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# **Background report**

## **Cambodian Health System**

**Health Status of the Cambodian Population  
Health Service Delivery**

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# **Health Status of the Cambodian Population**

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## **Health Status of the Cambodian Population**

### Summary findings

1 There has been an overall increase in the health status of Cambodians based on national household surveys (CDHS 2000 vs. 2005). Improved outcomes have been due to both increased spending on health and improved access, combined with increased economic growth over this period. Significant improvements have been made in reducing the under-five mortality, lowering the fertility rate, increasing ANC coverage, and reducing the prevalence of HIV/AIDS.

2 However there are some notable exceptions. Results from a two tailed t-test of CDHS data has shown there has been no change in the rates for infant mortality, mild/moderate anemia in children or the Maternal Mortality Ratio since 2000.

3 The comparison of national averages for 2000 and 2005 for infant and under-five mortality has shown that the actual disparity between urban and rural rates has widened, and confirms again that women's education is a factor contributing to significantly lower child mortality rates. By province, Kampong Speu had a significant increase in both infant and under five mortality rates, and Kampong Thom and Preah Vineah/ Stung Treng/ Kratie experienced higher infant mortality rates since 2000.

4 Challenges still exist for further increasing the coverage for ANC and for deliveries either in health facilities, or for those attended by a health professional. Breastfeeding has increased but poor complementary feeding practices are clearly causing an increase in malnutrition indicators.

5 Providing women with primary or secondary education and birth spacing services has a profound effect on reducing infant or under five mortality rates. Women's education is also positively associated with reducing childhood illnesses; (ARI/Diarrhea/Fever), knowing when to seek medical assistance, and what treatments are effective. It is linked to higher vaccination rates and reduced malnutrition indicators (wasting, stunting, underweight).

6 There has been a very significant increase in the number of women with secondary or higher education since 2000, but rates vary by province. There has been a considerably higher drop-out rate from primary education in Mondol Kiri – Rattanka Kiri and Preah Vineah / Stung Treng than the national average.

7 Severe anemia has been substantially reduced in children, but only a marginally reduced in women since 2000. Mild or moderate anemia in women however has greatly declined. Women with little or no education, or from poorer households are more likely to have anemic children or be anemic themselves. The number of pregnant women who have taken iron supplements varies across provinces, and although Vitamin A distribution has improved greatly since 2000, better administration of supplies and distribution is needed.

8 Communicable disease case fatality rates for malaria and dengue fever are often compromised due to late arrival at a health facilities. Rates for testing and treatment of TB have greatly improved. Access to household sanitation

facilities has also improved significantly since 2000 in both rural and urban areas.

9 By comparison, Cambodia's rates are worse than neighboring countries on most health indicators, although relative spending per capita is higher.

10 Although the number of new-borns protected by tetanus toxoid vaccination has greatly increased since 2000 it currently rests at only around half of all births. Most neonatal deaths occur within 48 hours of birth, but nearly a third of new mothers who didn't deliver in a health facility, also don't attend for a post-natal check up.

11 The fertility rate has decreased. Unmet need for family planning and birth spacing have also decreased but further improvements are needed. Contraception has increased significantly in all the provinces that previously had the lowest levels in 2000. Data may be underestimated because rates don't include contraception sourced from private suppliers.

12 Although the rates for disability or illness are about the same across income groups, the effects from malnutrition and communicable disease are reported as important concerns by poorer households, while non-communicable disease are more often reported in richer households.

13 Most adults experience a rate of about 5-7 medical injections per year.

14 TV and Radio provide the most effective media coverage for health promotion activities.

15 More research is needed on the prevalence and incidence of chronic disease in Cambodia. Using Vietnam data as a proxy may not always be appropriate.

16 Very high tobacco use in males or rural or uneducated women suggests the need for anti-tobacco campaigns to avert the potential chronic disease in the future. Poorest, rural families generally spend more on tobacco and alcohol than on health care.

17 Parts of the Mekong delta may have a high incidence of contaminated household water sources by naturally occurring arsenic. Testing of wells, and education and treatment for the symptoms of arsenic poisoning, as well as options for alternative water sources, such as rain water tanks should be considered in higher risk areas.

18 Mobility disabilities as a result from Landmines or UXO's have declined greatly since 1996 but there has been an increased incidence due to other causes, such as accidents, disease or trauma due to road accidents. Cambodia's rate of traffic related injuries/disabilities has doubled in the last five years, and in 2002 had one of the highest incidences of fatalities in ASEAN nations.

19 Strengthening of the capacity for commissioning or interpreting statistical analysis is needed to recognize what research or survey data is comparable and what is not.

## Health Status Introduction

20 This report describes the differential nature of morbidity and mortality rates across social groups in Cambodia. The CDHS<sup>1</sup> 2005 provides the most recent population based information on national health indicators. Using this and other reports comparisons have been made on the equity-related dimensions of education level, location and income quintiles against health outcomes.

21 In relation to the Millennium Development Goals (MDG), statistical analysis was used where possible ( $p \leq 0.05$ ) to compare the results of CDHS 2000 and CDHS 2005. The analysis found under-five mortality has been very significantly reduced since 2000 in both rural and urban areas, while infant mortality and maternal mortality have remained stagnant.

22 Rates for HIV/AIDS, malaria, tuberculosis and other communicable diseases have been targeted and curtailed in the past five years due to extensive public health campaigns launched through donor support in partnership with the MOH and international and local NGO's. For HIV, in particular the CDHS 2005 provides firm evidence that the prevalence of the epidemic is many times lower that previously estimated.

23 In examining education, income and location relationships it is helpful to understand that the vast majority of the population (85%) in Cambodia live in rural locations, and the rural / urban demographic can be interpreted as a proxy for income distribution from lowest to highest. For most health outcomes, households in low wealth quintiles, or those with women who have low levels of education, are consistent markers for compromised health status when compared to other wealthier households or ones where women have higher levels of education.

24 The data sources are predominately the CSES<sup>2</sup> 2004 and CDHS 2000 and 2005, and although these surveys used representative samples to give estimates on a population basis, much of the standard statistical information is absent from all of these reports. This makes verifying results and identifying actual changes very difficult. Generally these surveys have not provided sample sizes, standard errors, confidence intervals or p-values to show the relevancy or accuracy of the collated data. Where possible a full statistical interpretation is provided for selected indicators between the CDHS 2000 and CDHS 2005, but because of changes to grouping of provinces in each survey not all provinces could be compared directly.

25 It is also important to bear in mind that a limitation of these types of cross-sectional studies is they are unable to determine causality, but they do provide a good indication of current population health and where further investigation might be warranted. These three studies include many cases self-reported assessments of disease and morbidity that may be subject to recall, selection or measurement bias. Additionally most data is concentrated on child and maternal health leaving an information gap about the health of adults or even school age children for general health indicators such as nutrition. Unfortunately longitudinal or specific cohort studies are not currently available to give a more rounded interpretation or analysis.

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<sup>1</sup> MOH: Cambodian Demographic Health Survey (CDHS)

<sup>2</sup> MOP: Cambodian Socio-Economic Survey (CSES)



## 1 **Child Health**

### *Infant and Under-Five Mortality*

26 The infant and under-five mortality data in the CDHS 2005 and CDHS 2000 was compared using a two tailed t-test. This test establishes to what extent the proportions in each survey are a true representation of actual value to within 95% confidence limit. A statistical test is needed to validate if the two surveys can be compared because each has used different methodologies to construct the data sets to minimize the possibility of bias or confounders.

27 The original data sets for the two surveys was not available, however using the sample sizes referenced in the surveys and proportions (means) provided for location, education level and province, the standard error, confidence intervals and the p-value<sup>3</sup> (probability value) was calculated using STATA<sup>4</sup> statistical software for infant and under-five mortality to make an assessment within 95% probability if a change in proportions has occurred over time. The CDHS 2005 has provided standard errors for some indicators but the CDHS 2000 does not include any common statistical details. Data relating to income groups was only collected in the CDHS 2005 and could not be compared with the CDHS 2000. The summary data in Table 1 indicates that based on data for the ten year period prior to each survey, between 2000 and 2005:

- There has been no significant change in infant mortality in urban or rural areas.
- For under-five mortality there has been a highly significant decrease in rural areas and a significant decrease in urban areas.

28 Infant mortality increased greatly during this period in Kampong Speu and less substantially in Kampong Thom and Preah Vihea / Strung Treng / Kratie. ( $p=0.0035$ ,  $p=0.0459$ ,  $p=0.0224$ ).

29 Five provincial groups improved their outcomes. Infant mortality decreased greatly in Pursat and Kampot / Krong Kep / Sihanouk and less substantially in Kampong Chhnang with only borderline decreases in Mondol Kiri / Rattanak Kiri and Kampong Cham ( $p=0.0052$ ,  $p=0.0053$ ,  $p=0.0947$ ,  $p=0.0730$ ).

30 For under-five mortality six provincial groups improved their outcomes. Under-five deaths decreased greatly in Kampong Chhang; Pousat, Kampot / Krong Kep/ Sihanouk, ( $p=0.0016$ ,  $p=0.0017$ ,  $p=0.0020$ ) less substantially in Kampong Cham and Siem Reap / Odtar Mean Chey; ( $p=0.0131$ ,  $p=0.0101$ ) and there was only a borderline improvement in Mondol Kiri / Rattanak Kiri ( $p=0.0588$ ). Only one province, Kampong Speu, was significantly worse ( $p=0.0184$ ).

31 Secondary education was highly associated with lowered infant mortality rates ( $p=0.0026$ ). Primary or secondary education was highly associated with lowered under-five mortality rates ( $p=0.0007$ ,  $p=0.0001$ ). For all other provinces there has been no change in rates between 2000 and 2005. The relationship

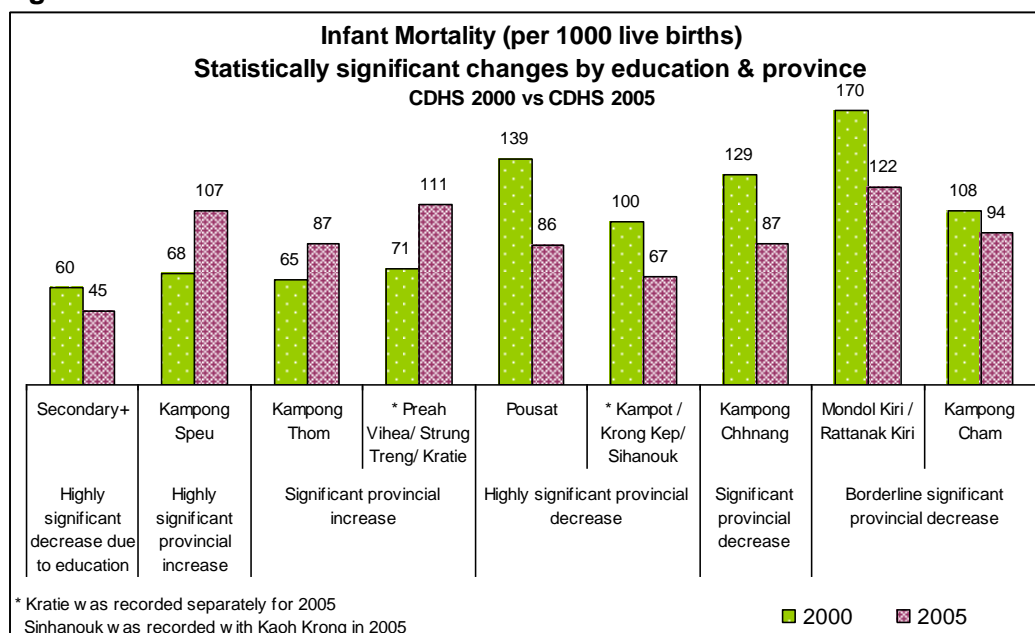
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<sup>3</sup> P-values  $\leq 0.05$  indicates there is a 95% probability that the proportion is a true representation of the actual value, p-values  $\leq 0.01$  indicates a highly significant difference, while p-values between  $0.10 \leq p \leq 0.05$  indicates a borderline difference. P-values that are greater than 0.10 indicates that there is no significant difference.

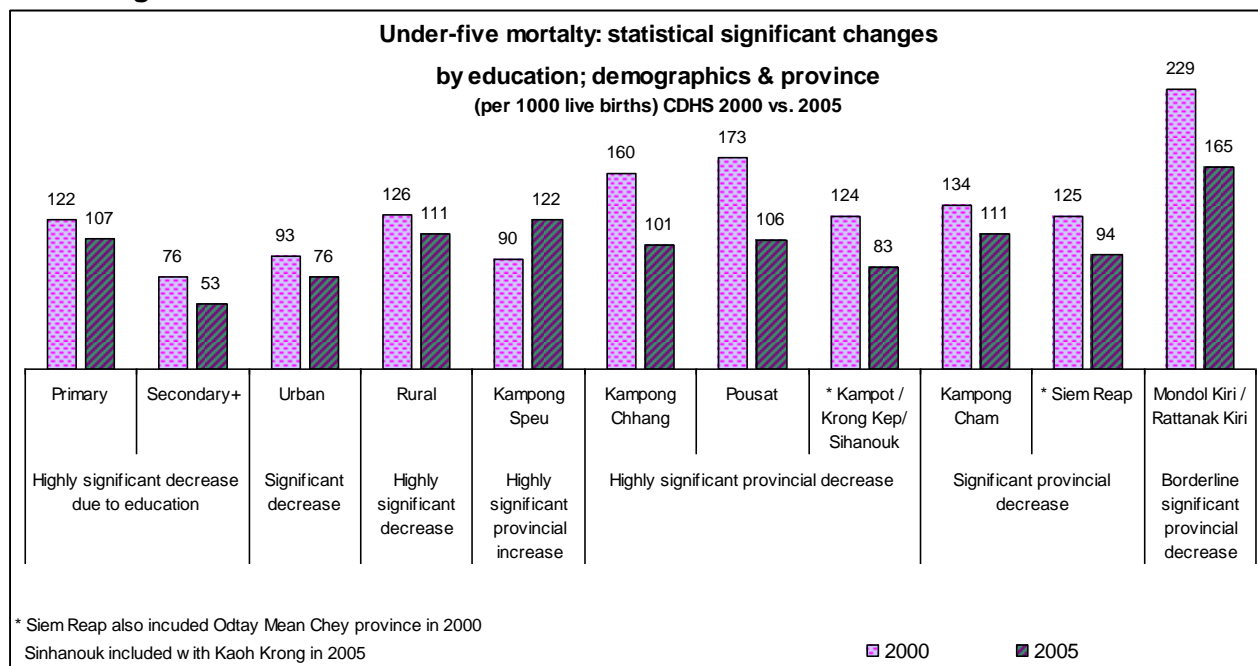
<sup>4</sup> STATA 9 Statistical software : [www.STATA.com](http://www.STATA.com)

with national averages for the two surveys has also been compiled and is provided later in this section. It is important to note that national averages indicate a relative position and do not demonstrate if a change has occurred over time. Using information from Table 1, Figures 1 and 2 show results from a ten year time frame prior to each survey for rates of infant and under-five mortality using variables of rural / urban location and education status. Provinces or categories not included in the diagrams indicate that no change in under-five mortality has occurred since CDHS 2000.

**Figure 1<sup>5</sup>**



**Figure 2**



<sup>5</sup> Rates are for the ten year period prior to each survey. Because of the changes in provincial grouping between the surveys, the results for Kampot / Krong Kep/ Sihanouk ( $p=0.0053$ ), and Preah Vihea/ Strung Treng/ Kratie\* ( $p=0.0224$ ) may be under-estimated in 2005 however this cannot be confirmed without the original datasets.

**Table 1 Summary Infant mortality & Under-five mortality**

Infant Mortality CDHS 2005			Under-five Mortality CDHS 2005		
<b>Location or education rates compared to the National Average 2005</b>					
Urban	Highly significantly below	<b>p-value</b> 0.0000	Urban	Highly significantly below	<b>p-value</b> 0.0000
Rural	Borderline above	(-)0.0725	Rural	Significantly above	(-)0.0410
No education	Highly significantly above	(-)0.0000	No education	Highly significantly above	(-)0.0000
Primary Education	No difference	(-)0.2240	Primary Education	No difference	(-)0.2905
Secondary Education	Highly significantly below	0.0000	Secondary Education	Highly significantly below	0.0000
<b>Provincial rates that are worse than the National Average 2005</b>					
Mondol Kiri / Rattanak Kiri	Significantly above	(-)0.0366	Mondol Kiri / Ratanak Kiri	Highly significantly above	(-)0.0022
Preah Vihea/ Strung Treng/ Kratie	Borderline above	(-)0.0741	Preah Vihea/ Strung Treng/ Kratie	Significantly above	(-) 0.0106
Prey Veang	Highly significantly above	(-)0.0000	Prey Veang	Significantly above	(-)0.0000
Kampong Speu	Significantly above	(-)0.0225	Kampong Speu	Borderline above	(-)0.0539
<b>Location or education rates that have changed between 2000 and 2005</b>					
Urban	No difference	0.1386	Urban	Significantly below	0.0122
Rural	No difference	0.1510	Rural	Highly significantly below	0.0001
No education	No difference	(-)0.1167	No education	No difference	(-)0.4749
Primary Education	No difference	0.2033	Primary Education	Highly significantly below	0.0007
Secondary Education	Highly significantly below	0.0026	Secondary Education	Highly significantly below	0.0001
<b>Provincial rates that have improved between 2000 and 2005</b>					
Kampong Cham	Borderline above	0.0730	Kampong Cham	Significantly above	0.0131
Kampong Chhnang	Significantly above	0.0109	Kampong Chhnang	Highly significantly above	0.0016
Pursat	Highly significantly above	0.0052	Pursat	Highly significantly above	0.0017
Kampot / Krong Kep/ Sihanouk	Highly significantly above	0.0053	Kampot / Krong Kep/ Sihanouk	Highly significantly above	0.0020
Mondol Kiri / Ratanak Kiri	Borderline above	0.0947	Mondol Kiri / Ratanak Kiri	Borderline above	0.0588
			Siem Reap / Odtar Mean Chey	Significantly above	0.0101
<b>Provincial rates that have worsened between 2000 and 2005</b>					
Kampong Speu	Highly significant provincial increase	(-)0.0035	Kampong Speu	Significant provincial increase	(-)0.0184
Kampong Thom	Significant provincial increase	(-)0.0459			
Preah Vihea/ Strung Treng/ Kratie	Significant provincial increase	(-)0.0224			
<b>Provincial rates that have not changed between 2000 and 2005</b>					
Banteay Meanchey	No difference	0.4404	Banteay Meanchey	No difference	0.2411
Kandal	No difference	0.3398	Kampong Thom	No difference	(-)0.3187
Phnom Penh	No difference	(-)0.2520	Kandal	No difference	0.2570
Prey Veang	No difference	(-)0.2105	Phnom Penh	No difference	(-)0.3779
Svay Rieng	No difference	0/2678	Prey Veang	No difference	0.2727
Takeo	No difference	0.5000	Svay Rieng	No difference	0.1343
Battambang / Pailin	No difference	0.4676	Takeo	No difference	0.1079
Siem Reap / Odtar Mean Chey	No difference	0.1601	Battambang / Pailin	No difference	0.2168
			Preah Vihea/ Strung Treng/ Kratie	No difference	(-)0.1324

(-) for convenience this sign indicates an inverse result e.g. either increase or decrease.

Please note the terminology:

No Significant Difference refers to a probability of Type II error being greater than 0.05 (or 5%)

Significant Difference refers to being less than 0.05 (under 5%)

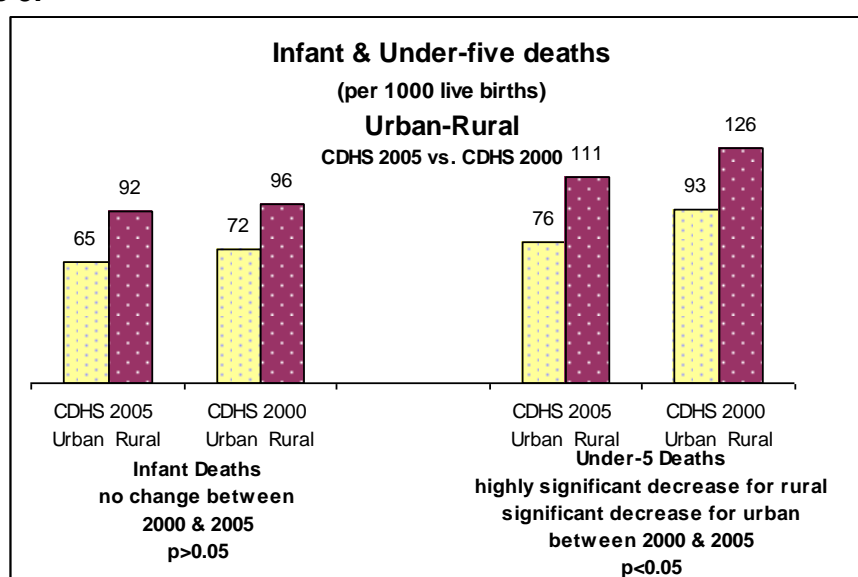
Highly Significant Difference refers to being less than 0.01 (under 1%)

Borderline significant difference refers to being greater than 0.05 but less than 0.1 (between 5% and 10%)

Changes to Grouping of Provinces

2000	2005
Kaoh Kong	Sinhanouk included with Kaoh Krong
Kampot/ Krong Kep/ Sihanouk	Sinhanouk included with Kaoh Krong
Preah Vihea/Strung Treng/Kratie	Kratie recorded separately
Siem Reap/ Otdar Mean Chey	Otdar Mean Chey recorded separately

**Figure 3:**

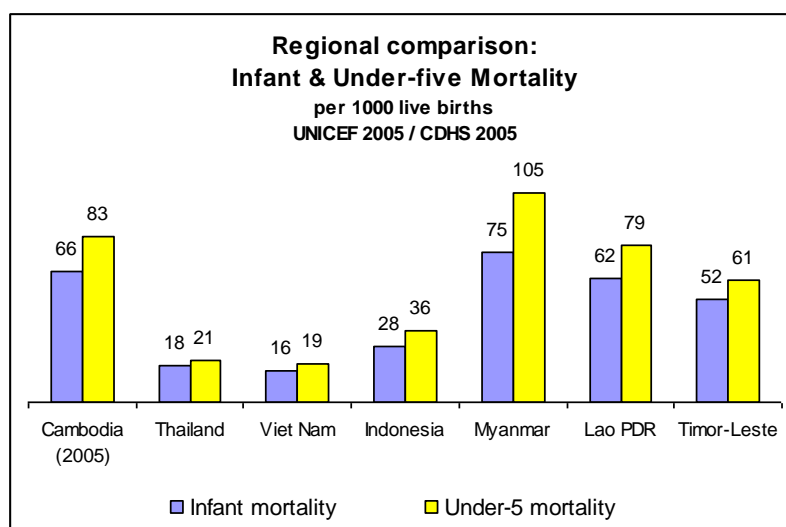


32 Co-factors that impact on child mortality rates include sex of the child, mother's age at birth, birth order, birth interval and birth weight. Consistent with global observations males had a higher chance of mortality in the first month of life compared to females. (42 vs. 30 per 1000). By proportion, the highest likelihood for the death of an infant or child under-five is if mothers are over forty when they gave birth, the birth interval to an older sibling is less than two years and if the child is a first-born or sixth-born or higher. A birth interval of less than two years means a child is nearly three times (2.7) more likely to die before their first birthday than a child born four or more years after a preceding birth (CDHS 2005).

33 Mother's were asked to recall the relative size of their new-borns as a substitute for birth-weight using the descriptors *small / very small*, or *average / or larger*. Using this method *small / very small* babies (estimated to be less than 2.5kg) were reported at the same rate by rural and urban women (8%), but these babies were much more likely to record an infant death than babies described as *average / or larger* (95 vs. 56 per 1000 live births). (CDHS 2005).

34 Poverty and limited education of the mothers contribute to a greater risk of infant mortality. Mothers with no schooling or only primary schooling more than doubles the risk of an infant or under-five death compared to mothers with secondary schooling or above (111, 90 vs. 45). (CDHS 2005).

**Figure 4**



35 Based on the data from the CDHS 2005 and UNICEF, Cambodia has comparable rates of infant and under-five mortality to Myanmar and Lao PDR, but its rates are around three to four times worse than Thailand, Indonesia or Vietnam.

Infant Mortality compared to the national averages in 2000 and 2005

**Table 2 Infant Mortality compared to the national averages in 2000 and 2005 (p<0.05)**

Infant Mortality 2005 – (ten years prior)				
	Rural	Urban	Total sample size	Weighted average*
Sample size	12659	2692	15351	0.0872
Infant Mortality 2000 – (ten years prior)				
Sample size	13850	2973	16823	0.0916
<ul style="list-style-type: none"> <li>• Infant mortality per 1000 live births</li> <li>• Weighted average based on data sourced from the CDHS 2000 &amp; CDHS 2005 and compiled using STATA statistical software in a two tailed t-test.</li> </ul>				

36 The national average for infant mortality for ten years preceding 2005 has been estimated as 0.087 per 1000 live births. Using a two tailed t-test urban areas were found to be highly significantly below the national average (p=0.0000). Women with no education were highly significantly above and those with secondary education were highly significantly below the national average (p=0.0000, p=0.0000). Not unexpectedly and to compensate for the much higher results achieved in urban areas, rural areas are borderline above the national average (p=0.0725).

37 By province, Phnom Penh, Siem Reap / Odtar Mean Chey and Kampot / Krong Kep/ Sihanouk are well below the 2005 national average ( $p=0.0000$ ,  $p=0.0078$ ,  $p=0.0208$ ).

38 Mondol Kiri / Ratanak Kiri, Kampong Speu were significantly higher ( $p=0.0366$ ,  $p=0.0225$ ), while Prey Vaeng was much more significantly higher ( $p=0.0000$ ). Preah Vihea/ Strung Treng/ Kratie had an average that was only borderline worse than the national average ( $p=0.0741$ ).

39 All other provinces - Banteay Meanchey, Kampong Cham, Kampong Chhnang, Kampong Thom, Kandal, Pursat, Svay Rieng, Takeo and Battambang / Pailin, are not statistically different from the 2005 national average.

40 To make some comparison the national average for infant mortality for ten years preceding 2000 was 0.092, slightly higher than 2005. Having no education recorded significantly above the national average in 2000 and highly significantly above in 2005 ( $p=0.0149$ ,  $p=0.0000$ ). Secondary education was consistent marker for rates highly significantly below the national average in both years ( $p=0.0000$ ,  $p=0.0000$ ).

41 Mondol Kiri/Ratanak Kiri, and Prey Vaeng provinces have been much worse than the national average in both surveys ( $p=0.0003$ ,  $p=0.0366$ ), ( $p=0.0110$ ,  $p=0.0000$ ). Kampong Speu changed from being significantly below in 2000 to significantly above the national average in 2005 ( $p=0.0163$ ,  $p=0.0225$ ).

42 Phnom Penh and Siem Reap/Otar Mean Chey were both lower than the respective national averages in both years ( $p=0.0000$ ,  $p=0.0000$ ), ( $p=0.00687$ ,  $p=0.0078$ ). Preah Vihea/ Strung Treng/ Kratie was significantly lower in 2000 and was slightly higher in 2005 ( $p=0.00472$ ,  $p=0.0741$ ). Kampong Cham and Pursat were both highly significantly above in 2000 and moved to no significant difference in 2005 ( $p=0.0097$ ,  $p=0.1500$ ), ( $p=0.0004$ ,  $p=0.4625$ ).

