

**Access to Essential Medicines:
Rajasthan, India, 2001**

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About SEAM

The Strategies for Enhancing Access to Medicines (SEAM) Program, funded by the Bill & Melinda Gates Foundation, works to improve access to essential medicines and vaccines in the developing world by fostering partnerships between the public and private sectors.

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Acronyms

BPL	below poverty line (families with annual income less than INR 24,000 per annum = USD 500 per annum)
BSNL	Bharat Sanchar Nigam Limited (telephone service provider)
C & F	cost and freight
CGHS	Central Government Health Scheme
CHC	community health center
CMHO	Chief Medical and Health Officer
COOP	Rajasthan State Cooperative Consumers Federation Limited
DCGI	Drug Controller General of India
DH	district hospital
DMHS	Director of Medical and Health Services
DOTS	Directly Observed Treatment, Short-course
EDL	Essential Drugs List
EDP	Essential Drugs Programme (WHO/India)
ESIS	Employees State Insurance Scheme
GDP	gross domestic product
GIC	General Insurance Corporation
GMP	Good Manufacturing Practices
GOI	Government of India
GOR	Government of Rajasthan
GRO	grassroots organization
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
IDPIG	International Drug Price Indicator Guide
IEC	information, education, and communication
IIHMR	Indian Institute for Health Management Research
INR	Indian rupees
LLFS	Life Line Fluid Store
MHFWD	Medical, Health, and Family Welfare Department
MOH	Ministry of Health
MRP	Manufacturer's Retail Price
MSH	Management Sciences for Health
NDP	National Drug Policy
NGO	nongovernmental organization
NHP	National Health Policy

PHC	primary health center
PMO	Principal Medical Officer
RCA	Rajasthan Chemists Association
RCH	Reproductive and Child Health Program
RDPL	Rajasthan Drugs and Pharmaceuticals Ltd
RIICO	Rajasthan State Investment and Industrial Corporation
RMRS	Rajasthan Medicare Relief Societies
RPMA	Rajasthan Pharmaceutical Manufacturers Association
RSPRUD	Rajasthan Society for Promotion of Rational Use of Drugs
RUD	rational use of drugs
RVHA	Rajasthan Voluntary Health Association
SAP	State Action Plan (GOR)
SEAM	Strategies for Enhancing Access to Medicines [MSH]
STG	Standard Treatment Guidelines
TB	Tuberculosis
TCI	Transport Corporation of India
UN	United Nations
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive Summary

Starting in April 2001, the Management Sciences for Health (MSH) team, with assistance from the Indian Institute of Health Management Research at Jaipur, conducted an assessment to measure access to essential medicines in the state of Rajasthan. Over the following eight months, the team met with key stakeholders, including politicians, state health officers, nongovernmental organizations (NGOs), United Nations (UN) agencies, donors, and the private sector, to develop a project proposal to improve the inequities in access within the framework of Government of India (GOI) and Government of Rajasthan (GOR) policies and initiatives.

Rajasthan is one of the largest and poorest states of India, with many of its health care indicators below the national average. Public investment in health has declined to 0.9 percent of the gross domestic product (GDP). The gap has been filled by the private sector, which is contributing more than 80 percent of the total health care costs in the state. Health insurance coverage is estimated at 12 percent of the national population (state data not available) and is limited to a few groups that include employees of the government and large private-sector firms.

Rajasthan has a vast health care infrastructure to cover its 56 million residents—the state is divided into six administrative divisions that cover 32 districts. The district officers are responsible for all the health care facilities in the district, which include community health centers (CHCs), primary health centers (PHCs), and subcenters. However, there are significant gaps in the delivery of health care services, especially in rural areas. Gaps range from lack of medical and paramedical personnel (more than 25 percent in some areas) and poorly maintained facilities to lack of basic medical supplies and essential drugs. Although delivery of health care has been decentralized to the state level, and a further attempt is being made to decentralize it to the district level, there exist several centrally sponsored vertical programs targeting blindness, leprosy, malaria, HIV/AIDS, reproductive and child health, tuberculosis, immunization, and population.

The private sector in India has over 20,000 manufacturers producing more than 70,000 drug formulations, which are shipped through more than 12,000 distributors and retailers in Rajasthan. The National Drugs Policy has been responsible for the prolific growth of the private sector, albeit with significant concerns for quality, irrational drug use, and inappropriate sales and marketing activities. Quality assurance for the manufacture and sale of drugs is weak; although there are various national and state policies regulating these activities, the weak link is implementation and enforcement. The state does not have sufficient human and financial resources to monitor the trade in pharmaceuticals.

With respect to access to medicine, the MSH assessment revealed significant gaps.

- **Geographic accessibility:** Despite Rajasthan's vast infrastructure of public and private health facilities, residents in rural areas need to travel long distances, often spending a day or more, to access a health facility.

- **Availability of medicines and information:** In general, drugs are widely available, but essential generic drugs are neither widely available in pharmacies nor frequently prescribed—physicians and pharmacists promote the use of branded drugs. In addition, unbiased information on drugs is not available to health care professionals and consumers.
- **Affordability:** Although drugs are generally less expensive in India than in most other countries, between 30 and 40 percent of the state’s population is unable to afford drugs. The problem of affordability is exacerbated by wastage through irrational prescribing and dispensing. Groups that cannot afford drugs include a segment of the rural population such as farmers, slum residents, and individuals with chronic diseases, such as cancer, asthma, and diabetes.
- **Acceptability/satisfaction:** There is low acceptability of generic drugs dispensed in the public sector—in general, patients consider generic drugs in the public sector to be of inferior quality and only use free or low-cost public-sector drugs if they cannot afford drugs in the private sector.
- **Quality of products and services:** Assay results indicate that about 10 percent of samples collected by the MSH team have quality problems; however, as reported in the media, between 20 and 30 percent of the population believes that Indian drugs are of poor quality, spurious, or counterfeit. Few health care practitioners provide adequate information regarding drug use. The interaction between the dispenser (often not a pharmacist) and the consumer is limited to an exchange of goods for cash. There is little or no counseling regarding intake of drugs, their side effects, contraindications, and interactions. Few of the drugs are appropriately labeled, whether dispensed in a blister pack or in a small folded piece of paper.

Based on the gaps outlined, two potential interventions have been developed and are discussed in detail in the report. The first is related to strengthening and expanding an autonomous government group called the Rajasthan State Cooperative Consumers Federation Limited (COOP). The COOP manages the procurement, distribution, and sales of more than 7,000 products, from 225 manufacturers, that are distributed through 120 wholesalers and sold by 53 retail outlets located around Jaipur city, the state capital, generating revenues of 130 million Indian rupees (INR). The COOP serves 1.2 million customers annually.

The second potential intervention is to improve access to medicines at the primary health centers. Broadly speaking, the project aims to develop a network of rural-based retail pharmacy outlets to sell high-quality, low-cost generic drugs at approximately 50 percent below retail prices. The outlets would be situated in or near primary health centers and would coordinate their activities with the operations of the government health center. The product line would include approximately 200 essential drugs (generic), medical supplies (condoms, impregnated bednets), basic diagnostics (pregnancy, blood glucose), and health products (antiseptics, intravenous bags, etc.).

The intervention is supported by the Government of Rajasthan's State Action Plan, Essential Drug Policy, and the Government of India's Population Policy 2000.

Introduction and Background

In 2000, Management Sciences for Health received a grant from the Bill & Melinda Gates Foundation to identify and test innovative approaches to address the lack of access to essential medicines in developing countries through greater participation of the private sector. As a first step in this mandate, MSH set out to operationalize the concept of access to essential medicines, design a method to measure the nature and extent of the problem, and monitor the impact of programs that aim to improve the situation.

The Strategies for Enhancing Access to Medicines (SEAM) access framework was developed after a review of the published and unpublished literature on the concept of access to health care in general and medicines in particular. This framework was later discussed at a consultative meeting, jointly sponsored by MSH and the World Health Organization (WHO), in Ferney-Voltaire, France, December 11–13, 2000. More than 40 experts from 15 countries participated in the discussions and concluded that, as with health services, access to essential medicines is a construct that encompasses distinct dimensions, and these are distinguished by sets of specific relationships.

The following four dimensions of access and one crosscutting characteristic emerged from the discussions, along with a set of 17 key indicators to represent them.

- Physical availability, defined by the relationship between the type and quantity of product and service needed and the type and quantity of product and service available
- Affordability, defined by the relationship between the products and services and the user's ability to pay for them
- Geographic accessibility, defined by the relationship between the location of the product or service and the location of the eventual user of the product or service
- Acceptability (or satisfaction), referring to the fit between the user's and the provider's attitudes and expectations about the products and services and their actual characteristics
- Quality of products and services, an essential component cutting across all dimensions

After several rounds of internal discussions and consultations with experts from the WHO and the World Bank and with contacts in developing countries, six countries—Brazil (state of Minas Gerais), Cambodia, El Salvador, Ghana, India (state of Rajasthan), and Tanzania—were identified as countries where an assessment based on the conceptual framework would take place, with the understanding that only two, or at most three, countries would eventually be selected to carry out long-term projects under the SEAM Program. The initial selection criteria included perceived or known significant lack of access to essential medicines, perceived enabling environment for private-sector initiatives, political and economic stability, and potential for collaboration with other MSH- and Gates-funded local initiatives.

The assessments were carried out between February and May 2001. Local, private, nonprofit, and academic organizations collaborated in the adaptation of data collection instruments, sample selection, data collection, and analysis. This report presents the assessment results and recommendations for Rajasthan, India. It is expected that the countries not selected for long-term assistance will have benefited from the assessment exercise, in particular from a SEAM-supported analysis of potential strategies involving local public-private initiatives to enhance access to essential medicines.

Country Overview

Geography

Rajasthan is located in the northwestern part of the Indian subcontinent. It is bound on the west and northwest by Pakistan; on the north and northeast by the states of Punjab, Haryana, and Uttar Pradesh; on the east and southeast by the states of Uttar Pradesh and Madhya Pradesh; and on the southwest by the state of Gujarat. The Tropic of Cancer passes through its southern tip in the Banswara district. The state has an area of 132,140 square miles (342,239 square kilometers). The capital city is Jaipur.

In the west, Rajasthan is relatively dry and infertile; this area includes the Thar Desert, also known as the Great Indian Desert. In the southwestern part of the state, the land is wetter, hilly, and more fertile. The climate varies throughout Rajasthan. On average, winter temperatures range from 8° to 28°C (46° to 82°F) and summer temperatures range from 25° to 46°C (77° to 115°F). Average rainfall in the western deserts is about 4 inches annually, while the southeastern part of the state receives 26 inches annually, most of which is from July through September, during the monsoon season.



Figure 1. Map of Rajasthan

Demographics

The 2001 census estimates Rajasthan's population at 56.5 million, which represents a 28.3 percent increase from the 44 million reported in the 1991 census. The majority of the people (76.6 percent) in Rajasthan live in rural areas (Census 2001). Gender distribution is 52 percent male and 48 percent female, with 18.5 percent of the population under six years old.

Social and Economic Development

Rajasthan's economy is mainly agricultural, including millet, wheat, maize (corn), and cotton. Though parts of the state are extremely dry, the total cultivable area in the state is 27,465 thousand hectares, of which 20,167 thousand hectares are being utilized. Rajasthan is rich in mineral resources and accounts for India's entire output of zinc concentrates, 94 percent of its gypsum, 76 percent of its silver ore, 84 percent of its asbestos, 68 percent of its feldspar, and 12 percent of its mica. It has rich salt deposits at Sambhar Lake and copper mines at Khetri and Dariba. White marble is mined at Markana near Jodhpur. The main industrial products are textiles, rugs and woolen goods, vegetable oils, and dyes. Heavy industries include the construction of railway rolling stock and smelting of copper and zinc. The chemical industry also produces caustic soda, calcium carbide, sulfuric acid, fertilizers, and pesticides. The principal industrial complexes are at Jaipur, Kota, Udaipur, and Bhilwara. The tourism industry is also an important part of the economy. Emeralds, garnets, and other precious stones are important resources for Rajasthan.

Life expectancy at birth in Rajasthan increased from 59 to 61 years from 1991 to 2001, and the infant mortality rate fell from 87 to 83 per 1,000 live births. The crude death rate in Rajasthan is 9.6/1,000 population, which is higher than the national average of 9.1 (SID 1999). Nonetheless, the pattern of morbidity has remained virtually unchanged. Malaria, upper respiratory infections, and waterborne diseases remain endemic throughout the state. An underlying cause of the persistence of these diseases is the prevalence of poor nutrition, poverty, inadequate housing, and lack of access to potable water in many communities.

It is estimated that 15.3 percent of the people in the state of Rajasthan live below the poverty line.¹ The poverty rates are uneven geographically. The incidence of poverty in rural Banswara is as high as 60 percent. In some areas such as in Bikaner, Ajmer, and Jodhpur, the incidence of poverty is around 19 percent (Parikh and Radhakrishna 2002). Approximately 49.7 percent of the population over age six is literate (Census 2001). Table 1 provides indicators of social and economic development for Rajasthan.

¹ Annual family income of less than INR 24,000 constitutes below the poverty line.

Table 1. Indicators of Social and Economic Development

Indicator	Rajasthan
Infant mortality rate (per 1,000 live births)	81 (World Bank 2003)
Life expectancy at birth (years)	61
GDP per capita in USD	440 (India 2000)
Human Development Index	139/174 (India)
Literacy rate of population 6 years and older (2000)	49.7%

Source: Economic Survey of India, India Development Report, Health Information of India.

Note: GDP = gross domestic product.

Infrastructure

Electricity

Electricity supplies for Rajasthan are obtained from the Chambal Valley project, which is a nuclear energy plant at Rawatbhata, near Kota. Additional supply is also obtained from neighboring states. Overall, there is a deficit of energy in Rajasthan, especially during peak demand seasons, such as summer months.

Telecommunications

The communications and information system is evolving in Rajasthan. In addition to the government's Bharat Sanchar Nigam Limited (BSNL), which is linked to GOI telephone and Internet service provider, Videsh Sanchar Nigam Limited, a number of private companies now provide landline, cell phone, and Internet services since privatization in the early 1990s.

BSNL states that landline telephones are available in all but the most unapproachable areas. Telephones are the main system used for communication at all levels in the public system and by retail outlets. Apparently a number of private companies have expressed interest in the landline telephone business, and it is hoped that this will result in new lines, which will improve the functionality not only of the telephone system, but also of Internet access.

Estimates of the number of businesses relying on cell phones in addition to landlines ranged between 30 and 50 percent. Two cell phone companies operating in Rajasthan have introduced voice mail and short message service, and one of them plans to provide Internet access. Currently there are about 66,000 subscribers in Rajasthan (Satyam 30,000, DIL 26,000, BSNL 10,000). The GOI is actively encouraging access to the Internet. The rates for internal private lease circuits have decreased, and the Internet service providers are able to provide greater bandwidth at low costs. In terms of Internet access, the main problem is the landline telephone system, which is not conducive to transmitting data—the system is slow and erratic. Satyam already provides lease lines, domains, and business-to-business transactions and is planning to expand access from Jaipur and Jodhpur to other cities.

Transportation

Rajasthan is well connected by rail, air, and roads. The total length of roads was 77,347 kilometers in March 1999. Jodhpur, Jaipur, Bikaner, Kota, Sawai Madhopur, and Bharatpur are the main rail junctions of the state. Regular air services connect Jaipur, Jodhpur, and Udaipur with Delhi and Mumbai.

Although rail journeys are inexpensive, the most popular mode of transport for both public and commercial purposes is by road. Relative to the national road density, Rajasthan is considered deficient in its road network, having a density of 43.11 kilometers of Public Work Department roads per 100 square kilometers, vis-à-vis the national average of 74.90 kilometers per 100 square kilometers. There are 37,889 inhabited villages in Rajasthan, according to the 1991 census, and of these, only 15,903 villages (42 percent) were connected by roads as of March 2001. The GOR is working on several initiatives to improve the present road system and has introduced a scheme to invite private investment for the construction of roads, bypasses, bridges, and tunnels. Nine projects have been sanctioned so far, of which seven have been completed.

