CHAPTER 9

Child Health

Since the early 1990s, there have been improvements in child survival in the four countries examined in this report. Despite these improvements, much work remains to be done in reducing levels of infant and under-five mortality and morbidity.

This chapter covers a number of topics related to the health of the child, such as birth weight, the use of well-baby care, child immunizations, the prevalence of diarrhea and acute respiratory infections during the 15 days prior to interview, the use of oral rehydration salts to treat the most recent episode of diarrhea, and the use of antibiotics to treat acute respiratory infections.

Birth Weight

A healthy birth weight is very important for a good start in life. Low birth weight babies are at high risk of experiencing health and developmental problems, and are more likely to get sick or die in their first year of life than normal weight babies. Since birth weight is a major predictor of infant morbidity and mortality, it should be monitored closely.

The proportion of live births during the five years prior to interview that were weighed at birth or during the 7 days following birth ranged from a low of 64.5 percent in Honduras to a high of

86.8 percent in El Salvador (Table 9.1 and Graph 9.1). In all of the countries, the probability of a newborn being weighed is substantially higher among newborns whose mothers live in urban areas than whose mothers live in rural areas. This is due to the fact that many deliveries in the rural areas of these countries still occur outside of a medical facility.
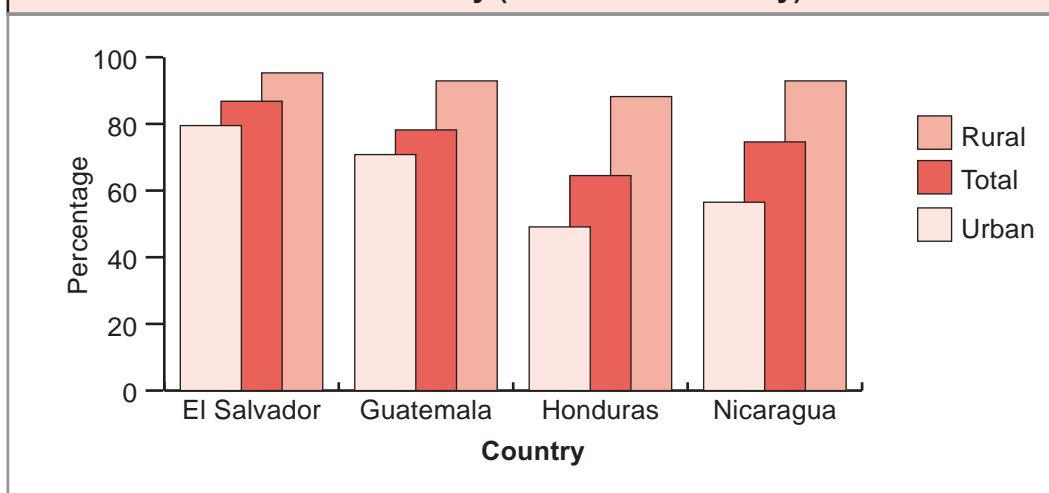
Well-Baby Care

Well-baby care consists of several visits to a medical facility during the child's first few years to monitor whether growth and development are proceeding normally, recognize problems early and supply appropriate intervention, provide immunizations, provide information about breastfeeding, diet and general care, and other important advice and information for parents. Because the health of the baby in the first year lays the foundation for later childhood, well-baby visits made during the first year are very important.

In the surveys conducted in the four countries profiled in this report, the questions asked about the use of well-baby care services refer to the first visit to a medical facility following birth. In general, the Ministry of Health in each country recommends that the first visit be made within 30 days of the birth of the child.

Table 9.1
Percentage of Children Weighed at Birth Or During the 7 Days Following Birth, By Area of Residence: Live Births During the 5 Years Prior to the Survey (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	86.8	95.3	79.5
Guatemala	2002	78.2	92.9	70.8
Honduras	2001	64.5	88.2	49.1
Nicaragua	2001	74.6	92.9	56.5

Graph 9.1
Percentage of Children Weighed at Birth Or During the Seven Days Following Birth, By Area of Residence: Live Births in the Five Years Prior to Survey (Most Recent Survey)

According to the last survey conducted in each country, the percentage of live births receiving well-baby care is very high in El Salvador and Honduras, where over 90 percent of newborns received this care (Table 9.2 and Graph 9.2). The use of well-baby care is relatively low in Guatemala, as only 43.2 percent of newborns were seen in a medical facility. As noted in the graph, the urban/rural differential is very small in El Salvador, but slightly larger in Honduras, while the differential in Guatemala is almost 17 percentage points. Since the early 1990s, the use of well-baby care has increased in El Salvador and Honduras, with the largest increase occurring in El Salvador (about 14 percentage points), and the smallest increase occurring in Honduras (6 percentage points).
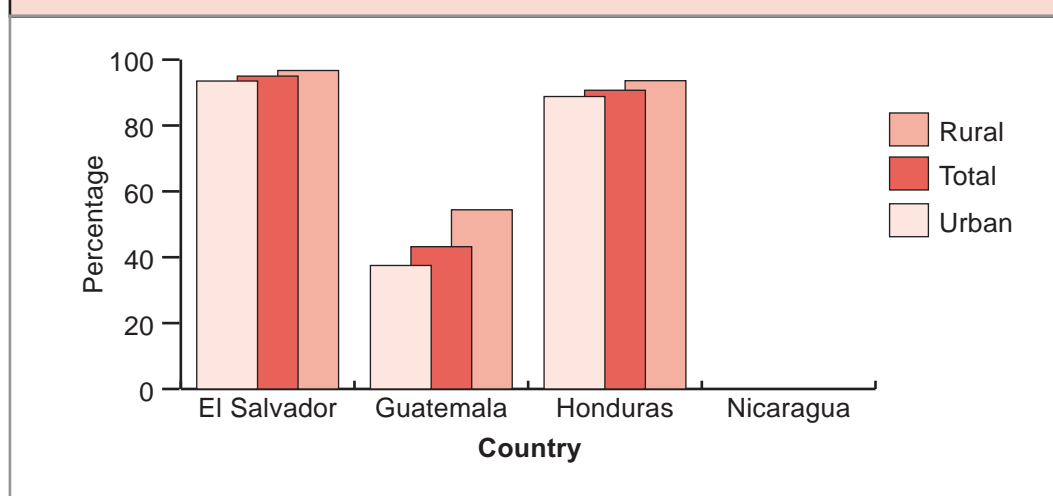
Child Immunization

