

MEETING ABSTRACTS

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Bringing Evidence into Public Health Policy (EPHP) 2010

Bangalore, India. 10-11 December 2010

Edited by Upendra M Bhojani, Prashanth NS, Vidya Venkataraman and Narayanan Devadasan

Published: 16 January 2012

These abstracts are available online at <http://www.biomedcentral.com/1753-6561/6?issue=S1>

INTRODUCTION

I1

Five years of the National Rural Health Mission – what lessons for policy?

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BMC Proceedings 2012, **6**(Suppl 1):1

In the late 1800s, Mark Twain wrote, "There is only one India...a wonderland of fabulous wealth and fabulous poverty, of splendour and rags. The one sole country under the sun that is endowed with an imperishable interest for alien princes and peasants, for lettered and ignorant, wise and fool, rich and poor..." [1].

A 100 years later and we couldn't agree more. India is a land of massive inequity. While urban women are treated to specialised and luxurious maternity clinics that promise to be "a home away from home" - rural women are dying in their real homes, unable to get to the nearest health centre, which isn't so near after all. But there is a silver lining to this. A lot of reforms have taken place in the health sector - reforms, that promise a great deal of change. However, there is very little empirical evidence to back this change and that poses a major hurdle to effective evaluation and course correction. There is little or negligible evidence from the field about what is working and what isn't. And importantly, why it is working and why it isn't.

As we draw close to the release of the 2011 World Health Report for which the chosen theme is "No health without research" [2], we are faced with limitations of research capacity and outputs [3]. Despite several calls for more implementation research [4] to guide health policies, the lack of right forum for policy makers and researchers to discuss relevance of the research topic limits the implementation of such recommendations. And even if there is some evidence in the form of research or studies, they are too few and too far apart. And these few studies are not disseminated widely enough and/or to people that matter in bringing about a change.

So the situation we are confronted with is this: on one hand, researchers who have studies - crucial evidence from the field - that are highly academic and circulated within a very close milieu and often not tailored to policy and needs of practitioners. On the other hand, decision makers/policy makers who are forced to make decisions in a vacuum, based on strong convictions of policy actors, impressions or conventions. Strong calls for universal health coverage such as the recent one by Reddy et al. [5] have had to depend largely on experiences and convictions rather

than being informed by strong evidence from implementation research from the field.

In response to this glaring gap, we conceptualised a national conference to bring together researchers, practitioners-managers and policymakers to bridge this gap between research and policy and give both of these, very important groups a chance to interact. The idea of the conference is to give them a common platform for effective dialogue so that researchers can share their findings with key decision makers and policy makers can in turn, evaluate the policies presently in practice. Not to mention, introduce and implement newer policies that are backed by evidence.

The conference focuses on the National Rural Health Mission (NRHM) that was launched by the Indian government on 12th April 2005. NRHM was launched to provide accessible, affordable, accountable, effective and reliable health care facilities to rural areas in India through increased financial outlays, flexible financing mechanisms, increased community involvement, horizontal integration of programmes, improved management at district and sub-district levels through capacity-building and innovative human resource management [6]. NRHM was launched on a "mission" mode recognising the urgency and importance of improving the status of health care provision in India.

As the NRHM completes five years, the Institute of Public Health felt that it was a good idea to look back on what has been achieved till date. Ignoring the myriad exaggerated and subjective criticism it has, and still receives, there is a need to question if there is empirical evidence that the NRHM is actually making a difference?

The conference stands as an opportunity for researchers to present the results of their empirical studies on health systems on an international dais. In this supplement, we have put together 24 papers that were presented at the first National Conference on Bringing Evidence into Public Health Policy (EPHP) held in Bangalore during 10-11 December 2011. By presenting these findings to policy makers and implementers at both, the central and state levels, there is a hope to influence the policy making process through evidence based research. For policy makers, it is a chance to get together, review the evidence and act accordingly. Through the conference, the researchers would get a chance to actively participate in the policy and program development process and distil crucial research questions in the future. Given the power of research, such a platform poses as an impetus, inspiring other researchers to take up health systems research and subsequently, with a union of research and action, strengthen the existing health system.

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ORAL PRESENTATIONS

O1

Study of initiatives to address shortage of specialists for emergency obstetric care in Maharashtra, India

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BMC Proceedings 2012, 6(Suppl 1):O1

Introduction: Emergency obstetric care (EmOC) is one of the concrete "service guarantees" of the National Rural Health Mission (NRHM) launched by the Government of India in 2005. However the Indian public health system suffers from a severe shortage of specialists to deliver EmOC.

As a part of a larger study of EmOC provision in Indian state of Maharashtra, we studied the government's strategies to expand the network of skilled providers through task shifting for anaesthesia and obstetric services and models of public private partnerships. In this study, we address the gap in our understanding of the potential of such strategies in providing EmOC, their influence on the size and distribution of obstetric and anaesthesia providers and the related service uptake.

Methods: We used a mix of quantitative and qualitative methods. We conducted a facility survey of all secondary and tertiary health care facilities (44) in 3 districts. We interviewed medical superintendents and specialist obstetric service providers at public facilities (20) in these districts, selected private obstetricians and anaesthetists (15) and the district health officials and programme managers. We mapped the location of the private obstetricians in the three districts.

In order to study access, we selected 6 blocks in the districts where we randomly selected 60 health sub-centres and conducted a community level survey in the 272 villages covered by these centres. In these villages we listed all women (1833) who were either below poverty line (BPL) or belonged to scheduled caste (SC) or scheduled tribe (ST) and who delivered their first or second live baby within one year from the survey. We identified women who experienced obstetric complication/s and we interviewed 120 such women selected through maximum variation sampling.

Results: Of the 44 public facilities we studied, we found that 20 (45%) have a qualified obstetrician/s, 13 (30%) have a qualified anaesthetist/s while 77% do not have either/ both of these specialists. The utilisation of the specialist skills of the serving obstetricians is low – the 25 obstetricians working at sub-district level performed 34 caesarean sections during six months.

The number of obstetricians working in the private sector in these districts translates to an availability of one obstetrician for 23,000 population in Amravati, one for 21,000 in Satara and one for 48,000 in Nandurbar district. The corresponding availability of obstetricians in the public sector was one for 325,000 in Amravati, one for 187,000 in Satara, and 1 for 163,000 population in Nandurbar district. Half of the 260 private obstetricians in the study district work in rural areas. Our findings contradict the assumption that there is an overall shortage of obstetricians. In the interviews with private specialists, they raised concerns in rendering services in government facilities.

For 50% of the public facilities with potential for contracting in specialists, the nearest private specialist is located more than 30 km (range 30 km to 100 km). Contracting in has been undertaken at seven facilities and these are mostly places where the private specialist is located in the same town. Though contracting in has provided specialists for fixed duration it has not influenced the provision of obstetric services in emergencies.

The interviews with the private specialists revealed their expectations and the interviews with administrators and managers brought forward the operational issues in executing the contracting in strategy.

Regarding task shifting, we met the 2 graduate medical officers trained in comprehensive EmOC services and the 3 others trained in providing anaesthesia (for caesarean section). None of these have independently conducted a caesarean section or have administered anaesthesia for it. Interviews with these providers revealed the reasons for non-performance.

Unavailability of caesarean section in public facilities has effect on general population. Our community level survey shows that 8% of the women had undergone a caesarean section and 57% of these surgeries were in the private sector. The cost incurred for caesarean section in the private sector ranges from INR 10,000 (USD 214.7) to INR 30,000 (USD 644.2). In the absence of caesarean services at 80% of the community health centres (CHC), the next public facility with these services is located more than 60 km for over half of the these CHCs.

Discussion: We discuss the appropriateness of initiatives for addressing specialist shortage in states like Maharashtra that have a relatively higher concentration of specialists and the limitations of contracting in and task shifting strategies. We highlight the neglect towards providing the required working environment for these cadres. Aiming for a sustainable solution, we recommend the areas for essential changes in human resource policies to attract and retain specialists in the system.

O2

Quality of care in obstetric services in rural South India: evidence from two studies with gap of ten years

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BMC Proceedings 2012, 6(Suppl 1):O2

Introduction: With a high maternal mortality ratio (of 212 per 100000 live births), provision of quality maternal healthcare services has remained a challenge in India. In 2005, government of India launched the National Rural Health Mission (NRHM) to improve healthcare services and health status of population in rural India with a focus on maternal and child health.

In this paper we compared findings from two studies conducted with a gap of nearly ten years to understand changes in maternal healthcare services before and after the NRHM. While the study population belonged to rural Karnataka, many of the issues identified represent the rural population across the country.

Methods: We compared the findings from two studies conducted with a gap of ten years in a rural block of Ramanagara district in Karnataka. These studies explored various aspects of the pregnancy related healthcare delivery by healthcare services as well as the way care was experienced by women and their families. Table 1 provides salient features of these studies.

Results: We found that in the first study, 30% of women delivered at other than their planned place of delivery for reasons excluding direct referrals from healthcare services. This level remained similar (33%) in the second study indicating little change in birth preparedness and emergency planning.

Overall, proportion of deliveries happening at healthcare institutions increased from 35% to over 80%. Skilled birth attendance by Auxiliary Nurse Midwife (ANM) in case of deliveries happening at home reduced from 34% to 17% in spite of the lower incidence of home births. The number and appropriate timings of antenatal care visits improved including the content of care package (blood pressure examination, iron and folic acids supplements) across the two time periods.

However there were gaps in certain aspects of antenatal care such as urine test, advice from healthcare services regarding risk signs in pregnancy and timings for postpartum visit. We found from second study that patient-provider interactions were generally poor and that providers were unlikely to be aware of the socio-cultural beliefs in community. The first study showed that such socio-cultural beliefs in community influence women's and families' responses to illness.

