Scaling up quality improvement for safer birth in public facilities of Nepal

Submission date	Recruitment status No longer recruiting	[X] Prospectively registered		
21/02/2019		[X] Protocol		
Registration date 02/03/2019	Overall study status Completed	Statistical analysis plan		
		Results		
Last Edited 17/12/2020	Condition category Pregnancy and Childbirth	Individual participant data		
		Record updated in last year		

Plain English summary of protocol

Background and study aims

Mothers and newborns are at the time of high risk of death during labour and first day of life. Reducing the risk of death will require improving care at the time of birth. We aim to conduct a study to evaluate a package of interventions that aims to improve the care at the time of birth.

Who can participate?

Women delivering in the hospital can participate in the study.

What does the study involve?

The study consists of implementation of package of quality improvement interventions. The quality improvement interventions consist of training, mentoring, weekly meeting and provision of equipment.

What are the possible benefits and risks of participating?

The intervention aims to improve the fetal heart rate monitoring, immediate newborn care, neonatal resuscitation and birth outcome. The risk of participating for women and children might be exposure to over-treatment.

Where is the study run from?

The study will be implemented in 8 public hospitals with delivery more than 3000 per year.

When is the study starting and how long is it expected to run for?

The study will start on 1 April 2019 and expected to end 15 December 2020.

Who is funding the study?

The study is funded by Government of Canada, Grand Challenges Canada.

Who is the main contact? Rejina Gurung

Contact information

Type(s)

Public

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Additional identifiers

Clinical Trials Information System (CTIS)

N/A

ClinicalTrials.gov (NCT)

N/A

Protocol serial number

N/A

Study information

Scientific Title

Scaling up safer birth bundle through quality improvement in Nepal: a stepped wedged cluster randomized controlled trial in public hospitals

Acronym

SUSTAIN

Study objectives

Can a set of quality improvement interventions bundled with technology improve the quality of intrapartum care in public facilities of Nepal?

Ethics approval required

Old ethics approval format

Ethics approval(s)

Approved 20/02/2019, Ethical Review Board of Nepal Health Research Council (Nepal Health Research Council, Ramshah Path, Kathmandu, Nepal, P.O.Box 7626; address-approval@nhrc.org.np; +977-4255987), ref: 110-2019.

Study design

Stepped Wedged Cluster Randomized Controlled Trial

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Childbirth

Interventions

The SUSTAIN Package is a bundled kit of interventions which empower health care workers to efficiently monitor, provide care, and review care provided during the intrapartum and immediate postpartum period. The tools in this bundle (referred to as the Safer Births Bundle) are evidence-based and align with global guidelines. The interventions in the SUSTAIN package include training (Helping Babies Breathe Educational Program, NeoNatalie Advanced Newborn Ventilation Training Manikin), intrapartum monitoring (Moyo Fetal Heart Rate Monitor), postpartum care (Upright Newborn Bag Mask, NeoBeat Newborn Heart Rate Monitor), and a supporting system of review.

Interventions include:

- 1. Perform a bottleneck analysis on the care of deliveries and set up a mechanism of continuous review and planning of care in the hospital to improve leadership accountability.
- 2. Introduce the Safer Births Bundle a set of proven, cost-effective tools for training and therapy to improve labour monitoring (Moyo FHR Monitor) and neonatal resuscitation (Upright Bag-Mask, NeoBeat Newborn HR Meter, NeoNatalie LiveTraining Manikin)24.
- 3. Implement QI interventions in the delivery room including daily skill check for neonatal resuscitation, use of a checklist for the preparation for birth and resuscitation, use of self-review /evaluation checklist after conducting neonatal resuscitation, and weekly review meetings to track the progress made from the implementation of new tools and standards.
- 4. Set up a system of continuous measure & improve to assess the change in the quality of

intrapartum care in the hospital by utilizing a Plan-Do-Study-Act (PDSA) approach. This approach harnesses local ownership of challenges and provides an actionable framework to monitor and evaluate progress to improve and sustain QI changes.

