

## **Briefing note**

For the Senate Commission 8 on Health, Social Affairs, Veteran Rehabilitation, Vocational Training and Women's Affairs

# **“Maternal and Child Health”**

Researchers: CHEA Malika, and ABJORENSEN Sebastian

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## Introduction

Public health is concerned with protecting the health of entire populations. It deserves great attention as the health of citizens is critical to a country's social, economic, and political development. For Cambodia, the healthcare system has been improving through rising incomes, and a reduction of health costs<sup>1</sup>. The Millennium Development Goals (MDGs) relating to reducing child mortality, the fertility rate and reducing HIV/AIDS prevalence are likely to be met or exceeded. However, compared to some other countries in the region Cambodia still faces numerous public health challenges; especially in the area of maternal and infant mortality where health indicators remain poor<sup>2</sup>. In combating this concern, the Ministry of Health (MoH) has identified the following health issues as priorities: maternal and child health; reducing the transmission and mortality rate of communicable diseases; and reducing the burden of non-communicable diseases (NCDs)<sup>3</sup>.

This briefing note is to assist commission 8 of the Senate in organizing a field mission to Monduliri and Ratanakiri by focusing on the health issues of: maternal, infant, and child health care<sup>4</sup>. This paper will begin with an overview of the health issues, national and existing health care programs, interventions from national and international organizations and best practices. It will then present linkages and differences between maternal, infant, and child health across the country.

### I. Overview of Maternal Health

Maternal health concerns a woman's health during pregnancy, child birth and the period of recovery post-birth<sup>5</sup>. Within Southeast Asia, the leading causes of maternal health problems are bleeding, high blood pressure, infections, and unsafe abortions<sup>6</sup>. There are well established effective and affordable treatments for these pregnancy-specific issues<sup>7</sup>. Furthermore, maternal health outcomes are also impacted by poor nutrition, sanitation and hygiene which affect much of the population<sup>8</sup>.

However, simply by increasing the number of child births which take place with a skilled birth attendant (such as a nurse, midwife or doctor), and increasing the usage of pre and post-natal health care can have a dramatic effect upon these problems, and greatly reduce the incidence of pregnancy related disability and death<sup>9</sup>.

Maternal mortality rates are considered especially important as they are used as generic indicators of a health system's status and capability<sup>10</sup>. Furthermore, maternal health is also seen as a priority factor in Cambodia, because it creates "spill over demand" for other health issues, thus allowing for the overall

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<sup>1</sup> Women and Children (UK) June 2011, Scaling up for better health in Cambodia, WHO and MoH, Phnom Penh, Cambodia, p.3.

<sup>2</sup> John Acre, compiled July 2008, "A Public Health Profile of Cambodia, Public Health Development", Phnom Penh, Cambodia, p. 23.

<sup>3</sup> Royal Government of Cambodia, Ministry of Health, Health Strategic Plan: 2008-2015, (Phnom Penh, Cambodia, 2008), xi-xii

<sup>4</sup> Further health indicators for Monduliri and Ratanakiri are detailed in Appendix 1.

<sup>5</sup> World Bank, "Improve Maternal Health by 2015," *World Bank Millennium Development Goals*, 2011, [http://www.worldbank.org/mdgs/maternal\\_health.html](http://www.worldbank.org/mdgs/maternal_health.html).

<sup>6</sup> Cecilia S. Acuin et al., "Maternal, Neonatal, and Child Health in Southeast Asia: Towards Greater Regional Collaboration," *The Lancet* 377, no. 9764 (2011): 516–525; World Bank, "Maternal Health." p. 519.

<sup>7</sup> Acuin et al., "Maternal, Neonatal, and Child Health in Southeast Asia." p. 518.

<sup>8</sup> Patralekha Chatterjee, "Cambodia Tackles High Maternal Mortality," *The Lancet* 366, no. 9482 (2005): 281–282.p. 281.

<sup>9</sup> Ibid.

<sup>10</sup> Ministry of Health, *Health Strategic Plan 2008-2015* (Phnom Penh: Ministry of Health, 2008).p. 10.

health of the population to be improved<sup>11</sup>. It is for this reason that Cambodia's low maternal health outcomes are afforded "centre stage' attention" in the current Health Strategic Plan<sup>12</sup>.