We found that the median cost for households for normal deliveries ranged between INR 1000 (USD 21.5) to INR 4000 (USD 85.9) across

Table 1(abstract O2) Study design

	Study 1	Study 2
Duration	1996-1998	2007-2009
Methods	Prospective cohort study with use of mixed methods.	Prospective cohort study with use of mixed methods.
Sample	11 villages selected randomly. Recruitment of all pregnant women (520) between 1996-98 from these villages. Followed to 3 months postpartum.	39 villages randomly selected across 13 primary health centres. Subsequently 41 villages purposively (located adjacent to villages selected earlier) selected to meet enrolment target. All women who planned to deliver within study area and were in the third trimester of pregnancy were enrolled (642). 608 (94.7%) women completed the study.
Data collection	Five questionnaires (two antenatal, one immediately post-delivery and one about three months post-partum) were administered.	Two questionnaires (one antenatal in the third trimester, one about one month after delivery) were administered.

primary health centres, block (*taluk*) and tertiary level government hospitals. Median cost for caesarean section at tertiary care government hospitals was INR 8000 (USD 171.8).

Furthermore, we found that certain measure quality of care such as of postpartum counselling, early postpartum check-ups, length of stay, appropriate use of uterotonics, and equity in service provision across caste groups needed improvement.

Discussion: By comparing the findings of two studies over a decade, we show that there have been some improvements in pregnancy related healthcare services. However many challenges remain. We suggest that use of checklists by healthcare providers on specific components of recommended care during antenatal check-ups, delivery and postnatal care (for example, birth planning during antenatal visits, postpartum and neonatal advice given before discharge) is needed.

There is need to increase the length of stay for women in institution to at least 6 hours post delivery for all women with uncomplicated normal deliveries and with healthy babies and longer for women with complications and/or low birth weight babies. Specific attention to questions that women and their families may have regarding healthcare as well as allowing women to have companion of their choice present during delivery would help improve care experienced by women.

There is need to improve round the clock presence of doctors and healthcare workers at primary health centres because many women had to seek other facilities as they found primary health centres closed. We found that the cost of care in government services was higher than the cash assistance available through *janani suraksha yojana* (maternity protection scheme) to families living below poverty line.

O3

Low coverage of Janani Suraksha Yojana among mothers in 24-Parganas (South) of West Bengal in 2009

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BMC Proceedings 2012, 6(Suppl 1):O3

Introduction: *Janani Suraksha Yojana* (JSY), a maternity protection scheme, aims to reduce maternal and infant mortality and to promote institutional delivery in India. It was started in 2005. Under JSY, pregnant mothers of poor, scheduled caste and tribes shall get financial benefits of INR 500 (USD 10.7) after completing three antenatal care visits; INR 150 (USD 3.2) to INR 350 (USD 6.4) for transport to government or accredited private healthcare institution; and INR 500 (USD 10.7) for opting institutional delivery.

We evaluated JSY in South 24-Parganas district of West Bengal.

Methods: We sampled 256 mothers who were eligible to receive JSY benefits and who had a child below one year of age. We used cluster sampling using population proportionate to size method to select these mothers. In total, 32 clusters with a cluster size of eight were identified. Sample size was calculated to achieve 95% confidence interval and 80% power, using 70% utilisation of JSY, rate of homogeneity (high utilisation of health care service) as 0.3 and design effect as 3.1. In each cluster, we

selected mothers randomly. Trained personnel interviewed mothers using semi-structured questionnaire.

For stakeholder analysis, we randomly selected 97 female health worker (auxiliary nurse midwives), 32 block medical officers and public health nurses, 12 *gram panchayat pradhans* (elected representatives in local governments) and district nodal officers for JSY. We interviewed these stakeholders using a semi-structured questionnaire.

We also analysed performance of JSY and reproductive and child health in the district using secondary data from the records, registers and reports at different levels. We analysed trends in institutional delivery and coverage of JSY.

Results: We found that 57% (147) of 256 mothers who were eligible to receive JSY benefits were registered with health services within 12 weeks of pregnancy; 85.9% (220) mothers completed at least 3 antenatal care visits; and 96.9% (248) mothers had completed one dose of tetanus toxoid injection. Blood pressure was recorded in 72% mothers; weight and haemoglobin was measured for 88% and 42% mothers respectively.

We found that 78% (202) of 256 mothers were registered under JSY and 73% (188) got JSY benefits after three antenatal care visits. Of mothers (188) who received JSY benefits, 11% (20) got financial benefits during antenatal period. Of 49% (99) mothers who delivered in healthcare institutions, 51% (51) got financial benefits for referral transport as well as institutional delivery after childbirth; 29 mothers received it before the discharge from institution. Institutional delivery was low among Muslims women (OR- 0.41, 95% CI: 0.23-0.72). Of 256 mothers 50% (128) had home delivery.

Regarding awareness on JSY, we found that 90% (231) mothers knew that some financial benefits are being given to pregnant mothers but only 64% (164) mothers had heard the name of JSY. Husband's education (Odds Ratio-2.5, 95%CI: 1.2-5.1) and knowledge of JSY (OR-11.2, 95%CI: 5.9-21.9) was positively associated likelihood of mothers getting JSY benefits.

We found that all female health workers, 94% of block medical officers and block public health nurses, and 58% of *gram panchayat pradhan* had correct knowledge of JSY. District nodal officer, 55% (53) female health workers and 47% (15) of block officials experienced inadequate and late allotment of fund for JSY. Most (88%) female health workers identified non-availability of necessary documents as a barrier to receipt of financial benefits from hospital. Disbursement of financial benefits of JSY was made on daily basis from 62% (23/37) of healthcare institutions. District or state nodal officer did not crosscheck any beneficiary.

We found that as per secondary data number of mothers receiving JSY benefits increased from 1959 in June 2007 to 14280 in September 2009. We also noted an increase in institutional delivery from 29% in April 2008 to 36% in October 2009. However maternal mortality ratio was 108 per 100000 live births during January 2007 and October 2009. We found reduction in reporting of Infant death from 2167 in 2007-2008 to 1604 in 2008-2009.

Discussion: We find that inadequacy of fund for JSY and delayed payments of financial benefits lead to low coverage of JSY. Institutional delivery increased with decrease in infant mortality after implementation of JSY. We recommend adequate fund allotment, timely disbursement of financial benefits to beneficiaries, circulation of JSY guidelines and reorientation of stakeholders.

04

A rapid evaluation of the *Rajiv Aarogyasri* community health insurance scheme in Andhra Pradesh, India

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BMC Proceedings 2012, 6(Suppl 1):O4

Introduction: In 2007, the Indian state of Andhra Pradesh introduced the *Rajiv Aarogyasri* community health insurance scheme (RAS) in order to break the vicious cycle of ill health, poverty, indebtedness and bankruptcy among families who are below the poverty line (BPL). The purpose of the scheme was to improve access to treatment of certain medical and surgical conditions for BPL families through a network of health care providers.

We conducted a rapid evaluation of RAS at the request of government of Andhra Pradesh. The purpose of the evaluation was to provide insights into the current performance of the scheme, to examine whether it is meeting the overall objectives and to suggest ways by which it may be further strengthened.

Methods: We used secondary data on patients accessed through the trust that runs the scheme and conducted a survey in six randomly selected districts. Patient data were obtained from the Aarogyasri Healthcare Trust, which runs the programme. A total of 105,712 treatments had been authorised from April 1, 2007 to September 30, 2008. We analysed 89,699 treatments undertaken for 71,549 beneficiaries. We excluded 16,013 treatments for which data was not complete.

We conducted surveys in six randomly selected districts of the state. 217 beneficiaries from 18 *mandals* (administrative sub-division of districts) of six districts were interviewed at their homes. We visited nine *Andhra Pradesh Vaidya Vidhan Parishad* (APVVP) hospitals, four government teaching hospitals and 14 private hospitals. We also visited one primary health centre (PHC) from each *mandal*. We interviewed the stakeholders - state government, Aarogyasri Health Care Trust, Star Health Insurance Company and beneficiaries using semi-structured interview guides.

Results: We found that 111 beneficiaries per 100,000 BPL population had utilised the scheme until the end of September 2008. Beneficiaries from the scheduled castes (SCs) and scheduled tribes (STs) were significantly lower than their proportions in the population, in a majority of the districts. Cardiac, cancer and neurological interventions made up 65% of all treatments administered by the scheme.

Of the 353 participating hospitals, 30 hospitals located in six cities of the state had undertaken more than 50% of all interventions. It was also observed that with increasing distance to major cities, the utilisation rate declined. The beneficiary satisfaction survey elicited the highest scores for doctors, nurses and cleanliness. The lowest scores were for health camps and information provided about the scheme.

Nearly 60% beneficiaries incurred a median out-of-pocket expenditure of INR 3600 (USD 77.3) with transport, medicine and pre-diagnostic investigations being the major reasons. 13% percent of beneficiaries had no follow-up visit and 28% had only one follow up visit.

Discussion: The evaluation has revealed that there is scope for the scheme to improve strategic purchasing, quality of care, integration, continuous audit and in-built evaluation. The evaluation has emphasised on developing more coherent, cohesive and integrated health system with convergence of preventive, promotive and curative services taking into account the wider determinants of health.

05

A study of *Rashtriya Swasthya Bima Yojana* in Chhattisgarh, India

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BMC Proceedings 2012, 6(Suppl 1):O5

Introduction: The *Rashtriya Swasthya Bima Yojana* (RSBY) is a national health insurance scheme launched in 2008 by government of India to

provide health insurance to households living below poverty line (BPL) in order to protect them from major health shocks that involve hospitalisation. In Chhattisgarh RSBY was launched in June 2009 and Durg was the first district to be enrolled under this scheme.

In this paper, we attempt to analyse implementation of RSBY in Durg, Chhattisgarh and explore whether out-of-pocket expenses are still incurred by patients utilising this insurance.

Methods: We selected Durg district as the study site as it has the highest utilisation rate in Chhattisgarh. We conducted the exit interviews of patients who used RSBY in months of May and June 2010 at RSBY empanelled hospitals. As per the RSBY utilisation data from the district, only two government hospitals (district hospital at Durg and community health centre at Gunderdehi) had undertaken hospitalisations. We included both these hospitals. Of private hospitals, we selected hospitals in Durg and Bhilai towns through convenience sampling. Hence two public hospitals (out of 16 empanelled) and five private hospitals (out of 10 empanelled) were selected for the study.

We spent four days at each selected hospital and attempted exit interviews of 10 cases per hospital. However the sample per hospital varied due to non-cooperation by some of the hospitals. Furthermore, the RSBY facility was closed for most of the data collection period (June 2010 at community health centre, Gunderdehi). In order to complete the sample, we identified the villages with highest number of hospitalisations and traced RSBY beneficiaries through Mitans (a village level female health worker).

