WHY FEWER BELLS TOLL IN CEARÁ:
SUCCESS OF A COMMUNITY HEALTH WORKER PROGRAM IN CEARÁ, BRAZIL

by

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in Partial Fulfillment of the Requirements
for the Degree of

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# ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHW</td>
<td>Community Health Worker</td>
</tr>
<tr>
<td>FUNABEM</td>
<td>Children’s Welfare Fund <em>(Fundação Bemestar do Menor)</em></td>
</tr>
<tr>
<td>GACs</td>
<td>Community Action Groups <em>(Grupo’s de Ação Comunitária)</em></td>
</tr>
<tr>
<td>IPLANCE</td>
<td>State Planning Agency of Ceará</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
</tr>
<tr>
<td>ORT</td>
<td>Oral Rehydration Therapy</td>
</tr>
<tr>
<td>PAS</td>
<td>Health Agent Program <em>(Programa de Agente de Saúde)</em></td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>PROIAS</td>
<td>Program in Integrated Primary Health Care</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>IBGE</td>
<td>Brazilian Institute for Geography and Statistics</td>
</tr>
<tr>
<td>RNC</td>
<td>Regional Nurses Council</td>
</tr>
<tr>
<td>SOCEP</td>
<td>Ceará Pediatrics Society</td>
</tr>
<tr>
<td>SSE-CE</td>
<td>Health Secretariat in Ceará</td>
</tr>
</tbody>
</table>
WHY FEWER BELLS TOLL IN CEARÁ: SUCCESS OF A COMMUNITY HEALTH WORKER PROGRAM IN CEARÁ, BRAZIL

by

SARA BETH FREEDHEIM

Submitted to the Department of Urban Studies and Planning on May 17, 1993 in partial fulfillment of the requirements for the Degree of Master of City Planning.

Ceará is one of the most impoverished states in Brazil having endured hundreds of years of recurring droughts. Political will and clever planning brought rapid changes to this small state. In 1987 Ceará had one of the highest infant mortality rates of Brazil’s Northeast states. By 1992 infant mortality fell to the lowest in the Northeast. Improved health conditions in Ceará gained the attention of people all over the world. In noting Ceará’s achievements, researchers consistently commend the state’s Health Agent Program, Programa de Agente de Saúde, (PAS) which employs 7,000 paraprofessionals to provide primary health care information to most of the state’s population. The current study examines the program and attempts to answer one general question -- why did this program work?

To answer this question this study examines the program’s history, evolution, and specific program features. The study also explores how the program overcame the institutional, political, economic, and social barriers in Ceará, and the obstacles faced by these types of programs. Community Health Worker programs often face barriers when implemented by governments because their large, bureaucratic, and top-down structures do not respond quickly or well to specific, individual community needs. Although PAS is a government program, the program responsibility is divided between the state and municipal governments creating a more manageable program.

The study finds that the program’s good performance can also be explained by the preparation and experience of certain individuals and groups years before the program’s implementation. The program’s linkage to government, and implementation in conjunction with reform of the state’s public health system, is also a key to the program’s success. This analysis points out that the impacts of the program go beyond the reduction of disease by providing lessons in inter-sectoral cooperation, institutional development, political commitment, scaling up, and reform.

Thesis Supervisor: Dr. Judith Tendler
Title: Professor of Political Economy
One of the poorest areas in Brazil shows the rest of the world how to reduce infant mortality dramatically (Time, May 6, 1991).

No country or state has obtained the same dramatic results in the same short period of time (Brazil’s UNICEF representative, Newsweek, September 2, 1991).

Being poor is no obstacle to being well governed (The Economist, December 7, 1991).

1. INTRODUCTION

These comments from articles throughout the world refer to Ceará, one of the poorest states in Brazil’s Northeastern region. Before 1987 one in ten babies died before reaching its first birthday, and Church bells tolled for every lost young life. Most infants died from preventable illnesses such as dehydration from severe diarrhea and infectious diseases. Only 25% of children in Ceará were vaccinated against measles and polio. Today over 90% are vaccinated, and most families now know how to prevent dehydration. Ceará’s infant mortality rate is nearly 35% lower than it was just five years ago, dropping from 100 to roughly 65 per 1000 between 1987 and 1991. The government of Ceará credits its Health Agent Program, Programa de Agente de Saúde (PAS), for saving so many young lives. And today, the Church bells toll far less often.

PAS is a state community health worker program (CHW) which started in 1987 and employs more than 7,000 paraprofessionals to provide primary health care information to most of the state’s 6.5 million people. The team of health agents,
spread throughout the small rural state, far exceeds in number the fewer than 1,000
doctors and nurses in the state’s interior.

PAS shares many characteristics with most of the non-governmental, religious,
and governmental CHW programs that have existed throughout the developing world
since the 1940s. Community health workers are typically local people who undergo
brief training in preventive and some simple curative health care such as perinatal
information, immunizations, oral rehydration therapy, nutritional surveillance,
hygiene, first aid, and other basic health care. They often serve as extensions to their
local health system, earning a small salary to visit homes in their villages and provide
information usually targeted to mothers and children under five. Another role of most
national CHW programs is to fulfill a commitment to increase universal access to
primary health care (PHC) (MacCormack 1983).

In 1978 representatives from most of the world’s nations met in Alma Ata for
the International Conference on Primary Health Care to assert that by reforming the
health system to incorporate PHC, the conditions of poor marginalized populations
would improve. Following the conference, many countries implemented CHW
programs to achieve one of the fundamental requirements of PHC: that the community
participate in identifying and solving its own health conditions.

Despite the enhanced international acceptance of CHW programs, many large
scale national CHW programs have faced serious problems, and criticism of CHW

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1 Countries use different terms to describe their health workers: barefoot doctors, village health volunteers,
family welfare educators, health promoters, rural health aides, or health agents (as in Ceará).
programs has increased (Jancloes 1984, Skeet 1984, Roemer 1986, Bourne 1987, Hammond 1987, Walt et al. 1988, WHO 1989, Gilson et al. 1989.) First, the CHW scheme often does not fulfill the objective of incorporating the community into decision-making and identification of its own health needs (Skeet 1984). Second, the CHWs are not integrated into the current health systems, usually because nations adopt CHW programs as an appendage to their existing systems, without concern for or commitment to universal health reform (Gilson et al. 1989). Third, CHW programs often suffer from minimal political commitment, lack of support, poorly defined functions, and inadequate selection, training, and supervision of health workers (WHO 1989).

The PAS program in Ceará is one of the most effective government CHW programs in the developing world because it has overcome many of these institutional problems and political barriers that plague programs elsewhere. Most striking, the program has contributed to lowering the infant mortality rate within an extremely poor region of Brazil with a legacy of unequal income distribution, recurring drought, political corruption and, perhaps most significant, a health system that has historically neglected the most needy population. The drop in infant mortality, the factor that brought international attention to PAS and also brought me to Ceará to study the program, is one of its many accomplishments.

While PAS is a health program, the findings of this study should interest an audience beyond those immediately involved in health planning and policy, and beyond just the region of Ceará, or Brazil. The Ceará PAS experience contains
lessons on "good government," turning a plan into a program, upscaling,
decentralizing responsibilities, and overcoming institutional and political barriers. For
these reasons, the program has an implication beyond merely reducing disease.

This study explores the historical, political, and institutional achievements of
the PAS program. Throughout my research I was guided by one central question:
why did PAS work so well given the adverse economic, political, and social
conditions in the state? Reviewing literature on CHW programs throughout other
regions gave me a basis for comparison and prompted me to ask the following
questions about the program’s ability to both exist and perform well:

* How did the PAS program manage to scale up from a small-scale pilot
  program to the largest, most successful state program in Brazil when these
  programs are seldom successfully scaled up?

* How did the state implement a program based on non-patronage practices in a
  political context based on patronage politics?

* Why was the state’s governor willing to fund PAS at the same time he was
  making the largest budget cuts in the state’s history?

* Why did the health system, medical professionals, and the community accept a
  preventive health care program when they are much more supportive and
  accepting of curative treatment?

* How did a program, dependent on paraprofessionals deal with resistance by
  professionals to minimally trained workers?

* How was PAS managed so well by the government when CHW programs are
  typically better administered by small-scale, non-governmental organizations?

* How could the state justify employing mostly women in a program that
  provides a wage exceeding many men’s wages in the state’s interior?

* Why were low-paid government employees motivated to perform with energy
  and enthusiasm in a drought-stricken, impoverished area?
* How did the state government convince all of the municipal governments to assume some financial responsibility for the PAS program?

* Why was PAS continued after a drought crisis when all other temporary employment programs in Ceará were suspended?

These questions guided my inquiry into the program. Chapter 2 provides a brief background of conditions in Ceará and then describes some details of the PAS program. Chapter 3 looks at the scaling-up process of PAS from its early pilot stage to its full-scale implementation. Chapter 4 discusses the program’s features that have helped to overcome the institutional, political, economic, and social barriers that such programs face. Chapter 5 poses questions about PAS’s future and lists concretely the central reasons for the program’s success.

1.1 Methodology

This study is based on three months of fieldwork in the state of Ceará, Brazil between June and August 1992. I collected most of the data through in-depth interviews, site observations, materials obtained from the State Department of Health, and other governmental and non-governmental organizations in Ceará (See Appendix 1). I spent one month in Ceará’s state capital, Fortaleza, interviewing administrators of the State Department of Health and medical professionals at the state level. I spent
the remaining six weeks in several municípioos in the state’s interior where the program exists.

The two administrative health regions in which I did most of my research were Iguatí and Crateús because PAS coordinators identified municípioos there as having successful programs (see Table 1.) I also chose them because they were among the first municípioos to implement the program, and had the longest history. I also spent time in Icapuí, a município on the coast that has had the greatest health improvements in the state. In addition I accompanied program coordinators on an all-day selection process of health agents in Geral Sampaio, a município 75 miles from Fortaleza where the state recently implemented PAS.

In most municípioos I spent several days accompanying health agents on bicycle and on foot in their daily visits to families. I observed their work and interviewed both them and the families we met as we traveled along. I also interviewed several families without a health agent present. In total I visited more than 75 households in Ceará.

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2There are three levels of government in Brazil: federal, state and municípioo. There are 4,000 municípioos distributed among 23 states and three territories in Brazil. Ceará has 178 municípioos. A municípioo corresponds roughly to a county, but differs in that it contains one central township and an outlying rural area. The entire municípioo is governed by an elected "prefeito" (mayor) and a dozen or so councilmen called "vereadores."

3There are 14 administrative health regions in Ceará. They generally encompass between seven and 15 municípioos. Fortaleza is the largest region, with about thirty municípioos. Regions carry the name of the largest municípioo.

4These municípioos are in the administrative regions of Aracati and Fortaleza. Their populations are approximately 13,000 and 5,500 respectively.
TABLE 1

POPULATION SIZE OF MUNICÍPIOS WITHIN THE ADMINISTRATIVE REGIONS OF IGUATÚ AND CRATEUS

<table>
<thead>
<tr>
<th>IGUATU</th>
<th>CRATEUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iguatú 75,622</td>
<td>Crateús 66,634</td>
</tr>
<tr>
<td>Jucás 21,104</td>
<td>Ipaporanga 10,850</td>
</tr>
<tr>
<td>Carius 17,545</td>
<td>Independencia 24,033</td>
</tr>
<tr>
<td>Quixeló 15,680</td>
<td></td>
</tr>
</tbody>
</table>

Source: IBGE, 1991

I attended approximately ten large group meetings with health agents, their supervisors and state coordinators and observed more than 50 evaluation meetings between health agents and nurse supervisors. I also spent about two weeks observing, interviewing, and accompanying program nurse supervisors in all of the municípios. I visited more than 20 health facilities and interviewed doctors, administrators, politicians, community leaders, community members, and program beneficiaries. In many of the municípios I stayed with health providers and was able to observe even the most detailed aspects of their lives -- how they lived, worked, interacted with their own families, spent their money, among other things. I learned about their values and beliefs and heard personal stories that helped me form a more realistic understanding of their circumstances. During my last two weeks in Ceará I interviewed additional state program coordinators and attended a state health seminar.
In addition to focusing on PAS, I interviewed people involved with other preventive health care programs to understand their impact on health in Ceará and their interaction with the PAS program. I made particular efforts throughout the research process to ensure that my data were accurate and my procedures non biased by using different sources, visiting different locations, comparing the information with my observations and verifying data through multiple interviews. I checked my findings by changing my research patterns in each new munícipio. For example, in one munícipio I would visit the health center first and talk with health professionals, then talk with the health agents, and then the local leaders and families. In the next munícipio I would visit the families first, then the health agents, then the health staff, and so on. In this way I could sometimes visit beneficiaries and local leaders without the health staff knowing I was there and then other times visit the health staff without the beneficiaries and leaders knowing I was there. I designed this strategy to reduce bias because many of the munícipios are small, in many instances I was the only American who had ever visited them, and news of my presence spread quickly.