The Maternal Mortality Rate (MMR) in Cambodia is 206 per 100,000 live births, which means that each year approximately 1,700 women die due to pregnancy complications<sup>13</sup>, compared to Southeast Asia's average MMR of 150<sup>14</sup>, except for Laos: Thailand has an MMR of 48, Vietnam 59 and Laos 470<sup>15</sup>.

According to the MoH, when compared to the improvements made in improving child mortality and HIV, tuberculosis and malaria, "maternal mortality remains high and continues to pose a great challenge<sup>16</sup>".

However, significant improvements have been made in Cambodia's maternal health indicators since 2000<sup>17</sup>. Infant mortality, an important indicator of maternal health as it is closely related to the mother's health and access to medical services, has reduced from 93 deaths per 1000 live births in 2000, to 58 per 1000 as of 2010 when the most recent Demographic and Health Survey was conducted<sup>18</sup>. The infant mortality rate reduced most markedly for the poorest 20 per cent of the population. This is relevant to maternal health, as it provides a broad indication of the mother's health and access to medical services, and is important to addressing maternal health issues from a population-level stand point, as the poorest quintile has the greatest prevalence of both maternal and infant health problems<sup>19</sup>. However, the improvements in other indicators of maternal health regarding the poor were lower than those of the wealthier quintiles. Not only are maternal health outcomes strongly linked to wealth in Cambodia, but the gap between rich and poor in these outcomes is growing. In 2000 the poorest 20 per cent had an infant mortality rate twice that of the richest 20 per cent. By 2010 that ratio had increased to over 3.4<sup>20</sup>. Furthermore, large gaps exist between access to maternal health services and skilled birth attendants in rural as compared to urban areas<sup>21</sup>.

Between 2000 and 2010, the level of skilled birth attendants increased from 32 per cent to 71 per cent, again with the greatest percentage improvements being amongst the poorest quintile<sup>22</sup>. Nevertheless, the use of skilled birth attendants by both the poor and those in rural areas is roughly half that of wealthier or urban Cambodians<sup>23</sup>. For these reasons the MoH continues to identify this as the key problem to be addressed regarding maternal health, as the country continues to suffer from a "critical shortage of health staff, particularly secondary/graduate midwives"<sup>24</sup>. Cambodia only has 0.77 skilled birth attendants per 1000 population, which is significantly less than the World Health Organization's

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<sup>11</sup>ibid. p 9.

<sup>12</sup>ibid.

<sup>13</sup>UNICEF, *Cambodia Country Kit 2011-2015* (Phnom Penh: UNICEF Cambodia, 2011),

[http://www.unicef.org/cambodia/results\\_for\\_children\\_18255.html](http://www.unicef.org/cambodia/results_for_children_18255.html). Chap. 4: Maternal, Newborn and Child Health and Nutrition.

<sup>14</sup>World Health Organization et al., *Trends in Maternal Mortality: 1990 to 2010: WHO, UNICEF, UNFPA, and The World Bank Estimates*, 2012, <http://www.who.int/reproductivehealth/publications/monitoring/9789241503631/en/>.p. 19.

<sup>15</sup>"WHO | Maternal Mortality Country Profiles," *WHO*, accessed February 18, 2014, [http://www.who.int/gho/maternal\\_health/countries/en/](http://www.who.int/gho/maternal_health/countries/en/).

<sup>16</sup>Ministry of Health, *Fast Track Initiative: Road Map for Reducing Maternal & Newborn Mortality 2010-2015*. This number is however misleading if we look at the provincial level. According to National Report of Final Result of Cambodia 2008 Population Census' (National Report of Final Result of Cambodia 2008 Population Census, p. 30) estimation, Kep, Ratanakiri, Mondulakiri and Koh Kong province have the highest MMR (See Appendix 2 for details).

<sup>17</sup>Wang Wenjuan, *Assessing Trends in Inequalities in Maternal and Child Health and Health Care in Cambodia*, DHS Further Analysis Reports (Calverton, Maryland: ICF International, 2013).p. 1.

<sup>18</sup>ibid. p. 8.

<sup>19</sup>ibid. p. 10.

<sup>20</sup>ibid. p. 10.

<sup>21</sup>United Nations Population Fund (UNFPA), *The State of the World's Midwifery 2011: Delivering Health, Saving Lives* (New York: UNFPA, 2011).p. 62.

