Annual Report

2014

NCGM Japan - NMCHC Cambodia
Joint Technical Collaboration Office

March 2015
Phnom Penh, Cambodia
Tokyo, Japan

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Preface

It is a great honor for me to extend my sincere congratulation on publication of this first annual report.

Since 1992, National Center for Global health and Medicine (NCGM) started its collaboration at National Maternal and Child Health Center (NMCHC). During these two decades, there have been seven technical cooperation projects by Japan International Cooperation Agency (JICA). A lot of staff from NCGM have been working with NMCHC.

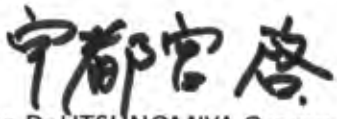
Moreover, in December 2012, His Excellency Prof. Eng Huot and the NCGM President signed a Memorandum of Understanding (MOU) for a direct collaboration. Under this MOU, many NCGM staff have visited Cambodia and NMCHC staff have come to Japan in the framework of exchange program.

It is also a good opportunity for young NCGM staff to learn from many mothers, babies and of course from the staff of NMCHC. I would like to thank all NMCHC staff for always accepting them with the warmest hospitality.

Nowadays, we are delighted to know that here in Cambodia, the progress in achieving MDGs 4 and 5 are on-track. I would like to highly appreciate recently around 80% of all deliveries including those in remote areas are with Skilled Birth Attendants.

Now we have some further challenges that we should tackle together. The mortalities of both mothers and children have successfully decreased in Cambodia. As the next step, the interventions for not only life-saving skills but also patient-centered care are more required in order to improve the 'quality' of maternal and newborn care more. I believe that the 'women and baby friendly care based on evidence', which JICA MANECA Project has been promoting, is a pioneer approach to improve quality of care. On the other hand, the gaps between the urban and the rural or the rich and the poor still exist in Cambodia. Women and children, the most vulnerable groups of the world are easily affected by the negative impact of socio-economic inequity. Therefore, I would like to express the sincere hope that NMCHC will provide the 'women and baby friendly care,' especially for the poverty, as a top MNCH institute.

For all mothers and babies in Cambodia, we look forward to continue this precious collaboration between NMCHC and NCGM.
Okun churaan (Thank you)!



Professor. Dr.UTSUNOMIYA Osamu
Director-General, Bureau of International Health Cooperation
National Center for Global health and Medicine, Japan

On behalf of National Maternal and Child Health Center, I am very pleased to know that this first annual report has been written with our collaboration between NCGM and NMCHC. I am delighted to see a great progress and cooperation between both Centers, which have established the close relationship since 1992 until now.

After putting a lot of efforts in reconstructing the country, Cambodia has accomplished significant results in health sector, especially in the field of Maternal and Child Health. In fact, Cambodia has recently gained Resolve Award 2014 from Aspen Institute in Geneva, Switzerland.

However, Cambodia still has more challenges to face in order to achieve the goal of government strategic plans 2014-2018 which has been set that by 2018. Namely, Cambodia has to reduce:

- Maternal Mortality Ratio to 130 on 1 000 000 lives
- Children Under 5 years Mortality Rate to 42 on 1000 births
- Infant Mortality Rate to 32 on 1000 births
- Neonatal Mortality Rate to 20 on 1000 lives

Ministry of Health will more focus on the intervention on neonatal care and nutrition. I believe our rich experiences at NMCHC will be also useful for organizing the next Health Strategic Plan in the future.

In the 3rd Joint Technical Meeting on 2nd December 2014, I requested the technical reports from each activity that will be done by March 2015 to be referred for the draft of "Guidance Map in Improving Health of Mother, Baby and Child 2016-2020". So it is our great pleasure to understand the fruitful results of every activity in this annual report.

Prof. TUNG RATHAVY

Abbreviations

CPAP	Continuous Positive Airway Pressure
EmONC	Emergency Obstetric and Newborn Care
JICA	Japan International Cooperation Agency
MM	Minutes of the Meeting
MNCH	Maternal, Neonatal and Child Health
MOH	Ministry of Health
MOU	Memorandum of Understanding
NCGM	National Center for Global Health and Medicine
NCU	Neonatal Care Unit
NMCHC	National Maternal and Child Health Center
ODA	Official Development Assistance
SBA	Skilled Birth Attendant
WHO	World Health Organization

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I. Overview of Collaboration between NCGM and NMCHC since the year 2013

1. History of collaboration

Since 1992, NCGM started its collaboration with the Ministry of Health (MOH) in Cambodia, in the field of Maternal and Child Health. In 1997, the National Maternal and Child Health Center (NMCHC) was constructed through the support of the Japan Official Development Assistance (ODA). It functions as a core of administration in maternal, neonatal and child health (MNCH), as a top referral MCH hospital, and as a national training center. Since then, activities has been continuing in the field of hospital management, nursing management, improvement of the midwifery and obstetric care, expansion of NMCHC services through training, prevention of HIV transmission from mother to child. Table 1. shows the history on collaboration between NCGM and NMCHC through Japan Cooperation International Agency (JICA) Project.

Table 1. The History of JICA technical cooperation for Maternal and Child Health (MCH)

Period	Project title
1992 ～ 1995	Adviser for Ministry of Health
1995 ～ 2000	Maternal and Child Health Project
2000 ～ 2005	Maternal and Child Health Project (Phase2)
2006	Development Survey of Maternal and Child Health
2007 ～ 2010	The Project for Improving Maternal and Child Health Service in Rural Areas
2010 ～ 2015	Project for Improving Maternal and Newborn Care through Midwifery Capacity Development

2. Direct collaboration between NMCHC and NCGM within the framework of MOU

The political stability in the year 2000 brought socioeconomic development in the country. Private hospitals are growing but NMCHC ensured high quality of services to the underprivileged population. The continued collaboration and the well entrenched good relationship between the NMCHC and the NCGM propelled the signing of a Memorandum of Understanding (MOU) between the two institutions. On 18 December 2012, His Excellency Prof. Eng Huot, Secretary of State for Health, MOU, and the Prof. Masato KASUGA, President of NCGM, subscribed to the MOU for the future direct collaboration on training, research, exchange program, and technical cooperation.

Signing ceremony of MOU on 18 December 2012

On 1 August 2014, we held the 1st Joint Technical Meeting under the framework of MOU. In the meeting, Prof. Dr. Tung Rathavy, Director of NMCHC and Dr.Tamotsu NAKASA, Director of Center for International Cooperation, NCGM, signed the Minutes of the Meeting (MM) on MOU. The MM prescribes main activities within the framework of MOU for 2013-2014 **(Table 2)**. The main objective of this project is to improve the quality of care at NMCHC.

Table 2. Activities for each field within the framework of MOU (2013-2014)

Fields / Activities	Neonatal care	Midwifery and obstetric care
1. Personnel exchange programs	– Residents and senior doctors from Japan to Cambodia – Nurses, midwife and doctors from Cambodia to Japan	– Midwife and doctors from Cambodia to Japan
2. Training		
3. Research	– Clinical research (SpO2, Electrolytes, Silverman) – Follow-up survey	– Researches related to midwifery care
4. Technical Cooperation	– Revision of clinical manual – Joint morning round – Joint tele-conference – Data report and analysis	(Under the discussion)
5. Others		

'Mini-project' on neonatal care

There are four main components/scopes/contents as follows:

1) Neonatal care especially at the neonatal care unit (NCU),
2) Researches for two topics: newborn infants and birth/midwifery care,
3) Personal exchange program including residents from NCGM,
4) And others.

Among these four components, the quality improvement of neonatal care is one of priorities through the activities within the framework of MOU. The activities on neonatal care has been promoted as the 'Mini-project for neonatal care', with the strong collaboration between NMCHC and NCGM (Pediatric department and International Cooperation Division). Some activities have continued since 2012, such as morning discussions, manual revision, and joint regular conferences using the Internet (Tele-conference). We can know the detail on each activity the 'Mini-project for neonatal care' in the next chapter. Furthermore, joint research activities have been conducted in the fields of midwifery and neonatal care.

These activities provide not only training for Cambodian doctors or nurses but also a good opportunity for young Japanese doctors, nurses, and other professionals to learn from the real situation of the NMCHC in Cambodia. For instance, the training program for resident NCGM doctors has been conducted at the NMCHC under this MOU. In accordance with the MOU, with Cambodian staff, Japanese health personnel can perform clinical practice at NMCHC or related institutions in Cambodia with approval by the MOH. Table 3. describes the detailed activities of each component.

3. Monitoring and evaluation

The MM prescribed that both NMCHC and NCGM should establish the 'joint technical meeting' biannually for regular monitoring and evaluation of all activities. According to this principle, since 18 December 2012, we held the joint technical meeting for three times (1st: 1 August2013, 2nd: 7 March2014, 3rd: 2 December 2014) (Annex 3). Moreover, the MM requested the secretariat of MOU to publish the annual activity report. This annual report is the first joint activity report of the year 2013 and 2014.

II. Mini-project for neonatal care

The quality improvement of neonatal care is one of priorities through the activities within the framework of MOU. The activities on neonatal care have been promoted as the 'Mini-project for neonatal care', with the collaboration between NMCHC and NCGM (Pediatric department and International Cooperation Division). Some activities have continued since 2012, such as morning discussions, manual revision, and joint regular conferences using the Internet (Tele-conference). **Table 3.** shows the contents of Mini-project for neonatal care.

Table 3. Contents of the Mini-project for neonatal care (2013-2015)

(Objective) Quality improvement of neonatal care at NMCHC (especially at NCU)		
(Output -1) **Improvement of care for sick newborn infants**	**(Output-2)** **Improvement of care for all newborn infants**	**(Output-3)** **Collaboration between NCU and other units**
(Activities) **1-1. Manual revision** **1-2. Joint morning round** **1-3. Joint tele-conference** **1-4. Data collection and analysis** **1-5. Clinical research (Electrolytes, etc)**	**(Activities)** **2-1. Clinical research (SpO2, etc)** **2-2. Follow-up survey for discharged babies from NCU**	**(Activities)** **3-1. Promotion of assessment for neonates in Maternity Ward** **3-2. Promotion of follow-up for babies before discharge**

1. Morning discussion (round)

Purpose:

- To check and share NCU problems with the NCU staff,
- To reply quickly to the daily questions, which the NCU staff have,
- To standardize the treatment plan/criteria for medical examination.

Method:

We mainly shared the problems of the severe sick inpatients at the beginning of this activity around May 2012. To solve problems, we introduced the POS (Problem Oriented System) presentation style, which is similar to NCGM-NICU style from October 2012. All Japanese doctors attend the nurse morning round at 8:00 every day and reply to all questions suitably. However, some Cambodian doctors' working hour is different so we could not meet doctors in the morning round. Therefore we decided to have a questions-and-answers style with doctors and discuss suitably about each case one by one.