Although access to public transportation is difficult in remote places, the private transporters (e.g., Transport Corporation of India [TCI]) are able to deliver goods to most parts of the state. TCI contracts out to other transport agents and uses a cascade of transportation modes, ranging from large 20-ton trucks to bicycle rickshaws, to deliver goods down to the village level.

The total railway route length in Rajasthan is 5,916.67 kilometers, of which 51 percent is broad gauge, 47 percent meter-gauge, and 2 percent narrow gauge. The railway route length per 1,000 square kilometers of geographical area is 17 kilometers in Rajasthan, compared to an average of 19 kilometers in India.

The Health Sector

Organization of Health Services

Under the constitutional structure in India, public health is the responsibility of the states. As a result, the principal contribution for funding public health services is from states' resources, with supplementary input (about 15 percent) from central resources. The public health investment in the country over the years has been comparatively low and, as a percentage of GDP, has declined from 1.3 percent in 1990 to 0.9 percent in 1999. The aggregate expenditure in the health sector is 5.2 percent of GDP (INR 1,030 billion = USD 21.46 billion), with the private sector contributing more than 80 percent of the total, or 4.3 percent of GDP (NHP 2002).

Health and pharmaceutical services in Rajasthan are offered in the three major sectors: public, private for-profit, and private not-for-profit, or NGO. The health care program in Rajasthan is vast, consisting of tertiary and secondary public hospitals, community health centers, primary health centers, and subcenters. Clinical programs provided by the health department include

patient consultation, diagnostic services, and preventive and curative services. Within the health care system, there is a large private health sector including physicians, clinics, hospitals, retail pharmacies, drug distributors/wholesalers, and manufacturers. The goal of the GOI and GOR is to provide quality health care to all citizens free of cost. Not only has this goal not been realized, there has been a shift away from the public provision of health care, as is apparent from the declining health care budget.

Organization of Public Health Services in Rajasthan

The Rajasthan State Medical, Health, and Family Welfare Department (MHFWD) administers all state and national health care programs. Although the organization has a vast physical infrastructure, Rajasthan’s health indicators are among the weakest in the nation. Of the 90 districts in India that have the highest birth and infant mortality rates, 27 are located in Rajasthan.² The Minister of State for Health and Family Welfare is responsible for the Health and Family Welfare program in Rajasthan. At the secretariat level, the Principal Secretary (Medical, Health, and Family Welfare) is responsible for formulating and implementing government health care policies. The Principal Secretary is the chief administrator of the government and is assisted by the Director of Medical and Health Services (DMHS), who in turn is supported by four directors—one each for public health; family welfare; information, education, and communication (IEC); and HIV/AIDS.

The state has been divided into six divisions to facilitate health administration: Jaipur, Kota, Bikaner, Jodhpur, Udaipur, and Ajmer (Table 2). The Joint Director is the administrative head of the zones and the districts within the zones, and also acts as the liaison between the districts and the Directorate in Jaipur.

Table 2. Administrative Divisions in Rajasthan for MHFWD

Administrative Division	Districts
Ajmer	Tonk, Nagaur, Bhilwara, Ajmer
Bikaner	Sri Ganganagar, Bikaner, Hanumangarh, Churu
Jaipur	Alwar, Bharatpur, Dholpur, Dausa, Jhunjhunun, Sikar, Jaipur
Jodhpur	Pali, Jaisalmer, Sirohi, Jalor, Jodhpur, Barmer
Kota	Sawai Madhopur, Bundi, Baran, Jhalawar, Karauli, Kota
Udaipur	Banswara, Durgapur, Rajasamand, Chittaurgrah, Udaipur

² Ministry of Health and Family Welfare

The district-level organization consists of two main sections, the Principal Medical Officer (PMO), who heads the district hospital, and the Chief Medical and Health Officer (CMHO), who is administratively responsible for subdistrict hospitals, community health centers, primary health centers, and subcenters. The CMHO is assisted by the Deputy CMHO for Health, the Deputy CMHO for Family Welfare, the Deputy CMHO for Malaria, and the Reproductive and Child Health (RCH) Officer. The PMO is in charge of the district hospital and is directly responsible to the DMHS. PMOs typically are clinicians as well as hospital administrators. The health care delivery system at the district level is organized as shown in Table 3.

Table 3. Health Care Delivery System at the District Level

Facility	Population Covered (Approx.)	No. of Beds (Approx.)	Services Provided
District hospital	2,000,000	100–300	Specialized curative services
Subdistrict hospital	500,000	50–100	Curative services
Community health centers	100,000–120,000	30	Selected specialized curative care
Primary health centers	20,000–30,000	6	Preventive, promotive, and basic curative care
Subcenters	3,000–5,000	0	Preventive and promotive care

Administrative management of the district hospital centers around the following major areas—

- Management of clinical, intermediary, and support services
- Human resource management
- Hospital planning
- Quality management
- Management of information systems
- Management of waste

The Rajasthan state government has introduced decentralized registered societies within each district called Rajasthan Medicare Relief Societies (RMRS). These semi-autonomous institutions are responsible for the operational management of district hospitals and are authorized to set appropriate user fees, which are used for health care–related projects in the district. This decentralization of the financial system and decision-making functions is a key step in the reform that has occurred in the Rajasthan health care system. RMRS have developed and encouraged the development of the Life Line Fluid Store (LLFS) concept. The LLFSs are pharmacies that operate in the district and tertiary hospitals and provide a limited number (approximately 400) of drugs and medical supplies. LLFSs are different from other retail (private) pharmacies in that they are located inside the hospital and provide drugs at prices that are far below retail prices charged in private pharmacies.

Staffing in many of the facilities is inadequate. The recruitment and retention of physicians are difficult in many rural areas. Many remote sites have poor schools, lack basic necessities such as water and electricity, are professionally and socially isolated, and lack adequate diagnostic facilities and drugs to deliver appropriate patient care. In addition to the problems of staff

shortage, there are the ubiquitous and chronic problems of absenteeism caused by low morale and lack of an appropriate incentive system and career development path. The situation of clinical labor in the state indicates vacancy rates of 17 to 24 percent, predominantly in the rural areas (Table 4).

Table 4. Clinical Labor in Rajasthan

	Sanctioned Posts	In Position	Percentage Vacant
Senior specialists	234	195	17
Junior specialists	1325	1006	24
Total	1559	1201	23

Source: SAP report from EC.

Government of India Vertical Programs

- *Prevention of Blindness (Cataract Blindness Control Project)*
This World Bank–supported project started in 1994 in seven states, including Rajasthan, where the blindness rate was 50 percent higher than the national average of 1.49 percent. The ultimate aim of the project was to reduce the prevalence to 0.3 percent by 2001. The total cost of the project for Rajasthan is INR 652 million.
- *National Leprosy Eradication Program*
The World Bank provides assistance for this program. Basic drugs are provided to District Leprosy Societies, which supply various units under their supervision, such as hospitals, dispensaries, and PHCs. The Mobile Leprosy Treatment Unit distributes medicine packs to health facilities and patients. Leprosy warehouses are located at district leprosy offices at Purana Ghat, Khania, and Jaipur.
- *National Antimalaria Program*
Drugs are sent directly from the Government of India to the district warehouse and are subsequently distributed to government health care facilities.
- *National AIDS Control Program*
The National AIDS Control Program aims to reduce the spread of HIV infection in the state and strengthen India’s capacity to respond to HIV/AIDS on a long-term basis. The five-year project covers all 32 districts and has a budget of INR 866.2 million. Drugs are procured and stored in the Directorate building warehouse and are subsequently shipped to district and medical college health facilities where they are prescribed for opportunistic infections and management of sexually transmitted diseases.

- *Reproductive and Child Health Program*
The RCH program provides support for expanding coverage and improving quality of family welfare services in the state. The main objective of the program is to reduce infant and child mortality and to achieve population stabilization in the state. This program is being implemented in all 32 districts in Rajasthan with the support of the World Bank. Drug kits (A and B)³ are sent directly from the manufacturers to Jaipur State Family Welfare Warehouse and are subsequently sent to districts via private transport arranged by the GOR.
- *National Tuberculosis Control Program*
This program provides tuberculosis (TB) drugs to patients throughout Rajasthan. Antituberculosis drugs are shipped from GOI warehouses in Bombay to Central Medical Stores in Jaipur and then to TB district officers and TB warehouses. The TB program has its own storage facilities in Rajasthan that supply drugs to 7 TB hospitals and 32 TB clinics. Treatment supervisors are responsible for distribution of drugs to smaller facilities (DOTS Centers). The annual value of TB drugs dispensed in Rajasthan is estimated at INR 50 million, although there is no cost for these drugs to the Rajasthan program or to patients.
- *Universal Immunization Program*
Vaccines are shipped by the manufacturers directly to Jaipur and six other storage locations, all of which have walk-in coolers and/or freezers. Vaccines are shipped to appropriate locations under strict cold chain conditions. Oral polio vaccine comes with a temperature monitor that indicates if the cold chain has been broken for a significant period. On paper, the program has an adverse drug reaction monitoring program for the vaccine.
- *India Population Project IX (1999)*
The major objective of this project is to improve utilization of family welfare services by creating additional facilities.
- *Integrated Population and Development Project*
Initiated in 1999 for a period of four years, this project is being implemented in seven districts of the state (Alwar, Bharatpur, Sawai Madhopur, Karauli, Bhilwara, Chittaurgarh, and Udaipur).

Financing of Health Services

The aggregate expenditure in the health sector is 5.2 percent of GDP (Table 5). Of this, about 17 percent is public health spending, the balance being out-of-pocket expenditure (WHO 2000). The public health investment in the country is low and, as a percentage of GDP, has declined from 1.3 percent in 1990 to 0.9 percent in 1999. The major source of funding for public health services is the state government, with some supplementary input from the central government. The central budgetary allocation for health as a percentage of the total central budget has been stagnant at 1.3 percent, while the allocation in the states has declined from 7.0 percent to 5.5

³ Products included in Drug Kits A and B are listed in Annex A.

percent. The current annual per capita public health expenditure in the country is INR 200 (NHP 2002).

Given the gaps in health care and diminishing investment by the states, the central and state governments are expected to increase their investments. According to the new National Health Policy, public-sector investment is expected to increase to 2 percent of GDP by 2010. The state governments would be expected to make a commitment to the health sector. In the first phase, by 2005, the states are expected to increase their commitment of resources to 7 percent of the budget and, in the second phase, by 2010, to 8 percent.

Table 5. Expenditures on Health in India, 2002 (Estimates)

Expenditure	INR (USD)	Percentage
Total expenditure on health as % of GDP (public and private sector)	1,030 billion (21.5 billion)	5.2
Public health expenditure as % of total expenditure on health	175 billion (3.65 billion)	17.0
Government's expenditure on health as % of total government expenditure		3.9

Source: NHP 2002.

Health Insurance in India

Rajasthan/Indian insurance companies provide various programs for reimbursement of medical services and drug expenses. An estimated 12 percent of individuals are covered by a risk-sharing or prepayment scheme (World Bank 2000).

The insurance industry does not provide programs to monitor appropriate drug use; as a result, there are inefficiencies in the system. Current issues with insurance include—

- No review of quality of medical services or appropriateness of pharmacy benefit
- Limited use by individuals due to lack of knowledge about insurance
- Lack of computerized management systems
- Minimal use of drug formularies
- Lack of control of drug use and expenses

Rajasthan and Indian insurance companies currently operating include—

- **Central Government Health Scheme (CGHS)** provides health insurance to central government employees and their families. During 1999, CGHS covered 22,000 employees and 100,000 beneficiaries in Rajasthan.
- **Employees State Insurance Scheme (ESIS)** is targeted at low-income employees in the organized industrial sector. In 1998, ESIS covered 340,000 employees and 1.2 million beneficiaries in Rajasthan.
- **General Insurance Corporation (GIC)** covers more than 500,000 people in Rajasthan with its four subsidiaries. The subsidiaries offer different insurance policies, with health

accounting for a very small share of their overall business. GIC's Mediclaim Policy covers only hospitalization expenses, with no scheme to cover outpatient or preventive care expenses.

- **Employer-Based Insurance** provides coverage to private-sector employees and their families and is estimated to cover 800,000 people in Rajasthan.

The Pharmaceutical Sector

Pharmacy Services and Drug Information

Pharmacy services are very limited in scope and provide little in the way of direct patient care. Drugs are normally dispensed without labels, and written instructions are rarely provided. There is minimal counseling of patients and no attempt to determine the patient's understanding of drug therapy. Drug information programs and services are very limited in the government health services as well as in the private sector. There is no formal drug information center that provides in-depth information to health care practitioners or patients, and health facilities do not provide drug information services of any kind. Drug information reference materials are generally not available at any level of health care. Medical representatives are a major source of drug information for both doctors and pharmacists; however, they only provide company-oriented information about their product portfolio.

National and State Drug Policy

The revised Drug Policy of 1986 emphasizes “Measures for Rationalization, Quality Control, and Growth of Drugs and Pharmaceuticals Industry in India” and has set out main objectives for—

- Ensuring availability, at reasonable prices, of essential, life-saving, and prophylactic medicines
- Strengthening the system of quality assurance for drug production and promoting the rational use of drugs in the country
- Creating an environment to attract new investment in the pharmaceutical industry
- Strengthening the indigenous capability for production of drugs

The aim of the National Drug Policy (NDP) to strengthen the drug-manufacturing sector has been realized; however, the “health” impact of the NDP has been weak and, as a result, there are significant inefficiencies in the system with respect to rational drug use, quality control, and pricing. There is no formally adopted state drug policy; however, the Rajasthan essential drugs list describes the essential drugs for various levels of health care delivery.

Quality Assurance

A well-developed legal framework exists for a comprehensive quality assurance program. The various laws that are in place to address the quality aspects include the Drugs and Cosmetics Act, 1940; Drugs and Cosmetics Rule, 1945; Drugs and Magic Remedies (Objectionable Advertisements Act), 1954; Narcotic Drugs and Psychotropic Substances Act, 1985; Poisons Act, 1919; Drugs (Price Control) Order, 1995; Pharmacy Act, 1948; and Consumer Protection Act, 1986. This legislation regulates pharmaceutical quality, pricing, manufacturing, registration/market approval, importation, distribution, dispensing/sale, promotion and advertising, professional licensing and pharmacy practice, and professional licensing and practice of prescribers.

Approval to sell pharmaceutical products in India is given by the State Drugs Control Authority. The Central Licensing Approving Authority, which is a federal body, is responsible for approving new drugs, laying down standards for drugs, and controlling the importation of drugs. In addition, the Drug Controller General of India (DCGI) is responsible for quality control of specific categories of life-saving products including blood, blood products, intravenous fluids, vaccines, and sera (Indian Pharmaceutical Guide 1999). The Drug Controller of Rajasthan is responsible for approving manufacture and sale of all drugs in Rajasthan. Unfortunately, a

consolidated register of approved products has not been compiled at either the national or state level.⁴

There are approximately 70,000⁵ formulations on the market in India. The exact number of products approved by the Drug Controller of Rajasthan is not specified; however, the state has issued 514 product certificates based on the WHO Certification Scheme on the Quality of Pharmaceuticals Moving in International Commerce. A manual management information system is currently used to manage newly approved drugs. A record is maintained in which each manufacturer is assigned a unique file number. Newly approved pharmaceutical products are allocated the file number of the manufacturer. The process to approve a pharmaceutical product in Rajasthan takes between 1 and 7 days for export and 1 to 15 days for in-country sale and use. There is a lack of standardization of Good Manufacturing Practice (GMP) requirements for licensing of drug manufacturing facilities, with different requirements for manufacturers selling in the local market versus export-oriented manufacturers.

