Addressing healthcare needs of people living below the poverty line: A rapid assessment of the Andhra Pradesh Health Insurance Scheme

M. RAO, S. S. RAMACHANDRA, S. BANDYOPADHYAY, A. CHANDRAN, R. SHIDHAYE, S. TAMISETTYNARAYANA, A. THIPPAIAH, SITAMMA M., M. SUNIL GEORGE, V. SINGH, S. SIVASANKARAN, S. I. BANGDIWALA

ABSTRACT

Background. Families living below the poverty line in countries which do not have universal healthcare coverage are drawn into indebtedness and bankruptcy. The state of Andhra Pradesh in India established the Rajiv Aarogyasri Community Health Insurance Scheme (RACHIS) in 2007 with the aim of breaking this cycle by improving the access of below the poverty line (BPL) families to secondary and tertiary healthcare. It covered a wide range of surgical and medical treatments for serious illnesses requiring specialist healthcare resources not always available at district-level government hospitals. The impact of this scheme was evaluated by a rapid assessment, commissioned by the government of Andhra Pradesh. The aim of the assessment was to explore the contribution of the scheme to the reduction of catastrophic health expenditure among the poor and to recommend ways by which delivery of the scheme could be improved. We report the findings of this assessment.

Methods. Two types of data were used for the assessment. Patient data pertaining to 89 699 treatment requests approved by the scheme during its first 18 months were examined. Second, surveys of scheme beneficiaries and providers were undertaken in 6 randomly selected districts of Andhra Pradesh.

Results. This novel scheme was beginning to reach the BPL households in the state and providing access to free secondary and tertiary healthcare to seriously ill poor people.

Conclusion. An integrated model encompassing primary, secondary and tertiary care would be of greater benefit to families below the poverty line and more cost-effective for the government. There is considerable potential for the government to build on this successful start and to strengthen equity of access and the quality of care provided by the scheme.

Natl Med J India 2011;24:335–41

INTRODUCTION

It is recognized that families living below the poverty line (BPL) in countries which do not have universal healthcare coverage are drawn into a vicious cycle of ill-health, poverty, indebtedness and bankruptcy.[1–4] When faced with serious ailments, they often have to sell their assets or borrow large sums of money to meet the costs of treatment and hospitalization.[5] Public spending on health in India, at about 1% of the gross domestic product (GDP), is acknowledged to be among the lowest in the world.[6] Despite some improvement in the public healthcare infrastructure, the quality of care at every level, from the primary health centre to the tertiary care hospital, remains inadequate due to problems ranging from critical shortages of staff to gaps in planning, management and monitoring of services.[6] Not surprisingly, even the poorest sections of the population are compelled to use the private health sector. As a consequence, the major proportion of overall health expenditure of about 5% of the GDP is met by out-of-pocket expenditure and accounts for 98.4% of the total health expenditure of Indian households.[7,8] The experience of families in Andhra Pradesh (AP) corresponds to this national picture. Poor farmers are pushed into using private healthcare, resulting in a downward spiral of indebtedness, and the level of suicide by farmers in the state is among the highest in the country.[9,10]

The Rajiv Aarogyasri Community Health Insurance Scheme

Traditionally, poor people, faced with unaffordable health expenditure, requested financial assistance from the AP Chief Minister's Relief Fund to meet the costs of treatment and care. In an attempt to provide more systematic assistance, the AP government established the unique Rajiv Aarogyasri Community Health Insurance Scheme (RACHIS) for BPL families. The objective of this scheme was to improve access to high quality secondary and tertiary care for pre-defined diseases through a network of existing public and private sector healthcare providers. The scheme provided an insurance cover of ₹200 000 (~US$ 4000) per year to each family. It was launched as a public–private partnership, bringing together a health insurance company, privately run and government-run hospitals, and the state department of health and

University of East London, London, UK and Administrative Staff College of India, Hyderabad, Andhra Pradesh, India
M. RAO

Indian Institute of Public Health, Hyderabad, Plot No. 1, ANV Arcade, Amar Co-operative Society, Kavuri Hills, Madhapur, Hyderabad 500081, Andhra Pradesh, India
S. S. RAMACHANDRA, S. BANDYOPADHYAY, A. CHANDRAN, R. SHIDHAYE, S. TAMISETTYNARAYANA, A. THIPPAIAH, SITAMMA M., V. SINGH, S. SIVASANKARAN

Indian Institute of Public Health, Delhi
M. SUNIL GEORGE

University of North Carolina at Chapel Hill, North Carolina, USA
S. I. BANGDIWALA   Department of Biostatistics

Correspondence to S. S. RAMACHANDRA; *srikrishnasr@gmail.com*

family welfare. The Aarogyasri Healthcare Trust (AHCT), led by senior government officials, was formed to implement and monitor the scheme, which was completely state-funded and administered by an insurance company.