Result:

We know NCU doctors and nurses have rich knowledge and experiences. But it is difficult for all doctors to meet together in the morning round because of their working styles. On the other hand, for nurses, they can see few doctors in the morning so they cannot do prompt consultations or asking for order of necessary examinations. The new POS presentation style could decrease such difficult situations because Japanese doctors always participated in the morning round to support NCU staff. Moreover, after introduction of POS, the observation of NCU staff became deeper and more careful, and the cautions to every vital signs such as breathing, circulation, infection, jaundice, etc. has increased. The total number of orders to medical examinations such as X- ray, CRP, bilirubin, etc. has been also gradually increasing.

2. Manual revision

Purpose:

- To update the old manual which the NMCHC-NCU developed in 1997,
- To unify the procedure and the inspection which can be carried out within NCU,
- To share the standard criteria on clinical diagnosis, examinations and treatment with NCU staff.

Method:

We updated the manual with the following steps. Please refer the flow chart **(Figure 1)**.

Step 1):

The NMCHC-NCU chief and the NCGM resident discuss in Cambodia. We compare NCGM-NICU manual to Dr. Yamada's manual (the old NCU manual), and create the draft proposal of the new manual, which is realizable in the NCU and also fits the global standard as much aspossible.

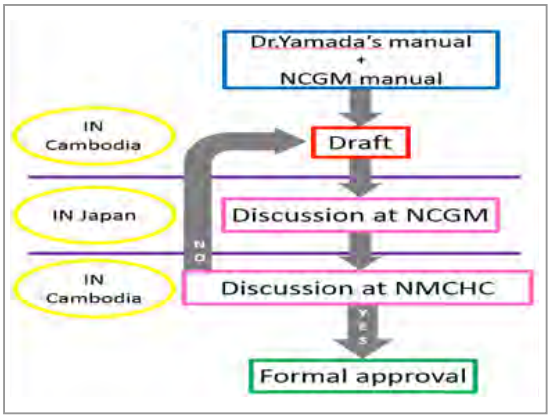
Step 2):

NCGM staff of pediatric department technically check the draft proposal and modify it with their opinion at NCGM in Tokyo.

Step 3):

The NCU staff in Cambodia checked the modified version again and if it cannot be accepted they send their comments back to NCGM, Japan. We repeat the procedure of Step 1) → 2) → 3). With enough consensus by NCU staff and official approval by the NMCHC-NCU chief, we can start to use it within NCU.

Figure 1. Manual making process



Result:

By the end of February 2014, we completed update of almost all topics as follows **(Table 4)**:

Table 4. List of manual contents

Contents	Progress
1.NCU call standard	Complete
2.Proposed Admission and Discharge Criteria	Complete
3. Resuscitation	Complete
4. Routine procedure at admission	Complete
5. Water balance	Complete
6. Nutrition	Complete
7. Respiration	Complete
8. Circulation	Complete
9. Electrolytes, hypoglycemia	Complete
10. Convulsion	Complete
11. Cerebral edema	Complete
12. Infection	Complete
13. Jaundice	Complete
14. Kangaroo Mother Care (KMC)	Complete
15. Follow-up examination at maternity ward	Complete
16. Nursing environment	Under discussion

3. Tele-conference

Purpose:

In NMCHC-NCU, it is difficult for staff to exchange opinions and to have the morning round because of various reasons as already mentioned, and there are few opportunities to acquire new knowledge for NCU doctors and nurses. On the other hand, it is also difficult to dispatch doctors and nurses continuously from Japan although there were requests for medical supports. We thought Tele-communication system using the internet could solve this problem and raise the staff's motivation and their daily medical skills with regular technical cooperation from Japan. Moreover, for Japanese young doctors, this conference could be a precious opportunity to experience a lot of diagnosis and medical treatments, which they could not see often in Japan.

Members:

NMCHC-NCU staff (doctors and nurses),

NCGM pediatric department staff (mainly NICU staff),

A Khmer-English interpreter

Method:

We use each LAN system with Skype inside the NMCHC conference room and NCGM pediatric office. We share the discussion theme and information beforehand by mini-lecture in Cambodia or using a mailing list among Japanese. On the conference day, we start the meeting from 10:00 at Cambodian time (12:00 JST). We carry out presentation, questions and answers, and exchange of opinions.

Result:

By the end of March 2015, we held total 41 times tele-conference **(Table 5)**. We aimed to reflect the results of conferences on the manual update at the beginning. However, as our conference was repeated, many problems were pointed out. For example, topics were too various and argument could not be concluded. It was difficult for staff to solve the issues together because the circumstances on neonatal care were very different between Cambodia and Japan. Moreover, many Japanese young doctors could not participate in discussions every time while many skilled nurses joined in Cambodia. Then, we took the measure against extraction of argument. We tried to find the common solutions among NCU staff, which could be reflected in the new manual. One the other hand, at the beginning, there were some difficulties of communication because of not only the poor internet communication condition but also the mixture of different languages (Khmer, English, and Japanese). We solved these problems by Skype connection only with sound (without image) and presentations in Khmer language only with whispering interpretation in English. After two years with many trials, staff could acquire new knowledge and skills through case reports or clinical discussions. It was useful for staff to start to consider and decide by themselves for better neonatal care.

Table 5. List of Tele-conference

Date (Year/Month/ Date)	No.	Title	Style	Participants of NMCHC, Cambodia	Participants of NCGM, Japan
2012/5/29	1	Systemic management of preterm infants	Case Discussion	4	6
2012/9/5	2	Lactation way of preterm infants and choking	Case Discussion	6	8
2012/9/12	3	Systemic management of preterm infants	Case Discussion	8	4
2012/9/19	4	Management of neonatal apnea	Making Manual	9	6
2012/9/26	5	Breathing of preterm infants	Case Discussion	10	5
2012/10/3	6	Asphyxia of premature infants	Case Discussion	7	8

Date (Year/Month/ Date)	No.	Title	Style	Participants of NMCHC, Cambodia	Participants of NCGM, Japan
2012/10/10	7	Hypoglycemia and convulsions of preterm infants	Case Discussion	5	6
2012/10/24	8	NEC of preterm infants	Case Discussion	5	6
2012/11/7	9	Vomiting of preterm infants	Case Discussion	6	8
2012/11/14	10	Systemic management of preterm infants, apnea attack	Case Discussion	7	6
2012/12/10	11	Severe asphyxia of preterm infants	Case Discussion	8	5
2012/12/18	12	Neonatal resuscitation	Case Discussion	8	5
2013/1/16	13	Cooperation with the delivery room (1)	Making Manual	10	7
2013/1/30	14	Cooperation with the delivery room (2)	Making Manual	9	8
2013/2/14	15	Infection of preterm infants (1)	Death Case Discussion	12	8
2013/2/28	16	Infection of preterm infants (2)	Death Case Discussion	10	7
2013/3/13	17	Neonatal resuscitation (infection case)	Making Manual	11	5
2013/4/25	18	How to use aminophylline	Making Manual	9	5
2013/5/22	19	Breastfeeding (1)	Making Manual	11	10
2013/5/28	20	Breastfeeding (2)	Making Manual	12	15
2013/6/27	Extra	Confirmation of future plan	Others	Dr.Sody	Dr.Hosokawa
2013/7/31	21	Vomiting of preterm infants (twin fetus)	Case Discussion	12	10
2013/9/11	22	Management of head birth trauma (1)	Case Discussion	10	13
2013/9/18	23	Management of head birth trauma (2)	Case Discussion	8	16
2013/9/25	24	Management of head birth trauma (3)	Case Discussion	9	7
2013/10/16	25	Hypoxic encephalopathy by asphyxia (1)	Case Discussion	10	8
2013/10/24	26	Hypoxic encephalopathy by asphyxia (2)	Case Discussion	12	10
2013/11/27	27	Management of respiratory distress by using CPAP (1)	Case Discussion with video	15	9

Date (Year/Month/Date)	No.	Title	Style	Participants of NMCHC, Cambodia	Participants of NCGM, Japan
2013/12/18	28	Management of respiratory distress by using CPAP (2)	Making Manual	14	12
2013/12/25	29	Management of respiratory distress by using CPAP (3)	Making Manual	12	10
2014/1/16	30	Management of respiratory distress by using CPAP (4)	Making Manual	9	10
2014/1/29	31	Analysis of blood gas (1)	Lecture	10	7
2014/2/13	32	Analysis of blood gas (2)	Lecture	12	10
2014/2/27	33	Importance of vital sign	Lecture	14	10
2014/3/24	34	Impression and discussion of the next conference's topic	Others	11	10
2014/5/12	35	Self-introduction	Others	11	6
2014/6/17	36	Nutrition management	Lecture	17	7
2014/8/19	37	Gastric bleeding	Lecture	17	8
2014/10/20	38	Jaundice	Lecture	14	5
2014/11/26	39	Assessment	Lecture/ Case presentation	17	6
2015/1/8	40	Kangaroo Mother Care	Lecture	17	10
2015/2/24	41	Infection	Lecture/ Case presentation	17	10

4. Data analysis

We collected patient information from the hospital database and NCU admission database of NMCHC from January to December in 2013. The rough results of analysis from raw data are shown below. We do not carry out statistical analyses or data cleanings such as exclusion of a deficit value.

- The total numbers of delivery were 6979 cases (The total numbers of pregnant women were 6825 cases including 154 twin delivery cases).
- The average mother's age was 27.5 years old (17 to 44 years old) and the average gestational weeks was 38.4 weeks (27 to 46 weeks).
- Regarding the delivery methods, 4822 cases (70.7%) were normal vaginal, 91 cases (1.3%) were vacuum, and 1912 cases (28.0%) were cesarean sections.
- The reasons for adaptation of cesarean sections were: 1) eclampsia; 196 cases (10.3%) 2) placenta previa ;167 cases (8.8%), 3) early ruptures of membranes; 154 cases (8.2%), and 4) oligohydramnios; 148 cases (7.8%).
- The total numbers of NCU admission were 579 (8.3% among the total numbers of delivery). The percentages of male/female are 57.5% and 42.5%. The average gestational weeks of NCU admission cases was 34.3 weeks. The average birth weight was 2112.4 g (580 to 5000g) and the median was 1900g.
- The average Apgar score at 1-minute value of NCU admission cases was 3.8 points (0 to 8) and the median was 4 points. The average Apgar score at 5-minute was 5.0 points (0 to 9) and the median was 6 points. As for resuscitation procedure, the suction was done for 347 cases (59.8%) and the pressure ventilation enforcement by mask and bag was done for 203 cases (34.9%). There was no cases who received intubation or medication on birth.
- 342 cases (59.2%) of NCU admission cases were normal vaginal delivery, 79 cases (13.7%) were pelvic presentations, 14 cases (2.4%) were born with vacuum extraction, and 14 cases (2.4%) with cesarean sections.
- The average time from after birth to the NCU admission was very widely spreading: 254.6 minutes (5 to 11520 minutes) and the median time was 30 minutes.
- The reasons for admission were: 1) premature; 200 cases (34.5%), 2) severe asphyxia; 195 cases (33.7%), 3) infection; 84 cases (14.5%).
- The outcomes of discharge were: 1) discharge after permission; 260 (44.9%). 2) discharge without permission (against doctors' advice); 160 cases (27.6%). The total death cases were 143 cases (24.7%) at NUC in the year 2013.