Another way I checked my findings was to interview people not linked to the program. It quickly became evident to me that those people connected to the program -- agents, administrators, supervisors, and beneficiaries -- were mostly quite favorable to it. I therefore interviewed several nurses in Fortaleza who were not linked to the program and were critical of it.

I also shared my findings with professors at Harvard’s School of Public Health and Department of Social Medicine, and other medical anthropologists who provided
me with guidance and advice. Because my research is part of a group project at M.I.T., throughout this process I shared my findings with colleagues who challenged me and posed questions that required me to cross-check my data and use additional sources, such as conducting further interviews or referring to the literature.
2. OBSTACLES TO GOOD HEALTH IN CEARÁ

As I accompanied the health agent into the mud house, the stench of urine, dried mud, and burning wood struck me sharply causing my eyes to burn and my breath to become short. A chicken pecking scraps on the floor scurried to the corner of the kitchen as we entered, and a little boy, naked and dirty, stood and gazed at me. His eyes remained glued to me as his pacifier fell to the mud floor and he popped it back into his mouth. His older brother, perhaps four years old, sat next to the oven, smoke pouring around him. I heard their baby sister crying in her hammock and watched as her urine seeped through onto the floor. Their mom finally arrived tired and sweaty with an infant in one arm and in the other the large tin of water she had just collected from the distant stream (Author’s journal, July, 1992, Iguatú, Ceará Accompanying a health agent on her daily visits to families).

This scene contrasts sharply with Brazil’s image as a rapidly industrializing, tropical country known for its exotic food, music, and Carnaval. Yet it typifies the lives of many in the Northeast region of the country where one third of Brazil’s 153 million people live. Brazil’s powerhouse of wealth and growth is concentrated in the south, while income levels, living standards, and health conditions in the Northeast are among the poorest in the world. Brazil’s "economic miracle," which brought increased income to many Brazilians from 1968 to 1974, scarcely trickled down to the poorest in the Northeast and only exacerbated inequity (Horn 1985:50).

Ceará, one of the poorest of Brazil’s nine Northeast states, has borne the brunt of recurring drought in its semi-arid interior where 4,000,000 of its 6,500,000 people live. Before 1987, Ceará had the lowest immunization coverage (25%) of all the Northeast states, and one of the highest rates of infant mortality (102/1000). The main cause of infant death in Ceará is diarrhea, followed by respiratory and parasitic infections, and chronic malnutrition. Low incomes, poor nutrition, inadequate living
conditions, and health services that are inappropriate for most of the population beget poor health conditions in Ceará.

Inadequate and unequal incomes are root causes for poor health in Ceará. More than 65% of Ceará’s land is owned by fewer than 7% of the population (SPCA 1985). Roughly 60% of Ceará’s work force receives less than a minimum wage ($US2/day) and in rural areas, nearly 80% earn less than a minimum wage (PNAD 1989). As a result nearly half of Ceará’s entire population lacks sufficient income to meet basic food needs, and 35% of children up to the age of three years suffer from moderate to severe malnutrition (Pires de Sousa 1992).

Insufficient sanitation and poor infrastructure contribute to poor health. In 1989, 95% of the state’s population had no sewer system, and more than 90% of the rural population in Ceará was without any kind of piped water connection (PNAD 1989). The rural population is particularly disadvantaged in obtaining health care. About 76% of the hospitals and 85% of the doctors and nurses are concentrated in the capital city of Fortaleza with only 20% of the state’s population. In many municípios the only health facility is as much as 30 kilometers from people’s homes, and few people have private transportation. Public transportation is unreliable and costly for many.

Health economists identify that decreased investment for preventive care services coupled with the increase in curative care since the 1940s perpetuates high maternal and child deaths rates in Brazil’s Northeast (Medici 1987, McGreevey 1988, Briscoe 1990). With limited primary health care and a concentration of curative
services in urban centers, the health system is both inadequate and inaccessible to many rural poor. Physician training is overspecialized, oversophisticated, highly technical and therefore inappropriate to the conditions in poor rural areas, which require preventive services in addition to curative care (Horn 1985:59). And in rural areas, health services are generally only minimal general clinic, emergency medical first aid, and prophylactic vaccine services (Galvão 1991).

Another obstacle to good health in Ceará, as in many parts of Brazil, is the political system. Medicine is one of the most political tools used by politicians to influence the population. This is most apparent at the local levels where many mayors secure political support from constituents by providing selected health services to individuals rather than providing universal services. I found in many municípios that instead of purchasing medicines for the hospitals, mayors purchased medicines to keep in their homes. In this way they distribute them to individual community members who in turn promise to support them.

The patron-client system is maintained by a community that is used to it and expects it. An elderly woman in a município related that she convinced her entire family to vote for a political candidate in exchange for medicine and assistance with her house. The politician never lived up to his promises, and she changed her political support when a candidate from a different party provided her with transportation to the hospital in an emergency. A week before I arrived in another município, the mayor fired the wife of a candidate for city council from her job at the hospital. He did this because she questioned why he allowed his son, who was
running for mayor in another town, to use the local ambulance for political
campaigning. Most citizens prefer to keep silent, rather than lose their only
opportunity for income.

Another barrier to better health for the poor is the overcrowded facilities and
often hostile environments. For example, before oral rehydration therapy (ORT)
became accessible early in 1980, people had to travel great distances to receive
intravenous rehydration in an often insensitive atmosphere. In a typical rehydration
procedure in the hospital, mothers are separated from their screaming babies for
several hours while nurses thrust needles into the babys' scalp for a painful
intravenous procedure (Nations 1988).

The universal distribution of oral rehydration has reduced popular demand for
such hospital services, lessening, in turn, the need for the poor to face this treatment.
But in addition to developing techniques that decrease the demand for health services,
Ceará's state government recently has endeavored to make public health services more
broadly responsive and accessible. The health agent program, Programa de Agente
de Saúde, (PAS) is part of this initiative to provide appropriate information to the
poor and create a bridge between the population and its health services.

\footnotesize{5 ORT was not distributed in rural communities until 1982 when the Federal Ministry of Health initiated the
Brazilian National Diarrheal Diseases Control Program (Nations 1988).}
Only a few years ago the church bell would ring all the time for babies who had died. Now we seldom hear it anymore (Woman store owner in Crateús).

People in the backlands of Ceará don’t need statistics on infant mortality to know that fewer children are dying in their neighborhoods. Mothers told me that whereas before 1987 they expected many of their children to die, now they expect all of them to live. This is a dramatic change in a short time.

The scene described earlier of the mother returning home with her baby in one arm and water from a distant stream may typify Northeast Brazil, but in Ceará there are some important differences. The mother in Ceará knows to boil and filter the water she just collected. She has chlorine and knows that by putting in one drop for every two liters of water she can make the water safe for her family to drink. In her kitchen she has a special measuring spoon the health agent gave her to make a simple solution of water, salt, and sugar to give to her child when he suffers from diarrhea. She understands the benefits of breast-feeding instead of using powdered milk, and her health agent reminds her to take her children for their vaccine shots, and, when she is pregnant, to receive a tetanus shot and attend monthly prenatal appointments.

In the other Northeastern states where the PAS program does not exist, the population rarely receives this type of support and information about their health. In a Northeast town near Recife, for example, differing opinions among mothers about how to treat an infant suffering from severe diarrhea exemplify the lack of information and confusion about health and nutrition:
One woman recommended a different powdered-milk formula; another suggested giving the infant a mashed banana; another disagreed, saying that fresh fruit might kill a baby as fragile as this one. The women complained that the local doctors disagree among themselves. Some said to withhold food during an acute crisis of diarrhea, and others said to give food to the infant. No one was sure; everyone was confused (Scheper-Hughes 1992:391).

In Ceará mothers recall that they too were once unsure about how to deal with diarrhea. Whereas many mothers once withheld food from children with it, they now know to feed them. When and from whom did they learn this information? Most have learned it and other health information from monthly visits from one of their neighbors trained as a health agent by a local nurse.

The Programa de Agente de Saúde (PAS) began in 1987 as part of an emergency employment program during a severe drought in Ceará. The program functioned in the most severely hit municípios of the state’s interior. It ended in 1988 when the drought ended, but was so well received that in 1989 the state sustained and extended the program to all of Ceará’s municípios except its capital Fortaleza, where health facilities and medical professionals are more accessible to the poor population. Table 2 shows PAS’s evolution as a temporary emergency program in 1987 to the current state-funded program. The agent-to-family ratio shows PAS’s increasing impact and importance on families in the state from 1987 to 1992. Although workers were not paid in 1988 because the federal funding ended and the state program did not yet begin, many health agents continued to visit homes and educate families, demonstrating the program’s popularity (See Appendix 2, Program Impact).
TABLE 2
GROWTH OF PAS FROM 1987 TO 1992

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF HEALTH AGENTS</th>
<th>NUMBER OF MUNICIPIOS</th>
<th>NUMBER OF FAMILIES SERVED (approx.)</th>
<th>RATIO OF AGENTS TO FAMILIES (5-member family)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>6,113</td>
<td>128</td>
<td>600,000</td>
<td>1:130</td>
</tr>
<tr>
<td>1988#</td>
<td>150</td>
<td>4</td>
<td>15,000</td>
<td>1:5307</td>
</tr>
<tr>
<td>1989*</td>
<td>1,628</td>
<td>45</td>
<td>160,000</td>
<td>1:478</td>
</tr>
<tr>
<td>1990</td>
<td>3,433</td>
<td>102</td>
<td>340,000</td>
<td>1:216</td>
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<td>1991</td>
<td>4,947</td>
<td>130</td>
<td>495,000</td>
<td>1:164</td>
</tr>
<tr>
<td>1992</td>
<td>7,227</td>
<td>177</td>
<td>800,000</td>
<td>1:112</td>
</tr>
</tbody>
</table>

# The program did not continue officially in 1988; however, roughly 150 health agents continued working without pay.
* In 1989 the state re-initiated the program with state funds as part of a movement for health reform in the state.

In Ceará's PAS program, more than 7,200 health agents currently visit the roughly 800,000 families in the state's interior. With approximately 64% percent of the state population living in the interior (4.1 million), each health agent is responsible for between 80 and 225 households, averaging 112 families per agent.

Figure 1 illustrates the pyramid structure of the PAS program. At the bottom are the 7,227 health agents who provide the health education. The state pays health agents a minimum wage (US$2/day) to work eight hours a day in the município where they live. They report to nurse supervisors who typically work for and live in the município in which they work. Municípios have between one and four part-time nurse supervisors depending on the number of health agents, with a total of 225 supervisors.
FIGURE 1

ORGANIZATIONAL STRUCTURE OF PAS

STATE SECRETARY OF HEALTH

HEAD COORDINATOR
(Nurse, paid by state)

COORDINATING TEAM
(4 nurses, 4 social workers paid by state)

TECHNICAL ASSISTANCE FROM UNICEF PHYSICIAN

REGIONAL SUPERVISORS
(14, one for each health region. Most paid by municipios)

SUPERVISORS
(225 nurses, 70% paid by municipios)

HEALTH AGENTS
(7,227 in 177 municipios. Paid by state)

Administered from the state

Administered in municipios
in the state. On average, one nurse supervises 30 health agents, training, evaluating, and managing them. Above the nurse supervisors are nine female state-hired program coordinators who select the agents and administer the project from the State Department of Health in Fortaleza. The state’s Secretary of Health oversees the project. Each of the state’s 14 administrative health regions has a regional supervisor who is often the municipal Secretary of Health, or the supervisor of the largest município in the given regions. Regional supervisors distribute supplies furnished by the state, organize meetings on a regional basis and compile and send data collected from supervisors in each region. UNICEF provides technical assistance to the program coordinators.

Health agents visit between 10 and 15 homes daily; they must visit each family once a month, and more often if there is a pregnant woman or children under five in the household. The agents are between the ages of 18 and 45, and many are literate, having achieved between a second and sixth grade education; 95% are females. The health agents assume a preventive health role, and therefore carry no medicines though they are trained to provide some simple curative treatments for minor cuts and burns. Health agents undertake a variety of preventive health tasks:

6One of the nine (a nurse) supervises the other coordinators.