The World Health Organization (WHO) Expanded Program on Immunization focuses on six common childhood diseases that can be prevented by immunization: diphtheria, pertussis, and tetanus (DPT), measles, polio, and tuberculosis (BCG). Full immunization includes three doses of DPT vaccine, three doses of the oral polio vaccine, a measles vaccination, and a BCG vaccination. In this section, levels of full

Table 9.2
Trends in the Use of Well-baby Care: Live Births During The Five Years Prior To The Survey To Women Of Fertile Age

Country	Year of Survey	Percentage
El Salvador	1993*	80.8
El Salvador	1998*	89.9
El Salvador	2002/03*	95.0
Guatemala	1995a	na
Guatemala	1998/99*	na
Guatemala	2002*	43.2
Honduras	1991/92‡	84.6
Honduras	1996†	77.7
Honduras	2001*	90.7
Nicaragua	1992/93*	82.9
Nicaragua	1998*	na
Nicaragua	2001*	na

* Live births to women aged 15−49 during the 5 years prior to the survey.

† Selected live birth to women aged 15−49 during the 5 years prior to the survey.

‡ Last live birth to women aged 15−44 during the 5 years prior to the survey.

na: Not available.

Graph 9.2
Use of Well-Baby Care, By Area of Residence: Live Births in the Five Years Prior to Survey (Most Recent Survey)

immunization of children aged 12–23 months are examined (in Nicaragua the age range 18–29 months was used in the report for the most recent survey and this is the information presented here).

Among the four countries surveyed, full childhood immunization varies from a low of 62.5 percent of children aged 12–23 months in Guatemala to a high of 77.7 percent in Honduras, according to the most recent survey (last column of Table 9.3 and Graph 9.3). In each country the urban/rural differential is small.

Comparing coverage by vaccine, BCG is highest in every country, while measles vaccine, which also requires one dose to infer protection, has the poorest coverage (Graph 9.4). The data suggest that missing the third dose of vaccine

in the polio and DPT series and the measles vaccine altogether is the reason that complete immunization levels are relatively low in each country. Incomplete vaccinations can reflect problems with service delivery and logistics systems, as well as lack of health services in remote locations.

Graph 9.4 also shows that coverage of BCG and DPT is high and similar in El Salvador and Honduras. Honduras is in first place with regards to polio (91 percent) while the other countries present a range from a low of 78 percent in Guatemala to 85 percent in Nicaragua. Measles coverage is highest in Nicaragua (86 percent) followed by Honduras (83 percent), El Salvador (80 percent) and Guatemala (75 percent). For each of the vaccines shown in Graph 9.4, Guatemala has the lowest coverage.

Table 9.3
Percentage of Children Aged 12–23 Months Who are
Fully Immunized, According to Area of Residence, By Vaccine
(Most Recent Survey)