5. Exchange program between NMCHC and NCGM

5-1. NCGM resident doctors' clinical training at NMCHC-NCU

Purpose:

- The young doctors of NCGM Pediatric department experience international medical care and the difference on perinatal care in overseas.
- The young doctors of NCGM learn the logical thinking and the proper course of medical treatment in the situation of the limited health resource.

Period:

From March in 2012 (now on-going)

Method:

All young resident doctors prepared their "activity plans" including the purpose, the activity, and the expected results) before their departure. After their activities, they submit "activity reports" as slides or a document to NCGM Pediatric department.

The contents of activity:

At the beginning, we conducted a pilot survey about the collaboration or training activities, which NCGM pediatric resident doctors can do. Then we started 1) morning round and 2) tele- conference. Moreover, we started 3) NCU manual update as the activity based on "research on the package design for the improvement of quality in the neonatal care" with the grant of National Center for Global Health and Medicine (H22-4; MATSUSHITA group). NCGM pediatric resident doctors continued the above-mentioned activities of 1), 2), and 3) in the 'relay' style so that their activities might not break off. Since 2013, the all three activities has been continued with the Grant of National Center for Global Health and Medicine (H25-3; IWAMOTO group).

List of dispatched resident doctors (April 2013 – December 2014)

1. IITAKE Chie (Pediatric department/Bureau of International Cooperation)
2. NISHIBATA Midori (Pediatric department)
3. TAKASAGO Satoshi (Pediatric department)
4. MORI Tomoto (Pediatric department/Bureau of International Cooperation)
5. KATO Hiroki (Pediatric department)
6. HONDA Mari (Pediatric department/Bureau of International Cooperation)

Activity report (1)

Name	IITAKE Chie
Period	28 May-7 Jun 2013, 23 Jul-6 Aug 2013, 1 -15 Sep 2013, 30 Sep- 30 Oct 2013, 13 Nov-7 Dec 2013, 14 Dec-27 Dec 2013, 7 Jan-4 Feb 2014, 9 Feb-11 Mar 2014
Purpose	1) To help improving the care for sick newborn infants in NCU, NMCHC, 2) To learn and study the basic knowledge, methods and ideas of international collaboration.
Result	**<u>Activities on the mini-project</u>** ➢ **Morning round→Morning discussion (Round visit)** 1) Changed the name from morning "round" to "discussion" due to the difficulty to maintain collecting all doctors at once. 2) Changed the style to individual discussion with the Japanese doctor and set the time from 9-11am, from Mon-Thu. 3) During the round visit, the doctors started to manage the babies' water balance and glucose infusion speeds carefully, started to use new drugs, manage old drugs effectively and made differential diagnosis clearly. ➢ **Tele-conference** 1) Held the conference from 18th -34th in Cambodia. 2) After several changes of style, finally we find out that the lecture and case studies & discussion style is the most effective way for both to communicate and to have better understanding. 3) During the conference, doctors improved their presentation skills, started to use para clinic methods to make the diagnosis clear. Nurses started to use the check sheet for high risk babies to evaluate the condition objectively. ➢ **Manual revision (all 16 Chapters)** 1) 6 chapters has been finished and approved, currently being used at NCU (Chap 1, 2, 3, 6, 8, 11). ➢ **Nursing activities** 1) Challenged to make a more relaxing and comfortable environment for the admitted babies with the NCU nurses (practicing for nesting techniques, effective use of towels, sound environments, etc). For further understanding, held a lecture several times for each theme. 2) Made an observation check system for babies from cesarean section, delivery room and high risk of infection, who needs careful observation for several hours. 

- **Suggestions made based on the annual activity**

1) Improving doctors' skill of writing patient's record: the Japanese doctor will write as well and showing a good example might help the Khmer doctors for better treatment and management.
2) Starting earlier breast feeding for sick small babies: it is a key to reduce gastric bleedings, infections and deaths in NCU.
3) A better management of using CPAP: we need certain criteria for small babies and for that we need precise records.

Activity report (2)

Name	NISHIBATA Midori
Period	4-12 September 2013
Purpose	1) To perform a case presentation at the 22nd Tele-conference on 11 September in 2013, 2) To adjust the new NCU manual to the old manual which NCU staff were using, 3) To attend the morning round in NCU ward, 4) To support the new research (`the blood electrolyte profile of neonates at birth at NMCHC') with i-STAT machine which will put into operation from now on.
Result	I could understand what the Cambodian doctors questioned through the actual clinical activities, know the present situation of the neonatal care in Cambodia, support to raise the bottom of the medical level in Cambodia, and so on. Chapter 6. Water balance and Chapter 3. Resuscitation of the updated manual were completed as a result of activity. At the 22nd Tele-conference, she discussed careful observation of the infants born by the forceps delivery or vacuum extraction. My impression was that NCU had been improving gradually in respect of equipment and almost all doctors could also perform a clinical round smoothly, but the rule may not be decided exactly. I thought that we could contribute to raise the bottom of medical level because NCGM pediatric department would continue to support manual revision and Tele-conference.

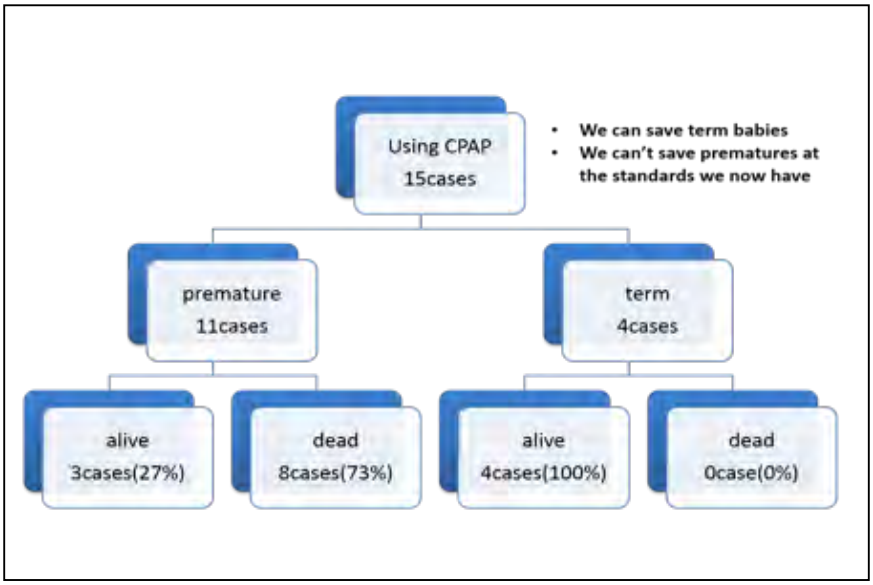
Activity report (3)

Name	TAKASAGO Satoshi
Period	23 -31 January in 2014
Purpose	1) To perform stocktaking about management of the respiratory distress infant in NCU of NMCHC, and to investigate the situation of using CPAP simultaneously, 2) To support the research (`the blood electrolyte profile of naonates at birth at NMCHC') with i-STAT machine, 3) To hold the 23rd Tele-conference on 29 January2014.
Result	As compared with the previous situation, the progress in medical treatment was seen because the statement of Total Water Intake (TWI) or Glucose Intake Ratio (GIR) had been carried out. On the other hand, since their treatment policy was not uniformalized and did not have the argument between doctors, it was thought the problem that the medical treatment only based on the view which each doctors are made by themselves. It was important to have common recognition and to analyze further the present medical situation of NCU in order to improve their respiratory care. The NCU staff considered tele-conference was very important to exchange and share knowledge between doctors and nurses and with Japan. In order to continue, the further argument is required also about the style or the contents.
Clinical study	**Investigation about respiratory distress infants and examination of the cases of using CPAP machine in NCU of NMCHC** **<Purpose>** To investigate the present condition about the cases using CPAP in NCU of NMCHC. **<Target>** 15 cases using CPAP machine in a medical record among 100 NCU inpatients of November and December in 2013 **<Result>** 1) About the cases of using CPAP machine, as a result of comparing the mortality rate in premature and term infants, the mortality rate of the premature with CPAP was higher than term. The possibility of improvement with CPAP use was higher among term than premature. 2) As reasons for using CPAP machine, many of breathing problem signs such as retraction, groan, and low SpO2 were accepted. 3) About 80% of the cases of using CPAP machine were started CPAP immediately when breathing problem signs had been recognized. In the cases which required longer time before starting CPAP from the appearance of breathing problem signs, their mortality rate is higher. 4) Among premature infants, there was no significant difference of the mortality rate whenever the time taken by starting CPAP, and the cause of the high mortality rate of the premature infants with respiratory distress was unknown, which had been or had not been dependent on the delay in CPAP starting.

<Conclusion>

CPAP use for the term sick infants who have clearly breathing problem seems effective. But for most premature infants, the survival rate was still low. It seems that the reconsideration of respiratory care especially to premature infants is required moreover.