<sup>22</sup>Wenjuan, *Health Care in Cambodia*.p. 17.

<sup>23</sup>ibid.; United Nations Population Fund (UNFPA), *The State of the World's Midwifery 2011: Delivering Health, Saving Lives*.

<sup>24</sup>Ministry of Health, *Fast Track Initiative: Road Map for Reducing Maternal & Newborn Mortality 2010-2015*.p. 14.

(WHO) recommendation of 2.5 attendants per 1000 people<sup>25</sup>. Although all health clinics now have at least one primary midwife, most of these are only primary midwives, who lack the extra training and experience of a secondary midwife needed to perform all necessary birth related procedures<sup>26</sup>.

### I.A. National responses

Improving maternal health has been designated a “strategic priority” within the current Strategic Health Plan<sup>27</sup>. The Strategic Health Plan broadly aims to improve maternal health by: increasing the number of midwives and improving their training; improving community education regarding reproductive and pregnancy health; and reducing or eliminating the upfront cost to women seeking maternal health services, as these have been found to strongly discourage their use by the poor<sup>28</sup>. The actionable components of the strategy are detailed within the MoH document *Fast Track Initiative: Road Map for Reducing Maternal & Newborn Mortality 2010-2015*<sup>29</sup>. It finds the following four core components to be crucial in improving maternal health and reducing maternal mortality<sup>30</sup>:

1. **Emergency obstetric and newborn care:** As three quarters of maternal and newborn deaths occur around the time of childbirth, universal access to emergency services such as post-abortion care, caesarean sections, blood transfusions and management of other birth-related complications are crucial to improving maternal and newborn health outcomes.
2. **Skilled birth attendants:** It is the RCG’s policy goal that every birth be attended by a skilled medical professional in a medical centre. Furthermore, as midwives are the primary care givers before, during and after birth, improving their numbers and training would greatly improve maternal health outcomes.
3. **Family planning:** Increasing education and access to contraceptives necessary to better space births, delay the first pregnancy and avoid unwanted births would significantly improve Cambodia’s maternal health outcomes.
4. **Safe abortions:** Abortion has been legal in Cambodia since 1997, however they are still poorly provided for within the public health system. The result is that many women resort to unsafe abortion services to deal with unwanted pregnancies.

To improve these four key areas, the MoH finds that the three following “enabling” components must be addressed<sup>31</sup>:

1. **Behaviour change communication:** Educational campaigns to encourage the use of contraceptives and safe pregnancy practices must be improved and expanded.
2. **Removing financial barriers:** Upfront medical fees can deny the poor access to maternal health services. The provision of these services at reduced or no cost to all women would improve Cambodia’s maternal health outcomes.
3. **Maternal death surveillance and response:** Only a small proportion of total maternal deaths are officially recorded within the MoH’s health information system. Improving the collection of information relating to maternal health would improve the RCG’s ability to design and implement more effective policy responses.

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<sup>25</sup>Ibid.

<sup>26</sup>Ibid.

<sup>27</sup>Ministry of Health, *Health Strategic Plan*.p. 20.

<sup>28</sup>Ibid. p. 50-4.

<sup>29</sup>Ministry of Health, *Fast Track Initiative: Road Map for Reducing Maternal & Newborn Mortality 2010-2015*.

<sup>30</sup>Ibid. p. 9.

<sup>31</sup>Ibid.

## I.B. Interventions from national and international organizations

The WHO is the Lead Donor Facilitator, which coordinates and liaises between the MoH and approximately 20 international donor agencies, and over 100 national and international NGOs which operate within Cambodia's health sector<sup>32</sup>.

### **Best practices**

Most maternal health related deaths and sicknesses are the result of well-known, easily treatable complications, such as bleeding, infections and high-blood pressure<sup>33</sup>. As such, best practice responses to maternal health involve ensuring that women have access to, and use of, antenatal care while pregnant, have a skilled attendant during child birth, receive medical care in the weeks following child birth, have access to safe ways to abort unwanted pregnancies, and use contraceptives to delay first pregnancies, space conception following pregnancies and reduce unwanted pregnancies<sup>34</sup>.

Cambodia appears to be developing its approach to maternal health along best practice lines. However, as the Strategic Health Plan notes, more resources are needed to provide widespread access to skilled birth attendants and medical care during and after pregnancy<sup>35</sup>.

