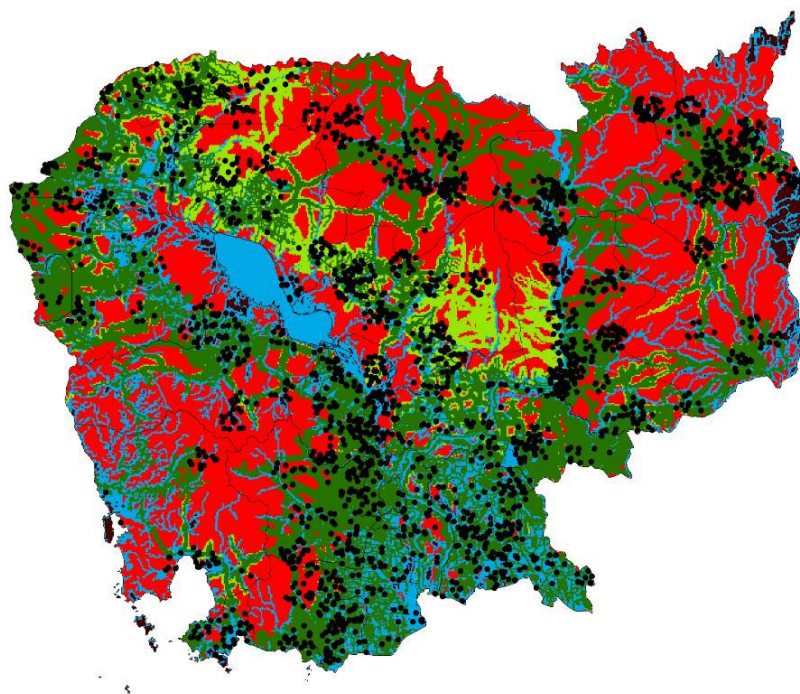


Investing the Marginal Dollar for Maternal and Newborn Health: Geographic Accessibility Analysis for Emergency Obstetric Care services in Cambodia



Steeve Ebener, PhD ¹ and Karin Stenberg, MSc ²

¹ *Consultant, Gaia GeoSystems, The Philippines*

² *Technical Officer, Department of Health Systems Governance and Financing, World Health Organization, Geneva, Switzerland*

© World Health Organization 2016

All rights reserved. Publications of the World Health Organization are available on the WHO website (<http://www.who.int>) or can be purchased from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; email: bookorders@who.int).

Requests for permission to reproduce or translate WHO publications –whether for sale or for non-commercial distribution– should be addressed to WHO Press through the WHO website (http://www.who.int/about/licensing/copyright_form/index.html).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

The named authors alone are responsible for the views expressed in this publication.

WHO/HIS/HGF/GIS/2016.2

Table of Contents

Executive summary.....	i
1. Introduction.....	1
2. Reference indicators and targets	2
3. Assumptions and EmOC referral system.....	3
4. Tool used for the different analysis: AccessMod 4.0	6
5. Analytical approach	7
5.1 Accessibility coverage analyzes.....	8
5.2 Geographic coverage analyzes	9
5.3 Service utilization analyzes.....	11
5.4 Scaling up analyzes	13
6. Data and national norms used in the different analysis	15
6.1 Statistical data	17
6.1.1 National level data.....	17
6.1.2 Sub national level data	17
6.1.3 Cluster level data.....	21
6.1.4 Health facility level data	22
6.2 Geospatial data	23
6.2.1 Administrative boundaries	25
6.2.2 Geographic location of the EmOC facilities	25
6.2.3 Land cover including the extend of urban areas	26
6.2.4 Road network	27
6.2.5 Hydrographic network	28
6.2.6 Digital Elevation Model.....	30
6.2.7 Spatial distribution of unattended home deliveries	31
6.2.8 Spatial distribution of the number of births	33
6.3 National norms	34
7. Results	36

7.1 Accessibility coverage analyzes.....	36
7.2 Geographic coverage analyzes.....	40
7.3 Service utilization analyzes.....	45
7.4 Scaling up analyses	48
8. Knowledge transfer	52
9. Conclusions and recommendations.....	53
References.....	57
Annex 1 – Indicators and minimum acceptable levels from the 1997 UNICEF, WHO, UNFPA Guidelines for monitoring the availability and use of obstetric services.....	59
Annex 2 – Indicators and minimum acceptable levels from the 2009 WHO, UNFPA, UNICEF and Mailman School of Public Health handbook for monitoring emergency obstetric care.....	60
Annex 3 – Illustration of the current EmOC referral system in Cambodia	61
Annex 4 – Province level demographic data used in the context of the project.....	62
Annex 5 – 2012 list of BEmOC and CEmOC provided by the MOH of Cambodia and used in the present project (NH= National Hospital, RH= Referral Hospital; PH= Province Hospital; FDH= Former District Hospital; HC= Health Centre)	63
Annex 6 – Simplified classification for the global land cover distribution grid [16]	66
Annex 7 – Process followed to create the final land cover distribution grid.....	67
Annex 8 – Process to generate the buffers around the DHS cluster location	68
Annex 9 – Protocol used to spatially distribute the number of births on a raster format GIS layer	70
Annex 10 – Province level number and percentage of births where the household is located within 2 hours of travel time to a BEmOC (including CEmOC) for both considered scenarios	72