Samples are currently sent for testing to the Drug Testing Laboratory in Rajasthan and to the two central laboratories (Central Drugs Laboratory based in Kolkata and the Central Indian Pharmacopoeia Laboratory in Ghaziabad). The central laboratories are needed because the Jaipur laboratory does not conduct microbiological or pharmacological testing. Only a limited number of samples are tested because of limited financial and technical resources at the central laboratories. Consequently, only suspicious products are sent for testing. The Drug Controller's office has drawn up guidelines on drawing samples when there is suspicion of spurious or poor-quality drugs, for example, when there is a complaint, or if the manufactured products are offered for sale at very low prices.⁶ The other significant issue that affects the operation of both the Drug Testing Laboratory and private laboratories in Rajasthan is the unavailability of reference standards from the Central Drug Laboratory in Kolkata.

Pharmaceutical products are not currently reevaluated on a regular basis, although a proposal has been prepared to introduce postmarketing surveillance for newly approved drugs at the central level.⁷ Currently, a drug is removed from the market only if it is banned, which can only be authorized by the DCGI only after a cumbersome process. No statutory laws or regulations exist that govern the procedure to withdraw drugs. The informal procedure appears primarily to be an exchange of information between Drug Controllers, who then contact warehouses to withdraw the stock that has been supplied.

Rational Use of Drugs in Medical Facilities

Quality of treatment is very difficult to determine in health care facilities. There is no peer review of medical care and there is no organized quality assurance program to ensure appropriate diagnosis, treatment, and follow-up. Health care indicators are not routinely monitored and the system has no monitoring and evaluation plan. There are no policies and procedures that promote

⁴ Personal communication, DCGI.

⁵ Interview with DCGI.

⁶ Personal communication, Drug Controller, Rajasthan.

⁷ Personal communication, DCGI.

rational drug use. Prescribing is frequently based on symptoms rather than clinical diagnosis, and polypharmacy is common; prescribers write three or four medicines per prescription on average.⁸

Standard treatment guidelines (STGs) have not been prepared for the facilities, although these are available for some vertical programs (TB, immunizations, malaria, and others). Irrational drug use is common in the health care system, including the overprescribing of expensive antibiotics that should be reserved for serious infections.⁹

Although procurement of drugs does use generic drug names, generic drug prescribing is not common in government health facilities, and physicians continue to prescribe by brand name. The Health Department had requested that all physicians use generic names, but there has been resistance to it. There is a general perception that the quality of many generic drugs may be poor and that private pharmacists are likely to dispense a cheap, poor-quality drug if generic drugs are prescribed. Under the federal regulations, pharmacists do not have the authority to substitute branded drugs with the equivalent generic drugs; however, there have been cases of substitution when the branded drug was not available, or when the generic equivalent was highly profitable for the pharmacy. Though the Rajasthan Essential Drugs List was introduced in 1999, its implementation has been limited.

The Market

Public Sector

The public-sector drug distribution system is a complex system that moves large amounts of drugs and medical supplies throughout Rajasthan (Figure 2).

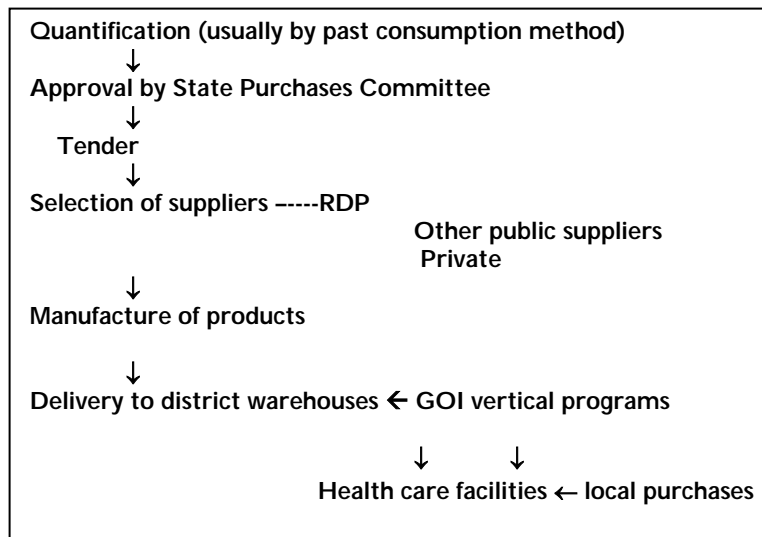


Figure 2. Public-Sector Drug Procurement and Distribution

⁸ SEAM assessment data.

⁹ Ibid.

Drugs are provided by both the GOI and the GOR DMHFW. The state government negotiates drug prices for the entire state through a rate contract with manufacturers. Health facilities and district warehouses can then order these drugs as needed throughout the contract cycle directly from the manufacturer. The ESIS and the cooperative pharmacy system do not participate in the state pooled procurement approach but have independent procurement mechanisms.

Many of the warehouses visited by the SEAM team were in a state of disrepair, poorly organized, and operated by minimally trained staff. The World Bank is involved in building new district stores, which include 32 district warehouses, five regional stores, and one central store in Jaipur. In addition to these warehouses, vertical programs maintain independent separate warehouses in Jaipur and other districts. The vertical programs that have warehouses include Family Welfare, immunizations, malaria, and communicable diseases. These parallel systems lead to operational and financial inefficiencies.

*The Rajasthan State Cooperative Consumers Federation Limited (Rajasthan Rajya Sahakari Upbhokta Sangh, Ltd.)*¹⁰

Drugs are also distributed through an autonomous COOP group that serves more than a million customers annually. It is discussed in depth in order to provide a better understanding of its operations and the rationale for the proposed intervention.

This organization is registered under the COOP society's act of 1965, under which several other cooperatives have also been established (e.g., the Urban Cooperative Bank). The cooperatives are autonomous, parastatal organizations and are responsible for their own activities and budget. The main functions of the COOP are to buy and sell products that are required by government employees and government organizations. Some COOPs also serve the general public. The COOP has several branches, each operating in a different product category, which include medical (pharmaceutical and medical products), groceries, textiles, stationery, computers, furniture, civil supplies (e.g., sugar, iodized salt, tea) and a few others. Of these categories, medical products generate the largest revenue.

The COOP for medical supplies is operated by 104 employees who manage the procurement, distribution, and sale of more than 7,000 products that are distributed through 120 wholesalers/stockists to 53 COOP retail outlets. These outlets generate revenues of INR 130 million and serve 1.2 million customers annually. The policy of the COOP is to sell all products at 2 percent below manufacturer's recommended price (MRP). For fiscal year April 2000 to March 2001, total sales were INR 130 million (about USD 2.6 million), while total product cost was INR 104.9 million, a markup on cost of almost 25 percent. Operating expenses were estimated at 12 percent of total sales, while nonoperating expenses and pilferage were less than 2 percent. Net income has averaged 4 to 5 percent during the past few years.

¹⁰ All data in this section were collected through interviews and reports provided by the COOP.

Customer Assessment

The COOP does not restrict any individual from purchasing products at its retail outlets; however, government employees are required to purchase from COOPs in order to be reimbursed by their employers. Pensioners (retired government employees) are given the prescribed medicines free of cost and the amount is reimbursed to the COOP by the government. In general, nongovernment consumers (private consumers) do not purchase drugs from COOPs as it can take up to an hour to get served, compared to less than a few minutes in the private-sector retail outlets.

Private patients and government employees are required to pay cash at the time of purchase, while below-poverty-line (BPL) and pensioners are provided drugs without cost. The COOP then claims the value of the sale price of the drugs from the GOR treasury department, which normally takes about two months to reimburse.

Product Assessment

Although the COOP is technically required to work with GOR's essential drugs list of approximately 300 products, the actual product range managed by the COOP exceeds 7,000 allopathic products and over 200 ayurvedic products.¹¹ No testing of products is conducted; the responsibility for quality control is left to the manufacturer.

Manufacturers

More than 225 manufacturers are included on the supply list based on physicians' prescribing habits, price, and "market goodwill," which is related to brand value. The selection criteria for products include some questions relating to the quality assurance procedures of the manufacturer, but the COOP does not inspect manufacturing facilities. Procurement is fragmented, with the top six manufacturers accounting for less than 25 percent of total product purchases. The leading suppliers are Cipla, Ranbaxy, Unichem, Glaxo, Cadila, and Boots/Knoll.

Distributors

The COOP works with at least 120 distributors who deliver their products to the central office warehouse. The distributors represent different manufacturers or partial product lines of larger manufacturers. In order for the COOP to access the more than 7,000 products, it must contract with 120 different distributors.

¹¹ Two hundred ayurvedic products are distributed through five COOP retail outlets and account for 5 percent of total COOP sales.

Logistics and Inventory Management

The total inventory at the COOP is estimated at INR 30 million, which is the equivalent of more than three months of sales. Goods are ordered daily by the 53 retail outlets and delivered at least once or twice a day. It is not uncommon for retailers to order partial packs (e.g., 50 blistered tablets from a box of 100) to minimize inventory-carrying costs.

At the retail level, the inventory level varies significantly. The 10 least efficient outlets carry an average inventory of over 300 days' sales, while the 10 most efficient outlets carry an average inventory level of 40 days. Inventory and logistics management is partially computerized. The central office has computerized some of its operations for shipping and receiving orders, but none of the 53 retailers appears to have any computers.

Retail Operations

Of the 53 retail outlets, 49 dispense allopathic drugs, while 4 outlets dispense ayurvedic drugs. Outlets are not legally prohibited from mixing the two different systems of medicine; hence, it is not uncommon for outlets to dispense allopathic and ayurvedic products in the same facility. Interestingly, of the 45 shops in Jaipur, 13 are located on the grounds of SMS Hospital, which is the largest public hospital in Rajasthan.

All shops are operated by a pharmacist and an assistant, who are required to meet certain sales targets that are established by the central office. Average annual sales per shop for 1999–2000 were INR 2.45 million (USD 50,000). Sales were highest for shops that were operating near SMS Hospital.

Private Sector

The pharmaceutical industry is one of the most important sectors for the Government of India, not only because of its export potential and self-reliance, but also because of its employment capacity, which has been estimated at 250,000 direct workers and a total of one million indirect employees at ancillary industries (György et al. 1997). It is estimated that there are more than 70,000 products are being manufactured by over 20,000 manufacturers in India. There are about 150 manufacturers in Rajasthan.¹²

¹² Interviews with DCGI, Rajasthan Drug Controller.

Table 6. Estimated Global Pharmaceutical Market, 2002

Region	Projected Market Size in 2002 (USD Billions)	Percentage of Total Market Share	Projected Growth (%) 1998-2000
North America	169.5	41.7	9.8
Europe	100.8	24.8	5.8
Japan	45.8	11.3	4.9
Latin America	30.5	7.5	8.4
SE Asia & China	20.1	4.9	11
Middle East	10.6	2.6	10.6
E. Europe	7.6	1.9	8.6
Indian Subcontinent	7.3	1.8	8.6
Australia	5.4	1.3	9.8
Africa	5.3	1.3	3.3
CIS	3.2	0.8	6.7
Total	406.1	100	8 (Average)

Source: IMS.

Manufacturers

According to 1998 statistics, the Indian pharmaceutical market is estimated to be around INR 304 billion (CMIE 1998; 1999). Most of the leading manufacturers have retained their positions during the past decade. The market remains fragmented, with the top 13 firms accounting for less than 20 percent of the Indian market and none of the firms capturing greater than a 5 percent market share (Table 7).

Table 7. Leading Manufacturers in India

Rank	Company Name	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
1	Ranbaxy Laboratories	3.4	4.3	4.5	4.3	4.2	4.3	4.5
2	Glaxo Indi	3.4	3.2	3.2	2.7	2.7	2.7	2.5
3	Lupin Laboratories	2.2	2.3	2.2	2.2	2.4	2.4	2.0
4	Dabur							1.8
5	Hoechst Marion Roussel	1.8	1.6	1.7	1.6	1.6	1.5	1.8
6	Cipla	1.4	1.5	1.6	1.7	1.7	1.7	1.7
7	Nicolas Piramal India	0.5	0.5	0.4	0.5	0.5	1.2	1.1
8	Torrent Pharmaceuticals	0.7	1.3	1.4	1.1	1.1	1.0	1.1
9	Dr. Reddy's Laboratories							1.1
10	SmithKline Beecham							1.1
11	Kopran	0.7	1.0	1.0	1.0	1.2	1.2	
12	Wockhardt	0.8	1.0	1.0	0.9	0.9	1.1	
13	Alembic Chemical Works	1.5	1.5	1.5	1.3	1.2	1.0	

Source: CMIE: Industry Market Size and Shares, 1998, 1999.

The drug market share of Rajasthan is estimated at 5 percent of the Indian market. In terms of production, Rajasthan-based manufacturers supply about 1.5 percent of the total Indian market.¹³ Of the estimated 150 drug manufacturers in Rajasthan, 105 are members of the Rajasthan Pharmaceutical Manufacturers Association (RPMA). Unlike Maharashtra, Tamil Nadu, Andhra Pradesh, and Gujarat, Rajasthan does not have any major national or international manufacturers. The largest manufacturer in Rajasthan is Rajasthan Drugs and Pharmaceuticals Ltd (RDPL), a government-owned company. RDPL employs 154 people and generates annual revenues of INR 190 million (USD 4.13 million), of which INR 70 million is supplied to the GOR, while the balance is supplied to various public and private groups outside the state of Rajasthan.

*Distribution*¹⁴

The Rajasthan distributor and wholesaler market is highly fragmented, with more than 3,000 groups vying for market share.¹⁵ The number of distribution and wholesale businesses has increased rapidly during the past few years because it is considered a low-risk, lucrative business. It is estimated that 95 percent of distribution and wholesaling is conducted through the private sector, although 20 to 30 percent of the Rajasthan drug market is financed by the public and parastatal sectors. Several categories of distributors play a critical role in the movement of pharmaceuticals.

- Cost and freight (C&F) agents and distributors: Both of these groups work entirely through wholesalers to reach the retail market.
- Wholesalers and subwholesalers: The private-sector wholesalers and subwholesalers control nearly the entire flow of goods. The public sector also uses the private sector to deliver goods to its facilities.
- Retail pharmacies and dispensing segment: Retail pharmacies are responsible for supplying 85 percent of the products to the consumers, while the dispensing segment, which includes dispensing physicians, nursing homes, and hospitals, is responsible for supplying 15 percent of the products to the consumers.

It is important to note that the distinction among the various categories of distributors is blurred. It is common for retailers to vertically integrate into wholesale activities and for distributors to also act as wholesalers. This integration allows these groups to capture a higher margin. For example, a distributor/wholesaler would receive at least 13 percent, while a distributor/wholesaler/retailer would receive at least 29 percent.

Retail Operations

Pharmacies are referred to as chemists and druggists shops. There are an estimated 12,000 licensed pharmacies operating in the state of Rajasthan, of which 800 are in the city of Jaipur.

¹³ Personal communication, Vinod Kalani, Rajasthan Pharmaceutical Manufacturers Association.

¹⁴ Quantitative data were not available; estimates were calculated based on interviews with Rajasthan Chemists Association (RCA), wholesalers, distributors, and manufacturers.

¹⁵ Estimates by Mr. Puri, RCA.

Private pharmacies are mostly located close to major public hospitals. Private nursing homes and clinics have their own or contracted pharmacies.

In Jaipur, the most successful retailers generate revenues of INR 480,000 (USD 10,000) to INR 720,000 (USD 15,000) per month, while the average outlets generate INR 96,000 (USD 2,000) to INR 240,000 (USD 5,000). The smaller outlets are estimated to generate INR 24,000 (USD 500) to USD 1,000 (INR 48,000) per month, and may be struggling to remain financially solvent. The larger, more successful outlets usually expand their operations by vertically integrating backward, becoming distributors or wholesalers. For retailers, official net profit margins after taxes range from 5 to 10 percent, while actual profit margins, including off-the-book sales, average 10 to 30 percent.¹⁶ Start-up capital for establishing and operating a retail shop varies significantly and is mostly dependent on the location. For example, a 200-square-foot shop opposite SMS Hospital in Jaipur requires estimated start-up capital of USD 50,000 to 100,000. In a less desirable neighborhood in Jaipur, the start-up investment would be closer to USD 20,000, while a village would require USD 5,000.