Approximately 70% of AP's population of 76.2 million[11] qualifies as BPL (AP's criteria for BPL are more generous than the national criteria). In rural areas, BPL families are defined as those with an annual family income below ₹20 000 and owning less than 2.5 acres of wet land or 5 acres of dry land. In urban areas, those defined as BPL are families with an annual income below ₹24 000 and (i) those residing in slums, (ii) those working in the informal sector, for example, as porters, rickshaw-pullers, fruit and flower vendors on the pavements and domestic servants, or (iii) beggars.[12] Under RACHIS, care was free at the point of service and the beneficiary made no payment to the provider.

At the time of our assessment, 353 hospitals fulfilled the criteria for treatment facilities and infrastructure and were included in the scheme. A unique feature of the scheme was the introduction of 'helpers', formally entitled 'Aarogyamitras' (Sanskrit for 'health friends'), recruited to hand-hold patients who were likely to lack the confidence and knowledge required to engage with care-providers. The Aarogyamitras manned help desks that were established at all primary health centres, which were the usual first contact point for the majority of beneficiaries of the scheme, as well as at area, district and network hospitals.[13]

The scheme was established across AP in 5 phases, starting from April 2007. The first phase covered 3 districts and a rapid scale-up resulted in the inclusion of 5 districts in each of the 4 further phases. Thus all 23 districts of the state were covered by July 2008. The first stage of the scheme, Aarogyasri 1, included treatment related to diseases of the heart, lung, liver and pancreas. Renal disease, neurosurgery, congenital malformations, burns, post-burn contracture surgery for functional improvement, prostheses (artificial limbs), cancer treatment (surgery, chemotherapy, radiotherapy), poly-trauma (including cases covered under the Motor Vehicles Act) and cochlear implant surgery with auditory-verbal therapy for children below 6 years were also included. Encouraged by the success of the scheme, the government launched the second stage, Aarogyasri 2, in July 2008. This covered a much larger number of medical and surgical conditions and included more procedures.[13] With the launch of Aarogyasri 2, free treatment for the majority of serious diseases became a reality.

Services provided by the scheme

Senior doctors from public- and private-sector hospitals assisted the government in deciding the surgical and medical treatments to be covered and the reimbursement for these treatment packages. All interventions available for the treatment of serious illnesses were considered for inclusion. In addition to the cost of the treatment, the package rate included the costs of investigations, food, transport and follow up medications. Thus, 719 surgical and 144 medical procedures for conditions requiring specialist doctors and facilities not ordinarily available at district-level government hospitals were covered by the scheme. In combination with the services available at primary health centres and smaller government hospitals, these were expected to meet a substantial part of the total primary, secondary and tertiary healthcare requirements of the BPL population. The scheme did not exclude pre-existing illnesses. Exclusions from the scheme were 'extremely high-cost procedures', such as hip and knee replacement, bone marrow, heart and liver transplants, gamma-

knife procedures in neurosurgery and assisted devices for cardiac failure, as also treatment provided by the national health programmes for diseases such as malaria, leprosy, HIV/AIDS and tuberculosis.[13]

When the scheme had been functioning for 18 months, the AP government commissioned the Indian Institute of Public Health (IIPH), Hyderabad to undertake a rapid assessment of the contribution of the scheme to the reduction of catastrophic health expenditure in the state. It was also asked to comment on the contribution of the scheme towards the overall improvement of health among the BPL population and to suggest ways in which the scheme may be strengthened further. At the time of the rapid assessment, the full range of treatments offered by the scheme had been available throughout the state for 5 months.

METHODS

The overall objectives of the assessment were to gain a broad understanding of the utilization of the scheme and the perceptions of the beneficiaries and providers about the performance of the scheme.

Two types of data were collected for the assessment. First, data pertaining to the 105 712 treatment requests authorized by the AHCT for the 18-month period from 1 April 2007 to 30 September 2008 were obtained from the AHCT database. For 16 013 treatments, data were inadequate and these were excluded from the analyses. The analyses, therefore, included 89 699 treatments provided to 71 549 beneficiaries.

Second, surveys using semi-structured questionnaires were conducted to obtain qualitative information from beneficiaries, Aarogyamitras, senior medical staff from participating hospitals and medical officers of primary health centres in 6 randomly selected districts of AP. In addition, other key informants from the AHCT and state government were interviewed. Ethical clearance was secured from the AHCT Ethical Review Committee prior to the study. Analysis was undertaken on anonymized data.