This is a stepped wedge design. Where in the hospitals are clustered into different groups randomly. The interventions will be implemented in a stepped wedge manner, ie with a time lag of 2 months. The control area will be the total baseline period in the total hospital and the intervention area will be the total intervention period. Please see the figure. The 8 hospitals will be randomly allocated using a lottery technique.

Intervention Type

Behavioural

Primary outcome(s)

To be measured using patient record review:

- 1. Intrapartum stillbirth-In-utero fetal death during labour after 22 weeks of gestational age with no signs of life (no breathing or no heart rate until 10 minutes of life).
- 2. First-day neonatal mortality rate
- 3. Pre-discharge neonatal mortality-death of baby before discharge

Key secondary outcome(s))

- 1. Improvement in the proportion of delivery with fetal heart rate monitoring practice (every half an hour) will be determined using observation.
- 2. Improvement in the proportion of women to whom Moyo's FHMR is used to monitor fetal heart rate will be determined using observation.
- 3. Improvement in the proportion of babies heart rate monitored using neo-beat after birth will be determined using observation.
- 4. Whether maternity care was dignified will be determined by an interview with participating women.
- 5. Improvement in the proportion of non-breathing babies with bag and mask ventilation at 1 minute will be determined using observation.
- 6. Whether health workers are competent in neonatal resuscitation immediately after training will be determined using observation.
- 7. Whether health workers maintain neonatal resuscitation competency 6 months after training will be determined using observation during drills.
- 8. Whether health workers are competent in immediate newborn care will be determined using observation.
- 9. The proportion of health workers practicing skill drills in neonatalie at least 8 times in 3-month interval will be determined using observation.
- 10. The proportion of hospitals conducting bottleneck analysis and quality improvement plan development will be determined using observation.

Completion date

15/07/2021

Eligibility

Key inclusion criteria

- 1. Women with gestational age ≥22 weeks
- 2. In labour

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Neonate

Sex

All

Key exclusion criteria

- 1. Referred from the labour room to operation theatre for delivery
- 2. Referred to other facilities
- 3. Do not have fetal heart sound at admission.

Date of first enrolment

01/04/2019

Date of final enrolment

01/07/2021

Locations

Countries of recruitment

Nepal

Study participating centre Koshi Zonal hospital

Biratnagar Province 1, Morang, Biratnagar Nepal 977

Study participating centre Janakpur Zonal hospital

Janakpur Province 2, Janakpur Nepal 977

Study participating centre Bharatpur Hospital

Chitwan

Province 3, Bharapur Nepal 977

Study participating centre Lumbini Zonal Hospital

Province 5, Lumbini Lumbini Nepal 977

Study participating centre Bheri Zonal hospital

Nepalgunj Province 5, Bheri Nepal 977

Study participating centre Mid-Western Regional Hospital

Surkhet Surkhet road, Surkhet Nepal 977

Study participating centre Seti Zonal hospital

Kailali Dhangadi, Nepal Nepal 977

Study participating centre Dadeldhura Sub-Regional Hospital

Dadeldhura Province 7 Nepal 977

Sponsor information

Organisation

Grand Challenges Canada

ROR

https://ror.org/02snbhr24

Organisation

Laerdal Foundation for Acute Medicine

Funder(s)

Funder type

Government

Funder Name

Grand Challenges Canada

Alternative Name(s)

Grands Défis Canada, gchallenges, Grand Challenges Canada / Grands Défis Canada, grandchallengescanada, GCC

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

Canada

Funder Name

Laerdal Foundation for Acute Medicine

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be stored in a secured repository of the Golden Community server and will be made public upon request. The participants location and identity will be anonymized.

The datasets generated during and/or analysed during the current study will be stored in a secured repository of the Golden Community server. The access of the data will be with the data management officer-Omkar Basnet- basnetom21@gmail.com, interim analysis of the background characteristics and outcome will be done during study. The data will be not be made available until 15 July 2021.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient- facing?
Protocol article	protocol	19/06/2019	27/08 /2019	Yes	No
Other publications	Nested prospective observational study	01/10/2020	31/10 /2022	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11 /2025	No	Yes
Protocol file		21/02/2019	04/03 /2019	No	No
Study website	Study website	11/11/2025	11/11 /2025	No	Yes