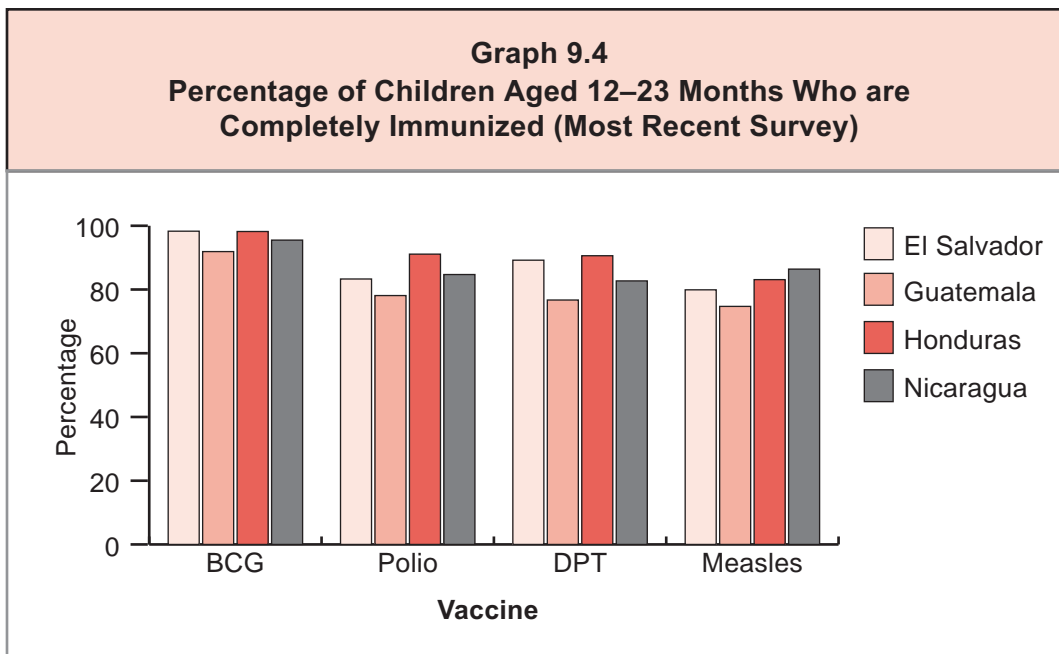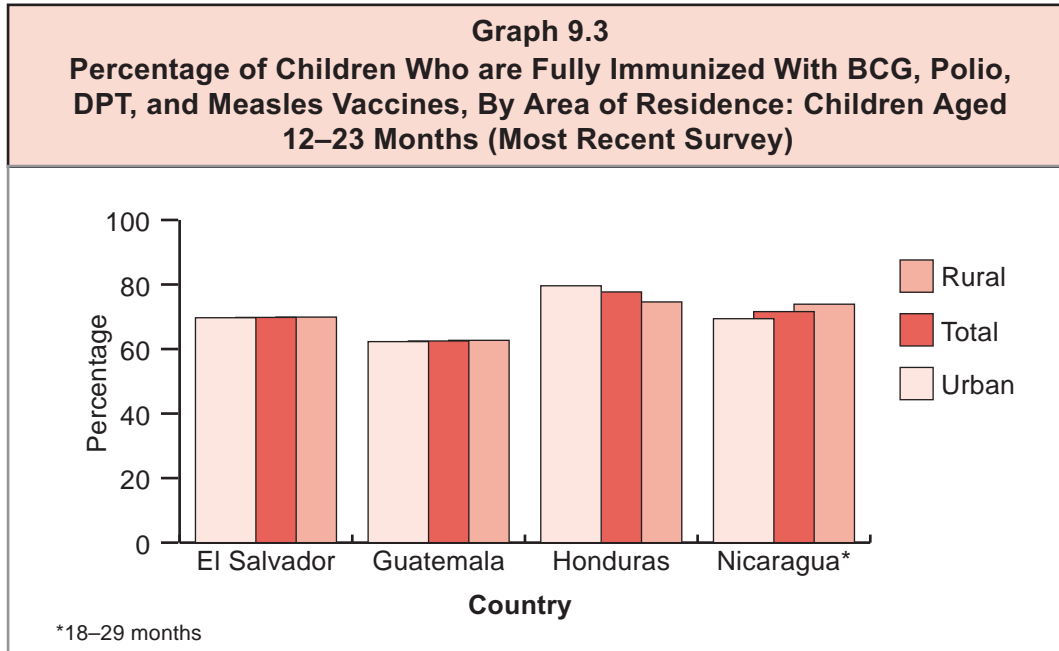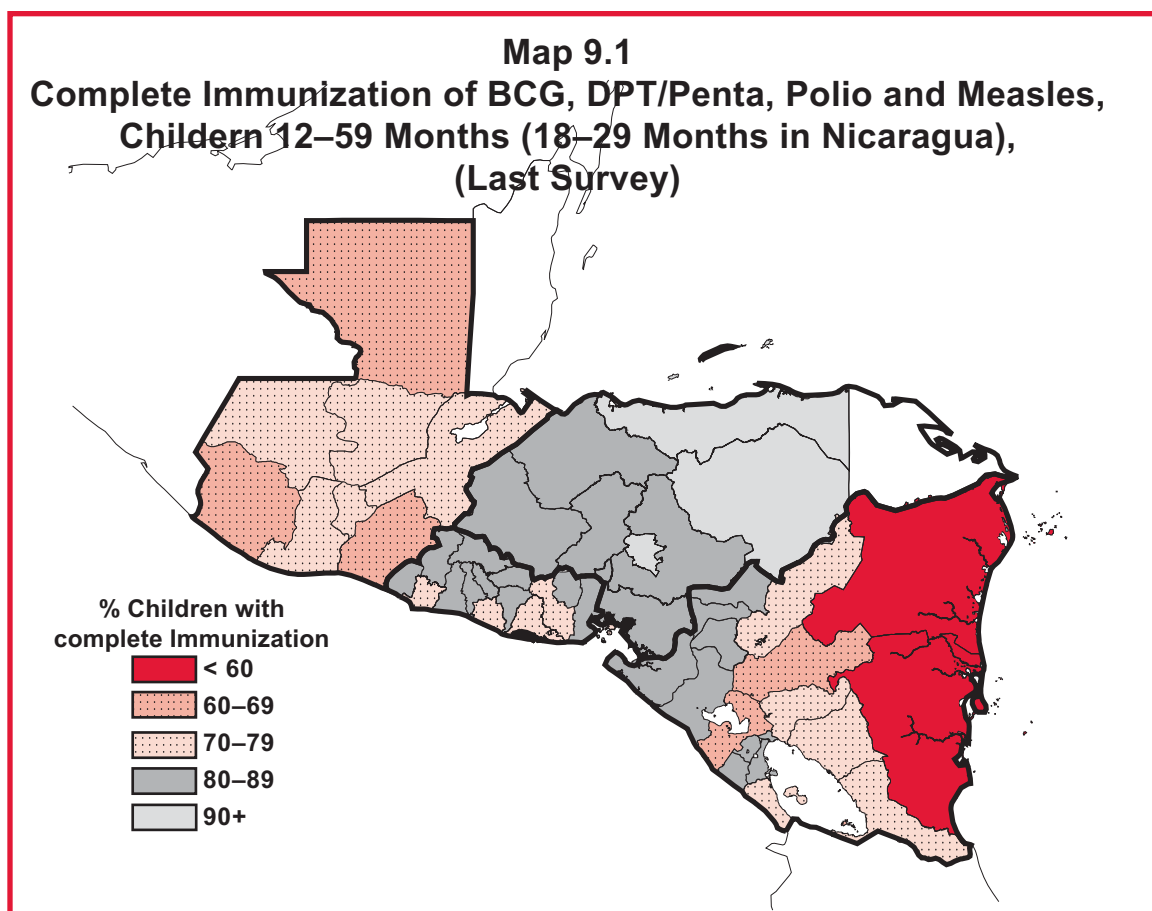| Country/Area	Year of Survey	BCG	Polio	DPT	Measles	All
El Salvador	2002/03					
Total		98.3	83.3	89.2	79.9	69.8
Urban		98.3	84.9	90.3	76.9	69.9
Rural		98.2	81.8	88.2	82.9	69.7
Guatemala	2002					
Total		91.9	78.1	76.7	74.7	62.5
Urban		91.9	74.0	74.3	75.9	62.7
Rural		91.9	80.2	77.9	74.1	62.3
Honduras	2001					
Total		98.2	91.1	90.6	83.1	77.7
Urban		98.2	92.3	90.5	81.3	74.6
Rural		98.1	90.4	90.7	84.2	79.6
Nicaragua*	2001					
Total		95.5	84.7	82.7	86.4	71.6
Urban		98.7	86.9	84.7	89.8	73.9
Rural		92.5	82.7	80.7	83.1	69.4