Under-five Mortality compared to the national averages in 2000 and 2005

**Table 3 Under-five Mortality compared to the national averages in 2000 and 2005 (p<0.05)**

<b>Under-five Mortality 2005 – (ten years prior)</b>				
	<i>Rural</i>	<i>Urban</i>	<i>Total sample size</i>	<i>Weighted average*</i>
<i>Sample size</i>	13850	2973	16823	0.1048
<b>Under-five Mortality 2000 – (ten years prior)</b>				
<i>Sample size</i>	12659	2692	15351	0.1201
<ul style="list-style-type: none"> <li>• Under-five mortality per 1000 live births</li> <li>• Weighted average based on data sourced from the CDHS 2000 &amp; CDHS 2005 and compiled using STATA statistical software in a two tailed t-test.</li> </ul>				

43 The national average for under-five mortality for ten years preceding 2005 using a two tailed t-test has been estimated to be 0.1048. Having no education meant a rate highly significantly above the national average, while having a secondary education indicated the reverse (p=0.0000, p=0.0000). Urban areas were found to be highly significantly below the national average, while rural areas were significantly above the national average (p=0.0000, p=0.0410).

44 This confirms the dramatic contrast between urban and rural rates. The urban rate is so much lower than rural, that the national average is itself skewed as a result. Because these results for education and location are only relative to the national average it does not indicate that there has been a change over time. The provincial data will provide evidence if that has occurred.

45 By province, Kampong Speu, was borderline above the national average. Prey Veang and Mondol Kiri / Ratanak Kiri, were highly significantly above the national average. Preah Vihea / Strung Treng / Kratie was significantly above. (p=0.0539, p=0.0000, p=0.0022, p=0.0106)

46 Phnom Penh was highly significant below, and Kampot / Krong Kep / Sihanouk fared almost as well below the national average (p=0.0000, p=0.0208).

47 Compared to the national average, having a primary education showed no significant difference to the national average, as did the provinces Banteay Meanchey, Kampong Cham, Kampong Chhnang, Kampong Thom, Kandal, Pursat, Svay Rieng, Takeo, Battambang / Pailin and Siem Reap / Odtar Mean Chey.

48 For comparison, the under-five mortality rate in 2000 at 0.1201, slightly higher than 2005. Urban areas had rates highly significantly below the national average in both years (p=0.0000, p=0.0000) and by contrast rural areas were borderline above in 2000 and significantly above in 2005 (p=0.0686, p=0.0410). Results for both 2000 and 2005 show that urban rates are very much lower than rural rates. The national average has been influenced by the low urban rate and if this variable was excluded from the calculations it would cause the average to be slightly higher in 2000 and in 2005 to be much higher.

49 Results for respondents with no education remained highly significantly above the national average in 2000 and 2005 ( $p=0.0033$ ,  $p=0.0000$ ). Once again secondary education meant that the rate was highly significantly below the national averages in both years ( $p=0.0000$ ,  $p=0.0000$ ).

50 Kampong Speu was highly significantly below the national average in 2000 to borderline above in 2005 ( $p=0.0063$ ,  $p=0.0539$ ).

51 In each survey Phnom Penh was consistently well under the national average ( $p=0.0000$ ,  $p=0.0000$ ). Conversely Preh Veang and Mondol Kiri / Rattank Kiri were highly significant above the national averages in both years ( $p=0.0006$ ,  $0.0000$ ), ( $p=0.0000$ ,  $p=0.0022$ ).

#### Infant Mortality: Analysis of provincial changes CDHS 2000 & 2005

52 A two tailed t-test was applied to infant mortality data from comparable provinces from the CDHS 2000 and CDHS 2005. Table 1 shows there has been no statistical significant ( $p<0.05$ ) change for infant mortality rates in urban or rural areas ( $p=0.1386$ ,  $p=0.1510$ ).

53 Education was shown to have a highly significant difference in reducing infant mortality rates in households where mothers have secondary education ( $p=0.0026$ ). Kampong Chhnang had a significant decrease ( $p=0.0109$ ), while two provincial groups; Pursat ( $p=0.0052$ ) and Kampot / Krong Kep/ Sihanouk ( $p=0.0053$ ) had highly significant decreases.

54 Kampong Cham ( $p=0.0730$ ) and Mondol Kiri / Ratanak Kiri ( $p=0.0947$ ) reported borderline significant decreases in infant mortality rates between the two surveys.

55 Three provincial groups; Kampong Thom ( $p=0.0459$ ), Preah Vihea/ Strung Treng/ Kratie ( $p=0.0224$ ) showed a significant increase and Kampong Speu ( $p=0.0035$ ) showed a highly significant increase in infant mortality.

#### Under-five Mortality: Analysis of intra-provincial changes CDHS 2000 & 2005

56 A two tailed t-test was applied to data from comparable provinces from the CDHS 2000 and CDHS 2005. Table 1 shows there has been a significant decrease in under-five mortality in urban areas ( $p=0.0122$ ) and highly significant decrease in rural areas ( $p=0.0001$ ). Education levels were also shown to have a highly significant difference in reducing the under-five mortality rate particularly in households where mothers have primary ( $p=0.0001$ ) or secondary education ( $p=0.0007$ ).

57 On a provincial basis Kampong Speu was the only province to show a significant increase in the under-five mortality rate ( $p=0.0184$ ), while Kampong Cham ( $p=0.0131$ ), Siem Reap<sup>6</sup> ( $p=0.0101$ ), all had significant decreases, while Kampong Chhnang ( $p=0.0016$ ), Kampot/ Krong Kep/ Sihanouk ( $p=0.0020$ ) and Pursat ( $p=0.0017$ ) recorded highly significant decreases. Mondol Kiri / Ratanak Kiri showed a borderline decrease between the two surveys ( $p=0.0588$ ).

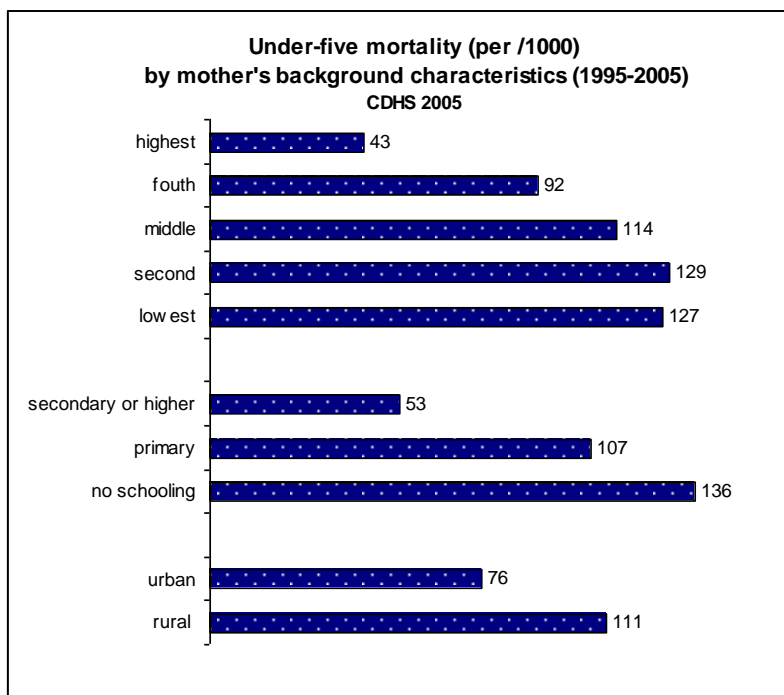
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<sup>6</sup> The 2005 sample size for Siem Reap is compared to the 2000 combined sample size for Siem Reap / Otdar Mean Chey (1306). A significant decrease was interpreted with provision for Siem Reap, due to its sample size (1200) being more than six times that of Otdar Mean Chey (177).



58 Figure 5 shows results from a ten year time frame prior to CDHS 2005 for rates of under-five mortality using variables of rural / urban location, education and wealth quintiles.

**Figure 5**



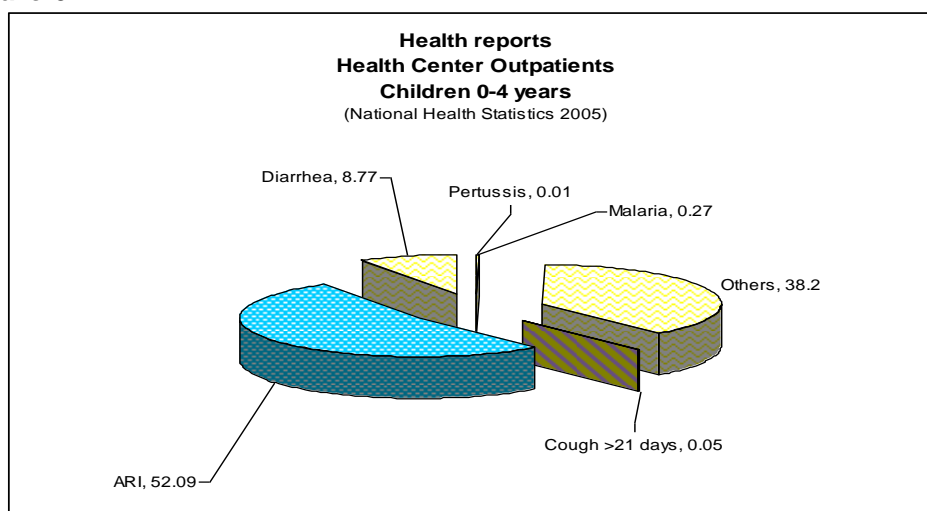
59 The CDHS 2005 showed that wealthiest households experience under-five mortality at much lower rates than the poorest households and they occur at much higher rates in rural areas compared to urban areas deaths (111 vs. 76).

#### *Child Morbidity*

60 Acute Respiratory Infection (ARI), diarrhea and fever are common childhood illnesses and can quickly escalate if left unchecked. Diarrhea can cause dehydration and serious medical complications, while fever is a possible indication of malaria. According to the National Health Statistics 2005<sup>7</sup>, ARI and diarrhea were the most common reasons for out-patient admissions for children aged under-four at public health centers.

<sup>7</sup> MOH: National Health Statistics (NHS) 2005

**Figure 6**



61 The CDHS 2005 asked mothers to report on symptoms in their households for the previous two weeks on the presence of ARI, fever or diarrhea. Poorer households were more likely to report ARI symptoms, diarrhea or fever than wealthier households but the wealthier households were more likely to seek medical treatment.

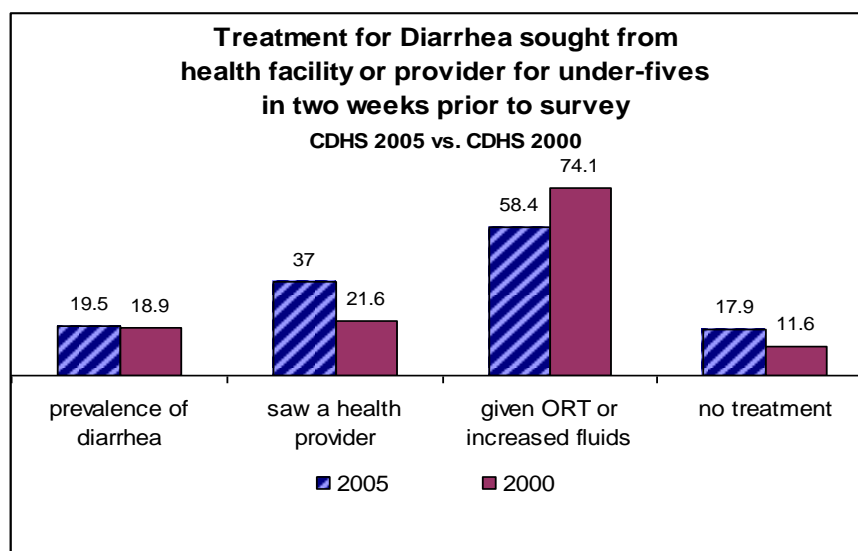
62 Children under two years of age were most at risk of fever (39%) or ARI (11%). ARI prevalence was highest in the mountainous north west in Otdar Mean Chey province (26%) and lowest in Phnom Penh (2%).

63 Susceptibility for malaria varies throughout Cambodia with some regions endemic, particularly the forested highlands while other areas remain relatively malaria free. Slightly more cases are reported in rural than urban locations and also correlate with malaria endemic areas. Nearly half the children under five years of age in Battambang / Krong Pailin had a fever (47%) in the month prior to the survey while coastal Kampot /Krong Kep province reported the lowest, with one in five children having the same symptoms in (20%).

64 Recommended treatment for diarrhea is either the administration of oral rehydration therapy or to simply ensure an adequate increase of fluids. Rural children surveyed were more likely than urban children to be taken to a health provider (38% vs. 28%), as were children from wealthier households (40% vs. 33%). Mothers with secondary schooling or higher also sought treatment compared to mothers with no schooling (40% vs. 33%).

65 Mothers with low levels of education parallel higher instances of fever, ARI or diarrhea. In potentially more serious cases where diarrhea was also bloody, this was much more likely to happen in households with a non-improved (or shared) toilet facility, and much more common in the lowest income group, or in households where the mother had no schooling.

**Figure 7**



66 Access to clean water and sanitation reduces the likelihood of diarrheal diseases and early diagnosis and appropriate treatment with oral rehydration therapy is essential to prevent the onset of serious illness.

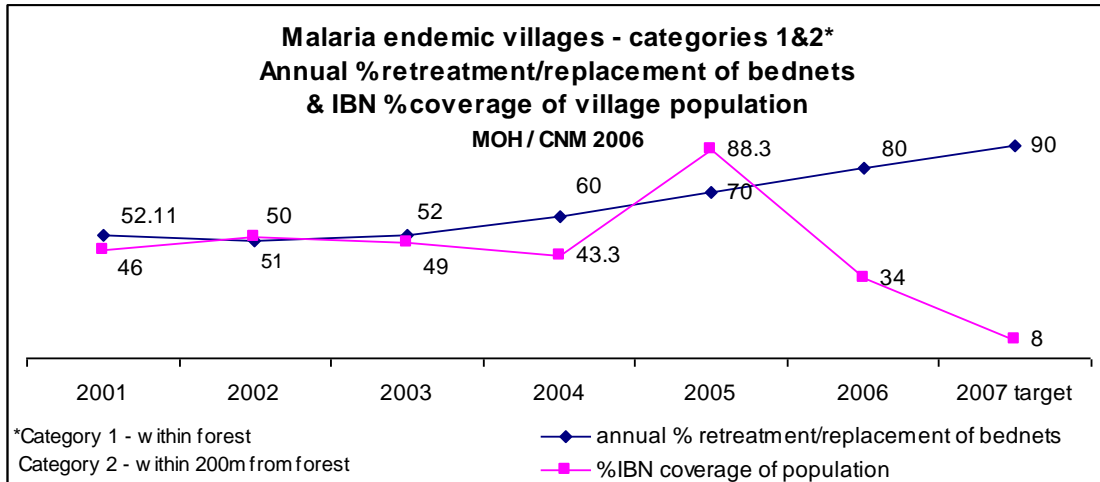
67 Although it appears that less people are consuming drinking water from a non-improved source during the dry season since 2000, (59% vs. 43%) this still represents a potential source highly infectious gastro-intestinal diseases such as those caused by *S. Typhi*, *Cryptosporidium*, *Giardia*, *Norovirus*, *Shigella*, *Hepatitis* and *E. coli*. There has been a highly significant increase since 2000 of rural and urban households with improved sanitation facilities ( $p=0.0000$ ). About half the urban respondents surveyed (56%) had access to improved facilities compared to around 16% of rural households, and much higher than those surveyed in 2000 (3% rural, 35% urban).

68 Pregnant women and young children are particularly vulnerable to malaria, and although rates differ depending on the source the National Health Statistics 2005 reported around sixty thousand cases of malaria in public health facilities, and around 9500 cases of dengue fever.

69 The CDHS 2005 observed that almost all (96%) Cambodians own a mosquito bed-net, and two-thirds own more than one especially richer households (86%). Very few bed-nets (5%) have been treated with insecticide although ownership of treated bed nets is highest among the poorest income groups. This is in-line with the Global Fund distribution of treated bed nets either for free in remote malaria endemic regions, or sold via social marketing campaigns in towns and cities. The use of bed nets by women or by pregnant women was about the same. The JAPR 2007<sup>8</sup> also confirmed annual re-treatment and replacement of bed nets occurred in around 81% of villages in endemic areas during 2006 which was slightly under target (85%).

<sup>8</sup> MOH: Joint Annual Performance Review March 2007

**Figure 8**



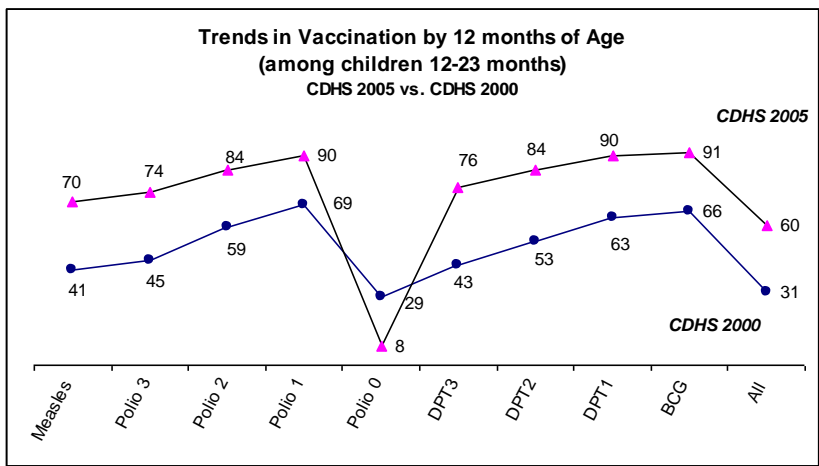
*Immunization*

70 In collaboration with the MOH, WHO and UNICEF's initiative, Expanded Program on Immunization (EPI) has subsidized and provided technical assistance for improved vaccination coverage within Cambodia. Immunization is a cost effective means to reduce the incidence of vaccine-preventable diseases and concurrent number of infant and child deaths. Cambodia has also recently re-qualified for assistance from the GAVI Alliance for new vaccines (HepB) and other immunization services.

71 The CDHS 2005 shows the number of children aged 12-23 months who are now fully vaccinated has doubled since 2000 for the six targeted vaccine-preventable diseases: pertussis, childhood tuberculosis, tetanus, polio, measles and diphtheria (60% vs. 31% p=0.0000). The JAPR 2007 reports that the percentage of children aged under one year in 2006 who received DPT3 vaccinations was 81% although coverage would have been greater but it was difficult to maintain outreach services beyond ten kilometers from the health centers.

72 Urban and rural vaccination coverage is similar (66% vs. 69%), but the number of children who are not vaccinated averages nationally at seven percent. More than twice the number of babies (11%) in the lowest wealth quintile have no vaccinations compared to the highest (4%).

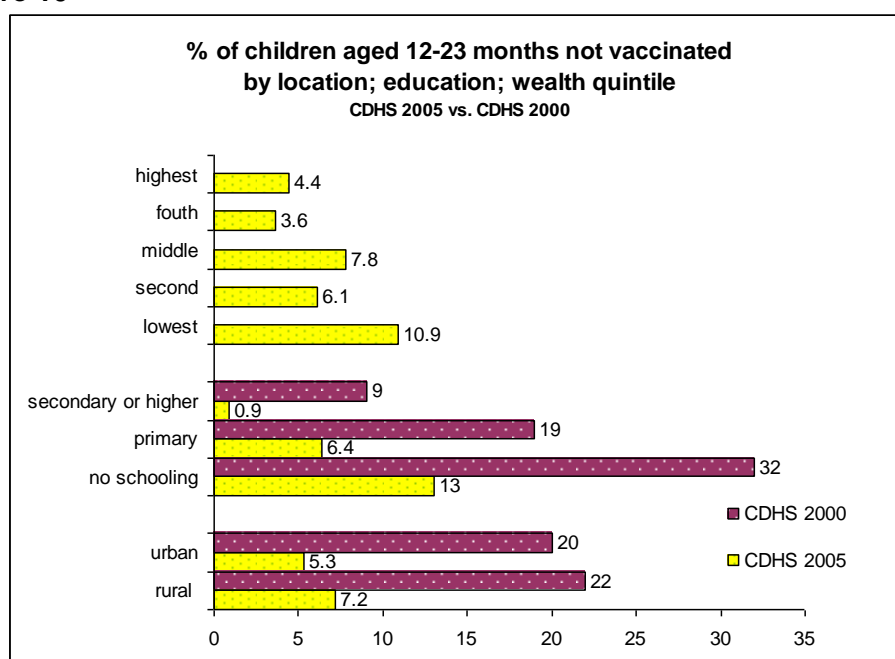
**Figure 9**



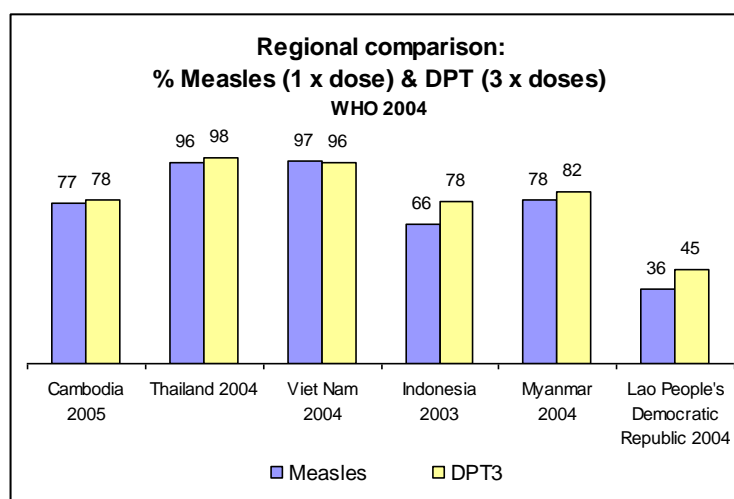
73 As with many other mother and child health indicators, the level of education of the mother is critical to children being fully vaccinated. Comparing CDHS 2005 with CDHS 2000 there has been a highly significant reduction in the percentage of children who are unvaccinated compared to education levels ( $p=0.0000$ ) The CDHS 2005 showed mothers without education are much less likely to have their children vaccinated compared to those with secondary education or higher (13% vs.1%), but these rates in 2000 were much higher (32% vs. 9%).

74 Thankfully the number of unvaccinated children has dropped markedly since 2000 based on differentials for education, or urban / rural location. (Figure 10). Income status was not provided in the CDHS 2000 and could not be compared.

**Figure 10**



**Figure 11**



75 Using data from WHO, Cambodia has vaccination rates for measles and DPT that are comparable to Myanmar and Indonesia and slightly lower than neighbors Thailand and Vietnam.

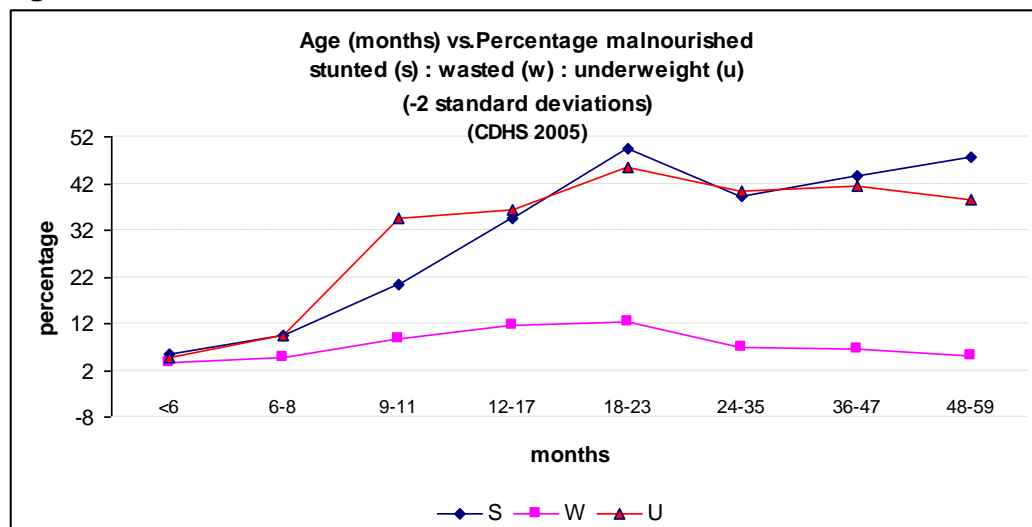
*Nutrition*

76 Stunting represents long term chronic malnutrition affected by recurrent or chronic illness. Wasting is indicative of acute malnutrition within a more recent timeframe, brought about by inadequate food intake or short-term illness. Underweight children could signal either chronic or acute malnutrition or a combination of both.

77 Nationally more than a third of the children aged under five are stunted (37%) and 13% of these children are severely stunted; Almost one in ten under-fives are wasted (7%); and more than a third are underweight (36%).

78 Indicators can be correlated with birth intervals of less than two years, mother’s reports of the size at birth being ‘very small’ and mothers themselves being either malnourished (BMI ≤ 18.5) or absent from the household.

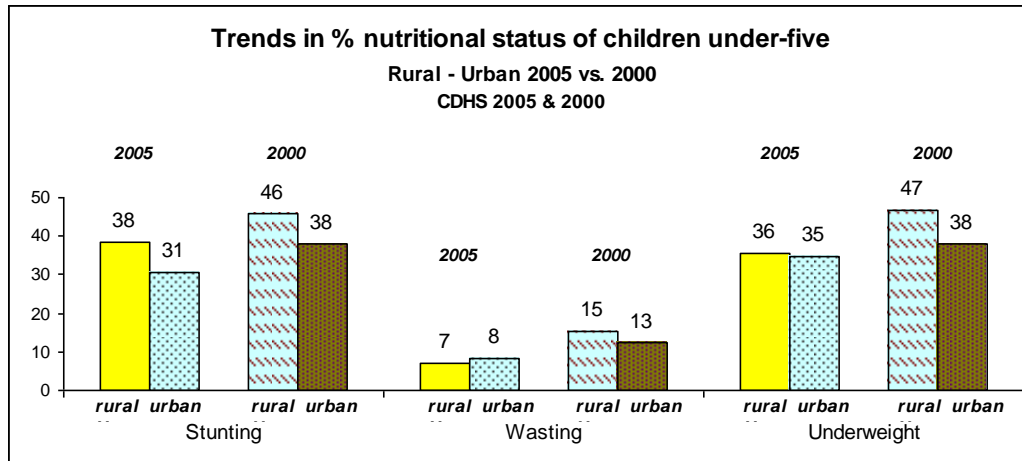
**Figure 12**



79 The patterns of malnutrition are shown in Figure 13. There is a rise beginning at around six months, cresting at eighteen months and then decreasing and leveling off by two years of age. This timeframe parallels the introduction of complementary foods and changed feeding practices. Figure 13 also clearly outlines individual indicators. Stunting peaks at around 18-24 months (49%), underweight rates rise sharply from six months to one year, then less dramatically the following year peaking at 45%. Wasting gradually increases from six months to eighteen months.

80 More than half the total number of provinces report percentages of underweight children greater than the national average. Pursat has the highest rate of underweight children at 62% while Phnom Penh has the lowest (22%), Pursat also has the highest rate of wasting at 17% at almost 10 percentage points higher than the national average.