We used a structured questionnaire to conduct exit interviews of patients at the selected healthcare facilities and of RSBY beneficiaries in the village. We pilot tested the questionnaire on five patients before using it for sample population. In total we interviewed 100 RSBY beneficiaries that represent 4% of total hospitalised cases in Durg district and 2% of total hospitalised cases in Chhattisgarh in that period. We collected secondary data from RSBY website.

Results: In Chhattisgarh 46% of the eligible families were enrolled under RSBY till July 2010. Hospitalisation rate was only two per 1000 persons enrolled. The insurance claim ratio was low with INR 64000000 (USD 1374280) paid as claims so far, whereas insurance companies received an annual premium of INR 750000000 (USD16104800). The average value of hospitalisations in Chhattisgarh is INR 4411 (USD 94.7).

In our sample population, we found that only 4% of respondents had received their RSBY smart card on the spot. People were hardly given any information on RSBY. More people from rural areas and those belonging to scheduled castes and scheduled tribes were using government hospitals. *Mitans* (a village level female health worker) referred 40% of patients using government hospitals. Main symptoms that brought people to the health facility included weakness in 33% of cases; fever in 18% of cases; surgery in 13% of cases and, abdominal pain in 10% of cases.

For people who were aware of the amount deducted, the average value of hospitalisation was INR 4988 (USD 107.1) in government healthcare services and INR 7416 (USD 159.2) in private healthcare services. We found that 58% of the respondents who used private healthcare services and 17% of those who used government healthcare services incurred out-of-pocket expenses. Average out-of-pocket expenditure was INR 1078 (USD 23.1) in private sector and INR 309 (USD 6.6) in government sector. Most private hospitals fixed a quota for BPL patients, beyond which they refused to admit patients under RSBY.

Discussion: RSBY is meant for the poorest and aims to relieve them of the burden of healthcare costs. However, our findings suggest that patients still incurred out-of-pocket expenses. Furthermore, most private hospitals did not admit patients under RSBY beyond their BPL quota.

A lack of transparency at healthcare facility level is evident as a large number of persons were not aware of the amount deducted from their RSBY cards. There is need to enhance transparency and proactive disclosure by healthcare facilities for patients and for effective analysis of the scheme. There is need to strengthen government healthcare services and regulate private healthcare services in order to have desired results of RSBY.

06

Use of the right to information act to improve access to better services in two urban slums

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BMC Proceedings 2012, 6(Suppl 1):O6

Introduction: In the context of inflationary trends and the incapacity of the poor to access services in open markets, the Indian government initiated various programmes to provide basic facilities either free or at nominal cost. However, these services are not reaching the most vulnerable people due to a lack of awareness, barriers in accessibility and rampant corruption in the system.

The failure in basic service delivery has impacted the health and economy of the poor, especially in urban areas such as Bangalore. The urban poor are unable to access food grains in the open market, which prevents them from attaining the minimum required nutrition, and makes them vulnerable to health problems.

A similar situation exists in health services. It is necessary to build pressure to improve accessibility for public services - especially public distribution system, primary health centres and *Anganwadis* (supplementary nutrition centres) to improve health in urban areas. In Bangalore, though there are various service points to provide services on health, the quality of the service delivery at the service points are not assessed. Most of the time, these service points don't work as per norms such as working hours, availability of allocated supplies to that service point, and appropriate service delivery methods, leading to a failure of the realisation of the whole entitlement reserved for the needy.

Methods: As part of our work in urban governance reforms, we undertook a rights-based approach in two selected slums of Bangalore to address a few major services that were provided to the poor under subsidy or for free, namely, food and health.

We documented the experience with using the right to information act (RTI) as a tool to push governance reforms in specific departments and initiate dialogue with service agencies to develop charters and enhance delivery of services through improving/developing platforms such as grievance redressal meetings.

Results: We found that using RTI as a tool helped with the establishment of *anganwadi* centres (supplementary nutrition centres) in two slums. There was an improvement of food provision in the existing centres for children, pregnant and lactating women. The coverage of schemes like the newly introduced *Bhagya Lakshmi* scheme (financial assurance scheme for girl child) increased.

The regularity of visits by the auxiliary nurse midwife and lady health visitor from the health sub-centre also improved. The coordination between the *Anganwadi* centre and health sub-centre also improved.

In the case of the public distribution system (PDS), the confidence in the community to demand their entitlements under the scheme increased. This also improved the attitude of the PDS shop owners towards the community especially with respect to their willingness to increase the frequency and working hours of shop. Beneficiaries reported an increase in the quantity of food grain distributed in accordance with the rules, thus decreasing the burden. Families that were eligible to receive below poverty level cards have applied for these cards.

Discussion: To bring changes in delivery of basic services such as health and PDS, a multifaceted approach needs to be adopted with awareness on entitlements as a basis. We faced many challenges in obtaining cooperation from the service agencies in accessing information on the details of entitlements of the poor for specific service points.

RTI is a key tool, through which it was possible to bring high level of change in the two urban slums. Other tools such as citizens' charters, grievance redressal mechanisms, and government orders were also needed.

07

Equipping missionaries for the mission: capacity building initiatives and the decentralised planning in Jharkhand, India

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BMC Proceedings 2012, 6(Suppl 1):07

Introduction: In 2006, even with the external support, most of the districts in Jharkhand state were unable to do health planning beyond an initial prospective planning. The key impediment was the lack of capacity

to analyse the health situation in their districts and develop strategies and propose budgets to implement these. The Public Health Resource Network (PHRN) in partnership with the National Health Systems Resource Centre (NHSRC) developed a training curriculum and a fast-track capacity building programme in 2006 to address this gap.

Jharkhand state adopted this training programme and trained selected officials from all districts in several batches beginning in the year 2008. Social workers from various civil society organisations were also trained on district health planning through a parallel distance-learning programme by PHRN. The trained personnel from both health department (n=155) and civil society groups (n=85) supported the district programme management unit in preparing district health action plan during November 2009 to March 2010.

This study was done in order to assess the significance of the PHRN-led capacity building in enhancing the individual and institutional technical capacities at the district level. Study aimed to understand how the capacity building enhanced the district level planning and management of health service deliveries under the National Rural Health Mission (NRHM).

Methods: A case study on district health planning processes was prepared through a desk review of reports, review of district health plan documents, focus group discussions with the district teams, and interviews with stakeholders.

Results: We found that at least 10 of the 24 districts developed in-house capacity to take forward the health planning processes at district level as a result of the capacity building programme. This improved planning capacity at district level has enhanced the enthusiasm for decentralised planning replacing the earlier notion that planning is a normative compulsion under NRHM.

The situation analysis and planning was better in the districts where the selection of personnel for the training was done. Involvement of civil society members improved compliance to the decentralized planning process. The capacity building intervention improved the focus on inclusive planning and equity through special plans for vulnerable areas and groups.

All districts were able to prepare and submit their action plans on their own for the first time, with limited guidance and appraisal inputs from experts at the state level. Most of the plan proposals from the districts were incorporated in the state project implementation plan for 2010-11. The subsequent 2011-12 planning process has adopted the same strategy.

Discussion: There is a need to improve the competence of the district team for planning and management of public health systems through systematic capacity building. The selection of personnel for such capacity building programmes is crucial for the success of the programme. Even though several years have passed since the launch of NRHM, and there have been some capacity-building inputs, there are gaps especially in the regions where this is most needed. The key challenge is how these improvements can be institutionalised and maintained.

Also, there is a need to ensure resource allocation based on the needs indicated by the district health plans. In absence of this, the enthusiasm created by the capacity building initiatives may diminish.

08

Strengthening support mechanisms for performance improvement of Accredited Social Health Activists in Uttar Pradesh

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BMC Proceedings 2012, 6(Suppl 1):08

Introduction: The National Rural Health Mission (NRHM) was launched in 2005. One of the key components of the NRHM is the identification and training of Accredited Social Health Activists (ASHA) for each village in the country. They have undergone several rounds of training and received additional training like 10-day training on child survival in Uttar Pradesh state. Despite these training programmes, significant gaps remain in their performance and their ability to translate "knowledge to practice".

Recognising that improving performance of ASHAs is critical to achieving the outcomes of NRHM, the USAID-funded IntraHealth International led

Vistaar project, as part of technical assistance to the Uttar Pradesh government, planned assessments to identify (1) gaps between the desired and actual performance of ASHAs, (2) key factors affecting ASHA performance, and (3) on-the-job support, capacity building and mentoring needs of ASHAs.

Methods: Qualitative assessments: We conducted rapid needs assessment and performance needs assessment comprising of focus group discussions and in-depth interviews with ASHAs, auxiliary nurse midwives (ANM), lady health visitors (LHV) and medical officers (MO) across five districts of Uttar Pradesh.

We used systematic random sampling to select ASHAs using the list of trained ASHAs provided by the district governments as the sampling frame. The supervisors (ANMs, LHVs and MOs) of the selected ASHAs were interviewed to assess the existing supportive supervision mechanisms for ASHAs. Content analysis of the qualitative data from in-depth interviews was carried out using N6 software package. Two performance need assessment were undertaken at two different locations with about 40 participants each, which included ASHAs, ANMs, LHVs and MOs. We attempted to understand the gaps between desired and actual performance by using root cause analysis to identify underlying factors and address the root causes at various levels.

The intervention: The *Vistaar* Project provided technical assistance in five districts of Uttar Pradesh to regularise monthly ASHA meetings, optimise these as platforms for continued capacity building of ASHAs and enhance their interpersonal communication skills for effective transformation of knowledge to practice. The interventions were planned to reach to 10,000 ASHAs. *Vistaar* designed capacity building modules on supportive supervision and assisted government with training of ANMs and LHVs in five districts to provide on-site support to ASHAs during field interactions. ANMs were trained to provide problem solving /action planning support, provide positive feedback wherever possible and motivate ASHAs.

Results: The assessment revealed that ASHAs possess basic theoretical knowledge, but significant gaps remain in application of this knowledge. ASHAs lacked operational skills to translate knowledge to practice. They also lack inter-personal communication skills required to communicate effectively and negotiate behaviour change at household level.