* Based on ages 18-29 months

Graph 9.3
Percentage of Children Who are Fully Immunized With BCG, Polio, DPT, and Measles Vaccines, By Area of Residence: Children Aged 12–23 Months (Most Recent Survey)

*18–29 months

Graph 9.4
Percentage of Children Aged 12–23 Months Who are Completely Immunized (Most Recent Survey)

Table 9.4
Trends in the Percentage of Children Aged 12–23 Months Who are Fully Immunized, By Vaccine

Country	Year of Survey	BCG	Polio	DPT	Measles	All
El Salvador	1993*	87.0	78.1	78.0	82.1	70.6
El Salvador	1998*	96.3	85.7	85.9	85.6	77.0
El Salvador	2002/03*	98.3	83.3	89.2	79.9	69.8
Guatemala	1995*	78.2	55.9	59.4	75.1	42.6
Guatemala	1998/99*	90.3	66.7	70.4	80.6	59.5
Guatemala	2002*	91.9	78.1	76.7	74.7	62.5
Honduras	1991/92†	94.0	94.2	93.4	80.3	na
Honduras	1996*	96.4	85.6	85.5	88.0	81.6
Honduras	2001*	98.2	91.1	90.6	83.1	77.7
Nicaragua	1992/93*	91.2	84.0	80.8	83.4	na
Nicaragua	1998*	95.0	83.0	79.7	85.7	72.6
Nicaragua	2001*‡	95.5	84.7	82.7	86.4	71.6

* Based on vacination cards and mother's responses

† Based on vacination cards and those reporting never having a vacine

‡ Based on ages 18-29 months

As shown in Table 9.4, between the next-to-last and last survey, gains in full childhood immunization appears to be slowing or even declining. Between the early 1990s and the late 1990s, both El Salvador and Guatemala made significant gains in immunization coverage. But since the late 1990s a slowing, or even decline, in coverage related to measles vaccine has affected overall immunization coverage, as the coverage of the other vaccines has been increasing.

Map 9.1
Complete Immunization of BCG, DPT/Penta, Polio and Measles,
Childern 12–59 Months (18–29 Months in Nicaragua),
(Last Survey)

% Children with
complete Immunization

< 60
60–69
70–79
80–89
90+

Map 9.1 illustrates the regional coverage of the vaccination program within countries. It shows percent of children, 12–59 months, who had received the recommended doses of BCG, DPT, Polio and measles vaccines, according to the most recent survey. For Nicaragua, data are presented for children ages 18–29 months. It is noteworthy that a coverage of 80 percent or greater has been achieved for all health regions in Honduras, with three regions immunizing more than 90 percent of children. In Guatemala, none of the regions had exceeded 80 percent, and three regions had less than 70 percent coverage. In El Salvador all but 4 regions exceed 80 percent, but none had reached 90 percent, and Nicaragua exhibits a broad range in coverage with the autonomous northern and southern regions of the Atlantic coast (RAAN and RAAS regions) having less than 60 percent coverage.

Prevalence and Treatment of Diarrhea and Acute Respiratory Infections

In the four countries profiled in this report, the primary causes of infant and child morbidity and mortality are respiratory infections and diarrhea. As a result, the DHS and RHS surveys conducted in these countries have included modules that investigate the prevalence of these diseases, their severity, and what was done to treat children with a recent episode of diarrhea or acute respiratory infection.