**Figure 13**

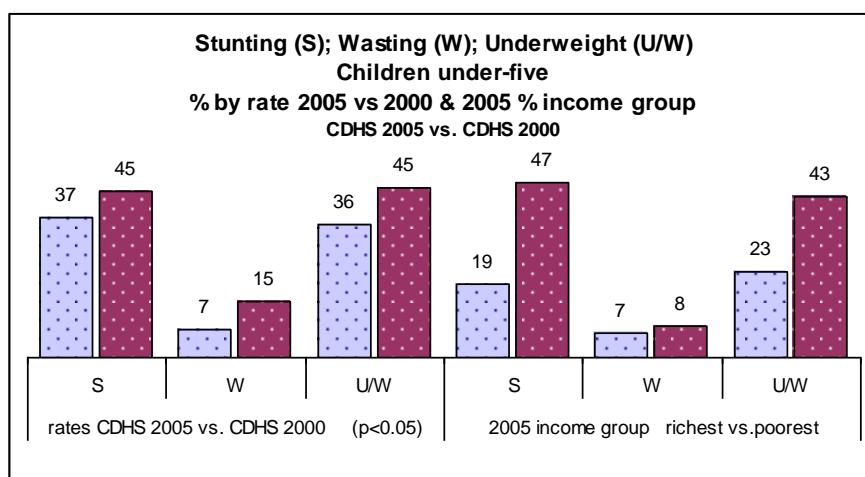


81 Contrary to the CSES 2004, the CDHS 2005 showed wealthier households had rates for stunting and underweight about half those of poorer households (19% vs. 47% & 23% vs. 43%). Meaning that about one in five (23%) children from the richest twenty percent of households are underweight.

82 Rates for wasting however were about the same for richest to poorest (7% vs. 8%). The data based on income groups was not collected for malnutrition indicators in the CDHS 2000 and can't be compared with 2005 figures.

83 Stunting, wasting and underweight results have all been highly significantly reduced ( $p=0.0000$ ) since CDHS 2000. The improvements in these indicators are likely due to increased rates both for breastfeeding and coverage of ANC, and provision of more nutritious and appropriate complementary foods.

**Figure 14**



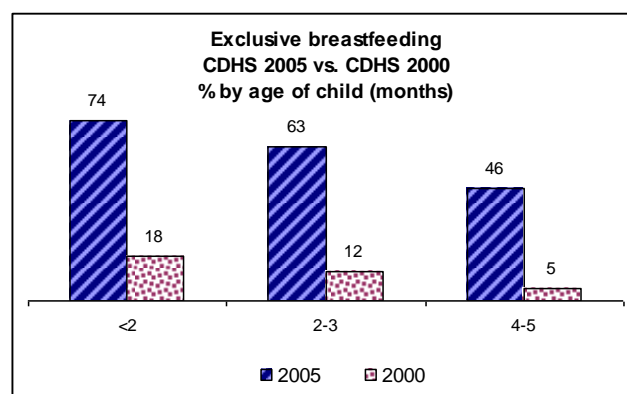
84 Often the etiology of under-nourishment or malnutrition is linked to increased infections and poor feeding practices particularly when solid and semisolid foods are introduced earlier than six months and before an infant's immune system is robust enough to tolerate them. Figure 12 gives the impression that possibly infections or poor feeding practices were common in the sample group.

85 Although other liquids are not needed before six months, almost a twenty percent of babies were given water in addition to breast milk from birth. Few mothers used infant formula in the first six months (4%-6%) and therefore avoided contamination from tainted food, bowls or bottles that have not been cleaned (or sterilized) properly. Contrary to WHO and UNICEF recommendations five percent of babies aged 2-3 months were fed food made from grains, and three percent consumed foods made from meat, fish, poultry and eggs.

86 During episodes of diarrhea more than half the children aged under six months who were taken to a health provider were given more fluids or Oral Rehydration Therapy (ORT), while this left the other half at increased risk of dehydration, and serious medical complications.

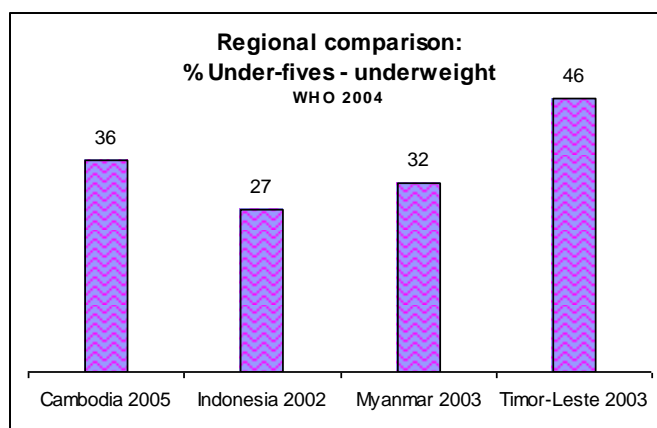
87 Education levels are a significant variable linked to stunted or underweight babies and both these indicators showed a substantial decrease between women with no education and those with secondary education or higher level of schooling.

**Figure 15**



88 Figure 15 shows that there has been a substantial increase in children under six months of age being exclusively breastfed since 2000 ( $p=0.0000$ ), but even so more than half at 4-5 months are being fed inappropriately with complementary foods.

**Figure 16**





89 Regionally Cambodia has about a similar percentage of underweight children aged under-five as Myanmar and less than Timor Leste, while Indonesia overall shows a slightly better result.

*Anemia & Micronutrient deficiency / Parasitic Infection*

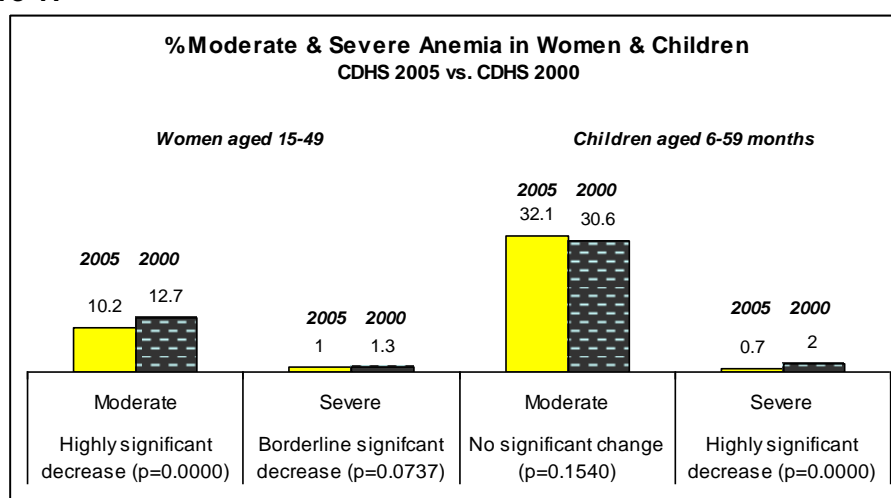
90 Increased incidences of anemia in children are once again associated both with lower levels of mother’s schooling and the lowest wealth quintile. More than half the children aged under-five in all provinces are anemic (average 61.9%). Overall compared to CDHS 2000 there has been no change in either the national average, or for mild or moderate cases of anemia ( $p=0.1639$ ,  $p=0.1603$ ,  $p=0.1540$ ), while severe anemia has been highly significantly reduced ( $p=0.0000$ ).

91 Anemia also affects nearly half the Cambodian women of childbearing age (47%) and is associated with rural location, women with lower levels of schooling, higher parity and poorest households. The high incidence of anemia in women predisposes their children to iron deficiency as well. The percentage of pregnant women who took iron supplements is subject to the same constraints but varies greatly by province.

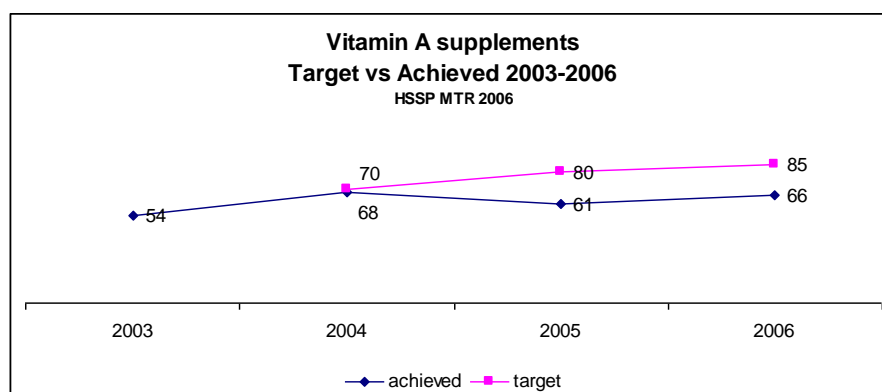
92 Compared to CDHS 2000 a proportional t-test showed highly significant reductions in mild and moderate anemia in women between the two surveys, along with only a borderline reduction in severe anemia ( $p=0.0000$ ,  $p=0.0000$ ,  $p=0.0737$ ).

93 The CDHS 2005 shows an anomalous result with Pusat having very much higher rates of pregnant women or children who had taken iron supplements (53%, 10.6%) compared to other provinces. The CDHS does not explore the possible reasons for this result. The CDHS 2005 also reports Pursat with the dubious distinction of the highest rates of stunting or wasting in children under-five.

**Figure 17**



**Figure 18**



94 Vitamin and mineral supplements, better access to immunization programs and ante / postnatal care can greatly improved child and maternal health outcomes. Vitamin A deficiency can lead to eye problems including blindness, increased severity of infections such as measles and diarrheal diseases and can slow a child's recovery from illness. Provision of Vitamin A supplements usually every six months, is an intervention that greatly reduces the likelihood of Vitamin A Deficiency (VAD).

95 Comparing CDHS 2000 and 2005 there has been a highly significant increase in Vitamin A supplements given to children in the six months prior to the surveys (28.5% vs. 34.5%,  $p=0.0000$ ) The results for CDHS 2005 showed only 35.8 percent of children had received a Vitamin A supplement in contrast to the much higher rates reported in the HSSP Mid-Term Review in 2006 (HSSP MTR 2006) and JAPR (2007). However the HSSP MTR cautions direct comparison with the population based results of the CDHS 2005.

96 The HSSP MTR (2006) shows that Vitamin A supplements for children 6-59 months administered during two rounds each March and October have been on a general increase since 2003. The JAPR 2007 reports that although coverage had not concluded at the time of reporting, 77% in Round 1 and 78% in Round 2 had been achieved, and by the end in 2006 coverage was expected to reach the 85% target.

97 Although poor record-keeping of the vaccination cards by providers during outreach activities may have meant some underreporting. Monitoring of the administration of supplements was also hampered because of a lack of fuel to conduct outreach activities and there was some confusion at the provider level because of the often inconsistent size and color of the various branded supplements.

98 Further improvement in micronutrient levels showed three out of four families had iodized salt available (85% urban, 71% rural), while families in higher income groups and better educated mothers gave their children deworming preparations at some time during the six months prior to the CDHS 2005 survey.

99 To redress rates of under-nutrition key indicators were identified and included in the Cambodia Nutrition Investment Plan (CNIP) 2003-2007 (Table 4)<sup>9</sup>

<sup>9</sup> MOH Food Security & Nutrition <http://www.foodsecurity.gov.kh> accessed 20 Jan 2007

Table 4

Cambodia Nutrition Investment Plan (CNIP) 2003-2007			
Indicators	CDHS 2000 %	CDHS 2005 %	Target 2007
<b>Breast-feeding</b>			
Mothers who start breast-feeding newborn child within one hour of birth	11	33	35
Infants exclusively breastfed up to 5 months of age*	5	60	25
Mean duration of breast-feeding 24 months	24 Months	21.6 months	24 months
<b>Nutritional status of children under 5 years</b>			
Underweight	45.2	35.6	31
Stunting	44.6	37.2	30
Wasting	15	7.3	10
<b>Nutritional status of women 15-49 years old</b>			
Women with Body Mass Index $\leq$ 18.5 Kg/Sq meter	21	20.3	15
Women stunted ( $\leq$ 145cm tall)	6	7.7	5
Low birth-weight babies	1.1*	8.3	10
<b>Iron Deficiency Anemia (IDA)</b>			
Children 6-59 months age	63	61.9	42
Women 15-49 years old	58	47	40
Pregnant women	66	57	43
Women taking iron supplements for at least 2 months during pregnancy	4	27	40
<b>Vitamin A Deficiency (VAD)</b>			
Blindness among pregnant women	8	8	4
Women who received a post-partum Vitamin A supplement	11	27	80
Children who received Vitamin A capsules 6 months prior	29	35	80
<b>Iodine Deficiency Disorder (IDD)</b>			
Households using iodized salt	12	73	80
Goiter**	2	N/A	4
*MOH policy is exclusive breastfeeding up to 6 months of age. CDHS indicator reported above was collected for babies exclusively breastfed up to the age of 5 months.			
** Source: National Micronutrient Survey 2000 and National Goiter Survey 1997.			
*Originally reported as 15, CDHS 2000 reports 1.1 although 82.6% of all births were not weighed.			

## 2 Maternal Health

### ANC / MMR / Deliveries

100 Reduced fertility, increased availability of contraception, provision of ante and post-natal care and ensuring delivery is with a trained professional in a health facility continue have been the mainstay for sustained reduction of child or maternal deaths.

101 Overall the number of pregnant women receiving ANC from a qualified health professional almost doubled in the last five years (38% - 69%,  $p=0.0000$ ). Thirty percent of rural women received no ANC at all compared to nineteen percent of urban women, although this is much improved since 2000 ( $p=0.0000$ ). Mondol Kiri /Rattanak Kiri had the lowest rates for ANC with a health professional in both surveys but has made a significant improvement since 2000 (15.7% vs. 28.2%,  $p=0.0192$ ).

102 Deliveries at health facilities doubled (9.9% vs. 21.5%,  $p=0.0000$ ) and deliveries using a health professional rose from 32% to 44% ( $p=0.0000$ ). In 2000 the lowest rate for assistance by trained personnel during delivery was in Siem Reap / Odtar Mean Chay at 12%, and although this was measured as two separate locations in 2005 the relative improvement has been about double.

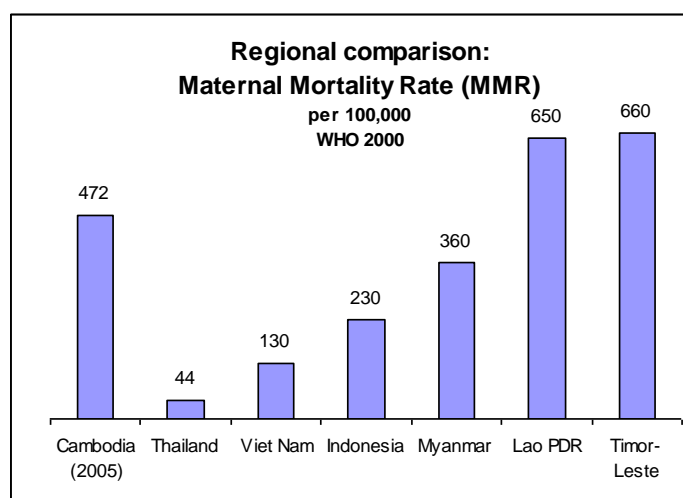
#### Maternal Mortality Ratio (MMR)

103 The CDHS 2000 contains at least two errors in calculating the estimate for the Maternal Mortality Ratio<sup>10</sup> (MMR per 100,000), the correct estimate should have been 485. The MMR estimated in CDHS 2005 was correctly calculated and shows a slight decrease since 2000 to 472.

104 Further analysis using a test of proportion however shows that there is no significant difference between these two rates ( $p=0.1247$ ), meaning that the MMR has remained unchanged since 2000.

105 But given that the MMR is not a sensitive indicator and related indices have shown great improvement such as ANC, deliveries at health facilities and deliveries by health professionals, the HSSP Mid-Term Review 2006 suggests and a timeframe longer than five years may be needed to give a better reflection of the true MMR.

**Figure 19**



106 On available data Cambodia's rate for MMR is comparable to Lao PDR and Timor Leste. It is two to three times the rate of regional neighbors Vietnam or Indonesia, and ten times the rate of Thailand.

<sup>10</sup> The CDHS 2000 Table 10.5 has the total number of maternal deaths added incorrectly as 263 when it should be 100. This affects the Mortality Mortality Rate (MMRate = exposure x deaths) The correct mortality rate calculation yields 0.62 not 0.55 as stated. When 0.65 is used to calculate the Mortality Mortality Ratio (MMR= MMRate x General Fertility Rate), assuming the GFR is correct, the MMR is 485 per 100,000, and not 437. Secondly the number of women deaths on Table 10.4 is also incorrectly added to 546 when the correct answer is 544, however the 'proportion of maternal deaths to female deaths' in Table 10.5 has been calculated using the correct figure of 544.

**Table 5 Key reproductive health indicators**

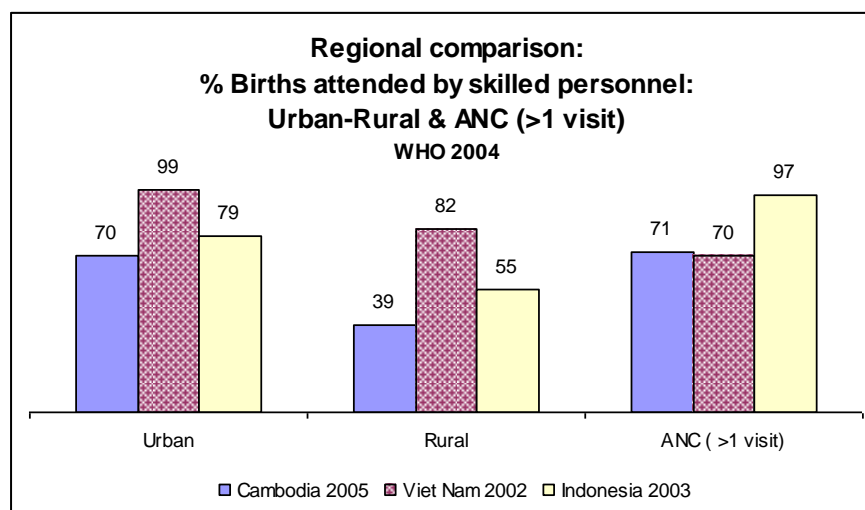
Key Indicators	CDHS 2000			CDHS 2005		
	Urban	Rural	Total	Urban	Rural	Total
Currently married women currently using a modern method of contraception	23%	18%	19%	31%	27%	27%
Unmet need of family planning	27%	34%	33%	22%	26%	25%
ANC with trained health staff	62%	34%	38%	79%	68%	69%
At least two ANC visits			31%	72%	58%	60%
Women who are anemic	51%	59%	58%	38%	48%	47%
Delivery with trained health staff	57%	28%	32%	70%	39%	44%
Delivery at health facilities	34%	6%	10%	50%	17%	22%
Total fertility	3.1	4.2	4	2.8	3.5	3.4

107 Rural, poor or low educated women are more likely not to receive ANC. These women and their babies are more likely to suffer the effects of anemia, or risk neonatal tetanus or complications during delivery. Conversely women with secondary or higher education are more than three times likely to deliver with a trained health professional and more than five times more likely to deliver at a health facility. Highest income groups are four times more likely to deliver with a trained health professional and are ten times more likely for this to happen in a health facility.

108 Neonatal tetanus is reported as a leading cause of death for new-borns in Cambodia<sup>11</sup> and although there has been a highly significant reduction in risk ( $p=0.0000$ ) compared to CDHS 2000, the number of new-borns protected by a vaccination given to their pregnant mothers during an ANC visit is still relatively low at just over half (54% 2005 vs. 30% 2000).

109 Most infant deaths occurs within two days of delivery but more than thirty percent (37%) of new mothers who did not deliver in a health facility also did not undergo a post-natal check-up.

**Figure 20**



<sup>11</sup> MOH: National Health Statistics (NHS) 2005

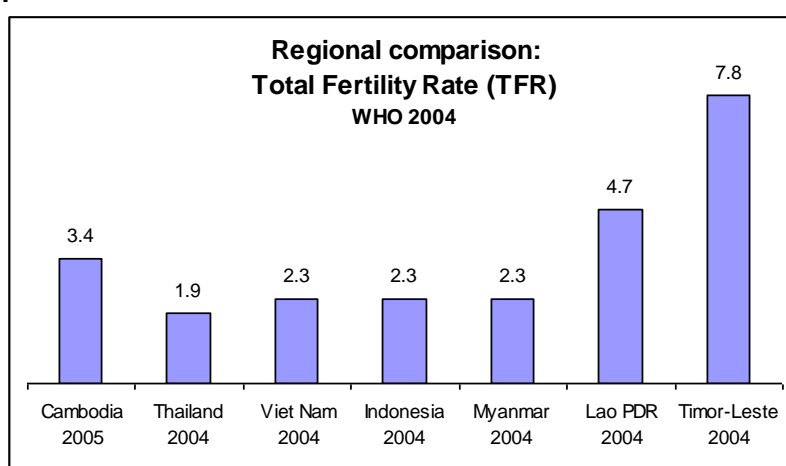
110 Cambodia lags behind Indonesia and Vietnam in deliveries made with the assistance of trained personnel in urban areas and appreciably for rural areas. It has about the same rate for at least one ANC visit as Vietnam, but significantly less than Indonesia.

### *Fertility*

111 There has been a steady decline in all provinces of the Total Fertility Rate (TFR) since 2000 for all education levels and across all wealth quintiles (TFR: 4 to 3.4 births per woman). Women's level of education is a significant variable on fertility rates. Women with no schooling or from the lowest wealth quintile are likely to have two children more than women with secondary education, or women from wealthier families. Rural women will likely give birth to at least one more child than urban women (2.8 vs. 3.5).

112 On a regional basis fertility rates in Cambodia are higher than most neighbors apart from Lao PDR and Timor Leste.

**Figure 21**

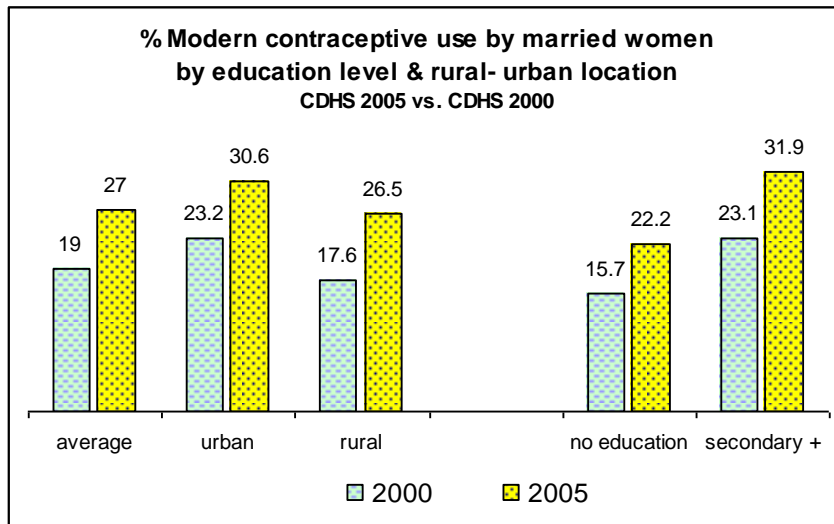


### *Contraception*

113 The knowledge of Cambodian women about contraception methods is very high, with a 99% average - although Mondol Kiri / Rattanak Kiri province posed an anomaly with considerably lower knowledge (76%). Forty percent of currently married women are using either traditional or modern forms of contraception and importantly the use of modern methods alone has increased from 19% to 27% since 2000 (p=0.0000).

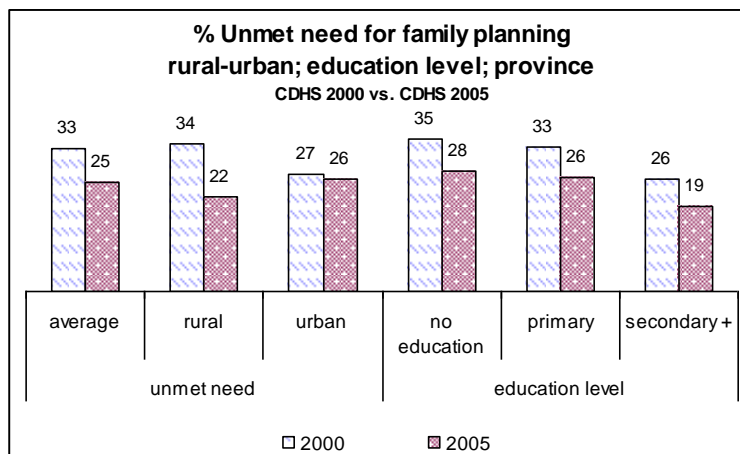
114 Rates for the use of modern contraceptive methods differ for married women in urban or rural locations (31% vs. 27%) and are further discernable by education and income group. There is also a marked difference in their use between married women without schooling and those with secondary or higher schooling (22% vs. 31%) and similarly between those in the highest compared to lowest income groups (22% vs. 32%).

**Figure 22**



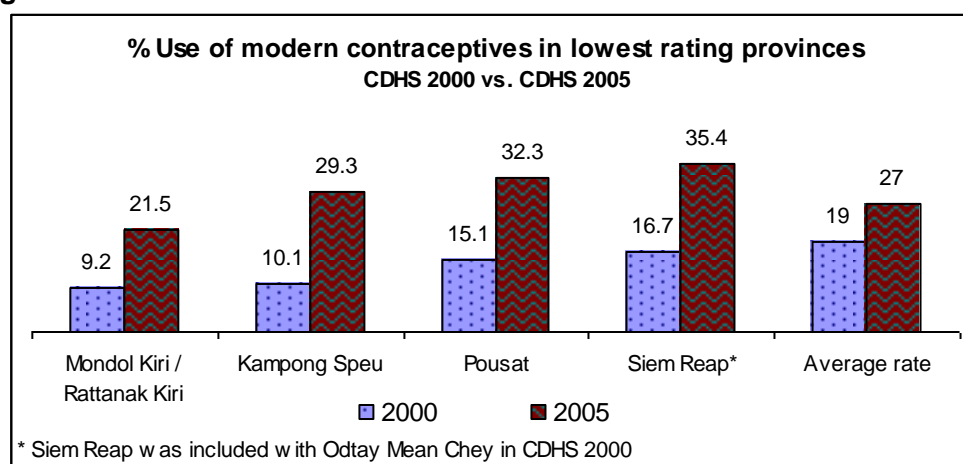
115 Unmet need for family planning has been greatly reduced for both urban (27% vs. 22%,  $p=0.0007$ ) and rural women (34% vs. 26%,  $p=0.0000$ ) since 2000. Continuing demand predominately comes from the wealthiest quintile where unmet need is twice that of the poorest. Unmet need for spacing increase with the level of schooling, while unmet need for limiting is negatively associated with education.

**Figure 23**



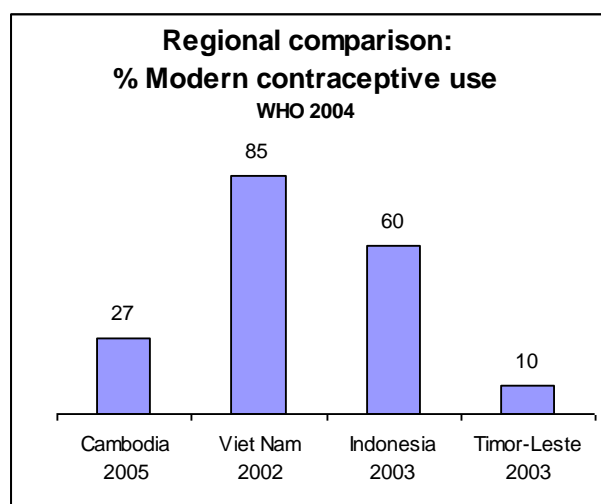
116 Compared with 2000, the provinces with the lowest rate of use of modern contraceptive methods have increased ranging from 12-19 percentage points ranging from 12-19 percentage points, compared to an average improvement of 9 percentage points (CDHS 2005).