7All health agents carry a blue backpack with antiseptic cream, iodine, scissors to cut hair and fingernails, soap, a comb, gauze, cotton, adhesive tape, a thermometer, oral rehydration solution packets, a measuring tape to monitor the growth of babies and pregnant women, growth and immunization charts for children under five years, and a card to record information about the household. This includes status of mother’s breast-feeding, mother’s prenatal care, number of deaths and illnesses in the household, family’s access to clean water, and the vaccination status of domestic animals.
* make home visits and organize group meetings on health topics;

* refer people to the health centers for prenatal care, cancer prevention, or severe illness or injury, and other health services;

* vaccinate or assist with vaccination campaigns against diphtheria, tetanus, measles, polio, and tuberculosis;

* teach oral rehydration methods and water treatment to prevent dehydration and diarrhea;

* instruct families about proper hygiene for infants and young children; and

* monitor children’s growth and encourage women to breast-feed and undergo perinatal care.

Agents are unusually dedicated and hard working. Many start the day at 7:00 am, and work until after 5:00 pm, assisting people beyond their required daily eight hours. Several times I arrived in a town and asked a store owner or local leader to see the health agent. Within 15 minutes, she arrived on her bicycle ready to respond to a request for assistance. The health agents know their nurse supervisors well. They meet with them at least once a month, and rely on them for information and problem-solving advice. The nurse supervisors organize monthly meetings and training sessions for their agents. They regularly contact state coordinators to provide them with data or seek advice and information, and the coordinators send supplies to municípios on a systematic basis.

The seeming simplicity of the PAS program hides the complex mechanisms behind its functioning. To select and manage 7,000 health agents throughout the state requires a strong administrative unit. Keeping 177 municípios well supplied and trained requires systematic planning, coordination, and a clear division of labor.
Agents must be well trained and supervised to pass on detailed information to families day after day. The agents must have incentives, feel motivated enough and have the energy to walk, bike, ride horseback, or canoe eight hours everyday. For the program to be effective the community must accept the services and be willing to learn. In turn, the agents must provide a valued service to gain acceptance from men as well as women, to a point where they expect their monthly visits, and know how to contact them when they need them. The program requires the cooperation of health professionals to provide training and supervision of paraprofessionals, and of political leaders to support the program.

All these requirements underscore complexities that most CHW programs have had difficulty managing. Chapter 3 explains how, through political support gained at the state level, the program scaled up and functioned well as a large state program.
3. SCALING UP:  
FROM PILOT PROJECT TO STATE PROGRAM

The failures of CHW programmes can be attributed to inadequacies in their planning and implementation. With notable exceptions, these programmes have not received the support they need (WHO 1989).

Ceará is a perfect example of what can be done, even in the poorest regions, when a competent and dedicated team gets complete support from their government (Time May, 6 1991).

His commitment, prudence, and honesty convinced us he would support us (Miriam Lavor, PAS co-founder, referring to Ceará’s Governor Tasso Jereissati, July, 1992).

The Programa de Agente de Saúde (PAS) began as a non-governmental, pilot program in one of Ceará’s municípios and eventually became the largest state community health worker (CHW) program in Brazil. The program’s scaling-up process is significant because in most countries small-scale CHW programs have seldom successfully been turned into large-scale government programs (Wood 1984, Walt et al. 1989). How did PAS accomplish this? The key to this process was that the PAS founders envisioned it as a government program and part of a movement for health reform in the state from its inception. Three factors that enabled them to link PAS to government and scale up are:

1) through years of preparation they developed a clear concept of the role of the health agent in Ceará;

2) they learned from various pioneer programs in Ceará, and benefitted from these earlier efforts; and,

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1See, for example, the Botswana case in Walt et al. (1990) where the transformation from a successful small pilot scheme to a national program resulted in a less effective program. See also the Tanzania case in Heggenhougen (1987) and the Guatemala case in Heggenhougen (1984).
3) they lobbied intensely to gain support and legitimacy from the medical profession, the community, and the state governor to implement the state-wide program. (See Appendix 3, chronology of PAS)

3.1 PAS: Part of A Health Reform Movement

Many governments implement CHW programs to meet the broad goals of primary health care: to make health care universally accessible and to involve the community in identifying and solving its own health problems (WHO 1989, Wood 1984). A primary reason for PAS’s success was that the program founders had realistic expectations of what the program could accomplish in the state. They envisioned PAS as a component of universal health care and community participation, not as the entire solution. Indeed, they considered that the program could only be universal, effective, and sustainable if two conditions were met: PAS had to be linked to and funded by the public health system, and the health system had to be structured to meet the needs of the population.

The PAS founders believed that without the support of the state health system, the CHW program would lack access to the extended health services and information which it needed to make the expected health impacts. They recognized that basing the CHW program in the health system would legitimize the health agents because their work needed to be supported by the system’s professionals. The health agents could refer patients to the formal health services when necessary, receive on-going training, and influence the system by keeping the medical professionals informed about general community needs. Finally, the founders did not expect PAS to solve all
of the state’s health problem, but believed that, as part of a larger system, PAS would contribute more effectively to improved health.

3.2 Self-Learning and Learning and Benefitting from Pioneers

The decision to link PAS to the government as part of a larger movement for health reform did not evolve immediately, but rather through much preparation, learning, and benefitting from personal experience and other CHW efforts and experiences. The PAS founders moved into decision-making positions within the state government and were ultimately able to implement PAS as a full-scale government program.

The following story describes the determination and charisma of a married couple, born and educated in Ceará, who dedicated their careers to developing solutions to their state’s severe health problems. This story is significant in that we seldom learn about the origins of major political movements, whether they are institutional or governmental. Furthermore, the importance of this story is not the couple’s energy and determination in and of itself, but their linkage to a larger movement both internationally and within Ceará that supported their efforts and sustained their cause.

Carlile Lavor, a physician, and his wife, Miriam, a sociologist, both born in rural Ceará and educated there, were disturbed by the high infant death rate and the lack of basic health care in their state. They were determined to reach the poor in remote areas with preventive health care services and information. They researched
CHW schemes throughout the developing world and were particularly influenced by China’s successful "barefoot doctors", a program in which CHWs are spread throughout China to provide basic preventive and curative health services to the underserved rural populations. In particular, two features of China’s model stood out for them: the "barefoot doctors" were integrated into China’s medical system, and the Chinese government strongly supported the program. They decided that Ceará could benefit from a similar program.

In the 1960s formal health services in Ceará’s interior were virtually non-existent, clinics were sparse and medical personnel scanty. This made it impractical for the Lavors to test out their ideas there. They moved to Brasília which had a more advanced public health care system and implemented a small CHW program in a town outside of Brasília. They worked there for ten years with families and medical personnel to encourage community participation in health and self-improvement.

In the late 1970s, a time when most developing nations formally recognized primary health care and the CHW scheme as a means to reduce high morbidity and mortality, the couple traveled to several countries in South America to learn about other CHW programs. Influenced by the international recognition of primary health care, in 1979 they returned to their hometown of Jucás, Ceará and trained community members to use UNICEF’s GOBI technique (Growth monitoring, Oral rehydration, Breast-feeding, and Immunization), which had already become widely used in CHW programs throughout the developing world.
The Lavors’ experience in Brasília and their exposure to international programs did not entirely prepare them to deal with the severe health conditions in Ceará, however, Miriam Lavor noted that "We walked into people’s homes, their babies’ heads were black with oozing sores, and most suffered from diarrhea. The general hygiene was so poor that we realized the population would benefit by starting with basic information and care." Thus, she determined, in addition to performing the GOBI techniques, the health agents would carry scissors to cut children’s hair and fingernails, and soap to wash infants. The health agents in Jucás, earned a small wage with funding from the state agency, FUNABEM, Fundação Bemestar do Menor (Children’s Welfare Fund). The dozen agents learned rapidly to teach oral rehydration and breastfeeding and worked diligently. After several years, as health improvements became noticeable, the Lavors were ready to expand the program. Yet before garnering the political support necessary to scale up the program, they had more learning to do: this time from other CHW programs within Ceará.

The Lavors found that CHW programs had existed in Ceará since the 1940s. Table 3 shows that, like PAS, all of these programs teach community members to provide preventive health care, mostly to young mothers and children. The Lavors learned from the strengths and weaknesses of these earlier programs, adopting the successful aspects and taking alternative approaches to strengthen the impact and efficacy of the PAS program.
<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>FSESP</th>
<th>PROIAS-VIVA Programs</th>
<th>PASTORAL DE CRIANÇA</th>
<th>PROGRAMA DE AGENTE DE SAUDE (PAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUNDING</strong></td>
<td>Federal Government</td>
<td>Federal university, Project Hope, AID, and Kellogg Foundation Funding</td>
<td>Catholic Church</td>
<td>Ceará government UNICEF**</td>
</tr>
<tr>
<td><strong>BEGUN</strong></td>
<td>1942</td>
<td>1975</td>
<td>1982</td>
<td>1987</td>
</tr>
<tr>
<td><strong>WORKER</strong></td>
<td>Visitadora</td>
<td>Traditional Healers</td>
<td>Volunteer Leader</td>
<td>Health Agent</td>
</tr>
<tr>
<td><strong>MAIN TASKS OF WORKER</strong></td>
<td>Provide child and maternal health info. in health posts</td>
<td>Retrained to perform safe birthing methods, GOBI#</td>
<td>Provide GOBI, and religious messages house to house#</td>
<td>Provide GOBI house to house#</td>
</tr>
<tr>
<td><strong>SALARY</strong></td>
<td>less than minimum wage</td>
<td>1/2 minim. wage to CHW</td>
<td>no pay</td>
<td>minimum wage</td>
</tr>
<tr>
<td><strong>SIZE</strong></td>
<td>Number of municípios</td>
<td>38</td>
<td>26</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>3-4</td>
<td>N/A</td>
<td>5-9</td>
<td>20-130</td>
</tr>
<tr>
<td></td>
<td>130 workers</td>
<td>502 TBAs*</td>
<td>167 THs*</td>
<td>500 workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80 CHWs (749 total)</td>
<td></td>
<td>7,227 agents</td>
</tr>
</tbody>
</table>

* THs, TBAs - Catholic healers and traditional birth attendants, or midwives.
** UNICEF provides technical assistance
# GOBI- Growth monitoring, oral rehydration, breast-feeding and immunization.
An important difference between PAS and the Special Public Health Services Foundation (FSESP) is that PAS emphasizes home visits of health agents while FSESP does not. FSESP trains community members to vaccinate and provide basic curative and preventive care, and the FSESP agents (visitadoras) spend most of their time in health posts. In contrast, the Lavors realized that because many people lacked both time and transportation to visit health centers, and because many distrusted the health services, health agents would reach more people and be more effective by visiting homes. In addition, FSESP pays its health workers less than a minimum wage while PAS raises the status of its workers by paying one full minimum wage. Currently the PAS health agents spend 90% of their time visiting roughly 72,270 homes every day (about 800,000 families).

PAS differs in two important ways from Ceará’s largest non-governmental child and maternal health program, Pastoral da Criança (Child’s Commission). PAS pays its health agents and, health agents provide no religious information. Supported by the Catholic Church, the Pastoral da Criança began throughout Brazil in 1982. Nuns in each município supervise the program and engage nurses who train volunteer community members to perform the same tasks as PAS health agents. Unlike PAS, however, the program includes Catholic teaching, and the use of herbal medicines and alternative foods. The Lavors wanted PAS information to be free from religious messages. The Lavors also decided they would give health agents full-time paid

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2FSESP (known as SESP Special Service of Public Health before 1960) was Brazil’s first public health effort. It was established by the U.S. government during World War II to improve health conditions of the work-force employed in extracting raw materials for the war effort (Horn 1985:49) The FSESP program concentrates its efforts in Northeast, Brazil.
employment to reward their work. As Table 3 shows, the 7,227 PAS health agents working eight hours per day visit far more families than the roughly 500 volunteers from *Pastoral da Criança* who work one or two hours per day. Research findings showing that voluntary programs have high attrition rates and limited sustainability, make a strong case for paying health workers (Walt 1988, WHO 1987). Most CHWs earn a small wage from either their government or fee-for-service from beneficiaries.

The PAS program also differs from the third program, the Integrated Primary Health Care Program (*Programa de Ações Integradas de Saúde* - PROIAS) which emphasizes using religious healers. Nearly 85% of the people in Ceará rely on traditional healers such as midwives, Catholic healers, and herbalists to deliver infants, perform spiritual ceremonies to eradicate disease, and prepare herbal teas and homemade remedies (Nations 1989). Because of this, the director of the University Maternal Hospital in Ceará founded PROIAS to retrain existing traditional healers to provide preventive health information. In 1985 Project Hope, a USAID-supported non-profit organization collaborated with PROIAS to teach traditional healers to incorporate oral rehydration therapy into their practice. The program also trains roughly 80 community health workers (four/community) to provide health education.