Figure 2. CPAP Use in December 2013



Activity report (4)

Name	MORI Tomoko
Period	19 Nov-4 Dec 2013, 23 Feb- 7 Mar 2014, 16 May-28 June 2014, 16 July- 4 Sep 2014, 10 Nov- 25 Dec, 2014
Purpose	1) To contribute to the improvement of newborn care at the NMCHC, 2) To learn the knowledge, technology and thinking necessary to international cooperation.
Result	**<u>Activity about mini-project</u>** ➢ **Morning round** -With doctors: I discussed with doctors every day and supported to write down the diagnosis and assessment of each patient. Every two- or three months, I checked evaluation sheet for each patient with the chief of NCU-NMCHC. Furthermore, we discussed the next step what we would do to improve the quality of treatments. - With nurses: I joined morning round with nurses and gave some technical recommendations such as changing the bed arrangement for severe cases, regular check of naso-gastric tubes, more careful monitoring etc. We also discussed the result of blood examinations and doctors' orders. ➢ **Manual revision** I took charge of the following manuals with NMCHC and NCGM staff: Chapter 4. 5. 7. 9. 10. 12. 13. 14. 15. 16. ➢ **Tele – conference** I held the conference in Cambodia from 34th – 41st. I supported NCU staff to hold a pre-lecture sessions by themselves. The NCU staff's skills on presentation have improved through this conference. **Investigation environment surrounding NCU** I investigated and supported the environmental situation of NCU such as making necessary drug/ medicine list, checking the supply route of equipment, discussion on the data with laboratory department.
Clinical study	**Silverman- score research** I joined the activity with NCU staff person in charge of this research. **<Purpose>** To investigate the prevalence of respiratory distress of babies into moderate and severe by Silverman score. **<Target>** All neonates admitted to the Neonatal Care Unit at the NMCHC during 16 July 2014 – 31 January 2015. **<Method>** Prospective observational research

Study Procedure

In this study, we observed respiratory conditions and scored with three grades for each five component in the figure of Silverman score. We recognized the baby had moderate respiratory distress if the score was 2-5 points in term babies, and 5-8 points in preterm babies. We defined severe distress more than 6 points in term, 8 points in preterm. We checked the score within 24 hours after admission.

<Results>

Total 152 cases were registered. Median gestational week of all participants was 33 weeks and median body weight was 1700g. Cesarean section cases were 43 cases (28%) **(Table 6)**.

Figure 3. shows the prevalence and mortality for each grade of respiratory condition at NMCHC-NCU. 84 cases (55%) were normal, 33 cases (22%) had moderate respiratory distress, and 35 cases (23%) had severe. Death rate of each group was 13 cases (15%) at normal grade, 6 cases (18%) at moderate grade, and 20 cases (57%) at severe grade. This meant babies with more severe respiratory distress babies tended to die. We also found preterm babies who have respiratory distress had higher risk of death (45%) than preterm babies who did not have respiratory distress (25%) and term babies who had respiratory distress (8%) **(Figure 4).**

<Conclusion>

There was high prevalence of respiratory distress babies (55%) at NCU. Among these babies, mortality rate was as high as 66%. It is necessary for reduction of mortality at NCU to face this problem.

Now, We are investigating risk factors and intervention factors on respiratory distress. Next step is to classify the cause of respiratory distress and to suggest more effective intervention.

Silverman score

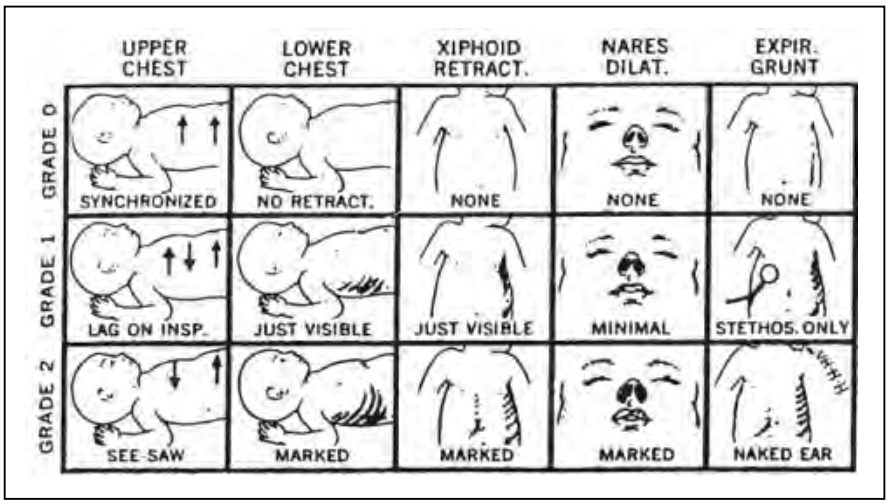


Table 6. Clinical characteristics

Items	Total (n=152)
Male / Female	86 (57%) / 66 (43%)
Gestational Age(weeks) <median>	33
Birth weight (g) <median>	1700
Caesarean section (%)	43(28.0)

Figure 3. Prevalence and mortality number of each grade (n=152)

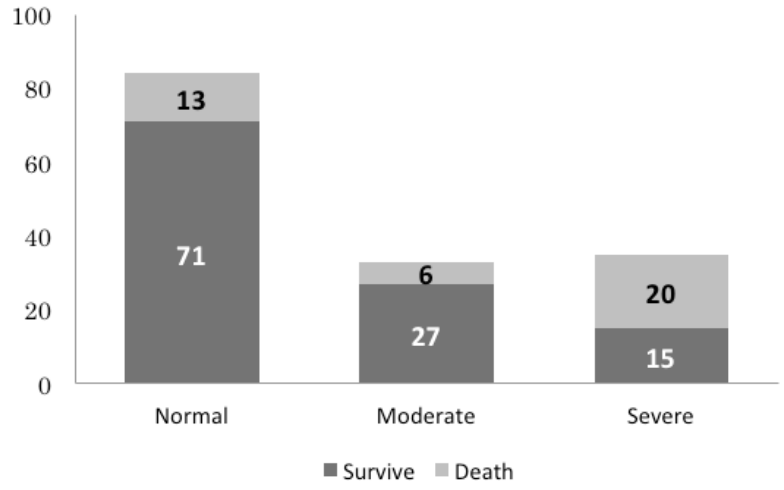
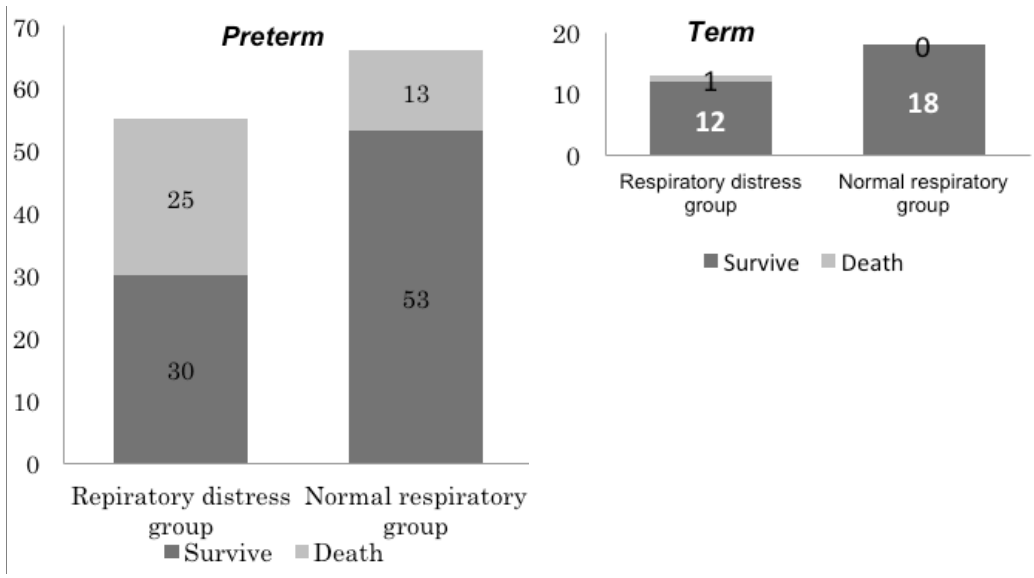


Figure 4. Prevalence and mortality with/without respiratory distress (Preterm versus Term)



Activity report (5)

Name	KATO Hiroki
Period	26 June – 3 July 2014
Purpose	1) To investigate improvement of therapy in NCU by comparing medical records about water and nutrition management in 2012 to 2014 2) To make assessment our activity until 2014, and recommendation for next intervention for NCU
Method	We randomly chose 60 medical records of NCU (2012: n=31, 2014: n=29), checked records of body weight (BW) measurement, total water intake (TWI), glucose infusion rate (GIR), and breast feeding.
Result	1) NCU demography has changed. 25 preterm babies were admitted in 2012 but only 12 in 2014. 15 babies died or were transferred to other hospital in 2012 but only 2 babies in 2014. 2) BW and TWI records has been improved. BW was recorded in only 38.5% case in 2012, but 85.1% in 2014. TWI was not recorded in any cases in 2012, but 75.1% in 2014. But GIR records were not changed. 3) 54.5% babies started breast feeding on the birthday in 2014, but only 25.0% babies in 2012.
Conclusion	Some interventions are effective regarding medical records, especially BW and TWI. In 2012, some medical records contained BW. It was easy to increase recording frequency as this kind of original routine. On the other hand, GIR has not yet recorded. We guess NCU has difficulty understanding usefulness of GIR because NCU cannot check blood glucose level instantly so it cannot be contained into original routine. Therefore we should propose next interventions as adding present/feasible NCU therapy because new therapy that is necessary many cost or human resource doesn't fix NCU.

Activity report (6)

Name	HONDA Mari
Period	21 Nov – 7 Dec 2014
Purpose	1) To know about the Mini-project for neonatal care, 2) To know the current situation on neonatal care in NMCHC and other referral hospitals in Phnom Penh, 3) To summarize the interim report of follow-up survey on outcome of sick newborn infants discharged from NMCHC-NCU, 4) To support and joint the 3rd joint technical conference between NMCHC and NCGM on 2 December 2014.
Result	In this period, there were a lot of admission cases to the NCU so the all beds were full. However there were no death cases. Main cause of admission was respiratory disorders and asphyxia. They recovered smoothly by adequate treatments. We reconfirmed the Prevention of Mother to Child Transmission (PMTCT) manual of Cambodia with NCU staff through a case whose mother had been infected HIV and been transferred to NCU. The director, chief of pediatric department of NCGM, Dr. MATSUSHITA Takeji visited NMCHC-NCU on 1-3 December 2014. His visit motivated all staff therefore many staff attended morning rounds and NCU had been kept clean during my stay. On 26 November 2013, we held 39th Tele-conference to share knowledge and experiences about how to make clinical assessment in Japan. After then, NCU staff started to perform blood tests more often to make assessment. Regarding the interim report of follow up survey on outcome of sick newborn infants discharged from NCU, we knew 94% parents answer the follow-up interview after one month and 89% participants were alive at that time. There was the 3rd joint technical conference on 2nd December 2014. The objective of the conference was to share/reconfirm the framework and activities of the collaboration based on the MOU between NMCHC and NCGM. I supported to hold the conference and attended it to understand well about this collaboration. I also had the opportunities to observe three neonatal wards of national hospitals in Phonom Penh to know the present situation of neonatal care. Although equipment, resources and budgets were insufficient, Cambodian staff were keenly interested in neonatal care. I believe it is important to keep cooperation in this field.

