Telemedicine Support for Maternal and Newborn Health

2007-2019

PROJECT IMPLEMENTATION OUTCOME FACT SHEET
Overview
2007-2019

**PROJECT NAME**

**PROJECT GOAL**
Maternal and newborn health is improved through the health technology innovation in Mongolia

**PROJECT DURATIONS**
12 years (2007-2019)

**PROJECT TOTAL BUDGET**
USD 7,100,181
- Luxembourg Government: USD 5.0 M
- UNFPA Mongolia: USD 1.6 M
- Mongolian Government: USD 500 K (in kind)

**EXECUTING AGENCY**
UNFPA Mongolia Country Office

**IMPLEMENTING PARTNERS**
- Ministry of Health of Mongolia (MOH)
- National Center for Maternal and Child Health (NCMCH)
- Ulaanbaatar (UB) City Health Department
- National Center for Health Development
- Mongolian National University of Medical Sciences
- All 21 provincial hospitals, three maternity hospitals of UB and maternity wards of two remote UB districts

**PROJECT OBJECTIVES**
- Establishing a nationwide network of consulting services
- Empowering physicians and specialists and sharing knowledge
- Creating a multi-disciplinary expert team consultation at the NCMCH

**DIRECT BENEFICIARIES**
- Women of reproductive age
- Professionals working at the NCMCH and provincial and district hospitals, including midwives
- Patients, particularly pregnant women, mothers, newborn and young people

**PROJECT MAIN ACTIVITIES**

<table>
<thead>
<tr>
<th>Tertiary level of care - NCMCH</th>
<th>Secondary level of care - Provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision of existing guides in line with international standards</td>
<td>Improvement of local case management through capacity development</td>
</tr>
<tr>
<td>Policy advocacy on quality Maternal and Child Health Care</td>
<td>21 Provincial hospitals</td>
</tr>
</tbody>
</table>

**BUDGET CATEGORIES (IN USD)**
- Provision of Equipment: 449,648 USD
- Technical Assistance: 1,665,458 USD
- Capacity Development: 4,293,043 USD
- M&E: 692,032 USD

**Quick Facts**

1923 Total Cases Consulted via Telemedicine
25 Number of credited E-Learning modules
24 Fully functional emergency obstetrics care (EMOC) drilling units and simulation laboratories
3 International Project Publications

**WINNER**
of prestigious United Nations Public Service Award (UNPSA) in 2017
# Overall Impact

## National Health

### Maternal Mortality Reduction

<table>
<thead>
<tr>
<th>Year</th>
<th>Maternal Mortality Rate per 100,000 Live Births</th>
</tr>
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<tbody>
<tr>
<td>2009</td>
<td>81.4</td>
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<tr>
<td>2010</td>
<td>80.6</td>
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<td>2011</td>
<td>79.8</td>
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<td>2016</td>
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<td>2017</td>
<td>74.6</td>
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<td>2018</td>
<td>73.8</td>
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Project provided essential equipment, training of service providers and teleconsultation facility. These have all contributed to the reduction of maternal mortality in Mongolia.

### Achieving 2015 MDG

Mongolia is one of 9 countries in the world that achieved 2015 MDC (Millennium Development Coal) target of reducing maternal mortality ratio by 75% compared to baseline.

### Neonatal Mortality Reduction

<table>
<thead>
<tr>
<th>Year</th>
<th>Neonatal Mortality Rate per 1,000 Live Births</th>
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<tbody>
<tr>
<td>2010</td>
<td>11.2</td>
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<tr>
<td>2011</td>
<td>10.2</td>
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<td>2012</td>
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<td>2017</td>
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<td>2018</td>
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</tbody>
</table>

One of the components of the project was improving the capacity to provide quality services for newborn. With implementation of new technical guidelines and training of new-born experts, it contributed to the reduction of neonatal mortality rate.

### Perinatal Mortality Reduction

<table>
<thead>
<tr>
<th>Year</th>
<th>Perinatal Mortality Rate per 1,000 Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>16.9</td>
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<tr>
<td>2011</td>
<td>16.4</td>
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<td>2012</td>
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<td>2017</td>
<td>12.4</td>
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<td>2018</td>
<td>11.3</td>
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</tbody>
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Improved case management and diagnostic services in pregnancy at local and tertiary level hospitals contributed to reduction of perinatal mortality rate.

## National Policy

National policies were introduced and/or modified to ensure the sustainability of the Telemedicine Project.