## II. Overview of Child Health

Studies show that infant and child mortality rates reflect a country's socioeconomic situation as well as the quality of life of the population<sup>36</sup>. However, a child's health condition varies according to the demographic factors and the mother's health and knowledge background<sup>37</sup>. Though Cambodia has made considerable improvements on a child's health situation, with the mortality rate dropping from 124 to 83 deaths per 1,000 live births<sup>38</sup>, children's health still faces important challenges. The situation is more serious in some of the poorest provinces, particularly where there are obvious needs for family planning and immunization and where there is a high rate of child malnutrition<sup>39</sup>. Moreover, mortality in rural areas is consistently 3 times higher than urban areas. While Phnom Penh has the lowest rate of infant and child mortality, provinces located in the northern part of the country (Preah Vihear, Stung Treng, Monduliri, and Rattanakiri) demonstrate the highest rate of infant and child mortality<sup>40</sup>.

### II.A. National response to Child's Health

To ensure a more effective development of health service delivery to the population, the Royal Government of Cambodia, through the Ministry Health, has adopted plans and strategies to respond to the issues. These are noted below.

*The National Strategic Development Plan* provides overall goals and strategic directions, while *the rectangular strategy* aims to reduce infant and child mortality and improve the provision of health care

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<sup>32</sup>WHO (World Health Organisation), *Country Cooperation Strategy at a Glance: Cambodia* (Geneva: WHO), accessed February 18, 2014, [http://www.who.int/entity/countryfocus/cooperation\\_strategy/ccsbrief\\_cambodia\\_09\\_en.pdf](http://www.who.int/entity/countryfocus/cooperation_strategy/ccsbrief_cambodia_09_en.pdf).p. 2.

<sup>33</sup>WHO | 10 Facts on Maternal Health," WHO, accessed February 12, 2014, [http://www.who.int/features/factfiles/maternal\\_health/en/](http://www.who.int/features/factfiles/maternal_health/en/).

<sup>34</sup>WHO | Maternal Mortality," WHO, accessed February 18, 2014, <http://www.who.int/mediacentre/factsheets/fs348/en/index.html>.

<sup>35</sup>Ministry of Health, *Health Strategic Plan*.p. 20.

<sup>36</sup>National Institute of Statistics and Director General for Health, 2011, "Cambodia Demographic and Health survey 2010, Phnom Penh, Cambodia.

<sup>37</sup>Ibid, p. 3

<sup>38</sup>National Institute of Statistics, Directorate General for Health, *Cambodia Demographic and Health Survey 2010*, Phnom Penh, Cambodia.

<sup>39</sup>Cambodia sharing growth, op cit, .p. 95, in Chapter II Human Development Context in Cambodia

<sup>40</sup>NIS and DGH, p 115.

to children by improving health care facilities and human resources<sup>41</sup>. *The Cambodian Health Strategy Plan II* places significant focus on methods to achieve the MDGs through five working principles which include social health protection, client focused approach to health service delivery, higher service delivery, human resource management, and good governance and accountability<sup>42</sup>. The *Health Equity Fund* was developed as an initiative to improve access to health services for the poor. Plans are underway to strengthen and expand this programme<sup>43</sup>. *The Health Strategic Plan (HSP) 2008-2015* and *Cambodia Child Survival Strategy (CCSS) 2006-2015* outline the Government's strategies to reduce child morbidity and mortality rates. In terms of improving nutrition, the *National Nutrition Strategy 2009-2015* also aims at involving all stakeholders to focus on the nutritional status of women and children. There also other initiatives such as the *National Policy on Infant and Young Child Feeding Practices*, and the *National Baby-Friendly Hospital Initiative* which have been developed to reduce mortality and malnourishment indicators, as well as to improve a child's overall health and well-being<sup>44</sup>.

## **II.B. Interventions from national and international organizations**

Civil society and international donors are very active within the Cambodian health sphere<sup>45</sup>. The number of organizations providing health care has increased rapidly since 1993<sup>46</sup>. The Department of maternal and Infant Protection in the MoH has been working with assistance from several of the NGOs and international organizations, in trying to improve prenatal, infant and child health through education and direct care, and staff training<sup>47</sup>. WHO is a leading donor working globally to support health improvements. In Cambodia, WHO and UNICEF are amongst the key international organizations which work on improving maternal, newborn, child health, and better nutrition. There are also many other organizations who work towards improving the health sector such as, the World Bank, USAID, DFID, AusAID, etc.