**Figure 24**



117 Use of contraceptives is most probably under-reported as the CDHS 2005 data was only provided by public health facilities. Regionally Cambodia's use of modern contraceptives is lower than Vietnam and Indonesia although this data may also be seriously underestimated for the same reasons of availability of contraceptives from private providers.

**Figure 25**



*Women's education*

118 As identified earlier women's education is a major determinant of child and maternal health outcomes. The CDHS 2005 reports that while 27% of males has attended secondary or higher schooling only 16 % of women (aged 6-65) had some secondary or higher education. There has been a highly significant increase in women with secondary or higher education since 2000 ( $p=0.0000$ ), however there is a good deal of variation between provinces, ranging between 20%-37% of the female population above 6 years of age having never been to school (previously 28%-49% in 2000). An extreme outlier to this range is Mondol Kiri / Rattanak Kiri with 61.7%. However since 2000 this province has had a highly significant decrease in the number of women without any education (61.7% vs 75.1%,  $p=0.0001$ ) Phnom Penh has seen no significant change since 2000 and remains the province with the lowest rate of women who have no education (13.5%, 14.2%,  $p=0.2237$ ).

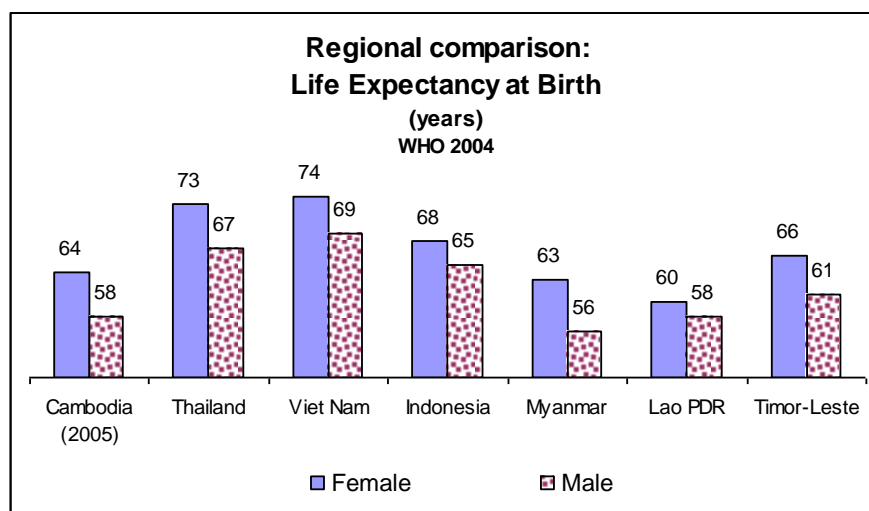


119 Improved access to education throughout Cambodia has been accomplished over a relatively short timeframe and generally dropout rates for primary school are low. Mondol Kiri / Rattanak Kiri and Preah Vihear / Stueng Treng are exceptions where 14.2% and 11.4% of primary students dropped out after the fifth grade compared to a range between 0%-7.3% for all other provinces. (CDHS 2005). On a national level more than half the villages (62%) have a functioning primary school and 82% of the population are within one kilometer of a primary school<sup>12</sup>.

### 3 Adult Morbidity

120 Cambodian men and women have a similar life expectancy as those in Lao PDR and Myanmar, but can expect to live about ten years less than the populations in neighboring Thailand or Vietnam and slightly less than those in Timor Leste or Indonesia.

**Figure 26**



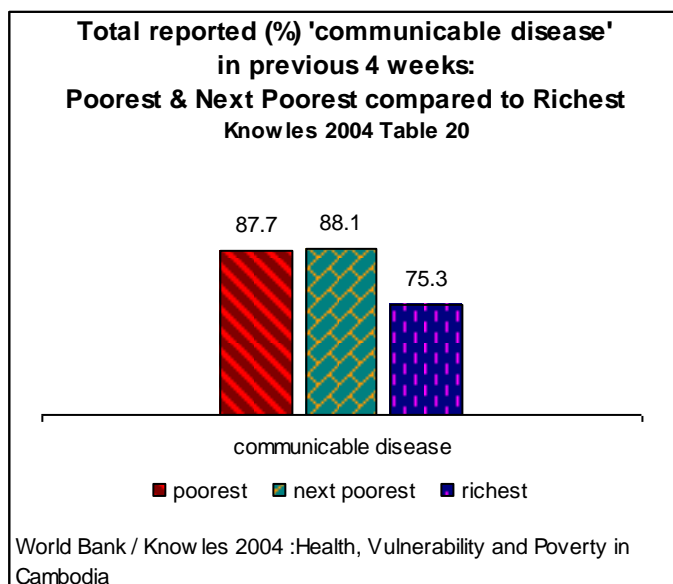
#### *Physical Impairment / Disabilities*

121 According to the latest CDHS survey about 3% of males and 2% of females report themselves as disabled and the urban-rural difference is about the same (2%). Compared with the earlier CDHS 2000 most disabilities are due to disease (33% vs. 37%), as a result of birth (19% vs. 18%), landmines (10.3% vs. 14%) guns (8% vs. 11%) and road accidents (7% vs. 4%).

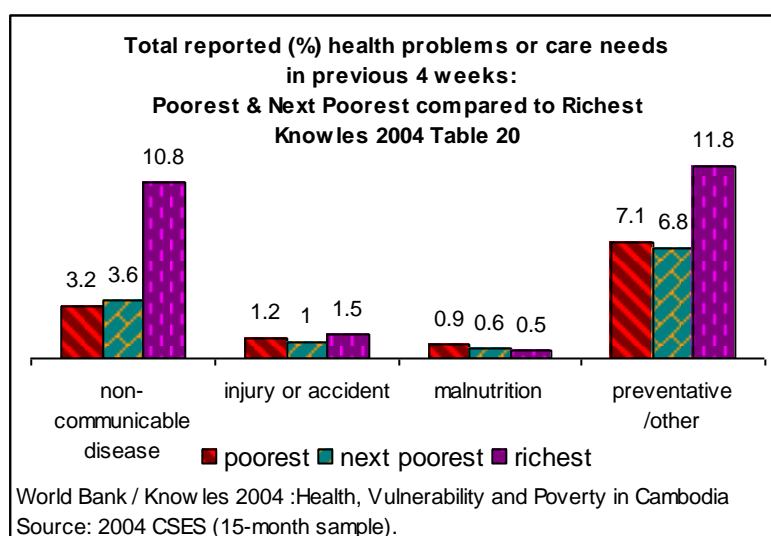
122 The CSES 2004 was able to discern individual effects and found that reports for amputated / dysfunctional limbs and blindness / poor eyesight accounted for about 3 out of 5 reported disabilities. The CDHS 2005 did not provide morbidity data in relation to income groups however previously in the CSES 2004 malnutrition and communicable disease are still seen as significant concerns in the poorest quintiles compared to the richest.

<sup>12</sup> WHO Study of the Link between Health & Poverty - Cambodia 2005; Dalton & Peacock (WP/04/051715)

**Figure 27**



**Figure 28**



123 The HSSP Mid-Term Review (2006) reported that the integration of communicable disease programs (Tuberculosis, Malaria and HIV/AIDS) at provincial and community levels has been functioning well, but on-going monitoring from the central level in respect to each National Program is still required.

*Prevalence of medical injections*

124 The provincial data for the number of injections varies considerably, but the CDHS 2005 reported women and men average about 5.0-6.5 medical injections from a trained health worker per year. Most cases had sourced syringes and needles from an unopened packet but the frequency of injecting leads to increased risk of blood borne disease from unsafe practices such as re-use of injection equipment. Income group or education level did not appear to influence the data and comparative rates were not recorded in the CDHS 2000.

## HIV/AIDS

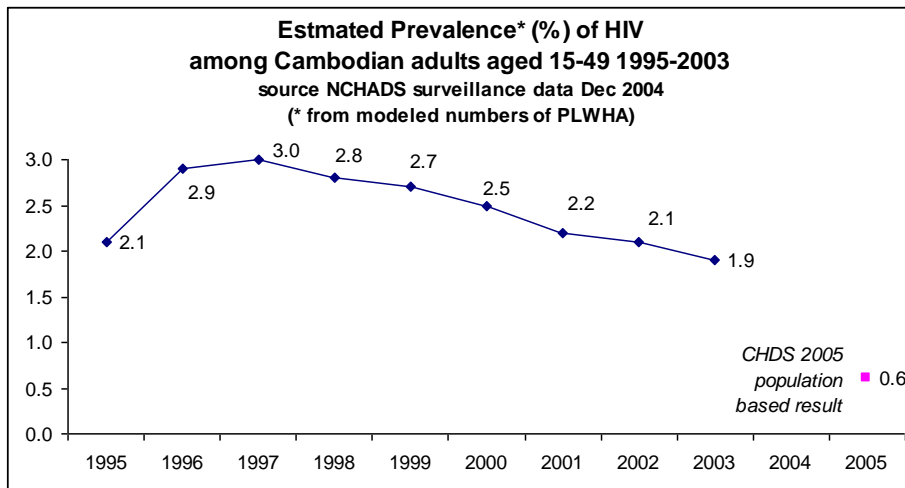
125 Cambodia has made impressive progress with an overall rapid decline in HIV from 1997-2005 from 3.0% to 0.6%. Recent concerns however is that the epidemic is now migrating to the general population because of smaller decreases observed in sentinel groups of pregnant women compared to observed decreases in high-risk groups such as sex-workers. Supporting this interpretation is that husband to wife transmission is now the primary mode of infection and one third of all new cases are a result of mother to child transmission.

126 Marital status is closely related to HIV prevalence in Cambodia. Women and men who are widowed, divorced or separated are at higher risk than those married or living together. Rates are higher in urban areas than rural. Women with no schooling are slightly more at risk than those with higher education, conversely men with higher schooling have higher prevalence rates than men with no schooling. Both men and women in the highest quintile have higher rates of HIV infection than other income groups.

127 Most Cambodians are aware of HIV/AIDS and methods to avoid infection, although this understanding climbs with higher education and increasing wealth. Similar results are found for comprehensive knowledge of mother to child transmission. Lowest levels are among women and men who have no education as well as those in the lowest wealth quintile.

128 Perhaps it is a reflection of limited ANC coverage but notably, less than a third of pregnant women were aware that HIV could be transmitted via breastfeeding and that mother to child transmission could be reduced using drug therapy during pregnancy.

**Figure 29**



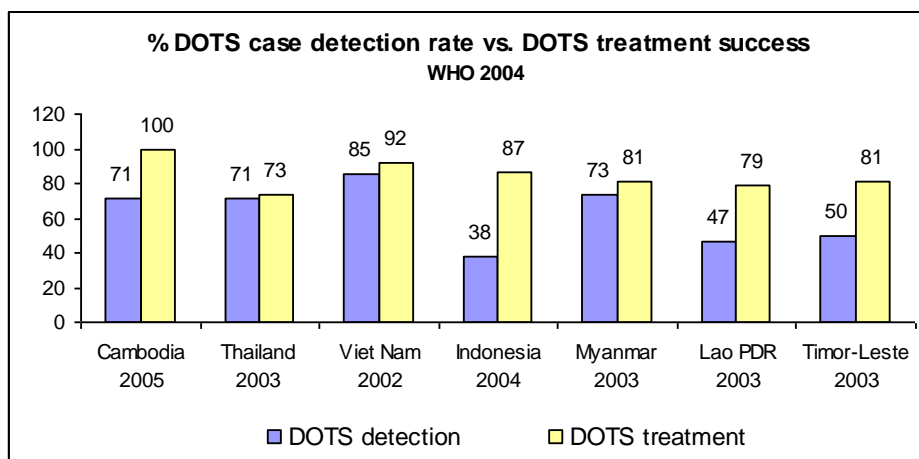
## Tuberculosis

129 The estimated incidence rate for all forms of Tuberculosis is 510/100,000 which is about 70,000 cases. The estimated incidence rate for smear positive cases is 225/100,000 population which means Cambodia has roughly around 30,000 cases. A HIV sero-prevalence survey in 2005 among Tuberculosis patients found one in ten is HIV-positive.<sup>13</sup>

<sup>13</sup> CENAT / MOH presentation Dec 2006

130 The case detection rate under DOTS reached 100% in 2005. The Tuberculosis case detection rate has risen significantly from 59% in 2003 to 71% in the first half of 2006, reflecting the dramatic expansion of Tuberculosis control services during this period.<sup>14</sup> Cambodia has comparable DOTS<sup>15</sup> detection rates to Thailand, Vietnam and Myanmar and the best regional result for DOTS treatment.

**Figure 30**



#### *Mental Health*

131 There are few studies available that have investigated the mental health status of general or selected populations in Cambodia and its effect on productivity and relationship with poverty. Several small studies have shown high levels of depression among adults and behavioral problems among children and adolescents.<sup>16</sup>

#### *Malaria / Dengue haemorrhagic fever*

132 Outbreaks of malaria or dengue haemorrhagic fever (DHF) can pose a considerable burden of mortality and morbidity particularly in forested areas, fluctuating considerably with mosquito breeding seasons. Late arrivals by patients with severe malaria or DHF at public health facilities often compromise the efficacy of treatment.

133 The JAPR 2007 records the malaria incidence rate in 2006 at 7.2 cases per 1000 population. For cases of severe malaria the Case Fatality Rate (CFR) was around 7.9%. In 2005 the incidence rate was 6 cases per 1000 and a CFR for severe malaria of 10.45%. Using data from the CNM Figure 31 shows the malaria CFR relative to all malaria cases, averaging around 0.4%.<sup>17</sup>

134 Case fatality rates for dengue fever in 2006 were less than 9 per 1000 cases, and higher in 2005 at 1.7 per 1000 cases<sup>18</sup> indicating more favorable breeding seasons in 2005. Accurate incidence rates for dengue fever are not available as it is usually only critical cases that present to public health facilities.

<sup>14</sup> WHO: Cambodia Country Report 2006, HSSP Mid-Term Review 2006

<sup>15</sup> DOTS: Directly Observed Treatment Short-course

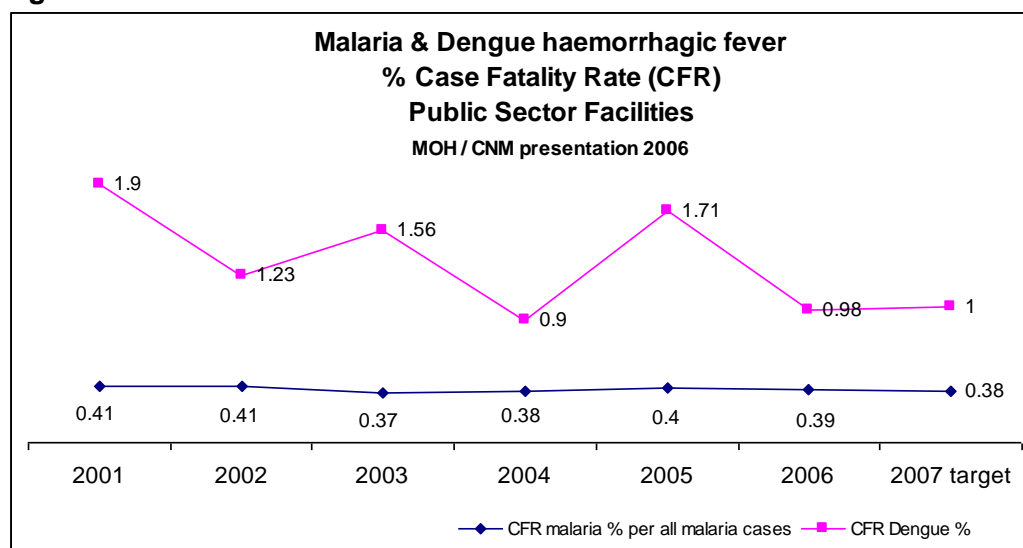
<sup>16</sup> WHO: Cambodia Country Report 2006

<sup>17</sup> MOH: Joint Annual Performance Review 2007 & MOH/CNM (Public sector data), presentation Dec 06

<sup>18</sup> MOH: Joint Annual Performance Reviews 2007 and 2006

135 Case loads for both diseases are difficult to estimate and are expected to be under-reported as many patients consult private providers or traditional healers in preference to government facilities. An unregulated private sector and frequent use of incorrect treatments further exacerbates the problem of drug resistance in Cambodia as elsewhere in southeast Asia. Population migration back into endemic zones by poor, rural, mostly male Cambodians to work as loggers, gem miners or to hunt, has meant their lack of immunity makes them highly susceptible to malaria.<sup>19</sup>

**Figure 31**



#### 4 New challenges

##### Demography

136 Reduced fertility rates have been achieved through the concentrated efforts to improve both child survival rates and educational levels and by implementing widespread family planning programs.

137 Cambodia has a young population, the median age is twenty-one and 37% of the population is aged under 15. (UNFPA 2007). This of course reveals the importance of further investments in reducing poverty, creating employment, ensuring completion of primary and secondary education, and increasing access to services such as immunization, family planning and reproductive health.

138 For young people who have either dropped out of school or have never enrolled, (particularly with respect to young girls) aside from bringing to a halt their educational attainment it also limits potential access to counseling or diagnostic and treatment services. A young (and often migratory) population requires targeted health promotion and follow-up programs to communicate the risks associated with experimentation with illicit drugs, tobacco, alcohol, or exposure to HIV infection. Health promotion activities have the opportunity to reach the majority of the population directly through TV and radio programming. The CDHS 2005 reported more than half the rural population owns a radio or TV (often for communal use), with even higher ownership rates in urban areas. Some INGO's such as Health Unlimited are pursuing this line of coverage through support of the Cambodia Health Education Media Service<sup>20</sup>.

<sup>19</sup> Chatterjee, P: The Lancet: Vol 366 July 2006 pp 191-192 *Cambodia's fight against malaria*

<sup>20</sup> Health Unlimited CHEMS project <http://www.healthunlimited.org/cambodia/chems.htm>

### *Chronic disease*

139 There are no reliable official data available on the incidence of non-communicable diseases because private sector information is excluded, however there is some verification that Cambodia is beginning an epidemiological transition. Urban residents in particular may be moving away from infectious diseases patterns to more 'lifestyle' type diseases such as diabetes, heart disease and cancer however more evidence is needed. Although rural residents or poorer groups however continue to signal communicable diseases as an inherent threat. (CSES 2004).

### *Tobacco / Alcohol*

140 Because of the high levels of tobacco use and low priority of anti-smoking campaigns chronic smoking related illnesses are expected in the medium to long-term. In 2004 the CSES showed that 42% of men were daily smokers compared to an average of 4% of women, it also reported thirty percent of males in the wealthiest households and almost half the males in the poorest (49%) are smokers. Seventy percent of older males aged 65-74 were also smokers.

141 Indoor air pollution both from cooking fuels and tobacco smoke contribute to the fact that ARI is a leading cause of both adult and child outpatient visits (NHS 2005). Aside from the established links with the incidence of cancer, cardiovascular and respiratory diseases, smoking is associated with low-weight births and reinforced by data from the CDHS 2005. Tobacco use by women is three times higher in rural areas than in urban areas (12% vs. 4%) Highest tobacco usage reaches 22% among women with no education or those in the lowest wealth quintile. Eight percent of pregnant women use tobacco and slightly more breastfeeding women smoke (12%). This habit also higher for older women (45+). (CDHS 2005)

142 In terms of opportunity cost the CSES 2004 showed that the smoking and alcohol consumption especially in poorer income groups takes a higher percentage of household finances than healthcare. The poorest families (including women) spend twice as much on tobacco and alcohol combined as they do on healthcare (approx 15% vs. 7%)<sup>21</sup>. This is a concern particularly in light of potential disease burden, but also in terms of outgoing expenses in lieu of healthcare or education.

### *Diabetes*

143 Diabetes is associated with population growth, aging, urbanization and increased incidence of obesity and physical inactivity. Estimates for the global burden of diabetes was forecast<sup>22</sup> in 2004 and presented in Figures 32, and 33.

144 Using this source to compile regional estimates, Indonesia is expected to hold the highest prevalence of diabetes, while rates of diabetes in Cambodia are expected to slowly climb along with associated diseases like hypertension, however the source of this information uses Vietnam data as a proxy for estimates in Cambodia and Laos. This may be not be appropriate, which is supported unexpected results from a subsequent localized diabetes survey also in 2004 that found an incidence of 5% in a rural (Siem Reap) and 11% in a semi-urban setting (Kampong Cham).<sup>23</sup> These are both much higher than

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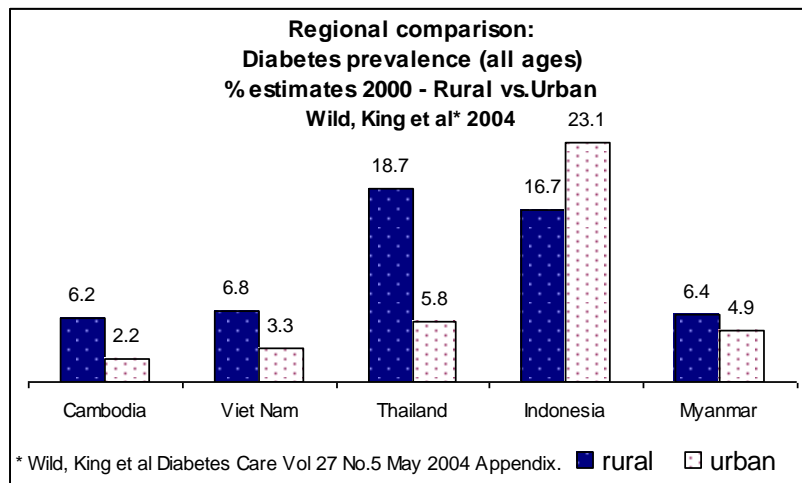
<sup>21</sup> World Bank Cambodia Poverty Assessment 2006.

<sup>22</sup> Wild, King et al: *Diabetes Care* Vol 27 No.5 May 2004 Appendix.

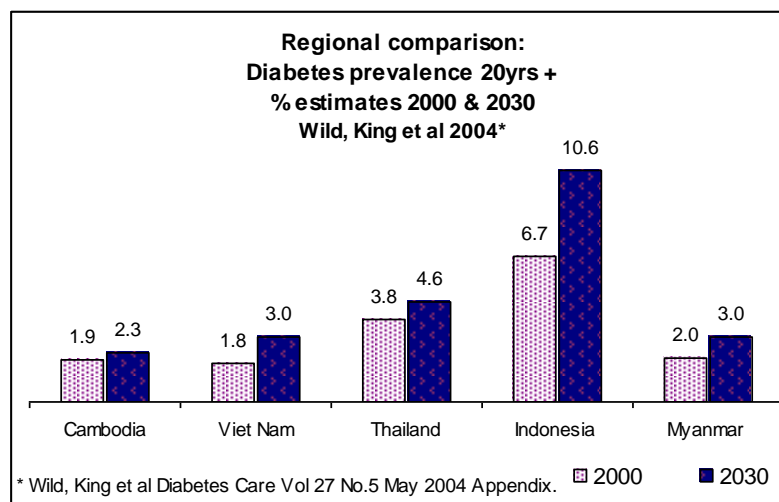
<sup>23</sup> The WHO Country Report 2006 / King et al: *The Lancet* Vol 366 Nov 2005; pp.1633-39.

expected estimates shown in Figure 32 and warrants further investigation (6.2% rural vs. 2.2% urban).

**Figure 32**



**Figure 33**



### *Emerging diseases*

146 Flooding is an accepted part of life throughout Cambodia, but it also predisposes affected communities to the likelihood of injuries, trauma and water-borne diseases, such as typhoid fever, cholera, leptospirosis and hepatitis A, as well as encouraging vector-borne diseases, such as malaria, dengue and dengue haemorrhagic fever.

147 Improved sanitation and water quality impacts on the health of all Cambodians. Rising population density particularly in urban areas can expose residents to both wild and domestic animals and increase the likelihood of transmitted zoonotic diseases. Deforestation and subsequent population migration for instance, can inadvertently increase rodent, insect or snail populations that are the vectors for hanta viruses, Japanese encephalitis, malaria or schistosomiasis.

148 Similar risk assessments and prevention strategies are current for other zoonotic disease such as avian influenza or SARS - although Cambodia is one

of the few countries in South East Asia that has not recorded any cases of SARS.

149 Since avian influenza was first detected in Vietnam in 2003, Cambodia has had a total of seven cases and seven deaths (May 2007).<sup>24</sup> The reservoir for the virus has been found in domestic poultry but not in wild birds. In response the World Bank has developed a proposal in collaboration with the MOH in 2006 to strengthen monitoring and surveillance networks as part of the national Avian Influenza Preparedness Plan.

150 Based on several academic studies, arsenicosis has also been identified as a potential public health issue and reported in the JAPR 2007. Harmful concentrations of arsenic leached from naturally occurring arsenopyrites has contaminated groundwater at many locations throughout the lower Mekong basin. Long-term exposure to arsenic in drinking-water causes increased risks of cancer in the skin, lungs, bladder and kidney or disturbances of cardiovascular and nervous system functions. About two to five years of exposure may result in skin-related problems such lesions, hyperkeratosis and changes in pigmentation and serve as an early sign of arsenic poisoning.

151 Many wells have shown anomalous concentrations of arsenic that will need on-going monitoring and perhaps require alternative water sources such as rainwater tanks in high-risk zones particularly those identified in Kandal and Prey Veng provinces.

#### *Landmines / UXO's*

152 The Cambodia-specific Millennium Development Goal No.9 targets de-mining and reduction of injuries or deaths due to UXO or landmines. These accidents have declined substantially since an annual peak of more than 4000 incidents in 1996 to an average of between 700-850 per year since 2000. Nearly all mine/UXO casualties are concentrated on the Thai-Cambodian border where the Vietnamese established the K5 mine belt in the 1980's. Incidents along the border provinces of Battambang and Banteay Meanchey reflect the demand for land and mostly as a result of foraging for wood or forest resources. About 20% of casualties require an amputation and most of the amputations (70%) are due to mine related injuries. There have been lower reported casualties for landmines in the last two years compared to UXO (39% vs. 61%). Around 20% of casualties are killed in a landmine/UXO accident and more than half of these fatalities will be due to UXO (62%).<sup>25 26</sup>

153 It has been estimated in earlier studies (MOP 2000) that households headed by a person disabled by war or landmines are in poverty at almost three times higher than if the disability was due to other causes. Although these households represented a small proportion of those below the poverty line, in 2000 they were a great deal lower (27%) making this group particularly vulnerable to adverse socio-economic impacts.

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<sup>24</sup> WHO Cambodia website 2007

<sup>25</sup> Landmine Monitor Report 2006

<sup>26</sup> Cambodia Mine/UXO Victim Information System (CMVIS) Annual Report 2005



### *Physical rehabilitation*

154 Physical rehabilitation services largely began in Cambodia as a response to landmine and unexploded ordnance survivors but services have expanded in recent years to include clients with mobility difficulties for other causes. Based on the CSES 2004 and WHO data, it is estimated that between 70,000-153,000 people require assistive devices in Cambodia and most (89%) live in rural areas. Mobility difficulties are most prevalent in young males under 24 years of age, although the majority of new clients accessing INGO physical rehabilitation centers have been 18 years or under, translating into 18-20% of all clients are now new clients in this age bracket. The causes of disability are changing with an increase as a result of accidents, disease and illnesses<sup>27</sup>.