We also found that there is not much support or mentoring after the training programme to improve their competence. The ASHA monthly meetings remained unutilised for on-the job capacity building and supportive supervision for ASHAs. Village health and nutrition days are missed opportunities for field interaction between ASHA and ANM and providing on-site support to ASHAs.

Following the intervention, we found that where capacity building was undertaken, the ASHA meetings increased from 53% to 98%. ASHA attendance at monthly meetings improved significantly from 48% to 82%. The proportion of recently delivered women visited by ASHAs who reported use of job-aides by ASHAs increased from 10% to 22%. The proportion of recently delivered women who reported being counselled on early initiation of breastfeeding increased from 64% to 77%. The proportion of mothers visited by ASHAs at least once within 3 days of birth increased from 0.6% to 35%.

Discussion: Supportive supervision (including capacity building) of ASHAs can be strengthened through the existing system by making use of the monthly meetings more effectively. The meetings of ASHAs must be made regular and further opportunities to meet in smaller groups should be provided to make the meetings more effective and interactive. The results also suggest that the involvement of ANMs in meetings along with ASHAs promotes team building, provides opportunity for joint problem solving and follow-up support during field-visits.

09

Community-based monitoring as an accountability tool: influence on rural health services in Maharashtra, India

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BMC Proceedings 2012, 6(Suppl 1):O9

Introduction: Introduction of comprehensive framework for community-based monitoring (CBM) and planning at various levels of the public

health system has been one of the most significant policy initiatives under the national rural health mission. One of the key considerations while introducing this large-scale social experiment was to fill the accountability deficit of the public health system by involving local communities. In this paper I examine how CBM has contributed to improvement of local health services as well as some limitations of CBM.

Methods: The act of tracking, recording and reporting the state of public health services in villages as experienced by people themselves is the core principle of CBM. In each monitoring cycle, the information is collected about the outreach services and the services of primary health centre at village level through group discussions. This is done by involving community members with emphasis on participation of women and other marginalised groups. Community responses are recorded in a form of rating each service as good, partly satisfactory, or bad. Information collected through this process is presented in a concise form as a 'pictorial report card' clearly reflecting availability, regularity, and quality of health services. These report cards rate health services using 11 indicators for which data is generated over a three-month recall period.

This paper is based on three rounds of CBM that took place in a period from July 2008 to December 2009 in the 220 villages spread over five pilot districts in western state of Maharashtra. Findings from these report cards were presented in the officially mandated public hearings (dialogues). Compiled data from different districts, reflecting the overall situation of health services, was presented to the state level health officials in the state level public dialogue, for further remedial actions.

Results: At the beginning of CBM process, in the first round of monitoring exercise, on an average 48% of health services were rated as 'good' by community. This rating increased by 13 percentage points to 61% in round two, and by an additional 5 points to 66% in round three. The average percentage of services rated 'bad' by community decreased from 25% to 16% and to 14% over three subsequent cycles of monitoring.

We observed improvements in specific indicators e.g. immunisation improved by 21 percentage points from 69% rating it as 'good' in round one, to 90% rating it as 'good' in round three. Between the first and the third round of CBM, services by *anganwadi* (supplementary nutrition centre) and use of untied fund improved by 33 and 31 percentage points respectively. Health services by primary health centre (for example, 24-hour delivery services, in-patient services, laboratory and ambulance services etc.) improved from 32% in the first round to 74% in the third round.

While many aspects of the village health services improved, certain services like disease surveillance and village level curative services did not see much improvement. Status of these health services remained below 50% even after third round of CBM. Disease surveillance improved by only 9%, from 41% in first round to 50% in third round. Village level curative services remained at 42% in the third round compared to 40% in first round.

Discussion: Improvements in health services witnessed over last three years seem to result from a combination of supply-side (health services) inputs and actions from demand-side (community) through CBM. However, CBM will have limitations in addressing systemic and structural issues, and may remain confined to the periphery of the public health system (i.e. outreach services or services by primary health centres) if it is not accepted as an accountability principle at all the levels of governance in the public health system. There seems to be a growing acceptance among health officials that community led action in form of CBM is integral to various strategies of the national rural health mission. However it certainly requires stronger reinforcement.

O10

Monitoring helps services to reach the poor: the urban primary healthcare project in Bangladesh

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BMC Proceedings 2012, 6(Suppl 1):O10

Introduction: The Second Urban Primary Health Care Project (UPHCP-II) in Bangladesh started in 2005 with a mandate to extend every component of health services to at least 30% of the poor in catchment areas.

Poor were identified through household survey and were provided with free service entitlement cards by the service delivery partners. UPHCP-II started service delivery in partnership with contracted non-government organisations (NGO) in 2005.

The Project maintains a robust health management information system with web-based data uploaded by the provider NGOs. In 2007, the project employed a third party (HLSP) for monitoring service delivery using specially designed tools called Integrated Supervisory Instruments. These tools measure performances of partner NGOs with pre set indicators including services to the poor.

In this paper we analyse this gap using a case of institutional delivery to assess the coverage of the poor over a period of 2005 to 2009.

Methods: We took the data on institutional deliveries in 24 maternal hospitals from the health management information system of the UPHCP-II. Data quality was assured through regular monitoring with systemic approach. We did descriptive analysis to see the changes over the time.

Results: We found that the percentage of poor women who delivered at 10 UPHCP-II clinics in Dhaka was 2.09% in 2005, 1.85% in 2006, and 5.07% in 2007. The achievement was far lower than the mandatory target of 30%. However after the systemic monitoring in place, we observed an increase in number of poor women using institutional delivery services from 5.7% in 2007 to 19.6% in 2008, and 28.75% in 2009. A similar trend of increase was observed in other city cooperation partnership areas also.

Discussion: Pro-poor policy framework combined with regular monitoring with specific poverty-based indicators helps maternal health services to reach the poor.

POSTER PRESENTATION

P1

The role of the Accredited Social Health Activists in effective health care delivery: evidence from a study in South Orissa

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BMC Proceedings 2012, 6(Suppl 1):P1

Introduction: In order to provide effective healthcare to the rural population, the National Rural Health Mission (NRHM) by government of India proposed introduction of female health workers village level. These workers are called Accredited Social Health Activists (ASHA) and their role is to act at an interface between the community and the government healthcare services. More specifically, she is responsible for promoting universal immunisation, referral and escort services for reproductive and child healthcare and other health care delivery programs.

In this context, this paper would discuss the role of the ASHAs in fulfilling these responsibilities and thus facilitating access to quality health care in rural areas. The paper draws on data collected as part of a larger research project on "Explaining differential immunisation coverage in India and Malawi", a collaborative project between University of Oslo (Norway) and University of Delhi (India).

Methods: We collected data using anthropological tools including (1) observing and following up on the ASHA's role on Immunisation days, and escorting the pregnant woman to the healthcare institutions for deliveries; (2) attending training of ASHA and their monthly meetings; and (3) conducting in-depth interviews with ten ASHAs working in different villages. We did fieldwork in Koraput district of Orissa from May 2010 to September 2010.

Results: We found that Auxiliary Nurse Midwife (ANM) of respective health sub-centre nominated all ASHAs for recruitment and hence the involvement of the community and village panchayat (elected local governance body) in selections of ASHA was very limited. Hence ASHA looked upon themselves as another cadre of state healthcare services accountable to the medical supervisor in the primary health centre rather than the Panchayat and the community. This certainly hampered the primary role of the ASHAs.

We found that different ASHAs understood their work profile differently. Those ASHAs who also worked in non-government organisations or were a member of the self-help groups set a larger work profile for themselves than others. One common distinctly visible role of all the ASHAs was 'taking care of the pregnant women' which essentially included

promoting three pre-natal check-ups and institutional delivery. We observed that the cash incentives have certainly increased the number of institutional deliveries as the ASHAs make all possible efforts to take the pregnant woman to the healthcare institutions for delivery. We also observed that the immunisation coverage has also increased as the Immunisation days were conducted on a regular basis in the village.

We observed that the cash incentives (for all the work done by ASHA) however have several unintended consequences. It diluted the focus on safety associated with institutional delivery. The ASHAs along with other health workers encouraged pregnant women to deliver in the healthcare institution solely on grounds of monetary benefits. ASHAs preferred to work in several villages as they translated it as 'more villages, more cases and more money'.

Other constraints towards institutional delivery including the distance and limited healthcare facilities available in the primary health centres, and no facilities whatsoever at health sub-centres affected ASHA's role. Community responded to the ASHAs better when they offered a range of services including curative services (e.g. medicines for common ailments like malaria, diarrhoea). ASHA coordination meetings mainly limited to submission of health records than discussing field experiences.

Discussion: Our findings imply that there should be more involvement of community in recruiting and discussing responsibilities of the ASHAs. This will enable ASHAs to effectively act as a bridge between the community and the formal healthcare services.

Strengthening the healthcare institutions, by better equipping health sub-centres and primary health centres for safe childbirth services, can enhance ASHAs' contribution. This is because referrals from healthcare services to long distance hospitals act as a major deterrent for institutional deliveries. Also there should be more scope for discussion and feedback among the frontline health workers and the supervisory staff.

P2

Verbal autopsies of maternal deaths in Koppal, Karnataka: lessons from the grave

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BMC Proceedings 2012, 6(Suppl 1):P2

Introduction: Maternal deaths bear important lessons for death prevention, as they occur mostly due to failures to prevent and respond to obstetric emergencies. These lessons are worth taking. Verbal autopsies can enable such learning and become useful resources for programme managers and policy makers if they identify lapses in death prevention in ways that suggest what corrective actions can be taken.

A review of worldwide literature shows that most verbal autopsy applications to date focus solely on identifying the medical causes of maternal mortality. While such autopsies reveal how the different causes of death are clustered, they do not directly address health system issues. A smaller group of studies examine social causes using the 'three delays model' to classify the factors that prevent timely access to medical care in an emergency. However, the model does not directly identify the operational issues that constrain health system functioning nor familial and community-level barriers.

Given this, the Gender and Health Equity (GHE) Project developed a qualitative methodology that departs from existing approaches in significant ways and enables in-depth analysis of the social and medical causes of pregnancy-related deaths.