Presentation report (1)

Name	IItake Chie
Date and venue	3 Nov 2013, Okinawa, Japan
Conference	the 28th Annual Meeting of Japan Association for International Health 2013
Poster presentation	**A new challenge of building up a sustainable clinical support system using Tele-conference at the Neonatal Care Unit of National Maternal and Child Health Center, Phnom Penh, Cambodia** By IITAKE Chie, HOSOKAWA Shinichi, IWAMOTO Azusa, EGAMI Yuriko, MATSUSHITA Takeji, SEANG Sody, MEAN Sitha. **<Introduction>** In Cambodia, it's difficult to have an every-day doctor's meeting and a morning round due to many reasons. Also, doctors and nurses have rare opportunities to gain new knowledge. Under these circumstances, we're asked for support sending our staff continuously, which is difficult. Therefore, we've decided to hold a Tele-conference to motivate, encourage and skill-up the staff in Cambodia, which was also a great chance for the Japanese doctors to learn in different environments. **<Background>** National Maternal and Child Health Center became the top referral hospital in Cambodia, during the support from JICA in these 15 years. Recently, the neonatal care unit has also been asked to be progressed and skilled. **<Contents>** The first conference was held on May 2012 just by a simple style. After that, one by one, we tried new styles and ways to improve. That's a big challenge to the Cambodian doctors, too. We held 21 conferences by now. **<Results>** Some good improvements were found. Water balance and glucose infusion speed were started to be calculated and the volume of the record raise up to 25%. Number of participants of the conference became triple. 2 new test and exam, and new information from nurses and midwives became available. **<Discussion>** After one year of trial, good results came little by little, without sending Japanese doctors on bed sides. Tele-conference seems to be effective in some way and also is a golden opportunity to reconsider both of our daily practice.

5-2. NMCHC staffs' visit to NCGM-NICU

Since 2013, NMCHC staff have visited NCGM as the participants of exchange program mainly on neonatal care. By the end of 2014, six NMCHC staff visited NCGM as follows:

1) 11-14 March 2014

<Participants>

1. Dr. SEANG Sody, Chief of NMCHC-NCU
2. Ms. VOEUK Phea, Vice chief of NMCHC-NCU

They joined the " 119th International MNCH Conference" at NCGM on 12th March 2014. Dr.Sody made a presentation on the current situation of NMCHC-NCU."

2) 29 Oct- 4 Nov, 2014

<Participants>

1. Prof. Dr. KETH Ly Sotha, Deputy director, NMCHC
2. Dr. MEAN Sitha (Male), Vice chief of NMCHC-NCU
3. Mr. PHENG Chhada, Vice chief nurse of NMCHC-NCU
4. Ms. CHEAM Sokunthea, Vice chief midwife of Delivery Unit, NMCHC

They joined "the 29th Annual Meeting of Japan Association for International Health 2014". Dr.Sitha had a poster presentation: "Impact of intervention on infection in the Neonatal Care Unit at the National Maternal and Child Health Center in Cambodia."



Schedule at NCGM (11-14 March,2014)

08 February, 2014

Objective:

1) To join the 119th NCGM Maternal and Child International Conference in Japan

2) To exchange experiences on neonatal care with Japanese doctors and staff by observation at NICU, NCGM

Date	Activities	Venue	NCGM(attendant)
Tue 11 March	07:30 Arrival at NRT (VN3856) 11:00 Move to NCGM and check-in the dormitory 12:00 Lunch 14:00 Visit NCGM and NICU Preparation for the conference 19:00 Dinner	NCGM Restaurant	CI,YY CI CI,AI CI,SH,TM,AI CI,SH,TM,AI,YY, MI
Wed12 March	08:30 Attending the morning round Attending NICU activities 12:00 Lunch 13:00 Bureau of International Medical Cooperation (IMC) 18:00-20:00 Conference 20:00 Dinner (welcoming party)	NCGM (NICU) NCGM IMC Restaurant	CI,SH CI,SH CI and NICU staff CI,AI TY, CI,SH,AI All relevant staff
Thu13March	08:00 Attending the pediatric resident conference 08:30 Attending the morning round 09:05 Courtesy visit to the NCGM hospital director 10:00 Attending NICU activities 12:00 Lunch 13:30 Visiting Out-patient department	NCGM (Ped) NCGM (NICU) Director'sroom NCGM (NICU) NCGM NCGM (OPD)	CI,SH CI,SH TN,SH,CI,AI CI,SH CI and NICU staff CI,SH
Fri14 March	05:00 Check-out 09:30 Departure from NRT (VN301)		CI

AI: Azusa IWAMOTO, CI: Chie IITAKE, SH: Shinichi HOSOKAWA, MI: Megumi IKARASHI,
TM: Tomoko MORI, TN: Tamotsui NAKASA, TY: Takako YAMADA, YY: Yuta YOKOBORI

Schedule at NCGM (29Oct- 4Nov, 2014)

15 October, 2014

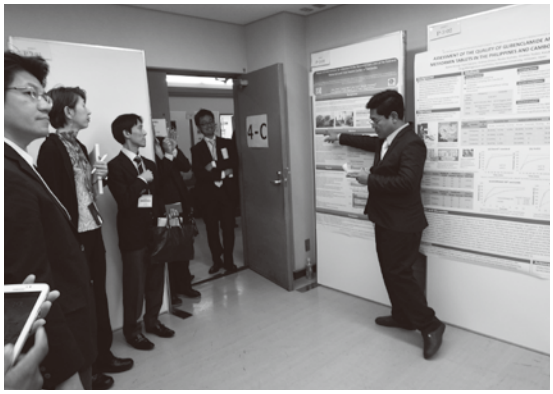
Objective:

1) To join "the 29th Annual Meeting of Japan Association for International Health 2014" at NCGM in Japan
2) To exchange experiences on neonatal care/maternal and midwifery care with Japanese staff

Date	Dr.Shitha and Mr.Chhada	Dr.Sotha and Ms.Sokunthea
Wed 29 Oct	22:30 Arrival at HND (TG660) (AI, MM) 24:00 Hotel check-in	
Thur 30 Oct	11:00 Move from the hotel to NCGM (AI, MM) 12:00 Lunch at NCGM	
	13:00 Brief orientation (AI, TM) 14:00 Baby follow up at OPD (NICU staff) 16:00 Evening round at the NICU (SH)	13:00 Brief orientation (AI, TM) 14:00 Discussion about the SpO2 research (AI, YY)
Fri 31 Oct	9:00 Morning round at the NICU 11:00 Visit to Denmark-in (Dr.Yamada)	9:00 Operation Theater 11:00 Visit to Denmark-in (Dr.Yamada) (TBC)
	Mr.Chhada : Observation at the NICU Dr.Sitha : Preparation for presentation 15:00 Weekly conference at the Pediatric conference room	14:00 OB-GY ward and OPD at NCGM
Sat 1 Nov	Conference (1) at TWMU and NCGM (Prof. Rathavy will join.)	
Sun 2 Nov	Conference (2) at NCGM (Prof. Rathavy will join.)	
Tue 3 Nov	Conference (3) at NCGM (Prof. Rathavy will join.)	
Tue 4 Nov	6:00 Check-out (with Prof. Rathavy) 8:45 Arrive at the HND airport 10:45 Departure from HND (TG683)	

AI: Azusa IWAMOTO, SH: Shinichi HOSOKAWA, MM: Mitsuaki MATSUI, TM: Tomoko MORI, TWMU: Tokyo Women's Medical University

Presentation report (2)

Name	MEAN Sitha
Date and venue	2 Nov 2014, Tokyo, Japan
Conference	the 29th Annual Meeting of Japan Association for International Health 2014
Poster presentation	**Impact of intervention on infection in the Neonatal Care Unit at the National Maternal and Child Health Center in Cambodia** By MEAN Sitha, MORI Tomoko, IITAKE Chie, HOSOKAWA Shinichi, IWAMOTO Azusa, EGAMI Yuriko, SEANG Sody, TUNG Rathavy. **<Background>** The National Maternal and Child Health Center (NMCHC) in Cambodia has an important role as a national top referral hospital for maternal and neonatal care. Since then, we did strengthen nosocomial infectious control in cooperation with experts (WHO/JICA). This report aims to assess the intervention after three years passed. **<Method>** The intervention on nosocomial infection in the NCU consisted of standard precaution and cleaning of equipment. We compared both morbidity and mortality rate due to infection determined clinically in between 2011 and in 2013 using the statistics of NMCHC retrospectively. **<Results>** The staff in NCU strongly strengthened the standard precaution such as hand wash and cleaning the machine as instructed by the manual. They avoided using same equipment for different patients strictly. The consumption amount of antiseptics has increased five times. The prevalence of clinical infection has decreased from 29.4% in 2011 to 24% in 2013(p=0.028). Mortality rate caused of clinical infection also decreased from 4.1% to 1.3 %(p=0.003). **<Conclusion>** The interventions on nosocomial infection in the NCU are effective with limited resources. The strong efforts of staff for infectious control because of lessons learned from the past outbreak seem to be the key to success. In the future, not only NCU staff but also the infection control team should be involved as supervisor to maintain this ideal condition. 

5-3. The 119th International MNCH Conference at NCGM

The International MNCH Conference is a open technical conference, which has been held since 2003. The topic of the 119th conference on 12 March 2014, was “Neonatal Care at NMCHC — Past, Present, and for the Future –“. We invited three speakers as follows:

1. Dr. YAMADA Takako

(Director, Denmark Inn Shinjuku, 1ST chief advisor of JICA MCH Project)

“Neonatal Care when there was not enough electricity”

2. Dr. SEANG Sody

(Chief, NMCHC-NCU, Cambodia)

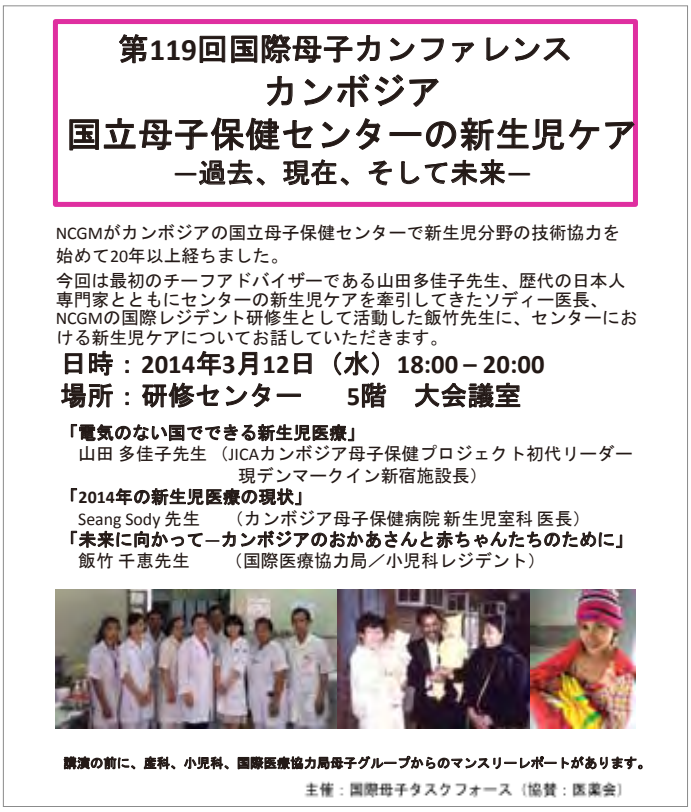
“The current situation of NCU, 2014”

3. Dr. IITAKE Chie

(Resident, Pediatric department/Bureau of International Cooperation, NCGM)

“The future of NCU – for all mothers and children of Cambodia –“

Ms. Voeuk Phea, Vice chief nurse of NMCHC-NCU also joined this conference and made a technical comment on neonatal care.