The Lavors, nevertheless, viewed the health worker as someone who should be able to relate to both traditional and modern medicine and to provide information free of religious or spiritual messages. While PAS does not prohibit the use of traditional

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3This program was carried out by two medical anthropologists, Marilyn Nations from the University of Virginia, and Maria Auxiliadora de Sousa, Chief of the Anthropology Department of the Federal University of Ceará.

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healers, the program attracts many women who have not previously been involved in healing, and gives priority to those candidates who are literate, below the age of 45, and physically capable of biking or walking eight hours per day. These requirements eliminate many Catholic healers, although some midwives are health agents. 4

My field research provided other observations about the traditional system as compared to PAS. While traditional medicine has important lessons for modern practitioners, and while many medical anthropologists rightly elucidate the value of traditional methods, religious traditional medicine has significantly influenced people’s values, knowledge, and behavior regarding the origins and treatment of disease. Anthropologists seldom point out the possible drawbacks of traditional healers in limiting people’s questioning of disease.

Healers who use Catholic teaching as the base for their practice reinforce people’s sense of powerlessness to control disease by making God responsible for illness. Because people believe disease is something over which they have limited control, they do not question its possible origins or their power over their own health conditions. For example, I found that often a woman would interpret her baby’s diarrhea as God’s will and therefore out of her control. When I asked women how many children they wanted they consistently replied, "however many God wants." The inability to control one’s health is reinforced by Catholic healers who "cure" people through mysticism and "God’s powers."

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4I do not have the percentage of midwives working as health agents. In all the municipios I visited, I found a few midwives employed as health agents. In my interviews I learned that midwives are highly respected and valued by the community, health agents, and nurses.
Also, teaching traditional healers to incorporate health tasks into their repertoire reinforces the mystification of a simple, non-mystical procedure. For example, when traditional healers teach oral rehydration therapy they perform rituals which add a level of mysticism to a simple procedure. The health agents, in contrast, provide direct information that is not spiritual or complicated. Furthermore, agents don’t provide religious explanations for disease. They engage people in discussing the lack of public services, inadequate housing, the food deficiency, and other issues that affect people’s health conditions. While this observation requires further investigation, my field experience indicated that the PAS program’s non-religious approach may lead people to better understand and control their own health.\(^5\)

For the Lavors, the precursor programs introduced the CHW concept to Ceará, provided lessons for the PAS program, and paved the way for implementing the state program. The earlier programs boosted the acceptance of PAS by the government, medical professionals and the general population. They demonstrated the importance of primary health care to reduce illness and death. They also laid the groundwork to prepare medical professionals and the general community to accept paraprofessional care. According to the head administrator of PROIASS, doctors initially criticized training paraprofessionals to provide even basic health care. He recalls that this criticism dissipated as doctors saw the benefits of CHW work.

\(^5\)Heggenhougen and Gilson (1992) use examples from Tanzania to show that people’s health needs are quite complicated and unpredictable and that they will often use multiple sources ranging from Western to traditional medicine to treat illness.
Another benefit of the earlier small-scale programs was that their administrators generously offered their expertise. For example, when the Secretary of Health first implemented PAS he and his staff met with leaders of PROIUS and Pastoral da Criança for advice and to exchange information. He set the stage for open communication and cooperation. As a result, PAS uses the same means of data collection as Pastoral da Criança. These programs also provided a pool of trained and experienced health workers for PAS to draw upon.

Yet one question is left unanswered. Given that these programs still exist and have been successful on a small scale in the state for many years, why was it PAS and not one of them that scaled up to become a large state-wide program? The next section answers this question.

3.3 Linking to Government

Often health professionals or political leaders implement ad hoc programs to make up for the shortcomings of inappropriate or inaccessible health services and do not link the program to the local government-based health system. While many health professionals agreed that Ceará needed a reformed health system that provides basic health care, they did not believe that the government could initiate change. Thus, rather than pressuring government to improve the inefficient public health system, they established non-governmental organizations (NGOs) such as PROIUS and Pastoral da Criança. Because these are based in financially-constrained voluntary institutions, however, they lack the capacity to scale up. Furthermore, the NGO
program administrators firmly believed they would lose quality control if their programs grew, and were linked to a large, bureaucratic government system. As described in section 3.1, PAS founders were unusual in that they envisioned the government as the program's institutional home.

After 20 years of experimenting and learning, the Lavors decided on a rather radical strategy to garner the government support they needed to implement a state-wide CHW program. They became politically active. The approach of the 1985 gubernatorial election provided an opportunity to interest Tasso Jereissati, a candidate for governor, in their ideas about health reform and the CHW program. Their support for him was a *jogo no fogo* ("shot in the dark") (interview with Miriam Lavor, July 1992) because they did not know him and were not certain of his intentions. His slogan *Movimento Pro Mudanças* ("Movement For Change") and his representing the modern urban industrial model rather than the traditional rural elite paralleled their own hopes for Ceará. Furthermore, they knew the other candidates, all *Coronets* (the rural elite that dominated state politics) would be unsupportive.

One of the most important strategies they used to gain Jereissati's support was to elicit backing from medical professionals in Ceará. Every weekend, Dr. Lavor traveled 14 hours by bus from Jucás to Fortaleza and back to build a coalition. The coalition began with six doctors, all committed to building preventive health care throughout the state. They would continue to work for years as a team to push for state health reform. The Lavors' linkage to other progressive, highly motivated medical professionals throughout the state demonstrates that their efforts were not
isolated, but rather, part of a larger movement for health reform in the state. Three of the original six doctors, including Dr. Lavor, eventually became Secretary of Health for the state.

The team of six doctors soon grew to over 200 health professionals including nurses, social workers, and other health professionals who formed a council for Jereissati’s campaign. The council agreed that the current health system was not improving the state’s health conditions or responding to the real needs of the poor. They endeavored to shift decision-making control over health spending from the federal to the state and eventually to the municipal level to make health services more responsive and accessible to the population. The health agent program was considered an important component of this effort to decentralize health to more appropriately meet the population’s needs and avoid slow bureaucratic decision-making at higher government levels.

Because medical professionals are highly visible and influential in communities, they helped Tasso Jereissati win the election. In appreciation, the new governor appointed Dr. Lavor as Secretary of Health. With support and advice from both the governor and members of the council, he initiated two changes. First, he initiated a movement to decentralize health services. Second, he created an educational program to increase awareness about the importance of primary health care among the population and health professionals.

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6 In August, 1992, 88 of the state’s 178 municípios were decentralized.
The push for decentralized services actually began at the national level, as a larger movement for health reform in Brazil beyond Ceará. Dr. Lavor and the governor joined a national Public Health Movement (*Movimento Sanitarista*) with other reformers (mostly doctors) throughout the country to universalize health services and decentralize the system. Under the national plan, health funds from payroll-based social security and other government revenue would be transferred from the federal to the state government, instead of federal government distributing funds directly to health centers from the federal level. The plan:

1) allowed people to have most of their medical problems resolved at the nearest health or clinic instead of having to use high-cost hospitals;

2) unified and reallocated resources in favor of more cost-effective preventive services and simple curative services at the non-hospital level, and;

3) opened up the health care system, making it free of charge to all persons, irrespective of whether they are employed or affiliates of the social security system.

With pressure from governors and medical professionals throughout Brazil, in mid-1987 the federal government launched the health reform agenda, and by 1988 it was officially added to Brazil's 1988 constitution (Melo 1992).

Although this federal initiative prompted other state's to decentralize their services, no state in the Northeast was as committed to reform as Ceará. Dr. Lavor prepared Ceará for the PAS program by initiating a reorganization of the health delivery system. He merged health organizations that were performing duplicate tasks and gave local community leaders increased decision-making power over the health spending in their *municípios*. He required that each *municipio* appoint a Secretary of
Health, allocate 10% of its own local budget to health, and establish a health council based on popular participation. The health council, led by the município’s Secretary of Health, was to decide how to spend the health budget. The PAS improves this system by keeping people educated about health, and maintaining a flow of information within the population.

The state governments’ second initiative was to raise awareness among the population and medical professionals about the importance of primary health care. In 1987, the state launched Viva Criança (Long Live the Child) which continues today. The state government lobbied corporations to fund the program which 1) organizes primary health care (PHC) television and radio campaigns, and 2) provides PHC training to medical personnel to increase vaccination and oral rehydration therapy.

The governor convinced the state’s medical schools to require students to take courses with Viva Criança medical staff before taking their medical board exams, to learn to incorporate preventive health care techniques into their own practice.

The educational campaign serves PAS in two ways. First, it underscores the importance of primary health care, legitimizing the health agents when they visit families. Second, the campaigns strengthen support from the medical community by making primary health care an important component of health care.

This decentralization process and the educational campaigns prepared the state for the PAS program, and in March 1987 the governor included the Program de Agente de Saúde in the Governor’s State Plan. One complication inhibited beginning the program, however; the state couldn’t afford it.
3.4 Seizing Opportunity Through Drought Emergency

After his election, Tasso faced serious economic problems and fired roughly 40,000 (27%), mostly "phantom" civil servants, of the 150,000 employed by the state. These sharp budget cuts made it inappropriate to hire between 5,000 and 7,000 health agents required to work in all of the state’s munícipios. Thus, to continue experimenting with his model, Dr. Lavor set up a small health agent program in Fortaleza and trained low-level state employees, mostly state hospital aides and cleaning staff, as health agents. This meant that additional funds were not required to pay them.

In 1987, a severe drought hit Ceará, causing high unemployment and increased incidence of malnutrition and diarrhea, especially in the rural interior of the state. In response to these conditions, the federal government allocated funds to Ceará for one year to employ approximately 200,000 of the poorest people (roughly 5% of the state’s interior) in infrastructure jobs for approximately half a minimum wage (US$1.50/day).8

Because drought is common in Ceará, the emergency employment scheme was not new. For years the federal government had transferred funds to employ temporarily the poorest to construct small dams, reservoirs, bridges, roads, and other

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7For years prior to 1985, state governors employed hundreds, perhaps thousands of "phantom" workers to retain additional finances at the state level to use at their discretion.

8It is unclear what health agents actually earned during the emergency employment scheme. In interviews, respondents claimed to have earned half the minimum wage; documents state that the wage was the full minimum wage (Carneiro Telês 1988).
construction jobs. But during this emergency the state broke with tradition in two ways. First, the state implemented a health project as part of the employment program. This temporary "boom" in funding, the increased health risks of the drought, and the readiness of the Secretary of Health to implement a health worker program, made implementing the PAS program a prudent decision. The governor allocated a portion of the federal money to employ roughly 6,000 health agents in the 118 municípios most severely hit by the drought.

Second, the state employed women on a wide scale in an emergency program that historically gave priority to men. The governor and Dr. Lavor agreed that employing primarily women as health agents was appropriate given that most of the information and services they provide are for women and children. They were further justified in employing women because as Dr. Lavor noted, "women really are the poorest of the poor, and the purpose of the emergency program was to employ the poorest." This decision set the precedent for employing mostly women as health agents in the sustained program, and partly answers the question: how could the state justify employing women at a wage that exceeds many men's wages in the interior? In general, while program administrators worldwide often prefer to employ women as health workers (because their central tasks are to inform women and children), some programs employ mostly men for several reasons. In some cultures it is unacceptable for women to work outside the home. The task requires some literacy and in some regions few women are literate. Some tasks may require hard labor such as building

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9See Wade (1993) for a complete description and analysis of Ceará's drought emergency program.
latrines or sewer systems. In Ceará, however, the nature of the health worker’s task, the general acceptance of women working outside the home, and because the literacy rate in Ceará is higher among women (50%) than men (40%) (PSSNB 1991), the obstacles to hiring females in other CHW programs did not exist in Ceará. The temporary program established an example for accepting female health agents, so when the state re-initiated the program in 1989 with its own funding, most of the women were already in place as health agents.

3.5 Pressure to Continue PAS

During the temporary emergency program, the health agents visited families at least once a month to provide information about pre-natal care, breast-feeding, oral rehydration therapy, and vaccination. Health conditions improved noticeably, and the population reacted positively to the program. Medical professionals and community members relate that with oral rehydration therapy and increased breast-feeding, the incidence of diarrhea decreased and fewer children were dying. When the emergency program ended in 1988 the community\(^{10}\) reacted strongly. They asked local politicians and health personnel (mainly council representatives, nurses and social workers) why the program ended and whether it would continue.