Annex 11 – Travel time between each BEmOC (including CEmOC) and the nearest CEmOC.....	73
Annex 12 – Province level travel time statistics.....	75
Annex 13 – Health facility level results of the geographic coverage analysis for BEmOC (including CEmOC).....	76
Annex 14 – Province level number and percentage of births where the household is located within 2 hours of travel time of a BEmOC (including CEmOC) when taking both travel time and coverage capacity into account.....	78
Annex 15 – Estimated number of births referred to the nearest CEmOC facility in case of complication during delivery in a BEmOC facility	79
Annex 16 – Number of births and respective Province level geographic coverage obtained by locating 50 new BEmOC facilities in the Provinces of Mondul Kiri, Preah Vihear, Ratanak Kiri and Stung Treng.....	80

Acknowledgements

The authors wish to express our gratitude to staff at the Ministry of Health of Cambodia, Prof Tung Rathavy, Dr Veasna Kiri, Dr Mey Sambo and Dr Meas Vanthan, for their time and for the health and GIS data they have provided to inform the analysis presented in this report.

We also would like to take this opportunity to thank the Dr Kannitha Cheang and Dr Ann Robins from the WHO Country Office for their valuable insights and support.

Our gratitude also goes to Mr Sopheak Pouy (MEDiCAM) and Mr Ulisses Munoz (Consultant) for their contribution to the study.

Dr Howard Sobel from the WHO regional office for the Western Pacific and Dr Matthews Mathai from WHO/HQ reviewed and commented on earlier versions of the report and contributed to its finalisation.

We acknowledge the financial support provided to this project by the Government of Norway.

For comments, please contact Karin Stenberg (stenbergk@who.int) or Steeve Ebener (steeve.ebener@gaia-geosystems.org).

Executive summary

Objective

Progress on MDG5a to reduce maternal mortality is lagging behind in many countries and a key constraint is access to skilled care at birth including emergency obstetric care (EmOC) services. In order to expand coverage, good-quality essential services must be integrated into strong health systems.

The World Health Report 2005 proposed a “close to client” approach with back up services at referral level. While the first level should be able to provide most of the Basic Emergency Obstetric Care (BEmOC) signal functions, there is also a universal need for access to comprehensive Emergency Obstetric Care (CEmOC) referral services, in case the need arises.

In recognition of the key impact that EmOC services can have on maternal mortality and safe birth outcomes, the World Health Organization (WHO) is supporting the use of Geographic Information Systems (GIS) to analyse physical accessibility to facilities providing EmOC in five selected countries, namely (by alphabetical order): Burkina Faso, Cambodia, Lao People’s Democratic Republic, Malawi and Rwanda.¹

Essentially, from a normative perspective every woman should be able to easily access a health facility that provides BEmOC. This is not currently the case in most low-income countries. Strategic decisions need to be made by policy makers and health planners with regards to what investments are feasible given limited resources and competing priorities.

The broader project aims to inform policy discussions on how to optimize or target the spending of the marginal dollar for maternal health at country level; in particular to examine the infrastructure requirements for scaling up coverage of institutional delivery with skilled attendance. The research undertaken as part of this project and presented here aims to investigate the current accessibility to EmOC and potential implications for future global and national level policy recommendations and norms.

Methodology

The analysis assesses accessibility coverage² and then combines the results with the availability of human resources in the currently available infrastructures (existing health facilities) in order to obtain a measure combining both the population needs and service availability, this measure is referred to as geographic coverage.

¹ This work has received financial support from the Norwegian Government as part of a work plan to operationalize the UN Secretary General’s Global Strategy for women and children’s health.

² Refers to ensuring that health services are located within reasonable reach of the people who should benefit from it (Tanahashi, 1978)

In the case of Cambodia, working in close collaboration with the Ministry of Health of Cambodia, a freely available GIS extension developed by WHO to measure physical accessibility to health care, called AccessMod (See Chapter 4), has been used in combination with statistical data from existing sources (household surveys, Health Information System, data,...) to perform the following analyses (See Chapter 5 for more details):

1. Accessibility coverage:
 - a. The percentage of all births where the household is located within 2 hours of travel time of a BEmOC facility;
 - b. The travel time between each BEmOC facility and the nearest CEmOC facility.
2. Geographic coverage:
 - a. The percentage of all births where the household is located within 2 hours of travel time of a BEmOC facility with enough capacity to cover all births if normal delivery (i.e., with sufficient availability of skilled birth attendants);
 - b. The percentage of births with complications requiring blood transfusion/Caesarean-section (C-section) that will reach a CEmOC facility within 2 hours of travel time from BEmOC facilities, and where the CEmOC facility has enough capacity to manage complications (through the availability of EmOC surgical teams).
3. Service utilization: Comparing results from the accessibility/geographic coverage analysis with data on actual service utilization (estimated capacity of BEmOC compared with the percentage of births delivered in a health facility; the estimated capacity of CEmOC compared with the number of caesarean-sections)
4. Scaling up: Scenarios developed to reach universal coverage through various mechanisms of expanding the EmOC facility network.

The results coming out of these analyzes (Chapter 7) are presented in the form of tables, graphs and maps to be included into the analysis of maternal and new born health investments in the country.

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_27211

