

# Compendium of new and emerging health technologies



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# Under development

Assisted vaginal delivery instrument

Blood collection drape estimating postpartum blood loss

Fetal heart rate monitor by mobile phone

Infant warmer

Isolator system for laparoscopic surgery

Lab-in-a-backpack: point of care screening/diagnostic

Low-technology child restraint car seat

Microbial water testing kit

Mobile health record system for pediatric HIV

Mobile phone image transmission for diagnosis

Mobile phone pulse oximeter

Off-grid refrigerator

Orthopaedic external fixator

Pedograph

Point-of-use water purifier

Portable cell sorting and counting device

Portable system for pre-cancer screening at point of care

Portable telemedicine unit

Portable transcutaneous haemoglobin meter

Single-size contraceptive diaphragm

Subcutaneous drug delivery device

Woman's condom

# Commercialized

Birth simulator for training

Fetal heart rate monitor

Isothermal nucleic acid amplification system for POC diagnosis

Manual wheelchairs and mobility devices

Medical data communication system

Mobile technology to connect patients to remote doctors

Newborn simulator for resuscitation training

Non-pneumatic anti-shock garment

Oxytocin in prefilled auto-disable injection system

Parasitological test system

Phototherapy for neonatal jaundice treatment

Point-of-use water disinfection system

Portable haemoglobin meter

Portable ventilator

Prefilled auto-disable injection system

Reusable neonatal suction device

Self-powered pulse oximeter

Solar thermal cooking and autoclave device

Transcutaneous bilirubin measurement system for infants

Treatment response software application

Ventilator using continuous positive airway pressure

Water filter

# Compendium of new and emerging technologies that address global health concerns, 2011

The compendium of new and emerging technologies that address global health concerns has been created as a neutral platform for technologies which are likely to be suitable for use in low-resource settings. It is released to encourage the dialogue between ministries of health, procurement officers, donors, technology developers, manufacturers, clinicians, academics and the general public. In doing so, WHO aims at raising awareness of the pressing need for appropriate design solutions, and for further development and technology dissemination.

The compendium 2011 is a first snapshot of several health technologies which might have the potential to improve health outcomes or to offer a solution to an unmet medical need in low-resource settings. The compendium specifically focuses on innovative technologies that are not yet widely available in developing countries, and product concepts under way.

Technologies in the compendium are presented in one page summarizing the health problem addressed, the proposed solution and product specifications, based on data and information provided by the developers of the technologies concerned.

Eligibility for inclusion in the compendium has been evaluated by EuroScan member agencies and WHO. However, the evaluation by EuroScan member agencies and WHO has been solely based on a limited assessment of data and information submitted in the developers' applications and, where available, of additional sources of evidence, such as literature search results or other publicly available information. There has been no rigorous review for safety, efficacy, quality, applicability, nor cost acceptability of any of the technologies. Therefore, inclusion in the compendium does not constitute a warranty of the fitness of any technology for a particular purpose. Besides, the responsibility for the quality, safety and efficacy of each technology remains with the developer and/or manufacturer. The decision to include a particular technology in the compendium is subject to change on the basis of new information that may subsequently become available to WHO.

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Under  
development

# Assisted vaginal delivery instrument

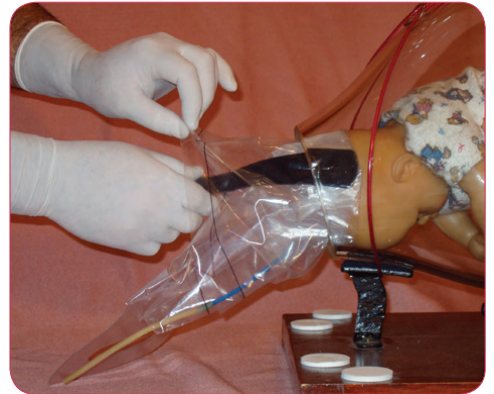
Country of origin | Argentina

## Health problem addressed

World-wide, 10-20% of deliveries require some form of intervention, frequently a Caesarean section. Instrumental vaginal deliveries (forceps and vacuum extraction) account for 2-23% of deliveries. This profile makes the introduction of a new device which would prioritise maternal and fetal safety, is easy to use, disposable and - particularly relevant - does not require a highly skilled attendant.

## Product description

This device has been designed on the basis of a double physical phenomenon consisting of a conveyor belt and an air clamp. It consists of a polyethylene sleeve with a cuff-like fold on the fetal insertion edge, which fits the fetal head diameter. This sleeve is introduced using two flexible plastic spatulas 3-mm thick that allow placing the device in the adequate final position around the foetus' head.



## Product functionality

The atmospheric air entering during the sleeve introduction and application is generally enough to produce the air clamp and fix the sleeve around the fetal's head. However, this effect may be enhanced by insufflating a small amount of air through an insufflation cannula. This adds to the sliding effect occurring between the inner parts of the fold upon force exertion.

## Developer's claims of product benefits

Medical advantages: The device decreases the risk of fetal-maternal injury, contributes to the physiologic development of the second stage of labour, contributes to contraction forces and maternal pushing efforts, could reduce prolonged second stage, could reduce postpartum hemorrhage (uterine atony) through a reduction in the second stage of labor, could significantly decrease operative delivery, could reduce the incidence of perineal damage, and could decrease perinatal infections acquired through the birth canal.

Technical advantages: The device does not require expertise or individual training, is an easy-to-learn technique as insertion is easy, rapid and smooth, has very low production costs and is disposable.

## Operating steps

1. Apply one of the insertion spatulas against the inner cuff on one side of the sleeve.
2. Perform a sliding motion following the fetal cephalic curvature.
3. Repeat steps on opposite side, as well as at positions 12 and 6 o'clock.
4. Withdraw spatulas. Pump air into the air chamber through the insufflation cannula. Use the traction handle to pull until the fetal cephalic pole is extracted.
5. Remove and discard the device.

## Development stage

Phase 0 of the research was performed in a childbirth simulator (simulator S 575 - "Noelle") at the Obstetric Simulation Laboratory in Des Moines University (DMU), WHO collaborating center, Iowa, USA, October 21-23, 2008. Trials were successful. Action physical mechanisms (A- the air clamp and B- conveyor belt) generated upon device placement were objectively proved in the simulator obtaining the expulsion of the cephalic pole.

## Future work and challenges

The device is currently undergoing processes for regulatory approval. A phase I study to evaluate feasibility and

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