A large pharmacy carries between 10,000 and 20,000 unique products valued at INR 960,000 (USD 20,000) to INR 1,440,000 (USD 30,000), while smaller shops carry 700 to 1,000 unique products valued at INR 96,000 (USD 2,000) to INR 120,000 (USD 2,500). In all instances, retailers order inventory based on the prescribing habits of doctors in the neighborhood and the common diseases affecting the community. To contain costs, retailers regularly return expired products to the wholesaler for a full refund. The retail drug trade is often referred to as low risk; one of the key reasons for owning a retail pharmacy is that all drugs, expired and nonexpired, can be liquidated at market price. In addition to drugs, many pharmacies also carry cosmetics, toiletries, nutritional supplements, and general household items.

The number of customer visits varies by the location of the store. For example, a large store may serve more than 750 customers per day, while the average in the city is about 100 to 150. The rural outlets serve 10 to 40 customers per day. There are seasonal variations, with demand increasing in May and June (summer), July and August (monsoon), and December and January (winter). During the summer and monsoon months, pharmacies dispense a lot of medicines for diarrhea, gastroenteritis, heat exhaustion, dizziness, and dehydration, while during the winter months, the most common afflictions are fever, common cold, bronchitis, and asthma.

NGO Sector (Private Not-for-Profit)

Very few NGOs in Rajasthan focus directly on supplying or improving access to pharmaceutical products. Some NGOs are distributing drugs in a small way to support their projects, for example, as part of a family welfare program. However, there are no large-scale operations in Rajasthan. Some philanthropic organizations funded by trusts supply drugs free of charge to the community. There are many grassroots organizations (GROs) in Rajasthan that work at the community level and adapt the focus of their activities according to the needs of the community they work in. Therefore, GROs rarely concentrate on one area, such as health or education, alone. Their activities may include a mix of income generation, health, education, sanitation, and

¹⁶ Interviews with retailers and distributors.

many others. NGOs network only when they have common objectives, for example, to improve the availability of water.

Rational Use of Drugs

The Rajasthan Society for Promotion of Rational Use of Drugs (RSPRUD)¹⁷ is the major NGO working in the area of rational use of drugs (RUD) in Rajasthan, although Rajasthan Voluntary Health Association (RVHA) has also carried out some activities in this area. RSPRUD was established in 1999 and has mainly concentrated its activities on assisting the GOR in the development of the first Essential Drugs List (EDL) for Rajasthan, which was published in 2000. The organization's other activities include organizing orientation programs and workshops on RUD for faculty members of hospitals and medical colleges. RSPRUD also developed and continues to support the one-day training module on RUD that has been introduced as part of the induction training of new recruits as well as in-service state medical officers. The organization also performs prescription audits to determine antibiotic use in teaching hospitals. Although the objectives of the WHO-India Essential Drugs Programme (EDP) include increasing patient awareness and providing information to patients for improving compliance, RSPRUD has yet to begin work in this area.

RVHA,¹⁸ with a staff of two senior technical and two program officers, has also carried out some activities that focus on RUD since it was established in 1991. It has organized 14 symposiums that target resident doctors and fourth-year medical students to inform them about banned drugs and rational prescribing. RVHA has also produced a *Dear Doctor* quarterly newsletter that focuses on similar issues. The current focus of RVHA's work in RUD is to mobilize GROs to educate TB patients to comply with Directly Observed Treatment, Short-course (DOTS). In addition, RVHA is conducting studies on patients who default from TB treatment and is exploring strategies to improve compliance. The organization has also been involved in lobbying GOR to prescribe generic drugs.

Access to Information

Due to time constraints, few interviews with consumer groups were conducted and the focus was to map out organizations in Rajasthan that may be potential partners in improving the access of information to consumers. RVHA has done some work in this area, including translating Health Action International leaflets on problem drugs into Hindi, producing a bimonthly newsletter, and forming a drug information hotline to answer questions on the safety of drugs in pregnancy and during breast-feeding. The leaflets were widely distributed through RVHA's links to GROs and were published in the local newspapers. The production of the newsletter has been stopped due to lack of funding and the drug information line now gets only occasional calls, mostly from doctors. Current activities include development and dissemination of malaria information for consumers, training of GROs for a rapid response to a malaria outbreak, and providing information and support to TB patients through GROs to assist them to complete their treatment.

¹⁷ Information on RSPRUD from personal communication with Coordinator, RSPRUD, and Delhi Society for the Promotion of Rational Use of Drugs. WHO-India EDP Annual Report 2000.

¹⁸ Personal communication, Campaign Manager, RVHA.

Other activities are ongoing that relate to consumer information access—

- The components of the WHO/India EDP, which guides RSPRUD’s activities, include providing information to patients for improving patient compliance and providing objective information to doctors about medicines. As yet, RSPRUD has not initiated any activities in this area.
- The Indian Institute of Health Management Research (IIHMR)¹⁹ and IDS²⁰. both provide training courses for NGOs in management and capacity building and would be able to adapt the content to incorporate a focus on mobilization of NGOs to improve consumer education and access to information on drugs.
- Another consumer group that is very active in Rajasthan is Sewamandir, which provides consumer information on drugs. Many consumer groups are also based in Delhi, including VOICE, which works on increasing consumer awareness about drug-related issues.

¹⁹ Personal communication, IIHMR.

²⁰ Personal communication, IDS.

Access to Essential Medicines, Vaccines, and Related Health Commodities

The measures of access to essential medicines and medical supplies presented in this report are based on indicators reflecting important dimensions of access that were identified at the joint WHO-MSH meeting on defining and measuring access held December 11–13, 2000, in Ferney-Voltaire, France.

Geographic Accessibility

Indicator: Percentage of households living more than 10 kilometers from a health care facility

There were 37,889 inhabited villages in 1991, of which 16,063 (42 percent) are connected by roads. The relatively long distance that many patients must travel to a primary health center or hospital makes access difficult, especially in rural areas where there are no proper roads or transportation. The percentage of rural people living within 10 kilometers of a primary health center or a hospital was estimated to be about 45 and 55 percent, respectively (IIPS 2000).

Indicator: Average number of operating hours, by type of facility

The complementary indicator to physical access to services is whether the facility is operating when people need it. Information regarding facility hours was obtained through interviews and not through direct observation (Table 8). It was discovered that some facilities, especially PHCs, were open for only one to three hours per day.

Table 8. Operating Hours by Type of Facility

	Public Facilities N = 40	Private Hospitals/ Clinics N = 48	NGO Hospitals/ Clinics N = 18	Private Pharmacies N = 40
Average number of operating hours per week	44.7	83.0	56.2	94.6
Average number of operating hours per day, weekdays	6.8	12.6	8.1	13.8
Average number of operating hours per day, weekends	5.4	11.2	7.8	12.7

Availability of Medicines and Information

Indicator: Percentage of a set of unexpired tracer items in stock

Drug availability is typically examined by considering two related indicators. The first measures the availability of unexpired tracer items. The second indicator measures the length of time that key items are not available, which requires an examination of the stock-out rates for a period of one year prior to the survey. Together, these indicators provide information about the availability of these items (Table 9). The findings indicate low availability of essential drugs across Rajasthan. Some potential reasons for low availability could be attributed to the following—

- Drugs were not ordered or the existing stock was depleted.
- Financing is insufficient.
- Requirements are forecast poorly.
- The procurement cycle was at the end of the year at the time of assessment.
- Different strengths of the same drugs were not calculated into the availability statistics.
- The Rajasthan EDL has not been adequately implemented—our survey showed that only 45 percent of essential drugs were available at health centers/hospitals. Using a health facility list, availability was much higher (76 percent for public health facilities and 85.4 percent for private pharmacies).

Table 9. Percentage Availability of Tracer Items by Facility

Generic Drug Name	Public		NGO	Private		
	Stores N = 9	Facilities N = 41	Hospitals/ Clinics N = 9	Hospitals/ Clinics N = 23	Pharmacies N = 38	Drug Outlets/Rural Medical Practices N = 25
Aminophylline 25 mg/ml inj., ampoule	22.2	36.6	22.2	39.1	34.2	8.0
Amoxicilline 250 mg capsule	0	19.5	33.3	69.6	78.9	24.0
Ampicillin 500 mg injection, vial	33.3	36.6	22.2	43.5	60.5	28.0
Chloramphenicol applicap, container (eyedrops)	33.3	39.0	0	21.7	47.4	20.0
Chloroquine 150 mg (base) tablet or 250 mg (salt) tablet	33.3	90.2	44.4	69.6	92.1	48.0
Condoms, single	33.3	85.4	0	17.4	76.3	44.0
Co-trimoxazole 20 mg/100 mg tablet	55.6	63.4	33.3	34.8	63.2	32.0
Dexamethasone 4 mg/ml injection, vial	0	34.1	44.4	47.8	65.8	40.0
Dicyclomine 10 mg tablet/capsule	22.2	46.3	0	17.4	28.9	20.0
Doxycycline 100 mg capsule	0	43.9	22.2	52.2	86.8	8.0
Ethinylestradiol/levonorgestrel (0.03 mg+0.15 mg) strip	33.3	95.1	22.2	26.1	73.7	12.0
Furosemide 40 mg tablet	33.3	39.0	0	52.2	60.5	16.0
Gentamicin 80 mg/2 ml injection, vial	22.2	43.9	55.6	56.5	86.8	44.0
Insulin, soluble (plain) 40 units/ml, vial	33.3	9.8	11.1	13.0	57.9	0
Iron and folic acid (large) 400 mcg/60 mg tablet	11.1	61.0	0	26.1	21.1	4.0
Isoniazid 150 mg/rifampicin 300 mg tablet	0	26.8	0	17.4	21.1	0
Mebendazole 100 mg tablet	22.2	43.9	0	26.1	55.3	4.0
Methylethylmethazine 0.125 mg tablet	11.1	31.7	11.1	52.2	57.9	4.0
Metronidazole 200 mg tablet	0	39.0	33.3	56.5	86.8	24.0
Nifedipine 10 mg capsule	0	14.6	11.1	26.1	44.7	8.0
Oral rehydration salts, packet	55.6	97.6	33.3	60.9	84.2	36.0
Oxytocin 10 IU/ml injection, ampoule	33.3	34.1	33.3	30.4	52.6	8.0
Paracetamol 500 mg tablet	77.8	100.0	55.6	73.9	97.4	84.0
Pethidine 50 mg/ml injection, ampoule	0	2.4	0	0	2.6	0
Praziquantel 600 mg tablet	0	0	0	0	0	0
Ringer's lactated IV solution, 1000 ml bag	22.2	39.0	22.2	47.8	36.8	12.0
Ringer's lactated IV solution, bag	0	2.4	0	4.3	5.3	0
Vitamin A 100,000 IU solution, bottle	0	7.3	0	4.3	0	0
Vitamin A 200,000 IU solution, bottle	11.1	53.7	11.1	8.7	2.6	8.0
Average percentage of a set of unexpired items in stock	20.7	42.6	18.0	34.3	51.1	18.5
Average percentage of a set of unexpired items in stock*	26.9	44.5	18	—	—	—

* Abridged to exclude items not listed in EDL as stocked at each type of facility.

Indicator: Percentage time out of stock for a set of tracer items

To calculate this indicator, it is necessary to verify, by means of registers or other records, the incidence of any stock-outs and the length of time of any stock-out for the 12 months prior to the study. This indicator expresses the proportion of days out of stock for the year (Table 10). Together with the first indicator, it allows for the determination of the probability of the occurrence of a stock-out over a longer period.

Public facilities were out of stock much more often (17 percent) than NGO facilities (3 percent), which appear to be managing their stocks properly.

Table 10. Percentage of Out-of-Stock Tracer Items by Facility

Generic Drug Name	Public Facilities Days Out of Stock (%) N = 38	NGO Hospitals/Clinics Days Out of Stock (%) N = 14
Aminophylline 25 mg/ml injection, ampoule	6	5
Amoxicilline 250 mg capsule	52	0
Ampicillin 500 mg injection, vial	24	0
Chloramphenicol applicap, container (eyedrops)	37	15
Chloroquine 150 mg (base) tablet 250 mg (salt) tablet	9	0
Condoms, single	6	NA
Co-trimoxazole 20 mg/100 mg tablet	27	24
Dexamethasone 4 mg/ml injection, vial	28	3
Dicyclomine 10 mg tablet/capsule	18	0
Doxycycline 100 mg capsule	11	0
Ethinylestradiol/levonorgestrel (0.03 mg+0.15 mg) strip	5	NA
Furosemide 40 mg tablet	46	0
Gentamicin 80 mg/2ml injection, vial	24	0
Insulin, soluble (plain) 40 units/ml, vial	53	0
Iron and folic acid (large) 400 mcg/60 mg tablet	11	0
Isoniazid 150 mg/rifampicin 300 mg tablet	3	NA
Mebendazole 100 mg tablet	17	0
Methylethylmetrine 0.125 mg tablet	40	0
Metronidazole 200 mg capsule	32	0
Nifedipine 10 mg capsule	41	0
Oral rehydration salts, packet	8	0
Oxytocin 10 IU/ml injection, ampoule	59	0
Paracetamol 500 mg tablet	10	0
Pethidine 50 mg/ml injection, ampoule	34	NA
Praziquantel 600 mg tablet	33	NA
Ringer's lactate IV solution, 1000 ml bag	12	0
Vitamin A 200,000 IU solution, bottle	11	0
Average percentage of time out of stock for a set of key items	18	3
Average percentage of time out of stock for a set of key item*	17	3

Note: NA = data not available

*Abridged to exclude items not listed in EDL as stocked at each type of facility.

Indicator: Percentage of prescribed items that are dispensed

The treatment of a patient is compromised when he or she is not able to obtain the medications needed. Ideally, all prescribed medicines should be dispensed. However, the correct interpretation of the indicator still requires an understanding of the health system in which medicines are prescribed and dispensed. If the system uses (or should use) a list of medicines to guide the prescribing, dispensing, and stock management of medicines, and if medicines are available free of charge to patients, there should be a high correlation between what is prescribed and what is dispensed. Lack of stock is a common reason for lack of dispensing under these conditions, although sometimes prescribers will adapt their prescriptions to match what items are in stock. When the patient is obliged to cover the entire or even partial cost of treatment, the prescribed medications may not be dispensed because the patient cannot afford them.

To calculate this indicator, information that links prescriptions with dispensing is needed. This information may be obtained from a single record maintained at the dispensary or by matching a patient record with a dispensing record. The information for this indicator was collected in public, private, and NGO facilities. The rate of dispensing prescribed drugs varied greatly by type of facility, from 63 percent in public facilities to 93 percent in private-sector facilities (Table 11).

In the public sector, especially in PHCs, essential drugs are not always available. Public facilities are underfunded and receive an estimated INR 2.30 per person per year²¹ for drugs in rural areas; as a result, public-sector patients often purchase drugs from the private sector.