第119回国際母子カンファレンス
カンボジア
国立母子保健センターの新生児ケア
―過去、現在、そして未来―

NCGMがカンボジアの国立母子保健センターで新生児分野の技術協力を始めて20年以上経ちました。
今回は最初のチーフアドバイザーである山田多佳子先生、歴代の日本人専門家とともにセンターの新生児ケアを牽引してきたソディー医長、NCGMの国際レジデント研修生として活動した飯竹先生に、センターにおける新生児ケアについてお話していただきます。

日時：2014年3月12日（水）18:00 – 20:00
場所：研修センター　5階　大会議室

「電気のない国でできる新生児医療」
山田 多佳子先生（JICAカンボジア母子保健プロジェクト初代リーダー
現デンマークイン新宿施設長）
「2014年の新生児医療の現状」
Seang Sody 先生　（カンボジア母子保健病院 新生児室科 医長）
「未来に向かって―カンボジアのおかあさんと赤ちゃんたちのために」
飯竹 千恵先生　（国際医療協力局／小児科レジデント）

講演の前に、産科、小児科、国際医療協力局母子グループからのマンスリーレポートがあります。
主催：国際母子タスクフォース（協賛：医薬会）

III. Research

Outline:

Four collaborative researches as follows between NMCHC and NCGM have been conducted:

1. Oxygen saturation of newborn infants just after birth at the the National Maternal and Child Health Center (25-3*)
2. Outcome of newborn infants discharged from the neonatal care unit of the National Maternal and Child Health Center (25-3*)
3. Effect of implementation of “individual midwifery care” on medical interventions during delivery and birth on maternal and neonatal health in Phnom Penh, Cambodia (24-4*)
4. Midwifery care at public facilities in Phnom Penh (Grant from the International Nursing Foundation of Japan)

* Grants from the International Health Cooperation Research, a grant from the Ministry of Health, Labor and Welfare of Japan

1. Neonatal care

1-1. Oxygen saturation of newborn infants just after birth at the National Maternal and Child Health Center

Research report (1)

Title	Oxygen saturation of newborn infants just after birth at the National Maternal and Child Health Center
Principle investigators	Dr. IWAMOTO Azusa
Co-investigators	Prof. Dr. KETH Ly Sotha Dr. YOKOBORI Yuta, Dr.IITAKE Chie Dr. MATSUI Mitshuaki
Period	April 2014 – March 2017

Summary:

<Background>

It can be said that the oxygenation level of newborn infants after birth is one of the important indicators to evaluate the newborn infants' conditions just before birth. Knowing the conditions is important to consider how to prevent neonatal death. However, there have been few reports of newborn infants' Oxygen saturation (SpO2) after birth in Cambodia, which can be available for the reference of SpO2 trends.

<Objective>

This research aimed to clarify the time trend of SpO2 of newborn infants just after birth (within 10 minutes) at MNCHC and define reference ranges for SpO2 by making a graph chart.

<Method>

Infants are eligible if they were born in the National Maternal and Child Health Center in Cambodia from 25 November 2013 to 3 March 2014 during daytime (2 to 8 PM) when research investigators could work. Infants are excluded if they received supplemental oxygen. SpO2 was measured with a sensor applied to the right hand as soon as possible after birth. The SpO2 data were collected every minute by investigators. The trend of SpO2 was summarized in a graph by using the skewness-median-coefficient of variation (LMS) method. Furthermore, two risk factors which influenced the time to reach adequate SpO2 levels, oxytocin-use and Cesarean Section were also evaluated by using multivariate Cox regression analysis for the time to reach a SpO2 of >90%.

<Results>

We studied 164 newborn infants and recorded 1,580 SpO2 data points. The all data of SpO2 at 1 minute were excluded because of the difficulty in measuring. The infants' birth weights (Mean±SD) were 3022±527 g **(Table 7)**. For all infants, the 5th, 10th, 50th, 90th and 95th percentile values at 2 minutes were 54%, 57%, 72%, 88% and 90%, respectively. Those at 5 minutes were 69%, 75%, 89%, 96% and 98% **(Figure 5)**. It took a median of 4 minutes (interquartile range: 3-5 minutes) to reach a SpO2 value of >80%. Regarding risk factors, any conditions did not significantly affected the time to reach at 90% of SpO2 **(Figure 6, 7)**.

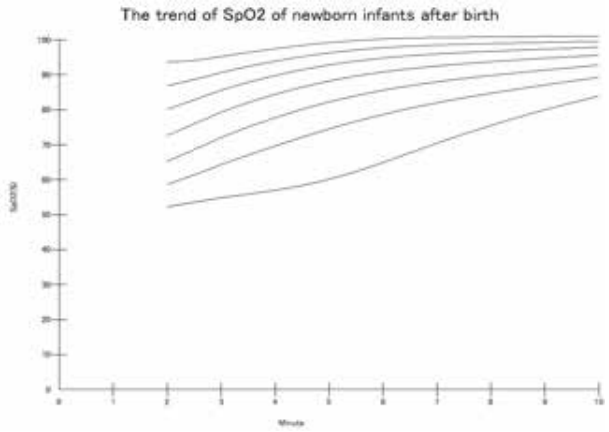
<Discussion>

These data could represent reference ranges for SpO2 in the first 10 minutes after birth for healthy newborn infants in Cambodia. Although any risk factors to affect the time to reach 90% of SpO2 after birth were statistically detected, some conditions such as cesarean section and oxytocin-use had the trend to make the time slower. On that basis, the staff related with perinatal care should carefully observe the conditions of newborn infants with oxytocin-use as well as cesarean section. However, further research with objectives to investigate the risk factors should be necessary in the future.

Table 7. Characteristics of infants on oxygen saturation research

Total Number	164
Birth weight (mean ± SD)	3022 (±527)g
Low birth weight, n (%) (less than 2500g)	13 (8.1%)
Cesarean Section, n (%)	47 (28.7%)
Primipara, n (%)	99 (60.4%)
Oxytocin, n (%)	33 (20.1%)
Preeclampsia, n (%)	4 (2.4%)
Bleeding, n (%)	1 (0.6%)
Narcotic drug use or General anesthesia, n (%)	0
Steroid administration before birth, n (%)	0
Mother's oxygen supplementation, n (%)	18 (11.0%)

Figure 5. The trend of oxygen saturation of newborn infants from 2 to 10 minutes after birth (n=164)



1-2. Outcome of newborn infants discharged from the neonatal care unit of the National Maternal and Child Health Center

Research report (2)

Title	Outcome of newborn infants discharged from the neonatal care unit of the National Maternal and Child Health Center
Principle investigators	Dr.IWAMOTO Azusa
Co-investigators	Dr.SOM Rithy, Ms. YEAP Sophea Dr. HONDA Mari
Period	April 2014 – March 2017

Interim Summary:

<Background>

Every year, around 7,000 babies including high-risk infants are born at NMCHC). Among them, about 600 sick newborn infants need admission to the neonatal care unit (NCU) per year. Almost all infants who need admission are low birth weight infants less than 2,000g and 20-30% of them die at NCU within several days.

After the intensive treatment during first a few days at NCU, many survivors discharge immediately if they can suck breast milk or formula orally once or twice even though very small body weight. Furthermore, near 20% of all patients at NCU go home without permission/approval by medical doctors because of socio-economic limitations. However, ideally, such small newborn infants should be taken care at NCU for longer time until the baby grows up enough to stay at home. There is no pediatric department at NMCHC besides immunization clinic now so unfortunately the infants discharged from NCU do not have any opportunities to be followed up there. Some high-risk infants may die or have some chronic health or developmental problems after they return back to home. But the real situation is unknown.

<Objective>

This research aims to know the real situation of infants within one year after discharge from the NCU by follow up survey and to identify the factors, which determine the prognosis. Primary outcome is the mortality of discharged infants within one year and its risk factors. Secondary outcome is the morbidity and its detail on growth and development after discharge from the NCU of NMCHC.

<Study design and population>

This is a prospective observational study and the target populations are all sick newborn infants discharged from NCU from 1 September 2014 to 31 March 2015 (seven months). We estimated the target population is 38 cases/month X 7 months = 266 cases.

<Methods>

On admission and discharge, our research assistant collects necessary information after getting agreement by NCU staff from the family. Perinatal information will be collected from the chart, delivery record, and direct interview.

The research assistants call the family of all infants who discharged from NCU at NMCHC when they become one month, six months and one year old. The assistant asks the health condition of baby. If the baby has been surviving, the interviewer collects necessary information and asks the family living in Phnom Penh city whether they can come to the direct follow-up examination NMCHC. If possible, we will hold the follow-up examination during the study period.

<Interim results>

Among total 183 cases, which have been registered from 1 Sep 2014 to 28 Feb 2015, we could telephone the family of 119 cases after one month **(Figure 6)**. Out of 119 cases, 106 survived, 7 died, and 6 cases could not be contacted. While only one died among 56 cases whose birth weight were more than 2000g, 6 died among 63 small cases who were born in less than 2000g **(Figure 7)**. Four cases out of 47 died when they were discharged without doctor's permission but two out of 68 died when they went back to home with doctor's permission **(Figure 8)**.

<Discussion>

For the follow-up for discharged infants from NMCHC-NCU, we could utilize cellular phones to ask whether the baby could survive or not because almost all families had. We will also have direct follow-up examination for the cases who can come to NMCHC because there are limitations to check the physical/mental development in detail.

