WHO compendium of innovative health technologies for low-resource settings

2016- 2017

Medical devices
eHealth/mHealth
Medical simulation devices
Personal protective equipment
Assistive products
Other technologies

World Health Organization

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Terms, conditions and disclaimers for the Call

WHO compendium of innovative health technologies for low-resource settings, 2016-2017.

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Eligibility for inclusion in the WHO compendium of innovative health technologies for low-resource settings (hereinafter referred to as the Compendium), has been evaluated by WHO and external technical advisers listed in the Acknowledgements. However, the evaluation 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.

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WHO does not furthermore warrant or represent that:

1) the list of innovative health technologies is exhaustive or error free; and/or that
2) the technologies which are included in the Compendium will be embodied in future editions of the Compendium; and/or that
3) the use of the technologies listed is, or will be, in accordance with the national laws and regulations of any country, including but not limited to patent laws; and/or that
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Objective

The objective of the WHO Compendium series of innovative health technologies for low-resource settings, is to provide a neutral platform for technologies which are likely to be suitable for use in less resourced settings. It presents a snapshot of several health technologies which might have the potential to improve health outcomes and the quality of life, or to offer a solution to an unmet medical/health technology need. It is released to acknowledge some success stories and at the same time, to raise awareness of the pressing need for appropriate and affordable design solutions and to encourage more innovative efforts in the field. This effort also aims to encourage greater interaction among ministries of health, procurement officers, donors, technology developers, manufacturers, clinicians, academics and the general public to ensure greater investment in health technology and to move towards universal access to essential health technologies.

Methodology

Following the 2010, 2011, 2012, 2013 and 2014 calls, the last one was launched in April 2016. The format was improved from the 2014 call, based on a review of the previous template to include more evidence, information on regulations, and technical and commercial information. Two categories were considered: prototypes and commercially available health technologies, specifically: assistive products, medical devices (including in vitro diagnosis and personal protective equipment), e-health solutions including with medical devices interfaces and medical simulators for training

A total of 562 submissions were received in the 2016 call. Of the total submissions, only 112 complied with all of the requested information and were assessed.

The selected 112 submissions to the 'Call for innovative health technologies for low-resource settings' underwent an evaluation process performed by 35 internal WHO staff and 87 external reviewers, who presented no conflict of interest. The technologies were assessed based on the material and evidence provided by the applicant as well as publicly available information. In some cases, WHO contacted the submitter for more evidence as needed by the reviewers.

Once the evaluations were received and compiled, a total of 39 prototypes and 29 commercially available products were selected and are presented in this 2017 Compendium. Note that for any selected technology, the inclusion in the Compendium does not constitute a warranty for fitness of the technology for a particular purpose.

All innovative solutions in the Compendium are presented in one page summarizing the health problem addressed, the proposed solution and product specifications, based on data, information, and images provided by the developers of the technologies concerned.

Medical devices, assistive devices and eHealth solutions are health technologies, which have the potential to save lives and improve quality of life and well-being. However, in many low resource settings, too many people worldwide suffer because they don't have access to appropriate, good quality health technologies to support the prevention, diagnosis or treatment of a disease or disability. This Compendium just illustrates some innovative technologies that are in the pipeline and others that are available that can empower health care workers and might support people and patients to have a healthier life.

AVAILABLE PRODUCTS

Anaesthesia machine

Country of origin | United States of America

Primary function | Treatment

Health problem addressed

Nearly 5 billions people, almost entirely in low- and middle-income countries, lack access to adequate surgical and anesthesia care. At 16.9 million deaths per year, more people die from surgically treatable conditions than HIV/AIDS, malaria and tuberculosis combined. One major factor inhibiting access to surgical care is inadequate infrastructure to support anesthesia delivery in health facilities across the developing world.

Disease addressed

The technology does not address a specific disease, it supports surgery.

Technical descriptions

This anaesthesia machine combines draw-over and continuous-flow technologies, allowing it to function with or without electricity and compressed medical gases. While it has always been intended for use in low-income countries, the device bears the CE marking, thus showing its compliance with the highest international standards. To this day, this anaesthesia machine is the only hybrid device having obtained the CE mark.

Developer's claims of products benefits

Hospitals in developing countries experience an average of 18 power outages per month and regular shortages of compressed medical gases, either of which will disable a conventional anesthesia machine. Conventional devices (even of the highest quality) will inevitably fail, break, remain unused or become unsafe in this setting. This anaesthesia machine combines draw-over and continuous-flow technologies, allowing it to function with or without electricity and compressed medical gases.

Operating steps

The machine functions in a variety of modes. When there is electricity, it generates its own oxygen with an integrated oxygen concentrator that produces 95% pure oxygen. If power is unavailable, the machine seamlessly transitions to using oxygen from an external source. If an external source is unavailable, it will automatically draw in ambient air from the air inlet. The machine has an electrically-driven automatic ventilator that also comes with 6 hours of backup battery.

Regulatory status and standards compliance

European Community (CE-mark). ISO 9001.

Use and maintenance

User: Technician, nurse, general physician, specialised physician (anaesthetist).

Training: Upon purchase of the machine, a two-day on-site training for clinical and technical staff is offered. The training is led by a local physician anaesthetist and a local biomedical engineer or technician. This includes a didactic session, a session in the operating theater and a suite of instructional materials for regular use.

Maintenance/Calibration required: Yes

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health centre), secondary level (general hospital), tertiary level (specialists hospital), any facility that offers surgery.

Product specifications

Weight (kg): 130

Dimensions: 146mm x 53mm x 69mm

Consumables: Volatile agent, breathing tubes, oxygen masks, laryngoscopes

Lifetime: 5-10 years

In UN catalog: Yes

Commercial information

Reference price (USD): $22'400.00

Year of commercialization: 2011

Number of units distributed: 101-1 000

Model: Universal Anaesthesia Machine

Other features: Reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Lina Sayed | Telephone +1 212 537 0337 | Web https://bit.ly/2Lpnif6

Breast exam, portable device

Country of origin | United States of America

Primary function | Diagnosis

Health problem addressed

Incidence rates of breast cancer (BC), especially in women older than 50 years old, have nearly doubled in low- and middle-income countries over the past 20 years. Nearly 66% of these women are diagnosed late due to lack of education, awareness and access to affordable, clinically relevant and scalable technology. As a result, women in low- and middle-income countries have a 40%-60% survival rate compared to 90%+ for their USA/UK counterparts. In India alone, over 190 million women between ages 30-65, approximately 35% of the female population, may benefit from access to early detection.

Disease addressed

Neoplasms

Technical descriptions

The device measures the contrast in elastic modulus between normal and abnormal breast tissue. The device contains a novel, low-power, lead zirconate titanate (PZT) piezoelectric material that works by using direct/reverse piezoelectric effects, enabling "electronic palpation" entirely automated, controlled internally and independent of the operator. The device is a FDA cleared, hand-held, battery powered and fully wireless, mobile health (mHealth) solution for clinically effective breast lesion detection.

Developer's claims of products benefits

The 'gold standard' for breast cancer detection, i.e. routine mammography, is unsustainable for low- and middle-income countries, inaccessible to rural areas and requires highly trained radiologists to interpret images. While clinical breast exam (CBE) is affordable, it is subjective and clinically limited in detecting non-palpable lumps at early stages. This breast exam device is objective, affordable, portable, accessible, painless and radiation-free.

Operating steps

Pair the device via Bluetooth with its associated tablet (1 min). Once paired, calibrate the device against air (10 sec). Then calibrate it by placing it on the breast tissue (10 sec). Begin scanning by placing the device gently on one end of the breast tissue. Cover the entire breast tissue by moving the device across smaller quadrants (depending on size of breast), capturing the reading simultaneously on the tablet (4 mins). Repeat procedure on second breast (4 mins).

Regulatory status and standards compliance

United States of America (FDA).

Use and maintenance

User: Trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialised physician, community health workers.

Training: The device requires minimal training. As long as the user is familiar with the use of basic battery powered technology and comfortable using an electronic tablet, they can operate it and perform scans. A user can get fully trained to operate the device after doing approximately 20-30 scans under the supervision of a training instructor, after which the user will receive a certification that they are sufficiently trained to operate it.

Maintenance/Calibration required: Yes

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Energy requirements: Rechargeable battery.

Product specifications

Weight (kg): 0.2

Dimensions: 120mm x 68mm x 84mm

Accessories: Android Mobile Device, Mobile App, power bank, charger cables, case to carry device and accessories (all included with device).

Lifetime: 5 years

In UN catalog: No

Commercial information

Reference price (USD): 1-5 per scan

Year of commercialization: 2016

Currently sold in: India India, Mexico, Botswana, Thailand, Malaysia,Singapore, Myanmar, Philippines, Vietnam, Indonesia, Nepal

Number of units distributed: 0-100

Software requirements: Proprietary

Model: iBreastExam

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Mihir Shah | Telephone +1 631 980 8340 | Web https://bit.ly/2DcQwca

Cardiac catheterization laboratory, mobile

Country of origin | United States of America

Primary function | Diagnosis

Health problem addressed

Cardiovascular diseases (CVDs) are the number 1 cause of death globally: an estimated 17.5 million people died from CVDs in 2012, representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke. Over three quarters of CVD deaths take place in low- and middle-income countries. Out of the 16 million deaths under the age of 70 due to noncommunicable diseases, 82% are in LMICs and 37% are caused by CVDs.

Disease addressed

Diseases of the circulatory system.

Technical descriptions

The device is a mobile catherization laboratory (cath lab). It can be powered from 15 A single phase wall socket, is easy to install, provides high quality image and has low dose features. The precision imaging algorithm can provide consistent imaging. Advanced active tube cooling enables longer and more complex procedures. The arm structure provides flexible patient access and overscan for steep angulations, such as spider view.

Developer's claims of products benefits

Existing state-of-the-art technology is a fixed cath lab, typically with 80 kW or more capacity. The main shortcoming of the existing technology when addressing rural and peri urban markets is the fact that it needs 3-phase power and draws significantly more power than the present solution. This device is a 15 kW system needing just single phase power and with an overall power consumption of 6 kVA. This significantly reduces running cost and complexity during installation.

Operating steps

This product is meant to be used by a trained physician (interventional cardiologist) with support from a technologist. Operating manual and contact information are provided along with the system.

Regulatory status and standards compliance

United States of America (FDA), Canada (Health Canada), Australia (TGA), Japan (JMHLW) and others. DICOM conformance statement for OEC 9900 system available in PDF which can not be attached. Please refer to http://www3.gehealthcare.com/en/products/interoperability/dicom/surgery_dicom_conformance_statements for OEC 9900 Elite conformance statements.

Use and maintenance

User: Technician, specialised physician (interventional cardiologist).