### ***Best practices***

Cambodia has been a success story in reducing infant and under-five mortality<sup>48</sup>. This is largely due to the strong performance of the national immunization programme, successful breast feeding promotion, the reduction of poverty levels, improved access to education and better infrastructure<sup>49</sup>. There are also other success stories including the access to improved water supplies and the development of an innovative financial schemes (i.e., health equity funds – HEF use subsidies at the district level to purchase public health services for the poor, and publically funded community-based health insurance) to protect the poor in using public health services<sup>50</sup>. The health of mothers is a critical factor that greatly affects the health of children. Mothers with no basic education or limited knowledge about child health are less likely to know about how to raise their children healthily. Therefore, educating Cambodian

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<sup>41</sup> Ministry of Planning, 2010, "National Strategic Development Plan 2009-2013", Phnom Penh, Cambodia.

<sup>42</sup> Char, 2008, p. x in "Literature review in Health care system in Cambodia" Phnom Penh, Cambodia.

<sup>43</sup> MoH, 2009, "Implementation of the Health Equity Funds Guideline", Phnom Penh, Cambodia.

<sup>44</sup> Char, 2008, in "Literature review in Health care system in Cambodia"

<sup>45</sup> UNICEF, Chapter II, *An analysis of the situation of children and women in Cambodia 2009: Human Development Context in Cambodia*, Phnom Penh, Cambodia.

<sup>46</sup> Public Health Development, 2008, "A Public Health Profile in Cambodia", Phnom Penh, Cambodia.

<sup>47</sup> Laura McGrew, n.d "Health Care in Cambodia". Accessed 20 February 2014: <http://www.culturalsurvival.org/publications/cultural-survival-quarterly/cambodia/health-care-cambodia#sthash.nIHe9Ugy.dpuf>

<sup>48</sup> National Institute of Statistics, Directorate General for Health, *Cambodia Demographic and Health Survey 2010*, Phnom Penh, Cambodia.

<sup>49</sup> UNICEF, Chapter III, *An analysis of the situation of children and women in Cambodia 2009: The child's right to life and health*, Phnom Penh, Cambodia.

<sup>50</sup> Ibid

women is a critical factor in the reduction of malnutrition and the improvement of the health of children as a whole

### III. Common concerns about maternal and infant/child health

The socio-economic status of mothers is an important factor that influences infant and child mortality in Cambodia<sup>51</sup>. The Constitution states that the “State shall give full consideration to children and mothers” by establishing nurseries, and helping to support women and children who have inadequate support (article 73)<sup>52</sup>.

The causes of maternal, newborn and child deaths are well known and largely preventable and treatable. However, the coverage of some health interventions and practices remains low due to a disconnection between knowledge, policies, and action<sup>53</sup>. The lack of water supply, sanitation, education, transportation, and communication has caused huge problems in the development of the health system in certain regions<sup>54</sup>.

### IV. How do these public health issues vary throughout Cambodia?

There are dramatic differences in access to health services across population groups within the country. Because Cambodia's population density is quite variable, the country's health care needs and services vary greatly<sup>55</sup>. People in remote villages in the provinces have difficulty obtaining health care. Besides geographical and physical barriers, trained health care personnel from Phnom Penh are reluctant to be isolated in distant locations. Many provinces lack antibiotics and other medicines; many do not have cold storage facilities, so vaccine distribution, already difficult due to transportation problems, is practically impossible<sup>56</sup>.

According to the 2010 Cambodian Demographic Health Survey<sup>57</sup>, antenatal care from a health professional has increased substantially since 2005. However, in terms of maternal, infant and child health, and minority populations there is a demonstrably greater need for this type of care than the national average<sup>58</sup>. Antenatal care coverage is highest in Phnom Penh at 99 percent and lowest in MondulKiri/RattanakKiri at 62percent. 59 percent of women have four or more antenatal care visits. The same proportion starts antenatal care in the first three months of pregnancy. However, success in meeting the MDGs relating to maternal mortality, contraceptive prevalence, and attended births are less certain<sup>59</sup>.