Figure 6. Interim report of follow up by telephone (total, 1 Sep 2014 – 28 Feb 2015)

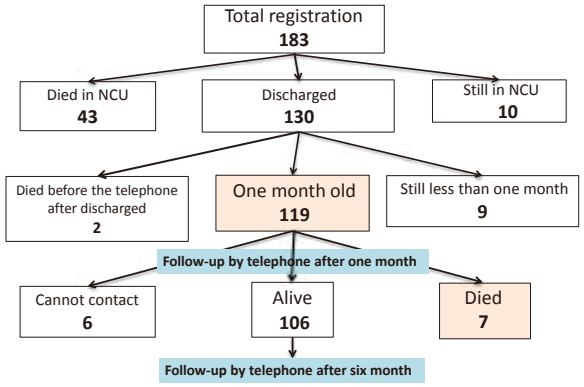


Figure 7. Interim report of follow up by telephone (by birth weight, 1 Sep 2014 – 28 Feb)

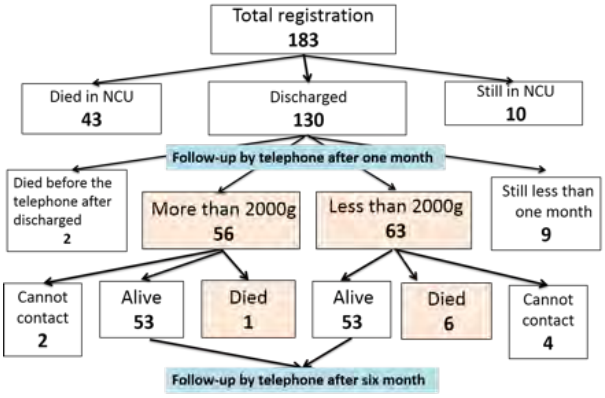
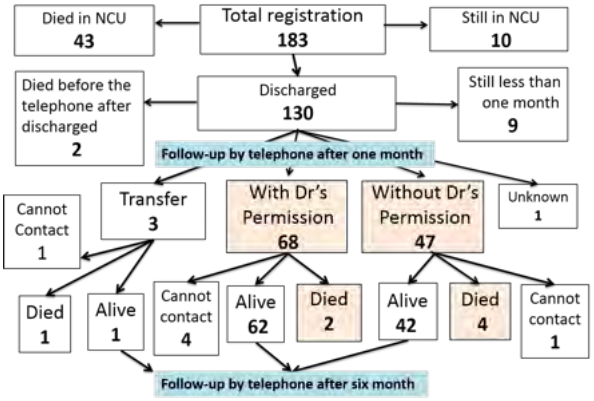


Figure 8. Interim report of follow up by telephone (by Dr's permission, 1 Sep 2014 – 28 Feb)



1-3. The blood electrolyte profile of neonates at birth at the National Maternal and Child Health Center

Research report (3)

Title	The blood electrolyte profile of neonates at birth at the National Maternal and Child Health Center
Principle investigators	Dr.HOSOKAWA Shinichi
Co-investigators	Dr.SEANG Sody Dr.IITAKE Chie, Dr.MORI Tomoko
Period	April 2013 – March 2016

Summary:

<Introduction>

A glucose intravenous (i.v.) drip mixed with calcium and normal saline solution is uniformly used at the NMCHC to help prevent hyponatremia and hypocalcemia. However, due to limited resources, blood tests are not routinely performed on the infants admitted to the Neonatal Care Unit either before or after the i.v. drip, so its effect on the electrolyte balance of these infants remains unknown. The i.v. drip injection must be delivered carefully in order to avoid hypernatremia and hypercalcemia, which would put the infant at a disadvantage.

<Objective>

To investigate the blood electrolyte profile, especially concerning the concentration of sodium, potassium, and calcium, of infants at the time of birth in order to determine if the standard i.v. drip is the most appropriate solution mix.

<Methodology>

Study population

This study aims to enroll all neonates admitted to the Neonatal Care Unit at the NMCHC.

Blood sampling

Using a minute needle, very small quantities of blood will be collected from the heels of neonates at birth. The blood electrolyte profile will be measured by using a bedside blood measurement machine (i-STAT 1 Analyzer; Fuso Pharmaceutical Industries Ltd., Osaka, Japan).

Data collection

Perinatal information will be collected from the statistic committee at the NMCHC. The data source will comprise information collected from the maternal and neonatal medical charts. Necessary perinatal information is as follows:

- Address of residence of the pregnant woman (province and district)
- Parity and gestation of the pregnant woman
- Age
- Date of the delivery
- Diagnosis of the maternity and neonatal illness
-Outcome of the newborn (alive or dead)

In addition, a name and identification number (or other relevant information) will be collected in order to confirm the information at the time of data cleaning and analysis. All identifying information will be deleted to preserve the privacy of the subject after data analysis.

<Expected Results>

We clarify a blood electrolyte profile of sick newborn infants at birth at NMCHC, so we can do the following actions:

1) We can avoid unnecessary electrolyte infusion to infants.

2) We can manage the medical treatment by proper electrolyte infusion.

3) We can understand those etiologies for sick newborn infants.

<Results>

The final objectives were 86 newborns and 54 alive, 32 dead cases, average birth body weight were 1,800g. Results from the venous blood gas were, average pH 7.238 (±0.12SD) ,average CO2 51.36 (±15.4SD) ,average Base Excess -5.79 (±5.78SD) ,average Sodium 136 (±3.69SD) , average Potassium 5.32 (±0.87SD) , average ionic Cap 1.14 (±0.18SD) , average Blood sugar 93.31 (±87.56SD) . Average time from birth to taking intravenous line was 123 minutes. Moreover, checking that time for dead cases, 24 out of 32 cases were over 60 minutes. For cases of hypoglycemia (Blood sugar < 50mg/dl), 15 out of 19 cases with LBW: Low Birth Weight (< 2500g), their time for taking intravenous line were over 60 minutes.

<Conclusion>

Electrolytes of the sick newborns in Cambodia were almost normal. However, cases with taking intravenous line for long time seemed to be worse outcome and leading to hypoglycemia of the LBWs. For admitted sick newborns, it's important to make a quick assessment of their condition and start treatment as soon as possible.

2. Midwifery care

2-1. Effect of implementation of "individual midwifery care" on medical interventions during delivery and birth and on maternal and neonatal health in Phonom Penh, Cambodia

Research report (4)

Title	Effect of implementation of "individual midwifery care" on medical interventions during delivery and birth and on maternal and neonatal health in Phonom Penh, Cambodis
Principle investigators	Dr.MATSUI Mitsuaki
Co-investigators	Prof. TUNG Rathavy
Period	April 2014 – March 2015

Summary:

<Background>

A various type of abuses is frequently observed in maternity ward in developing countries. Our hypothesis is that the abuses are partly due to an unsymmetrical relationship between health care providers and clients, which is caused by authoritative attitude of health care providers.

In addition, current world strategy "every pregnancy faces risk" could contribute to prevalent utilization of unnecessary medical interventions. The strategy emphasizes that "any life-threatening event cannot be foreseen, therefore every mother and her baby have possibility of dying". It is partly true, because certain percentages of women develop complications. On the other hand, vast majority of pregnant women do not require "emergency obstetric care". Careful observation during pregnancy and birth, which should be based on physiology and anatomy, is only solution to identify complications from normal delivery courses. However, most health care providers do not have appropriate knowledge on physiological process of birth. This is due to insufficient professional training system, especially in the undergraduate period. Health care providers are under pressure of maternal and neonatal death, without effective means to detect complications. These are double whammy for them. Nobody prefers to deal with delivery and birth under this circumstance. As a result of complex situations above, there is an epidemic of abuses and unnecessary medical interventions for maternity care.

Therefore, it is crucial to facilitate "normal physiological process of birth" as well as detection and management of complications in order to ensure "quality care". The National Maternal and Child Health Centre (NMCHC) in Cambodia created a "Guide to Individualized Midwifery Care for Normal Pregnancy and Birth". The guide is expected to use as a tool to maximize midwifery care based on showing respect to each woman who has her own individual needs. This is so called "women-friendly care".

<Objective>

This research intends to measure changes in 1) medical interventions and 2) maternal and neonatal outcomes after introduction of "women-friendly care" in Cambodia.

<Study design>

This study is carrying out in health centers and referral hospitals in Phnom Penh municipality. 10 facilities with a large number of deliveries were selected and assigned either to "intervention" group or to "control" group randomly. Intervention group received a series of training on women-friendly care with follow-up, while no training were offered to the intervention group.

<Progress>

64 persons participated in women-friendly care workshop, which were organized in the NMCHC between July and August 2014. The participants came from Phnom Penh Municipal Health Department (PPMHD), Mean Chey Operational Health District (OHD), Russey Keo OHD, Mekong Referral Hospital (RH) (former Samdech Ov RH), Mean Chey RH, Daun Penh Health Centre (HC), Prek Pnou HC, Steung Mean Chey HC, and Chhbar Ampeou HC. In addition, 32 midwives or nurses, who are dealing with delivery care in each facility, received four practice training sessions in the NMCHC.

<Future plan>

Surveys both in intervention and control groups will be planned between January and March in year 2015. Data collection will be carried out by direct observations in each facility. Approximately twenty surveyors will be employed for this purpose. Necessary training will be provided prior to the survey.

Data will be analyzed after the survey. Final result is expected to release around August 2015.

2-2. Quality of Midwifery care at public facilities in Phnom Penh, Cambodia

Research report (5)

Title	Quality of Midwifery care at public facilities in Phnom Penh, Cambodia
Principle investigators	Ms. OSANAI Yasuyo
Co-investigators	Prof. TUNG Rathavy Dr. TAMURA Yayoi
Period	March 2014 – March 2015

Summary:

<Background>

The Millennium Development Goal Five has been attained in 2010, however this is still high MMR when compared with neighboring countries. Therefore, improving the quality of midwifery care is further required. Quality of Midwifery care in this study includes Basic Midwifery Care, Evidence Based Midwifery Care and Supportive Care. The current practice of Basic Midwifery Care, Evidence-based care and Supportive Care were clarified. Then expected factors such as characteristics and motivation were examined to know what factors affect quality of midwifery care.

<Objective>

To assess current Basic Midwifery Care, Evidence-based care and Supportive Care that focuses on midwifery care in labour provided by midwives, and related factors which affect them are examined.

<Methods>

A cross-sectional design was employed using an anonymous self-administered questionnaire.