Training: One day application and product training is required to familiarise the product to the user.

Maintenance/Calibration required: No

Environment of use

Setting: Secondary level (general hospital), tertiary level (specialists hospital), cath labs and emergency departments.

Energy requirements: Continuous power supply.

Product specifications

Weight (kg): 540

Accessories: Cardio vascular table, hemo dynamic monitor, radiation protection devices.

Consumables: Catheters, guide wires, stents, etc.

General product: Physiological monitors, radiation protection devices.

Lifetime: 10-15 years

In UN catalog: No

Commercial information

Year of commercialization: 2012

Number of units distributed: 101-1 000

Software requirements: Proprietary

Model: OEC 9900 Elite

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Shekhar M | Telephone +91 80 40882108 | Web https://bit.ly/2kOgrC9

Cloud application for remote healthcare

Country of origin | India

Primary function | Treatment

Health problem addressed

While 70% of India's population lives in rural areas, 80% medical facilities are concentrated in urban areas. Healthcare for rural patients is more likely to be performed by semi and non-qualified practitioners. More than 20 million people are pushed below the poverty line every year. This cloud solution can be applied to countries with weak health infrastructure, where trained human resources are a key constraint in providing quality healthcare. This solution would be applicable to regions including South and South-East Asia, Africa, Central and South America.

Disease addressed

Certain infectious and parasitic diseases; diseases of the skin and subcutaneous tissue; pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period; factors influencing health status and contact with health services.

Technical descriptions

This application is a comprehensive remote healthcare delivery solution that includes modules for exhaustive electronic medical record (EMR), appointment scheduling and management, integrated diagnostics and video conferencing. Integrated diagnostics include physiology, imaging, blood and urine tests that can be measured both in real-time and store-and-forward modes. Video conferencing can work at bandwidth as low as 32 Kbps.

Developer's claims of products benefits

Telemedicine has been in existence for many years, but has mostly been used for secondary and tertiary consultation, enabling doctors to get opinion from specialists. This application takes the tele-consultation to the next level, where a health worker can enable consultation between a patient and a doctor for primary ailments. It requires minimal skills and infrastructure at remote location, overcoming the two major challenges that have blocked spread of telemedicine to the grass roots level.

Operating steps

The patient should be registered by a health worker and will get a unique ID. Then, the health worker should fix an appointment with the doctor. On the day of the appointment, a tele-consultation over video conference can be launched. During the consultation, the doctor can ask the remote health worker to perform one of the diagnostics procedure available. At the end of the consultation, the doctor can prescribe medication. An advanced diagnostic test like X-ray may also be prescribed, in which case the patient will visit the nearest laboratory. If required, patient may be referred to a higher level facility for a physical visit.

Regulatory status and standards compliance

QMS under ISO13485:2012 and ISO9001:2009 with TuV Rheinland as the certifying agency. HL7, DICOM, ICD-10, EMR guidelines specified by Government of India.

Use and maintenance

User: Trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialised physician

Training: A minimal training is required to understand the basic steps in using the software. If the healthcare worker uses diagnostic devices, they need to learn to attach the sensors to the patient's body or to collect body fluid samples and place them on the appropriate test strips for measurement. However, the use of devices is very straightforward and the user needs little time to get trained on the use of sensors.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Facility requirements: Access to the Internet, access to a cellular phone network, connection to a laptop/computer.

Energy requirements: Rechargeable battery, continuous power supply.

Product specifications

Accessories: Point-of-care diagnostic tests may be used with the cloud application. However, they are not mandatory and the consultation may still be carried out without these tests.

Consumables: Test strips, disposable electrodes, disposable caps, etc. (supplied to customer by the producer). The type of consumables required will depend on the kind of diagnostic devices available with the health worker.

General product: Windows computer & Android mobile/tablet

Lifetime: 2-5 years

In UN catalog: Yes

Commercial information

Reference price (USD): $500.00

Year of commercialization: 2015

Currently sold in: India and a few countries in Africa, South and Southeast Asia

Number of units distributed: 0-100

Software requirements: Proprietary software; underlying open source softwares necessary

Model: ReMeDi-Cloud

Other features: Portable

Contact Sameer Sawarkar | Telephone +91 80 4131 3168 | Web https://bit.ly/1krHtJC

Colposcope for visualization of cervical cancer, mobile

Country of origin | Israel

Primary function | Diagnosis

Health problem addressed

Cervical cancer is the leading cause of cancer death for women in low-resource settings, with 528 000 new cases each year that result in 266 000 deaths. In contrast to low- and middle-income countries, cervical cancer rates in member countries of the Organisation for Economic Co-operation and Development (OECD) have declined drastically since the implementation of regular Pap screening 50 years ago. However, Pap testing requires a clinical workforce and laboratory infrastructure that is lacking in in many LMICs, and as a result, patients do not have this access to screening.

Disease addressed

Certain infectious and parasitic diseases; neoplasms; diseases of the genitourinary system; injury, poisoning and certain other consequences of external causes.

Technical descriptions

This system enables enhanced visual inspection of the cervix, allowing nurses and doctors to perform visual inspection with acetic acid (VIA) with magnification, polarization to reduce glare, and a consistent light source. The system securely captures cervical images and patient information to be used for improved patient tracking, follow up and referral, and allows for continuing medical education and ongoing supervision of screeners.

Developer's claims of products benefits

In 70 LMICs around the world, cervical cancer screening is done by VIA, an easy to implement procedure with limited diagnostic accuracy. To perform VIA, a practitioner applies a thin layer of 3-5% acetic acid to the cervix and visualises it from outside the vaginal canal using a light source. However, VIA suffers from a positive predictive value (PPV) of only 17%. This leads to overtreatment, and costs under-resourced health systems money, equipment, and time. This technology can be used to visualise the cervix to conduct VIA.

Operating steps

Turn on the phone. Enter the application using a password. Enter the patient information. Examine the patient using the lightsource on the device to visualise the cervix in the phone. Images can also be captured for later review, for patient sensitization and for remote consultation. The data is automatically stored in a cloud.

Regulatory status and standards compliance

Ministry of Health Pharmacy and Poisons Board, Kenya. IEC 60601 ISO 8600 series. (ISO 8600-5 and ISO 8600-3, respectively).

Use and maintenance

User: Midwife, nurse, general physician, specialised physician (gynecologist).

Training: The materials necessary for the training are the visualisation device and a smartphone with the dedicated mobile phone application. The training is focused on entering patient information, visualising the cervix, capturing images, entering a decision, marking a case for consultation, using the online webportal, maintenance and troubleshooting. Depending on the comfort level of the healthcare provider with a smartphone, the training can take anywhere from 1-4 hours.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, screening camps.

Energy requirements: Rechargeable battery.

Product specifications

Weight (kg): 1

Dimensions: 208mm x 78mm x 110mm

General product: Speculum, acetic acid, gloves

Lifetime: 10-15 years

In UN catalog: No

Commercial information

Reference price (USD): $1'500.00

Year of commercialization: 2014

Number of units distributed: 101-1 000

Software requirements: Proprietary

Model: Enhanced Visual Assessment (EVA) System, with CervDx mobile phone application

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Beery, Ariel Beery | Telephone +97 252 432 7686 | Web https://bit.ly/2NiwGBZ

Continuous Positive Airway Pressure, bubble

Country of origin | United States

Primary function | Treatment

Health problem addressed

Preterm birth is the second leading cause of death in children under 5, with over 1 million babies dying directly from complications of preterm birth. In the developed world, Continuous Positive Airway Pressure (CPAP) is the gold standard treatment for respiratory distress syndrome (RDS). This device is based on CPAP technology and aims to treat neonates, particularly premature neonates, suffering from RDS in low-resource settings.

Disease addressed

Diseases of the respiratory system; pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period.

Technical descriptions

The device consists of a flow source, pressure source, and patient tubing. The flow source, which is contained within a sheet metal enclosure, supplies a flow of room air and blends room air with supplemental oxygen. The pressure source is a column of water, and the user can adjust the pressure level by adjusting the level of water in the bottle. Infant-sized nasal prongs, connected to the patient tubing, provides the pressurised air flow to the patient.

Developer's claims of products benefits

Oxygen is the standard treatment for neonates with RDS in low-resource settings, although oxygen does not provide the pressure necessary to keep lungs inflated, and can be an ineffective treatment for many neonates. This technology is a low-cost, easy to use device that is designed to keep the patientês lungs inflated. The only additional components required are a power supply and source of oxygen. The device is designed to be very easy to assemble and use.

Operating steps

Fill the bottle to the specified pressure level. Attach the bottle tubing and the patient tubing to the device and attach the nasal prongs to the end of the patient tubing. Plug the power cord into an outlet and turn on the device. Set the oxygen flow and the total flow on the device. Attach the nasal prongs to the patient. Check for bubbling in the water bottle to confirm that the patient is receiving the pressurised air.

Regulatory status and standards compliance

European Community (CE-mark). The device is compliant with: ISO 14971, ISO 980, ISO 1041, ASTM D4169-09, ISO 10993, EC 60601.

Use and maintenance

User: Nurse, general physician, specialised physician

Training: A one-day training of the assembly, use, maintenance, and repair of the device is required in order for clinicians to be comfortable with and capable of providing CPAP therapy. Users are provided with a printed user manual and repair manual, as well as online training videos and documents.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, indoors, secondary level (general hospital), tertiary level (specialists hospital).

Facility requirements: Gas supply.

Energy requirements: Continuous power supply.

Product specifications

Weight (kg): 12

Dimensions: 480mm x 380mm x 310mm

Accessories: A 'starter kit' of accessories, includes hats, hat clips, nasal prongs, connectors, bottle tubing, and patient tubing. Additional accessories are available separately.

Consumables: A hat, a set of hat clips, nasal prongs, patient tubing, a bottle, and bottle tubing.

General product: The device should be used with a pulse oximeter, respiratory rate monitor, suction machine, and oxygen source (either a concentrator, cylinder, or piped).

Lifetime: 5-10 years

In UN catalog: Yes

Commercial information

Reference price (USD): $800.00

Year of commercialization: 2015

Number of units distributed: 101-1 000

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Robert Miros | Telephone +1 415 454 3005 | Web https://bit.ly/2L3QCf0

Cooling personal protective equipment for work in hot and humid environments

Country of origin | United States of America

Primary function | Protection

Health problem addressed

Many infectious diseases require the use of personal protection equipment (PPE), which is known to create a heat burden by adding layers that prevent evaporative cooling to the wearer. The impact of the overall thermal stress was realised during the Ebola response. This vest has a cooling system, which can help prevent heat and allows for safer, longer operations in PPE in hot and humid environments.

Disease addressed

The technology does not address a specific disease.