In this paper, we aim to (1) to describe the methodology developed by the GHE project to analyse and learn from maternal deaths, (2) to identify from the autopsies the types of failures that result in preventable maternal death, as well as the factors that drive them, and (3) to make suggestions for how death prevention measures by public health services can be strengthened.

Methods: The GHE project tracks on an on-going basis all pregnancy-related deaths that occur in 67 villages of Koppal district, Karnataka. Of these, 23 deaths were investigated using its qualitative methodology through six stages: (1) death notification, (2) data gathering, (3) construction of the narrative and timeline, (4 & 5) analysis of the

social and medical causes of death using flow charts and standard guidelines, and (6) identification of corrective actions.

Results: In resource-poor regions like Koppal, where anaemia and pregnancy-induced hypertension are widely prevalent, the period prior to the emergency is as important for death prevention as the emergency itself. However, in their inability to accurately detect and effectively manage risks, health providers fail the women more critically than do their families.

Demand generation by ASHAs and the availability of the 108 emergency ambulance services result in women going to primary health centres (PHC) or community health centre (CHC) for delivery by choice. But the doctors and staff nurses at these facilities are not always able to triage (i.e., identify emergencies and prioritise treatment/referral for them) or render appropriate care when multiple in-patient admissions take place simultaneously.

Post-partum haemorrhage is the most common cause of maternal death, but this is at least partly due to inappropriate delivery practices by both government and private doctors (e.g., premature application of fundal pressure to hasten delivery, pulling of the cord to hasten placental delivery) and ineffective treatment of the ensuing haemorrhage from inadequate diagnoses of underlying causes.

The three delays model is not always helpful because it links every failed action to one or another delay while leaving unspecified the factors that underpin it. This is not the case. Inappropriate health provider behaviour and treatment in hospitals that stem from a lack of responsiveness or accountability during emergencies do not cause any delay, except in a tautological sense. On the other hand, the inability of government doctors in PHCs and CHCs to identify emergencies and make effective referrals does result in delays.

Discussion: The capacities of doctors and their staff in PHCs and CHCs to identify and manage pregnancy-related risks and obstetric complications need to be strengthened through practical problem-solving training programmes on a continuing basis.

To enable more accurate detection of risk, ANC check-ups need to become comprehensive assessments that go beyond self-reports by women and/or their families, as there is a tendency among them to normalise risk. Diagnostic methods in use also need to be accurate.

To enable more effective management of risk, communication between health providers and women/their families needs to be strengthened to improve treatment adherence. The monitoring of risk management requires more meaningful follow up than is evident at present.

Finally, the death review process needs to be strengthened through external reviews and the involvement of independent experts.

P3

Women's experience of the quality of care in institutional delivery: evidence from a prospective study in rural south India

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BMC Proceedings 2012, 6(Suppl 1):P3

Introduction: In the context of rising institutional births in India the question often raised is the quality of care in increasingly crowded labour wards. The success of a policy that encourages hospital birth depends on improved standards of medical care, and also crucially, an adequate level of service satisfaction on the part of women and their families. Not only does quality of care influence health outcomes, it is also likely to affect the understanding, utilisation, perceptions of interpersonal aspects of care and the content of services. These were the aims of our study.

Methods: A prospective study (n = 642) was undertaken from 2007 to 2009 in 80 villages in a Ramanagara taluk (an administrative sub-division of a district) of Karnataka situated in a range of 50 km to 80 km from the state capital of Bangalore. 39 villages were selected in a stratified random sample according to the distance to the primary health centres. An additional 41 villages adjacent to the randomly selected villages were purposively chosen to meet the enrolment target.

Results: Findings show that 80% of the women delivered in a range of institutions. Taluk (administrative sub-division of the district) hospitals conducted twice the number of deliveries compared to primary health centres (PHC) and health sub centres. Auxiliary Nurse Midwives (ANM)

and nurses handled about 90% of the PHC deliveries, with doctors playing a primary role at the taluk and tertiary care hospitals. About 18% of women in the sample delivered at home and the majority with unskilled birth attendants.

A large percentage of families (43%) changed their mind about where the delivery should take place, mostly after labour began. Referrals account for only 25% of those who changed, and other reasons include fear of complications or expecting that the health centre would be closed.

Women's perceptions of provider's interpersonal communication, respect for privacy and confidentiality, and comfort in asking questions show predictable as well unexpected differences between public and private services.

About 35% of institutional deliveries were augmented with oxytocin, and 62% of women left health centres in 6 hours or less, and most without postpartum or newborn care advice. Stratification by caste show that women from scheduled caste or tribe (SC or ST) are experiencing poorer quality of care.

Discussion: In light of the current policy that aims to achieve 100% institutional deliveries, our data show that high percentages of women receiving poor quality of care and that differences in public versus private care are not uniformly in favour of the latter. This may discourage future institutional contacts and limit the intended impact on maternal and newborn mortality and morbidity.

Furthermore, in a state such as Karnataka that performs relatively better than the national average on most health indicators, equity analyses need to explore disparities beyond mortality rates to understand quality of care experienced by women from poor and low caste families.

P4

Accredited Social Health Activists and pregnancy-related services in Uttarakhand, India

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BMC Proceedings 2012, 6(Suppl 1):P4

Introduction: Accredited social health activist (ASHA) is a key link to public health services in villages in India. We conducted a cross-sectional study to determine the proportion of women utilising services of the ASHA for pregnancy-related conditions. We assessed the knowledge, attitude, practices, hindrances and motivation factors among ASHAs regarding pregnancy-related conditions. We also sought to determine the factors associated with the utilisation of ASHAs for pregnancy-related services.

Methods: Using cluster sampling for the women (18-45 year age group), who delivered in past one year we calculated a sample size of 240 assuming 9% prevalence of ASHA use for antenatal care services with 1.9 design effect, 95% confidence interval and cluster size of 10. We selected 24 revenue villages as clusters with probability proportional to number of women in reproductive age group in the villages of Rudrapur district of Uttarakhand. From each cluster we selected 10 eligible women from consecutive households and all the ASHAs (24) working there.

We used a questionnaire in Hindi (the local language) and administered by trained field workers. We collected data on the socio-demographic and utilisation characteristics of ASHA services for eligible women along with the socio-demographic characteristics and training, knowledge, practices, community acceptance, hindrances and motivational factors for ASHAs.

We used multivariate logistic regression to identify the characteristics of both the eligible women and ASHAs that were independently associated with the utilisation of ASHAs for pregnancy-related services. We calculated the odds ratios and 95% confidence intervals separately for antenatal care (ANC), delivery-related and postnatal care (PNC) services.

Results: Of the 240 women in the survey, 188 women had heard about ASHA. Of these women who had heard about ASHA 69.7% took the help of the ASHA for antenatal care (ANC), 58.5% took their help for delivery-related conditions and 53.7% took their help for post-natal care (PNC) services. Among the 24 ASHAs in the study, 22 (91%) reported escorting pregnant women for services, 13 (54.2%) had knowledge of being

appointed by the panchayat, 19 (79.2%) reported spreading health awareness as one of their job responsibilities, and 15 (62%) reported participating in sit-in protest. 7 (29%) ASHAs did not have community support for their work as ASHA, 18 (75%) ASHAs reported lack of facilities for institutional delivery as hindrance to their work and 12 (50%) reported helping the needy as the major motivation factor for their work.

Utilisation of ASHA's services was significantly more among women with ASHA as source of *Janani Suraksha Yojana* (a maternal conditional cash transfer scheme) information and motivation for registration, receiving free medicines from ASHA, ASHA with longer work experience and training, and more ASHAs in village. Place of delivery and attending Village Health and Nutrition Day (VHND) were significantly associated with utilisation of ASHA for both delivery and PNC services. Education status of women and ASHA, issues discussed in VHND and distance to health facility were significantly associated with utilisation of ASHA for ANC, delivery and PNC services respectively.

Discussion: Utilisation of ASHA for ANC was high but lower for delivery-related and PNC services. ASHAs have optimal knowledge of expected work and are the major source of information and support for pregnancy-related services.

P5

What do doctors want? Incentives to increase rural recruitment and retention in India

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BMC Proceedings 2012, 6(Suppl 1):P5

Introduction: On the occasion the National Rural Health Mission (NRHM) completing its five years, Mr. G B Azad, minister of health and family welfare, declared in his speech "the non-availability of critical human resources continues to be an even larger challenge for which there are no easy solutions". One of the key priorities of NRHM is to increase availability of human resources in rural India.

Distribution of doctors in India remains highly skewed towards urban areas. Most doctors are employed in the private healthcare sector while many vacancies persist in the government healthcare sector, particularly in rural areas. State governments experience difficulties in staffing rural health centres which in turn undermines various initiatives by NRHM to strengthen rural health services such as making primary health centres and first referral units to work round the clock, and implementation of Indian Public Health Standards.

In this study we examine what doctors expect in order to work in rural areas. We examine career preferences of medical students as well as in-service medical officers working at primary health centres in order to identify incentives that would attract and retain them in rural health services. Our findings inform current practices and policies in regard to recruiting and retaining doctors in rural India.

Methods: We conducted semi-structured interviews with 68 (23 graduates doing medical internship, 19 postgraduate medical students and 26 in-service doctors) from Andhra Pradesh and Uttarakhand.

Interviews were audio recorded and transcribed for thematic analysis. We clustered stated job attributes by respondents into three broad categories i.e. individual, organisational and contextual attributes. We finalised these attributes through an iterative process and taking a group consensus. We did further rating of each attribute on strength, based on the frequency and force with which the attribute was referred to by respondents.

We also interviewed key policy makers at the state and national level were to get policy perspective on findings from interviews with doctors. We asked policy makers about feasibility of bringing about the changes that doctors were expecting and ranked the attributes accordingly.

Results: Doctors perceived that the current salaries were not sufficient. They expected increase in salaries; some expected double the current salaries or parity with private healthcare sector.

Many doctors were demotivated by the lack of infrastructure. "What was happening was, we were just looking at the cases and referring them. That was the only thing we were doing" – excerpt from doctors' interviews. For students, lack of learning opportunities featured prominently. Reservation in post-graduate education for rural medical

practitioners was attractive for both, medical interns/students and in-service doctors.