### Teleconsultation Regulation

NCMCH and MoH introduced new regulations to support the MnObstetrics software and emergency teleconsultation network. The regulations provide protection of patient information as well as encouraging communication between medical professionals at central and peripheral levels. The format of documentation of teleconsultations has been approved by Health Minister’s order (A385, 2019), which has to be attached to the clinical record of a patient.

### Revision of Midwife Job Description

In accordance with International Confederation of Midwives, new midwife Job Description has been prepared that strengthens the independence of midwives and their collaborative role with obstetricians. The scope of midwifery practices has been expanded to include reproductive health care, such as providing contraceptives and examining for early detection of STIs, and cervical and breast cancer. The role of midwife in helping adolescents was also emphasized.

### Distance Learning

NCMCH became a distance learning center for midwifery and obstetrical services. NCMCH is responsible for ensuring smooth coordination of e-learning courses, while Center for Health Development integrates them into the Continuous Medical Education system and provides online credit to those who participate in online classes.

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*Icons by Gregory Montigny, Creative Stall, Souvik Bhattacharjee, and icon 54 from Noun Project*
Capacity Building
FACILITY UPGRADE WITH NEW TECHNOLOGY AND NEW TRAINING METHODOLOGY

ULTRASOUND WITH DOPPLER STUDY
helps make correct evaluation of fetal growth.

CARDIOTOCOGRAPHY (CTG), INTRAPARTUM CONTINUOUS MONITORING SYSTEM
improves intrapartum case management and early detection of fetal and maternal distress during labor.

NEO-NATAL INCUBATORS
increases survival of premature babies by keeping them in a controlled environment for observation and care.

NASAL CPAP (CONTINUOUS POSITIVE AIRWAY PRESSURE)
encourages fetal respiratory recovery, with minimal invasion.

REPRODUCTIVE MEDICINE UNIT
It is the first public advanced reproductive medicine center to assist women who need infertility treatment, particularly those who cannot afford high-cost private services.

MINIMALLY INVASIVE SURGERY SET
allows doctors to operate with endoscopes which provokes less pain and faster recoveries.

DIAGNOSTIC AND TESTING KIT
With the diagnostic and testing kit for biomedical engineers, the hospitals can now maintain maternal and child health equipment.

A nurse helping an infant to connect to nasal CPAP ventilator, Orkhon Regional Hospital
A doctor in Selenge Provincial Hospital scanning with ultrasound to monitor and evaluate fetal growth
**Capacity Building**

**FACILITY UPGRADE WITH NEW TECHNOLOGY AND NEW TRAINING METHODOLOGY**

## NEW TRAINING METHODOLOGY

### HANDS-ON SURGICAL SKILL TRAINING

was provided to city and rural doctors to improve their skills on gynecological and obstetrics surgeries. Many rural doctors can now perform major surgeries, even those in isolated rural hospitals. As a result, referrals to tertiary level hospitals were significantly reduced, allowing patients to receive quality care in their provinces.

### SIMULATION TRAINING

improves hands-on skills, clinical decision making skills, case management skills, and team management skills in emergency situations, by setting up an artificial environment that mimics real clinical scenarios. This training is now provided at 22 drilling units and 2 advanced simulation centers.

### DISTANCE LEARNING (E-LEARNING) PLATFORM

allows rural doctors and midwives to improve their medical knowledge without having to travel for required trainings. Newly adopted distance learning regulations provide online credits or Continuous Medical Education points to those who finish each course. A number of modules for midwives and obstetricians as well as a mobile application version “M-Health” are now available.

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Interventional Sonography Training in National Center for Maternal and Child Health (2013)

Emergency Obstetrics Training in Bulgan Provincial Hospital (2019)

Emergency obstetrics training models distributed to provincial hospitals

Demonstration of emergency obstetrics training tool at the National Center for Maternal and Child Health (2019)
Telemedicine Project established tele-consultation system which allows the rural doctors and the expert team at NCMCH to work as a team. As of now all 21 provincial hospitals and capital city of Ulaanbaatar are connected via telecommunication technology. Ulaanbaatar experts can see patients in remote area and provide specialist advice to those who seek second opinion on the case management.

Telemedicine Project received the prestigious United Nations Public Service Award (UNPSA) garnering 1st place in the category of “Innovation and Excellence in Delivering Health Services.” This was the first UNPSA any UNFPA office won in the past 15 years.

**MN OBSTETRICS**


**EMERGENCY TELECONSULTATION NETWORK**

To support MN Obstetrics platform, emergency tele-consultation network was created between rural hospitals and NCMCH. Now the network is available in the total of 25 hospitals. With high definition camera installed in each consultation room, the system allows patients to get involved in the discussion and doctors to closely observe the patients and their medical records.