Technical descriptions

The vest is fitted with a set of cooling phase elements that are body heat-activated at 28°C (82°F) to cool the body without overcooling it. When the body temperature rises above 28°C, the vest will absorb the body heat. When heat is absorbed, cooling elements provide a comfortable and soothing cooling effect. The vest holds cooling elements close to the body for maximum heat absorption and is made from an advanced 3D air mesh designed to enable air flow for evaporative cooling.

Developer's claims of products benefits

There are many cooling technologies available, but few that allow for safe working environments while wearing PPE in hot and humid environments where evaporative cooling is not possible. Ice is known to overcool the body and creates logistical hurdles for recharging. Tethered systems do exist but are not interoperable with PPE. The technology contained in the vest is a phase change material (PCM) that activates at 28°C (82°F) and impacts the human system differently than microclimate cooling systems, which rely on colder temperatures or evaporation.

Regulatory status and standards compliance

PhaseCore is manufacutred to ISO 9001:2008 standards.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), technician, nurse, general physician, specialised physician, anyone in PPE.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Product specifications

Weight (kg): 2

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): $410.00

Year of commercialization: 2015

Currently sold in: United States, Canada, Australia

Number of units distributed: 1 001-10 000

Model: XPC Cooling Vest

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Randy Sakowitz | Telephone +1 703 955 7510 | Web https://bit.ly/1X9nhPW

Cryosurgery device for cervical cancer treatment and prevention

Country of origin | United States of America

Primary function | Treatment

Health problem addressed

Cervical cancer is the third most commonly diagnosed cancer in women worldwide, and yearly 90% of new cases are diagnosed in low- and middle-income countries (LMICs). This disease causes more than 250 000 deaths per year. Currently, gas-based therapy is by far the most common cryotherapy method. Many barriers exist for gas-based cryotherapy in LMICs, such as difficulty in procurement, cost, transportation, safety. This device does not use cryogenic gases, thus overcoming these obstacles.

Disease addressed

Neoplasms; diseases of the genitourinary system.

Technical descriptions

The device is designed to ablate tissue through the application of extreme cold temperature. It achieves very cold temperatures by the use of compression cooling technology, eliminating the need for gas. Medical personnel remove a cryogenic hand-piece from the system, attach a re-usable aluminum tip and perform the procedure. The system can be run on standard grid electricity or batteries.

Developer's claims of products benefits

Loop electrosurgical excision procedure (LEEP) is a popular technique for cervical cancer ablation in developed countries, but it is complex, very invasive, has many side effects and requires highly skilled personnel. Gas-based cryotherapy is another technique commonly used, but it is not designed for portability (due to weight and size), challenging to procure, costly and sometimes unreliable. The present cryogenic device requires no gas, is portable, rugged, reliable, affordable and consistently effective. It can also be operated on battery power.

Operating steps

Test the readiness of the unit with the temperature indicator. Place the aluminum tip on the tip holder. Insert the tip holder assembly into the vagina, placing the tip on the cervix. Remove the cold core handle from the unit. Fully insert the cold core handle into the tip holder assembly already in place on the cervix. The procedure lasts for 3-5 minutes (operators protocol preference). Remove the cold core handle, wait for the tip to thaw, then remove the tip holder assembly.

Regulatory status and standards compliance

United States of America (FDA).

Use and maintenance

User: Midwife, technician, nurse, general physician, specialised physician.

Training: A short in-service training is required, either by video conference or face-to-face, for approximately 30 minutes.

Maintenance/Calibration required: Yes

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), Tertiary level (Specialists hospital).

Facility requirements: Sterilization.

Energy requirements: Replaceable batteries, continuous power supply.

Product specifications

Weight (kg): 13

Dimensions: 27mm x 25mm x 67mm

Accessories: Optional battery power convertor

Consumables: An ethanol-based solution, less than one liter per year

General product: Timer

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): $4'250.00

Year of commercialization: 2016

Number of units distributed: 0-100

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Joanne Haas | Telephone +1 985 892 8827 | Web https://bit.ly/2LrGYiu

DICOM gateway for difficult enviroments

Country of origin | Brazil

Primary function | Diagnosis

Health problem addressed

This project aimed to shorten the response time from the onset of symptoms to a clinical examination using telecommunication technologies. The system combines quality of the examination report, independent from existing communication means.

Disease addressed

The technology serves to support diagnostic images of various diseases.

Technical descriptions

This technology is a system that allows for telecommunication and is specialised in traffic of large volumes of medical data. It can work through different means of communication, such as satellite connections or multiple cellular modems. Its major advantage is its adaptive capacity to the communication environment, being able to operate in unstable media, multiplexed and low-speed; and with compression factor of up to 93%.

Developer's claims of products benefits

Currently, imaging data is usually exchanged by direct transmission via conventional communication channels or private networks. The data is often large in size: a conventional X-ray examination can weigh up to 40 Mb, a mammogram up to 128 Mb. The standard communication protocol conventionally used is DICOM, which might not be suitable for transmission in external communication networks.

Operating steps

Obtain medical images through standard imaging procedure (X-ray, magnetic ressonance, computer tomography, etc). Transmit the data from the imaging equipment to the specialised Picture Archiving and Communication System (PACS) server. Through a DICOM gateway, the data are transmitted to a hospital, clinic or radiology centre and can be accessed and analyzed by a medical doctor.

Regulatory status and standards compliance

National Telecommunications Agency from Brazil. DICOM Standard.

Use and maintenance

User: Nurse, general physician, specialised physician.

Maintenance/Calibration required: Yes

Environment of use

Setting: Any setting or healthcare facility.

Facility requirements: Radiation isolation, access to the Internet, access to a cellular phone network.

Energy requirements: Continuous power supply.

Product specifications

Weight (kg): 1

Dimensions: 230mm x 60mm x 205mm

General product: Digital radiology equipments (X-rays, mammograph, CT scan, Magnetic Resonance, etc)

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Year of commercialization: 2016

Number of units distributed: 101-1 000

Contact Junqueira Julio | Telephone +55 21 3587 6075 | Web https://bit.ly/2mn3hLq

Disinfecting solution and equipment

Country of origin | United States of America

Primary function | Prevention

Health problem addressed

Regular infection/control and prevention can strengthen healthcare systems to deal with day-to-day infectious agents, as well as lay a solid foundation to deal with pandemic/crisis situations. This equipment is an easy, environmentally friendly and effective way to disinfect/ decontaminate hospitals, vehicles, labs and equipment, including delicate medical equipment. It is non-hazardous to ship and store, easy to apply with no toxic by-products or additives.

Disease addressed

Certain infectious and parasitic diseases; factors influencing health status and contact with health services.

Technical descriptions

The solution contains 7.8% hydrogen peroxide as the active ingredient. When the solution is run through the equipment, which features a cold plasma atmospheric arc, the resulting mist is high in reactive oxygen species, specifically hydroxyl radicals. The 2-4 micron mist is fast acting (5 second application) and highly effective (99.9999% reduction) against pathogens including bacteria, virus and spores. Oxygen and water are the end products.

Developer's claims of products benefits

Chlorine bleach is the most currently used disinfectant. Dangerous to ship and store, chlorine burns skin and eyes and is not appropriate for electronics. It is often inconsistently mixed and applied for uneven results. The solution presented above can be shipped by air (not hazardous), stored in ambient conditions, is effective in hot humid conditions, can be used on electronics and fabrics without degradation. It is pre-mixed, easy to apply and quick to work.

Operating steps

Wipe area to be treated with microfiber cloth (no chemicals). Put on personal protective equipment (goggles, N-95 mask, gloves). Place the bottle of solution in the machine. Turn machine on. Hold applicator approximately 45 cm from object to be decontaminated. Press button to begin spraying. Spray in slow, even strokes, in order to completely coat the trated area with light mist.

Regulatory status and standards compliance

SteraMist Equipment and SteraMist BIT are in compliance with US regulations, and is in the process to comply with EU REACH requirements.

Use and maintenance

User: Untrained individual, technician.

Training: A short overview of how to turn the machine on and off, how far to hold the applicator from the surface to be treated, how to make sure there is solution in the machine, etc. Training can be done in person, by pictogram or video.

Maintenance/Calibration required: Yes

Environment of use

Setting: Urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Energy requirements: Rechargeable battery, continuous power supply.

Product specifications

Weight (kg): 22

Dimensions: 560mm x 380mm x 640mm

Consumables: Disinfecting solution

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): $18'000.00

Year of commercialization: 2016

Number of units distributed: 101-1 000

Model: SteraMist

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Elizabeth Battaglia | Telephone +1 301 250 5316 | Web https://bit.ly/2NoK1Zh

Electrical stimulator for gait correction

Country of origin | Chile

Primary function | Rehabilitation

Health problem addressed

Drop foot is a common gait disturbance in patients with stroke, multiple sclerosis and spinal cord injury. This disorder is characterised by a non-voluntary control of dorsiflexor muscles, which means that is difficult to point toes toward the body (dorsiflexion) or rotate the foot inward or outward. Patients with drop foot have serious difficulties to walk and are at high risk of falling. According to the WHO, 15 millions people suffer from stroke worldwide each year.

Technical descriptions

This device is a functional electrical stimulator to correct gait in people with drop foot. It consists of a pressure sensor, a stimulator and two electrodes. The electrical stimulator allows for the obtention of surface symmetrical current levels between 0 and 100 mA, for loads of up to 1 kOhm and frequencies between 10 — 60 Hz. The user interface was designed in an Android application. The parameters of the device can be controlled from the smartphone or tablet and are transmitted to the device by Bluetooth.

Developer's claims of products benefits

Treatment for foot drop will depend on the cause. Early treatment may improve chances of recovery.

Treatments may include lightweight braces, shoe inserts (orthotics), physical therapy or surgery.

Operating steps

A pressure sensor located in the heel of the shoe of the patient will detect the state of the gait cycle. This information is processed by an electronic control unit, which through a control algorithm will determine whether to stimulate or not. Stimulation is made by a sequence of electronic pulses controlled by the control unit. The stimulus is applied to the skin (over the peroneal nerve) by two electrodes. The stimulator has only one button to activate the system.

Regulatory status and standards compliance

An homologated standard in Chile was applied to verify the IEC 60601.

Use and maintenance

Training: Training is necessary for user to correctly place the electrodes on the skin and the pressure sensor in the shoes. The training takes less than an hour.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.).

Energy requirements: Rechargeable battery.