\(^{10}\)I refer to the "community" often throughout this study. It should be noted that communities, by nature, are not monolithic. Not all community members share common interests, beliefs and needs, although they may share living space and are subject to laws of the same government. In discussing actions or beliefs of the "community," I refer to the general picture I formed from my interviews and observations in a given município or area.
Pressure of this kind is unusual. According to Tendler (1982), projects such as irrigation or electricity, which have a conspicuous physical structure with clear impacts on producer incomes, consistently garner more community support than less visible social programs such as nutrition, basic sanitation, or health. For example, recipients of prenatal care may never realize that it resulted in a safe pregnancy. Because the benefits of such care are not apparent, they are unlikely to pressure for the program’s continuation. Another reason social programs are less valued by the community is that they tend to improve conditions in the household (the female domain in most countries) while production-generating activities benefit income (the male domain). In most countries, the productive activity of men is considered more important than women’s non-productive activities.

Because of high unemployment during the drought, the emergency jobs were highly valuable and therefore visible throughout the state. Thus, when the emergency program began, the problem with PAS was not visibility, but gaining the acceptance of the beneficiaries. Many people associated health agents with the often hostile and burdensome health system; they did not trust the health agents’ advice and resisted them. Health agents reported that many families refused to let them in or would hide their children when they came. People would ignore the agents' advice to use oral rehydration therapy or immunize their children. They reasoned that because no one in their family was vaccinated, and they survived, that their children need not be vaccinated either.
Gaining the community’s trust was the most difficult initial task for the agents. One agent remembers the resistance, but says she kept pushing. "I continued to go house to house even when the doors slammed on me. From my training, I could see how important the information was. Besides, I was paid to educate people." A few families accepted them, and soon others began to see the direct benefits of using oral rehydration therapy. When the newly vaccinated babies did not die immediately from a common ailment, the word spread quickly that the agents' advice improved things.

Another important factor in gaining community support was that agents provided comfort and assistance to lonely and overburdened mothers. Because they visited homes during the day when the mother was there with young children, agents would sometimes assist with the cooking or cleaning. The agent was a source of solace to mothers who would often share her problems with the agent. One mother I interviewed recalled that;

Veronica (health agent) has been coming to our house for five years. I expect and look forward to her visits. She shares important information with me about my family’s health and nutrition, and sometimes she gives me a hand preparing meals or with my little ones. She is a true friend, and has done more for us than she will ever realize.

The program’s rapid results in health improvements, and the compassionate style of the health agents increased the community’s acceptance of the program, and made families feel they now had a right to the agents’ information and assistance. Because the emergency PAS program existed for a year in over 70% of the state’s municipios, a majority of the state’s communities became convinced of its importance and lobbied.
the government to continue it. This pressure to continue PAS is unique considering, as mentioned earlier, that communities seldom push for health projects.

3.6 Instituting the PAS Program

He [Governor Tasso Jereissati] could have chosen, after all, to implement a sanitation project, but the engineers were not prepared. The doctors were. It was simply our readiness that swept our program into the state plans (Dr. Carlile Lavor, July 1992).

The state made PAS a permanent program in 1989. It was the only employment project that continued after the emergency program ended. Community pressure was not the only factor that convinced the governor to re-initiate the program with state funds. He was also persuaded by the rapid results and the low cost. The PAS program, at $1 per capita per year, was improving health conditions more swiftly than the country’s centralized health care system which cost more than $80 per capita (McGreevey 1988.)

To quickly establish the temporary program in 1987, the state set up an innovative selection process to prevent local politicians from selecting health agents for their own political interests. To choose the health agents in each município an agricultural extension agent and a member of a local community action group (GACs,

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11 McGreevey (1988) says that Brazilian experts differ in their estimates of public and private health spending, ranging from 3.9% to 4.3% of GDP. He uses figures that estimate that health care costs would reach $12 billion by 1987. The total cost of the program is roughly $6,000,000 per year.
Grupo de Ação Comunitário\textsuperscript{12} organized the community to choose the poorest unemployed people, and the GACs then selected the health agents. Coordinators recall that during the emergency, "Although the selection with the GACs was set up to be fair, and participatory, the mayors still exerted tremendous influence over the process." For the permanent program in 1989, the governor and Secretary of Health modified this process.

\begin{table}
\centering
\caption{DIFFERENCES BETWEEN THE EMERGENCY PROGRAM AND THE STATE-FUNDED PROGRAM}
\begin{tabular}{|c|c|c|}
\hline
\textbf{1987} & \textbf{1989} \\
\hline
\textbf{Emergency Program} & \textbf{State Program} \\
\hline
\textbf{Funding} & Federal government & State government \\
\hline
\textbf{Supervision} & Dependent on volunteer doctors, nurses, social workers, dentists. & Nurses hired in municípios where no nurse existed. \\
\hline
\textbf{Selection} & Health agents selected by GACs\textsuperscript{*} with community input & Health Agents selected by coordinating team with minimal community input \\
\hline
\textbf{Training} & 15 days & 3 months with on-going training \\
\hline
\textbf{Tasks} & Tasks limited to oral rehydration therapy, vaccination, and breastfeeding & Same as Emergency Program, but also growth monitoring, water treatment, prenatal care, charts \\
\hline
\textbf{Additions} & & Uniforms, different modes of transport: bicycles, donkeys, canoes \\
\hline
\textsuperscript{*}GACs - Community Action Group (Grupo de Ação Comunitário) \\
\hline
\end{tabular}
\end{table}

\textsuperscript{12}The GACs comprised 12 representatives from the mayor's office, city council, service clubs, religious organizations, rural worker's union, the state agricultural extension agency, and the municipal secretaries of health, education and social action. See Wade (1993) for a full description of the GACs.
Table 4 outlines some of the differences in funding, selection, supervision, and training between the temporary emergency program and the permanent state program. Instead of having the GACs select the health agents, the Secretary of Health assigned five nurses and social workers\(^\text{13}\) already employed by the state Secretary of Health to coordinate the program at the state level and select health agents based on their skill, enthusiasm, and potential to educate their neighbors. When the permanent program started all of the 6,113 health agents selected by the GACs during the emergency had to go through the new selection process with the coordinating team to be considered.

Supervision also changed. During the emergency, supervision was precarious. The coordinators traveled throughout the municípios to motivate dentists, doctors, nurses, or social workers who lived in the municípios to volunteer to train health agents for two weeks, and supervise their work. Once the governor sustained the program, each município was required to hire a nurse to supervise and train health agents which, as explained in the next chapter, had a significant impact on PAS.

Lessons from the emergency program helped the governor and Secretary of Health find ways to reduce political patronage, increase professionalism and commitment of workers, and led to a uniquely structured government program. State employed health professionals oversee and administer the program and employ the health agents, but the município employ the agents’ supervisors. We now turn to explore why this cooperation between governments has worked so well.

\(^{13}\)The Lavors decided to include both nurses and social workers as program coordinators to give the program a balanced, interdisciplinary nature.
4. SUCCESSFUL FEATURES OF PAS

The transition from the temporary program to the sustained program was not completely smooth. In order to implement PAS during a time when he was making the largest budget cuts in the state’s history, the governor had to make some compromises. In the first section of this chapter I describe how financial constraints at the state level required him to assign partial responsibility for the program to local government. This division of responsibility between the state and municipal governments, while emerging from constraints, made the program more manageable and less bureaucratic. I then describe other features of PAS and how they have contributed to worker performance and/or avoided problems common in other CHW programs. They are: the selection process, the support of paraprofessionals by professionals, the use of curative care, and the program’s data collection process.

4.1 Divided Responsibility With Municípios

To retain complete control over PAS, the state Secretary of Health wanted the program coordinators, supervisors, and health agents to be state government employees. Financial constraints, however, compelled the governor to request that the municípios employ some of the staff. The nurse supervisors and health agents constituted the greatest program cost (see appendix 4). The governor was willing to assume 85% (approximately US$5.2 million) of the program cost by paying for the health agents’ salaries and supplies, but requested that the municípios assume 15% (roughly US$800,000) of the program cost by
employing the nurses to supervise the health agents. The program coordinators were already state employees and posed no additional expenditure.

The governor’s decision was based on three reasons. First, employing one or two nurses is less of a cost burden for financially weak municípios than employing between 30 and 150 health agents.\footnote{Nurses’ pay ranges from roughly US$200 to US$500 per month. Some mayors pay high wages because they value medical professionals. In most instances, however, the only way to persuade a nurse to work in a distant município in the middle of Ceará is to pay her well.} Second, the state wanted to retain complete control over the selection process of agents to prevent mayors from employing health agents for political purposes, or in exchange for political favors. Third, as state employees the state evaluates the agents’ work on criteria determined by the state government and applied to all health agents in each município.

Before implementing PAS, the state first had to convince the mayors to endorse the program in their municípios. Fully 70\% of the municípios had no nurses, and mayors had to hire one if they wanted the program since the state would only hire health agents to work in a município with a nurse to supervise them. Securing local support was not simple.

A few mayors accepted responsibility for the program because of its potential to improve health conditions in their town. Many mayors, however, resisted the program for various reasons. Some claimed they never needed a nurse in their município in the past and that they had no funds to hire one. Others resisted the program for political reasons. For example, mayors from political parties other than the governor’s suspected that he intended to use health agents as lobbyists to canvass for his political party. Others feared that because the health agents engage people in communication and assembled them for meetings, that
their efforts could force mayors to provide services they had successfully avoided providing in the past. For instance, residents might pressure mayors to provide water connections, or latrines once they realized the high incidence of diarrhea is due to contaminated water. To convince recalcitrant mayors of the program’s value required that PAS coordinators meet with each individually.

All the mayors eventually accepted the program (although some mayors did not hire a nurse for three years) because it offered to employ 30 to 150 people in their municipios, thereby decreasing unemployment and bringing new income into their towns. They also realized PAS would provide a service to their people for which they could take credit. Additionally, because health agents do not distribute medicine, they do not threaten many mayors’ powerful roles as distributors of medicine (see section 2). Popular pressure was the ultimate reason all the mayors eventually accepted the program in their towns. As the program began functioning in some municipios, people in towns without the program wanted the same services.

4.2 Influence Over Skilled Labor

The state’s financial constraint and firmness to make the selection process of health agents free from political manipulation by mayors compelled the state to give the municipios control over the skilled labor of professional nurse supervisors as opposed to the unskilled labor of health agents.2 This situation should raise concern for an important reason:

2Not only are mayors excluded from selecting health agents, but nurse supervisors are not permitted to participate either. This is to avoid possible pressure from mayors on the nurse to choose certain people. Supervisors are permitted to assist with the selection of agents outside their own municipio, and this often occurs.
supervision is one of the weakest aspects of CHW programs worldwide (Walt et al. 1989, Gilson et al. 1989). In Ceará, the state exercises minimal regulation over one of the most important aspects of the program. The weakness of PAS supervision has to do with the mayor's influence to make it easier or more difficult for the supervisor to carry out her tasks depending on how much he invests in the program. The few formal studies on CHW supervision attribute poor supervision to minimal time spent supervising (Valadez, Vargas & Diprete 1990, Desai & McCaw 1987). Inadequate supervision time is related to cost. Supervision is often 40% of the program cost and when financial constraints arise, administrators frequently cut costs by decreasing supervision time. In the PAS program, the mayors' willingness to pay supervisors well, hire enough supervisors, and provide needed services affects program supervision.

For example, most mayors hire only one nurse to work at the health center and expect her to use her remaining time to supervise the health agents. This often leaves her fewer than four hours of supervision per day, and limited time to carry out all her essential tasks such as individually evaluating 30 to 150 agents every month, ordering and distributing supplies and salaries, filling out and sending evaluation sheets to Fortaleza, organizing meetings with agents, and providing agents with on-going training. The mayor can place further restrictions on the supervisors' already constrained time by giving the supervisor additional work in the health center, eliminating time for PAS supervision, or by not providing them with transportation to visit the field.

Conversely, when the mayor increases the number of supervisors, equips them with transportation, or hires an assistant to undertake the time-consuming administrative tasks,
supervisors have time to train and evaluate agents in the field. In one munícipio I visited, the mayor hired only two supervisors for 123 health agents, but added an assistant to fill out the data charts, a time consuming responsibility. This gave the supervisors more time to review the information, meet with each agent individually, and visit agents in the field.