### IV. Conclusion

Maternal health outcomes have improved much slower than other large public health issues in Cambodia, such as HIV or infant mortality. Most deaths occur due to basic, preventable medical issues such as bleeding, infection or pregnancy related high blood pressure, which are readily treatable by a skilled birth attendant. The social-economic status of mothers is an important factor that influences

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<sup>51</sup> UNICEF, Chapter III

<sup>52</sup> UNICEF, Chapter II

<sup>53</sup> UNICEF, (n.d), *Maternal, newborn and child health, and nutrition*, Phnom Penh, Cambodia.

<sup>54</sup> Website of Cultural and survival, written by Laura McGrew, “Health care in Cambodia”. <http://www.culturalsurvival.org/publications/cultural-survival-quarterly/cambodia/health-care-cambodia#sthash.S6oSXL5h.dpuf> Accessed by 23 Jan 2014

<sup>55</sup> Ibid

<sup>56</sup> Ibid

<sup>57</sup> National Institute of Statistics, Cambodia Demographic and Health survey 2010.

<sup>58</sup> Health Unlimited, 2006, *Indigenous women working toward improved maternal health*, Phnom Penh, Cambodia.

<sup>59</sup> WHO and MoH 2007, *Scaling Up for Better Health in Cambodia*. Phnom Penh, Cambodia



infant and child mortality in Cambodia<sup>60</sup>. Educating Cambodian women is likely to be critical factor in the reduction of malnutrition and improvement of the health of children as a whole<sup>61</sup>. One of the common and most critical interventions for child survival and safe motherhood is to ensure the presence of a skilled birth attendant at every delivery. Policies which address the often unaffordable costs for medical care faced by the poor would likely improve a number of public health outcomes.

Achieving all of Cambodia's health related MDGs as well to have a healthier society still requires more attention. However, there are realistic steps that can be taken to address these health issues in Cambodia. Practical improvements to primary medical services, health management practices and a health education strategy would make a difference to health care access for the poor, thus improving the health of much of Cambodia's population<sup>62</sup>.

Experience in other countries, and expert opinion, clearly demonstrates the necessity of having skilled birth attendants and access to emergency obstetric care from adequately equipped hospitals as essential and critical to substantially reducing maternal mortality, which is one of the key health objectives of the MDGs.

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<sup>60</sup> UNICEF, Chapter III

<sup>61</sup> UNICEF, An analysis of the situation of children and women in Cambodia 2009

<sup>62</sup> UNICEF 2009, Health service access among poor communities in Cambodia. Phnom Penh, Cambodia.

## Appendix 1: Case study on maternal and child health related information and data

### Infant and child mortality

Child and maternal mortality rates are important, as they can be used as an overall indicator as to the status of a health system, and the health status of the population it serves<sup>63</sup>. Cambodia on average, 54 out of 1,000 children will die before their fifth birthday<sup>64</sup>. By comparison, Mondulkiri and Rattanakiri have 106 deaths per 1,000 children under five years old<sup>65</sup>; over twice the national average<sup>66</sup>.

### Maternal mortality

Cambodia's most recent Demographic and Health Survey did not collect maternal health data by province. A reason for this is the poor reporting of maternal mortality. This is because maternal mortality is defined as occurring during pregnancy and up to six weeks after child birth. During this period, a woman's death can be attributed to a factor other than maternity. Due to these reasons, province specific data is not available, and the National Institute of Statistics can only estimate the national maternal mortality ratio to be 2.06 deaths per 1,000 births, which can be equated to women having a 1 in 165 chance of dying from maternal causes<sup>67</sup>.

### Skilled birth attendants

38 per cent of births in Mondulkiri and Rattanakiri are assisted by a skilled birth attendant, such as a nurse, midwife or doctor. Specifically, 3.5 per cent of births are attended by a doctor, 0.3 per cent by a nurse, and 34.6 per cent by a midwife. 59.6 per cent of births are assisted by a traditional midwife of some description, which is not a skilled birth attendant as they have no medical training. The Cambodian average is for 71 per cent of births to be assisted by skilled birth attendants<sup>68</sup>.

In Mondulkiri and Rattanakiri 30 per cent of births occur in a health facility, compared to a national average of 54 per cent<sup>69</sup>. However, there are only 29 per cent of women have a medical checkup after giving birth. The Cambodian average is for 74 per cent of women to have a postnatal checkup.