**TEAM SPIRIT**

By establishing teleconsultation system, Telemedicine Project created stronger professional network. Communication and teamwork between the expert team and rural hospitals is greatly improved. The patients are directly benefiting from the enhanced team spirit. Since patient data and information is more easily shared and discussed, when the patients are referred to the NCMCH, the experts are more prepared to receive them and take prompt actions.

**NEW SERVICES**

**MATERNAL FETAL MEDICINE**

By training eight Mongolian doctors under internationally recognized curriculum, Telemedicine Project raised medical experts in maternal fetal medicine and contributed to improving the quality of fetal diagnosis.

Around **40%** of high risk pregnant women are screened for fetal abnormalities.

**MINIMALLY INVASIVE SURGERY**

Doctors at regional hospitals can now perform endoscopic surgeries. They improve patient satisfaction and reduces patients’ pain, hospital stay, and chances of complications.

Around **30%** of surgeries now use minimally invasive techniques.

**ADVANCED REPRODUCTIVE MEDICINE (ARM)**

ARM unit provides infertility treatment to women, particularly those who cannot afford private clinic treatment.

The first-ever public reproductive medicine unit in the country.

**IMPROVED CARE FOR PREMATURE BABIES**

With the improved care at Intensive Care Units, the chances of survival of premature babies has greatly increased.

8000 Visits Per Year

250 Infertility treatment cycle

26.5% Biochemical pregnancy rate

21.06% Take home baby rate

The survival rate of low birth weight babies (under 1.4 kg) at NCMCH increased to **47.1%** from below 30% five years ago.
Midwifery School
TOWARDS EXCELLENCE OF MIDWIFERY EDUCATION

Revision of Midwifery Curriculum

The Midwifery curriculum was revised based with the assistance of a consultant to comply with the current Guidelines of the International Confederation of Midwives and the WHO. The old curriculum had an imbalance of theory and practice hours with the ratio of 85:15. The new revised curriculum offers more emphasis on practice with theory to practice ratio of 60:40.

MOU signed with Michigan University

A partnership agreement (MOU) was signed in 2019 between the School of Nursing and Midwifery, the University of Michigan and the Mongolian National University of Medical Sciences to ensure the continued collaboration for excellence in midwifery education. For the next 5 years the two schools will start the student exchange programme and research projects on midwifery education and quality of services.

Faculty Training by International Experts

To support the implementation of the new curriculum and strengthen the capacity of faculty members, the international exchange program was initiated. With the facilitation of the international consultant, the School of Nursing and Midwifery of the University of Michigan and a WHO collaborating center was selected and agreed for continued collaboration for excellence in midwifery education.

Introduction of New Midwifery Textbooks with Mentoring Programme

The new textbook for midwifery education “Varney’s Midwifery” with Teacher’s Supplement has been adopted as the main resource material for the faculty. In addition, two more books on “Health Assessment” and “Basics in Gynaecology” have been adopted as required by the new curriculum. Mentors from selected Mongolian maternal hospital or National Center for Maternal and Child Health (NCMCH) will assist the midwifery undergraduate students with their studies.

Clinical Skills Lab with Various Midwifery Skill Simulators

Cutting-edge training devices which create life-like learning simulations were provided. With them, midwifery students can develop their skills on obstetrics and newborn care through hands-on experiences. These activities complement the students’ lack of clinical exposure to real cases during undergraduate training.
Teleconsultation Network
FROM DATA SHARING TO REAL-TIME CONSULTATION WITH PATIENTS

Development of Teleconsultation Network
Throughout Telemedicine Project, the technology for teleconsultations evolved as following:

(1) Phase I (2007-2011)
iPath platform, an open source programme offered by Swiss Surgical Team

(2) Phase II (2012-2016)
Campus Medicus, a commercial platform

(3) Exit Phase (2017-2019)
MnObstetrics, a nationally developed and owned software and Emergency Consultation Network

Emergency Teleconsultation Network
Direct teleconsultation cameras, as part of Emergency Teleconsultation Network, are now installed in all 21 provinces and two remote districts of Ulaanbaatar city, which facilitates live interactions between the specialists and patients in remote areas. Efficient utilization of the network for timely and appropriate care can prevent emergency.
"The People of Telemedicine"
HUMAN INTEREST STORY SERIES ON DOCTORS, MIDWIVES, AND BENEFICIARIES OF TELEMEDICINE PROJECT

MS. PUREVSUREN, SELENGE PROVINCE
After the delivery of her first child, Purevsuren felt oddly weak after the operation. It turns out that she fell ill from infection.