Product specifications

Weight (kg): 0.12

Dimensions: 82mm x 56mm x 24mm

Accessories: Pressure sensor

Consumables: Stimulation electrodes

In UN catalog: No

Commercial information

Reference price (USD): $1'200.00

Year of commercialization: 2016

Currently sold in: Chile

Number of units distributed: 0-100

Software requirements: Proprietary, license free Android application

Model: SmartFES

Other features: Portable, single use

Contact Pablo Aqueveque | Telephone +56 41 266 1261 | Web https://bit.ly/2NIYLIA

Electrocardiogram, handheld, digital

Country of origin | India

Primary function | Diagnosis

Health problem addressed

According to WHO, 17.5 million people die every year of cardiovascular diseases (CVDs). In developing countries, access to heart healthcare is difficult due to poor infrastructure and the small number of cardiologists in hospitals.

This device offers a wholistic solution to diagnose and support heart patients, by providing neighbourhood doctors with the right equipment and knowledge to perform cardiac diagnosis.

Disease addressed

Diseases of the circulatory system.

Technical descriptions

The device is a 12 lead handheld digital electrocardiogram (ECG), SpO2 and blood pressure (BP) monitoring system with Android and cloud backend. It allows general physicians and technicians to quickly screen a heart patient potentially at risk. The data is acquired at 1kHz and transmitted to a native Android application wirelessly through Bluetooth. The application displays, analyses and transmits the data to a web application for real time remote diagnosis. PDF reports are generated with complete analysis.

Developer's claims of products benefits

Existing ECG monitors are expensive, bulky, standalone, mostly analog design (making them prone to failure) and require frequent calibration. Doctor and patient have to be colocated or else the report has to be carried by the patient for diagnosis. The present monitoring device is a completely digital, battery-operated and network-connected ECG machine. It allows patients to connect in real time irrespective of their location. The device supports multiple languages and automatically updates its software.

Operating steps

10 lead ECG cable and SpO2 finger clip must be connected to the patient. Cardiotrack data acquisition unit must be switched on. Enter patient details on Android application and click on 12 Lead ECG. ECG gets displayed on Android and stored on the tablet automatically. Generated PDF report can be emailed for referral.

Regulatory status and standards compliance

ISO certification through National Accreditation Board for Testing and Calibration Laboratories (NABL, India) accredited body Swisscert. ISO 13485.

Use and maintenance

User: Trained caregiver (e.g family member), technician, nurse, general physician, specialised physician.

Training: Device usage training required.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Energy requirements: Rechargeable battery.

Product specifications

Weight (kg): 0.14

Dimensions: 115mm x 69mm x 20mm

Consumables: Ag/AgCl ECG gel

General product: Android phone (mandatory), printer (optional)

Lifetime: 5-10 years

In UN catalog: No

Commercial information

Reference price (USD): $500.00

Year of commercialization: 2015

Number of units distributed: 101-1 000

Software requirements: Native Android application (free)|, browser-based Web application (free)||. ECG snapshots with patient data can be read without the hardware.

Model: Carbon

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Avin Agarwal | Telephone +91 78 299 03814 | Web https://bit.ly/2LfHnb2

Electrocardiographic measurement, mobile phone application

Country of origin | India

Primary function | Monitoring

Health problem addressed

Routine monitoring of health is a must for cardio-diabetic patients, but it is sometimes complicated for patients to have regular physical appointments with doctors. This device allows for electrocardiographic activity measurements, which are then stored on a secured cloud and can be shared with a specialist for consultation. Target population for this technology are cardio-diabetic patients, at risk patients and patients who underwent an intervention.

Disease addressed

Endocrine, nutritional, and metabolic diseases; diseases of the circulatory system.

Technical descriptions

The device consists in a 12-lead electrocardiogram (ECG) and a blood glucose (BG) sensor. It communicates with a mobile application through Bluetooth. The user's measurements acquired are transferred to the phone and are then stored on the cloud. The readings are sent for consultation through the mobile application and the specialist accesses it through the application or through the cloud server. Diagnostic and advice can then be sent to the user via text, e-mail and in-app notifications.

Developer's claims of products benefits

Existing self-use ECGs in the market are either single lead, 3-lead or 6-lead. This technology is 12-lead, which means that it provides more information and allows for a better diagnosis.

Operating steps

Switch on the device and pair it with the mobile application via Bluetooth. Measure an ECG/BG as per instructions displayed on the screen. Enter symptoms, save the record. Send it for a consultation to a specialist (optional). Receive the diagnostics and advice on the smartphone.

Regulatory status and standards compliance

European Community (CE-mark). ISO standards for medical devices.

Use and maintenance

User: Self-use/patient, general physician.

Maintenance/Calibration required: No

Environment of use

Setting: Anywhere.

Energy requirements: Rechargeable battery.

Product specifications

Weight (kg): 0.07

Dimensions: 60mm x 65mm x 22mm

Consumables: Glucose strips

General product: Smartphone with Bluetooth, partial Internet access

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): $220.00

Year of commercialization: 2015

Currently sold in: India, United Arab Emirates, Saudi Arabia, Kuwait, Bahrain, Oman, Qatar, Singapore, Thailand, Vietnam, Indonesia, United Kingdom and China

Number of units distributed: 1 001-10 000

Software requirements: Proprietary smartphone application

Model: LifePhone+ BG

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Kavea S. Abhishek | Telephone +91 874 682 6014 | Web https://bit.ly/2zSt2N4

External fixation for bone fracture

Country of origin | United Kingdom

Primary function | Treatment

Health problem addressed

External fixation is used for the treatment of all types of bone fractures. It is a clinical technique which has been used over the last 70 years. It is a treatment of choice in low-resource settings, because of the lack of sterile conditions and the lack of facilities. However, the problem is that modern, mechanically sound external fixators are too expensive for countries with low resources. This solution offers mechanically sound, easy to use modular systems at very affordable prices.

Disease addressed

Bone fractures.

Technical descriptions

This external fixation systems are made up of “pin to rod” and “rod to rod” clamps, connecting rods of various diameters and lengths, and stainless steel self-drilling bone pins of different diameters and lengths. Depending on the type of fracture and its anatomical location, the doctor or surgeon can construct an appropriate frame. Simple instruments for inserting the pins into the bone and for tightening the frame are supplied in the set.

Developer's claims of products benefits

Bone fractures can be treated in several ways: conservatively (with plaster or splint), through internal fixation (plates and screws, intra medullary nails, pins and wires) or through external fixation. Conservative treatment can only be used for simple stable fractures. Internal fixation requires sterile conditions and highly skilled surgeons. External fixation can be used for both simple and complex fractures, is minimally invasive and can be used under non-sterile conditions, outside of specialised healthcare facilities.

Operating steps

The operative technique of external fixation is well known to all orthopaedic surgeons or doctors trained to treat bone fractures.

Regulatory status and standards compliance

European Community (CE-mark). ISO.

Use and maintenance

User: General physician, orthopaedic surgeon.

Training: Orthopaedic surgeon training.

Maintenance/Calibration required: No

Environment of use

Setting: Secondary level (general hospital), field hospital.

Facility requirements: Sterilization.

Product specifications

Consumables: Bone pins

General product: X ray, sterilization

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): $200.00

Year of commercialization: 2012

Number of units distributed: 10 000-50 000

Model: Low cost/very low cost external fixation system

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact John Szego | Telephone +44 7788801854 | Web https://bit.ly/2L1nViY

Hypothermia monitoring bracelet for newborns

Country of origin | India

Primary function | Monitoring

Health problem addressed

Newborns are unable to regulate their body temperature, which might lead to hypothermia. Hypothermia affects 4-12 million of Indian newborns yearly. Hypothermia can result in poor growth, poor organ development and death. Preventing hypothermia is recognised by WHO and the Indian Government as an essential part of care for all newborns. However, seemingly simple temperature monitoring often goes overlooked in areas where nurses are few and parents are unaware.

Disease addressed

Pregnancy, childbirth, and the puerperium.

Technical descriptions

This hypothermia bracelet was developed by measuring newborn temperature over 4 studies, in 2 different hospitals, with approximately 400 newborns. Wrist and core temperature was correlated (R=0.7) and a sophisticated algorithm was developed to accurately identify hypothermia from continuous temperature measurement at the wrist. In parallel, a skin-safe bracelet was designed carefully to make sure it was comfortable, culturally acceptable, usable by the mother, and gave accurate measurements.

Developer's claims of products benefits

Regular temperature monitoring has the ability to prevent hypothermia and is therefore the standard of care in developed countries. However, as part of a research in more than 80 clinics around India, it was found that nurses are understaffed and unable to monitor newborns regularly. Additionally, parents are often uneducated and unaware of the dangers of hypothermia. For this reason, a thermal monitoring bracelet was developed, based on a technology similar to this of basic thermometer, with an alarm and colour-changing light to report hypothermia.

Operating steps

Put the bracelet around the newborn wrist. As long as the temperature of the newborn is high enough, a blue light blinks every 30 seconds. If the temperature of the newborn drops below the hypotermia threshold, an orange light blinks and an audio alarm plays until the temperature goes up again. Parents would perform Kangaroo mother care or swaddle the newborn to warm him/her up. If the bracelet continues to sound, medical intervention is required and caregivers should take the baby to a doctor. The device is water resistant, but not water proof. When the bracelet is taken off of the baby, it emits a white light.

Regulatory status and standards compliance

Silicone Bracelet - 100% hypo-allergenic medical-grade silicone material biocompatible as per ISO-10993 standard
Thermistor Metal Cup - Stainless Steel SS-316L.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), midwife, nurse, specialised physician.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, newborn surgery.

Facility requirements: Sterilization.

Energy requirements: Replaceable batteries.

Product specifications

Weight (kg): 0.009

In UN catalog: No

Commercial information

Reference price (USD): $21.00

Year of commercialization: 2015

Currently sold in: India

Number of units distributed: 101-1 000

Other features: Portable, single use

Contact Virginia Morgan | Telephone +91 97421 55702; +1 602 403 2595 | Web https://bit.ly/2Lmvkcc

Infusion rate monitor

Country of origin | United States of America

Primary function | Treatment

Health problem addressed

The device allows for precise medication management across multiple clinical conditions, including vasopressors, magnesium sulfate, oxytocin, quinine, and others. The impact of this technology on the provision of maternal healthcare alone is staggering, potentially saving hundreds of thousands of lives a year through improved treatment of eclampsia and postpartum hemorrhage. The device makes it possible for healthcare workers with minimal training to administer a wide variety of medication safely, even in settings where infusion pumps are not available.

Disease addressed

The technology does not address a specific disease.

Technical descriptions

The device is a supplementary system for monitoring the flow rate of intravenous fluids. It does not control flow rate. The device uses an infrared detector and emitter to monitor the drops through the drip chamber of a standard intravenous (IV) administration set. While tracking the intervals between drops, a patented software calculates the flow rate through the chamber and displays the flow rate on an LCD screen.