Addressing diarrhea first, according to the results of the last survey conducted in each country, from 13.1 percent (Nicaragua) to 22.5 percent (Honduras) of children under age 5 were reported to have had diarrhea during the two weeks prior to interview (Table 9.5 and Graph 9.5). The difference in prevalence may be due to

Table 9.5
Percentage of Children With Diarrhea During the Two Weeks Prior to Interview, By Area of Residence: Children Less Than 5 Years of Age (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	13.9	11.7	15.9
Guatemala	2002	22.2	15.8	25.4
Honduras	2001	22.5	21.1	23.4
Nicaragua	2001	13.1	11.7	14.4

when fieldwork was conducted in each country, or to the living conditions in each country, or both. It is difficult to distinguish which is more important here. In all of the countries, rural prevalence rates exceed urban rates, with Guatemala presenting an urban/rural differential of almost 10 percentage points.
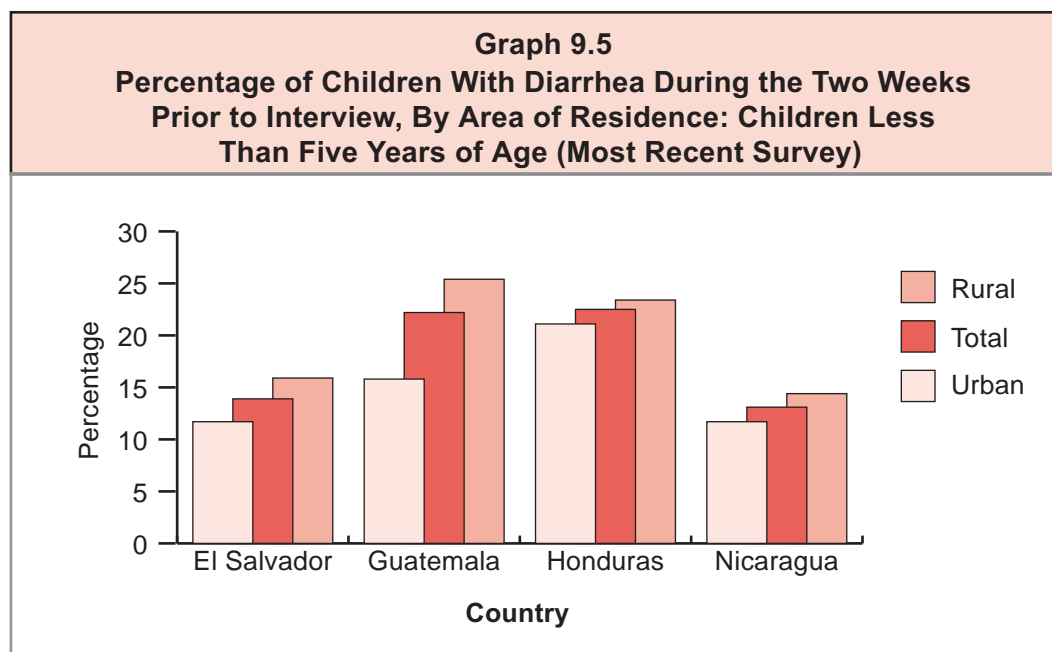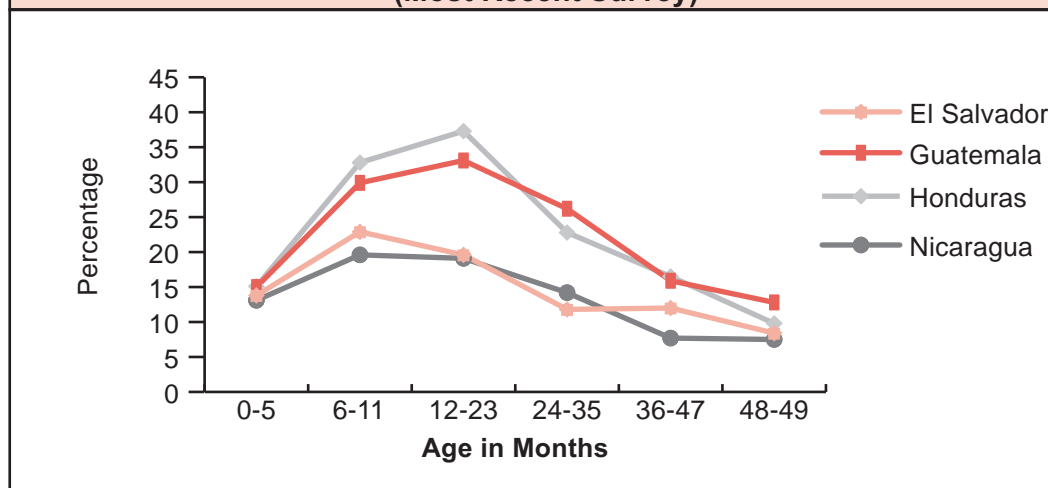
Graph 9.5
Percentage of Children With Diarrhea During the Two Weeks Prior to Interview, By Area of Residence: Children Less Than Five Years of Age (Most Recent Survey)

Table 9.6
Percentage of Children With Diarrhea During
the Two Weeks Prior to Interview, By Age of Child (In Months):
Children Less Than 5 Years of Age (Most Recent Survey)

