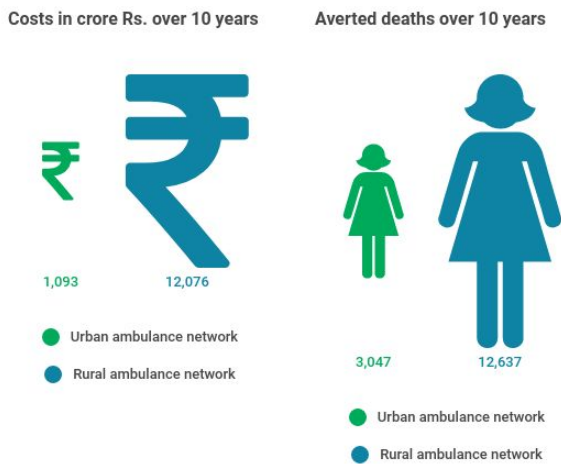
Ambulance services constitute a critical component of Emergency Medical Services (EMS) by transporting patients to health facilities quickly, which is essential to ensure timely and adequate care. This system has been ineffective due to poor availability of vehicles, poor infrastructure, the lack of trained prehospital personnel, and a lack of access to services.

In Rajasthan, there is a shortage of ambulances, which results in an unintended delay in timely health service delivery. This often leads to the death of the victims in a number of medical and surgical emergencies. The suggested number of ambulances is 33 per 1 million people in urban populations and about 3 times higher in rural areas.

In Rajasthan, currently 741 ambulances are providing services of which about 42% are deployed in urban

areas. As per NFHS-4 only 24% of pregnant females were transported during the study period by any (public/private) ambulance service in India. The situation in Rajasthan was even worse, with a coverage of only about 14.5%.

### Costs and averted deaths over 10 years



Source: Authors paper

#### The Solution

The intervention considers deployment of additional ambulances, which are expected to remain operational for the next 10 years. The indicator to measure the improvement in population health will be the coverage of the ambulance services.

#### Costs

The capital cost is a one-time investment for the next 10 years; in addition, there will be recurrent annual costs such as salaries, maintenance, training etc. It is estimated that the total number of ambulances required as 33 per million population in the urban area and 99 per million population in rural areas. Hence, the total cost to fulfil the need for ambulances in urban and rural areas of the state comes to INR 1,093 crores and INR 12,076 crores, respectively.

#### Benefits

For estimation of benefits the data of referrals for ischemic heart disease, road traffic accidents, and obstructed labour cases was used. A total of 3,047

and 12,637 deaths in urban and rural areas are avoided and 36,967 and 152,397 DALYs averted at 5% discount rates in urban and rural areas respectively. The total benefit in economic terms would be INR 9,645 crores in urban areas and INR 39,762 crores in rural areas.

## Family Planning

### The Problem

In 1952, India launched the world's first National Programme for Family Planning. This initiative gradually led to the National Population Policy (NPP) in 2000 to reduce fertility rates. Globally, the prevalence of unmet need for contraception is still high (MoHFW, 2016).

The National Population Policy (NPP) of India was adopted in 2000 to achieve a total fertility rate (TFR) of 2.1 by 2010 from 2.7 of 2005/2006. However, in 2017, it is still about 2.3, although in 17 states the TFR has reached below 2.1, and Rajasthan, the TFR is currently at a higher level (2.4), which calls for a focus on it. Along with this, the total unmet need for contraception stands at 12.3% (NFHS 4 Rajasthan, 2015).

### The Solution

This intervention looked forward over the next 50 years, as our ultimate target is to reduce the number of unwanted children and decrease the prevalence of unwanted pregnancy related abortion.

### Costs

The cost of the intervention includes the cost of service delivery and procurement of contraceptives for the target population. The total per capita cost is about INR 614 at 5% annual discount rate.

### Benefits

Providing family planning services could avert an estimated 1,174 and 69 deaths respectively for child and mother annually, as well as additional benefits arising from reducing population growth rate.

Major benefit would come by way of demographic dividends but the child and maternal lives saved due to family planning methods would also be important. The total per capita economic benefits would be about INR 19,728.