Table 11. Dispensing of Prescribed Medicines, According to Patient Exit Interviews

	Public Facilities	Private Hospitals/ Clinics	NGO Hospitals/ Clinics	Total
Patient encounters	517	264	146	929
Total drugs prescribed	1,381	836	387	2,610
Total drugs dispensed	871	774	328	1,979
Percentage of prescribed medicines that were dispensed	63	93	85	76

Indicator: Percentage of facilities with a reliable or “valid” source of information about medicines

The underlying assumption behind this indicator is that the possibility of rational prescribing increases if prescribers have access to “valid” information about medicines. Although the criteria defining “valid” were not specified at the WHO-MSH meeting in Ferney-Voltaire, types of information about drugs can be classified according to their origin and purpose. Traditional pharmacopoeias, for example, offer information about product formulation and little or no

²¹ Subcenters: INR 7,500 per 5,000 residents per year, INR 1.5 per person per year; PHC: INR 24,000 per 30,000 residents per year, INR. 0.80 per person per year; GOR’s financial support for drugs in rural areas = INR 2.30 per person per year; central government contributes through its vertical programs too.

therapeutic information. More modern pharmacopoeias contain much more therapeutic information in addition to the pharmacologic information (e.g., *Martindale: The Extra Pharmacopoeia*). Pharmacologic texts (e.g., Goodman and Gilman's *The Pharmacological Basis of Therapeutics*, Remington's *Pharmaceutical Sciences*) and medical compendia contain minimal information about product formulation and a lot of information about factors related to adequate or appropriate prescribing. Medication dictionaries are generally financed by the pharmaceutical industry and contain the information published in the package inserts that are distributed with the medications; these publications are rarely subject to critical review by a legal or professional authority.

The definition of a valid or reliable source of drug information, however, was not addressed during this study. Rather, the concern was with access to any information about drugs. Forty percent of private pharmacies and 26 percent of private hospitals and clinics had at least one valid source of information; public facilities and NGO facilities had few or no such sources of information.

Affordability

Indicator: Average percentage difference between the most and least expensive prices for a set of tracer items

This indicator describes the market from the perspective of the patient as purchaser. The interpretation of this indicator depends on the context of the market. It is possible that in a context of little or no competition, the difference between prices is less than what might be observed in a context that promotes competition. A larger difference might be expected in a market that is highly competitive when generics are allowed to compete with brand-name products.

There is wide variation in prices between generic and branded drugs, and between “branded generics.” In the SEAM study, private hospitals had an average price differential of 50 percent (Table 12), whereas private pharmacies had an average price differential of 83 percent (Table 13). Some drugs in the survey showed over 300 percent difference in prices in the same pharmacy.

Table 12. Average Percentage Difference between Most and Least Expensive Prices for Tracer Items in Private Hospitals/Clinics

Generic Drug Name	Number of Records	Average Price, Most Expensive	Average Price, Least Expensive	Average Price Differential*	Price Differential* (%)
Aminophylline 25 mg/ml inj., ampoule	NA	NA	NA	NA	NA
Amoxicilline 250 mg capsule	2	3.93	2.54	1.39	64.30
Ampicillin 500 mg injection, vial	1	14.50	13.00	1.50	11.54
Chloramphenicol applicap, container (eyedrops)	NA	NA	NA	NA	NA
Chloroquine 150 mg (base) tablet or 250 mg (salt) tablet	3	1.26	1.09	0.17	30.38
Condom, single	1	4.00	3.00	1.00	33.33
Co-trimoxazole tablets 20 mg/100 mg tablet	1	1.60	1.23	0.37	30.08
Dexamethasone 4 mg/ml injection, vial	NA	NA	NA	NA	NA
Dicyclomine 10 mg tablet/capsule	NA	NA	NA	NA	NA
Doxycycline 100 mg capsule	3	4.25	3.44	0.81	20.92
Ethinylestradiol/levonorgestrel (0.03 mg + 0.15 mg), strip	2	2.25	1.76	0.49	24.40
Furosemide 40 mg tablet	2	1.91	0.37	1.54	389.29
Gentamicin 80 mg/2 ml injection, vial	1	11.00	9.00	2.00	22.22
Insulin, soluble (plain) 40 units/ml, vial	NA	NA	NA	NA	NA
Iron and folic acid (large) 400 mcg/60 mg tablet	1	0.26	0.24	0.02	8.33
Isoniazid 150 mg/rifampicin 300 mg tablet	4	6.72	5.62	1.10	30.04
Mebendazole 100 mg tablet	1	1.37	1.28	0.09	6.71
Methylethylergometrine 0.125 mg tablet	3	3.12	2.35	1.59	44.95
Metronidazole 200 mg tablet	2	7.05	6.65	0.40	6.27
Nifedipine 10 mg capsule	1	1.12	0.90	0.22	24.44
Oral rehydration salts, packet	NA	NA	NA	NA	NA
Oxytocin 10 IU/ml injection, ampoule	NA	NA	NA	NA	NA
Paracetamol 500 mg tablet	4	0.66	0.51	0.15	36.48
Pethidine 50 mg/ml injection, ampoule	NA	NA	NA	NA	NA
Praziquantel 600 mg tablet	NA	NA	NA	NA	NA
Ringer's lactated IV solution, 1000 ml bag	NA	NA	NA	NA	NA
Ringer's lactated IV solution, bag	NA	NA	NA	NA	NA
Vitamin A 100,000 IU solution, bottle	NA	NA	NA	NA	NA
Vitamin A 200,000 IU solution, bottle	NA	NA	NA	NA	NA
Average	—	—	—	—	48.98

Notes: NA = data not available, — = not applicable

* Calculated using highest and lowest prices per facility.

Table 13. Average Percentage Difference between Most and Least Expensive Prices for Tracer Items in Private Pharmacies

Generic Drug Name	Number of Records	Average Price, Most Expensive	Average Price, Least Expensive	Average Price Differential*	Price Differential* (%)
Aminophylline 25 mg/ml inj., ampoule	1	8.10	5.18	2.92	56.37
Amoxicilline 250 mg capsule	10	4.26	3.37	0.90	33.37
Ampicillin 500 mg injection, vial	NA	NA	NA	NA	NA
Chloramphenicol applicap, container (eyedrops)	2	5.75	5.50	0.25	118.94
Chloroquine 150 mg (base) tablet or 250 mg (salt)tablet	14	1.00	0.83	0.17	28.95
Condom, single	13	2.37	1.03	1.70	343.95
Co-trimoxazole tablets 20 mg/100 mg tablet	2	1.19	0.67	0.52	75.95
Dexamethasone 4 mg/ml injection, vial	1	10.36	9.75	0.61	6.26
Dicyclomine 10 mg tablet/capsule	9	1.12	0.89	0.23	26.97
Doxycycline 100 mg capsule	15	4.15	2.30	1.85	92.95
Ethinylestradiol/levonorgestrel (0.03 mg + 0.15 mg), strip	NA	NA	NA	NA	NA
Furosemide 40 mg tablet	4	2.25	0.42	1.83	435.23
Gentamicin 80 mg/2 ml injection, vial	2	8.51	7.99	0.53	6.49
Insulin, soluble (plain) 40 units/ml, vial	1	129.34	72.34	57.00	78.79
Iron and folic acid (large) 400 mcg/60 mg tablet	5	3.29	2.09	1.20	96.64
Isoniazid 150 mg/rifampicin 300 mg tablet	NA	NA	NA	NA	NA
Mebendazole 100 mg tablet	7	1.78	1.16	0.63	60.47
Methylethylergometrine 0.125 mg tablet	4	4.37	2.46	1.91	101.92
Metronidazole 200 mg tablet	6	0.43	0.41	0.02	3.38
Nifedipine 10 mg capsule	2	0.98	0.92	0.06	6.64
Oral rehydration salts, packet	4	5.10	4.46	0.63	28.34
Oxytocin 10 IU/ml injection, ampoule	2	13.30	6.28	4.68	112.05
Paracetamol 500 mg tablet	25	0.67	0.59	0.08	15.35
Pethidine 50 mg/ml injection, ampoule	NA	NA	NA	NA	NA
Praziquantel 600 mg tablet	NA	NA	NA	NA	NA
Ringer's lactated IV solution, 1000 ml bag	NA	NA	NA	NA	NA
Ringer's lactated IV solution, bag	NA	NA	NA	NA	NA
Vitamin A 100,000 IU solution, bottle	NA	NA	NA	NA	NA
Vitamin A 200,000 IU solution, bottle	1	1.25	1.17	0.08	6.75
Average	—	—	—	—	82.66

Notes: NA = data not available, — = not applicable

* Calculated using highest and lowest prices per facility.

Indicator: Average percentage difference between median international prices and public-sector prices for a set of tracer items

This well-known indicator is used to evaluate how efficient tender systems are for procurement. The assumption is that resources are always limited, so greater efficiencies should be sought. The motives for reducing expenditures and minimizing costs include being able to use the money saved to provide services to more people or to expand existing services. Procurement is a

particularly complex area of drug management. Prudent procurement involves several factors, including the availability of up-to-date information about prices, a reliable supply of products, processes that make optimum use of resources (human and financial), and a system that both the buyer and the purchaser trust.

Drug procurement prices in the public sector are low (67% less) compared to international prices (Table 14). In the private sector, retail markups are high, making many drugs unaffordable.

Table 14. Price Comparison in Public-Sector Outlets

Generic Drug Name	Pack Price Rupees	Units/ Pack	Unit Price Rupees	Unit Price USD*	IDPIG USD*	Difference Between IDPIG and Unit/Price (%)
Aminophylline 25 mg/ml inj., ampoule	NA	NA	0	0	.0140	NA
Amoxicilline 250 mg capsule	NA	NA	0	0	.0258	NA
Ampicillin 500 mg inj., vial	194.8	100	1.9480	0.0423	.2438	-83
Chloramphenicol applicap container (eyedrops)	1.13	3	0.3767	0.0082	NA	NA
Chloroquine 150 mg (base) tablet	400	1,000	0.4000	0.0087	.0185	-53
Condom, single	NA	NA	0	0	.1190	NA
Co-trimoxazole 20 mg/100 mg tablet	NA	NA	0	0	—	NA
Dexamethasone 4 mg/ml inj., vial	NA	NA	0	0	—	NA
Dicyclomine 10 mg tablet/capsule	94	1,000	0.0940	0.0020	—	NA
Doxycycline 100 mg capsule	NA	NA	0	0	.0278	NA
Ethinylestradiol/levonorgestrel (0.03 mg + 0.15 mg) strip	NA	NA	0	0	3.0452	NA
Furosemide 40 mg tablet	18	100	0.1800	0.0039	.0115	-66
Gentamicin 80 mg/2 ml injection, vial	NA	NA	0	0	.0680	NA
Insulin, soluble (plain) 40 units/ml, vial	NA	NA	0	0	.4773	NA
Iron and folic acid (large) 400 mcg/60 mg tablet	NA	NA	0	0	NA	NA
Isoniazid 150 mg/rifampicin 300 mg tablet	NA	NA	0	0	NA	NA
Mebendazole 100 mg tablet	NA	NA	0	0	.0141	NA
Methylethylgometriner 0.125 mg tablet	NA	NA	0	0	—	NA
Metronidazole 200 mg tablet	NA	NA	0	0	.0187	NA
Nifedipine 10 mg capsule	24	100	0.2400	0.0052	.0217	-76
Oral rehydration salts, packet	2.2	1	2.2000	0.0478	.1419	-66
Oxytocin 10 IU/ml inj., ampoule	9.1	10	0.9100	0.0198	.1929	-90
Paracetamol 500 mg tablet	139	1,000	0.1390	0.0030	.0066	-54
Pethidine 50 mg/ml inj., ampoule	5.35	1	5.3500	0.1163	.2340	-50
Praziquantel 600 mg tablet	NA	NA	0	0	NA	NA
Ringer's lactated IV sol., 1000 ml bag	8.4	540	0.0156	0.0003	NA	NA
Vitamin A 200,000 IU sol., bottle	NA	NA	0	0	NA	NA
Average %difference						-67

Notes: NA = data not available; — = not applicable. * Exchange rate used: 46 INR = USD 1.

Indicator: Number of days that the lowest-paid government employee needs to work in order to pay for a standard treatment of a tracer condition

This indicator aims to capture the concept of affordability from the perspective of the patient. It is a variation of one that was introduced at the WHO-MSH Ferney-Voltaire conference. The original indicator was based on the salary of the lowest-paid government worker. The reason for using the civil servant for this index is the high probability of the existence of reliable published information about the salaries of civil servants. With this type of information, one can create an index of relative values that can be compared over time both in the same country and with those obtained in other countries.

Although medicines appear to be affordable based on this indicator, this is an anomaly. Government workers in India are paid more than their counterparts in the private sector (e.g., a “tea wala” will receive INR 4,000–6,000 per month in the public sector versus INR 1,500 per month in the private sector). This would indicate that these groups require 7 to 20 days to pay for one month’s treatment for asthma and diabetes (Table 15).

Table 15. Days Needed to Work to Pay for Treatment of a Tracer Condition

	Public Facilities	Private Hospitals/ Clinics	NGO Hospitals/ Clinics	Private Pharmacies
Malaria (adult): chloroquine 150 mg [*]	NA	0.08	NA	0.06
Pneumonia (pediatric): amoxicilline 250 mg ^{**}	NA	0.28	NA	0.38
Pneumonia (pediatric): co-trimoxazole 20/100 mg ^{**}	NA	0.17	NA	0.09
Diabetes: glibenclamide, metformin ^{***}	NA	NA	NA	0.24–0.90
Asthma: salbutamol, beclomethasone inhalation ^{***}	NA	NA	NA	0.55–2.13

Note: NA = not available

^{*}WHO

^{**}IMCI

^{***}30-day supply

Acceptability/Satisfaction

The acceptability/satisfaction dimension of access approximates the criteria of responsiveness used to describe the performance of health services in the *World Health Report* (WHO 2000). Responsiveness refers to how aspects of the health system relate to the expectations of the public. This concept has two components, one that focuses on respect (respect for human dignity, confidentiality, and patient autonomy) and another that addresses issues of client orientation (punctuality, cleanliness, space, access to social support, and possibility of provider choice).

Indicator: Number of drugs from the Essential Drugs List that are among the top best-selling drugs in the private sector

Although use of generic drugs in India is low, 52 percent of the top 25 drugs were branded equivalents of generic drugs listed on the Rajasthan EDL (Table 16).

Table 16. Rajasthan's Top 25 Drugs (ranked by value), 1999–2000**

No.	Brand Name	Generic Name	Category
1	Corex	(Chlorpheniramine maleate 4 mg, codeine phos. 10 mg, menthol 0.1 mg, per 5 ml)	Antitussive
2*	Becosules	Vitamin B complex + vitamins	Vitamins
3	Liv-52	Herbal	Vitamins
4*	Althorcin	Erythromycin	Antibiotic
5*	Voveran	Diclofenac	Analgesic
6*	Sporidex	Cefalexin	Antibiotic
7*	Betnesol	Betamethasone sodium phosphate	Steroid
8*	Taxim	Cefotaxime	Antibiotic
9	Ciplox-eye/ear drops	Ciprofloxacin	Antibiotic
10	Revital-Ginseng	Multivitamins	Vitamins
11	Combiflam	Ibuprofen and paracetamol	Analgesic
12	Ampoxin	Ampicillin + cloxacillin (not as COMBO)	Antibiotic
13*	Septran	Sulfamethoxazole + trimethoprim	Antibiotic
148	Betnovate	Betamethasone valerate	Steroid
15	Phexin	Cefalexin	Antibiotic
16*	Brufen	Ibuprofen	Analgesic
17*	Norflox	Norfloxacin	Antibiotic
18	Digene	Gel (Methylpolysilox 25 mg, mag. hydrox. 185 mg, alum. hydrox. gel 830 mg)	Antacid
20	Ceftum	Cefuroxime	Antibiotic
21*	Avil	Pheniramine maleate	Antihistamine
22	Phensidyl	(Codeine phos. 10 mg, chlorpheniramine maleate 4 mg/5 ml)	Antitussive
23*	R-cinex	Rifampicin	Anti-TB
24*	Ciprobid	Cipro	Antibiotic
25*	Zinetac	Zantac (ranitidine)	Antiulcer

*Drugs listed in Rajasthan's EDL.

**Data courtesy of DRL and Cipla.

Indicator: Satisfaction with the results of the last visit to a public health facility

These data were not available from the research conducted in Rajasthan.