Country	Year of Survey	Total	Age of Child					
			0-5	6-11	12-23	24-35	36-47	48-59
El Salvador	2002/03	13.8	13.8	22.9	19.6	11.8	12.0	8.4
Guatemala	2002	22.2	15.0	29.9	33.1	26.2	15.9	12.8
Honduras	2001	22.5	15.1	32.8	37.3	22.8	16.5	9.8
Nicaragua	2001	13.1	13.1	19.6	19.1	14.2	7.7	7.5

Graph 9.6
Percentage of Children With Diarrhea, By Age of Child (In
Months): Children Less Than 5 Years of Age
(Most Recent Survey)

In general, prevalence rates are lowest among children aged 0–5 months and highest among children aged 12–23 months (Table 9.6 and Graph 9.6), possibly reflecting a beneficial effect of breastfeeding among the younger age group. As children 6–11 months of age are weaned and are exposed to other foods and become more active in contaminated environments, the prevalence of diarrhea begins to increase.

From 41 to 50 percent of the mothers with a child who had a recent episode of diarrhea consulted with someone about the disease (Table 9.7). The urban/rural differential in each country was small, but urban mothers were more likely to consult with someone than rural mothers. In El Salvador and Honduras, the probability of consulting with someone increased as the duration and severity of the diarrhea increased (data not shown).

As shown in Table 9.8 and Graph 9.7, the percentage of children with diarrhea who were treated with oral rehydration salts (ORS) was highest in El Salvador (51.4 percent) and Nicaragua (50.0 percent), and lowest in Guatemala (33.8 percent) and Honduras (29.6 percent). In Guatemala and Honduras, use of ORS was greater in the rural area than in the urban area. Between the last two surveys, use of ORS increased slightly in El Salvador and Guatemala, remained about the same in Honduras, and decreased slightly in Nicaragua (data not shown).

Table 9.7
Percentage of Children Less Than 5 Years of Age With Diarrhea During the Two Weeks Prior to Interview, Whose Mothers Consulted With Someone About Their Recent Episode of Diarrhea, By Area of Residence: Children Less Than 5 Years of Age (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	50.4	57.0	46.2
Guatemala*	2002	41.6	46.6	40.1
Honduras	2001	48.8	51.4	47.1
Nicaragua*	2001	44.1	45.4	43.1

* Includes only health providers.

Table 9.8
Percentage of Children With Diarrhea During the Two Weeks Prior to Interview, Whose Mothers Treated Them With Oral Rehydration Salts, By Area of Residence: Children Less Than 5 Years Of Age (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	51.4	55.0	49.0
Guatemala	2002	33.8	32.2	34.3
Honduras	2001	29.6	18.6	36.6
Nicaragua	2001	50.0	53.9	45.7

Graph 9.7
Percentage of Children With Diarrhea Who Were Treated With Oral Rehydration Salts, By Area of Residence: Children Less Than Five Years of Age (Most Recent Survey)
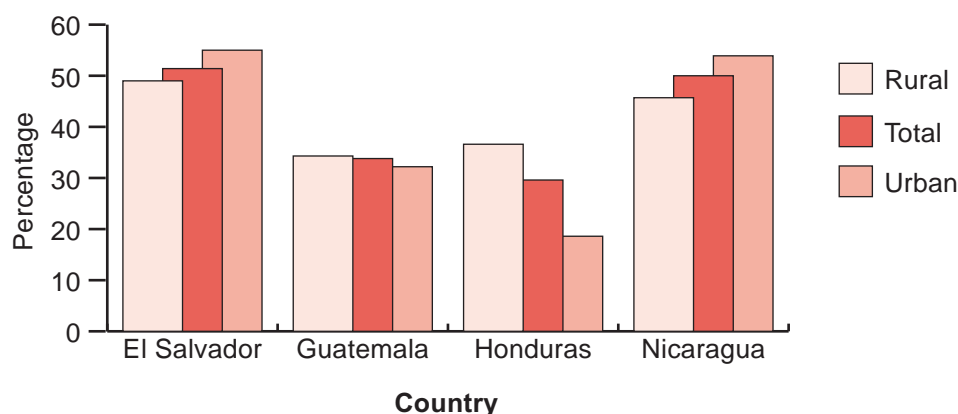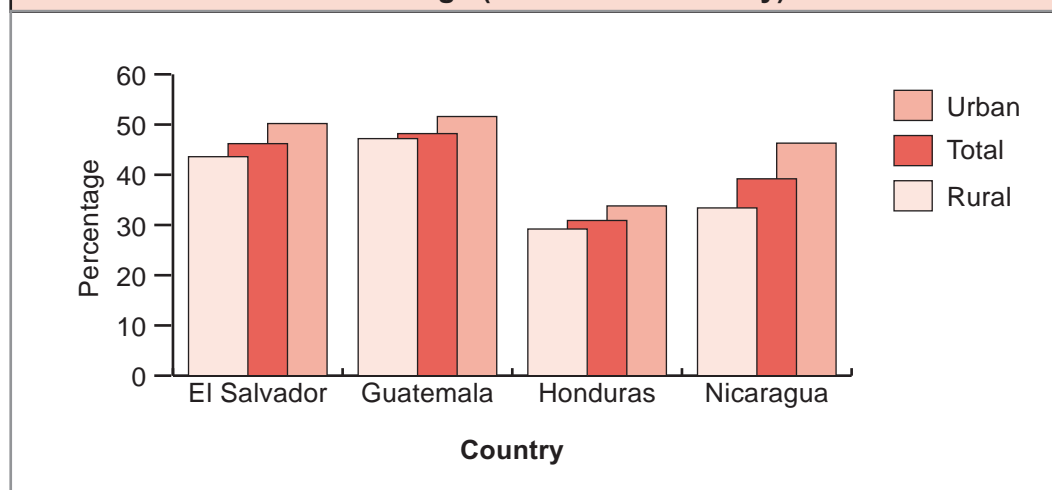
Table 9.9
Percentage of Children With Diarrhea During the Two Weeks Prior to Interview, Whose Mothers Increased the Amount of Liquids Given to Them During Their Recent Episode of Diarrhea, By Area of Residence: Children Less Than 5 Years of Age (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	46.2	50.2	43.6
Guatemala	2002	48.2	51.6	47.2
Honduras	2001	30.9	33.8	29.2
Nicaragua	2001	39.2	46.3	33.4