Developer's claims of products benefits

Medication management is often provided by infusion pumps, syringe pumps, or similar technology. Such products are expensive, require regular calibration and maintenance, use proprietary consumables and require significant training. Most also rely on power. This monitor operates from one AA battery, requires no maintenance or calibration, works with any tubing set, and users can be trained in under five minutes. The device also withstands environmental challenges, including heat, humidity, and dust.

Operating steps

Slide the monitor onto a drip chamber and turn it on using the first button on the left. Use the second button from the left to select tubing size/gtt of the infusion set (10, 15, 20, 60 gtt). Adjust the roller clamp inline with tubing set to establish desired rate. The screen of the monitor automatically displays infusion rate set with the roller clamp. The third button sets an optional alert once target rate is achieved. The fourth button toggles to show mL/hr, drops/minute, or volume.

Regulatory status and standards compliance

United States of America (FDA). IEC 60601-1: 2005 + CORR. 1:2006 + CORR. 2:2007 + AM1:2012, ANSI/AAMI ES60601-1:2005+A2 (R2012).

Use and maintenance

User: Midwife, technician, nurse, general physician, specialised physician.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Product specifications

Weight (kg): 0.108

Dimensions: 127mm x 28mm x 62mm

Consumables: Intravenous tubing sets

Lifetime: 0-2 years

In UN catalog: No

Commercial information

Reference price (USD): $150.00

Year of commercialization: 2015

Number of units distributed: 101-1 000

Model: HDAB

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Beth Kolko | Telephone +1 206 650 0120 | Web https://bit.ly/2mpnr7K

Multi-slice CT scanner

Country of origin | India

Primary function | Diagnosis

Health problem addressed

A computer tomography (CT) scanner is a front line modality for several acute conditions such as stroke and trauma. Developing countries like India, Nigeria, and China, to name a few, have an extremely high burden of conditions like stroke and trauma. However, the CT scan penetration in these countries is very low, in the range of 1-6 CT scan/million inhabitants, compared to 20 CT/milllion inhabitants in Organisation for Economic Co-operation and Development (OECD) countries.

Disease addressed

Diseases of the circulatory system; diseases of the respiratory system; diseases of the digestive system; diseases of the musculoskeletal system and connective tissue; injury, poisoning and certain other consequences of external causes.

Technical descriptions

The device is a multi-slice CT scanner that enables fast and high resolution imaging of the patient anatomy and related pathology. The scanner requires 50% less space and 47% lower power than previous generation scanners. A newly redesigned interface makes the workflow simpler to learn and use. With up to 32 slices per rotation, it is designed to provide exceptional image quality and supports advanced applications such as CT angiography, colonoscopy and perfusion.

Developer's claims of products benefits

The usability of the product has been validated by clinicians in laboratory conditions. Furthermore, over 400 scanners have been deployed worldwide, especially in low-resource settings. The user interface is easy to learn and use within 1-2 days of training for a radiographer. The scanner is approved for sale in more than 50 countries around the world with several installations in emerging markets like India, Vietnam, Bangladesh, Myanmar to name a few.

Operating steps

The scanner has a one time powerup procedure, after which patients are loaded on the patient table and operator positions the patient using the gantry control panel. The CT host computer allows the operator to select a scan, set scan parameters and complete the scan. The console software also allows viewing, post-processing, and reporting. The user interface will be available in several regional languages (Chinese, Italian, Spanish, French, Portugese, Korean, Japanese).

Regulatory status and standards compliance

European Community (CE-mark) , CFDA China, AERB India, Bapetan and Ministry of Health Indonesia. Product confirms to the requirements of Medical Device Directive 93/42/EEC and several IEC, ISO, and EN standards.

Use and maintenance

User: Technician.

Training: The user interface is easy to learn and use within 1-2 days of training for a radiographer. The technician is provided with a detailed user manual that provides an explanation of all the key procedures, from startup to calibration and daily usage.

Maintenance/Calibration required: Yes

Environment of use

Setting: Secondary level (general hospital), tertiary level (specialists hospital).

Facility requirements: Specific ambient temperature and/or humidity range, radiation isolation.

Energy requirements: Continuous power supply

Product specifications

Weight (kg): 1 700

Dimensions: 1783mm x 1741mm x 921mm

Lifetime: 5-10 years

In UN catalog: No

Commercial information

Reference price (USD): $250'000.00

Year of commercialization: 2015

Currently sold in: India, China, Bangladesh, Bhutan, Nepal, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, United Kingdom, Chile, Paraguay, Bolivia, Thailand, Philippines, Vietnam, Myanmar, Indonesia, Malaysia, Cambodia, Singapore, Morocco, Zambia, Mozambique, Namibia, Botswana, South Africa, Nigeria, Egypt, Kenya, Algeria, Tunisia, Senegal, Chad, Ivory Coast, Zimbabwe, Malawi, Swaziland, Lesotho, Angola, Uganda, Libya, Congo, Democratic Republic Congo, Burkina faso, Niger, Rwanda, Mauritania, Mali, Cameroun, Guinea, Guinea-Bissau, Belize, Guatemala, Honduras, Nicaragua, Panama

Number of units distributed: 101-1 000

Software requirements: Proprietary; advanced software applications can be purchased for specific clinical needs.

Model: GE Revolution ACT

Other features: Reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Srikanth Suryanarayanan | Web https://bit.ly/2LIftXR

Online platform for building a mobile application for low-resource settings

Country of origin | United States of America

Primary function | Data Collection

Health problem addressed

In low-resource settings, community health workers (CHWs) are often the first point of care for healthcare. CHWs are recognised for being successful in "reducing morbidity and averting mortality in mothers, newborns, and children" (One Million CHW campaign). Yet often times, CHWs do not have the necessary training, support, or tools to do their jobs as effectively as possible.

Disease addressed

The technology does not address a specific disease.

Technical descriptions

This website is a customisable, open source mobile platform that enables non-programmers to build mobile applications for data collection, counseling, behavior change, and a variety of other functions. Active in over 50 countries, hundreds of organizations have used this platform to build mobile applications that are designed to support frontline workers (FLWs) across a variety of sectors in low-resource settings.

Operating steps

The platform is designed to be used and built by non-programmers. Numerous tools are provided to support users in building mobile application, including a help site (https://fieldresearch.miraheze.org/wiki/Commcare) and online courses (https://academy.dimagi.com/), in addition to having field services available for hire.

Regulatory status and standards compliance

HIPAA.

Use and maintenance

User: Trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialised physician, community health workers, frontline workers.

Training: There is no typical training, because the possible applications of the platform are very wide. Users must be trained on how to use their custom mobile app. The time required often depends on the level of technology literacy users have, and how complicated the app is.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, in public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Energy requirements: Rechargeable battery.

Product specifications

General product: Computer or smartphone, Internet access

Lifetime: 2-5 years

In UN catalog: Yes

Commercial information

Year of commercialization: 2016

Number of units distributed: 101-1 000

Software requirements: Open source software

Model: CommCare

Other features:

Contact Gillian Javetski | Telephone | Web https://bit.ly/2JsPH2k

Phototherapy, for jaundice

Country of origin | Vietnam

Primary function | Treatment

Health problem addressed

This device is used to treat hyperbilirubinemia, or jaundice. Approximately 60% of normal newborns become clinically jaundiced during their first week of life. If not treated in time, jaundice can cause severe physical damage to the child. Early recognition and intervention is very important for the success of the therapy.

Disease addressed

Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism.

Technical descriptions

Phototherapy is a non-invasive, simple to use and highly effective solution to jaundice problem. The LED light source emits blue light in the spectrum of 455-475 nm, a range at which the light breaks down the molecule responsible for jaundice (bilirubin) in the neonatal patient's blood. The by-products of the bilirubin are then excreted into the feces and urine of the patient.

Developer's claims of products benefits

The LED light source allows for a low-cost and low-maintenance product. The device can be used in combination with any radiant warmer, infant bed or incubator available on the market. It has two canopies which do not interfere with radiant warmers and provide maximum exposure to the LED light, one of the most important factors for effective therapy. There is no need for horizontal adjustment, which simplifies the use and maintenance.

Operating steps

Plug in the device to the power outlet. Turn on the device by pressing the "On/Off Button". Select the therapy mode (standard or intensive). Place the patient under the light. Make sure that patient wears eye protection. Monitor the patient.

Regulatory status and standards compliance

European Community (CE-mark). EN 60601-1:2006/AC2010, EN 60601-1-2:2007/AC2010, EN 60601-2-50: 2009, EN 60601-1-6:2010.

Use and maintenance

User: Nurse, general physician, specialised physician.

Maintenance/Calibration required: No

Environment of use

Setting: Indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital)

Facility requirements: Specific ambient temperature and/or humidity range.

Energy requirements: 1m^2 solar panel or AC power supply for 6 hours.

Product specifications

Weight (kg): 15

Dimensions: 600mm x 500mm x 1550mm

Accessories: Eye Patch

Consumables: None

Lifetime: 5-10 years

In UN catalog: No

Commercial information

Reference price (USD): $950.00

Year of commercialization: 2016

Number of units distributed: 100- 1000

Software requirements: Proprietary

Model: Colibri Phototherapy

Other features: Reusable (assuming appropriate decontamination and/or other reprocessing between uses); optional 15 hours battery backup.

Contact Gregory Dajer | Telephone +84 43 766 6521 | Web https://bit.ly/2mpv8uA

Phototherapy, LED, for jaundice

Country of origin | India

Primary function | Treatment

Health problem addressed

Jaundice is the first cause for newborns readmittance to hospitals worldwide. About 3 in 5 children have some degree of jaundice. For approximately 18% of babies, the condition is severe and requires treatment. Severe jaundice, when left untreated or ineffectively treated, can lead to severe brain damage (a condition called kernicterus) or death.

Disease addressed

Pregnancy, childbirth, and the puerperium.

Technical descriptions

The device is an easy-to-use LED-based phototherapy designed for treating infants with jaundice, a condition that affects 60% of the babies born worldwide.

Developer's claims of products benefits

Most phototherapy devices on the market use tube lights or compact fluorescent (CFL) bulbs for phototherapy, which do not provide adequate intensity and surface area coverage. This phototherapy device has greater intensity than the typical phototherapy devices and has an integrated light meter, expanded functionality, and a sleek look to work better in the neonatal intensive care unit. Tests conducted at the Stanford School of Medicine show that the device performs on par with or better than state-of-the-art phototherapy devices. It lasts over 60 times longer than CFL commonly used in phototherapy devices do.

Operating steps

After installation, plug the device into main power. Switch on the device and set the intensity level using the "Intensity Adjustment" buttons. Other buttons are "Observation Light" and "On/Off" buttons. Protect the new born's eye and genital parts with eye mask and gonad pads during therapy.