### *Road accidents*

155 Disabilities due to road accidents have almost doubled in the last five years and this increase is expected to continue (7% vs. 4%). In 2002 the Department of Transport reported a fatality rate of 13 per 10 000 vehicles - one of the highest rates in ASEAN countries<sup>28</sup>.

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<sup>27</sup> Min of Social Affairs, Veterans and Youth Rehabilitation & partner agencies. *Evaluation of the physical rehabilitation sector in Cambodia* Gregson et al 2006.

<sup>28</sup> WHO Cambodia Country Report 2006

## **Health Service Delivery**

### Key Points

- 156 Public utilization is increasing, but it is still low. Service delivery is uneven and funding constraints are widespread.
- 157 Poorer households and low education and are associated with reduced outcomes. Healthcare costs and transport difficulties, and the quality of available services are major constraints for poor households accessing healthcare.
- 158 Demand for health services by the poor is expected to rapidly increase with the expansion of social health protection schemes such as Equity Funds or CBHI. Greater leverage for accreditation and quality assurance is also expected.
- 159 A detailed framework for quality improvement systems and standards of care are in place but not yet enforced.
- 160 Little is known about the coverage and practices of the private sector, small studies have found treatment provided by private drug sellers to be low quality. However opportunities are available for more public/private partnerships.
- 161 Referral systems are poor in the public sector, and seemingly better in the private sector, although more targeted dissemination and education strategies about case management and treatment protocols are needed.
- 162 Contracting of health management services has shown positive results for improved outcomes, and for performance related management structures.
- 163 MOH control over workforce planning is constrained by lack of cooperation by some Provincial Health Departments, and lack of baseline data for the private sector, although the Human Resources data base has been useful to identify locations for assessment and intervention. There is a general shortage of midwives but training to increase existing skill levels, re-distribution of trained staff and recruitment of midwifery students are in place.
- 164 A lack of overall strategic direction for the hospital system has continued to hamper performance, and limit development of an effective referral system.
- 165 Many private sector providers also hold jobs within the public sector. MBPI and PMGs are hoped to redress this situation.
- 166 National programs are not always aligned with public health priorities, funding for other serious common diseases are distorted. The role of National Programs and their relationship with MOH needs to be more explicit through service level agreements.
- 167 Salaries and incentives need to increase 4-5 times to ensure staff commitment and improved performance.

## Summary findings

168 Coverage for CPA and MPA have steadily increased, along with the numbers of staff trained in IMCI. Most of the targets set for 2006 were generally met or exceeded, however some of the reasons that service delivery indicators that failed to reach target, were because remote areas continue to have a lack of trained staff, limited resources had been available for outreach activities, coupled with on-going financial constraints and a general shortage of midwives.

169 Utilization however has been increasing overall as a result of improved health service delivery combined with an improving economy. Urban residents or richer households are more likely to access healthcare services than rural or poorer households. The majority of people rarely seek more than one treatment if they are ill, and not surprisingly for the first treatment, the private sector is about twice as popular as the public or non-medical sectors. There is little difference between utilization by income groups in Phnom Penh but there are marked differences in poorer areas such as the coastal zone, where the richest access healthcare much more often than poorest households

170 The poorest households are much less likely to seek healthcare when they are ill, often due to their remote locations, but when they do, it is more difficult for poor people to source quality healthcare. With the exception of traditional providers, poorer income groups consistently have less access and are located further from most private providers, compared to richer households. Health centers are really only effective providers for the population residing within 4.5 km radius, and outreach activities are often hampered through lack of funds particularly for fuel and incentive payments. A higher demand for health services by the poor is expected to rapidly increase with the expansion of social health protection schemes such as Equity Funds or CBHI.

171 Mothers lacking or only having minimal education or those from poor households are less likely to access or seek primary healthcare such as Antenatal Care (ANC) or immunization, or to even seek health services for curative care for diseases like tuberculosis, malaria or childhood illnesses. Apparent reluctance of poor families to seek out treatment is often a composite of the high cost of care including transport, a lack of transport, long or arduous distances, poor roads, together with long waiting times, or restricted hours once a patient arrives at a health facility. The implementation of contracted management of health services and social protection funds in selected Operational Districts has been largely successful in addressing most of these problems through better case management, and improved staff motivation, salaries and general administration.

172 The public sector in Cambodia has a weak referral system, but improvements in MPA and CPA and on-going training has sought to resolve this important problem. Referrals in the private sector seem to be better, particularly in relation to pharmacies, but training targeting the private sector including wider dissemination of treatment guidelines is needed. A small study has indicated that treatment offered by drug sellers and pharmacies is of low quality. It also seems that the private sector is open to improved coordination, and promotion of referral systems within the public sector.

173 The QI system is in early stages but the core elements are in place. A framework has been endorsed covering the key aspects of service delivery but many guidelines for audit, case management or clinical practice are still under development. Low staffing levels at the Quality Assurance Office (MOH) has caused some delays to the QI program but it is anticipated a steady roll out of many of the core materials will be maintained throughout 2007. Licensing of new health facilities, guidelines for minimum standards, internal audits, and essential drug lists have all been developed and implementation is underway. A CME program for the public sector is available, as well as on-going needs assessments at RTC's, implemented through the NIPH.

174 Implementation of a Performance Management System and increased coverage for CPA/MPA has helped define roles and functions for health facilities and staff. Decentralization of management authority and funding arrangements are still under discussion with the MOH, but amending legislation linked to social health protection, and changes to human resource management are important future milestones for strengthening quality improvement systems.

175 Operational Districts with contracted management providers have shown consistently better performance results for most parameters including per capita outpatient visits, hospital admission rates, vaccination coverage and efficiency of hospital bed use, compared to those Operational Districts without contracted management. Contracting in existing Operational Districts will continue under the HSSP until the end of 2008, but high set-up and maintenance costs for new entrants and sometimes high overheads for existing providers means that although the management providers could potentially be re-directed to new Operational Districts, the future of HSSP contracting arrangements in existing sites beyond that timeframe is not known. Although contracting only indirectly targets the poor, a strong performance focus, improved management, increased capacity of staff, appropriate incentives and adequate and timely financing of recurrent operational costs have been positive lessons learned from the contracting experience. Urgent policy discussion is needed however on how to ensure appropriate level of financing for frontline health services which remain seriously under funded.

176 Little is known about the extent, quality and cost of services provided by the private sector and there is limited empirical evidence to measure the full extent of its contribution in helping reduce morbidity and mortality. Regulatory controls for professional registration are weak, and a proliferation of private providers in recent years including clinics and drug sellers, has mostly occurred without scrutiny. Mechanisms to establish standards of practice and quality of care have recently been developed but as yet have not been widely enforced. There is an obvious overlap with public and private services given that many private providers are also civil servants. There is a significant opportunity to engage and develop the private sector to help achieve public health priorities, and encourage better referral practices. The introduction of public sector reforms such as MPBI and social health protection schemes is expected to change the landscape of private sector provision through accreditation and quality systems.

177 Steps have been taken to consolidate the MOH's position through key planning documents such as the Health Sector Strategic Plan, the Institutional Development Plan, Organizational Development Plans and Quarterly Work

Plans. Much has already been set in train, through the establishment of performance based management, and a more comprehensive planning and reporting frameworks, the expansion of health protection funds, the setting of quality assurance standards via MPA and CPA, as well as review of staff salary incentives.

178 Upgrading skills, training and recruitment of midwives has increased. Inclusion of SSL and training for CPA guidelines into the HR database has helped identify workforce gaps, and helped with scheduling of Training Needs Assessments. Increased population growth to 2015 especially in urban centers, is expected to cause considerable strain on existing health services, particularly for child and maternal health, infrastructure and workforce coverage. The MOH has poor control over workforce matters, in either the public or private sector. This is seen especially in the MOH's reduced ability to control the number of medical graduates from private or public universities.

179 Although baseline data for workforce planning is scant, there is a wide displacement of trained health professionals within the public sector and strategies to more effectively deploy health workers are currently in play. The MOH retains a large workforce of around 17000 because frontline service providers are also civil servants. It is not clear why direct care must be retained by the public sector, but Provincial Health Departments have often been obstructive in providing workforce data to enable thorough workforce planning options to be explored.

180 Government health workers are often absent from duty, and are usually employed concurrently in the private sector. Absenteeism, conflicts of interest, and poor service would suggest that sector wide activities such as the MBPI pilot, and expansion of Priority Mission Groups might help resolve these inconsistencies.

181 A lack of overall strategic direction for the hospital system has continued to hamper improved performance. Policies to improve technical and allocative efficiencies by granting more autonomy to both National Hospitals or larger Provincial hospitals have been under review but not yet finalized. Integrated management of hospital care has not been adequately delineated particularly in light of the inevitable changes that will be brought about with the expansion of social health protection schemes. It is currently too early to assess the impact of activities such as Program Based Budgeting, Organizational Development Plans, functional analysis, and increased autonomy.

182 The determinants of success for National Programs are generally linked to strong leadership within individual agencies combined with the level of autonomy from the MOH. National Programs have been very successful in achieving widespread coverage across income groups, but have often been discordant with other primary healthcare services. Although more funds are needed for maternal and child health, the relative amounts targeted for other National Programs in 2007 compared to common serious diseases has become more distorted. For instance illnesses as a result of measles, diarrhoeal diseases or respiratory illness create a higher burden and cause more deaths than HIV/AIDS, but this is not reflected in budget allocations within the MOH.

183 Recommendations for Group A National Programs, included reaching an agreement to pool incentive payments made to primary health care staff, such as the case with user-fees; extending Merit Based Pay Initiatives; as well as

ensuring that all Organizational Development Plans are completed. A systematic review of both management reporting and associated delegations is needed so that ultimately all Group A agencies should adopt service level agreements with the MOH. Recommendations for Group B agencies are for a clear definition of their strategic relationship with the MOH, including the level of autonomy, and to explore what options are available for both strengthening the relationship and improving efficiencies.

184 There has been some concern by donors that the performance of the Priority Mission Groups is mixed because of the relatively low incentives offered, and that unlike the MBPI, their incentives are not outcome based or performance related. PMG's may actually increase workloads for central MOH staff because of the support demanded by inexperienced staff in PMGs. Although the MBPI and Priority Mission Groups are significant start for public sector reform it is important to note that the experience from contracting as well as comparison with non-government salaries, have shown that incentive packages would need to increase current salaries up to 4-5 times to ensure staff commitment and performance in their jobs.

## **Health Service Delivery**

### **1 Distribution of Health Services**

185 In Cambodia health service delivery is defined through the MOH Health Coverage Plan 2002 which has designated 77 Operational Districts throughout the country responsible for healthcare for 100,000–200,000 people. Most Operational Districts are comprised of a Referral Hospital delivering a Comprehensive Package of Activities (CPA) authorizing the provision of appropriate curative care for first referral. Referral Hospitals are further supported by 965 health centers each catering to around 10,000 residents and delivering a Minimum Package of Activities (MPA) encompassing a basic set of preventive programs, health promotion activities and out-patient curative health services. The per capita consultation rate for government health services continues to increase from 0.37<sup>29</sup> in 2003, 0.51 in 2005, to 0.56 in 2006.<sup>30</sup>

186 Donor organizations have been very active since the early 1990's to support the Health Coverage Plan and help build capacity, improve service delivery and infrastructure, particularly through the implementation of the Health Sector Support Project (HSSP), which has been piloted in 22 provinces and due to conclude at the end of 2008. The WB/IDA, DFID, UNFPA and the ADB together with the MOH have collaborated under a Sector Wide Management (SWiM) protocol to implement the HSSP in order to improve health service quality, utilization and access, especially for women, children and the poor.

187 The HSSP project has involved building and renovating Referral Hospitals and health centers, supplying equipment, drugs and other medical essentials as well as training staff to deliver either minimum and complementary package of activities (MPA, CPA). The HSSP also has financed contracting of health management in selected Operational Districts to NGO's to improve access for poor communities to healthcare, in conjunction with establishing health protection funds.

### **2 Performance of Health Service Delivery**

188 The Joint Annual Performance Review for 2007 gave a synopsis of the accomplishments in 2006 and challenges for 2007 for the six goals of the Health Sector Strategic Plan 2003-07 (HSP). Priority areas identified in the JAPR for 2007 are maternal and child health. The goal of Health Services Delivery from the HSP is monitored in terms of maternal and child health on five key areas:

#### Health Services Delivery

1. Emergency Obstetric Care;
2. Attendance at Delivery by Trained Health Providers;
3. Integrated Management of Childhood Illnesses (IMCI);
4. Full MPA status at health centers; and
5. Birth Spacing Services.<sup>31</sup>

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<sup>29</sup> MOH: HSSP MTR Aide Memoire Oct 06

<sup>30</sup> MOH: Joint Annual Performance Review 2006 and 2007

<sup>31</sup> Some of the data has not been completed for the 2007 JAPR, but comparison with 2006 is made where possible. Some of these results such as contraceptive access may also be skewed by the services provided by the private sector which are not within the scope of the JAPR.

### *Emergency Obstetric Care*

189 Updated data for 2006 was not available for some indicators but data from 2005 showed that the number of Referral Hospitals offering Complementary Package of Activities (CPA2) for emergency obstetric care underwent a small increase in 2005 from 26 to 28, and those with CPA3 rose by one from 15 to 16.

### *Full MPA status at health centers*

190 In 2005 just over half the total number of health centers (439) were able to deliver the full MPA, and importantly for cold chain security nearly all health centers were equipped with a refrigerator (943 out of 966).

### *Integrated Management of Childhood Illnesses (IMCI)*

191 Staff trained in Integrated Management of Childhood Illnesses (IMCI) rose from 1257 in 2005 to 1460 in 2006<sup>32</sup>, and were available at 322 health centers in 2005 and rising to 415 by 2006. Annual consultations for children under five was 0.92 in 2005 and 1 in 2006. In 2006 most children under 12 months of age received a DTP3 vaccination, which was slightly under the target but coverage was still underway at the time of reporting (81% vs. 89%). Children who received Vitamin A supplements looked to be almost reaching target levels, Round one 77% and 78% in Round two. (85%). The CDHS 2005 reported 34.5% as a national average for children (aged 6-59 months) who had received Vitamin A supplements in the six months prior to the survey.

192 De-worming treatment provided to children aged 12-59 months was 56.7% in the JAPR 2007. The CDHS 2005 reported a national average of 26.7% although this result was determined for a wider age range of 6-59 months. School age children who had been provided with de-worming medication was 89%.<sup>33</sup>

193 Reportedly the funding for the nutrition program is too segmented and needs closer attention for increased and targeted resources, for instance on raising greater awareness about complementary feeding practices. In terms of efficiency, the administration of IMCI is currently located within the Communicable Diseases Department in the MOH when perhaps it would be more effectively administered under the auspices of National Maternal and Child Health Centre.

### *Attendance at Delivery by Trained Health Providers*

194 Deliveries attended by trained staff was slightly under target (34% vs. 40%), women who received at least two antenatal consultations was almost on target (59% vs. 60%) and those pregnant women who received a tetanus toxoid vaccination were lower than expected (50% vs. 70%).

195 Iron folate supplements exceed target for the first ANC visit (60% vs. 86%) and were just about on target for the second ANC visit (58% vs. 60%). This information has been recently updated to 69% of pregnant women receive 90 tablets, 57% of post-partum women received 42 tablets, and in addition a baseline survey of folate supplements for teenagers has just been concluded.<sup>34</sup> According to the CDHS 2005, the national average showed only 9% of pregnant

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<sup>32</sup> MOH: 2006; Health Sector Support Project (HSSP) Mid-Term Review Table 11

<sup>33</sup> MOH: CNM email May 2007

<sup>34</sup> MOH: Nutrition Program – phone call June 2007.



women received 60-80 days of tablets or syrup, and 17.6% received more than 90 days of treatment.<sup>35</sup>

196 Half of the women who had made a delivery received a Vitamin A supplement within eight weeks, less than the target of 65%. As a comparison, the CDHS 2005 reported a national average that was much lower at 27.3%<sup>36</sup>. The 'Baby Friendly Initiative' is has been a new tactic to help improve infant and maternal health and in 2006 seven hospitals had implemented this scheme, and a higher target of 13 has been set for 2007, with even greater coverage expected for maternal and child health indicators in 2007-08.

#### *Birth Spacing Services*

197 In 2006, birth spacing results showed 27% of married women accessed modern contraceptive methods against a target of 35%, although underreporting is probable because of private sector contribution.

#### *Other Indicators*

198 Hospitals admissions increased for children under-five in 2006 to (64/1000) exceeding target (45/1000) but adult admissions were lower than expected with only (18/1000 vs. 25/1000).

199 Reports from 2006 show 32 Referral Hospitals now have a blood bank and most public laboratories and blood banks exceeded the target for supervision by the National Institute of Public Health (NIPH) (93% vs. 81.2%). Percentages of blood donor samples that had been validated by the NIPH varied across provinces and was only a slightly higher average than 2005 (82.95%). Blood quality and stocking has been an on-going problem both because of a shortage of donors and a lack of understanding by the community about their role in contributing and maintaining an effective blood supply system.

200 Voluntary counseling and testing for HIV/AIDS is now available at 150 sites covering all Operational Districts. TB smear positive testing was just under target (67% vs. 70%). The malaria incidence rate has increased slightly from 2005 from 6 to 7.2 in 2006 (per 1000), the Case Fatality Rate (CFR) for severe cases was 7.9% in 2006 while the percentage of endemic villages that had annual re-treatment or replacement of treated bed nets was 81%. The Dengue Case Fatality Rate meanwhile was less than 9 per 1000.

201 Some of the reason for failure to meet the targets expressed in the JAPR 2006 were that remote areas were suffering from a lack of trained staff, limited outreach activities, financial constraints and a general shortage of midwives.<sup>37</sup>

#### *Utilization of public / private sectors*

202 On comparable indicators for outpatient utilization the CDHS 2005 confirmed that health outcomes or indices were similar or slightly better than the CSES 2004. About the same percentage of the surveyed population were ill in the preceding month (16% vs.19%) and of the people who required medical care, a third more sought care in the CDHS 2005 compared to the CSES 2004 (92% vs. 66%) which suggests an improved economy along with improved health service delivery may be combining to increase utilization.

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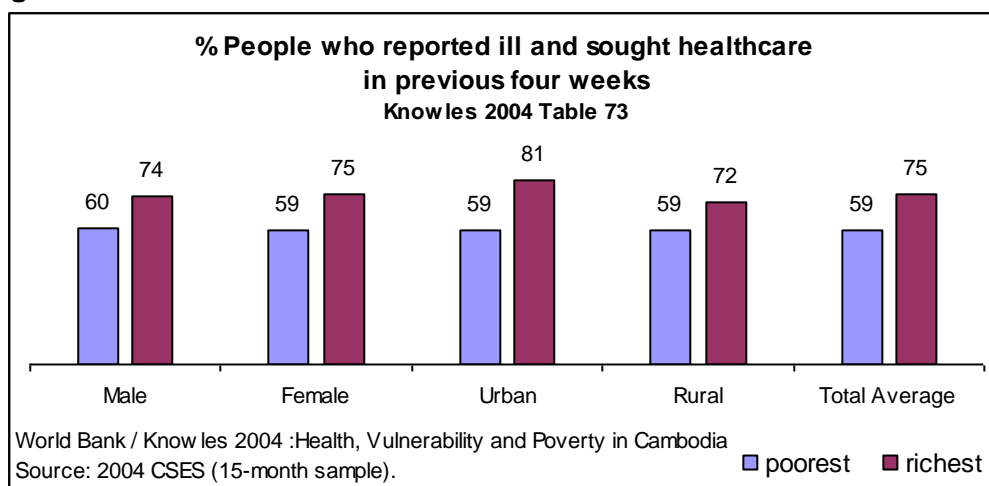
<sup>35</sup> CDHS Table 15.8

<sup>36</sup> CDHS 2005 Table 15.13

<sup>37</sup> MOH: Joint Annual Performance Review 2006

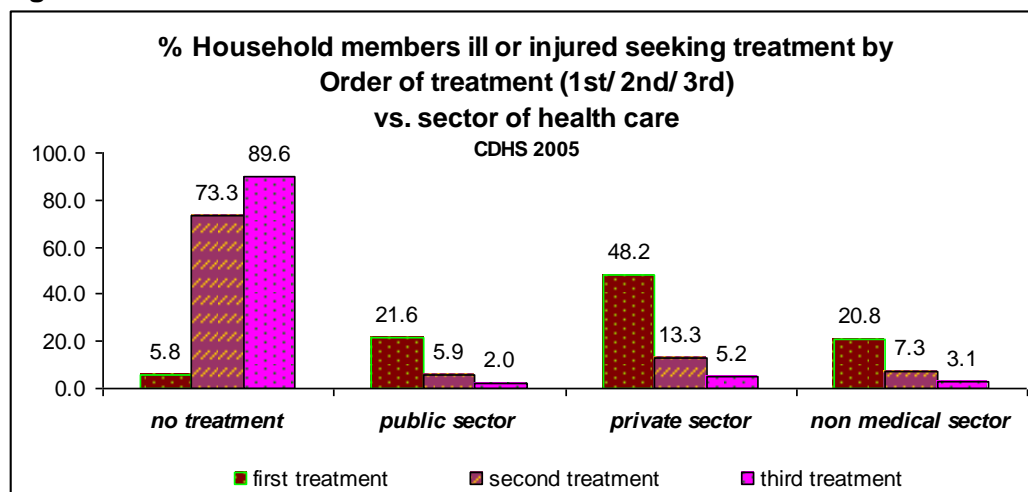
203 Demographics from the CSES 2004 revealed that women are higher users of public health centers, possibly because some maternal services are not available through private providers. Urban residents and males to a lesser extent make more use of National and Provincial hospitals. Urban patients will generally consult private providers in a hospital or a clinic and purchase drugs from a dedicated drug store. Rural patients will receive their consultations in a private provider's home or even in their own home and they are likely also to buy their medicines from places that are not dedicated drug shops. Young children and women usually visit a health center, while older patients are more likely to visit a traditional healer (CSES 2004). To give an indication of the range of utilization, Figure 1 shows around a fifteen percent difference between poorest and richest quintiles both by urban-rural demographics as well as gender.

**Figure 34**



204 The CDHS 2005 was able to provide some details of household medical treatment sought by respondents in the thirty days prior to the survey, the number and type of visits, as well as a more recent summary of costs incurred for illnesses. Utilization of public facilities continues to be low (22% CDHS 2005 vs. 17% CSES 2004 ) although health centers are the most often used public sector facility by rural or urban residents.

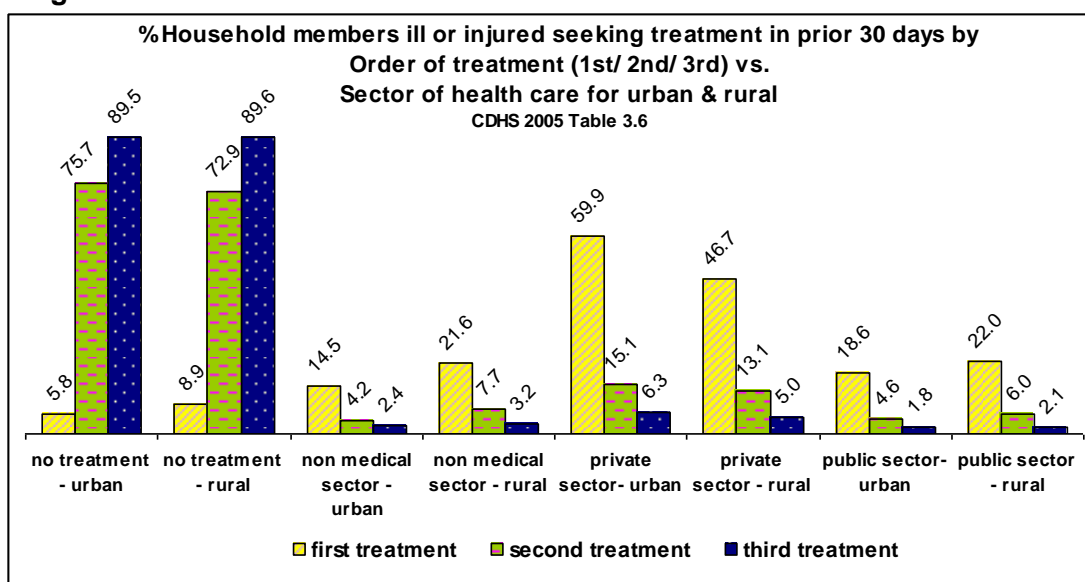
**Figure 35**



205 For respondents who sought healthcare in the prior thirty days, the CDHS 2005 reviewed three treatment sessions. Not surprisingly it discovered for first treatment the private sector is about twice as popular as the public or non-medical sectors, both of which had about the same patronage (48% vs. 22%, 21% respectively) (Figure 2).

206 On a urban/rural breakdown, for people who sought treatment, the private sector was consistently the most popular choice. Many more rural compared to urban residents use shops or markets in the non-medical sector for a first visit (20% vs. 13%). Rural populations are twice as likely to use a health centers for an initial visit, (14% vs. 8%). Conversely more than one in three urban residents will use a pharmacy as first contact for a medical problem compared to rural residents – likely because pharmacies in urban areas are more accessible and more convenient than a clinic or hospital. (25% vs.7%).<sup>38</sup>

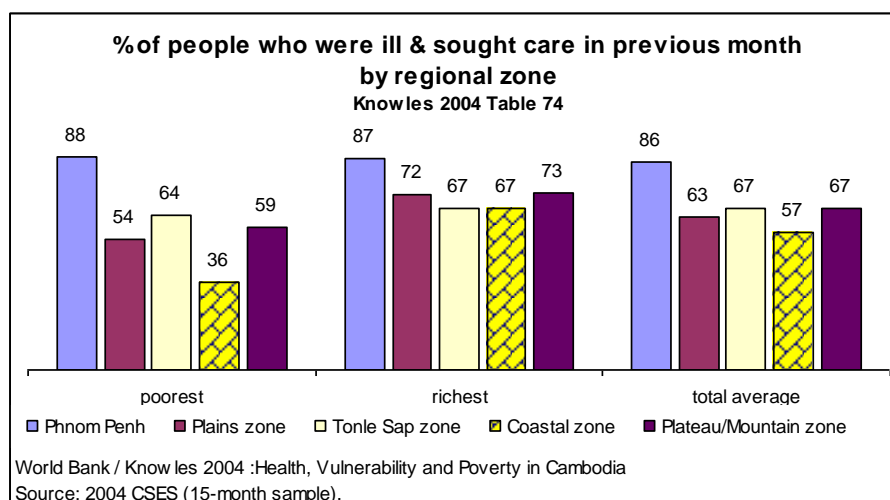
**Figure 36**



207 Second treatment shows marginally more urban residents are likely not to seek treatment than rural residents (76 vs. 73%), for those who sought treatment about double the rate of rural residents visited the non-medical sector (8% vs. 4%), about the same urban-rural rate sought the private sector (15% vs. 13%) or public sector (5% vs. 6%). The third treatment showed those who didn't seek treatment was about the same for urban or rural groups (90%) For people who continued to seek treatment, the third treatment was about even for each category. Non-medical (2% vs. 3%), Private (6% vs. 5%), and Public sector (2% vs. 2%). Importantly however it appears that the overall majority of people rarely seek more than one treatment as shown in Figure 3.

<sup>38</sup> Graph not provided – source CHDS 2005 Table 3.6

**Figure 37**



208 The CSES 2004 was able to differentiate utilization levels by income group on a regional basis. This showed little difference between income groups in Phnom Penh compared to a marked differences in the coastal zone where the richest access healthcare much more often than poorest households (67% vs. 36%) (Figure 4).