Graph 9.8
Percentage of Children With Diarrhea Who Were Given More Liquids By Their Mothers, By Area of Residence: Children Less Than Five Years of Age (Most Recent Survey)


In all of the countries, less than 50 percent of the mothers increased the amount of liquids that they gave to their children with diarrhea (Table 9.9 and Graph 9.8). The probability of increasing liquids was highest in Guatemala (48.2 percent) and lowest in Honduras (30.9 percent). As shown in the graph, a higher percentage of urban mothers increased the amount of liquids given to their children than rural mothers.

Table 9.10
Percentage of Children With
Respiratory Infections During the
Two Weeks Prior to Interview,
By Area of Residence: Children Less
Than 5 Years of Age
(Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	42.3	39.3	45.0
Guatemala	2002	18.2	14.4	20.2
Honduras	2001	48.6	45.4	50.7
Nicaragua	2001	30.9	28.5	30.2

Graph 9.9
Percentage of Children With Respiratory Infections During the
Two Weeks Prior to Interview, By Area of Residence: Children
**Less Than Five Years of Age (Most Recent Survey)**
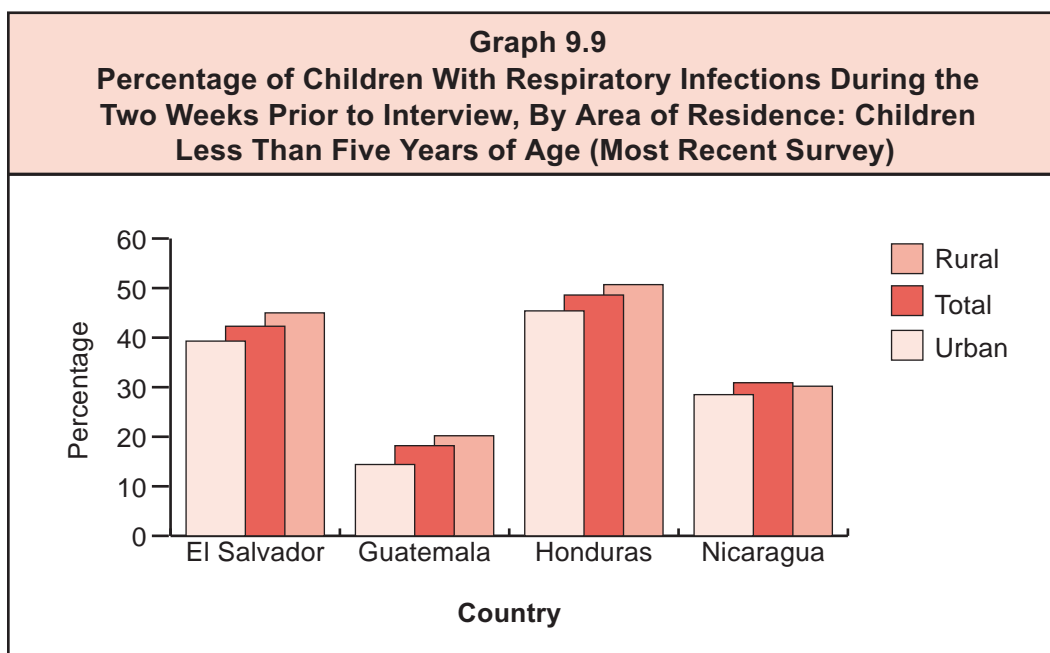
Turning to acute respiratory infections (ARI), the prevalence of ARI varied considerably across the four countries (Table 9.10 and Graph 9.9). The variance may be due to when the last survey was conducted in each country. While Guatemala reported the lowest prevalence of ARI (18.2 percent), Honduras reported the highest (48.6 percent). As expected, prevalence of ARI was highest in the rural areas of each country, but the urban/rural differences are small.