Regulatory status and standards compliance

European Community (CE-mark). ISO.

Use and maintenance

User: Midwife, nurse, general physician, neonatologist.

Maintenance/Calibration required: Yes

Environment of use

Setting: Rural settings, primary level (health post, health centre), secondary level (general hospital).

Energy requirements: Continuous power supply.

Product specifications

Weight (kg): 12

Dimensions: 123mm x 69mm x 64mm

Accessories: Light meter to check the intensity

Consumables: Eye mask, genital pads

Lifetime: 5-10 years

In UN catalog: No

Commercial information

Reference price (USD): $500.00

Year of commercialization: 2014

Number of units distributed: 1 001-10 000

Model: Brilliance Pro

Other features: Reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Krista Donaldson | Telephone +1 415 642 1143 | Web https://bit.ly/1mzk6Ns

Portable detector for analog radiographic systems

Country of origin | China

Primary function | Diagnosis

Health problem addressed

This X-ray device can be used to detect a variety of diseases in the skeletal system and soft tissues. Common uses include chest, abdomen and bone imaging. A specific use could be to detect pneumonia, which accounts for 15% of all deaths of children under 5 years old, killing an estimated 922 000 children in 2015.

Disease addressed

The technology does not address a specific disease but serves to diagnose various diseases.

Technical descriptions

The X-ray system is composed of a 35 cm x 43 cm cassette-size detector that can fit into analog radiography system trays. The detector has an auto-sensing function which automatically detects X-rays. This allows the system to acquire a digital image with any timing synchronization. The user can share the system on most other fixed radiology systems to acquire digital radiography image in very short time, without the need for hardware connection.

Developer's claims of products benefits

Commonly used X-ray technologies are Analogue Radiography (AR), Computer Radiography (CR) and Digital Radiography (DR). All of them present shortcomings: AR requires development on a film, which result in patient waiting; CR is less efficient than DR; DR is expensive. The present device provides an affordable digital solution, which allows to upgrade an analogue system into a digital one.

Operating steps

Log in the system. Refresh the patient form radiology information system (RIS) or manually add new patient information. Select the acquisition protocol. Position the patient on the target X-ray system. Set technique parameters on the target system. Start detector auto sensing X-ray function. Trigger X-ray exposure in target system. The acquired images are displayed. Reprocess, print and/or transfer images. Close the exam.

Regulatory status and standards compliance

China (CFDA). EN 60601-1:2006 EN 60601-1-2:2007, EN 60601-1-6:2010 EN 62304:2006, EN 62336:2008 EN ISO 10993-1:2010, EN 1041: 2008 EN 980: 2008, EN ISO 14971: 2012 EN ISO 13485: 2012/AC: 2012, EN 301 489-1 V1.9.2 EN 301 489-3: V1.6.1 EN 301 489-17: V2.2.1, EN 301 893 V1.1.7.1 EN 300 440-1 V1.6.1 EN 300 440-2 V1.4.1.

Use and maintenance

User: Technician, specialised physician.

Training: The system application requires on-site training, which lasts for about 4 hours.

Maintenance/Calibration required: Yes

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Facility requirements: Radiation isolation.

Energy requirements: Replaceable batteries, rechargeable battery.

Product specifications

Weight (kg): 3.5

Dimensions: 460mm x 384mm x 16mm

Lifetime: 15-20 years

In UN catalog: No

Commercial information

Year of commercialization: 2016

Currently sold in: China

Number of units distributed: 0-100

Software requirements: Proprietary

Model: Brivo XR118

Other features: Reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Tang Song | Telephone +86 185 01948812 | Web https://bit.ly/2L3XXeD

Preterm newborn simulator

Country of origin | Norway

Primary function | Simulation

Health problem addressed

Prematurity is the major cause of newborn death and disability globally. Each year, preterm complications account for over 1 million deaths, often from preventable causes. Skin-to-skin, proper feeding and infection prevention (Kangaroo mother care method) can avert up to 450 000 preterm deaths each year by 2015 if near-universal coverage is achieved (Lancet, 2013).

A recent Lancet article reports that scaling up of breastfeeding to a near universal level could prevent 823 000 deaths annually.

Disease addressed

Certain conditions originating from the perinatal period.

Technical descriptions

The product represents a preterm baby around 32 weeks gestational age or a 1.6 kg low birth weight newborn. It can help train health providers in skin-to-skin care, feeding with nasogastric (NG) feeding tube, and attachment and positioning during breastfeeding. The product can be used along with a breastfeeding simulator.

The product is filled with 1.5 litres of water before use to provide realistic weight and can be emptied and deflated, for convenient and light weight transportation.

Developer's claims of products benefits

Compared to existing high-end solution, the product enables role-play, provides realistic simulation and feedback of NG tube placement and feeding, is affordable (60 USD vs 400 USD) to enable large scale deployment and is light weight for ease of transport. Compared to existing low-end solutions, the product is anatomically accurate for preterm identification and enables realistic training of NG tube placement and feeding.

Operating steps

Fill body foil with about 1500 mL of water (lukewarm water will simulate realistic temperature). Fill simulated stomach with 10 mL of water. Use simulator for training in preterm newborn care, like nasogastric tube insertion and feeding, breastfeeding positioning and attachment, skin-to-skin and Kangaroo mother care. Leave simulator available for retraining, or empty water from simulator for convenient transport.

Regulatory status and standards compliance

The preterm simulator has been developed according to the manufacturers quality system. There are no standards that apply for this type of product.

Use and maintenance

User: Trained caregiver (e.g family member), midwife, nurse, general physician, specialised physician.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), anywhere.

Product specifications

Weight (kg): 29

Dimensions: 300mm x 270mm x 170mm

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): $60.00

Year of commercialization: 2015

Number of units distributed: 1 001-10 000

Model: PreemieNatalie

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Tor Inge Garvik | Telephone +47 515 11 749 | Web https://bit.ly/2LpsPm2

Safety blood lancet

Country of origin | Japan

Primary function | Prevention

Health problem addressed

Blood drawing is necessary for diagnosis and analysis in many diseases: diabetes, Dengue fever, Ebola, etc. In 2012, diabetes was the direct cause of 1.5 million deaths. In subtropical and tropical areas, Dengue fever affects 50 million people. There were 28 603 cases of infections of Ebola in West Africa. However, blood drawing with a metal sharp finger stick might lead to infection.

Disease addressed

Certain infectious and parasitic diseases; diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; endocrine, nutritional, and metabolic diseases.

Technical descriptions

This device is a finger prick system, or lancet, designed to draw and inspect small amounts of blood (1 - 100µl). Instead of the conventional stainless steel, the lancet is made of a polyactic-acid resin, mimicking the stylet of a mosquito. The absence of blade in the device prevents risks of sharp injury. The lancet easily punctures the skin through a spring mechanism, without causing any pain. The resin lancet cannot be reused, because the spring mechanism can only be activated once. After having jumped out of the case, the lancet tip goes back inside.

Developer's claims of products benefits

The resin finger prick system can be used by minimally skilled health workers. It is individually packaged, compact and sterile, optimal for low-resource settings. Because the needle is made of resin, the lancet does not have a blade, thus preventing the risk of sharps injury. Once used, the resin lancet goes back into the case and cannot be reused, avoiding multi-use of the device.

Operating steps

Open the package from the side nearest the green or the orange base. Grip by the base and hold the white section flat against the top of the finger (do not apply the needle to the side of the finger). Press down firmly until a click sound is heard, then dispose. If an insufficient amount of blood is coming out, massage the finger towards the puncture mark.

Regulatory status and standards compliance

United States of America (FDA), Japan (JMHLW), Singapore (HAS), Philippines (FDA). ISO7864: 1993-05-15 Sterile hypodermic needles for single use.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), technician, nurse, general physician.

Maintenance/Calibration required: No

Environment of use

Setting: Any setting or healthcare facility.

Facility requirements: None.

Product specifications

Weight (kg): 0.002

Dimensions: 38mm x 15mm x 14mm

Accessories: None

Consumables: None

In UN catalog: Yes

Commercial information

Reference price (USD): $0.30

Year of commercialization: 2012

Currently sold in: Globally

Number of units distributed: > 50 000

Model: PIINIX Light 0.4mm, PIINIX Light 0.8mm,

Other features: Portable, single use

Contact Mitsuo Fukuda | Telephone +81 798 52 3594 | Web https://bit.ly/2LiQgAK

Sanitary pads, reusable

Country of origin | Uganda

Primary function | Protection

Health problem addressed

Menstruation is one of the most common and uniquely female experiences. Yet, millions of women and girls around the world face challenges managing their monthly periods. As many as one in ten girls in Sub-Saharan Africa miss school because of their period and many women are forced to lose out on productive days of work because of lack of access to affordable and healthy feminine hygiene products.

Disease addressed

Pregnancy, childbirth, and the puerperium as well as female life course, not a specific disease.

Technical descriptions

The menstrual kit includes 4 reusable sanitary pads designed to provide feminine hygiene protection and comfort, they are made from high-performance textiles to provide effective protection for 12+ months. The design is an all-in-one pad that buttons into a pair of underwear. After use, the product folds conveniently for easy storage before washing.

Developer's claims of products benefits

Women and girls in over 30 countries, largely in Sub-Saharan Africa and the Middle East have used them. They are often distributed in refugee settings and rural low income settings where access to menstrual hygiene products is scarce or completely lacking.

Operating steps

Wrap the wings of the pad around the undergarment and button underneath. Make sure the soft side is up. It is now ready for use. If the pad needs to be changed, fold it and put in the bag if you cannot wash immediately. To clean, soak the pads in clean, cold water for 15 minutes. After soaking, use clean water and soap to wash your pads thoroughly. Rinse with clean water afterward. Hang to dry in direct sunlight or inside a ventilated areas. Reuse when dry.

Regulatory status and standards compliance

UNBS has recently (December 2017) passed a new standard for reusable pads. All requirements for the standard are completed and is expecting to officially receive the standard stamp in February 2018.

Use and maintenance

User: Self-use and untrained individual.

Environment of use

Setting: Rural settings, urban settings, anywhere.

Facility requirements: Running water.

Product specifications

Dimensions: 280mm x 90mm x 3mm

Accessories: Underwear

Lifetime: 0-2 years

In UN catalog: No

Commercial information

Reference price (USD): 4.65

Year of commercialization: 2009

Currently sold in: 30 countries in Africa and Eastern Mediterranean

Number of units distributed: 50,000+

Other features: Reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Katy Lindquist | Telephone +256 779 605 297 | Web https://bit.ly/2bD03hk

Sheet, multifunctional disposable biodegradable

Country of origin | Norway

Primary function | Prevention

Health problem addressed

The product acts as a single sheet covering for various types of beds/surfaces, draping of injured and dead bodies, operating theatres, hypothermia cover and it is well suited as a transfer sheet. The product is reducing risk of contamination, protecting both patient and staff from infection. Designed to support people in vulnerable situations under poor conditions and at the hospital. Applicable in disaster areas.