Lack of quality education facilities for children in rural areas was a big deterrent. Security, living facilities, connectivity and proximity to family were among the prominent expectations of doctors to work in rural areas. Many medical students and doctors feared the political interference in rural health service. Medical students viewed rural health services as a stepping-stone for entry into postgraduate education because of the poor image of a rural doctor. Better management, well-defined and transparent transfer policy and increased leaves were seen as important incentives by doctors to serve in rural areas.

Policy makers felt that though salary could not be easily changed, monetary incentives for rural health service could be increased. They felt that improvement of health centre infrastructure, of in-service learning opportunities, and of living facilities were feasible. They regarded need for better management, transfer and leave policies as not very actionable. They suggested that factors like children's education, connectivity, and security were not actionable as these factors were outside the purview of the health department.

Discussion: Our study findings suggest that simple solutions like increasing salary are need but not sufficient in recruiting or retaining doctors in rural health services. We need a 'package' of incentives as several factors influence where doctors choose to work. Elements of this package would need to include increase in salary, enhanced opportunities for post-graduate education, better equipped and supplied health facilities, improved living conditions, and clear transfer policies.

It was noteworthy that some critical issues like better management and clear transfer policies were considered to be 'touch me not' issues by policy makers given the political considerations. Yet, all of these are important elements for improving rural recruitment and retention of doctors. NRHM can help addressing the gaps between what doctors expected and what the policy makers felt was feasible. We conclude that bold human resource policies are required to address shortage of doctors in rural India.

P6

Reservation in postgraduate education for government in-service doctors: a case study from Andhra Pradesh

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BMC Proceedings 2012, 6(Suppl 1):P6

Introduction: In order to achieve health for all, it is essential to attract and retain health workers in rural India, a need recognised by the National Rural Health Mission (NRHM), a flagship programme of government of India.

Since the majority of allopathic doctors aspire to do specialisation, making it easier for doctors serving in rural areas to get admission to specialist medical postgraduate courses is a logical step towards attracting fresh medical graduates to serve in rural health services.

In this study, we explore one such strategy used by the state of Andhra Pradesh. The state has reserved 50% of seats in postgraduate pre- and para-clinical disciplines, and 30% of seats in postgraduate clinical disciplines for candidates who have served in government health services. Students using this scheme have to sign a bond of INR 20,00,000 (USD 42946.1) and are required to serve in state government health services for the period of five years after completing their postgraduate education. If they leave the government health services before a minimum of five years period, they are obliged to pay the bond amount and refund the salary amount received after their postgraduate course. Doctors having served for two years in tribal areas, or three years in rural areas, or five years in urban areas become eligible for these reserved seats.

Methods: We used a qualitative case study methodology in which we interviewed a large number of stakeholders including government officials, health system managers, and serving medical officers. This was supplemented with quantitative data on the scheme obtained from departments of health, medical and family welfare in Andhra Pradesh.

Results: Our study findings suggest that admission to postgraduate education is a powerful incentive for attracting fresh medical graduates

to rural areas. Use of reservation for the in-service doctors increases the probability of getting admission to postgraduate courses. Over the time the number of people using this scheme has increased, possibly due to increasing difficulty in getting admission to postgraduate courses otherwise.

There is a mismatch between the specialist disciplines available through the postgraduate in-service quota and the need for specialists in these disciplines in government health services. There were also concerns expressed about the academic performance of in-service candidates. Finally there was little information on the enforcement of the bond.

Discussion: The strategy of reserving seats in postgraduate medical courses is successful if the filling of vacancies (for doctors) in government health services is the criteria. However, it is pertinent to ask whether attracting medical graduates whose sole interest, in many cases, is getting an admission to postgraduate courses is a good strategy to provide quality healthcare to people. It is also important to encourage academic interest in rural health problems among doctors during their rural health services.

Finally, there is a need to rationalise the scheme and align the supply of in-service postgraduate specialists with demand for specialists in these disciplines in Andhra Pradesh. The directorate of medical education has noticed this issue and made recommendations in this regard. Finally, there is need to maintain information on in-service postgraduate candidates that would enable enforcement of compliance with the bond.

P7 **Effective utilisation of National Rural Health Mission flexi-fund in Jharkhand: facilitators, barriers and options**

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BMC Proceedings 2012, **6**(Suppl 1):P7

Introduction: The National Rural Health Mission (NRHM) provides flexi-fund (a financing mechanism enabling pooling of money from fixed budget heads to be flexibly used as per local needs) to states and districts for paying for urgent but discreet expenses pertaining to

maintenance of health infrastructure and provision of services at district, block and village level.

Decisions on use of such fund is to be made locally through various bodies/committees at district, block and village levels such as District Health Societies (DHS), Rogi Kalyan Samitis (RKS), Panchayati Raj Institutions (PRIs), Village Health and Sanitation Committees (VHSC) and village level health and Integrated Child Development Services (ICDS). Various policy documents and guidelines are available on use of flexi-fund.

Primarily, this fund is meant to ensure that health institutions at all the levels for healthcare services have readily available fund to overcome any bottlenecks that arise in the delivery of public health services. Amount of the flexi-fund at various levels of healthcare services has been fixed (Table 1). As per the financial monitoring reports available from the state government, the utilisation of AMGs at primary health centres and community health centres level has remained around 50% in years 2008-09 and 2009-10. Utilisation of untied fund at health sub-centre level has been about 30% during the same years. Utilisation of untied fund at the village level by VHSCs has remained low.

We conducted this study to identify factors that impede or facilitate utilisation of flexi-fund at district and sub-district level. We aimed to use the findings of this study to develop revised operational guidelines on use of flexi-fund for consideration by state government.

Methods: We reviewed relevant literature and used lessons from our work (using problem-solving approach) with health services to understand issues affecting underutilisation of flexi-fund in Jharkhand.

Results: We observed that late release of fund and lack of clarity on decision-making processes as well as operational guidelines in regard to utilisation of flexi-fund were barriers to effective utilisation of flexi-fund. Other issues included poorly defined auditing as well as supervision/monitoring systems and lack of orientation to fund managers.

Discussion: Our findings suggest that existing guidelines for use of flexi-fund need revision in order to make them comprehensible and useful for fund managers and users. Any revisions in programme guidelines/implementation should be followed up to assess the appropriateness and effectiveness of revisions.

There is need to build capacity of fund managers especially as many of the staff appointed as fund managers are dealing with fund management first time. There is need to strengthen monitoring and evaluation systems. Despite political and socio-economic variations across the country, there is tremendous scope for adapting existing best practices from other states.

Table 1(abstarct P7) Allocation of flexi-fund per year at various levels of healthcare services

Level of healthcare services	Flexi-fund INR (USD)		
	Untied Fund	Annual maintenance Grants (AMG)	RKS
District	NA	NA	5,00,000 (10736.5)
Block (community health centres)	50,000 (1073.7)	1,00,000 (2147.3)	1,00,000 (2147.3)
Block (primary health centres)	25,000 (536.8)	50,000 (1073.7)	1,00,000 (2147.3)
Village (health sub-centres)	10,000 (214.7)	10,000 (214.7)	NA
Village (VHSC)	10,000 (214.7)	NA	NA

Table 2(abstarct P7) Barriers related to underutilisation of specific type of flexi-fund

Level	Type of fund	Barriers to utilisation of flexi-fund
District and block	RKS	Formation and registration of district level societies Lack of clarity for technical and management Units
Block	AMG	Lack of clarity on accountability and role of managers in fund utilisation
Village (health sub-center)	AMG, Untied fund	Lack of operational guideline Frontline health workers are new to fund management Guidelines for utilisation of fund prescribe specific items (against the principle of 'untied' fund)
Village (VHSC)	Untied fund	Delayed formation and registration of VHSCs Absence of PRI in the state Frontline health workers and VHSC members are new to fund management

P8

Knowledge and utilisation regarding untied fund among village level committees in selected villages of Wardha, Maharashtra

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BMC Proceedings 2012, 6(Suppl 1):P8

Introduction: Under the National Rural Health Mission (NRHM), village health and sanitation committees have been formed at village level in order to enable participation of people in monitoring and planning of health services. In Maharashtra state, considering the high prevalence of malnutrition, a nutrition component has been added and thus these committees are called village health nutrition and sanitation committees (VHNSC).

Government provides an untied fund of INR 10000 (USD 214.7) per year to VHNSC along with some broad guidelines on how to utilise the fund. To date, there is very little information available on knowledge about and utilisation of untied fund among VHNSC members.

Objective of this study was to assess the knowledge of VHNSC members about guidelines for utilisation of untied fund and to assess the knowledge of VHNSC members regarding actual utilisation of untied fund.

Methods: We conducted a cross sectional study in 10 selected village across five health sub-centres in coverage area of the Anji primary health centre in Wardha district of Maharashtra. These villages are part of the field practice area of the Mahatma Gandhi Institute of Medical Sciences where authors are affiliated. We conducted the study during 15th July to 15th August 2010. We selected two villages from each of five health sub-centres; one village where health sub-centre was located, another from the coverage area of that health sub-centre selected using lottery method.

We administered a pre-tested questionnaire with 50% of VHNSC members in each selected village. Furthermore, we conducted in-depth interviews with the president and secretary of VHNSC. We analysed quantitative data using EpiInfo (version 6.04d). We analysed qualitative data manually using qualitative qualifier.

Results: VHNSC members interviewed as part of this study had mean age of the 37.7 years and mean family income of INR 3700 (USD 79.5) per month. Male members constituted 61.9% of respondents. Majority of the respondents received education up to 9th standard (57.2%) and had agriculture as the main occupation (54.7%).

Most (71.4%) of the VHNSC members were aware about NRHM and 85.7% members attended one or more VHNSC meeting. Nearly 61.4% said no meeting was held during last three months. Of those who respondents attended at least one VHNSC meeting, 85.7% were aware about untied fund and 77.7% were able to tell the correct amount of untied fund. Only 41.6% of respondents were aware of guidelines for utilisation of untied fund.

Regarding utilisation of fund during previous year, 77.7% of the respondents were unaware about where and how fund was utilised and 91.66% members reported that decision regarding utilisation of fund was made either by president or secretary of VHNSC without consulting the members. Nearly 50% of VHNSC presidents and secretaries were aware of NRHM and some of them were aware about responsibilities of VHNSC. Majority of VHNSC presidents and secretaries were unaware about the guidelines for utilisation of untied fund. Most of the fund was utilised for supplementary diets to children attending *anganwadi* (supplementary nutrition centre).