Quality of Products and Services

Indicator: Percentage of tracer medicines sampled from facilities that fail quality testing

The percentage of 125 tracer drugs sampled from facilities that failed quality testing was 9.6. Six percent of the 50 samples from the public facilities failed testing, while 12.7 percent of the 71 samples from private facilities failed. None of the four samples from the NGO facilities failed. Quality problems could have resulted from storage conditions (some warehouses were warmer than 45°C) or from GMP problems. These findings are not surprising given that the state drug regulatory agency does not have the necessary financial and human resources to monitor the flow of drugs in the state. The drug regulatory agency does not inspect warehouses or medical facilities.²²

From SEAM interviews, it was apparent that quality is perceived to be a major problem in Rajasthan—

- The perception is that higher-priced branded products are of higher quality than lower-priced products, which drives the entire system toward expensive branded drugs promoted by drug manufacturers.
- The Rajasthan regulatory agency has limited capacity for controlling quality problems, especially the inspection of manufacturers' GMPs.
- Drug controller records indicate that 19 percent of drugs tested in 2000–2001 did not meet quality standards. Although this appears very high, it should be noted that testing was conducted for drugs suspected of having problems and not by random sampling.

Indicator: Existence of a national essential drugs list and standard treatment guidelines published within the last five years

This indicator provides evidence on the level of the government's current and ongoing concern for the rational use and management of drugs, important factors for the delivery of quality care and services. Rajasthan's Essential Drugs List was published in April 2000.

Indicator: Percentage of facilities with a copy of the latest national formulary or essential drugs list

Only 38 percent of public health facilities possessed the EDL, and almost no one in the private sector had a copy (Table 17). This indicates minimal dissemination and use of the EDL in Rajasthan; however, it was newly available (published in April 2000).

²² Personal communication with DRA representatives.

Table 17. Facilities with Rajasthan Essential Drugs List Available

	Family Welfare Stores N = 6	District Medical Stores N = 6	Public Health Facilities N = 40	Private Hospitals/ Clinics N = 23	NGO Hospitals/ Clinics N = 18
Number of facilities with a copy of the latest Rajasthan Essential Drugs List	3	4	15	1	1
Percentage of facilities with a copy of the Rajasthan Essential Drugs List	50	67	38	4	6

Indicator: Selected prescribing indicators (patient exit interviews)

Prescribing data show that the number of drugs prescribed per prescription per patient was 2.7 for public and NGO facilities and 3.2 for private-sector facilities (Table 18). Most drugs prescribed from other than public facilities were prescribed by brand name, not generic. Of prescribed drugs, antibiotics made up about 40 percent in all facilities, whereas vitamins and tonics were prescribed rarely.

Table 18. Selected Prescribing Indicators, According to Patient Exit Interviews

	Public Facilities	Private Hospitals/ Clinics	NGO Hospitals/ Clinics
Average number of drugs per encounter	2.7	3.2	2.7
Percentage of drugs prescribed by generic name	23	63	13
Percentage of prescribed drugs on Rajasthan Essential Drugs List	70	63	66
Percentage of patients prescribed antibiotics	45	39	40
Percentage of patients given vitamins or tonics	9	14	12

Indicator: Percentage of medicines that patients were able to identify by name and use

Health care providers generally provide information about doses and duration but little information about the name of the medication, side effects, or drug interactions (Table 19). This problem was observed in public, private, and NGO facilities.

Table 19. Information on Medicines Provided to Patients by Providers, According to Patient Exit Interviews

Information on Name and Use of Prescribed Medicines	Public Facilities N = 1,391 patients	Private Hospitals/ Clinics N = 840 patients	NGO Hospitals/ Clinics N = 373 patients
Percentage that knew the name of the medicine	9	5	9
Percentage that knew what the medicine is for	63	48	61
Percentage that knew how many tablets to take, how many times a day	90	93	88
Percentage that knew how long to take the medicine	81	79	78
Percentage given any other information about the medicine	8	4	3

Access Indicators Summary

Rajasthan has some significant drug access problems, which can be summarized as follows.

Geographic Accessibility

Rajasthan has a large infrastructure of public and private health facilities; however, in rural areas, residents need to travel long distances to access a health facility. The problem is compounded by the fact that many public health facilities in the rural areas, which include PHCs and subcenters, are not operational, requiring patients to travel even farther to the nearest community health center or district hospital (DH).

Availability of Medicines and Information

In general, drugs are widely available, but essential generic drugs are not widely available in pharmacies, nor are they frequently prescribed—physicians and pharmacists promote the use of branded drugs.

Unbiased information is not available to health care professionals or consumers; both groups indicate that their most common source of drug product information is the pharmaceutical industry, via sales representatives or advertisements.

Affordability

Although drugs are generally less expensive in India than in most other countries, there are groups in the State of Rajasthan that are unable to afford drugs. The problem of affordability is exacerbated by wastage through irrational prescribing and dispensing and overuse of branded versus generic drugs.

Groups that cannot afford drugs include the rural population (farmers and the informal sector), who often need to borrow funds or take a loan from the pharmacy,²³ slum residents, and individuals with chronic diseases such as TB, cancer, asthma, and diabetes. This group is estimated to comprise 30 to 40 percent of the state population.

Acceptability/Satisfaction

There is low acceptability for generic drugs dispensed in the public sector. In general, patients consider generic drugs in the public sector to be of inferior quality and only use free or low-cost public-sector drugs if they cannot afford drugs in the private sector.

²³ Interviews with consumers and pharmacies in rural areas.

Quality of Products and Services

Few health care practitioners provide adequate information regarding drug use; most are influenced by drug manufacturers and retailers in their prescribing habits. The interaction between the pharmacist (if present) and consumer is often limited to an exchange of goods for cash. There is little or no counseling regarding consumption of drugs, side effects, contraindications, and interactions. Few drugs are appropriately labeled, whether dispensed in a blister pack or in a small, folded piece of paper.

Product quality problems were found in about 10 percent of the samples; however, the perception of poor-quality, spurious, and counterfeit drugs is believed to be held by 20–30 percent of the population.²⁴

²⁴ Interviews with journalists and statements from Rajasthan media reports.

Strategy Formulation Principles

Various strategies were formulated with the objective of closing the significant access gaps that exist in Rajasthan. The options were then screened using various criteria such as impact, scale, ability to implement, and cost, and were narrowed to the two options that are discussed below. The options were formulated with the assistance of opinion leaders from industry, academia, research, government, and health care providers.

Strengthening and Expanding the COOP Parastatal to Close the Access Gap

The COOP has the potential to significantly improve access to medicines in Rajasthan. Its current network of 53 shops, which serves 1.2 million customers annually, could be strengthened and expanded to target the underserved population. Key elements of the intervention would include institutional strengthening, capacity building, and streamlining of operations to improve operational efficiencies, improve access to medicines, and lower operating costs. The second phase of the project would be to expand the operations to cover other districts and populations.

More specifically, the key elements of the project would include—

- **Streamlining selection, procurement, and distribution of medicines**
The COOP sells more than 7,000 products that are purchased from 225 manufacturers and distributed through 120 wholesalers. By using Rajasthan’s EDL and developing STGs, the product range could be rationalized to include more than 300 products to be distributed by one or two distributors.
- **Expanding the network using the principles of franchising**
The COOP is inherently a mix of chain and franchise retail pharmacy models,²⁵ which is not functioning optimally (refer to earlier discussions). The COOP could be strengthened to address several access gaps by—
 - Enforcing regulatory control over retail outlets to ensure minimum standards of product and service quality are maintained
 - Developing and enforcing a drug formulary with a limited number of drugs
 - Purchasing quality drugs from a limited number of reputable manufacturers

²⁵ The COOP is technically a “chain” model because it owns all of the pharmacies and employs pharmacists and assistants to operate the outlets. However, it has implemented an incentive-based system, which, through commissions and bonuses, rewards pharmacists for increasing sales.

- Exploiting economies of scale in order to sell drugs at a significant discount from the retail price, while maintaining financial sustainability
- Developing and expanding the outlet stores into rural and slum areas, where there are greater problems of access
- Contracting with large employers and groups to become the preferred supplier of drugs and information to their beneficiaries
- Providing patient education, counseling, and monitoring

Potential Partners in the Public and Private Sectors

The proposed intervention would directly or indirectly involve the participation of several organizations in the public and private sectors, including NGOs (Table 20).

Table 20. Potential Intervention Partners

Organization	Public/Parastatal or Private/NGO	Role of Organization
The Consumers Federation Cooperative "CONFED COOP"	Parastatal	The main organization through which the intervention would be implemented
C&F agent, distributor, or wholesaler	Private	To act in the capacity of a prime vendor
Other government and large private organizations	Public and private	COOP's customer for pharmaceutical benefits management activities
IIHMR and others	NGO	To provide training to new recruits and current employees of the COOP
RSPRUD, Voluntary Health Association of India, others	Various NGOs	To provide consumer education and to lobby the GOR to respond to consumer needs
Rajasthan State Investment and Industrial Corporation (RIICO) and various affiliated organizations*	GOR	To assist with government lobbying efforts, potential financing, support of rural governments, access to low-cost or free land, etc.

* The following information was gathered during an interview with the Acting Managing Director of RIICO—

- PMRY (Pradhan Mantry Rojgar Yogna) is a self-employment scheme for unemployed youth, including D Pharms, which is run by the Department of Industries in Rajasthan.
- The Village Panchayats can obtain land allotment in rural areas.
- The Department of Urban Development can assist with activities in slums.
- The Department of Rural Development can provide funds for shop construction.
- The District Industries Center will pay for expenses for training of individuals.

Assessment of Feasibility

There do not appear to be any legal, political, technical, or financial barriers to implementing this intervention. However, gaining the commitment of the COOP managers and directors to agree to reform and expand the organization may be a challenge. Preliminary discussions on this intervention indicated the necessary support from various stakeholders.

Legal. No legal issues are anticipated; the intervention would not require any regulatory approval or change in state policy.

Political. Assisting a parastatal group in strengthening and expanding its reach to help government employees and the underserved community should receive the necessary political support. However, if private retailers' sales are negatively impacted, the Rajasthan Chemists Association (RCA), a group of retailers, is likely to oppose this initiative.²⁶

Technical and operational capacity. Establishing and operating a franchise-like model in Rajasthan is not expected to encounter any obstacle as several similar models already exist. However, the model will be put to the test after the outlets start to operate in remote and rural areas, where the outlets will have to address lower purchasing power among residents, low population density, and problems with logistics (lack of passable roads, availability of transporters).

Financial viability. Nearly all of the shops are financially sustainable, and strengthening and expanding their operations will ensure that the overall organization continues to operate profitably and, therefore, self-sufficiently.

Investment required. Streamlining currently operating stores will require investment for information technology, training, and remodeling; adding additional stores will require significantly greater investment. Each new store is expected to cost about USD 5,000.

Impact on Access

At present, the COOP predominantly serves government or government-affiliated groups; private-sector consumers account for only 5 percent of the total. It is expected that the initial phase, which will involve institutional strengthening and development of new services, will be targeted toward the COOP's main customer segment. However, the second phase will expand the more efficient COOP to serve a new segment, which will include the poorer income groups,²⁷ many of whom reside in rural and slum areas. Newer COOP pharmacies will also explore lowering prices by 25 percent or more.

It is anticipated that there should be improvements in the following components of access—

- Geographic accessibility will improve when the COOP stores are expanded to rural and slum areas, which would be done in a second phase.
- Availability of generic drugs, which is quite low, will improve; availability of information will improve significantly, as the intervention will ensure access to the EDL, STGs, and other nonbiased medical information for pharmacists and consumers.
- Affordability will be enhanced by lowering procurement costs and reducing the sale price of drugs. Currently, drugs are sold at 2 percent below manufacturer's retail price; with

²⁶ Interviews indicate that chemists tried to derail the Life Line Fluid Store operations in SMS Hospital.

²⁷ Such as coolies, rickshaw and scooter operators, bus drivers, and shopkeepers.

use of generics, pooled procurement, and rationalizing the product line to include the EDL, prices could be reduced by 25 to 40 percent.

- The quality of products and services will be improved through rationalization of the product line, additional testing of products, and education of pharmacists for providing better counseling and follow-up with patients.

Role of MSH

Agreements. Assistance from MSH would be needed to establish contracts, memorandums of understanding, and agreements with potential partners, such as the COOP, C&F agents, distributors, IIHMR, and other potential collaborating partners.

Training. MSH would need to develop various training programs and manuals, hire trainers for various interventions, and train existing and new staff at the COOP.

Baseline studies. MSH would be needed to conduct a thorough situation analysis and collect data on and analyze the existing status in the operational districts.

Institutional strengthening. MSH assistance would be required in streamlining the COOP's procurement and inventory management activities, rationalizing the product range, and providing management training and information technology training and support.

Improving Access to Essential Medicines in Rural Rajasthan through a Network of PHC-Based Retail Outlets

Background

MSH explored the operational activities at the rural level and found the problem of access to medicines to be even more acute at the PHCs and subcenters. For example, it was noticed that patients tended to avoid visiting PHCs, which resulted in significant underutilization. There were several PHCs with four to eight employees that catered to only 10 to 20 patients per day. The low turnout of patients was attributed to unavailability of the doctor, negative attitude of the doctor toward the patients, inconvenience for patients to reach the PHC, and long waiting times at the PHC despite underutilization and unavailability of medicines. In order to avoid loss of wages for the day, patients prefer to attend village-based care providers.

It was noticed that many of the PHCs carried between 9 and 14 drugs and about 5 or 6 medical products, whereas the nearest private pharmacy carried about 2,000 products. However, since drug inventory at PHCs is replenished quarterly, there are frequent stock-outs, and health care practitioners prescribe expensive branded drugs that have to be purchased at neighboring retail outlets.

Although in MSH's quality control tests the public-sector drugs had fewer problems than private-sector drugs, the perception of drugs dispensed in the public sector was poorer, perhaps because most of the drugs at PHCs are received in bulk containers (1,000-pack bottles) and dispensed in small paper packets, with no labeling of drug names, expiration dates, or instructions.

With these findings and the results of the assessment, MSH invited various stakeholders to several brainstorming sessions to formulate strategies and activities that would address many of these gaps and provide significant benefit to the people of Rajasthan. Organizations represented at the sessions included GOR's Department of Health and Family Welfare; various UN agencies including the United Nations Children's Fund (UNICEF); WHO; the World Bank; various NGOs, including the Indian Institute for Rural Development, IIHMR, Urmal, Arth, Mahavir International; SMS Hospital; RCA; C&F agents; and procurement agents. These findings and the resulting project were presented to and received wide support from the various stakeholders, including the Chief Minister, the Health Minister, the Chief Secretary, and the previous Secretary of Health of Rajasthan, among others.

GOR State Action Plan

This project addresses many of the gaps highlighted in GOR's State Action Plan (SAP). One of the areas of reform is to "ensure that the primary and secondary levels in the health care delivery system are operating effectively and efficiently" (GOR SAP, Chapters 5, 37). Another gap was described as follows: "Provision of essential drugs is of utmost importance if good quality care is to be ensured, if peripheral health institutions have to be strengthened, and if tertiary level hospitals are to be decongested of patient load" (GOR SAP, Chapters 5, 38). This project aims to directly achieve these goals by strengthening the underutilized PHCs by providing training and education to the physician and PHC staff and by improving access to good-quality essential drugs.

As discussed in the GOR's State Action Plan (SAP), the state is interested in attracting the private sector to deliver care in underserved areas and, as an incentive, the government is offering various concessions that include allotment of land on liberal terms and tax reductions. The actual implementation of the project would be conducted through one or more Rajasthan-based NGOs.

These findings led to the design of a project to organize a public-private partnership at the level of primary care facilities to dramatically increase access to low-cost and high-quality essential drugs, available on a permanent basis, and rationally dispensed by fully trained pharmacists supervised by a specialized NGO.

Key Elements of the Project

Broadly speaking, the project aims to develop a network of rural-based retail outlets (mini-chemist shops) selling high-quality, low-cost generic drugs at prices far below manufacturer's retail price (an average of 50 percent below). The retail outlets would be operated by a

pharmacist, who would be managed by a not-for-profit corporation. The outlets would be situated in or near PHCs and would coordinate their activities with the operations of the government health center. The product line would include approximately 200 essential drugs (generic), medical supplies (condoms, impregnated bednets), basic diagnostics (pregnancy, blood glucose), and health products (antiseptics, intravenous bags).