Disease addressed

Certain infectious and parasitic diseases, pregnancy, childbirth, and the puerperium, injury, poisoning and certain other consequences of external causes.

Technical descriptions

The product is comprised of a three-ply, highly absorbing laminate. The top layer is white non-woven fabric made from viscose and polyester, which ensures rapid absorption, high elasticity and durability. The thin middle layer consists of super absorbing polymers. The bottom layer is a biodegradable film which acts as a barrier against moisture and liquid penetration. Tapes along the side to fix the sheet firmly.

Developer's claims of products benefits

The product is ultra efficient. Compared to traditional cotton with low-end disposable sheets/pads the product will contribute with significant cost reduction related to: easy logistics, cleaning work, risk of contamination and infection, consumption of water and electricity. Other added values to be mentioned tapes and odor control.

Operating steps

Unfold the product. Place it on the underlayer with the blue side facing downwards. Place the patient on top of the sheet. If necessary use the tapes to make bags along bed sides to collect liquid spill or to wrap the sheet around the person. For lifting and transportation use the sheet it self by twisting and wrapping the sheet corners around the fists.

Regulatory status and standards compliance

CE. ISO9001 and ISO14001.

Use and maintenance

User: Self-use, patient, untrained individual, midwife, nurse.

Environment of use

Setting: Rural, urban, outdoors, indoors, home, public places, primary level, secondary level, tertiary level, ambulances, anywhere.

Product specifications

Weight: 0.4kg

Dimensions: 245mm x 140mm x 7mm

Lifetime: 2-5 years

In UN catalog: No

Commercial information

Reference price (USD): 8

Year of commercialization: 2015

Currently sold in: Globally

Number of units distributed: 50,000+

Other features: Single use

Contact Astrid Skreosen | Telephone 0047 926 80 295 | Web https://bit.ly/2LgfGPw

Steel kit for mass transport of patients

Country of origin | United States of America

Primary function | Treatment

Health problem addressed

Low-resource areas lack ambulances or means to safely transport large numbers of patients or casualties. With this kit, pick-up trucks and buses, which are usually more readily available to transport people to medical treatment areas, can be transformed to transport 6 patients (3 high, 2 wide). The kit has dual use capability, allowing the system to be either mounted inside of a vehicle or to freely stand for sheltering of patients.

Disease addressed

The technology does not address a specific disease.

Technical descriptions

The kit can be utilised globally for the mass transport of patients and casualties during any health problem. It consists in a zinc coated structural steel kit. Its pieces are hand assembled with simple nuts and bolts to create a frame that expands in length, width, and height, which can be used free standing, bolted in place, or pressure mounted. The kit is designed for use with pole stretchers which can stack 3 high and/or 2 wide to hold 6 people.

Developer's claims of products benefits

Ambulances are the global standard for patient transport, but are costly to acquire and maintain for a limited transport space. Low resource areas will use any vehicles available to transport the sick and wounded, but there are no existing solutions available to transport multiple patients in a large vehicle. This kit can utilise existing vehicles, such as pick-ups and military trucks, to transport more people at once. The kit can easily be decontaminated.

Operating steps

The kit is packaged in a reusable shipping container that can be forklifted or broken down and hand carried into place. The kit assembles using a single size bolt and comes with a tool box of hand tools. The frame can be assembled within 20 minutes using just the hand tools provided. There are no mechanical or moving parts so the kit is very easy to operate. The kit holds up to 6 standard NATO pole litters. Patients are loaded from top to bottom. Weight bearing arms are included.

Regulatory status and standards compliance

There are no applicable standards or equivalents, but the kit is manufactured at an ISO 9001-2008 facility.

Use and maintenance

User: Untrained individual, trained caregiver (e.g family member), technician, nurse, general physician, logistics manager/team.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), ambulances, anywhere.

Product specifications

Accessories: NATO pole stretchers

Lifetime: 5-10 years

In UN catalog: No

Commercial information

Reference price (USD): $25'000.00

Year of commercialization: 2012

Number of units distributed: 101-1 000

Model: AmbuBus

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Randy Sakowitz | Telephone +1 703 955 7510 | Web https://bit.ly/2Jsk3Sw

Surgical gown, self-donning and adjusting

Country of origin | Japan

Primary function | Protection

Health problem addressed

During healthcare delivery, standard surgical gowns often become soiled with potentially contaminated bodily fluids. They are time-consuming to don and remove correctly, and may require the assistance of another staff member to properly secure. The correct use of surgical gowns is critical for the personal protection of healthcare workers. The self-donning and adjusting surgical gown design can be put on and taken off more quickly and safely without requiring assistance. While the gown is suitable for all healthcare delivery environments, its design is particularly useful for improving staff safety in low-resource settings and emergencies.

Disease addressed

The technology does not address a specific disease, but is a crucial component of the equipment used to comply with infection prevention protocols for many health interventions.

Technical descriptions

The innovative design of this gown includes a special spring along the neckline, so that the user can don the gown without the need of an assistant. The spring characteristic of the neckring provides the wearer the flexibility to bend over. The belt is easy to reach and tie. One end of the belt is on the front of the gown. The other end of the belt contains a mild adhesive at the tip so that the wearer can affix it to a surface, such as a wall or table, enabling the worker to simply rotate their body until the second end of the belt is also in front of them. The wearer is then able to self-tie the waist belt and maintain sterility. The sleeves are designed to facilitate the removal of gloves without compromising the protective barrier.

Developer's claims of products benefits

The innovative gown helps to reduce the risk of transmission of infectious pathogens to healthcare personale and also minimizes the onward transmission of infection into the environment. The gown can be removed and folded to contain the outer contaminated surface within the clean inner surface. Used gloves are easily turned inside-out and folded into the gown at the same time.

Operating steps

Wear the gown (insert the arms). Hang the neck wire to your neck. Pass through the arm. Put on the gloves. Peel off the double face tape of string holder and adhere to a table or wall. Turn around 360 degrees. Hold the string. Cut off the string with perforation. Finally tie up the string at the side. (https://www.youtube.com/watch?v=znpwimlsfj4)

Regulatory status and standards compliance

In process for CE mark in 2018. ANSI AAMI PB70:2012.

Use and maintenance

User: Self-use and untrained individual

Training: No

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, anywhere.

Facility requirements: None

Energy requirements: None

Product specifications

Weight (kg): 0.1

Dimensions: 250mm x 370mm x 40mm

Lifetime: Single use, shelf life 2 -5 years.

In UN catalog: No

Commercial information

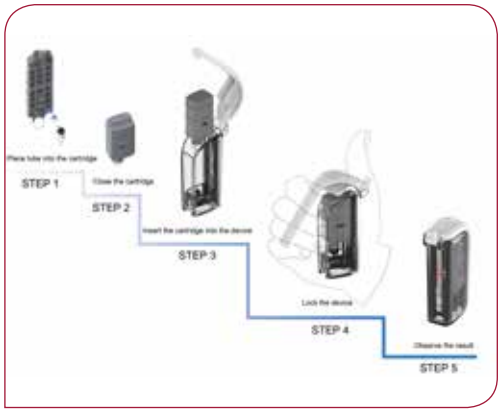
Year of commercialization: 2017

Number of units distributed: 1 001-10 000

Currently sold in: Western Pacific and South East Asia Region

Contact Yuko Matsuda | Telephone +81 6 6924 0495 | Web https://bit.ly/2NXYdJR

Tuberculosis detection kit based on isothermal amplification



Country of origin | China

Primary function | Diagnosis

Health problem addressed

Tuberculosis (TB) is a major global health problem, affecting millions of people each year and is a leading cause of death worldwide. In 2014, an estimated 9.6 million new TB cases and 1.5 million deaths occurred. The South-East Asia, Western Pacific and African Regions collectively account for 86% of the world's TB cases. With a timely diagnosis and correct treatment, almost all patients can be cured.

Disease addressed

Certain infectious and parasitic diseases such as TB.

Technical descriptions

Cross priming amplification (CPA) is a class of isothermal amplification reactions that is carried out by a strand displacement DNA polymerase. Strand displacement is encouraged by the annealing of cross primers with 5' ends that are not complementary to the template strand and the binding of a displacement primer upstream of the crossing primer. The resulting exponential amplification of target DNA is highly specific and highly sensitive, producing amplicons from as few as four bacterial cells.

Developer's claims of products benefits

Current state-of-the-art technology for TB detection are chest X-rays and computer-aided detection; smear diagnosis; culture-based tools and nucleic acid amplification-based tests. These tests either require well-trained staffs to interpret results or expensive equipment, which are usually not suitable for low-resource settings. Often, transportation is difficult or rapid testing and detection of TB on the same day might not be possible. This technology is affordable, sensitive, specific, user-friendly, resistant to ambient temperature transport, shows rapid result and consists in an instrument-free device.

Operating steps

Extract TB DNA is from a sample using boiling and chemical reagents from specimens. Add the extracted DNA into a reaction solution containing specific primers and probes, amplification reagent and glassified Bst DNA polymerase. In the reaction solution, amplification and hybridization are carried out in one step. Subsequently, any presence of amplified TB DNA in the end product is detected by a disposable detection device. Appearance of a control line and a test line indicates a positive reaction.

Regulatory status and standards compliance

European Community (CE-mark), China, Philippines, Indonesia. ISO 13485:2012.

Use and maintenance

User: Technician, nurse.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Facility requirements: Clean water supply, healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.).

Product specifications

Weight (kg): 0.05

Dimensions: 25mm x 53.6mm x 91.5mm

Consumables: Micropipette and disposable tips, sutum collection container, liquefying bottle or leak-proof 5-10 ml centrifuge tube, 1.5 ml centrifuge tubes with safe-lock feature.

General product: Any isothermal heating device (eg heating block, water bath, etc.), centrifuge (10 000 rpm), Vortex, timer

In UN catalog: No

Commercial information

Reference price (USD): $15.00

Year of commercialization: 2014

Currently sold in: China, Indonesia, Philippines, South Africa

Number of units distributed: 1 001-10 000

Other features: Portable

Contact Lin Hu | Telephone +86 571 88939355 | Web https://bit.ly/2L5boek

Ultrasound system, compact

Country of origin | China

Primary function | Diagnosis

Health problem addressed

Ultrasound has been a widely-used tool for the assessment and monitoring of acute and chronic diseases. A versatile system able to cover a range of clinical aspects could potentially increase effectiveness of timely diagnosis and reduce the cost of healthcare. This system covers a wide range of clinical areas to meet the needs of patients from all walks of life, making it adequate for primary care general practitioners set in developing countries.