Discussion: Our study findings suggest that though untied fund is perceived by VHNSCs to be a good initiative, its utilisation is not as per the prescribed guidelines mainly due to limited awareness among VHNSC members on these guidelines. We suggest the need for training of VHNSC members and continuous monitoring of and support to VHNSC functioning in order to achieve its set objectives.

P9

Performance of community health insurance in India: findings from empirical studies

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BMC Proceedings 2012, 6(Suppl 1):P9

Introduction: In India, health care is provided by a mix of government and private providers. While the government health services are ostensibly free, in reality, studies have shown that people have to pay for medicines, diagnostics and other procedures. People approaching the private sector usually end up making out-of-pocket payments (OOP). This has two effects- it can be a substantial and inequitable barrier to accessing health services, and among those who access these services, it can result in impoverishment.

Health insurance is considered as a protective measure against the harmful effects of OOP. Most of the people in India (and especially the poor) are not covered by health insurance. There is a growing movement of community health insurance (CHI) in India, which covers the poorer sections of the Indian community. However, there is little evidence that CHI is able to improve equitable access quality health care and prevent impoverishment. We present the findings of a study on CHI.

Methods: We made a list of all the CHI programmes in the country and then selected those schemes that provided hospital care. Of these we randomly selected 10 schemes and visited them to document their model. As most of the schemes did not have data on performance, we purposively sampled three of the above 10 schemes (ACCORD, SEWA and KKV) and conducted a cross sectional survey among the insured and uninsured populations within these schemes.

We interviewed a total of 1400 families and measured variables related to access to hospital care in the past one year, health expenditure among the patients who used hospital care and finally the satisfaction levels. We also collected relevant and available secondary data. Associations were measured using 95% confidence interval as well as multiple regressions.

Results: From our initial survey, we found that all CHI schemes in the country were organised by non-government organisations (NGO). The schemes can be divided into three broad models – a provider model where the NGO is the organiser, the insurer and the provider of care; an insurer model where the NGO is the organiser and insurer, but purchases care from private hospitals; and finally the agent model where the NGO is just the organiser and purchases insurance from insurance companies and care from private hospitals.

We found that at ACCORD the utilisation of hospital care was 2.2 times higher among insured compared to the uninsured. Insurance was one of the main reasons for this increased access, even after regression.

At ACCORD and SEWA we found that the insurance status was helpful in reducing the OOP payment for the insured. The incidence of catastrophic health expenditure was halved in both the schemes among the insured as compared to the uninsured and this difference was statistically significant. However, in both the schemes, insured patients still had to pay some amount as co-payments.

Patient satisfaction among insured at ACCORD and KKV were higher in both the schemes but the difference was statistically different only at KKV.

Discussion: Our study demonstrates that in India, a well-designed CHI programme is able to increase the access to health care and reduce OOP payments. However, to strengthen these outcomes on health, the schemes need to ensure minimal administrative load for subscribers and patients, increase the benefit package and actively purchase health care from providers. There are policy implications for the currently introduced Rashtriya Swasthya Bima Yojana (a government-instituted insurance scheme for people below poverty line) and other schemes in terms of organisation of the scheme, the purchasing of care and monitoring and paying attention to the package of services beyond just the financial aspects.

P10

Problems of three high focus Northeastern states after five years of decentralised planning in India

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BMC Proceedings 2012, 6(Suppl 1):P10

Introduction: National Rural Health Mission (NRHM) was launched to address with a mission approach all components of functional systems; infrastructure, human resources, logistics and participation of the community through increasing government investment in healthcare and addressing managerial weaknesses in the system.

Before the launch of NRHM, in order to bring the states that were performing poorly in terms of health indicators at par with the better performing states, the empowered action group of eight states was constituted in 2001. The failure to achieve desirable improvement in health indicators led the NRHM to focus on 18 poorly performing states, which included eight northeastern states of Assam, Meghalaya, Tripura, Manipur, Nagaland, Mizoram, Arunachal Pradesh and Sikkim.

Our consultancy organisation got an opportunity to be part of the decentralised planning process in three high focus northeastern states of Meghalaya (2006-2007), Tripura (2006-2007) and Sikkim (2007-2008) under NRHM. After five year's journey of NRHM, this study aims at revisiting the situation in the light of the performance of these three states in three identified components of structural correction of the health system.

Methods: We collected primary information through in-depth interviews of key functionaries. We also did a desk review of secondary literature.

Results: Shortage of human resource in the three states is a major problem in health sector in explaining ineffective and inefficient health outputs. Tripura is yet to appoint Auxiliary Nurse Midwives (ANM) in about 8.5% of health sub-centres in order to make them functional. The placement of a proposed second ANM at health sub-centre is a mammoth challenge. All the primary health centres (PHC) in Sikkim and 13% of PHCs in Meghalaya do not have staff nurse. In Meghalaya 13% of its PHCs offer services round the clock.

The presence of the medical care is concentrated in and around semi-urban and urban conglomerates as the overall development issues are yet to be addressed for the hilly areas. The availability of clinical cadre is often in papers. The demand by Accredited Social Health Activists (ASHA), recently introduced female health workers at village levels, for being included in the mainstream is adding to the human resource issues to be resolved. It has remained a challenge to find clinical specialists for placements at community health centres (referral facilities).

Janani Suraksha Yojana (Maternity protection scheme) has enabled Meghalaya to achieve 10% increase in institutional deliveries, the highest among the three states, but failed in assuring 48 hours of recommended stay of women in PHCs mainly due to unavailability of manpower, lack of electricity, and related amenities. Political unrest and inaccessible geographic terrains of three states often add to the multitude of the problem.

Development of Indian Public Health Standards (IPHS) under NRHM has been an important effort towards assuring quality healthcare services. However none of the healthcare facilities in the three states have achieved these standards. In regard to flexible financing under NRHM all the three states exhibited gradual increase in expenditure pattern till the year 2008-2009 with a fall in the year 2009-2010. The gradual increase in financial allocation and disbursements with reduction in expenditure implies inability of the states to spend the available fund. The utilisation of untied fund available with health sub-centres and village level committees increased from the year 2005 to 2010. However they exhibited inability to submit utilisation certificates for finances expended.

Discussion: If we remove the performance indicators pertaining to Assam from the northeastern states, the non-performance of other northeastern states becomes apparent. Also the financial allocation is skewed if Assam is seen in along with other northeastern states. The uniqueness and variety of northeastern states cannot fall into the "one size fit all" interventions and strategies. For example, appointment of ASHAs has led to resentment among trained birth assistants supporting home deliveries in hilly terrain and led to confusion in a successful service delivery mechanism.

We feel that the norms relating to two ANMs at health sub-centres and having healthcare facilities functioning round the clock can be relaxed and more attention need to be given on integration of local and other healing traditions into present healthcare services. NRHM has provided an impetus to utilisation of healthcare services but lack of concurrent development has affected the impression of the user negatively.

Introduction: The National Rural Health Mission (NRHM) proposed the decentralisation of health planning so that the state health plan represents the needs and priorities of respective blocks and districts in the state. In Bihar, the State Programme Implementation Plan (SPIP) for the year 2010-2011 has been framed on the basis of strategies and activities, which worked in the last four years. State has identified major bottlenecks and attempted to overcome them through alternative strategies.

In this paper we describe in detail the processes and outcomes realised in achieving decentralised planning in Bihar.

Methods: The state constituted planning teams and designated nodal officers at block and district levels for preparation of SPIP under NRHM. District planning team was constituted by assistant chief medical officer (ACMO), district programme manager, district accounts manager, one district programme officer, one medical officer in-charge (MOIC), and one block health manager. Two intensive (seven days) capacity building workshops were conducted for district planning team with support from national health system resource centre, public health resource centre, and state programme officers of state health society and government of Bihar.

Block planning team was constituted by the MOIC, block health manager, and block accounts manager. At the district level ACMO and at the block level MOIC and different district programme officers were designated as nodal officers for planning exercise in district and various blocks.

Resource package was communicated to all the districts and blocks based on the district and block fund allocation in previous year with an anticipated 25% increase from previous year's budget allocation. Furthermore, the financial guidelines prepared by respective state programme officers were disseminated to districts and blocks.

Districts thereafter conducted capacity building workshops for the blocks. Situational analysis and consultative workshops were conducted at block level to formulate the block health action plan, which was then sent to district. District health action plans were prepared by consolidating block plans and incorporating district level requirements/priorities, identified through district level situational analysis and consultations. Districts presented their plans to the respective SHSB officials/state programme officers at a state level workshop and subsequently finalised the plans considering the feedback received.

Information/data for planning process were gathered from primary and secondary sources. Focus group discussions, interactions, and meetings in different districts formed the primary source of information on views of health workers and private partners. Reports, registers as well as independent national surveys (e.g. national family health surveys, national sample surveys etc) formed secondary sources of information.

Results: State health society, under the guidance of secretary of health has brought in a systemic change in the planning process incorporating the principle of decentralised planning advocated by NRHM. For the financial year 2010-2011, the district health action plans as per the NRHM guidelines have been prepared for 32 out of 38 districts. Planning processes for the rest of the districts would be completed by the end of January 2010. The state health action plan for the year 2010-2011 reflects the outcomes of the district health action plans.

It is for the first time in Bihar that the planning exercise has been undertaken at block levels resulting into district health action plans proposing district specific initiatives (See Table 1).

Discussion: Health planning experience in Bihar shows that it is possible to implement decentralised planning processes and facilitate formulation of health plans at different levels reflecting needs and priorities of those levels. Once the government of India approves Bihar SPIP for the year 2010-2011, the state propose to undertake the following steps;

- Uploading of documents regarding release of payments by government of India, Bihar state health plan, district health plans, as well as district fund allocations and financial guidelines on the website of state health society.
- Flexibility to districts to re-allocate funds within the sub-heads of the major budget sections, with the ceiling of annual target in order to enable needs based spending at district level.
- District level workshop with representation from the state health society (for clarity of process and guidelines) to finalise annual and quarterly fund allocation to blocks.