Other strategic elements of the intervention that would link up well with GOR's State Action Plan, the Essential Drug Policy, GOI's Population Policy 2000, and Social Marketing Strategy include—

- Promotes public-private sector partnerships/NGO involvement
- Targets underserved populations in EAG state—rural-focused (PHC/Block PHC)
- Builds sustainable operations
- Begins with a pilot project—replicable, transplantable into other districts and states
- Makes significant use of IEC, social marketing, information technology
- Develops and/or implements STGs and EDL

Description of the Project

Physical Structure

- The intervention would create a network of outlets in rural areas within the compound of government PHCs or Block PHCs (Figure 3). The retail outlet will coordinate its operations and develop linkages with RMRS, which is operating in a similar manner in district hospitals.
- As a second phase of the project, outreach activities would be conducted through mobile retail drug outlets and paramedical workers, especially in border and desert districts. The mobile outlets would use the PHC-based outlets as their focal point.

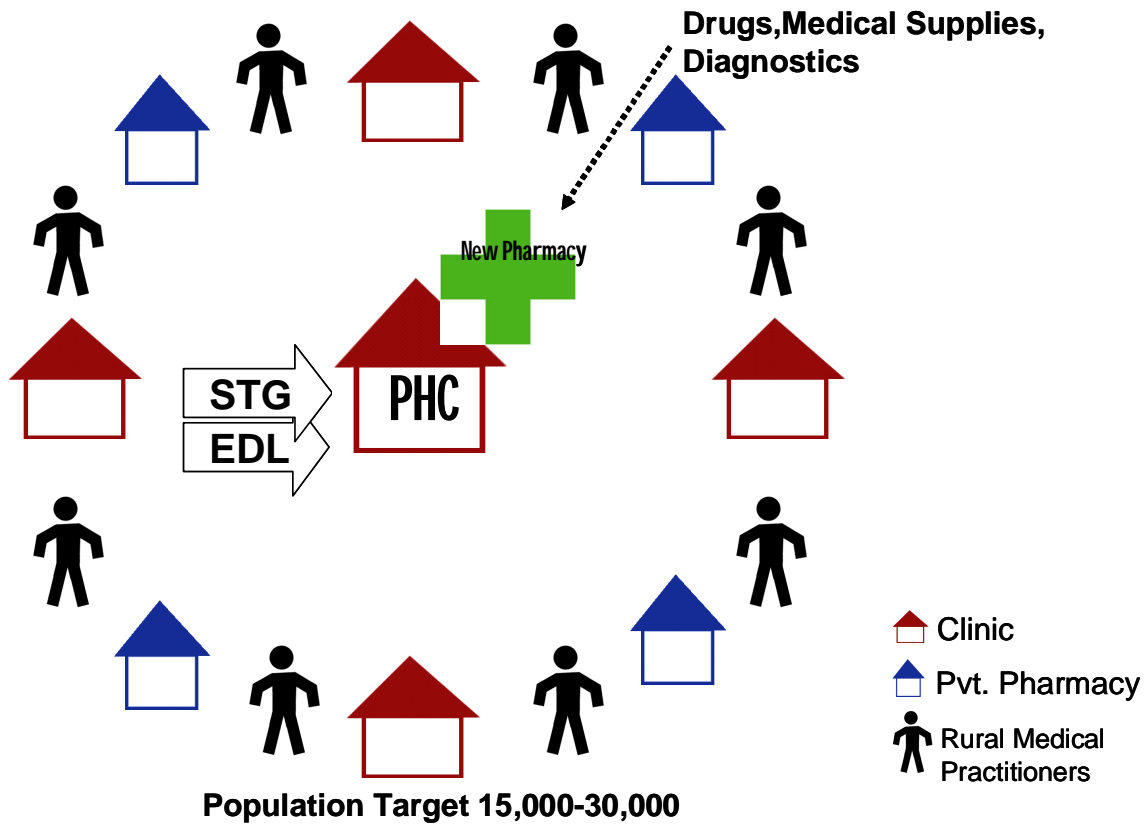


Figure 3. Structure of intervention

Target Population

- The target population would be all clients of primary care facilities wishing to access low-cost high-quality drugs.

- The catchment area would be expected to have a population base of 20,000 to 30,000 residents within a radius of 5–10 kilometers.
- It would be expected that most patients and customers would be from the low-income and BPL category.

Selection of Locations

- The pilot project would begin with 10 locations in a single district and expand to more than 100 locations in three districts.
- Each location would be able to cover a population base of 20,000 to 30,000 people; therefore, by the end of three years, with 100 outlets, total coverage would be extended to two to three million people, which is approximately 5 percent of the state population or about 7 percent of the rural population of Rajasthan.
- The selection of districts will be based on need, operational ease, concurrent complementary interventions, PHC employees' attitudes, Internet/wireless coverage, and availability of pharmacists. The district of Tonk was recommended by GOR as a starting point.

Project Management

- No new organization would be required—the project would be implemented with the assistance of one or more existing NGOs in Rajasthan, under the supervision of the IIHMR and MSH.
- The retail outlets would be managed by an NGO with experience in managing health care and self-sustainable business operations.
- Baseline studies would be conducted in order to measure the impact of the operations over time.
- The progress of the project would be closely monitored to ensure efficiency and transparency. A financial audit firm would also be utilized.

Products and Services

- A total of about 200 products would be stocked in the outlets.
- Product categories would include pharmaceuticals, medical supplies, basic diagnostics, and household products.
- The product list for each of the stores would be customized; some core products would be common to all stores (based on epidemiology, need).
- Product quality would be tested by independent laboratories to ensure quality.

- Products would be presented in clearly identified packages (privately labeled generic products).
- Products would be sourced mostly within India and all suppliers would be prequalified.
- All outlets would be required to keep patient records and provide counseling to patients.
- The outlets would also participate in various centrally operated vertical schemes, for example, TB, distribution of drugs for leprosy, malaria, and HIV.
- Standard treatment guidelines and an essential drugs list would be used.

Sales

- All product prices would be clearly displayed outside the pharmacy to ensure transparency.
- It is estimated that average outlet prices for drugs would be approximately 50 percent below MRP prices.
- To break even, it is estimated that retail outlets would need to serve 80 patients per day, each spending INR 20 per visit.
- To promote sales at the facility and to attract consumers to visit the PHC and the outlets, the project would establish co-marketing and co-sales agreements with social marketing firms established in India, leveraging their direct sales force and advertising.

Information, Education, and Communication

- The overall objective of IEC activities is to empower consumers and promote rational drug use and use of generic drugs.
- IEC activities would be targeted at prescribers, dispensers, and consumers.
- Activities would involve mass media (TV, radio, print).
- Other channels would include press conferences, street theaters, communication specialists, government and private health workers, and *panchayati* meetings.
- Activities would be conducted in coordination with UNICEF, Population Services International, and local NGOs.

Training and Education

- The project would play a significant role in training and education of project employees, government officials at PHCs, and consumers.

- Training and education would be conducted with traditional media (books, teachers) and through the use of interactive media, leveraging the intranet and Internet networks.
- Various NGOs are already actively pursuing training and education and could extend their message to include issues relating to rational drug use.

Benefits for the People and GOR

The intervention would be expected to significantly—

- Improve geographic accessibility: a large number of patients bypass poorly functioning PHCs and travel to CHCs and DHs that are farther away. Efficiently operating PHCs would therefore indirectly increase geographic accessibility for patients, decrease the burden on CHCs and DHs, and better leverage GOR investment in the existing PHCs.
- Increase availability of medicines and information in PHCs.
- Improve affordability: by year 3, with 100 retail outlets operating, consumers could save INR 72 million per year (USD 1.4 million).²⁸
- Improve acceptability through IEC activities.
- Enhance quality of products and services.

Timing of the Project

- The first outlet would be operational within four to six months after receiving funding.
- Ten outlets could be operational within 6 to 12 months.
- Measurement of impact would be conducted quarterly, with a major study conducted annually.
- More than 100 outlets would be operational within three to four years.

The Role of GOR

In order for the project to be implemented successfully, GOR would be required to provide the following assistance—

- Allocate land within the compound of PHC units
- Provide authorization to the outlets to supply a limited list of essential drugs and supplies

²⁸ 80 people per day times 300 days per year × saving INR 30 per prescription times 100 outlets / INR 50 per USD 1 = USD 1.4 million savings.

- Reimburse outlets for the cost of products provided to BPL, elderly, and other persons for whom drugs are given free of charge
- Assist in educating, implementing, and enforcing prescribing of generic drugs on the EDL and standard treatment guidelines at the PHCs
- Allow substitution of branded drugs with generic drugs at the PHC outlets
- Develop RMRS in PHCs to link up with the new retail outlets
- Appoint a project director at the Department of Health who would be liaison officer between GOR and the project operators

All of the preceding points fall within the existing guidelines and policies of GOR. For example, under the Private Sector Policy 1996, GOR has the authority to allocate land; authorization to supply registered drugs at a licensed pharmacy is ascribed in the Pharmacy Act; reimbursing outlets for providing products and services to BPLs is already being done by the COOP and some NGOs; encouraging use of essential drugs is part of GOR's Essential Drug Policy.

The Role of MSH

MSH's overall role would be to provide technical assistance, which would eventually allow GOR and the local NGOs to implement the project without external assistance. MSH's assistance would be as follows—

- Collaborate with overall management and eventually transfer to a local organization
- Assist in developing drug supply management tools adapted to the Rajasthan environment
- Assist in developing procurement procedures, dispensing standards, training materials, and supervision methods for the project
- Collaborate on quality assurance of drugs procured and distributed through the network
- Collaborate to establish and/or implement STGs and an EDL

It is anticipated that MSH's technical assistance would not be needed after three to four years, as the local NGOs should be able to manage all aspects of the project.

The Role of the Local Implementation Partner

The local NGO would play a central role in the implementation of the project in Rajasthan. Activities would include—

- Coordinate with and inform GOR of progress of the project

- Provide overall management of funds and activities
- Supervise the construction, equipping, and stock management of outlets
- Recruit and train managers; organize training, retraining, and quality assurance
- Provide support for local MSH technical assistance in India

Why This Intervention Makes Sense for GOR, at This Time

- This intervention would be rural-focused and would target GOR’s “priority” group, which includes low-income and BPL populations.
- The project would improve health care delivery through rational prescribing, dispensing, and counseling.
- It would significantly reduce out-of-pocket expenditures for drugs, which are estimated to constitute more than 60 percent of health care costs in rural areas. On average, drugs would be priced 50 percent below manufacturer’s retail price.
- Finally, the project works closely with PHCs, which are an underutilized, widespread asset—they occupy more than 1,600 buildings and employ 12,800 staff. It is anticipated that the project would revitalize the PHCs and reduce the caseload ofn CHCs and DHs.

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Timetable

- April 23 (Monday) a.m. – SEAM-India arrives in Jaipur
- April 23 p.m. – Meet with IIHMR to discuss selection of districts and sample size
- April 24 – Adapt data collection forms and develop tracer drug list
- April 25–27 – Train field investigators and adapt questionnaires
- April 26 – Pilot instruments and make final adaptation of questionnaires
- April 27 – Photocopy and translate final data collection forms into Hindi
- April 28 (Monday) a.m. – Distribute forms and final instructions; review timetable for data collection in each district
- April 28 p.m. – Field investigators leave for field
- April 29–30 – Data collection starts
- May 1–4 – Quality control teams leave for field
- May 4–14 – Use data collection forms at Jaipur SMS Hospital (state hospital and tertiary referral center)
- May 14–15 – Data collection complete
- May 15–18 – Input data and analyze

Resources

During the study, various types of questionnaires and data collection forms were used—

- Questionnaires for Central Medical Store
- Questionnaires for Regional Medical Store
- Questionnaires for District Medical Store
- Price comparison forms
- List of products sold
- Simulated client
- Prescribing/dispensing analysis
- Patient exit interviews
- Stock-out data form
- Tracer list of drugs

Indicator (Tracer) Items

A limited list of tracer items is a practical tool to quickly assess the status of drug supply for key items. The indicator list should include drugs that are commonly used, cover a range of key therapeutic categories, be available at all levels of a health care system, have a range of dosage forms, and be used by vertical programs important to the study.

The Rajasthan Essential Drugs List, published in 1999, guided selection of drugs for the study's indicator drug list. The list of indicator drugs first included drugs used to treat the most common health problems, based on treatment guidelines, and estimated drug requirements to treat leading causes of morbidity in Rajasthan, by level of facility (primary care and hospital).

A tracer drug list was developed for determining drug availability and price at public health, NGO, and private health facilities. The drugs were selected from Rajasthan's Essential Drugs List and World Bank Drug Kit lists, and represent drugs that are used to treat or prevent diseases and medical conditions that have significant morbidity/mortality or have a high prevalence in Rajasthan (Table A-1).

The selection committee for the tracer list included RSPRUD, IIHMR, GOR Ministry of Health, and the MSH India Team.

Table A-1. Indicator (Tracer) Items

Co-trimoxazole 100/20 mg tab
Mebendazole 100 mg tab
Chloroquine 150 mg tab
Paracetamol 500 mg tab
IFA (iron and folic acid) (large) 400 mcg/60 mg tab
Vitamin A 200,000 IU solution, bottle
Aminophylline 25 mg/ml inj amp
Methylethergometrine 0.125 mg tab
Chloramphenicol applicap, Ct
Oral rehydration salts, packet
Condoms, package
Dicyclomine 10 mg tab
Ethinylestradiol + Levonorgestrel (0.03 mg + 0.15 mg)
Amoxicilline 250 mg cap
Doxycycline 100 mg cap
Metronidazole 200 mg tab
Ringer's lactated IV solution 1000 ml
Nifedipine 10 mg cap
Furosemide 40 mg tab
Insulin, soluble (plain) 40 units/ml, vial
Ampicillin 500 mg injection vial
Gentamicin 80 mg/2 ml vial
Oxytocin 10 IU/ml inj amp
Pethidine 50 mg/ml Inj amp
Dexamethasone 8 mg/ml inj
Praziquantel 600 mg tab

Sample Selection

The state of Rajasthan is divided into six administrative regions. Sample selection for the survey was done by selecting one district from each of the six administrative regions of Rajasthan (Table A-2).

Table A-2. The Administrative Regions and the Selected Districts in Rajasthan

Administrative Regions	Districts Selected
Ajmer	Bhilwara
Bikaner	Hanumangarh
Jaipur	Jaipur
Jodhpur	Jalore
Kota	Jhalawar
Udaipur	Dungarpur

Sample Size

In each district, nearly 27 different health facilities were sampled. The type of facility and the number of different facilities covered are shown in Table A-3. The geographic locations are detailed in Table A-4.

Table A-3. Types of Health Facilities Sampled [AQ: What does "S.No." stand for?]