Sample size calculation for beneficiary interviews

For the survey of beneficiaries, adjusting for design effect and non-response, the minimum sample size was estimated to be 210 beneficiaries. This sample size took into account 95% confidence intervals and 10% precision. A 3-stage sampling process was adopted to select the subjects. The stages were selection of districts, selection of mandals (sub-district administrative areas) and selection of beneficiaries.

Six of the 23 districts were selected using a probability proportional to size (PPS) sampling procedure, with the number of treatments per 100 000 population as the variable for size and stratified for 3 regions of the state. Using PPS, 3 mandals were selected from each of the 6 districts. Twelve beneficiaries from each mandal were selected randomly using the AHCT database. If the selected beneficiary was deceased (10 [4.6%] of the total sample size of 217 patients), s/he was replaced with a beneficiary from a nearby house.

One district and one area hospital from each of the selected districts were randomly chosen for the survey; 11 of the 12 selected hospitals were visited. In addition, using the PPS procedure based on the number of treatments provided, 17 additional hospitals were selected for the survey from the 353 public and private hospitals participating in the scheme. It was possible to visit 16 of those 17 hospitals. Thus 9 government hospitals which provide secondary care, 4 government teaching hospitals and 14 private hospitals were included in the assessment.

In addition, one PHC from each selected mandal was visited and the Aarogyamitra and medical officer were interviewed.

RESULTS

Analysis of AHCT data

The majority of RACHIS beneficiaries were in the age group of 30–59 years (Fig. 1) and 53.6% of the beneficiaries were men. An analysis of the gender of the beneficiaries by age could not be done because the gender of beneficiaries below 15 years of age was not recorded in the AHCT database.

Utilization by rural and socially excluded populations. About 87% of the beneficiaries had rural addresses and 15.3% (10 947) belonged to the Scheduled Castes (SC) and Scheduled Tribes (ST), recognized as the most marginalized populations in the country. The age distribution of beneficiaries in the SC and ST groups was similar to that of the entire group (Fig. 2).

Treatments provided under the scheme. About two-thirds (65.6%) of the 89 669 treatments administered belonged to three specialties––cardiology (26.3%), oncology (23.8%) and neurology (15.5%). Renal and polytrauma cases ranked 4th and 5th in frequency.

Thirty hospitals (24 private and 6 public) had administered more than 50% of the treatments, with 39% of these treatments being provided in Hyderabad, the capital of AP. All these hospitals were located in major cities. The accessibility of services to patients from across the state was assessed by examining the relationship between 2 variables. The first was the mean distance from the district headquarters of each of the 23 districts and 2 closest cities catering to RACHIS beneficiaries. The second variable was the RACHIS utilization rate per district as measured by the number of beneficiaries per 100 000 BPL population per month. The linear regression model suggests that as distance from the nearest treatment facility increased, the utilization of services was reduced (R^2=0.234, B=0.012, p=0.029; Fig. 3).

Variation in cost of treatment. The AHCT had a published schedule of costs payable for each treatment agreed upon by it and the care-providers during the planning phase of the scheme. The published cost was the maximum the AHCT would pay for a treatment and included both the costs of diagnosis and intervention. An analysis of payments made for a sample of medical and surgical treatments revealed a wide variation in the amounts paid (Fig. 4).

Analysis of survey data

Socioeconomic characteristics of beneficiaries. The socio-economic characteristics of the beneficiaries were not recorded in the RACHIS database. We, therefore, assessed the Standard of Living Index (SLI) of the beneficiaries included in the survey. The SLI is an indicator of economic status that is used by the National Family Health Survey.[14] Beneficiaries of a low, middle and high socioeconomic status made up 50.7%, 42% and 7.3% of the survey sample, respectively. The inclusion of beneficiaries with a higher SLI may be because AP does not follow the official poverty definition of the Government of India[15] and >70% of the state's population is included in the BPL group, some of whom qualify as being of high socioeconomic status by the SLI.

Nearly 30% of the interviewees were unemployed and, together with unskilled labourers, made up 48.9% of the sample (Fig. 5). The distribution of beneficiaries by employment groupings (unemployed+unskilled labourers, domestic workers+agricultural employees+skilled manual and service workers and professional+service+sales) appears to match the distribution of SLI groups.