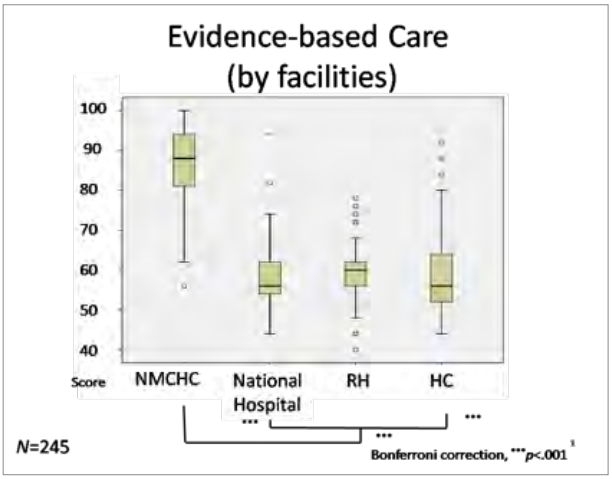
<Results>

Two hundred and forty five midwives in 36 public health facilities participated in this study. The mean score of Basic Midwifery Care, Evidence-based care and Supportive Care were 92.4, 65.5 and 89.0 respectively **(Figure 9)**. There were no statistically significant differences between Characteristics and Basic Midwifery Care, Supportive Care as well. Though the mean score of Basic Midwifery Care was high, observation of laboring women and fetuses score ranged was low from 54.7% to 69.4%. The mean score of the Evidence-based care of NMCHC was significantly higher than the other health facilities ($p<.001$). Moreover, midwife who has responsible position, had training and read the protocol were significantly higher score ($p<.01$). The result of factor analysis was that five factors were explored from the Supportive Care. Midwives aged in their 50's and 60's scored higher than young midwives in two factors (Acceptance and Encouragement) out of five ($p<.01$).

<Conclusion>

Some critical practices of the Basic Midwifery Care were low score though total mean executing rate of Basic Midwifery Care was high. NMCHC midwife and midwife who has responsible position, had training and read the protocol were key to improve the Evidence-based care. 50s and 60s midwives got higher score of Acceptance and Encouragement than young midwives, therefore their support may lead to reinforcement of the Supportive Care.

Figure 9. Evidence based care by facilities



The 1st Joint Meeting on MOU between NMCHC and NCGM

1 August, 2013

Objective: To make a consensus on main activities within the framework of MOU (especially on neonatal care) between NMCHC and NCGM

Time and Venue: Thursday 1st August, 10:00-12:00 + lunch, Room 322

Participants: Prof.Rathavy and NMCHC team, Dr.Nakasa and NCGM team NCGM local staff (translator)

Chair: Ms.Chhay Sveng Chea At

Language: Khmer and English (consecutive interpretation)

Agenda:

Time	Topic	Expected outcome	speakers
10:30-10:40 (10min)	Opening		Chair
10:40-11:00 (20min)	1) Keynote speech on collaboration between NMCHC and NCGM	Participants know the overview of collaboration between NMCHC and NCHM	Prof.Rathavy (TBC)
11:00-11:20 (20min)	2) Main activities within the framework of MOU for 2013-2015 between NMCHC and NCGM	Participants understand the contents of MOU	Dr.Nakasa
11:20-11:40 (20min)	3) 'Mini-project' on neonatal care as a part of MOU	Participants agree with the plan for 'Mini-project' to improve neonatal care at MNCHC	Dr.Sody Iwamoto (TBC)
11:40-12:00 (20min)	Signature ceremony for MM		Prof.Rathavy Dr.Nakasa
12:00-12:10 (10min)	Closing		Chair
12:10-	Lunch and free discussion		

*All sessions include Q&A time.

The 2nd Annual Joint Technical Meeting between National Maternal and Child Health Center and National Center for Global health and Medicine

4 March, 2014

Objective:

1) To confirm and share the framework and activities of the collaboration based on the MOU between NMCHC and NCGM,
2) To know the progress of each activity of the collaboration based on the MOU between NMCHC and NCGM since August 2013,

Time and Venue: Tuesday 4th March, 10:00-12:30 + lunch, Room 322

Participants: Prof.Rathavy and NMCHC team, Dr.Nakasa and NCGM team,
NCGM local staff (technical and administrative assistants/interpreters)

Observer: Phnom Penh Municipal Health Department, JICA MANEKA Project

Language: English and Khmer (simultaneous interpretation from Khmer to English using headphone, consecutive interpretation from English to Khmer)

Agenda:

Time	Topic	Expected outcome	speakers
10:00-10:05 (5min)	Opening		MC
10:05-10:15 (10min)	4. Keynote speech on collaboration between NMCHC and NCGM	Participants know/remember the collaboration between NMCHC and NCGM	Prof.Rathavy
10:15-10:25 (10min)	5. Brief explanation (review) on the overall framework of MOU between NMCHC and NCGM	Participants know/remember the contents of MOU between NMCHC and NCGM	Dr.Iwamoto
10:25-10:55 (30min)	6. Progress of the 'Mini-project' on neonatal care & results of the blood electrolyte profile of neonates at birth at NMCHC	Participants understand the progress of 'Mini-project' and tentative results of the blood electrolyte study	Dr.Sody Dr.Hosokawa
10:55-11:15 (20min)	7. Progress & results of the saturation oxygen (SpO2) study at delivery room and operation room at NMCHC	Participants understand the tentative results of SpO2 study for newborn infants	Dr.Iwamoto Prof.Sotha
11:15-11:55 (40min)	8. Progress of activities on scientific evaluation of 'women friendly care'	Participants understand the scope, plan and progress of study	Dr.Matsui Prof.Sotha
11:55-12:15 (20min)	9. Progress of research on quality of midwifery care at public facilities in Phnom Penh	Participants understand the progress of study	Ms.Osanai Prof.Rathavy
12:15-12:25 (10min)	Comments		Dr.Nakasa
12:25-12:30 (5min)			MC
12:30-	Lunch and free discussion		

*All sessions include Q&A time.

The 3rd Joint Technical Meeting between National Maternal and Child Health Center and National Center for Global health and Medicine

2 December, 2014

Objective:

1) To share/reconfirm the framework and activities of the collaboration based on the MOU between NMCHC and NCGM,

2) To know the progress of each activity of the collaboration based on the MOU between NMCHC and NCGM since March 2014.

Time and Venue: Tuesday 2nd December, 9:30-12:15, Room 322

Participants: Prof.Rathavy and NMCHC team, Dr.UTSUNOMIYA and NCGM team,
NCGM local staff (technical and administrative assistants/interpreters)

Observer: Phnom Penh Municipal Health Department, JICA MANECA Project

Language: English and Khmer (<S> simultaneous interpretation from Khmer to English using headphone, <C>consecutive interpretation from English to Khmer)

Agenda: *All sessions include Q&A time.

Time	Topic	Expected outcome	speakers
9:30-9:45 (15min)	Opening (including self introduction)		MC
9:45-10:05 (20min) <C><S>	11. Keynote speech on collaboration between NMCHC and NCGM	Participants know/remember the collaboration between NMCHC and NCGM	Dr.UTSUNOMIYA Prof.Rathavy
10:05-10:15 (10min)<C>	12. Brief explanation on the overall framework of MOU between NMCHC and NCGM and the progress since March 2014	Participants know/remember the contents of MOU between NMCHC and NCGM	Dr.Iwamoto
10:15-10:30 (15min)<S>	6. Progress of the 'Mini-project' on neonatal care including the report on visit to Japan	Participants understand the progress of 'Mini-project'	Dr.Sody Dr.Mori
10:30-10:40 (10min)<S>	7. Report on field trip to NCGM, Japan	Participants know the activity by NMCHC staff in Japan	Mr. Chadda Ms.Sokunthea
10:40-10:50 (10min)<S>	5-1. <Technical report 1> Effect of intervention on infectious control at NCU	Participants know the improvement on infectious control at NCU in 2013-2014	Dr.Shita
10:50-11:05 (15min)<C>	5-2 <Technical report 2> Saturation oxygen (SpO2) study at delivery room and operation room	Participants understand the results of SpO2 study for newborn infants	Dr.Yokobori Prof.Sotha
11:05-11:20 (15min)<C>	6. Progress of research on outcome of newborn infants discharged from NCU	Participants understand the scope, plan and progress of study	Dr.Iwamoto Dr.Rithy
11:20-11:40 (20min)<S>	7. Progress of activities on scientific evaluation of 'women friendly care	Participants understand the progress of study	Dr.Sona Dr.Sokhan Prof.Sotha
11:40-12:00 (20min) <C>	8. Closing remarks		Dr.Matsushita Dr.Miyoshi
12:00-12:05 (5min)	Closing		MC
12:05-	Lunch and free discussion		

List of research report 2013-2014

2013

✧ IITAKE Chie, HOSOKAWA Shinichi, IWAMOTO Azusa, EGAMI Yuriko, MATSUSHITA Takeji, SEANG Sody, MEAN Sitha, NAKASA Tamotsu

A new challenge of building up a sustainable clinical support system using Tele-conference at the Neonatal Care Unit of National Maternal and Child Health Center, Phnom Penh, Cambodia.

The 28th annual meeting of Japan Association for International Health, November 2013,.Okinawa, Japan

Poster presentation (in Japanese)

2014

✧ TAKASAGO Satoshi, NOZAKI Ikuma, HOSOKAWA Shinichi, EGAMI Yuriko, MATSUSHIA Takeji,

Clinical courses of positive blood culture in Cambodian neonates.

The 117th conference of the Japan Pediatric Society, April 2014, Mie, Japan,

Poster presentation (in Japanese).

✧ IITAKE Chie, MORI Tomoko, HOSOKAWA Shinichi, IWAMOTO Azusa, EGAMI Yuriko, MATSUSHITA Takeji, SEANG Sody, MEAN Sitha, NAKASA Tamotsu

A research on Electrolytes of the sick newborns in Cambodia at the Neonatal Care Unit of National Maternal and Child Health Center.

The 50th annual meeting of the Japanese Society of Perinatal and Neonatal Medicine,

July 2014, Chiba, Japan.

Oral presentation (in Japanese)

✧ YOKOBORI Yuta, IWAMOTO Azusa, MATSUI Mitsuiaki, EGAMI Yukiro, KETH Ly Sotha

The trend of oxygen saturation for infants after birth in National Maternal and Child Health Center, Cambodia,

The 29th annual meeting of the Japan Association for International Health, November 2013, Tokyo, Japan,

Oral presentation.

✧ MEAN Sitha, MORI Tomoko, IITAKE Chie, HOSOKAWA Shinichi, IWAMOTO Azusa, EGAMI Yuriko, SEANG Sody

Intervention and impact on infection at the National Maternal and Child Health Center in Cambodia,

The 29th annual meeting of the Japan Association for International Health, November 2013, Tokyo, Japan,

Poster presentation.

Contact details for further information

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Annual Report 2014
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