#### *Barriers to utilization*

209 Because utilization rates have traditionally been very low in Cambodia, the CDHS 2005 and the CSES 2004 give some clues as to the patterns of utilization. Both confirm that the poor are much less likely to seek healthcare when they are ill, and often due to their remote locations, it is even more difficult for poor people to source quality healthcare, such as better equipped health centers or Referral Hospitals.

210 Although staffing has improved in the last three years, respondents to the CSES 2004 indicated substantial differences in overall availability of staff, midwives and doctors between the richest and poorest villages. Only five percent of the poorest quintile was served by a health center staffed by a doctor compared to twenty-five percent in the richest quintile. Similarly the primary hospital of the poorest quintile had 13 midwives compared to 18 in the richest.

211 Less than sixty percent (59%) of poor people use health services when they need it compared to 72% rural richest or 81% urban richest. Various theories hold that medical conditions such as malaria, underweight babies or malnutrition might be considered 'normal' events in poorer communities and an expensive visit to a health facility is usually delayed until the condition becomes severe. This scenario was observed with the increase in the severe malaria Case Fatality Rate (CFR:10.3% in 2004 to 10.43% in 2005), reportedly due to significantly late arrivals by patients at public health facilities compromising the efficacy of treatment.<sup>39</sup>

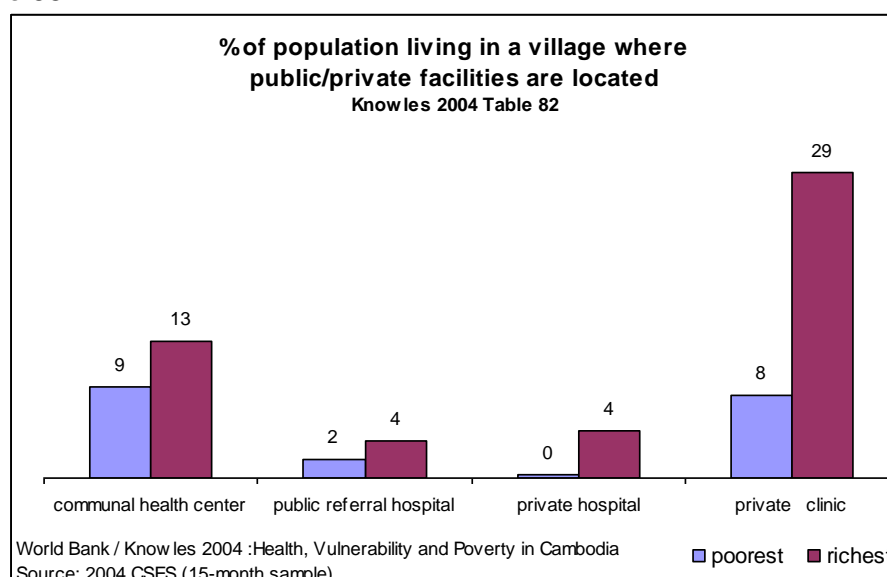
<sup>39</sup> WHO Cambodia Country Report 2006

212 As would be expected that only a very small number of villages have a public hospital, and only about 11% of the population reside in a village where a health center is located. Private hospitals, clinics, doctors, or dedicated drug retailers are not widespread across rural villages where most Cambodians live. However one third of the population usually has access to nurses, trained midwives or shops selling drugs, and the majority have access to services from one or more traditional healers such as kru Khmer, Traditional Birth Attendants (TBA) or other traditional healers.<sup>40</sup>

213 A socio-economic gap exists within Cambodia that parallels the urban-rural divide. This economic constraint in combination with mothers lacking or only having minimal education and being a household in a poorer community means that these women are less likely to access or seek primary healthcare such as Antenatal Care (ANC) or immunization, or to even seek health services for curative care for diseases like tuberculosis, malaria or childhood illnesses. The low attendance by poor families at health centers for common childhood illnesses, immunization programs, or for ANC or postnatal checkups also means a missed opportunity for delivering public health messages to the most vulnerable segments of the community.

214 Apparent reluctance of poor families to seek out treatment when they need it is often a composite of the high cost of care including transport, a lack of transport, long or arduous distances, poor roads, together with long waiting times, or restricted hours once a patient arrives at a health facility. The implementation of contracted management of health services and social protection funds in selected Operational Districts has been largely successful in addressing some of these problems through better case management, and improved staff motivation, salaries and general administration.

**Figure 38**

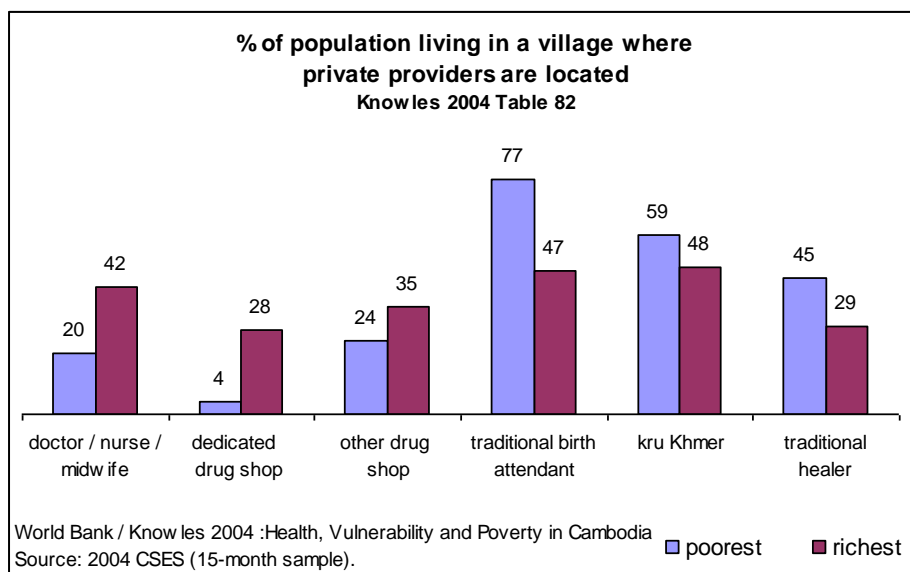


215 Generally, richer villages have access to more modern services while poorer villages have a higher ratio of traditional providers. Thirteen percent of the richest quintile reside in a village with a health center, compared to nine percent of the poorest. Four percent of the richest have access to a Referral

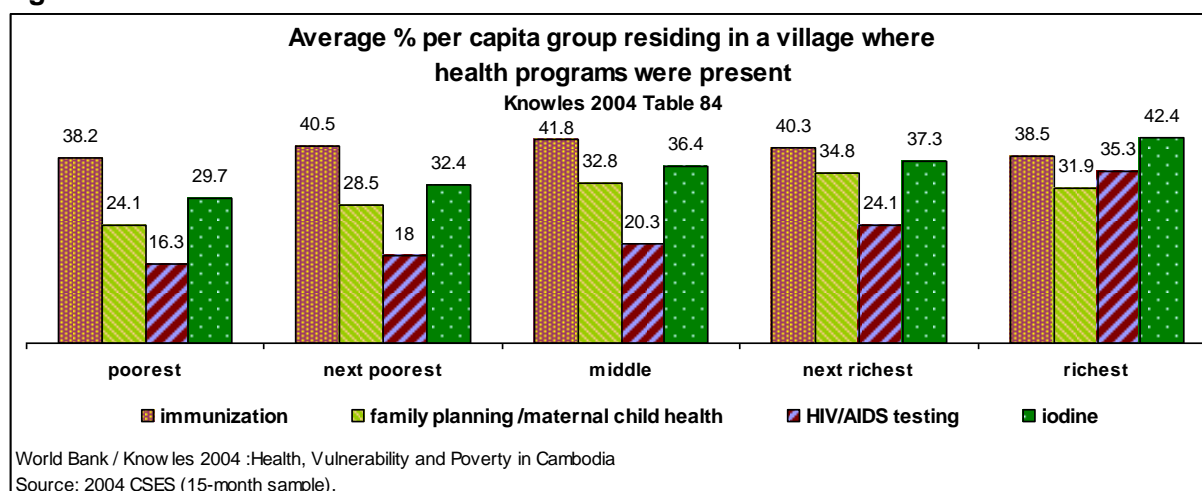
<sup>40</sup> Cambodian Socio-Economic Survey (CSES) 2004

Hospital compared to two percent of the poorest. With the exception of traditional providers these poorer income groups consistently have less access to private providers.<sup>41</sup> Figure 5.

**Figure 39**



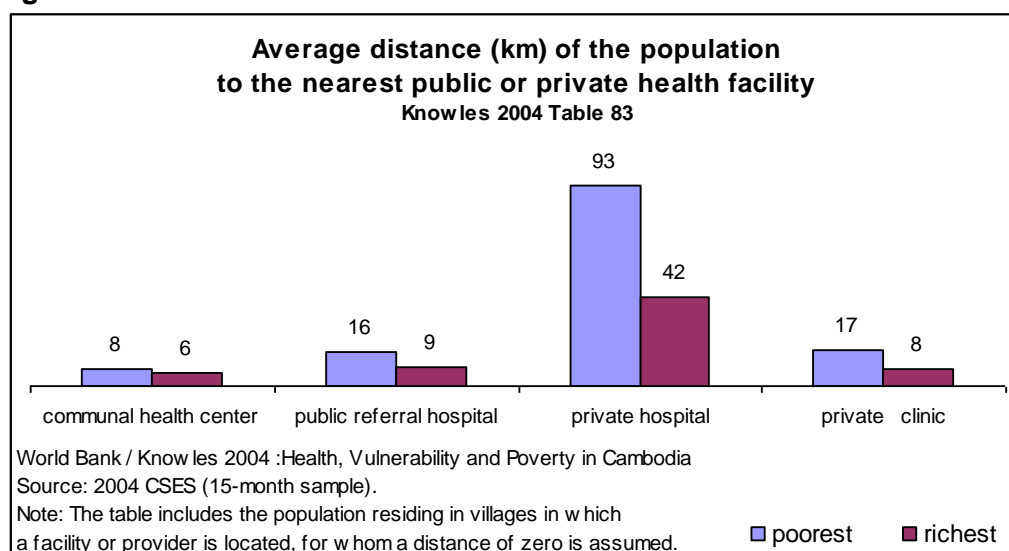
**Figure 40**



216 The CSES 2004 was able to conclude that although distribution of public health initiatives vary, most villages have consistent immunization coverage, but programs such as Family Planning/Maternal and Child Health, HIV/AIDS testing and iodine services are more common in richer villages. Figure 7 shows the successful coverage of vertical programs but does not adequately portray the significant discord National Programs have with delivering other primary healthcare services.

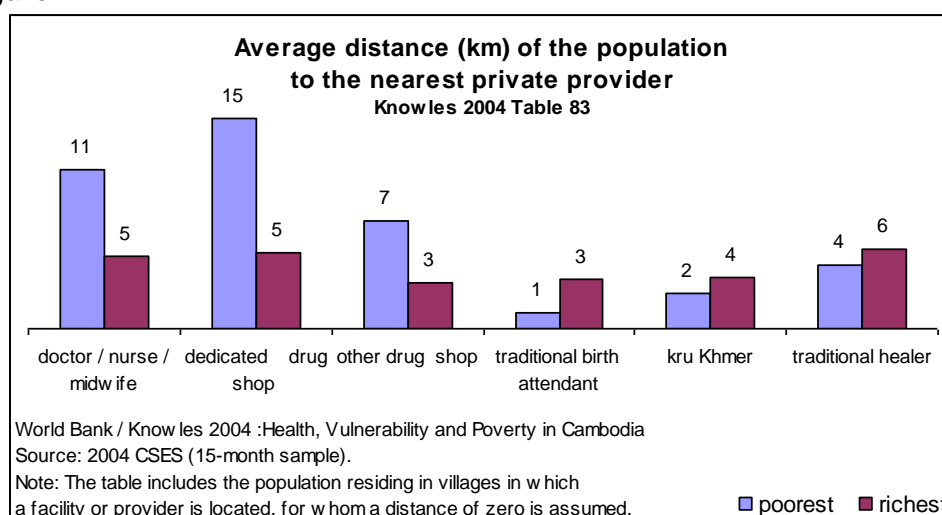
<sup>41</sup> Knowles (2004) reports that the facility and provider categories listed are those that were used in the CSES 2004 Village Questionnaire. In the case of the public facilities, these categories are not consistent with the MOH nomenclature, which is based on the 1997 Health Coverage Plan. For example, at the primary level, there are no longer any communal health centers. There are only health centers and health posts. Similarly, there are no longer any district or provincial hospitals—only referral hospitals. It is assumed that the categories for doctors, nurses and trained midwives refers to private providers. Many of these providers are employed in the public health system (for example, in health centers or in referral hospitals) and have private practices in their village of residence.

**Figure 41**



217 Access to public health facilities whether determined by distance or by population, both favor richer households. Although Knowles (2004) points out there is some inconsistencies in the terminology used in the CSES 2004 village questionnaire (refer previous footnote) Figure 8 shows poorer communities are located further from public facilities, but as well the CSES 2004 revealed that health centers were really only effective providers for the population residing within 4.5 km radius. Although incentives are generally paid to health center staff to undertake outreach activities they are often hampered through lack of funds particularly for fuel<sup>42</sup> and whether outreach staff are paid on a per-diem basis or by incentives for outputs.

**Figure 42**



218 Apart from traditional providers, the distance to private providers also favors the rich and usually by a greater margin than compared to accessibility of public health facilities (Figure 9).

219 Plans to encourage a higher demand for health services such as home visits from health staff or expansion of Equity Funds or a voucher system have

<sup>42</sup> MOEF Public Expenditure Tracking Survey 2006 (PETS).

been a positive way to increase utilization particularly from poor people, as well as to broaden public health priorities, although commonly a lack of funds or transport difficulties are barriers to success. Potentially the best option for this scenario is for demand strategies to be coordinated and concurrent with the expansion of Equity Funds and Community Based Health Insurance (CBHI).

### *Referral Systems*

220 The public sector in Cambodia has been widely acknowledged as having a weak referral system. Although not yet in a position to effectively deliver a continuum of care, public facilities should at least be competent to transfer patients from those with basic services to ones offering higher levels of care. This issue has been critically examined through the JAPR process, and a practical response has been initiated along with the re-alignment of functionality, roles and responsibilities of public facilities at all levels. Significant attention has been given to the upgrading skills at health centers and Referral Hospitals to ensure capacity for MPA and CPA, as well as provision of training and more appropriate deployment of midwives, particularly to under-served remote areas, although unfortunately it is unlikely there will be enough midwives to reach a targeted 70%-80% of need, in the short term.<sup>43</sup>

221 For referral systems in the private sector PATH/Ramage reported in 2002 that 99% of the private providers interviewed (108) confirmed cooperating with other health providers. Those surveyed maintained strong links to other public and private sector health providers, and referrals were quite common particularly for Phnom Penh pharmacies. It was clear from this small survey that the providers interviewed did not work in isolation but were part of active cooperation networks.<sup>44</sup> This is an important finding for developing plans to strengthen the quality, safety and efficacy of care. PATH Cambodia has utilized their research to invest in training and health promotion with particular emphasis on effective and appropriate clinical practice and referral systems especially for patients aged under-five.

## **3 Quality**

### *Patient perceptions*

222 There are many factors contributing to the under-utilization of public health facilities, but not unusually, convenience appears to be an important consideration. The poorest households are more likely to use (78%) private providers in the first instance, usually a drug shop (33%), or alternatively visit the home of an off-duty public provider located nearby such as a nurse or doctor (13%) or even request a home-visit from one of these practitioners.<sup>45</sup>

223 The CDHS 2005 revealed that both urban and rural residents use public facilities at similar rates (19% vs. 22%). This finding is qualified however in that poorer or rural people tend to use lower quality services provided by health centers or Referral Hospitals, likely due to their remote home locations - while the non-poor use Provincial or National Hospitals more frequently.

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<sup>43</sup> MOH Comprehensive Midwifery Review 2006

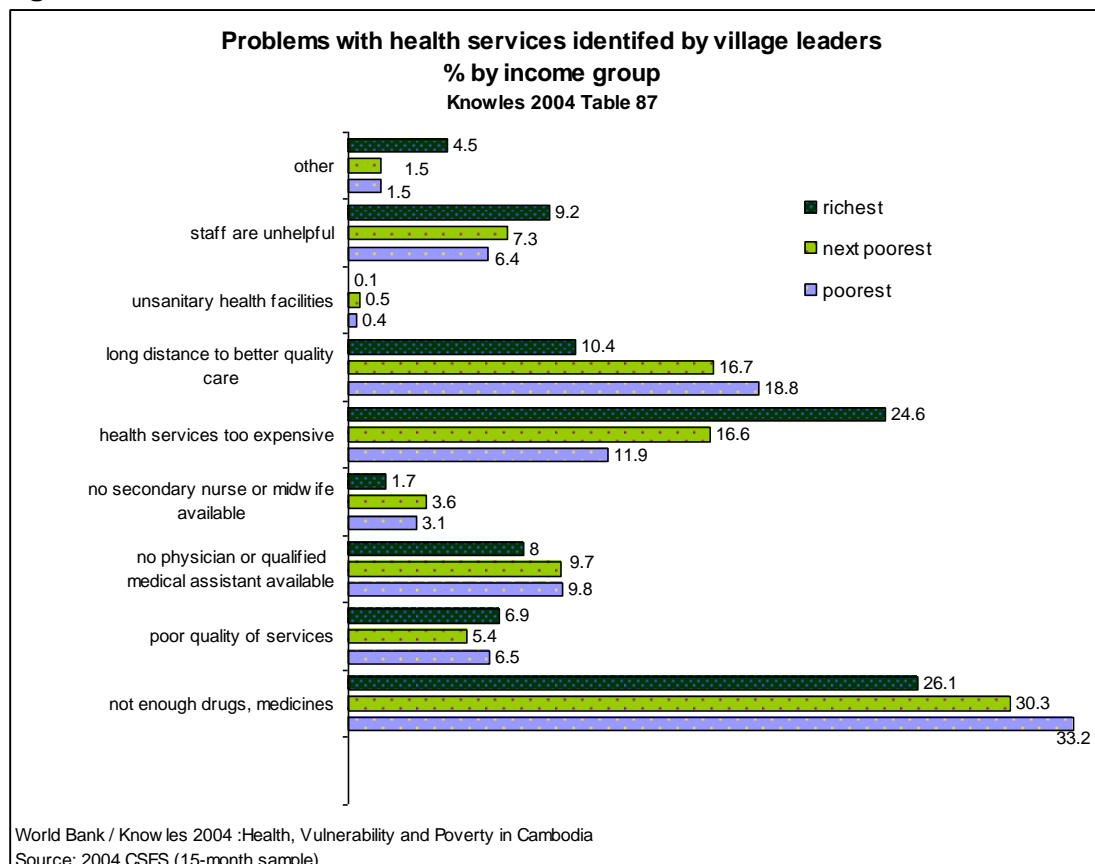
<sup>44</sup> PATH Cambodia / WHO: Ramage, I, 2002: *Assessment of Official Private Providers and Delivery of Health Care Services to Children Under-five.*

<sup>45</sup> Cambodian Socio-Economic Survey (CSES) 2004



224 The CSES 2004 asked village leaders to identify the three most important problems in public or private health services in their village. Not enough medicines and drugs was repeated across all income groups. Poorer villages felt distance to better quality care was important, and interestingly the richer respondents were concerned with the high cost of health services, perhaps due to their higher overall utilization rates. (Figure 10)

**Figure 43**



### *National Policy for Quality in Health*

225 The MOH announced a *National Policy for Quality in Health*<sup>46</sup> in October 2005 to support the Quality Improvement components of both the MOH Health Strategic Plan and the Institutional Development Plan. The policy focuses on priorities of health care financing, human resource management, professional self-regulation and decentralization of management. GTZ has been instrumental in providing technical advice to develop a Quality Improvement framework. It is based on the Structure / Process / Outcomes principles devised by Donabedian<sup>47</sup> for quality improvement.

<sup>46</sup> With technical assistance from GTZ.

<sup>47</sup> Quality Management: In Nursing & Health Care. NY 1996: Schmele JA (ed); Donabedian. A *The Quality of Care: How can it be assessed?* Delmar Publishers 1996:52-65

226 Although Quality Improvement is linked to strategic vision it depends on sufficient resources to both achieve and measure organizational change. With this in mind the MOH leadership has endorsed a Quality Improvement policy and identified some key challenges:

227 The low quality of care and poor attitudes and practices of health staff are seen as dominant factors contributing to low utilization of public facilities. Mal-distribution of health service providers particularly midwives is clearly linked to the continuing high incidences of infant and maternal mortality, while high user fees compound the limited access available to the poor especially the services provided by Referral Hospitals.

228 Quality outcomes have been obstructed by central budgetary problems with protracted delays in the disbursement of funds reported in the PETS<sup>48</sup> causing irregular and inadequate flow of resources, ultimately influencing all aspects of service delivery.

229 Lastly, the MOH has acknowledged that a lack of organizational competency is evident, stemming from poor leadership and limited supervisory skills to manage, plan or evaluate complex health programs.

230 The National Policy for Quality in Health<sup>49</sup> has sought to address all of above issues by implementing six key strategies:

- |   |  |
|---|--|
| 1. Empowering consumers                         | through a patient charter                                      |
| 2. Institutional Management                     | through management standards                                   |
| 3. Clinical Practice                            | through clinical standards                                     |
| 4. Professional Development                     | through training and Continuing Medical Education (CME)        |
| 5. Management Development                       | through training and Continuing Professional Development (CPD) |
| 6. Institutionalization of quality legislation. | through performance agreement, and Codes of Practice.          |

231 An inventory of actions was assigned to coordinate activities and reduce duplication between the MOH and partner organizations. Performance of quality initiatives has recently been reported in the Joint Annual Performance Review 2007 while other data is compiled from the Health Information System (HIS) at the MOH.

232 To date, few of the operational documents or guidelines have been finalized because of low staffing levels at the Quality Assurance Office (MOH) but it is anticipated a steady roll out of many of the core materials will be maintained throughout 2007.

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<sup>48</sup> MOEF Public Expenditure Tracking Survey 2006 (PETS)

<sup>49</sup> MOH: *National Policy for Quality in Health & Roadmap for organizational standards* Oct 2006; Quality Assurance Office; Hospital Services Dept.

*Empowerment of consumers & Information on quality*

234 The 2004 World Development Report<sup>50</sup> called for giving communities more voice about the services they receive. Cambodia already has a network of Health Centre Management Committees (HCMC) and Village Health Support Groups (VHSG) both of which that will become an increasingly important way to communicate community needs to health providers, as well as exercising oversight of the quality of services they receive. A role for advocacy and monitoring is likely to be reinforced and with the expansion of social health protection schemes. Many NGO's encourage participatory methods and develop resources such as IEC materials and local forums to empower communities in deciding what services they feel are most appropriate. Currently there is no official government policy applying to community groups.

235 A key governance structure and an important dimension of quality is to ensure that services are aligned to community needs. A *Charter for Clients and Providers Rights* has been authorized by the Health Minister and was nationally distributed in 2006 through the *Medical Messenger*<sup>51</sup> magazine. The Cambodian Health & Human Rights Alliance (CHHRA) has also been responsible for coordinating and running biannual workshops in Pursat for information exchange on consumer/client rights and lessons learned. While MEDICAM and its partner organizations regularly help disseminate pertinent information in their own publications.

236 Operational guidelines to institute the Charter are now available and IEC<sup>52</sup> materials were scheduled for release in April 2007. As this program is still in the implementation phase, a performance assessment of the campaign will be conducted at a later time. Importantly the non-government sector have produced an extensive range of IEC materials particularly for HIV/AIDs prevention, and child and maternal health, and communicable disease.

*Institutional regulation & management*

237 Licensing of health facilities is now mandatory for new public facilities, private clinics and private pharmacies, but not yet compulsory for existing public health facilities. Guidelines stipulating minimum standards for public hospitals were updated in 2006 requiring compliance with the Complementary Package of Activities (CPA). Other important standards such as an Essential Drug List and logistical manuals for public pharmacies were published by the Department of Drugs at the MOH and also released in 2006.

238 Various methods for internal assessment and external supervision are currently being integrated in all public health facilities. These examine management, clinical and operational processes as well as disease-specific audits. Ten Referral Hospitals have been audited in this way and some health facilities were upgraded to achieve compliance. Audits for Community Based Health Insurance (CBHI) have occurred in selected provinces.

239 The MOH has agreed in principle to endorse independent accreditation of health facilities and intends to use social health insurance as an incentive for compliance, but to date a national accreditation system is not in place.

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<sup>50</sup> WHO: 2004 World Development Report 'Making Services Work for the Poor People'

<sup>51</sup> *Medical Messenger* Published by the NGO, Ponleu Sokhapheap (PSP)

<sup>52</sup> IEC – Information, Education & Communication

### *Clinical Practice*

240 Some evidence-based guidelines and clinical pathways are in development to establish best-practice, but generally the extent and quality of guidelines has been inconsistent and needs up-grading particularly for adult case management. It is hoped that professional associations or societies will take a more active role to develop and endorse clinical guidelines.

241 Audits of clinical practice have been limited because of the narrow use of standards. A wider adoption of standards is needed before audits can be benchmarked either by the MOH or an independent body. To date the only training in clinical audits has been for maternal deaths which has been delivered by the National Maternal and Child Health Center, under the National Reproductive Health Program (NRHP).

### *Professional Development*

242 Weak regulator control means that the MOH does not enforce registration of medical practitioners remains voluntary. Similarly there is no regulatory requirement for practitioners qualified outside the Cambodian system to have completed national medical examinations.

243 For existing practitioners a framework for Continuing Medical Education (CME) has been established and is financed by partner organizations on request from national counterparts. Training for drug management for example is provided by the MOH is operational on a request basis. A needs assessment for professional development is also being finalized for Regional Training Centers (RTC) throughout the country.

244 The National Institute of Public Health<sup>53</sup> (NIPH) delivers Health Services Management Training (HSMT) and Hospital Management Training (HMT) to Provincial and Operational District health management teams, or other short training programs on request. The NIPH is currently able to cover 89% of national demand for advanced health management training.

### *Management development*

245 Guidelines for implementing the Complementary Package of Activities (CPA) has sought to better define the roles and responsibilities of hospital staff. This is supposed to include linking a Performance Management System (PMS) to salary incentives on a national basis, however this policy remains under discussion via the Health Reform Working Group (HRWG) at the MOH.

246 Decentralizing health management authority is also on their agenda but resolution of outstanding issues, such as increasing provincial capacity and achieving consensus on funding arrangements is not expected in the short term.

247 Management of national health priorities such as HIV/AIDS or Malaria are under the jurisdiction of semi-autonomous agencies who enforce their own criteria for program management independent from the MOH. Further discussion of National Programs is located later in this report.

248 The CSES 2004 reported that the respondents felt that an inadequate supply of drugs was a common issue for service delivery. In conjunction with HIV/AIDS, Avian Influenza and disaster management, efficient drug

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<sup>53</sup> <http://www.camnet.com.kh/nphri>

management is seen as a priority area for quality improvement. The MOH regards the control, supply and efficacy of drug therapies as a critical component in health service delivery particularly for health centers and Referral Hospitals. For this reason the MOH in collaboration with the Central Medical Stores are reviewing procurement, registration, local production, tender, storage and distribution of drug products, and in 2006 finalized a list of essential drugs.