Out-of-pocket expenditure. More than half (58.5%) of the beneficiaries incurred out-of-pocket expenditure before, during
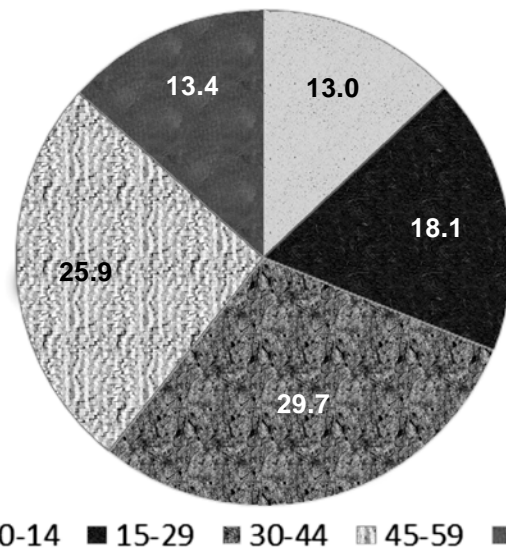
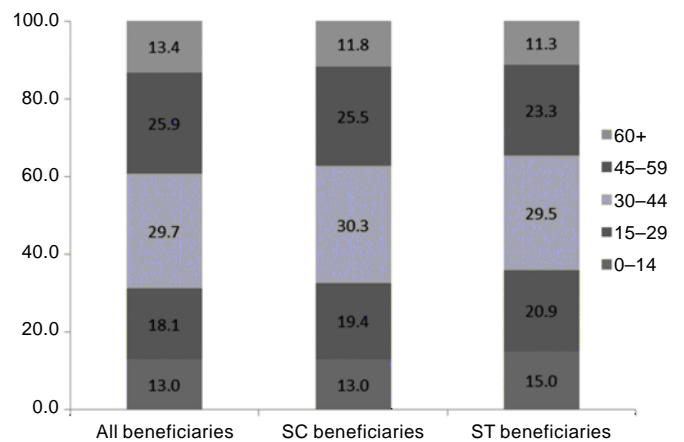FIG 1. Per cent distribution of beneficiaries by age (years)

FIG 2. Age distribution of beneficiaries by Scheduled Castes (SC) and Scheduled Tribes (ST)

O Beneficiaries per lakh BPL population per month in a district
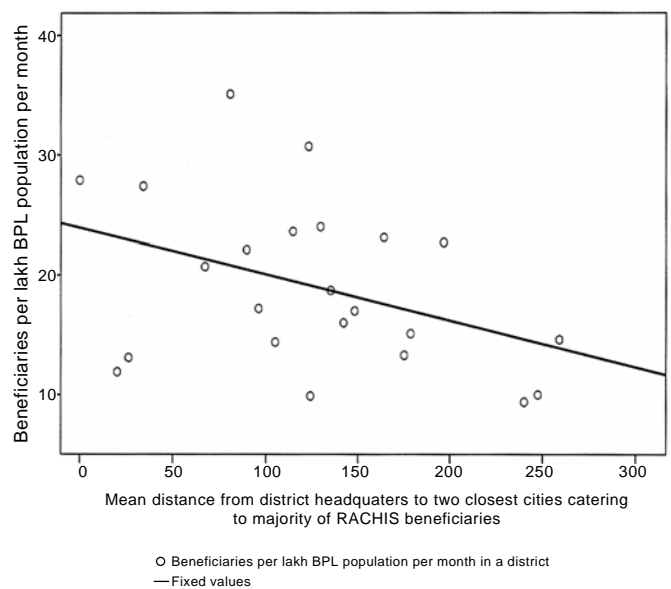—Fixed values

FIG 3. Scatter plot of beneficiaries per 100 000 below poverty line population per month by distance from network hospitals
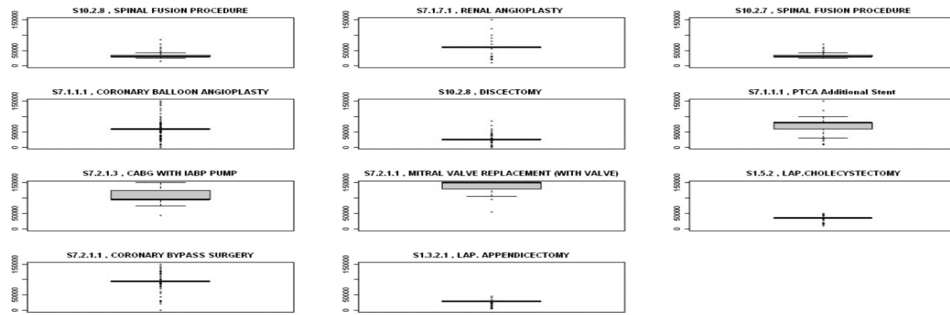
FIG 4. Variation in claims paid (amount in rupees) for selected treatments

or after the treatment at network hospitals (Fig. 6). The median amount of money spent was ₹3600 (~US$ 72). Medicines, diagnostic tests and transport were the main reasons for out-of-pocket expenditure.