An example demonstrates how sufficient time can improve program performance. In one munícipio the mayor hired five nurse supervisors for 135 health agents thus enabling them to make field visits. On one such field visit, I accompanied the supervisor assisted the agent in treating a child’s wound and asked her "Why would you not be able to give this boy stitches?" The agent responded, "Because he would need anesthesia." As the agent worked, the supervisor continued to ask a series of questions such as, "What do you do if the wound does not heal properly? How many days should he wear this bandage, and when should you change it?" On another visit with the health agent, the supervisor talked to the health agent and mother about tetanus as they together showed the 16 year old mother how to wash her two month infant. As they traveled together from house to house, the agent admitted to her supervisor that she could visit only ten houses on most days. The supervisor said, "You should continue to do quality work and not worry about rushing from house to house, you're doing great." The agent glowed. This type of encouragement and valuable training reinforces health agents in their work, but is seldom possible in munícipios where mayors put limits on the supervisor’s time.

While the mayors control some aspects of program performance, their control is also limited to some degree. Interestingly, the large number of health programs that operate simultaneously throughout the state place a check on the mayors’ discretionary powers.
Because health agents, supervisors, and the community in one municipio know about activities in surrounding towns, they may demand the same level of attention and resources provided to their neighbors. In one municipio, agents pressured their mayor to buy chlorine for them because they learned of the cholera campaign in nearby municipios. The mayor avoided buying the chlorine for several months, but increased pressure by health agents and the supervisor eventually forced him to purchase it and initiate a campaign. Although there are some negative consequences of dividing the responsibility for the program between two levels of government, the next section describes why this division of labor may be one of the most important explanations for the program's good performance.

4.3 Scaling-Out To 177 Programs

Health planners find that CHW programs are more successfully administered on a small scale because they better meet program objectives of using a participatory process, reaching a target population, and using innovative techniques at low cost (Streefland & Chowdhury 1990). In general, researchers find that NGOs are more responsive to the needs of a specific population like the elderly or battered women for example. (Lipsky and Smith 1989). Yet NGOs often lack the financial and institutional capacity to assume the high cost and administrative demands of a large-scale CHW program. In contrast, governments can often shoulder the administrative burdens of a large scale program, but are often inappropriate to administrator CHW programs because, their central management and top-

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3 Several researchers challenge these conventional views about NGOs as participatory, "bottom-up," innovative, and better suited to target a specific population. The findings show that often these characteristics falsely describe NGOs. (Tendler 1982, Van Wicklin 1987, Kramer 1981)
down approach can make administrators insensitive to local needs. This results in lost program objectives.

The unique division of labor between Ceará and its municípios shows how a government can manage a large-scale CHW program and still meet its objectives as a small-scale project similar to an NGO. The PAS program solved this dilemma because instead of scaling up from a pilot project to a single, centrally administered, large-scale program, in effect, PAS scaled out into small manageable programs in each of the state’s 177 municípios that respond to needs unique to each locality.

With PAS the division of labor corresponds with the comparative strengths of both levels of government. The state assumes responsibility for the costly and bureaucratic tasks required of a large-scale program (such as selecting health agents, distributing supplies and paychecks, and recording data collected by health agents). Municípios are responsible for their own supervisors and their autonomy enables them to respond rapidly to local needs.

In practice, the coordinators instruct nurse supervisors during a two-day orientation in Fortaleza where they learn to evaluate their agents every month, send data into the state, conduct an initial eight weeks of didactic training and four weeks of field work with the health agents, initiate on-going training sessions, and undertake other administrative tasks. Beyond these requirements, the nurse supervisors freely decide about the agents’ tasks and training. Some nurse supervisors teach health agents to provide family planning

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4 The training of health agents is critical to program performance. Although I spoke at length with health agents, supervisors, and coordinators about the training process, I did not observe a training session, and therefore am unable to describe in great depth the process.
information, while others train agents to vaccinate, and still others emphasize group meetings rather than individual consultation. In one município, where cholera was a principal problem, the supervisors spent time teaching agents about chlorinating, filtering, and boiling water, and using proper hygiene when handling food. In contrast, in another município where flu had been a prevailing problem, they emphasized educating the population about this more pressing issue. Giving autonomy to nurses at the local level allows them to be innovative, proactive, and to create a personal supervisory style that works best for them.

The freedom to make decisions about what agents do is important and allows them to adapt the program to address the most pressing local needs, not addressed by the tasks of the state program. For example, a central concern among women that I interviewed was controlling family size. Most women initially said they wanted as many children as God granted them, but would ultimately admit that they only wanted two or three. Although family planning is not a component of the state program, mayors and supervisors in some municípios have made the provision of family planning information an important task of health agents.5

Another benefit of the program structure is that by giving autonomy to local supervisors to identify and respond to local needs, PAS fosters cohesiveness among the agents, which helps them carry out their role as agents of change. The concept of being an agent of change is central to the entire PAS program. It comes from the Lavors, who considered Ceará to have a repressive political environment and believed that many of the

5The leading method of birth control in Ceará is female sterilization, and currently 38% of the women undergo tubal ligations (PSSFN 1991). A few women (13%) take contraceptive pills (PSSFN 1991), but only limited consultation accompanies the distribution of the pill. In a município with no family planning information, one woman told me that she takes a pill every time she has a sexual liaison. She didn’t realize that the method is only effective if she takes the pill every day at the same time. "Anyway, the thing costs me $cr10,000 (about $2) per pack, so I can’t afford to spend that every month."

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severe health problems in their state were rooted in socio-economic inequalities. In this light, they envisioned a role of the health agent as an agent of change, to assist in the process of reducing inequalities -- starting with health education.

Because agents work for the state, they feel relatively free to speak openly about problems in the munícipio, and to address issues that relate specifically to the circumstances of the munícipio. The health agents in each munícipio are a socially cohesive group because they live where they work, they share a common background and interests, and a goal of improving their munícipio. This cohesiveness facilitates collective action (Ostrom 1990, Attwood & Baviskar 1987 and Wade 1986).

Many agents referred to the areas in which they worked as "my community." They expressed an intense level of responsibility to their neighbors. Agents often told me that since working for PAS they have become involved in other community activities. Even community members often said, "health agents are always organizing community festivals and other gatherings, they are everywhere."

In several instances agents work beyond their prescribed tasks and induce their communities to act. In one munícipio the agents pressured staff in a bakery to wear hair nets and wash their hands. In another, agents requested and received free air time on the radio to name families that left garbage in front of their homes, quickly resolving the problem of unsightly, disease-breeding, and spoiled garbage piling up in front of homes. Other agents talked about beginning businesses to stimulate economic growth in their communities.

While many health planners view the potential role of health agents as change-agents (Werner 1977, Sidel & Sidel 1977, Rifkin 1978), this role is often highly idealistic and
rarely fulfilled (Walt 1988). The Lavors did not expect that the health agents would be revolutionaries, but believed that incremental reform began by employing low income people, increasing their knowledge, improving their self esteem, and expanding their leadership experience and ability to communicate.

The nine-member coordinating team is dedicated to the same philosophy. During a meeting between a PAS coordinator from Fortaleza and health agents in one município, the agents raised concern that the families asked for food, which the agents do not provide. The coordinator asked them what they should do. The group finally decided that the source of the problem was political, and that the families should ask their mayor and city councilmen for assistance. Agents learn that they and their communities have a right not only to the health services, but to other public services.

Even many nurse supervisors endorse the role of agents as change-agents. Several told me that they tell their health agents to go to the community and fight for its needs. One nurse related, "If people live four hours from a hospital they should pressure the political leaders to build a health post, or get an ambulance, or install a telephone." In another município, the agents are working with their supervisor to initiate meetings on family planning and female sexuality, areas that are not part of the program training.

Combining these small-scale efforts in the state’s 177 municípios, one can see the program’s profound impact as a unit. The 7,227 health agents throughout the state visit more than 800,000 families every month to educate their neighbors and initiate communication and questioning.
4.4 More Than Mere Selection

Part of the reason the health agents are so effective is because of the unique way in which they are selected. According to the literature, one problem with CHW programs is that they do not fulfill a commitment to community participation because the community seldom selects its own health workers. (Walt et al. 1989, WHO 1989). This is because program administrators find it cumbersome to mobilize the community to participate. The PAS program does not include the community in the selection of health agents either. In Ceará, the governor wished to avoid political patronage by local politicians.

Although the PAS program does not formally include community participation in the selection, the process itself challenges the community to assume a leadership role as monitors of the program. The effectiveness of the selection process in encouraging a participatory role in monitoring the program refutes the notion that health workers should be selected by the community to be accountable to it.

Because so many people apply for the positions and the coordinators only select a small percentage as agents, the process spreads important information to beneficiaries of the program. Often 300 people apply for 30 positions. The coordinators convey two central messages to the candidates throughout the process: "This program is yours," and "You determine its success." Thus the selection process increases the program’s importance and reinforces the community’s role as program monitors.

At the request of the coordinators, the nurse supervisors first call attention to PAS by announcing the health agent position in health centers, hospitals, and on the radio. The high rate of unemployment in the municípios makes this announcement prominent in the
community. The agents' minimum wage represents a respectable salary in the interior where 80% of the population earns less (PNAD 1989). In addition, because the health agents are some of the few (if not only) people wearing a uniform (blue jeans and a white t-shirts that says "Health Agent") they are highly visible. This emphasizes their importance and raises the interest and curiosity of the community in their work.

In PAS, coordinators prepare the community for assuming program responsibility. They conduct a unique interview process in which health agent candidates learn what may be expected of them as well as what they should expect from a health agent if they are not selected. Coordinators tell applicants that although they will not all be hired, their interest in the position proves their commitment to the community and therefore they should consider themselves leaders. This is the first of many messages to the health agents and community members that they are important and powerful members of the município.

The interview process has three steps. First candidates fill out an application form that asks them a range of questions about their personal circumstances such as, do they have children, did they breast-feed and for how long, and do they have eight hours a day to work? Other questions test their knowledge of the community and their ability to solve problems such as "What would you do in an emergency situation for which you could not provide treatment?"

The process does not prohibit illiterate people from applying. Many applicants have family members or friends who fill out the forms for them. Indeed, while the coordinators give priority to literate candidates because the work requires that they read and write, both

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6 For example, agricultural workers, who work for a landowner, earn about half the minimum wage and some yield in return for their labor. Many teachers earn even less than that.
health agents and supervisors informed me that some of the best health agents are illiterate. The illiterate agents often work with a literate agent who reads and writes for them.

Next, the nurse sends the applications to the coordinators who read each and send back a list of candidates whom they will interview. Several weeks later two members of the coordinating team, usually a nurse and a social worker, travel to the municipio to conduct the last two steps, individual and group interviews. Some characteristics that coordinators look for in a candidate are communication skills, knowledge of the community, and leadership.

In the individual interview, the coordinator asks a series of questions about the candidate’s qualifications and reasons for wanting to be a health agent. For most applicants, this is the first time in their lives they have ever experienced an interview, and the first time they have ever applied for a job. Most candidates sweat and shake from nervousness during the interview. The group interview is less stressful. The coordinators discuss the program expectations and health agent responsibilities. Applicants have a chance to ask questions. Applicants learn the health agents must:

* visit all the families for whom they are responsible once a month;
* attend all training sessions (or at least 90% with a good excuse for absence);
* attend all meetings and review sessions;
* have a monthly evaluation with the supervisor;
* live in the area where they work;
* work 8 hours a day;
* report to the supervisor to resolve any questions or problems; and
* not canvass for a political candidate, or wear or distribute political propaganda.
These details, while standard for any job, contribute to forming the expectations of those not hired as agents, and provides a monitoring guideline. Coordinators inform applicants not selected that they should make sure agents abide by the rules. Coordinators tell agents that they retain all applications and can replace an agent if necessary. This process encourages hired agents to perform well, and reinforces their accountability to the community. Candidates also learn that although they are paid by the state, they are not state employees. They earn a stipend from a special fund directly from the governor’s office. They receive no contract, no benefits, and no tenure. This arrangement places further pressure on the health agents to perform well because they lack job security and are easily replaced.

To improve quality control of selection, training, and supervision, the coordinators hire only a few health agents at a time until the program staffing is completed. The process can take up to three years in some município. For example, in a large município in which 150 health agents would be hired eventually, coordinators first selected 30. The nurse trained and supervised them and several months later a new selection process hired 30 more until staffing was complete. The advantage of this slow hiring process is that the community repeatedly learns about the program through announcements on the radio and in the health centers, and during the interview process. It also improves the training and supervision process. By training a small group of health agents first, a new supervisor learns from that experience and is better prepared for the next group. In addition, the more experienced health agents can help new ones learn their tasks and provide them support.