#### *Institutionalization of quality*

249 The MOH has a framework to improve quality of service delivery throughout the public sector. A Quality Assurance Office (QAO), a Quality Improvement Working Group (QIWG) and a Hospital Management Group (HMG) have been established at the MOH, and Quality Assurance Officers have been designated at the provincial level (QAP). These groups will liaise with donors and NGO's to help plan and integrate quality initiatives both within the Ministry and at Provincial Health Departments.

250 A hospital assessment tool developed by the Quality Assurance Office was recently endorsed by the MOH, however a lack of funds and too few staff at the Quality Assurance Office severely restricts the number of hospitals that can be audited.

251 Quality initiatives in Provincial Health Departments are assisted where possible by the MOH through technical and logistical support. Software has been made available to better monitor hospital inventories, but outreach, audit or evaluation activities in provincial areas are often neglected because of lack of transport, and/or fuel subsidies - particularly in more remote provinces.

252 Two pillars for achieving quality improvement will be the approval of legislation for social health insurance and decentralization of human resources management. Although the MOH has not set a timeframe for either of these milestones, but as both these issues are priorities and there is on-going advocacy from donors and within the MOH to speed up the process to make the relevant legislative changes.

## **4 Contracting**

### *Background*

253 Contracting has been a MOEF initiative specific to the health and education sectors and was been piloted by the MOH under the Basic Health Services Project since 1999. The MOH piloted two models, contracting-in and contracting-out, in selected Operational Districts against a control group. An evaluation in 2002 found that contracting services to NGO's was feasible, cost-effective, high performing and equitable.<sup>54</sup>

254 Currently the MOH uses contracting (out) to help improve the management of health service delivery through third party providers as a component of the HSSP.<sup>55</sup> Under the contracting process, management of the Operational District Office, Referral Hospital, health centers and health posts are contracted to an NGO to manage the government budget for non-salary expenditures for these health facilities in remote and poor areas.

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<sup>54</sup> ADB: Bhushan et al 2002: *Achieving the Twin Objectives of Efficiency and Equity: Contracting Health Services in Cambodia*. ERD Policy Briefs Series. No.6.

<sup>55</sup> MOH: Joint Annual Performance Review January 2006

255 Contracting arrangements are intended to achieve three outcomes. The first looks for better management supervision to increase service volumes, improve access for the poor and improve service quality. Secondly that increased payments to providers will lead to increased productivity and efficiencies, and thirdly by using contracted agreements the MOH is able to ensure the provider is evaluated on a performance basis.

256 Operational Districts with contracted management providers have shown consistently better performance results for most parameters<sup>56</sup> including per capita outpatient visits, hospital admission rates, vaccination coverage and efficiency of hospital bed use, compared to those Operational Districts without contracted management.

257 In addition all of the HSSP contracted districts had been included by the MOEF under the Priority Action Program (PAP) or as Accelerated Disbursement Districts (ADD) to help streamline financial management. By comparison other Operational Districts included under PAP or ADD but without contracted management providers performed less well. This result implies that there are a number of aspects contributing to performance along with better access and disbursement of allocated funds. Aspects such as a strong performance-oriented management, better institutional capacity as well as the extra incentives offered to contracted staff to drive output lead change.<sup>57</sup>

258 Contracting in existing Operational Districts will continue under the HSSP until the end of 2008, but high set-up and maintenance costs for new entrants and sometimes high overheads for existing providers means that although the management providers could potentially be re-directed to new Operational Districts, the future of HSSP contracting arrangements in existing sites beyond that timeframe is not known.

259 Contracting only indirectly targets the poor, but a strong performance focus, improved management, increased capacity of staff, appropriate incentives and adequate and timely financing of recurrent operational costs have been positive lessons learned from the contracting experience.

260 In many countries inherent difficulties with contracting-out schemes are generally inflamed by the inexperience and low capacity in the MOH to manage outsourced programs. However the Cambodian experience has shown the longer term pilots, some of which have been running for over eight years, have been able to boost capacity at the MOH to negotiate or enforce contractual provisions and has allowed the Ministry to conceptualize and explore different options of health service delivery that are adaptable to local needs.

#### *Contractor Performance*

261 Six contractors have been managing health service delivery under the HSSP in seven provinces for various timeframes ranging between 33–45 months. All the contracts commenced in the period from April 2004-May 2005 and as already mentioned are due to conclude in December 2008. Sustainability is an area of concern as exit strategies have not yet been formalized by the contracting agencies. It is not clear whether the contractors have been

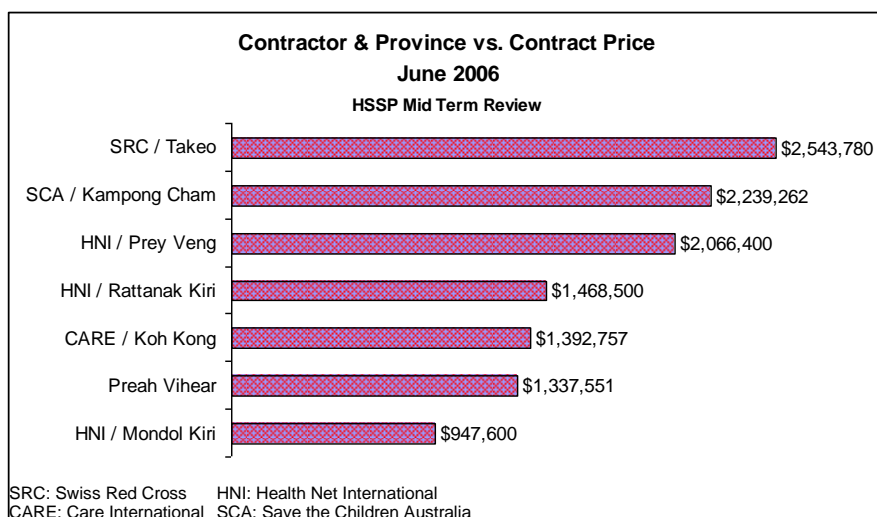
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<sup>56</sup> MOEF: Public Expenditure Tracking Survey 2006 (PETS).

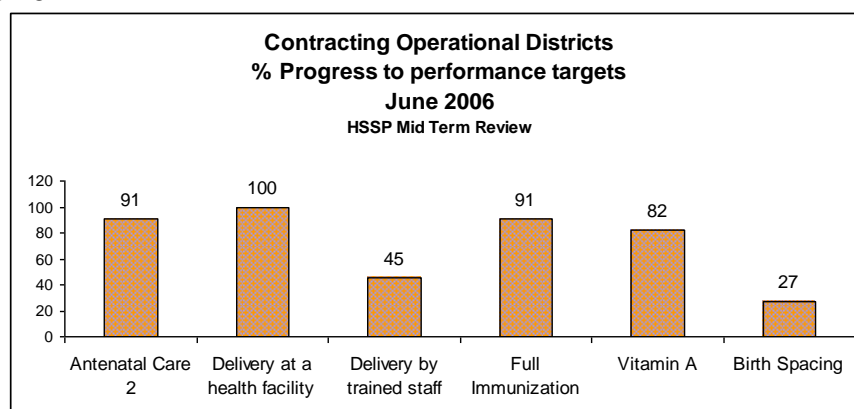
<sup>57</sup> MOEF: Public Expenditure Tracking Survey 2006 (PETS).

successful in transferring the skills and capacity to their designated Operational Districts to sustain the gains that have already been achieved.<sup>58</sup>

**Figure 44**



**Figure 45**



262 Drawn from HIS data for the first half of 2006, the performance targets for the six key indicators have either already been achieved or were likely to be achieved by the end of 2006 in all the Operational Districts that have been using contracted management.<sup>59</sup> (Figure 12)

263 Fundamental to improving health service delivery the MOH (through the HSSP) intends to complete its health service coverage plan by continued investment in infrastructure and upgrading the capacity of health centers to provide the full scope of Minimum Package of Activities (MPA). But it has been recognized that improvements in infrastructure need to be contingent on policies that ensure financing to cover the recurrent costs of operation and adequate staffing. A fact that merits urgent policy discussion on how to ensure appropriate level of financing for front line health services were described in the PETS 2006, as seriously under funded.

<sup>58</sup> MOH Health Sector Support Project (HSSP): Mid-Term Review 2006

<sup>59</sup> MOH: Health Information System 2006

## 5 Private sector<sup>60</sup>

### *Relationship with the Public Sector*

264 Strengthening the relationship between the public and private sectors has the potential to improve the quality of services, extend the supply of key health goods and services. However little is known about the extent, quality and cost of services provided by the private sector and there is limited empirical evidence to measure the full extent of private sector's contribution in helping reduce morbidity and mortality.

**Table 6**

**Licensed and unlicensed private clinics and laboratories 2003**

		Maternity Clinics	Medical consultations <sup>(1)</sup>	Medical clinics <sup>(2)</sup>	Dental consultations <sup>(1)</sup>	Dental clinics <sup>(2)</sup>	Laboratories
Phnom Penh	Licensed	2	238	176	26	8	2
	Unlicensed	0	335	29	187	27	1
Provinces	Licensed	0	342	7	19	0	1
	Unlicensed	26	1542	62	207	0	61
Total	Licensed	2	580	24	45	8	3
	Unlicensed	26	1877	91	394	27	62

(1) clinics without beds

(2) clinics with beds

265 As seen in Table 6, in Phnom Penh in 2003 there were one third more unlicensed places for medical consultations as there were for licensed venues, and in the provinces this ratio became almost one in five, and even higher for other categories. For businesses selling pharmaceuticals there were estimated nationally to be 1300 licensed vendors and around 2500 unlicensed vendors.<sup>61</sup>

266 Two reports from 2002 and 2005 commissioned by PATH Cambodia<sup>62</sup> in collaboration with the MOH or WHO have provided some insight into the private-public relationship and as well as the extent of the private sector provision.<sup>63</sup> The reports have been developed with a specific interventions in mind, (immunization and IMCI) however both are able to relay pertinent information about the structure, quality and technical competency of private providers – specifically licensed or unlicensed clinics, medical practices, drug sellers or pharmacies.

267 While most donors or NGO research has tended to focus on government services, four agencies (including PATH Cambodia) have implemented projects of service delivery in the private sector; PATH Cambodia has focused on increasing capacity of pharmacists and the quality of drug supply and referral systems; Pharmaciens Sans Frontiers (PSF) has implemented projects to educate communities about rational drug use; The Reproductive and Child Health Alliance (RACHA) has conducted a pilot education program for Childhood Diarrhoeal Disease (CDD) educating mothers and shopkeepers

<sup>60</sup> MOH 2006: *Institutional Development Plans Synthesis Report* (Oxford Policy Management) September 2006

<sup>61</sup> MOH 2006: *Health Workforce Development Plan 2006-2015*. Table 1.1 (Source Office of Ethics and Regulation, Hospital Services Department MOH 2004).

<sup>62</sup> Program for Appropriate Technology in Health (PATH)

<sup>63</sup> PATH Cambodia / WHO: Ramage, I, 2002: *Assessment of Official Private Providers and Delivery of Health Care Services to Children Under-five*.

PATH Cambodia / MOH-NIP: Domrei Research & Consulting, 2005: *Survey of Private Sector Immunization in Cambodia* (draft)



about CDD and on appropriate interventions; RACHA in collaboration with the MOH has also broadened the scope of these informal health educators to provide accurate information about birth spacing; Other agencies such Family Health International (FHI) have conducted baseline surveys of pharmacists in relation to the case management of tuberculosis.

#### *Current Status*

268 The Cambodian private health sector has grown very large in recent years, but with the legacy of weak regulatory control most of this has occurred in the absence of accreditation or effective monitoring of service delivery or quality of care. Strategies for quality improvement, including strengthening professional bodies, development of clinical practice guidelines, licensing, accreditation, consumer lobbying and others are being given higher prominence with the MOH (with technical support from GTZ) and while still at early stages when enforced, will greatly improve this situation.

269 A very rough indication for a selection of medical or health related providers listed in the 2006 Cambodian Yellow Pages directory for Phnom Penh (in English) shows; 66 medical or general practitioners, 29 gynecologists, 8 Psychologists / psychiatrists, 198 dental surgeries, 423 pharmacies, 34 Traditional medicine practitioners and 15 Private and 50 Public hospitals. Although some of the above figures may overlap while others may be an underestimation it gives some idea of the number of mostly unregulated private providers and the scope of the task ahead for the MOH to administer and enforce regulatory control.

270 PATH/Ramage in 2002 found that for the 180 private providers surveyed, one third of their patients were children aged under-five, which if this ratio is consistent across the sector has serious implications for Integrated Management Childhood Illnesses and appropriateness of care.<sup>64</sup>

271 It appears conclusive from these reports that the private health sector is not a homogenous group but there is considerable overlap between the public and private sectors. An acknowledged complication is that many private providers are civil servants who are working in the private sector outside of their appointments to supplement low government salaries. Ramage (2002) found that from 108 private providers, 79% were current government employees. The forthcoming expansion of the Merit Based Pay Initiative (MBPI) pilot has raised expectations to redress this type of scenario.

272 But despite the limitations observed in the above research, the vast majority of the Cambodian population use private providers in the first instance when they are ill (urban 60%, rural 47%).<sup>65</sup> The private sector has always been particularly active in child and maternal health interventions and the MOH is tasked with monitoring the quality, affordability, accessibility and safety of public and private provision. Experience in Cambodia and overseas has shown that successful intervention models for the private sector unites training, improved clinical practice, active endorsement of referral systems, community education, media promotion and on-going improvement of service delivery. Recent reports have shown interventions with the private sector are more likely to succeed if training is concentrated on a few key practices, and that community groups are

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<sup>64</sup> Ramage accounts that of the 108 private providers interviewed would correspond to about 220,000 children under-five treated per year, although this may be an underestimate as only legal drug providers were included, and the ubiquitous illegal village drug sellers had been excluded from the sample.

<sup>65</sup> CDHS 2005 Table 3.6

targeted concurrently with private providers. However because of the low confidence in public facilities, promoting referral links to public health services has often been neglected in these types of projects.<sup>66</sup>

273 A survey in 2005 as part of the Expanded Program for Immunization (EPI) revealed that generally private providers demonstrated a lower quality of care than the public sector in terms of practitioner knowledge about EPI, waste management, and vaccine management practices.<sup>67</sup> WHO/Lane (2007)<sup>68</sup> reported that the quality of care obtained through private providers is generally assessed to be low, based on a mystery client survey conducted in 2002 in Phnom Penh.<sup>69</sup> This survey found more than half of the consultations were hazardous (56%) and only about a third (32%) were able to meet broad MOH guidelines. Sixty percent of consultations resulted in four or more pharmaceuticals being prescribed. A separate mystery client survey in 2002 found pharmacy advice for the treatment of tuberculosis demonstrated 'limited understanding' with only 12% of pharmacies recommending treatment consistent with the WHO, Directly Observed Treatment Short-course (DOTS) guidelines.

274 In Cambodia it is a reasonable expectation that a collaborative approach between the private and public sectors would be the most prudent use of limited resources to gain improved health outcomes. PATH/Dorme (2005) has shown collaborative support in that the private sector has been able to increase the accessibility of immunization (Hep B and Tetanus Toxoid with delivery and ANC), as well as for new or underutilized vaccines for which the public is willing to pay. Their report found a strong willingness from the private sector for more collaboration with the public sector in a range of policy and practice areas.

275 The imminent expansion of subsidized health care through Equity Funds and voluntary and compulsory insurance schemes is expected to place significant leverage on not-for-profit and private providers to become registered and achieve the accreditation standards demanded by these schemes.

276 The CDHS 2000 and 2005 and the CSES 2004 have shown that patients devote high out-of-pocket payments to health services relative to both their income and to government expenditure. Key features for government and individuals is that much of this expenditure is channeled to pharmaceuticals. This poses some important strategic questions for the government in how to define the relationship with private providers and how to regulate the volume, price and quality of privately supplied healthcare, especially in relation to pharmaceuticals.

277 Almost all governments with limited health budgets are struggling to deliver high quality health services to poor people. This is a fundamental platform for achieving the Millennium Development Goals and for helping ensure a productive workforce contributing to stable economic growth. The *Institutional Development Plans Synthesis Report* has suggested that government services would be best to concentrate on what the government can do well within the confines of its health budget as well as pick up what the private sector is not

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<sup>66</sup> PATH Cambodia / WHO: Ramage, I, 2002: *Assessment of Official Private Providers and Delivery of Health Care Services to Children Under-five*.

<sup>67</sup> PATH Cambodia / MOH-NIP: Domrei Research & Consulting, 2005: *Survey of Private Sector Immunization in Cambodia* (draft)

<sup>68</sup> WHO 2007: Lane, C: *Scaling Up for Better Health in Cambodia*

<sup>69</sup> WHO Geneva 2004: Rose et al; *A Mystery Client Survey 2002*

able to do well. This premise is contingent on establishing a high level of trust and confidence by consumers and regulators in public, private and non-government providers. It is also dependent on the civil service understanding and accepting the changing role and context of public health service delivery.

278 The *Institutional Development Plans Synthesis Report* sees that the public sector as needing to better understand the context and changing dynamics of public healthcare because whether public or private, that it is the government's responsibility for ensuring quality, safety, efficacy and answering local needs, will continue to underpin health system reform.

## **6 Human Resources**

279 Since the 1980's, with substantial donor assistance, the Royal Cambodian Government has been rebuilding a decimated health system. Much has been achieved, and today there are a number of universities offering medical, dental, nursing or technical training in a range of health related professions.

- University of Health Sciences (UHS)
  - Technical School for Medical Care (TSMC)
- Institute of Health Science of Royal Cambodian Armed Forces (IHS)
- International University (IU) Faculty of Health Sciences (private)
  
- Kampong Cham Regional Training Center (RTC)
- Battambang Regional Training Center (RTC)
- Kampot Regional Training Center (RTC)
- Steung Treng Regional Training Center (RTC)
  
- National Institute of Public Health (short-courses)
- National Maternal and Child Health Center (short-courses)

280 The University of Health Sciences provides training in medicine, pharmacy, dentistry and technical medical care, as well as specialty and refresher courses. The affiliated Technical School for Medical Care (TSMC) is a nursing medical school and offers services similar to those provided by RTCs. The International University is a private institution offering medical training.

281 The National Institute of Public Health (NIPH) delivers Health Services Management Training (HSMT) and Hospital Management Training (HMT) and other short-courses as required by public facilities, while the National Maternal and Child Health Center (NMCHC) provides a range of training for CME and midwifery. Regional Training Colleges (RTC) deliver mostly nursing and midwifery programs. Kampot RTC<sup>70</sup> and the National Institute for Public Health (NIPH) both received technical and scientific direction from the regional TROPED-SEAMEO.<sup>71</sup> This alliance is expected to be extend to all RTC's in the near future.

282 The objectives of the MOH described in the Health Strategic Plan 2003-2007 were to increase the number of midwives; reduce the mal-distribution of health services; and provide comprehensive training and education in management and technical skills.

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<sup>70</sup> With support from GTZ

<sup>71</sup> Tropical Medicine Network of the South-East-Asian Ministers of Education Organization (SEAMO)

283 To achieve the first of these objectives, courses were introduced in provincial centers for post-basic midwifery, pre-service training and primary midwifery. In 2006 there were 85 post-basic midwife graduates and 88 new recruits for 2006-07. It is likely that a rate of 80 new recruits for post-basic training will be maintained for 2007-08. (JAPR 2007)

284 The first cycle of graduates from RTC's was 398, of which 198 are primary midwives, the second half of 2007 will see an intake of 246 of which 146 will be primary midwifery students. Although higher numbers of midwife recruits have been encouraged, from recent experience the JAPR 2007 advised it would be better that applicants have at least a high school diploma to ensure and maintain an acceptable standard of instruction. It is anticipated that 120 new primary midwife students will be recruited for 2007 and also for 2008. The scheduled three year pre-service program was postponed pending further discussion and approval of curriculum by the MOH.<sup>72</sup>

285 Using Emergency Obstetric Care as an example, the MOH has responded to the shortage of experienced midwifery staff particularly in remote areas, and has placed considerable effort to upgrade skill levels and improve mal-distribution. The inclusion of Standard Staffing Levels (SSL) and Complementary Package of Activities (CPA) Guidelines into the HR database has been a welcome tool for to identify health centers that are currently understaffed and for making re-deployment strategies for those locations. It is expected that 70% of the 194 health centers currently without midwifery staff will be supplied with graduates by 2007-08.

286 The JAPR 2007 reported that Training Needs Assessments (TNA) had been scheduled to be delivered by RTC's and TSMC in 2006 however this has now been extended to 2007-08, when training will be provided at health centers to deliver the Minimum Packages of Activities (MPA); other training consists of Basic Surgical Techniques (BST) for physicians; and anesthesia training for nursing staff.

287 Upgrading of management skills as well as a short-course in laboratory techniques will be provided through NIPH, although some of these activities are not on schedule, because of the delay in implementing the Annual Operational Plan and gaining agreement on pre-diem rates.<sup>73</sup>

288 The MOH *Health Workforce Development Plan 2006-2015*, provides an overview of the challenges facing the public health system, in terms of future workforce and training needed to comply with the national health strategies and service plans. The plan is intended to be a framework document to allow planners to target optimum workforce levels to effectively deliver practical outcomes.

289 In Cambodia there are three segments to the overall health sector: The government sector provides a wide range of personnel, community and environmental health related services and activities; The non-government sector includes for-profit businesses covering private practice; institutional care; and the production and distribution of pharmaceuticals and medical products. The not-for-profit sub-sector is directed by multilateral or bilateral government donor

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<sup>72</sup> MOH Joint Annual Performance Review 2007

<sup>73</sup> MOH Joint Annual Performance Review 2007

agencies, as well as international and local non-government organizations, all of which are primarily concerned with technical assistance and service delivery.

290 The relationship between the not-for-profit and government sectors has been one of partnership, especially for example through the contracting of management services financed by donor partners in selected Operational Districts. Other non-government partners include the Kuntha Bopha Group, comprising three major not-for-profit pediatric hospitals that are mostly funded and managed outside the government sector. Similarly the Center-for-Hope teaching hospital is administered largely autonomous from the MOH.

291 As elsewhere, the private-for-profit healthcare sector comprises a diverse range; From clinics, hospitals and dental surgeries to pharmacies, opticians and medical supply companies. But as already described, regulating the for-profit sector is complex because of the large number of civil servants who maintain their government jobs in parallel with employment in private healthcare sector.

292 With an anticipated 2% population growth for 2006-2015, the age distribution that is expected to undergo the greatest rise during this period will be in the under ten years age group. This clearly heralds the need for strengthening maternal and child health services in the short-medium term. The average overall increase in population is expected to be 25% for this period, but the increase in Phnom Penh is projected to be 42%; in the North East 38%; and for the rest of Cambodia 21%. Not only do these estimates impact on the type and mix of health personnel that will be needed, but by how it will be paid, and what will be the amount and type of utilization that will be demanded by consumers. It is therefore with some urgency that workforce planning and infrastructural frameworks are in place to deal with this population increase.

293 Continued improvements in road infrastructure and transport systems will have important implications for siting and development of health facilities and location of health personnel. These changes, and a growing economy also forecast greater demands will be made on both workforce and health infrastructure, to deal more aggressively with existing health issues such as communicable and infectious diseases; nutritional deficiencies; the growing incidence of chronic disease; as well as road-accident and other trauma.

294 Within this rapidly changing environment the MOH retains only limited control over the public sector health workforce (because of recruitment policies), and weak and largely unmonitored control over the non-government sector. In terms of supply and training mechanisms, the MOH's control over the intake of medical students has also been diluted, because of the greater autonomy allowed to the University of Health Sciences. A situation fueled with the introduction of medical courses in private-for-profit educational institutions, such as the International University.

295 Frontline service personnel are also civil servants, explaining why nationally the MOH employs around 17,000 personnel. To highlight some points around mal-distribution, the average ratio applied for MOH doctors (or medical assistants) to the population is 1:3800, but this widens considerably when comparing urban and rural settings. For example Phnom Penh has 9.5% of the population but 52% of MOH doctors.<sup>74</sup> Ratios for other MOH personnel are

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<sup>74</sup> MOH 2006: Health Workforce Development Plan: Table 2.2 source NHS 2004 (provisional)

included in Table 7 and they also emphasize the large differences between ratios of trained MOH personnel in urban or rural locations.

296 Re-distribution of large numbers of MOH staff to fill HR gaps in remote locations is not a realistic option, however the Health Workforce Development Plan recommends the capping of existing staffing levels in Phnom Penh and to re-assign vacant post as they become available to rural areas of need. Regulatory controls could also hasten the process of re-distribution, but any alternatives depend on the unyielding support from MOH leadership, which currently, the timing does not appear right.

297 It is in this context to wonder why it is necessary that frontline staff need to be civil servants at all, when perhaps contracted staff or out-sourced positions might be more efficient? Reluctance by Provincial Health Departments in supplying accurate staffing levels, utilization or detailed reporting, has caused considerable difficulty and delay in exploring alternative workforce options so far. But it is expected that tools such as the HR database, a more structured planning process, the implementation of SSL, accreditation for MPA and CPA, as well as the Program Budgeting experience will add considerable leverage from the MOH to gaining provincial cooperation.

**Table 7 Population per MOH personnel 2004**

Category	Phnom Penh	Rest of Cambodia	Cambodia
Doctor	1200	12300	6500
Medical Assistant	3000	13750	10300
Doctor or Medical Assistant	850	6500	4000
Nurse	850	2000	1750
Midwife	3200	5200	4900

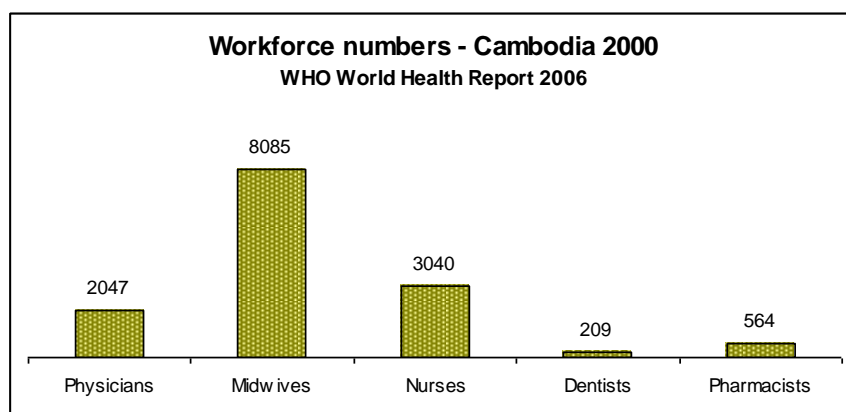
\* Population rounded to nearest 50

Source MOH 2006: Health Workforce Development Plan: Table 2.3 source NHS 2004 (provisional)

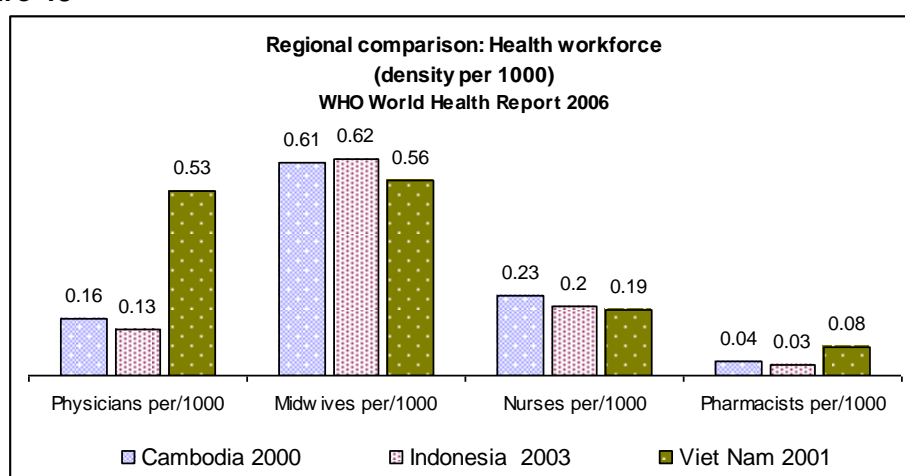
298 Baseline data (particularly for the non-medical sector) has generally been inadequate relative to most categories of medical personnel, (e.g. doctors, medical assistants, nurses and midwives). For instance little information has been verified such as: the numbers of government personnel working concurrently in the non-government sector; the number and type of unregulated service providers; or how existing data gathering can be better linked to workforce planning.