Levels of satisfaction. The survey of the beneficiaries revealed unanimous appreciation of the scheme and its impact on eliminating the burden of severe financial stress on families. While 87% reported improvement following treatment, only 5.5% reported worsening of their existing condition. Over half (58.5%) had 2 or more follow up visits, 28.1% had one follow up visit and 13.4% had no follow up.

Doctors, nurses, the quality of personal care and the cleanliness of the hospitals that the beneficiaries attended received the highest satisfaction scores. Aarogyamitras, who are a unique feature of this scheme and help the largely diffident and uninformed beneficiaries navigate their way through the complex healthcare system, also received high scores. By contrast, information about the scheme and transport received the lowest scores (Fig. 7).

Key findings of interviews of health staff
Health professionals implementing the scheme as well as those referring patients to the scheme applauded the greater access to

healthcare achieved by the new service. Primary care doctors felt empowered to refer patients with serious illnesses for treatment, irrespective of the patients' ability to pay. Hospitals that had treated substantial numbers of beneficiaries were recipients of substantial levels of additional funding and were able to rapidly expand and improve their services. The negative observations related to the lack of awareness among healthcare providers regarding the full range of benefits, as a result of which some beneficiaries were erroneously charged for services such as preliminary investigations. Lack of clarity on the part of the beneficiaries regarding the full range of entitlements also increased the risk of manipulation by service providers. Lack of agreed evidence-based clinical guidelines, a platform to share experience and good practice, and regular feedback from the AHCT were also cited as weak points.

DISCUSSION
Is RACHIS reducing the burden of catastrophic household health costs among BPL families in AP?
RACHIS began reducing the burden of household health costs by providing free treatment for serious illness to 71 549 BPL people by September 2008, but out-of-pocket expenditure by the beneficiaries continued. Despite this, overall satisfaction with the scheme was high and further research is needed to assess whether catastrophic household health costs have declined.

Health insurance schemes that provide the greatest degree of financial protection are those that cover all direct and indirect costs for all illnesses and the services are free at the point of
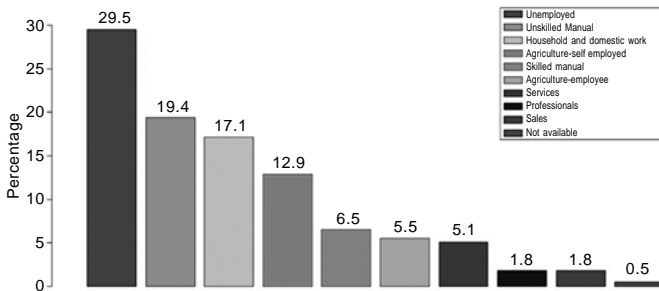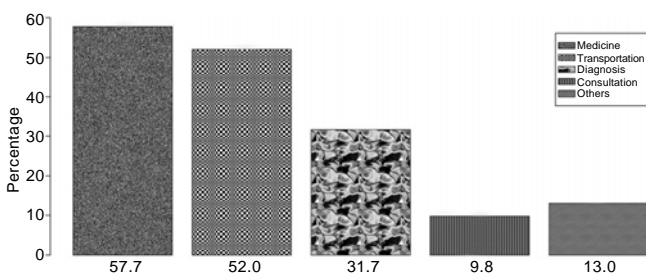

FIG 5. Occupation of beneficiaries interviewed

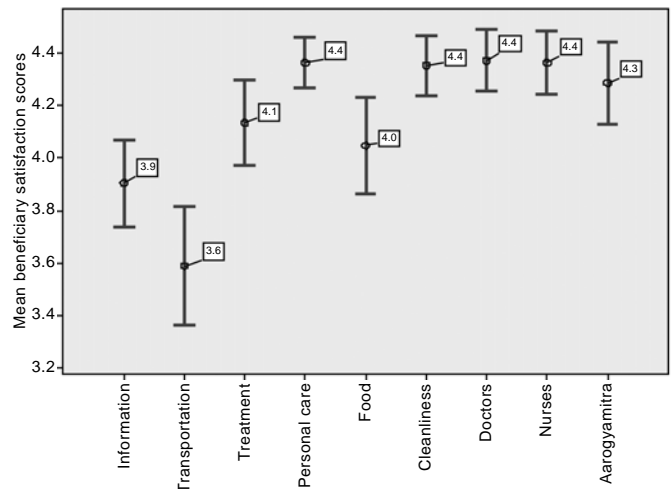FIG 6. Reasons for out-of-pocket expenditure by beneficiaries (n=127)

FIG 7. Distribution of beneficiary satisfaction survey scores

delivery.[16] RACHIS has all these characteristics, except that it does not include all kinds of illness or healthcare needs.