Table 9.11
**Percentage of Children With Respiratory Infections During
the Two Weeks Prior to Interview, By Age of Child (In Months):
Children Less Than 5 Years of Age (Most Recent Survey)**

Country	Year of Survey	Total	Age of Child					
			0-5	6-11	12-23	24-35	36-47	48-59
El Salvador	2002/03	42.3	35.5	49.6	48.5	40.9	41.5	39.5
Guatemala	2002	18.2	13.0	22.5	21.9	18.7	16.9	15.6
Honduras	2001	48.6	46.3	55.4	51.9	49.1	47.8	42.2
Nicaragua	2001	30.9	22.6	36.0	37.4	32.6	28.2	25.6

Graph 9.10
**Percentage of Children With Respiratory Infections,
By Age of Child (In Months): Children Less Than 5 Years of Age
(Most Recent Survey)**
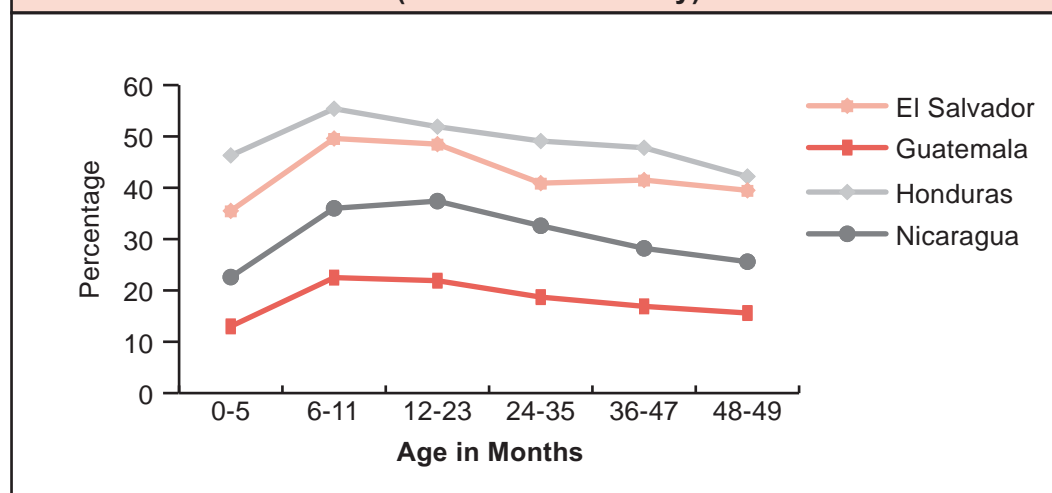
As was the case with diarrhea, prevalence of ARI was lowest among children aged 0–5 months, again reflecting the protective effect of breastfeeding (Table 9.11 and Graph 9.10). In general, the highest prevalence was recorded for children aged 6–11 months, followed closely by children aged 12–23 months.

Table 9.12
Percentage of Children Less Than 5 Years of Age With Respiratory Infections During the Two Weeks Prior to Interview, Whose Mothers Consulted With Someone About Their Illness, By Area of Residence: Children Less Than 5 Years of Age (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	61.6	74.3	52.0
Guatemala*	2002	64.3	78.9	59.0
Honduras	2001	52.0	57.0	48.5
Nicaragua*	2001	57.4	64.4	51.0
* Includes only health providers.				

Table 9.13
Percentage of Children Less Than 5 Years of Age With Respiratory Infections During the Two Weeks Prior to Interview, Who Were Treated With Antibiotics, By Area of Residence (Most Recent Survey)

Country	Year of Survey	Total	Urban	Rural
El Salvador	2002/03	52.9	61.4	46.4
Guatemala	2002	na	na	na
Honduras	2001	25.5	34.3	19.3
Nicaragua	2001	na	na	na
na: Not available.				

From 52.0 to 64.3 percent of the mothers with a child with a recent episode of ARI consulted with someone about the disease (Table 9.12). Unlike diarrhea, the urban/rural differential in each country was relatively large, reaching almost 20 percentage points in Guatemala. In El Salvador, the probability of consulting with someone increased as the duration and severity of the ARI increased, but in Honduras, more mothers of children with a moderate episode of ARI consulted with someone than those with children experiencing a severe case of ARI (data not shown).

As shown in Table 9.13, the use of antibiotics to treat ARI was relatively high in El Salvador (52.9 percent) and relatively low in Honduras (25.5 percent). In El Salvador, almost 40 percent of children who were classified with having only a cold were given antibiotics, while in Honduras, 20 percent of the children with a mild form of ARI were treated with antibiotics (data not shown). On the other hand, a sizeable proportion of children in both countries with a severe ARI were not treated with antibiotics. It appears that there is inappropriate use of antibiotics in both countries.

Summary of Findings

- Less than 87 percent of live births are weighed at birth or during the 7 days following birth. This proportion decreases to less than 80 percent among live births occurring to rural women.

- Over 90 percent of live births in El Salvador and Honduras received well-baby care, compared to 43.2 percent of live births in Guatemala. Urban/rural differentials are small in El Salvador and Honduras, but about 17 percentage points in Guatemala.

- Full childhood immunization of children age 12–23 months varies from 62.5 percent in Guatemala to 77.7 percent in Honduras. Missing the third dose of vaccine in the polio and DPT series and the measles vaccine altogether are probably the reasons that complete immunization levels are relatively low in the four countries. The fact that urban and rural immunization coverage within each country is relatively similar is a good example of improving equity in access to this service.

- Prevalence of diarrhea and acute respiratory infections (ARI) varies from country to country, and may be due to the time of year the last survey was conducted in each country. As expected, prevalence of both diseases was higher in rural than in urban areas. Breastfeeding appears to provide some protection against both diseases in children aged 0–5 months.

- The probability that a mother would consult with someone if the child was sick is greater if the child was suffering from an ARI than from a bout of diarrhea.

- The use of oral rehydration salts is low in the countries examined, as is increasing the amount of liquids given to children with diarrhea. Both issues need to be addressed in future public education campaigns, particularly in Guatemala and Honduras.

- The data suggest that there may be inappropriate use of antibiotics to treat ARIs in some of the countries.