Because the selection process informs the community about what to expect from the agents, the agents feel constant pressure to perform well. For example, if an agent has not
visited a home for a long time, the family may complain to the health center. The coordinators and supervisors remedy the problem by either hiring an additional agent to relieve the overburdened agent, or replacing the agent who is not performing well. Also, people commonly inform supervisors when an agent works in a município other than the one where she or he lives. This occurred on several occasions, and coordinators fired the agents because it is strictly forbidden. In addition to monitoring program performance, the community supports the health agents. When agent performance is good, the beneficiaries inform the health supervisors when visiting the health center, or when the supervisor visits them. This approval maintains and improves agents’ level of work and morale.

Good performance from health agents requires more than monitoring by the community. It requires quality training, guidance, and continual evaluation. In addition to selecting health agents, an important objective of the coordinators has been to pass down the program philosophy to the nurse supervisors in order that they take on their responsibilities with the same conviction and vigor. This raises an important question: why are the nurse supervisors so supportive of the health agents when professionals often resist paraprofessionals?
4.5 Support From The Professionals

Supervising community members to spread health information is one of the most rewarding aspects of my career as a nurse because I see health improvements, and we are working as a community to make this happen. If the nurses in Fortaleza had a chance to work with these health agents they would agree (Nurse Supervisor in Iguatú).

One of the most interesting and unusual aspects of PAS is the lack of opposition by nurse supervisors to paraprofessional health agents. In many CHW programs health professional supervisors, often nurses, are resistant to paraprofessionals whom they fear could eventually replace them. (Cumper & Vaughan 1985, Walt et al. 1990, WHO 1989). Some suggest that because nurses seldom participate in the program’s planning, and have limited training in primary health care, nurses feel detached from the program and are unsupportive of it (Walt et al. 1990).

In contrast, the PAS nurse supervisors invest energy in their health agents because good performance of agents reflects well on them. Several supervisors told me that they work overtime without additional pay because they enjoy their work and believe they are helping improve the community. The satisfaction they feel about their work strengthens the performance of their agents as well. The PAS nurses are supportive of the program not only because they are central decision-makers in the program, but for other important reasons.

First, as mentioned earlier, many of the municípios had no nurses before the program began because political leaders preferred not to spend their resources on additional medical staff. Therefore many of the nurses in the interior have jobs because of the program, and would otherwise be seeking employment in a highly competitive market in Fortaleza. Second, many nurses in the interior earn twice as much as nurses in Fortaleza. This is to
compensate for working in difficult conditions: drought areas, distant from the urban areas with limited services. Third, the program has boosted both the need and the importance of rural nurses by increasing the community’s use of the formal health system in the rural areas. Whereas many people are accustomed to using traditional health workers, PAS encourages the rural population to attend the clinics for prenatal care, immunizations, treatment of wounds, and to give birth in the hospital. Fourth, agents as well as community members hold tremendous respect for nurses, referring to them as "doctor." The nurses’ role as supervisors give them increased prestige and recognition in the community.

As found in other CHW programs, in Ceará not all nurses approve of the program for reasons identified in the literature. The most vocal criticism of the program comes from nurses in Fortaleza who are not linked to the program. These nurses believe that the agents lower professional standards, threaten the security of nurse professionals, and provide information and services for which they have inadequate training. One of the many Fortaleza nurses I interviewed about PAS had a bitter look on her face as she showed me a recent magazine article entitled "The Nurses of the Backlands" (As Enfermeiras do Sertão), which describes the accomplishments of the health agents. "Why do they earn praise and recognition for the state’s improved health conditions when they have only three months of training, and we must undergo five years?" she asked me.

Many also fear that if dependence on low paid health agents increases, the need for nurses will diminish. A member of the Regional Nurses Council (RNC) in Ceará publicly criticized PAS saying that "Many illiterate nurse attendants hired to clean hospitals and equipment are now caring for the sickest patients and are untrained to do so." She warned
that in the interior of some states, nurse attendants are heading hospitals and are a source of cheap and unqualified labor. She warned that PAS health agents will also gain responsibilities for which they are unqualified.

In the same view, the President of the Federal Nurses Council claimed that health agents are unqualified to provide care, and are "illegal" and "a risk to the population, and require more training." (O Povo 1992). Another nurse criticized the state for creating a program that is a "distortion" of China’s "Barefoot Doctor" program because health agents in Ceará have much less training than those in China (O Povo 1991). Because criticism of PAS remains among nurses not linked to the program, it has not undermined the program. In fact, the criticism challenges program administrators to consider carefully the services health agents provide, that they are sufficiently trained, not a danger to the community, and that they sustain the role of preventive care provider.

4.6 A Little Cure Won’t Hurt

I considered moving to São Paulo to find work. There was nothing here, but now I will never leave. I will never abandon my community. I adore my job and I am now happy here (Maria, health agent in Iguatú, age 25).

The purpose of creating PAS was to fill a gap not fulfilled by the current health system: to provide preventive health care to the unserved rural populations and balance a system which emphasizes curative care. Ironically, an important and useful aspects of the PAS program is the agent’s use of curative care along with their preventive health tasks. The integration of curative tasks has also contributed to the success of the PAS program. It:
1) gains the acceptance of the community, especially men;

2) alleviates physician overload, and directs more serious curative treatment to health professionals, and;

3) increases job satisfaction among agents.

The PAS case parallels numerous evaluations of CHW programs world-wide that find people value and understand curative care more than preventive care (Underwood 1981, Jancloes 1984, Heggenhougen 1984 & 1987, Berman 1986, Walt 1988, Gilson et al. 1989, Walt et al. 1989). Whereas curative care treatments show results, preventive care is difficult to measure and not visibly obvious. People recognize benefits from treatment of a wound more than they do from a vaccination or prenatal care. Even health agents prefer doing curative tasks. Educating is a long frustrating process, and many agents have difficulty getting people to respond. For example, many women prefer bottle-feeding to breast-feeding and women seldom attend pre-natal appointments. It takes patience and perseverance to teach them that their breast milk is not "sour and insufficient" as many believe. It is difficult to convince them to take time out of their day to attend prenatal care appointments. In contrast, the health agents are inspired by the positive response to the rapid results of curative treatment.

For this reason, providing small curative tasks helps legitimize the work of agents, and gains their acceptance by the community. People are often most thankful to the health agent for having "saved my leg," or "taken my child to the hospital when she was sick." People appreciate that agents know how to give shots, or remove stitches so they do not have to return to the health center and wait in long lines to see the nurse or doctor. This inclusion
of curative care also gives health agents opportunities to talk about preventive issues. The curative tasks are an entryway to the preventive care. One agent said, "I first earned the respect and trust of families by treating wounds or giving a shot, or even through the oral rehydration therapy. Now the families listen to me when I talk to them about breast-feeding, or better hygiene or nutrition, things that don’t show immediate results."

The use of curative care has been especially important in gaining the acceptance of men. In a program that gives priority to women both as employees and as clients, men seem to both accept and support PAS for two reasons. First, the program’s focus on female and child health discourages men from seeking employment, although 5% of agents are men. Thus, while some men at first criticize women for earning a high wage, they come to realize that the work is more appropriately conducted by women. Second, because health agents learn curative skills, men receive PAS services as well. Men often speak highly of agents. On one occasion I saw a man stop a health agent on the street to show her how well the leg she treated from a bicycle accident was healing. I also spoke with husbands of health agents who were appreciative of the extra income brought in by their wives and were proud of them and their knowledge.

Another aspect of curative care is that the health agents learn to identify problems and direct people to health professionals, thus providing a linkage to the medical system. For example, in Iguatú, a health agent visited a home where a woman was suffering from leprosy. Because of her training, the agent was able to identify the disease. She carried the
woman on her bicycle for immediate treatment. This is a common scenario. Health agents also reduce the high demand on medical professionals by taking care of minor health problems. They treat minor wounds, provide advice for treating colds and flu, and treat other minor problems that are easily solved at home.

Preventive treatments that have a curative appearance are more valued by the community, and enjoyable to health agents. For example, although oral rehydration therapy is a measure to prevent death, the treatment seems more like curative care. For example, health agents reported that when a severely dehydrated baby, near death, took the oral rehydration solution, hours later he would be playing and spirited.

Making preventive tasks part of a larger campaign also makes the task more interesting for agents. During the cholera epidemic (currently still in effect) the supervisors organized special meetings for the agents to educate families about proper hygiene, treating water and other facts about the disease. The state distributed t-shirts to all agents, and the munícipios provided chlorine to distribute to families. The fear of the epidemic among the population increased the importance of the agents. Many agents proudly affirmed that in their munícipio "no one has died from cholera."

Surrounding preventive tasks around campaigns, such as the cholera epidemic, or using preventive task that seem curative, such as oral rehydration, are useful ways of

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7Interestingly, there has been an increase in the number of reported leprosy cases in Iguatú since PAS began because health agents are identifying cases that were hidden for years because no one visited these houses. In Iguatú before 1987 30% of people with leprosy remained crippled from the disease. Now, because it is treated earlier, less than 10% are left crippled. (Interview with Nurse Maria Laura Bererrade Olivera, head nurse of TB and leprosy, Iguatú, July 14, 1992.)

8Interestingly, a similar finding exists in agriculture where the performance of the extension workers improved when the agents undertook disease campaigns. The urgency of the problem, and clearly defined task to confront the problem, made the task easier and more interesting (Tendler 1991).
sustaining community acceptance and health agent motivation. It should be warned, however
that there is a risk in reinforcing people’s reliance on curative treatment. A major problem
with CHW programs is that health agents increasingly want to provide curative care and the
community wants more curative treatment. Program administrators should be cautious that
the program’s preventive health emphasis on is not lost by increased use of curative health.

4.7 Vital Connection Through Data Collection

The thorough collection of data is unusual in Ceará. Many researchers who have
worked in the Northeast have described serious constraints in finding accurate statistical data
(Galvão et al. 1991, Scheper-Hughes 1992). In Ceará, as in many parts of Brazil, many
families do not register their children because of the cost and the high mortality rate.9
Women often wait to see how healthy their baby is and then only register the child if he
attends school. With the PAS program, however, for the first time in Ceará’s history, the
state collects detailed data about conditions in most homes in the state’s interior.10

In most CHW programs data are often more problematic than useful because they are
collected inaccurately taking away from the health agents’ time for educative work, and once
collected data are often not sent to a central office for compilation and analysis (Walt et al.

9Faulty health statistics are common throughout the developing world where mortality and morbidity are often
not recorded (Heggenhougen & Shore 1986).

10PAS agents visit nearly all homes in the interior and use a "child chart" to collect detailed data about the
families: 1) number of people, 2) people who died and causes, 3) weight and nutritional status, 4) vaccination status
of children and mothers, 5) number of mothers breast-feeding, 6) number of domestic animals and their vaccine
status, 7) family’s access to water.
In the PAS program, data collection is one of the most important and valued tasks of the program. It is a vital connection between the different levels of program staff. Supervisors use this data to evaluate agents' work, monitor them, and help them with their service delivery. Agents meet once a month with supervisors to report the data collected in their area. As agents report numbers to the supervisor, the supervisor often stops and talks with the agent about his/her work. Through this method the supervisor can identify problem areas and assist the agent in targeting them. Supervisors record and compile the data which they send to the state monthly. Data collection has been useful in another important way. Agents use the data to understand conditions in their community and provide care that corresponds to the community's needs.

For example, when an agent discovered that most of the women in her area were not attending their appointments for pre-natal care, she and the supervisor discussed the agent's current approach. Then they sought advice from other agents who reported higher rates of attendance, and discussed different ways the agent could encourage the mothers to attend. The group discovered that the reason the attendance was lower was because the clinic was located far from women's homes and they could not afford either the time or the money to take public transportation. Although the discussion did not solve the problem during that meeting, these hard data can be used by supervisors to identify problems beyond the agent's control, and to demonstrate to local political leaders the need for an additional nurse at a more nearby health post, or the need to construct an additional health post.

Program coordinators collect data from all 177 municipios which they enter into a central computer. With these data the state government has been able to see sharp health
improvements and compare towns (see Appendix 2). Coordinators communicate to supervisors the overall improvement in their town, and share comparative data. The state emphasizes the importance of data collection because every year the state recognizes the "best" municípios based on the percentage of records completed and submitted to the coordinators. In addition, the state government awards municípios a prize for best immunization coverage (43 municípios received a prize for the best DPT III-diphtheria, pertussis & tetanus coverage in the state) (PAS 1992). This motivates the supervisors to encourage agents to collect data.