National Sample Survey Organization (NSSO) data show that the main causes of hospitalization range from conditions such as diarrhoea and dysentery, which are likely to require less complex treatment, to heart disease and trauma, which require more complex and specialized treatment.[17] AP is in the midst of an epidemiological transition, with an increasing burden of non-communicable diseases such as cardiovascular disease and cancer.[6] However, conditions such as lower respiratory tract infections, diarrhoeal diseases and tuberculosis were among the top causes of the disease burden in AP.[18] RACHIS focuses mainly on high-cost specialist treatments. While this is undoubtedly useful, all hospitalizations and treatments result in catastrophic expenditure for BPL patients. Eliminating all catastrophic expenditure for healthcare would require the scheme to have a more comprehensive coverage.

Is the scheme achieving equity of access?

The findings of the study suggest that beneficiaries of all ages, both sexes and across all districts are accessing the scheme. The beneficiary rate was significantly higher among those with rural addresses. India's population remains predominantly rural (70.8%).[19] The rural population has worse health indicators and poorer access to healthcare, and accounts for a higher proportion of BPL population. The higher rural beneficiary rate is, therefore, a positive indicator of the scheme's success in beginning to improve the access of the rural BPL population to healthcare for serious illnesses. The assessment also showed that 10 947 people from the SC and ST populations had accessed the scheme and that the age distribution of the beneficiaries from these populations was similar to that of all beneficiaries. Further research is needed to determine whether despite these similarities, there is underutilization of the scheme by these populations because previous studies have demonstrated significantly higher morbidity in SC and ST populations when compared with the general population.[20] Further, destitute families such as street dwellers and migrant labourers, who have no residential address and are not even eligible for enumeration as members of the BPL population, may risk exclusion from RACHIS. This scheme, a flagship development programme of the government, was well publicized and was extended throughout the state 5 months before the start of this study. Nevertheless, lack of information regarding the scheme and its eligibility criteria may have limited access in some populations.

The links between sociocultural factors, knowledge of and belief about modern healthcare systems, and economic and other barriers to access deserve more in-depth study. Distance may be an important barrier to access, with few secondary and tertiary care facilities being located close to the rural and tribal regions of the state. Further investigation is, therefore, required to explain whether health needs are fully and equitably met across all population sub-groups.

Levels of satisfaction with the scheme

The beneficiary survey showed that the overall levels of satisfaction with the scheme were high. No comparisons were possible with satisfaction levels with other public facilities but this survey of beneficiary perceptions, based on a 5-point scale, nevertheless elicited some important findings. Given a choice, the BPL population prefers clean hospitals with a polite staff, predominantly in the private sector. The competition introduced by RACHIS may

prove to be an effective driver to improve the quality of healthcare for both the public and private sectors across the state. The health staff, too, welcomed the greater access achieved by the scheme and the freedom to refer and treat regardless of the patient's economic status. The involvement of non-governmental organizations and representatives of the poor in decisions related to the planning and implementation of the scheme is worthy of consideration for the future as it is likely to ensure that the needs and aspirations of the target population are better understood and translated into practice.

Does the scheme meet the overall health needs of the BPL population?

The needs of the BPL population for secondary and tertiary care appear to have been met by the scheme. However, the overall health needs of BPL populations far exceed those that are being met by RACHIS. The Global Burden of Disease and Risk Factors[21] study revealed that countries such as India are facing a triple burden of morbidity and mortality from communicable diseases, non-communicable diseases and injuries. The epidemiological transition from infectious to chronic non-communicable diseases is well established. Nevertheless, communicable diseases, maternal and perinatal conditions and nutritional deficiencies remain important causes of ill-health and death, with the BPL population bearing the major brunt. The majority of these conditions are preventable and amenable to intervention at the primary care level. The WHO Report, 2008, highlighted the potential of primary prevention and health promotion in reducing the global disease burden by up to 70%. It also highlighted that the healthcare sector lacked the expertise to mitigate the adverse effects of other sectors, such as transport and environment, on health and to make the most of what these other sectors can contribute to health.[22] The need for tertiary healthcare could be reduced if primary and secondary prevention are strengthened and the social determinants of health are tackled.