### Health facilities

Mondulkiri has the following health facilities:

- 1 provincial hospital
- 7 health centres
- 18 health posts<sup>70</sup>

Rattanakiri has the following health facilities:

- 1 referral hospital (more basic than a provincial hospital)
- 11 health centres

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<sup>63</sup> Ministry of Health, *Health Strategic Plan 2008-2015* (Phnom Penh: Ministry of Health, 2008). p. 10.

<sup>64</sup> National Institute of Statistics (NIS) and Directorate General for Health, *Cambodia Demographic and Health Survey 2010* (Phnom Penh: NIS, 2011). p. 114.

<sup>65</sup> National Institute of Statistics (NIS) and Directorate General for Health, *Demographic and Health Survey*. p. 116.

<sup>66</sup> The *Cambodia Demographic and Health Survey* provides the same data for Mondulkiri and Rattanakiri.

<sup>67</sup> National Institute of Statistics (NIS) and Directorate General for Health, *Demographic and Health Survey*. P. 111.

<sup>68</sup> *Ibid.* p. 128.

<sup>69</sup> *Ibid.* p. 127.

<sup>70</sup> Ministry of Health, "Mondulkiri," accessed January 4, 2014, [http://www.moh.gov.kh/?page\\_id=333&lang=en](http://www.moh.gov.kh/?page_id=333&lang=en).

- 18 health posts<sup>71</sup>.

### **Vaccinations**

In Mondulkiri and Rattanakiri, 28 per cent of children aged between 12 and 23 months receive their basic vaccinations, as proscribed by the ministry of health, compared to the national average of 79 per cent<sup>72</sup>.

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<sup>71</sup> Ministry of Health, "Rattanakiri," accessed January 4, 2014, [http://www.moh.gov.kh/?page\\_id=343&lang=en](http://www.moh.gov.kh/?page_id=343&lang=en).

<sup>72</sup> National Institute of Statistics (NIS) and Directorate General for Health, *Demographic and Health Survey*. p. 136.

**Appendix 2: Infant mortality rate, maternal mortality ratio (from births, deaths and maternal deaths in the preceding 12 months), Cambodia, by province Total 2008 census, and IMR from CDHS 2005 and CDHS 2000**

Province	Infant mortality rate and implied life expectancy at birth 2008 Census		Infant mortality rate		Maternal mortality ratio Cambodia 2008 census  (March 2007-March 2008)
	Adjusted IMR* 2008 Census	Implied life expectancy at birth (both sexes)	CDHS 2005  (1995-2005)	CDHS 2000  (1990-2000)	
1. Banteay Meanchey	44.9	65.9	76.0	78.2	263.50
2. Battambang	48.1	65.2	97.0	98.0	219.41
3. Kampong Cham	49.9	64.8	94.0	107.9	451.02
4. Kampong Chhnang	42.1	66.6	87.0	129.3	277.22
5. Kampong Speu	62.4	61.8	107.0	68.3	460.78
6. Kampong Thom	58.3	62.8	87.0	64.5	590.68
7. Kampot	69.6	60.2	67.0	100.4	823.40
8. Kandal	48.4	65.1	85.0	89.2	305.06
9. Koh Kong	75.1	59.1	88.0	70.7	1,113.26
10. Kratie	76.7	58.7	84.0	71.3	491.03
11. Mondul Kiri	156.8	44.0	122.0	169.8	1,498.75
12. Phnom Penh	33.4	68.8	42.0	37.6	298.42
13. Preah Vihear	170.3	41.9	111.0	71.3	476.33
14. Prey Veng	54.0	63.8	121.0	111.0	613.66
15. Pursat	56.4	63.2	86.0	139.4	269.49
16. Ratnak Kiri	231.6	33.8	122.0	169.8	1,441.73
17. Siem Reap	36.3	68.0	67.0	77.9	366.00
18. Preah Sihanouk	106.1	52.8	88.0	100.4	806.45
19. Stung Treng	105.2	53.0	111.0	71.3	423.53
20. Svay Rieng	84.8	57.0	92.0	102.0	558.84
21. Takeo	60.1	62.4	96.0	96.0	568.85
22. Otdar Meanchey	75.6	58.9	90.0	77.9	257.07
23. Kep	57.2	63.0	67.0	100.4	1,383.13
24. Pailin	60.6	62.3	97.0	98.0	630.63
Total Cambodia	60.0	62.4	--	92.7	460.84

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