Another powerful impact of data collection has been as an educational tool for health agents. I spoke with a health agent in Jucás who never finished elementary school, but could use percentages and other numerical descriptions to inform me about the work she is doing. What impressed me more than her report of a 30% increase in breast-feeding in her town in the past five years was the fact that she was describing it in relatively sophisticated numerical terms. Agents have learned to think and communicate in more advanced ways than their lives previously demanded. With this information, the health agent has a comprehensive understanding of the problems and conditions in her community. And with a new way of thinking she can more easily and accurately describe these conditions to her neighbors. Additionally, she teaches the community how to think and communicate in these terms.
By expanding the role of local governments and ending patronage, two governors have turned an impoverished Brazilian state into a model. And their health-care reforms have won international acclaim (The Christian Science Monitor, March, 1993)

5. CONCLUSION

The PAS program has performed well for five years, and has already been recognized internationally for this success. Nevertheless, the long-term success of PAS has not yet been established. Before concluding this study by highlighting aspects of the program that make it work so well, it is important to examine the program’s ability to continue carrying out its goal for primary health care (PHC). Two important questions are: 1) How can the state sustain the enthusiasm of workers? 2) Will the health agents continue to assume a role that meets the needs of the community?

With the dramatic drop in infant mortality, the health agents enjoyed rapid recognition and praise locally, nationally, and even internationally. The recognition of PAS on television, in newspapers, and in magazines energized workers at all levels -- the agents, supervisors, and the coordinators. Success at the beginning of project implementation, labeled as "good starts," is found to improve worker performance (Tendler 1992).

Having an easy fast success at the start puts an agency on a roll that propels it into the succeeding, less dramatic stages. It now has a standard of performance to meet that is defined by its own performance in the earlier period, a newly acquired good reputation that it is proud of and wants to keep, and a new confidence about its ability to make things happen (Tendler 1992).

Yet even with success at the beginning to establish a high performance level and stimulate enthusiasm, the attention given to PAS workers is likely to wane, as is worker motivation. PAS workers at all levels assume enormous responsibility for the community and work many hours
beyond what is expected of them. I spoke with supervisors and health agents, who, despite their 
enthusiasm were exhausted by the demands and high energy required. With the double burdens 
of work and home responsibilities for the mostly female work force, I wondered how long their 
enthusiasm could last. Sustaining high worker performance requires that the job remain 
interesting, challenging, and rewarding for health agents, and that the workers continue to see 
the direct benefits of their work. This leads to the question about the role of health agents.

The program founders envisioned a role for community workers in preventive health 
because infant mortality was so high and the health services so inadequate. Current criticism 
by nurses in Fortaleza of the agents’ administering some curative care has led PAS 
administrators to consider requiring health agents to undergo formal training as nurse assistants. 
This specified professional training is risky because it could lead health agents further away from 
their primary mission: preventive health care. The program could lose its effectiveness if the 
health workers change their focus from preventive care workers to more narrowly defined 
medical technicians. For example, if a decentralized health system is fully institutionalized and 
municipios assume greater responsibility for providing primary health care (PHC) services, the 
health agents may need to shift their role to meet other pressing needs in the community. 
Agents might better serve the population working as agricultural extensionists, initiating small 
community enterprises, eliminating environmental hazards, or perhaps assisting with the design 
and establishment of improved housing or infrastructure, all underlying PHC activities that 
address people’s health conditions. As nurse assistants they would not be able to make such a 
transition. Program administrators must consider carefully whether the role of the agents is 
indeed to realize PHC objectives, and if this includes a possible function beyond that of health.
One of the most important, and yet least controllable factors that will determine the sustainability of PAS, is the will of the state government to continue the program. A change in government priority could end the program instantly. Yet, after five years of successful experience it is likely that, even if PAS were to end, the lessons from this experience will endure. The collaboration of two governments, the breaking of patronage, the education and skill-building of 7,000 workers, the leadership training provided to 250 nurses, and the knowledge that is already spread to more than four million people in Ceará are only some of the experiences that will have a beneficial impact on the future of Ceará.

Ceará faces challenges common to other developing areas afflicted with poverty, poor health, uneven distribution of resources, weak government institutions, and other difficult conditions. Yet Ceará is unusual because it has successfully surmounted difficulties that many other regions have not. I end this section by highlighting several successful approaches taken by the government of Ceará to implement and administer the Programa de Agente de Saúde. Ceará’s experience can serve as a model for planners and policy-makers in other regions of the world, in health as well as other sectors.

Some of the key lessons that emerge from the PAS program stem from its movement from a pilot project to a large-scale state program and are related to the program’s linkage to government and the division of labor between the state and municípios. The first lesson is that:

The program designers engaged in careful planning and from a technical and operational perspective and met the priorities outlined in the Alma Ata Conference of 1978 as critical for program success which include the proper selection, supervision, training, and evaluation of health care workers (Alma Ata 1978: 18).

They built on their own experience, took time to learn from the experience of others both in Ceará and internationally, and seized political opportunity when they were prepared.
As a result, they implemented quality selection, training, supervision, and evaluation of health agents. They incorporated a good data collection system and included some curative care.

The second and third lessons involves what few programs acknowledge as critical to its success. The first is that:

The PAS founders and state governor did not expect that poor health in Ceará, which stems from a faulty government system, could be solved by a health program outside the government system without efforts to reform that system.

The linkage of PAS to the state government is important because poor health conditions are, in part, a result of a faulty political system of which public health is a part. The purpose of the PAS program was to improve the state’s health conditions by becoming an integral part of the health system. The founders realized that the health system had to change to support PAS. By linking PAS to the government system, the program reinforces and influences the health system and contributes to improved health conditions. PAS contributes to health reform by functioning in each locality, informing local leaders and the general public about health-related issues and problems, and preparing them to assume increased responsibility.

Health reform in Ceará emerged from an underlying movement that existed within Ceará among NGOs and medical professionals, and from the outside -- both nationally and internationally. These efforts are important because they show a larger campaign behind the charisma and determination of the Lavors, demonstrating that the program’s success was not dependent on their efforts alone. The Lavors identified and unified the efforts that already existed to bring about reform in the state. They avoided political sabotage by gaining the support of the community, political leaders, and medical professionals before implementing PAS, and by preventing political patronage. The third important lesson that emerges from PAS is:
Dividing responsibility for PAS between the local and state government solves the problem of one government (or institution) assuming full responsibility for a complicated program, and takes advantage the relative strengths of each to create a more manageable program.

In its move from a pilot to a state program, PAS retained the successful qualities it had as a small pilot project. The state divided responsibility with municípios causing PAS to scale out into 177 programs, not one large effort administered and run solely by the state government. The state serves as an umbrella over the individually running programs in each município. It institutes consistency by providing uniforms and supplies, determining the agents’ primary tasks, (such as oral rehydration and pre-natal care information), and establishing general program rules. The state’s selection of health agents, conducted similarly in each município, sets universal policy of the program, and increases accountability of the agents to their community because it challenges the communities to assume a leadership role as monitors.

By decentralizing operations, small, manageable programs function in each of the state’s municípios which thereby respond to the needs of their citizens. Within each município, nurses can train agents to perform tasks that respond to local needs, and agents and supervisors feel rewarded because they see direct benefits of their decision-making and work. Importantly, the failure or success of one município does not affect the program as a whole. In addition, the large number of health programs that operate simultaneously throughout the state places a check on the mayors’ discretionary powers, serve as examples to other municípios of good or poor performance, and give communities increased power to ask for services. Finally, this collaboration between two levels of government is valuable experience, preparing them to engage in further collaborative efforts in other sectors in the future.
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APPENDIX 1

Interviews Conducted in Ceará, Brazil

June - August, 1992

Fortaleza
UNICEF Representatives
2 PAS Coordinators
Secretary of Health,
Planning Coordinator
3 nurses from the Regional Nurses Council
Coordinator of Viva Criança
Medical Anthropologist
Meeting of Health Agents in Palmeiras (observation)
Director of PROIAS
PAS Coordinators (2)
Secretary of Education of Ceará
Nurse at FSESP
Director of Project Hope
Midwives (3)

Geral Sampaio
Selection process of health agents (observation)

Icapuí
Health agents (2)
PAS Supervisor
Secretary of Planning
Secretary of Education

Iguatí July 1-3 and July 14-17
Nurses at health center (5)
Supervisors of PAS (3)
Secretary of Health
Nurse in private health center
Nurses from hospitals (3)
Midwife
Health agents (17)
Doctors (4)
Jucás
Health agents (8)
Priest
PAS supervisor
Nurses at health center (3)
Secretary of Health
Husband of health agent
Supervisor of Pastoral de Criança
Dr. Carlile Lavor
Miriam Lavor

Carius
PAS supervisor
Health agents
Secretary of Health

Quixeló
Nurse assistant (3)
Secretary of Education
City Councilman
Traditional healer
PAS supervisor
Health agents (6)
Secretary of Health

Cratoús
PAS supervisor (2)
Secretary of Health
Regional Director of Health
City Councilmen (3)
Secretary of Planning
Bishop
Health Council Meeting (observation)
Doctors (5)

Ipaporanga, Nova Russas and, Independencia
PAS supervisors
Nurses in health center
Dentist
Doctor

*In all of the municípios I interviewed numerous families and health agents. The above list is limited to in-depth interviews or agents or nurses I accompanied all day in their work.
APPENDIX 2

Level of Health Activity in Areas with Health Agents as Compared to Areas without Health Agents
Ceará, Brazil

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MUNICIPIO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WITH AGENTS (%)</td>
</tr>
<tr>
<td>Pregnant women who receive pre-natal care</td>
<td>87</td>
</tr>
<tr>
<td>Pregnant women who receive from 1 to 3 doses of anti-tetanus vaccine</td>
<td>73</td>
</tr>
<tr>
<td>Presence of &quot;measuring spoon&quot; in homes to prepare oral rehydration solution</td>
<td>67</td>
</tr>
<tr>
<td>Knowledge of how to use the &quot;spoon&quot;</td>
<td>73</td>
</tr>
<tr>
<td>Given vaccinations of the following:</td>
<td></td>
</tr>
<tr>
<td>* DTP</td>
<td>82</td>
</tr>
<tr>
<td>* Measles</td>
<td>86</td>
</tr>
<tr>
<td>* BCG</td>
<td>88</td>
</tr>
<tr>
<td>Children weighed three months before survey</td>
<td>57</td>
</tr>
<tr>
<td>Child’s weight marked on a growth chart</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: Secretary of Health/Health Agent Program, 1990
APPENDIX 3

CHRONOLOGY OF PAS

1968  Dr. Carlile Lavor and Miriam Lavor set up a community health worker program in Brasília.

1978  The Lavors travel throughout South America to explore other community health worker (CHW) programs, and initiate an affiliation with UNICEF.

1979  The Lavors implement a pilot CHW program in Jucás, Ceará, and learn from pioneer programs throughout Ceará.

1985  The Lavors build a coalition of medical professionals to campaign for Tasso Jerreisati.

1986 (March)  Tasso Jerreisati is elected governor of Ceará. The governor appoints Dr. Lavor as Secretary of Health.

1987  Dr. Lavor begins restructuring the health system and initiates Viva Criança to educate the general public and medical professionals about primary health care.

(September)  With federal funds, the state implements the health agent program (PAS) as part of a drought emergency employment program.

1988 (August)  The PAS program discontinues when the drought emergency ends and federal funding terminates.

1989 (January)  The state re-initiates the PAS program with state funding beginning in 45 of the state’s munícipios.
**APPENDIX 4**

Approximate Cost of PAS
In US$ During a 12-Month Period

<table>
<thead>
<tr>
<th>SPENDING</th>
<th>SALARIES</th>
<th>SUPPLIES†</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-health agents 7,227</td>
<td>5,200,000</td>
<td>20,000</td>
<td>5,220,000</td>
</tr>
<tr>
<td><strong>MUNICIPIO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Supervisors 225 (avg. $300/month)</td>
<td>810,000 (about 15% of program cost)</td>
<td>Amount varies</td>
<td>810,000*</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>6,010,000</td>
<td>N/A</td>
<td>6,030,000</td>
</tr>
</tbody>
</table>

† Supplies provided by the state include a blue backpack, white t-shirt, blue jeans, and non-medicinal first-aid materials. Some municípios provided bicycles, canoes or donkeys as various modes of transportation for agents.

* All of the above cost estimates are based solely on interviews. Brazil’s economy is highly unstable and inflationary. PAS employees are paid on a monthly basis. The pay rate is based on the minimum wage which is multiplied depending on the skill, professional level, or discretion of the employer. For instance, the health agents earn one minimum wage per month ($60). The average nurse supervisor is paid approximately 5 minimum wages per month ($300).