The importance of prevention in addressing the health needs of the population as well as achieving best value for economic investment in health was demonstrated by a comprehensive assessment of the future resource needs of the National Health Service in England.[23,24] The assessment described 3 scenarios to illustrate how the resources required by the year 2022–23 would depend on a number of drivers, especially how effective the focus on prevention and the wider determinants of health in England would be. Importantly, the least expensive scenario, entitled the 'fully engaged' scenario, would require a massive shift away from the NHS primarily acting as a 'sickness' service to a true 'National Health Service'. The government, the NHS and its partners, as well as the public, would be required to engage fully to keep healthy people fit and to prevent illness. The order of difference estimated between the 'slow uptake' scenario, in which health improvement, disease prevention and reduction of health and social inequalities remain neglected, and the 'fully engaged' scenario in terms of NHS spending by 2022 was 30 billion pounds or half of the NHS expenditure in 2004.

These conclusions are applicable globally. Healthcare systems contribute most to improving health and health equity when the institutions and services are organized around the principle of universal coverage and when the system as a whole is organized around primary healthcare.[25] The RACHIS focus on secondary and tertiary care is based on the premise that publicly funded primary healthcare, including obstetric care, is universally available. However, the public healthcare system in rural areas is

reported in the Eleventh Five-Year Plan to be in 'shambles'.[6] The continued out-of-pocket expenditure incurred by RACHIS beneficiaries may be explained by ignorance of the full range of benefits on the part of the beneficiaries, or ignorance or manipulation on the part of the providers. Out-of-pocket expenditure is also likely to be testimony to the fact that a service exclusively focused on secondary and tertiary care does not cover the costs of preliminary primary care consultations and investigation of early and apparently minor symptoms. A more balanced approach which strives to prevent disease and promote health, as well as to provide safe, high-quality treatment through an integrated model encompassing primary, secondary and tertiary care, would be of greater benefit to the BPL families in AP and prove to be more cost-effective for the government. Further deliberation is needed to develop such a model and to explore the feasibility of extending it to cover the entire population.

Strengthening the strategic purchasing capability of the government

Our findings suggest that there is potential for considerably strengthening the scheme in terms of its accessibility, cost-effectiveness and clinical effectiveness if the strategic purchasing capability of the AHCT is strengthened by embedding technical expertise, such as health economics and public health, into the decision-making process. This assessment revealed variations in claims paid and their implications need to be better understood. These variations may be a result of variations in treatment costs or the types of investigations and interventions offered among the networked hospitals. Although approval for treatments was based on the provision by the treating physicians of a clinical justification for the treatment, standardized and detailed clinical treatment guidelines were not being used across the state. The use of internationally accepted guidelines appropriate for the Indian context would have the advantage of ensuring both clinical appropriateness and cost-effectiveness. This indicates the need for the government to become a more strategic commissioner of healthcare. A multidisciplinary team that could contribute expertise, such as cost-effectiveness analysis, knowledge of the clinical evidence base and monitoring and surveillance, would be crucial to achieve this and to ensure that the scheme meets the health and economic needs of the population. In addition, this would allow for a joint approach with other programmes, such as those established by the National Rural Health Mission (NRHM), an appropriate balance between primary, secondary and tertiary care, and a dynamic system that would remain sensitive to changing population and policy needs and ensure sustainability.

Limitations

The assessment of RACHIS was limited by the lack of baseline data on the burden of ill-health, health-seeking behaviour and health expenditure in the BPL population before the introduction of the scheme. Such data would have allowed for a better assessment of the benefits in terms of improved population health and reduced out-of-pocket expenditure attributable to the scheme. This highlights the importance of building evaluation into the design of such programmes.

The assessment was also restricted by the limited data collected by RACHIS and the requirement for the assessment to be completed within a very short duration. In addition, the population impact of the scheme was difficult to ascertain, given that the scheme was in its infancy and was continuing to evolve and develop. The survey was limited to beneficiaries and was, therefore, unable to

shed light on those with unmet needs. A community-based survey would be required to address some of these limitations. The cost and clinical effectiveness of the care provided are crucial issues, but were beyond the scope of the assessment commissioned by the government. Despite these limitations, the assessment has provided some useful insights into the benefits of the scheme and the scope for further improvement.

Conclusion

For too long the BPL population in India has been denied equity of access to healthcare as far as serious illness is concerned. The RACHIS in AP is the first of its kind in India, aiming to address this social injustice. Given that 70% of AP's population is already covered by the scheme, it may be appropriate for the government to consider universalizing access to free healthcare. Much more research and discussion will be necessary to achieve an ideal model, but the government of AP has demonstrated great leadership and deserves recognition for taking this unprecedented step towards achieving high-quality compassionate healthcare for all across the state.