S.No.	Facility Type	Numbers Covered
1	District hospital	1
2	Subdistrict hospital	1
3	Community health center	1
4	Primary health center	2 (1 in area served by CHC sampled and 1 elsewhere)
5	Subcenter	2 (1 in area served by each PHC sampled)
6	District store/warehouse	1
7	Charitable hospitals/clinics	4
8	Private hospitals/clinics	4 (2 of each type of facility unless not available or not feasible)
9	Private pharmacy	7 (1 near to each public facility sampled)
10	Rural medical practitioners	4
	Total	27

Table A-4. Public Sector Sample Sites

Administrative Division	District	Village/ Town	Facility Type	Total
Ajmer	Bhilwara	Bhilwara	District Hospital	1
		Jahazpur	Community Health Center	1
		Ladpura	Primary Health Center	1
		Mandalgarh	Subdistrict Hospital	1
		Media	Subcenter	1
		Nayanagar	Subcenter	1
Udaipur	Dungarpur	Piplund	Primary Health Center	1
		Bassi	Primary Health Center	1
		Dungarpur	District Hospital	1
		Padwa	Subcenter	1
		Ramgarh	Primary Health Center	1
		Sagwara	Subdistrict Hospital	1
		Samilyaghata	Subcenter	1
Bikaner	Hanumangarh	Simbalwara	Community Health Center	1
		Ayalki	Subcenter	1
		Goluwala	Primary Health Center	1
		Hanumangarh	District Hospital	1
		Kamrani	Subcenter	1
		Pillibangha	Community Health Center	1
		Tibbi	Primary Health Center	1
Jaipur	Jaipur	Chaksu	Community Health Center	1
		Jaipur	District Hospital	1
			Subdistrict Hospital	1
		Khejroli	Primary Health Center	1
		Kotkhavda	Primary Health Center	1
			Subcenter	1
			Subcenter	1
Jodhpur	Jalore	Tigaria	Subcenter	1
		Baghal septa	Subcenter	1
		Bhinmal	Community Health Center	1
		Daspa	Primary Health Center	1
		Jalore	District Hospital	1
		Morseem	Primary Health Center	1
		Rawta	Subcenter	1
Kota	Jhalawar	Garnawad	Primary Health Center	1
		Ghatod	Subcenter	1
		Golana	Subcenter	1
		Hariagarh	Primary Health Center	1
		Jhalawar	Community Health Center	1
			District Hospital	1
			Subdistrict Hospital	1
Total				40

Contents of Drug Kits

Table A-5. Contents of Drug Kit A

No.	Name of Item	Quantity
1.	Oral rehydration salt (ORS)	150 packets
2.	Tablet I.F.A. (Large)	15,000 tabs.
3.	Tablet I.F.A. (Small)	13,000 tabs.
4.	Vitamin A solution	6 bottles or 100 ml each
5.	Tablet co-trimoxazole (pediatric)	1,000 tabs.

Table A-6. Contents of Drug Kit B

Sr. No.	Name of Item	Quantity
01.	Tab. methylethylergometrine maleate (0.125 mg)	500 tabs.
02.	Tab. paracetamol (500 mg)	500 tabs.
03.	Inj. methylethylergometrine maleate (0.2 mg/ml., 1 ml. ampoule)	10 amps.
04.	Tab. mebendazole 100 mg	300 tabs
05.	Dicyclomine HCL 10 mg	250 tabs
06.	Chloramphenicol eye ointment 1 percent w/w in applicaps ointment	500 applicaps
07.	Ointment povidone iodine 5 percent	5 tubes
08.	Cetrimide powder	125 gm
09.	Absorbent cotton*	1 roll
10.	Cotton bandage*	120 roll

* Not procured by HSCC and hence not included in the kits.

Annex B. List of Persons Contacted

Category	Position	First Name	Last Name	Organization	Telephone #
National Government					
	Additional Secretary	Mr. G. R.	Patwardhan	Ministry of Health	3017451
	Joint Secretary	Ms. K. Sujata	Rao	Ministry of Health	3017723
	Joint Secretary	Ms. Bhawani	Thyagarajan	Ministry of Health	3017481
	Joint Secretary	Mr. Deepak	Gupta	Ministry of Health	3018842
		Mr. Ashwini	Kumar	Drugs Controller General of India	3018806
	Dy. Secretary, Donor Coordination	Mr. N. N.	Sinha	Ministry of Health	3017333
	Director, Policy Desk Officer, NGOs	Dr. S. C.	Srivastava	Ministry of Health	3012157
	Under Secretary (Finance)	Mr. Sharabjit	Singh	Ministry of Health	7863966
		Mr. S.	Sridhar	Ministry of Health	3018954
				Ministry of Health and Family Welfare National Pharmaceutical Pricing Agency Ministry of Chemicals and Fertilizers	
				Medical Stores Organization Insurance Regulatory & Development Authority	
Other National Organizations					
		Prof. J. S.	Bapna	DSPRUD	
		Dr. N. S.	Gurbani	RSPRUD	0141-635573 home, before 8AM or after 8 PM
	President	Padma Shri Professor Ranjit	Roy Chaudhury	Delhi Medical Council	11-6162281
	Executive Director	Gajanan	Wanankar	Indian Drug Manufacturers' Association	11-6171367
	Director	Dr. T. K.	Roy	International Institute for Population Sciences National Family Health Survey office	
	ESI Regional Director	F.	Singh	Employees State Insurance Scheme	
	Regional Director	Mr. Nirankar	Singh	United India	743153, 743540

Access to Essential Medicines: Rajasthan, India

Category	Position	First Name	Last Name	Organization	Telephone #
	Deputy Manager	Ms. Neel	Garg	Insurance Co. Ltd. United India	741759
		D. R.	Jani	Insurance Co. Ltd. United India	743540
	Manager	D. K.	Soni	Insurance Co. Ltd. United India	743291
				Insurance Co. Ltd. Central Government Health Scheme	
Government of Rajasthan					
	Chief Minister	Ashok	Gehlote	GOR	381212
	Secretary to Chief Minister		Pandey	GOR	
	Health Minister	Rajendra	Chowdhary	GOR	
	Officer on Special Duty	D. K.	Mangal	MOH	380222 ext 2483, 396386 (H)
	Director of Medical and Health Services	R. K.	Garg	DMHS	
	Joint Director Health Planning	L. R.	Meharda	DMHS	381479
	Personal Secretary to Secretary Health	Hari N.	Sharma		380390
	Director, Public Health	Dr. G. P.	Mathur		
	Statistical Officer, Demography & Evaluation, Family Welfare	Narian	Paliwal	DMHS	
	Drugs Controller	P. N.	Saraswat	DMHS	381670, 336280 (H)
	Statistical Officer (Annual Plan)	Praveen	Kumar	DMHS	
	Director, Family Welfare	P. N.	Swami	DMHS	381780, 380123
	Officer on Special Duty	Avtar	Singh Dua	DMHFW	380123
	Demographer and Evaluation Officer, Family Welfare	Niranjan	Gupta	DMHS	381685
	Statistical Assistant, Family Welfare Programme	Prem	Sharma	DMHS	
	Manager	Dr. R. K.	Dixit		381685
	Deputy Director	Dr.	Gupta	HIV/AIDS Department	
	Secretary	Dr. Bhasker	Sharma	Store Purchase Organisation of State Health & Medical Department	
	Deputy Secretary	Mr. Dharamveer	Verma	Financial Adviser	
	Reader and	Nirmal	Gurbani	Public Health	635573 (H)

Annex B. List of Persons Contacted

Category	Position	First Name	Last Name	Organization	Telephone #
	Principal			Institute	
	Superintendent Stores related	Dr. J. P. Various	Rishi	SMS Hospital SMS Hospital	
	Government Analyst	Yatendra Raj	Mehta	Drug Testing Laboratory	618665
	Stores Officer Clerk	K. B. Virendra	Sharma Singh	Central Medical Stores Central Family Welfare Stores Central Family Welfare Stores	
	Project Coordinator Co-coordinator	Prof. Rameshwar Dr. N. K.	Sharma Gurbani	WHO-EDP Project WHO-EDP Project	
	Managing Director	R. K.	Vashistha	Rajasthan Drug and Pharmaceutical Limited	333827 330740
	Medical Manager	Anil Kumar	Jain	Rajasthan Rajya Sahakani Upbokha Singh Ltd.	742866
	Sales Manager	J. B.	Muchhala	Rajasthan Drugs & Pharmaceuticals	330740
	Registrar	S. C.	Pant	Rajasthan Pharmacy Council	217310 (4-6pm), 511235 (H)
International Agencies					
	Programme Manager, Health & Family Welfare Sector Program in India	Chris	Potter	European Commission	11-6490204 /6490227
	Programme Adviser, Health & Family Welfare Sector Program in India	Indrajit	Pal	European Commission	11-6490204 /6490227
	Programme Medical Adviser, Health & Family Welfare Sector Program in India	Dr. Jean Patrick	du Conge	European Commission	11-6490204 /6490227
	State Facilitator	Mr. Bhandari Dr. Kumkum	Deepak Srivastava	EC/EPOS EC Jaipur	11-6963946 0141 549676 /546816
		Tim	Martineau	DFID Danida	11-6529123 x3458
	(Health Program)	Vic	Barbiero	USAID	
	(Health Program)	Peter	Heywood	World Bank	11-4619491 x102

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Category	Position	First Name	Last Name	Organization	Telephone #
		David	Peters	World Bank	
		Dr. G.N.V.	Ramana	World Bank	11-4619491 x117
	Representative	Francois	Farah	UNFPA, Delhi	11-4628877
	Team Manager, Technical Support Unit	Ventatesh	Srinivasan	UNFPA, Delhi	
		Dinesh	Agarwal	United Nations Population Fund	11-4641631
	Regional Programme Coordinator	Aravind	Pulikkal	UNFPA, Jaipur	381928, 382524
	State Program Officer	Vibha		UNFPA, Jaipur	
		Dr. Rameshwar	Sharma	UNFPA, Jaipur	381928/380277/382524
	Representative	Bob	Kim-Farley	World Health Organization	
		Ranjan	Dwivedi	World Health Organization	
		Palitha	Abhaykoon	World Health Organization	3717804
		Kis	Virasuria	World Health Organization	
	(#2 Delhi) (Procurement) Drugs & Logistics, Health Section	Erma	Manoncourt	UNICEF, Delhi	
		John	Gilmartin	UNICEF, Delhi	11-4690401
		A. L.	Bhuyan	UNICEF, Delhi	
		Dr. Suresth Rekha	Joshi Masilamani	UNICEF, Jaipur Pathfinder India	91 11 335 9908
Medical and Academic Professionals					
	Professor and Head, Department of ENT	Ajit S.	Bapna	Rajasthan Medical Association SMS Medical College	560291/297 (4-6pm)
	Assistant Professor of Pharmacology	Jyotsna	Bhargava	SMS Medical College	703959
	Director	Leela	Mathur	ESI Hospital	340238
Private-Sector Associations					
	President	S. S.	Agarwal	Private Sector Hospitals Association	560215
	President	Vinod	Kalani	Rajasthan Drug Manufacturers Association	211254, 211417, 511793 (H)
	President	K. L.	Sharma	The Chemist and Druggist Association	635818, 633819
	President	Ashok R. B.	Khanijau Puri	The Chemist and Druggist Association Retail & Wholesale Chemist Association	
Private-Sector Businesses					
		Ashok	Khanijau	Premier Enterprises, Jaipur	
		Rakesh	Gupta	Oasis Test House	

Annex B. List of Persons Contacted

Category	Position	First Name	Last Name	Organization	Telephone #	
		Vinod	Kalani	Limited Jaipur Pharmaceutical Works Ranbaxy Manufacturer C Manufacturer D		
		Mr. Vinit	Mittal Bagai	Mittal Enterprises Bagai Sons Distributor C	366725 211771	
		Mr. Dhananjay Kalika	Sharma Prasad	Transport Corporation of India Satyam Infoway Limited Shyam Telelink Limited Bharrat Sanchar Nigam Limited		
	Subdivisional Engineer	Mr. S. S. Anil Kumar Anyan Rajat Vijay	Gupta Jain Roy Arora Sharma	Bharrat Sanchar Nigam Limited Rajasthan RSUS Essar Cellphone Oasis Cellular Data Infosys Limited	742866	
	Manager Medical		Parimal	Kongari	Population Services International Population Services International	382714, 382717
	Director Societies/Charitable/NGOs	Carol	Squire			
	President Former Director of IIHMR	Prof. P. C. Prof. Rameshwar Dr. N. Gurbani Prithvi Rah	Dandiya Sharma Singh	RSPRUD RSPRUD RSPRUD Village Health Benefit Scheme	514219 82222?	
	Technical Assistant	Babu	Lal	Registrar of Societies Office	200836	
	Assistant	Hariom	Sharma	Registrar of Trusts Office, Jaipur Zone	611341	
	Director	Dr. D. D.	Nimannat	Indian Institute for Rural Development, Jaipur		
	Chairman	C. S.	Barla	Indian Institute for Rural Development, Jaipur	700994	
	Former Chairman	Dr. Dr. N. K. Y. S.	Jain Singhi Pundhir	Institute of Development Studies Institute of Development Studies Lok Vitas Shiksham Sansthan, Alwar	347 670/701 544	
	Secretary	Ram B. R.	Babu Mala	Rajasthan Voluntary Health Association Rajasthan Voluntary Health Association Jaipur Health & Management Development	302018	

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Category	Position	First Name	Last Name	Organization	Telephone #
				Institute	
Collaborators					
	Vice-President	Prof. J. S.	Bapna	DSPRUD	
	Secretary	Sangeeta	Sharma	DSPRUD	
	Trustee-Secretary	Dr. Ashok	Agarwal	Indian Institute for Health Management Research	
	Executive Director	Shiv D.	Gupta	Indian Institute for Health Management Research	581431/34
	Associate Professor and Dean	L. P.	Singh	IIHMR	581431-43
	Senior Research Officer	N. K.	Sharma	IIHMR	
	Visiting Professor Community Medicine	Rameshwar Hari	Sharma Singh	IIHMR	581431-34
	Ex Director & Emeritus Professor	Rameshwar	Sharma	IIHMR	
	Economist	Dr. Barun	Kanjilal	IIHMR	
U.S.-Based Contacts					
		Suneeta	Sharma	The Futures Group Int.	202 775 9680
	Lead Human Resources Specialist	Tawhid	Nawaz	The World Bank	202 458 0363
		Sadia	Chowdhury	The World Bank	202 458 1984
		Ramesh	Govindaraj	The World Bank	202 473 2948
	Logistics Adviser	Jagdish	Upadhyay	UNFPA, NY	212 297 5228
	Deputy Director, Asia Bureau	Satish	Mehra	UNFPA, NY	212 297 5075
	Program Officer	Guilia	Vallese	UNFPA, NY	212 297 5090
		Fred	Arnold	USAID	
				Macro International	301 572 0938
		John	O'Neill	Manitoba University	
District-Level Informants					
	Dungarpur				
	Chief Medical & Health Officer	Dr. B. L.	Malvi	Dungarpur	
		Dr. K. S. Mrs. Vijay	Meena Bargeese Laxmi	Bankhora PHC Bankhora PHC Liluasha Sub-Center	
Udaipur	Manager	T. S. B. L.	Bala Porwal	Cooperative TB Madicall, Bani	
Dausa	PMO	Chandra	Goyal	Dausa District	

Annex B. List of Persons Contacted

Category	Position	First Name	Last Name	Organization	Telephone #
Dausa	Pharmacist	Mohan Naresh Kumar	Sharma	Hospital Dist Govt Hospital	21422
Dausa	CHMO	L. N.	Datunia	Dausa District Health Services	
Jaipur	Director	Mohan	Purria	District Gov Warehouse	

IIHMR Trainers

Dr. S. D. Gupta, Director
Dr. L. P. Singh, Dean and Associate Professor
Dr. Barun Kanjilal, Professor
Dr. Hari Singh, Associate Professor

Mr. N. K. Sharma, Senior Research Officer
Ms. Sunita Nigam Senior Research Officer
Ms. Avantika Singh, Research Officer
Mr. T. J. Thomas, Research Officer
Ms. Aruna Bhattacharya, Research Officer

Ms. Parul Tandon, Trainee Research Officer
Ms. Anju Bala, Trainee Research Officer
Mr. Jatinder Bir Singh, Trainee Research Officer
Mr. Surajit Chakraborty, Trainee Research Officer
Mr. Pradeepta Pattanayak, Trainee Research Officer
Ms. Ambalika Singh Markandy, Trainee Research Officer
Ms. Priya, Trainee Research Officer
Ms. Swati Sarbani Roy, Trainee Research Officer
Ms. Soma Mitra, Trainee Research Officer

Mr. Sameer Zuhad, Trainee Research Officer
Mr. Neeraj Mishra, Trainee Research Officer

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