As soon as her doctor Dr. Odonchimeg discovered the disease of the new mother, she reached out to the National Center for Maternal and Child Health (NCMCH) in Ulaanbaatar, the capital city of Mongolia, via teleconsultation system. And for the next sixteen days of Purevsuren’s stay at the hospital, Selenge doctors held consultation sessions with NCMCH every day, to observe the new mother’s progress. Thanks to the doctors’ collaborative effort, Purevsuren started to recover fast from the 13th day of hospitalization.

With her resolute personality, according to Dr. Odonchimeg, Purevsuren stayed calm throughout the entire process and her stay in the hospital. “I trusted my doctors, so I didn’t worry very much.”

DR. OTGONBAYAR
OBSTETRICIAN AND GYNECOLOGIST IN KHUUVSGUL PROVINCIAL HOSPITAL
As the most senior OBGYN in Khuvsgul provincial hospital, Dr. Otgonbayar first-handly went through changes that Telemedicine Project had brought. “We are now providing timely and quality services to all cases, included those complicated cases at the provincial level. This is the most important highlight from Telemedicine Project,” says Dr. Otgonbayar.

Now with the teleconsultation system installed, the patients and doctors in Khuvsgul can now communicate with experts from Ulaanbaatar instantly.

Enhanced teamwork among hospitals of different levels of health care is another significant achievement made possible via Telemedicine Project. “The NCMCH and secondary hospitals are working as a network. It really helps us transfer knowledge to each other and to work as a professional network.”

“HUMAN INTEREST STORY SERIES ON DOCTORS, MIDWIVES, AND BENEFICIARIES OF TELEMEDICINE PROJECT

“I recovered well thanks to the doctors’ care. I will come back to the hospital for my future pregnancies.”

MS. PUREVSUREN, FORMER PATIENT OF SELENGE PROVINCIAL HOSPITAL

The People of Telemedicine © UNFPA Mongolia
"The People of Telemedicine"

**HUMAN INTEREST STORY SERIES ON DOCTORS, MIDWIVES, AND BENEFICIARIES OF TELEMEDICINE PROJECT**

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**DR. SARANTUYA,**
**CONSULTANT IN HIGH RISK OBSTETRICS, NCMCH**

"[Through Telemedicine Project] we met a lot of internationally well-known experts, and we introduced evidence-based medicine in the country. So now we always talk about ‘What’s the evidence, what’s the internationally accepted result?’ This is one of the innovations in terms of doctors’ knowledge, compared to the previous years.”

Now the doctors are constantly learning from international experiences and international evidence-based literature. “I have seen many projects implemented in health sector, and this Project made a real change in the mindset of doctors and quality of care. This is a real sustainability of the Project.”

She is passionate in training younger doctors and is looking to participate in further teaching for the sustainability of the project interventions.

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**MS. KHAJIDMAA. S,**
**MIDWIFE IN ORKHON REGIONAL HOSPITAL**

Ms. Khajidmaa commented that the most significant difference of the emergency obstetrics training compared to the other methods of teaching is the use of learning equipment. “It allows us to practice by hands.” In the past the transfer of medical knowledge was done theoretically via PowerPoint presentations, manuals, and books, making it difficult for new graduates to visualize and practice medicine straightaway. Now with the advanced training models - newly introduced by Telemedicine Project of UNFPA - and life-like simulations they create, the medical staff can effectively practice measuring the risks during the delivery situations and come up with appropriate procedures.

Ms. Khajidmaa, as one of the senior midwives in the hospital, will be in charge of future training of junior midwives using these training tools.
EXECUTIVE LEADERSHIP

Kaori Ishikawa
Former Head of Office, UNFPA Mongolia (2009-2013)
Current Head of Office, UNFPA India (2018-present)
(left with Ms. Anika Brück, Desk Officer for Asia, Government of Luxemburg)

Naomi Kitahara
Former Head of Office, UNFPA Mongolia (2013-2018)
Current Head of Office, UNFPA Vietnam
(left with Mr. Xavier Bettel, Luxemburg Prime Minister)

Argentina Matavel
Former Head of Office, UNFPA Mongolia (2009-2013)
Current Head of Office, UNFPA India
(second from left with SRH/Telemedicine project team)

Delia Barcelona
Former Head of Office, UNFPA Mongolia (2005-2009)
(left with Mr. Jean-Claude Juncker, former Prime Minister of Luxemburg, 1995-2013)