REFERENCES

1 Meessen B, Zhenzhong Z, Van Damme W, Devadasan N, Criel B, Bloom G. Iatrogenic poverty. *Trop Med Int Health* 2003;**8:**581–4.
2 Ensor T, San PB. Access and payment for health care: The poor of Northern Vietnam. *Int J Health Plann Manage* 1996;**11:**69–83.
3 Bloom G, Lucas H, Eddun A, Lenneiye M, Milimo J. *Health and poverty in sub-Saharan Africa.* Brighton, Sussex: Institute of Development Studies, University of Sussex, IDS Working Paper No. 103, 2000. Available at *http://www.ids.ac.uk/files/Wp103.pdf* (accessed on 19 Feb 2012).
4 Wilkes A, Yu H, Bloom G, Gu X. *Coping with the costs of severe illness in rural China.* Brighton, Sussex: Institute of Development Studies, University of Sussex, IDS Working Paper No. 58, 1997. Available at *http://www.ids.ac.uk/files/Wp58.pdf* (accessed on 19 Feb 2012).
5 Ministry of Health and Family Welfare (2005). *National Rural Health Mission (2005–2012) Mission Document.* New Delhi: Ministry of Health and Family Welfare. Available at *http://mohfw.nic.in/NRHM/Documents/Mission_Document.pdf* (accessed on 22 Feb 2010).
6 *Planning Commission, Government of India. Eleventh Five Year Plan (2007–2012), Vol II, Social Sector.* New Delhi:Oxford University Press; 2008.
7 Devadasan N, Manoharan S, Menon N, Menon S, Thekaekara M, Thekaekara S,

AMS Team. ACCORD community health insurance: Increasing access to hospital care. *Economic Political Wkly* July 10 2004;3189–94.

8 Ministry of Health and Family Welfare. *Report of National Health Accounts, India 2001-02, National Health Accounts Cell.* New Delhi: Ministry of Health and Family Welfare, Government of India. Available at *http://www.whoindia.org/LinkFiles/NHA_India_NHA_2001-02.pdf* (accessed on 20 Jan 2012).

9 *Report of the Commission on Farmers' Welfare, Government of Andhra Pradesh, April 2005.* Available at *http://www.macroscan.org/pol/apr05/pol070405Andhra_Pradesh.htm* (accessed on 4 Mar 2010).

10 Farmer's suicides in India. Available at *http://en.wikipedia.org/wiki/Farmers%27_suicides_in_India* (accessed on 4 Mar 2010).

11 Profile of Andhra Pradesh. Available at *http://mohfw.nic.in/NRHM/State%20Files/ap.htm* (accessed on 22 Feb 2010).

12 Consumer affairs, food and civil supplies, Government of Andhra Pradesh, revised eligibility criteria for BPL families. Available at *http://www.apcivilsupplies.gov.in/Old/rcindex1.html* (accessed on 21 Jan 2011).

13 Aarogyasri Health Care Trust. Government of Andhra Pradesh. Rajiv Aarogyasri surgical and medical treatments: List and package rates for cashless treatment of BPL population, 2008. Available at *www.aarogyasri.org* (accessed on 21 Jan 2011)

14 NFHS-2 (1998–99). *Report of the National Family Health Survey.* Mumbai: International Institute for Population Sciences; 1999.

15 Poverty estimates for 2004–5. Government of India, Press Information Bureau, New Delhi, March 2007. Available at *http://planningcommission.gov.in/news/prmar07.pdf* (accessed on 19 Feb 2012).

16 Devadasan N, Ranson K, Van Damme W, Criel B. Community health insurance in India: An overview. *Economic Political Wkly* 2004;**39:**3179–83.

17 National Sample Survey Organization. *Morbidity, health care and the condition of the aged. NSS 60th round. (January–June 2004). Report no. 507 (60/25.0/1).* New Delhi:NSSO, Ministry of Statistics and Programme Implementation; 2006.

18 Mahapatra P. *Estimating national burden of disease: The burden of disease in Andhra Pradesh, 1990s.* Hyderabad:Institute of Health Systems; 2002.

19 Planning Commission, Government of India. *Eleventh Five Year Plan (2007–2012),* Vol. I.

20 Misra R. *Pro-poor health reforms: Why, what and how?* Geneva:WHO; 2003.

21 Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL (eds). *Global burden of disease and risk factors.* New York:The World Bank and Oxford University Press; 2006.

22 World Health Organization. *Primary health care (now more than ever)—The World Health Report 2008.* Geneva:WHO; 2008.

23 *Wanless D. Securing our future health: Taking a long-term view. Final report.* London:HM Treasury; 2002.

24 Wanless D. *Securing good health for the whole population: Final report.* London:Her Majesty's Stationery Office (HMSO); 2004:14.

25 CSDH. *Closing the gap in a generation: Health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health.* Geneva:WHO; 2008.