P11

Decentralised health planning under National Rural Health Mission in Bihar, India

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BMC Proceedings 2012, 6(Suppl 1):P11

Table 1(abstarct P11) Specific initiatives proposed in district health action plans

Proposed specific initiatives	Name of the district
Free ambulance services for pregnant women	Gaya
Blood donation camp	Gaya
Monthly village health and nutrition days at Aganwadi centre	Kishanganj, Nalanda and Nawada
Maternal death audit	Arwal, Bhagalpur, Buxar, Gaya, Jehanabad, Samastipur, Siwan, Vaishali and West Champaran.
Health camps through mobile medical units in Mahadalit Tola (Vulnerable groups)	Banka, Begusarai, Bhagalpur, Kaimur and Kishanganj
Training on medical termination of pregnancies and safe abortion to nurses, auxiliary nurse midwives, and medical officers	Aaria, Arwal, Aurangabad, Darbhanga, East Champaran, Gaya, Gopalganj, Jamui, Jehanabad, Katihar, Khagaria, Kishanganj, Madhubani, Munger, Muzaffarpur, Nalanda, Nawada, Purnea, Rohtas, Samastipur, Sheohar, Siwan, Vaishali and West Champaran

- State level officials to undertake activity-planning exercise covering the process indicators for each activity and time lines for completion of the same.
- State level workshop for development partners to ensure their support in proper implementation at the district and block level and to ensure optimum fund utilisation at the district level.

P12

The use and misuse of oxytocin: a study in rural Karnataka, India

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BMC Proceedings 2012, 6(Suppl 1):P12

Introduction: Poor quality of care remains key constraint to safe motherhood especially for women from poor families in a context of rapid expansion of maternity healthcare services. In India, deliveries at healthcare institutions have increased in last three years.

There is evidence that oxytocin is a drug is often misused to speed labours (childbirth) in overcrowded labour wards or even in home settings. In India this phenomenon has not been extensively studied, especially since the expansion of institutional deliveries. To order to study use of oxytocin, we collected information on drugs administered for labour augmentation as part of a prospective study of pregnancy and childbirth in south India.

Methods: We randomly selected 39 villages across 13 primary health centres in a rural block of Ramnagar district in Karnataka. Subsequently we purposively selected 41 villages located adjacent to villages selected earlier to meet enrolment target. All women who planned to deliver within study area and were in the third trimester of pregnancy were enrolled (642) during 2007-2009.

Of the total number of respondents, 501 women delivered at healthcare institutions and 99 at home. We conducted in-depth interviews with healthcare providers.

Results: Healthcare providers revealed that oxytocin was the most commonly available and used drug for labour augmentation. Of the women who delivered child at home, 76.4% were administered oxytocin mainly by an Auxiliary Nurse Midwife (ANM) in the dosage ranging between one to five injections. Most of these women reported that these intramuscularly administered injections were "to increase labour". Of the women who gave delivered child at healthcare institutions, 23% were administered oxytocin – mainly via intramuscular injection.

Many women reported that healthcare providers did not remain present after administration of oxytocin. Also, the cost of procuring the oxytocin injections were reported high in spite of subsidised rates.

Discussion: We believe that our study findings would be a conservative estimate of the extent of oxytocin use since many women might have received the drug without explanation suggesting unnecessary use in government as well as private healthcare services.

We recommend need to ensure compliance with clinical protocols and guidelines for the safe use of oxytocin, a drug critical to safe motherhood but with considerable scope for misuse.

P13

What next in measles control for Karnataka, India?

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BMC Proceedings 2012, 6(Suppl 1):P13

Introduction: Worldwide, measles kills 400 people every day, more than 90% of them being under five years of age. Three out of four measles deaths happen in India, the only country that has not yet introduced a second dose of measles vaccine. Prevention of deaths due to measles is key to achieve fourth millennium development goal of reducing under-five mortality by two thirds by 2015. India's progress in measles control is a major determining factor in global control of measles.

There is limited literature available on measles epidemiology in India. No measles surveillance was done before 2006. The measles surveillance programme, based on an existing flaccid paralysis surveillance system, was launched in four southern states of India in 2006, including Karnataka. In this paper I attempt to describe the epidemiology of measles in Karnataka and to identify ways to improve measles control in the state.

Methods: I synthesised the spatio-temporal distribution of measles cases and outbreaks in Karnataka by collating weekly surveillance reports and outbreak investigation lists over four years (2006-2009). I reviewed the international literature on determinants of measles outbreaks. I specified the contextual demographic and socio-cultural determinants of measles outbreaks and vaccination coverage in the state of Karnataka through logistic regression multivariate analysis.

Results: Measles surveillance data from 2006 to 2009 revealed that measles is endemic in Karnataka, with frequent outbreaks. The notification rate of measles is 10.94 cases per 100,000 populations per year. Seasonality of notified measles cases characteristically increases between November and April and decreases from May to October.

There were 163 confirmed outbreaks in Karnataka during the four years (2006-2009). Measles outbreaks were happening consistently in the northern part of the state and sporadically in the southern part. Every year, 22 out of 179 blocks, referred to as high-risk blocks (of which 21 in northern Karnataka) reported outbreaks. Of those affected by measles, 51% were under five years and 38% were in the age group of five to nine years. In the age group one to four years, only 46% of the measles affected had received a documented dose of measles vaccine.

The vaccine efficacy in the high-risk blocks was between 80% and 90%. The duration of these outbreaks from the date of appearance of rash in the first case to last case ranged from 7 days to 120 days with median of 39 (first quartile 15, third quartile 63) days. The total number of measles cases in each outbreak (across 163 outbreaks) ranged from 20 to 256 with a median of 38 (first quartile 25, third quartile 74) cases.

Through bivariate analysis, we found that block's probability to have an outbreak was positively associated with a number of variables including low vaccination coverage in the block; decadal population growth rate of the block; scheduled caste and scheduled tribe population; below poverty line population; agriculture as occupation; poor housing conditions; low living index; and low literacy level.

However multivariate analysis revealed that only the low vaccination coverage (below 84.9%, Odds ratio 9.8) and decadal population growth rate (more than 19.6%, Odds ratio 6.1) remained statistically significant as independent predictors of measles outbreaks in a block.

The surveillance programme in Karnataka complied with the standards of timely and complete reporting (both over 90%) since 2006. Out of 172 suspected outbreaks, 163 were serologically confirmed.

Discussion: Refined understanding of measles epidemiology allows for appropriate action for measles control, which is critical to reduce under-five mortality. In Karnataka, both an organisational and a geographical focus are needed in measles control programme. Further reduction in measles incidence and outbreaks may be attained by adding a second dose to the routine vaccination scheme in the whole state and by conducting catch-up campaigns in northern Karnataka, where most high-risk blocks lie.

Alongside these priority interventions, surveillance can be strengthened, and case management can be improved with more efficient vitamin A administration and inclusion of outbreak response immunisation.

According to the international literature, three major factors contribute to measles outbreaks: inadequate routine vaccination coverage, inadequate vaccine efficacy and situations in which there is an accumulation of unprotected population coming into direct contact with measles cases.

P14

Impact of emergency medical support services on public health delivery system in Goa

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BMC Proceedings 2012, 6(Suppl 1):P14

Introduction: As India is fighting to strengthen its health care delivery system, pre-hospital care (emergency ambulance services) still remains the most neglected part of India's healthcare service system. The importance of pre-hospital care is especially important in the rural areas where immediate health care is poor and services are distant. Most people in India succumb to death due to non-availability of quick and good quality emergency medical support.

Trauma continues to be one of the major causes of death in India. A report released by the transport research wing of the concerned ministry of the Indian government said that in 2008, the country witnessed 485,000 road accidents in which 120,000 people lost their lives. It is estimated that by 2020, trauma will become the third leading cause of deaths in India from its present position of ninth.

Maternal mortality also remains one of the most daunting public health problems in India and its reduction is a prominent component of the rural health programmes of the Indian government. India contributes approximately 20% to 24% of the world's maternal deaths. One of the '3

delays' identified for this is the delay in reaching an appropriate health care facility due to lack of affordable and accessible emergency transport. A study conducted in Mpumalanga showed that lack of emergency transport between health institutions was a major factor in at least 38% of maternal mortalities recorded in the region. In such scenario, government of India identified the benefits of involving private players under the National Rural Health Mission (NRHM) in 'public-private partnership model'. The initial success of pre-hospital care services under Emergency Management and Research Institute (EMRI) has further boosted the confidence of policy makers. In this study, we present an assessment of the impact of EMRI services in the state of Goa based on all the emergencies reported in the months from September 2008 to March 2010.

Methods: We used 'life saved data' from pre-hospital care records (PCR, which are emergency hospital care records maintained by the emergency medical technician in the ambulance), response records and 48-hour follow-up records maintained by the emergency response officer. A close-ended interview schedule was administered on 20 patients at the government hospital in Bambolim, Goa to understand the effectiveness of emergency response services of EMRI. We also reviewed literature on EMRI services in India.

Results: We find an increase in utilisation of EMRI services. Of the total 43,835 patients handled by 108 emergency response services, 31.8% of the cases were trauma-related, 8.12% cardiovascular emergencies, and 7.5% pregnancy-related. Of the 50% of these patients that we followed up after 48 hours, we found that 3894 lives have been saved. The maximum lives saved were of trauma patients followed by cardiovascular emergencies. The services in the state averaged a response time of less than 30 minutes, the best response time for emergency services in all Indian states so far. A survey of the patients showed above-average satisfaction with the services in 95% of the patients.

Discussion: EMRI has been able to instil confidence and trust among people especially in rural areas to use 108 ambulance services during medical emergencies as shown by the increased utilisation of and the satisfaction with the services. However government shall consider providing a continuous effective system of emergency medical care with a lead EMS (emergency medical service) agency nationwide, having the authority to plan appropriate rules and regulations for each recognised component of the EMS system such as standardised treatment, transport, communication and disaster management.

A comprehensive education survey needs to be conducted periodically to review the needs of the population and to ensure the providers have the skills and knowledge required to meet them.

Cite abstracts in this supplement using the relevant abstract number, e.g.: Chaman: Impact of emergency medical support services on public health delivery system in Goa. BMC Proceedings 2012, 6(Suppl 1):P14