299 The World Health Report 2006 shows the relative numbers of health professionals active in Cambodia based on 2000 data. The same source also provides a comparative workforce numbers for Cambodia, Vietnam and Indonesia. This information shows Vietnam has a far better ratio of health professionals to population, while Cambodia has a similar coverage to Indonesia. Importantly however these statistics do not signify distribution of health professionals which is of course one of the principle service related problems in Cambodia.

**Figure 47**



**Figure 48**



300 Throughout the public sector, the chief topic applying to human resources is the low remuneration paid for government salaries and the subsequent low attendance of staff in public facilities. A point highlighted by the PETS 2006 which found that 29% of staff at Referral Hospitals and 26% at health centers were absent from their posts.<sup>75</sup>

301 Despite these significant HR challenges, and aside from some key specialists, the anticipated number of health professionals needed by 2015 appears to be adequate for scaling up health services, however deployment has been limited by both the existing skill levels combined with the incentives that are offered.<sup>76</sup>

302 OECD figures suggest that more than a third of total aid provided by external donors is spent on technical assistance and training

303 Performance related salary supplements paid in contracted Operational Districts have shown to be a cost effective method to improve health outcomes. This inspires further confidence for the pilot MBPI program for being a chief mechanism for implementing widespread reform across the civil service. PMG's are also touted to improve sector outcomes, although significantly, PMGs are not endorsed by donor agencies because they are not linked to performance.

<sup>75</sup> MOEF: Public Expenditure Tracking Survey 2006 (PETS)

<sup>76</sup> WHO, 2007: Lane, C: *Scaling Up for Better Health in Cambodia*

## 7 National Programs<sup>77</sup>

304 National Programs are categorized as Group A or B and have been established in order to deliver government health priorities. Group A makes investments in health promotion or preventative measures against adverse health outcomes, while Group B generally provides technical input and support services.

<u>Group A</u>	<u>Group B</u>
National Center for Parasitology, Entomology and Malaria Control (NCPMEC) <ul style="list-style-type: none"><li>- Dengue</li><li>- Malaria</li><li>- Schistosomiasis</li></ul>	National Blood Transfusion Center (NBTC) National Center for Health Promotion (NCHP) National Institute for Public Health (NIPH)
National Center for Tuberculosis and Leprosy Control (CENAT) <ul style="list-style-type: none"><li>- Tuberculosis</li><li>- Leprosy</li></ul>	National Laboratory for Drug Quality Control Central Medical Stores (CMS)
National Center for HIV/AIDS, Dermatology, and STDs (NCHADS) <ul style="list-style-type: none"><li>- HIV/AIDS</li></ul>	National Centre for Traditional Medicine (NCTM) National Medicine Research Center (NMRC)
National Maternal and Child Health Center (NMCHC) <ul style="list-style-type: none"><li>- NNP National Nutrition Program</li><li>- NIP National Immunization Program</li><li>- NRHP National Reproductive Health Program</li><li>- National ARI-Diarrhea Control Program</li></ul>	

305 An assessment by Oxford Policy Management (2006) reported that Group A programs have performed fairly well but needed a more targeted response to local needs as well as improved coordination between other National Programs and primary healthcare. While Group B programs needed more support in organizational development, clearer delineation and a more strategic focus around decisions for greater autonomy or privatization.

### *Hospitals*

306 There are three main divisions for hospitals supplying inpatient care in Cambodia; National Hospitals offering tertiary care; Provincial / municipal referral hospitals offering secondary level referral facilities; and thirdly, district level hospitals for primary referral. There are also two not-for-profit providers offering high quality inpatient care; The Centre for Hope, and Kunthak Bopha hospital, as well as a growing number of smaller privately run polyclinics also offering inpatient care.

307 Bed Occupancy Rates (BOR) and Average Length Of Stay (ALOS) have been the usual methods for measuring comparative efficiency. There are many factors that could affect these indicators, such as remoteness of the facility, or complexity of procedure etc, however a review based on HIS 2005 data for eighty-five hospitals revealed that BOR ranged between 14-160% (average 60.67%) and ALOS was usually between 3 and 13 days (average 5.55 days).

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<sup>77</sup> MOH 2006: *Institutional Development Plans Synthesis Report* (Oxford Policy Management) September 2006



308 Aside from location and types of clinical interventions, further reasons contributing to a variation in occupancy and lengths of stay can be attributed in many instances to a poor referral system creating an inefficient use of National Hospitals in their role as tertiary providers. The referral process allows meager incentives from primary and secondary care to National Hospitals, that correspondingly have little incentive to accept referred patients. This can lead to an untenable situation that even if poor people who are somehow able make their way to a National Hospital in Phnom Penh, they may be refused treatment.

309 Changes to the existing hospital system will have to take account of the context posed by changing demographics and health needs of patients, as well as the optimizing the level of engagement with private and non-government hospitals within the public system. A lack of overall strategic direction for the hospital system has continued to hamper improved performance. Policies to improve technical and allocative efficiencies by granting more autonomy to both National Hospitals or larger Provincial hospitals have been under review but not yet finalized.

310 Integrated management of hospital care has not been adequately delineated particularly in light of the inevitable changes that will be brought about with the expansion of social health protection schemes. The *Institutional Development Plans Synthesis Report* recommended that an overhaul of the roles and responsibilities of different types of hospitals and increasing stakeholder participation is warranted to bolster healthcare management at all levels. This process has begun but it is currently too early to assess the impact of activities such as Program Based Budgeting, Organizational Development Plans, functional analysis, and increased autonomy.

*Ministry of Health and Provincial Health Departments*<sup>78</sup>

311 The MOH has recently concluded a functional analysis, that links institutional competencies throughout the Ministry to strategic objectives. Essential to the functional analysis has been the establishment of Annual Operating Plans, with attached program budgets, and supported down to the individual level through the performance based management system, in place since 2006 and allied to the Merit Based Pay Initiative (MPBI) led by the MOEF.

312 The reform of Group A and Group B agencies catalogued in the *Institutional Development Plans Synthesis Report* begins with resolving the strategic aspects of their mission, identifying functional roles, developing organizational plans and finally confirming deliverables through agency specific service level agreements. By 2010 it is hoped that Organizational Development Plans will be implemented in all National Programs and National Hospitals and in fourteen Municipal and Provincial Health Departments and functional analyses completed in the remaining ten.

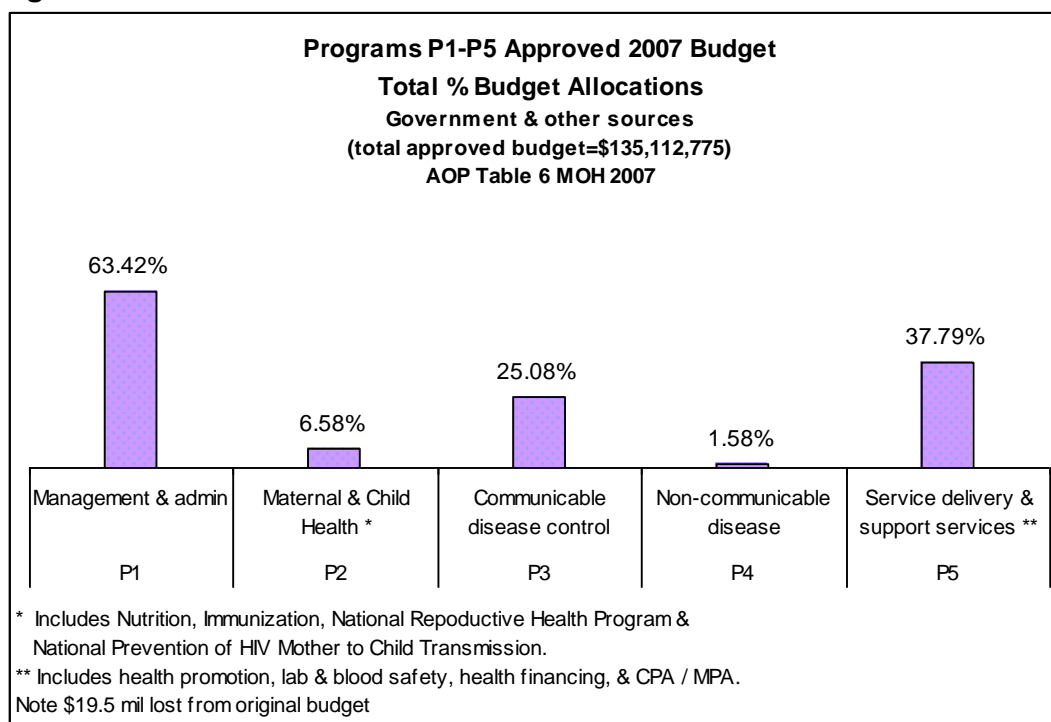
313 Although the performance of National Programs has been varied, the determinants of success are generally linked to strong leadership within individual agencies combined with the level of autonomy from the MOH. The more autonomous agencies generally have better surety and control of finances and have been able to create an efficient process by which their program can be administered from the central level through to frontline service delivery at health centers. Successful National Programs inevitably attract a higher level of donor

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<sup>78</sup> MOH 2006: *Institutional Development Plans Synthesis Report* (Oxford Policy Management) September 2006

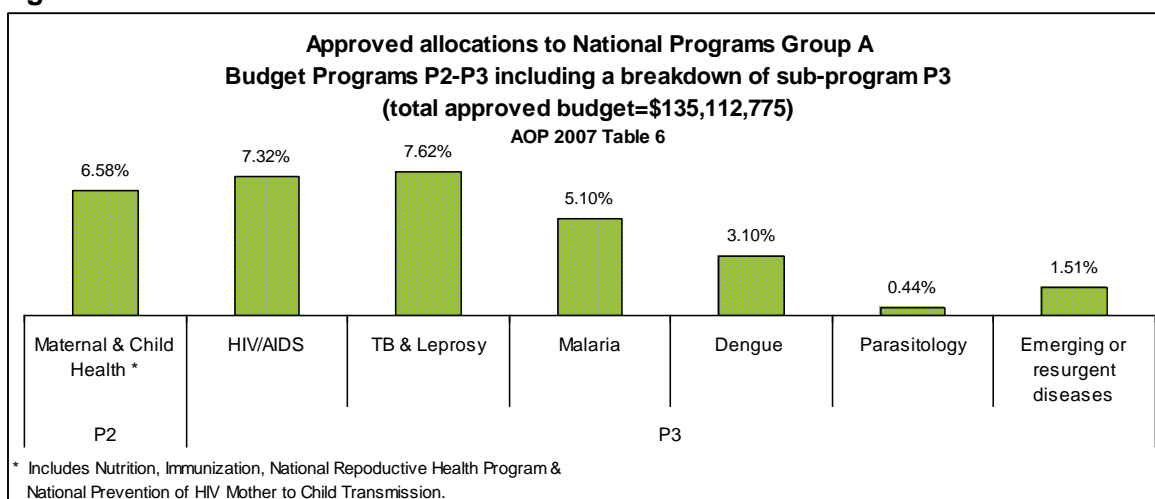
financing and technical support, allowing for the option to offer salary incentives, per diems or training.

**Figure 49**



314 In 2007, the total program based budget is almost about \$135 million USD, contributed by government and health partners (including \$5.7mil USD from GFATM, but excluding USAID contributions).

**Figure 50**



315 Figure 14 shows that in 2007 HIV/AIDS and Tuberculosis / Leprosy will receive the largest share of the MOH budget for Group A National Programs (P2 & P3), followed closely by programs under Maternal and Child Health. Vector borne diseases Malaria, Dengue or parasitic diseases (like Schistosomiasis) receive the lowest proportion of the Group A health budget.

316 The strategic issues to be resolved by National Programs primarily deal with the functionality, staff responsibilities, resource allocation and relationship with government health priorities. Funding provided by external agencies may not always coincide with the priorities expressed by the government and although these vertical programs have generally had a high success rate, for a variety of reasons already mentioned, they often have a weak cohesion with mainstream outputs. A common example is training which is usually provided separately by National Programs, when it might be more efficiently delivered as joint sessions.

317 The relative amounts targeted for National Programs in 2007 compared to other common serious diseases has become more distorted. For instance illnesses as a result of measles, diarrhoeal diseases or respiratory illness create a higher burden and cause more deaths than HIV/AIDS, but this is not reflected in budget allocations within the MOH. Another example are the per-diem rates paid for outreach activities by health center staff. Unlike incentives based on outcomes, per diem rates create a perverse incentive for health center staff to make multiple visits to the same locations to deliver different services, and in effect excluding communities that are in closer proximity to the health center.

318 Recommendations made for Group A programs in the *Institutional Development Plans Synthesis Report*, included reaching an agreement to pool incentive payments made to primary health care staff, such as the case with user-fees; extending Merit Based Pay Initiatives across two further Group A programs; as well as ensuring that all Organizational Development Plans are completed. The report also recommends a systematic review of both management reporting and associated delegations, and that ultimately all Group A agencies should adopt service level agreements with the MOH. Recommendations for Group B agencies are for a clear definition of their strategic relationship with the MOH, including the level of autonomy, and to explore what options are available for both strengthening the relationship and improving efficiencies.

#### *Group B Summary*<sup>79</sup>

##### *National Center for Health Promotion*

319 A priority of the Health Strategic Plan (2003-2007) is Behavior Change Communication (BCC) and with this in mind the *Institutional Development Plans Synthesis Report* has recommended that the National Center for Health Promotion (NCHP) should be strengthened in its capabilities for both BCC and Information, Education, Communication (IEC) services. Both of which have been very weak because of the low profile and inadequate funding allocations of the NCHP. The NCHP should be developed with the intention of being able to offer value added support and advice to National Programs, as well as better links with the Provincial Health Promotion Units (PHPU).

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<sup>79</sup> MOH 2006: *Institutional Development Plans Synthesis Report* (Oxford Policy Management) September 2006

National Institute of Public Health (NIPH)

320 The National Institute of Public Health<sup>80</sup> (NIPH) is responsible for health system development, public health management training, health research and evaluation, as well as supporting the National Laboratory of Public Health. The Institute has been targeted as a center for organizational research to provide guidance on both future health system reform, public health strategies, and technical innovations. Confirmation for autonomy via a business plan is expected to be finalized in 2007. Service level agreements with the MOH are expected in 2008 and implemented by 2009.

National Blood Transfusion Centre (NBTC)

321 The National Blood Transfusion Centre (NBTC) has improved collaboration with National Centre for HIV/AIDS, Dermatology and Sexually Transmitted Diseases (NCHADS) to increase safety of blood and blood products. Over the next twelve months the National and Provincial Blood Transfusion Centers will work to clarify the organizational structure and decisions for securing fee-based income, followed in 2009 by agreement on an Organizational Development Plan and service level agreement with the MOH.

National Centre for Traditional Medicine (NCTM)

322 Decisions about the regulatory and other roles of the National Centre for Traditional Medicine (NCTM) needs to be determined so as an Organizational Development Plan and subsequent implementation can proceed by 2010.

National Laboratory for Drug Quality Control (NDQC)

323 Similar to the NBTC, the National Laboratory for Drug Quality Control is expected over the next twelve months to each agreement on the mechanisms for enhancing regulatory functions and consolidating fee-based income, followed in 2009 by formalizing a business plan for greater autonomy linked to a service level agreement with the MOH by 2010.

Central Medical Stores (CMS)

324 The Central Medical Stores in 2007 currently operates within too many layers of administration to service Operational Districts effectively. The CMS will finalize a business assessment to test viability under alternate operating conditions and will complete an Organizational Development Plan and formal business plan in 2008, for implementation by 2009.

National Centre for HIV/AIDS, Dermatology and Sexually Transmitted Diseases<sup>81</sup>

325 NCHADS runs a high-profile well financed HIV/AIDS program that receives funding channeled through the central budget of the MOH and via international donors (DFID, European Union, University of New South Wales, Centers for Disease Control (USA), the Global Fund, Agence Française de Développement (AFD), the World Bank, and the ADB (using the Japan Fund for Poverty Reduction, JFPR).

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<sup>80</sup> <http://www.camnet.com.kh/nphri>

<sup>81</sup> The National Medicine Research Center (NMRC), The National Centre for Maternal and Child Health, and The National Centre for HIV/AIDS, Dermatology and Sexually Transmitted Diseases were not reported in the MOH: *Institutional Development Plans Synthesis Report* (Oxford Policy Management) September 2006.

### National Maternal and Child Health Center (NMCHC)

326 The NCMCH receives its resources from the central MOH budget, various donors, and user fees – which are a significant source of revenue for the Maternal and Child Health Referral Hospital in Phnom Penh. The donors agencies include the Japanese government through JICA; The UK government through DFID; the World Bank through the HSSP; as well as the UNFPA; the WHO and UNICEF. The NCMCH has provided resources in cash and in-kind to Provincial Health Departments, including posters, gas and refrigerators to support reproductive health programs.

## **8 Cross-sector Initiatives**

327 Wide ranging reforms for the public sector led by the Council for Administrative Reform (CAR) are underway to create a modern public administration in Cambodia. CAR sees the lynchpin of these reforms to be decentralization of public management, improved fiscal transparency and efficiency, and the expansion of Priority Mission Groups. Cross-sector initiatives such as the Public Finance Management Reform (PFMR) process coordinated through the MOEF has been critical to both identifying inefficiencies and to reinforce the need to coordinate and streamline budgeting and reporting instruments.<sup>82</sup>

### *Priority Mission Groups (PMG)*

328 Priority Mission Groups (PMG) are a piloted initiative under CAR to relocate groups of civil servants to areas of need using salary incentives and to address skill shortages by paying additional allowances for staff in remote areas. A health related Priority Mission Group is currently implemented in Kampong Trach District. Proposals for additional Priority Mission Groups in Takeo province and in the north west of Cambodia are under review of CAR. Reaching agreement with CAR, MOEF, health partners and the State Secretariat for Public Function can be a lengthy process, however it is intended to expand Priority Mission Groups to more Provincial Health Departments and Operational Districts over the next two years.<sup>83</sup>

329 There has been some concern by donors that the performance of the Priority Mission Groups is mixed because of the relatively low incentives offered, and that unlike the MBPI, their incentives are not outcome based or performance related.

330 Increased workloads for central MOH staff has sometimes been an undesired effect of the PMG process. For example at Kampong Trach a significant number of central MOH staff were reassigned from their usual duties to provide training and support to inexperienced staff in that Priority Mission Group.<sup>84</sup>

331 The government sector in Cambodia still remains heavily dependent on donor support both for financing and for technical assistance. CAR is exploring options to better analyze feasible and affordable ways to improve public fiscal responsibility and technical and managerial innovations. The analysis compiled in the PETS in 2006 is one such example. While this groundwork is being set for future refinement or scaling-up, important lessons will no doubt be drawn for

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<sup>82</sup> MOEF: Public Expenditure Tracking Survey 2006 (PETS)

<sup>83</sup> MOH: Joint Annual Performance Review 2007

<sup>84</sup> MOH: Joint Annual Performance Review 2006

health sector from the experience of Priority Mission Groups, and MOEF led pilots for the Merit Based Pay Initiative and Program Based Budgeting.

#### *Decentralization*

332 The CAR envisages a more decentralized form of public administration. As these measures are implemented, the relationships between central ministries (such as the Ministry of Health and its National Programs) provinces and districts will change, creating a clearer but more devolved line of responsibility from central, to provincial, through to village level. In order to ensure the reform process is consistent, the attention paid to local health priorities in planning, budget allocation and service delivery has already been acknowledged. It has been resolved that Provincial Health Departments need to strengthen their managerial capabilities, as the MOH's role gradually becomes less engaged with the direct delivery of services and more with policy oversight and the progress towards national health objectives (PETS 2006).

#### *Merit Based Pay Initiative (MBPI)*

333 The MBPI is an important step to reorganizing and professionalizing the public sector. The MBPI essentially creates a limited pool of core managerial posts that are filled on a competitive basis, under contract with enhanced pay, and linked to performance outputs. Work outside the position or income from other sources is prohibited. Features of the scheme will be introduced in phases sector wide.

334 The MOH Performance Management System (PMS) was implemented in all departments of the MOH in early 2006, and is used to support the MBPI. Most departments have now developed Team Annual Objectives and Team Quarterly Work Plans, with reviews held each quarter to assess current status and help with the development of team and individual Quarterly Work Plans.<sup>85</sup> The PMS is set to give context to departmental operations within the wider planning framework. A functional analysis has compared MOH staffing and work patterns against three key documents<sup>86</sup> in order to identify inefficient work practices or work not related to organizational objectives, together with suggestions to resolve the problem.

335 Support from the MOH; Council of Administrative Reform (CAR); Ministry of Economy and Finance (MOEF) and Health Partners has been an important ingredient to implementing the Performance Management System and piloting the MBPI. The MBPI allows managers to examine how health priorities are ultimately linked to operational objectives through their own individual performance schedule. The scheme will cover 160 positions at the central MOH during 2007 with future coverage extended to two Provincial Health Departments and two National Programs.

336 Although the MBPI and Priority Mission Groups are significant start for public sector reform it is important to note that the experience from contracting as well as comparison with non-government salaries have shown that incentive packages would need to increase current salaries up to 4-5 times to ensure staff commitment and performance in their jobs.

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<sup>85</sup> MOH: Joint Annual Performance Review 2007

<sup>86</sup> The 1998 MOH Organizational structure, function and staffing; Health Sector Strategic Plan 2003-2007; & Institutional Development Report (ver.6)

*Priority Action Programs (PAP)/ Accelerated Disbursement District (ADD)*

337 The MOEF had introduced Priority Action Programs (PAP) and Accelerated Disbursement District (ADD) programs in selected Provincial Health Departments and Operational Districts to enable a more efficient and timely disbursement process for front line services. Under these arrangements larger advances were made available for an extended list of eligible expenditures for non-salary operating expenses.

338 However as it was found that the majority of the accounting staff in provincial and district level health departments were actually health professionals, their knowledge and skills in financial management was mostly gained from on-the-job training and coaching from MOEF staff. This situation is partly why the MOEF discontinued PAP and scaled back Accelerated Disbursement District (ADD) programs because of poor record-keeping and accounts management particularly at lower health administration levels. PAP ceased in 2007 along with Budget Chapter 11 and 13 allocations, and has been replaced by a revised petty cash system following quarterly clearance of expenditures. As an alternative three of the five program areas identified in the annual Operational Plans are now become part of the pilot initiative from MOEF for Program Based Budgeting.<sup>87</sup>

*Program Based Budgeting*

339 Duplicate processes by the MOH and MOEF are applied to annual planning and budget process in the health sector. Activity based Annual Operational Planning is directly linked to the priorities defined in the Health Sector Strategic Plan but this planning process and budget development is not recognised by the Ministry of Economics and Finance (MOEF), who set separate budgetary requirements. The Program Based Budgeting pilot allows a better connection of public health priorities to public finance allocation, although obviously care needs to be taken to ensure that funding for program administration is incorporated into this disease/health priority-based structure.

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<sup>87</sup> MOEF: Public Expenditure Tracking Survey 2006 (PETS).

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## Abbreviations

ADB	Asian Development Bank
ADD	Accelerated Disbursement Districts
AIDS	Acquired Immunodeficiency Syndrome
ALOS	Average Length Of Stay
ANC	Antenatal Care
AOP	Annual Operational Plan
ARI	Acute Respiratory Infection
BCG	Bacille Calmette-Guérin, (a vaccine for tuberculosis)
BMI	Body Mass Index
BOR	Bed Occupancy Rates
BST	Basic Surgical Techniques
CAR	Council for Administrative Reform
CBHI	Community Based Health Insurance
CDD	Childhood Diarrhoeal Disease
CDHS	Cambodian Demographic Health Survey
CENAT	National Center for Tuberculosis and Leprosy Control
CFR	Case Fatality Rate
CHHRA	Cambodian Health & Human Rights Alliance
CME	Continuing Medical Education
CMS	Central Medical Stores
CNIP	Cambodia Nutrition Investment Plan
CPA.	Complementary Package of Activities
CPD	Continuing Professional Development
DFID	Department for International Development of the United Kingdom
DHF	Dengue Haemorrhagic Fever
DOTS	Directly Observed Treatment Short-course
DPT	Diphtheria-Tetanus-Pertussis vaccine
EPI	Expanded Program on Immunization
FHI	Family Health International
HCMC	Health Centre Management Committee
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HMG	Hospital Management Group
HMT	Hospital Management Training
HRWG	Health Reform Working Group
HSMT	Health Services Management Training
HSP	Health Sector Strategic Plan 2003-2007
HSSP	Health Sector Support Project
IDD	Iodine Deficiency Disorder
IDP	Institutional Development Plan
IDWG	Institutional Development Working Group
IEC	Information, Education & Communication
IHS	Institute of Health Science of Royal Cambodian Armed Forces
IMCI	Integrated Management of Childhood Illnesses
INGO	International Non-Government Organization
IU	International University
JAPR	Joint Annual Performance Review
MDG	Millennium Development Goals
MMR	Maternal Mortality Ratio
MOEF	Ministry of Economics and Finance
MOH	Ministry of Health
MPA	Minimum Package of Activities
MSVY	Min of Social Affairs, Veterans and Youth Rehabilitation
NBTC	National Blood Transfusion Center
NCHADS	National Center for HIV/AIDS, Dermatology, and STDs
NCHP	National Center for Health Promotion
NCPEMC	National Center for Parasitology, Entomology and Malaria Control
NCTM	National Centre for Traditional Medicine
NGO	Non-Government Organization
NHS	National Health Statistics
NIP	National Immunization Program
NIPH	National Institute of Public Health
NLDQC	National Laboratory for Drug Quality Control
NMCHC	National Maternal and Child Health Center

NMRC	National Medicine Research Center
NNP	National Nutrition Program
NPAR	National Program of Administrative Reform
NRHP	National Reproductive Health Program
ORT	Oral Rehydration Therapy
PAP	Priority Action Program
PATH	Program for Appropriate Technology in Health
PETS	Public Expenditure Tracking Survey
PFMR	Public Finance Management Reform
PMG	Priority Mission Groups
PMS	Performance Management System
PSF	Pharmaciens Sans Frontiers
QAO	Quality Assurance Office
QAP	Provincial Quality Assurance Officers have
QI	Quality Improvement
QIWG	Quality Improvement Working Group
RACHA	Reproductive and Child Health Alliance
RTC	Regional Training Center
SWiM	Sector Wide Management
TBA	Traditional Birth Attendants
TFR	Total Fertility Rate
TNA	Training Needs Assessments
Tropmed-SEAMO	Tropical Medicine Network of the South-East-Asian Ministers of Education Organization
TSMC	Technical School for Medical Care
UHS	University of Health Sciences
UNFPA	United Nations Population Fund
VAD	Vitamin A Deficiency
VHSG	Village Health Support Group
WHO	World Health Organisation