Disease addressed

The technology does not address one specific disease. It supports the diagnosis and monitoring of pregnancy, can be used in emergency and trauma and management of chronic diseases.

Technical descriptions

This portable ultrasound system is easy to use, portable, reliable, enhanced with guidance and automation, and allows for colour imaging. It covers a wide range of clinical specialties.

Developer's claims of products benefits

Similar devices are focused on cost reductions at the expense of quality, reliability, and development. This device is designed to meet the needs of developing countries. User guidance and automation allow for quality measurements.

Operating steps

Turn on the system. The booting up process will initialize. No user intervention is required until the boot up is complete. Place gel onto the scanning surface of the ultrasound probe. Place the probe onto the body region of interest. Use the "scancoach" option for guidance through the scan process. After completion of scan, post processing measurements can be carried out during or at the end of the examination. A report can be generated and printed if required.

Regulatory status and standards compliance

European Community (CE-mark), United States of America (FDA), Japan (JMHLW), EC TUV, MDS2, MSDS. DICOM and IHE.

Use and maintenance

User: Technician, nurse, general physician, specialised physician.

Training: Training would be tailored to the user's knowledge of ultrasound technology.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Facility requirements: Specific ambient temperature and/or humidity range.

Energy requirements: Rechargeable battery, continuous power supply.

Product specifications

Weight (kg): 6

Dimensions: 396mm x 368mm x 83mm

Accessories: Probes

Consumables: Ultrasound Gel

Lifetime: 5-10 years

In UN catalog: No

Commercial information

Reference price (USD): $24'000.00

Year of commercialization: 2015

Number of units distributed: 101-1 000

Software requirements: Proprietary software

Model: LOGIQ V2

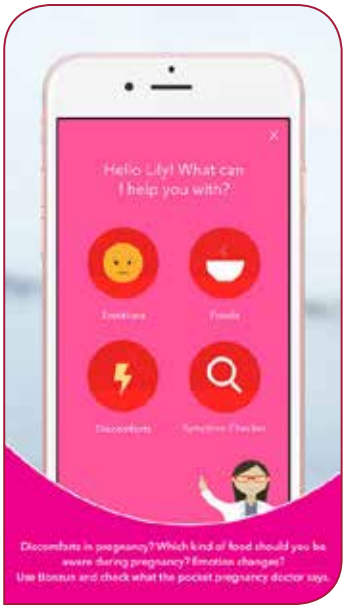
Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

Contact Marvin Ler | Telephone +65 90102597 | Web https://bit.ly/2LijX4N

Virtual midwife and obstetrician

Country of origin | Sweden

Primary function | Prevention



Health problem addressed

Pregnancy is the number one cause of death for women. Each year, more than 50 million women give birth at home without the help of a trained professional. For every woman who dies of pregnancy-related affectations, at least 20 more suffer complications which leave them with lifelong disability and pain. A child whose mother dies during childbirth is 3-10 times more likely to die before his or her second birthday.

Disease addressed

Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period; factors influencing health status and contact with health services.

Technical descriptions

Sweden has a very low maternal mortality, because of an effective prevention and prediction of complications. An algorithm was created from the data on Swedish maternal care and built into an app, so women everywhere can have access to Swedish quality health care. The software is available for all common smartphone operating systems. The software can help prevent and predict following complications: anemia, blood clots, gestational diabetes, pre-eclampsia, eclampsia, the HELLP-syndrome.

Developer's claims of products benefits

Today, a pregnant woman needs to go to the hospital and talk to a doctor to get quality advice. Not all the information accessible online is useful nor reliable. It is often inaccurate, and if it comes from a quality source, the woman needs to know the medical term for her symptom, or her diagnosis, in order to learn more. For example, one symptom of hypertension is eyes hurting, but a woman presenting this symptom will likely not know she should search "hypertension" to get more information about her condition. This application empowers the women to make their own decisions.

Operating steps

A symptom checker will give the pregnant women information if her discomfort is normal or the sign of a possible complication. She can then call a doctor and talk with them to get advice. A pregnant woman will get weekly updates on the changes that will happen in her body, to learn what discomforts are normal and expected, and what could be a serious complication. She learns when to seek emergency assistance and when it is safe to stay at home.

Regulatory status and standards compliance

This does not apply to the present software.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), midwife.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre).

Facility requirements: Access to the Internet, access to a cellular phone network.

Product specifications

Accessories: A smartphone

Lifetime: 20+ years

In UN catalog: No

Commercial information

Reference price (USD): $0.00

Year of commercialization: 2015

Number of units distributed: > 50 000

Software requirements: Open source, license free software

Other features: Portable

Contact Bonnie Roup | Telephone +46 73 414 9149 | Web https://apple.co/2LqF6GT

White blood cell counting system

Country of origin | Sweden

Primary function | Diagnosis

Health problem addressed

This white blood cells (WBC) counting system can be used to support efforts to reduce antibiotic overprescribing and in determining if an infection is due to a virus or bacteria. It can also be used to determine if a symptom is due to an infection, an allergy reaction or a parasite infection. It can also be used to monitor other therapies, such as clozapine treatment in schizophrenia. The differential counting can speed up treatment decision.

Disease addressed

Certain infectious and parasitic diseases; diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; diseases of the respiratory system; symptoms, signs, and abnormal clinical and laboratory findings.

Technical descriptions

This system is designed for quantitative determination of total WBC and a 5-part differential WBC count, including neutrophils, lymphocytes, monocytes, eosinophils and basophils using image and picture analysis. The red cells are hemolyzed in the microcuvette and a staining agent colours the white cells. Several images of the stained white cells are taken and cells are classified. The cells are counted by image analysis in the analyzer with results in 5 min.

Developer's claims of products benefits

The increase in bacterial resistance to antibiotics is dramatic and combating this growth is a top priority for global policy and public health. Access to this point-of-care WBC test may support in determining if an infection is of viral or bacterial origin, and if antibiotics are needed. Waiting for a lab result is not always an option, for those in rural areas, low resource setting or where laboratory is not available. It might serve as guidance (not diagnosis) for children susceptible of having pneumonia.

Operating steps

Capillary or venous specimen can be used. Bring the microcuvette into contact with the blood. The microcuvette is automatically filled by capillary action. Wipe off the outside of the microcuvette. Place it in the analyzer and close the lid. Result are displayed in 5 minutes.

Regulatory status and standards compliance

European Community (CE-mark). Comply with IVD directive, ISO standards as applicable and HL7.

Use and maintenance

User: Untrained individual, trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialised physician, community health workers.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Facility requirements: Specific ambient temperature and/or humidity range, healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.).

Energy requirements: Replaceable batteries, continuous power supply.

Product specifications

Weight (kg): 1.3

Dimensions: 157mm x 155mm x 188mm

Consumables: Microcuvettes, reagent and cleaner as provided by producer

In UN catalog: No

Commercial information

Year of commercialization: 2016

Number of units distributed: 1 001-10 000

Model: WBC Diff

Other features: Portable

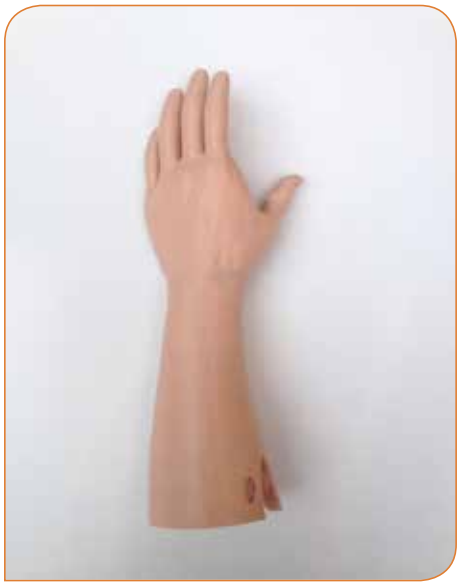
Contact Lena Wahlhed | Telephone +46 733 457 311 | Web https://bit.ly/2NVwc5W

PROTOTYPE PRODUCTS

3D printed prosthetics

Country of origin | Kenya

Primary function | Rehabilitation



Health problem addressed

There are an estimated 30 million amputees in the developing world, of which only a small number will ever have the chance of obtaining a prosthetic limb due to challenges of cost and access. For the few that can afford a prosthetic and have access to medical facilities, they are faced with extremely limited options that are poorly designed, uncomfortable, ugly, heavy, and expensive to purchase and maintain.

Disease addressed

Diseases of the nervous system; diseases of the musculoskeletal system and connective tissue.

Product information

The 3D printed models of prosthetic limbs are highly lifelike and easy and low cost to print. They can be printed at printing centres that can be established for developing countries, in developing countries. The process in place creates sustainable operational framework using local talent to provide outstanding pre and post medical care for every patient.

Use and maintenance

User: Self-use/patient, technician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), anywhere.

Product specifications

Consumables: 3D printer filament.

Commercial information

Reference price (USD): 150

Contact Paul Fotheringham | Telephone +254 708 010 756 | Web https://bit.ly/2mtqQT3

Arm support for table activities

Country of origin | Colombia

Primary function | Rehabilitation

Health problem addressed

Table activities like writing, typing and drawing can be significantly limiting for people living with various types and degrees of disability due to partial or complete motor limitations in upper body and/or spinal injuries. These limitations and injuries have varied origins (eg. neurological, traumatic, etc.) and can be the manifestations of active and/or degenerative or progressive diseases (eg. rheumatoid arthritis, etc.), especially in elderly people. The help of a caregiver is often necessary, reducing self-care and autonomy.

Disease addressed

Neoplasms; endocrine, nutritional, and metabolic diseases; diseases of the nervous system; diseases of the circulatory system; diseases of the musculoskeletal system and connective tissue; certain conditions originating from the perinatal period; congenital malformations, deformations, and chromosomal abnormalities; injury, poisoning and certain other consequences of external causes.

Product information

This device is targeted at patients with severe motor limitations of the arm (particularly distal), which make it difficult to lift and hold the arm. It allows for shoulder print anteroposterior and lateral movements sliding on a rail, to perform activities such as writing, keyboard use, drawing, phone use, etc. The arm of the user should be placed on the device, on a table.

Use and maintenance

User: Self-use/patient, untrained individual.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre).

Product specifications

Other features: Clean water supply.

Commercial information

Reference price (USD): 12

Model: Arm Carrying

Contact Lucero Galeano | Telephone +57 318 282 0073 | Web https://bit.ly/2JvMUFk

Bar code system for inventory

Country of origin | United States of America

Primary function | Monitoring

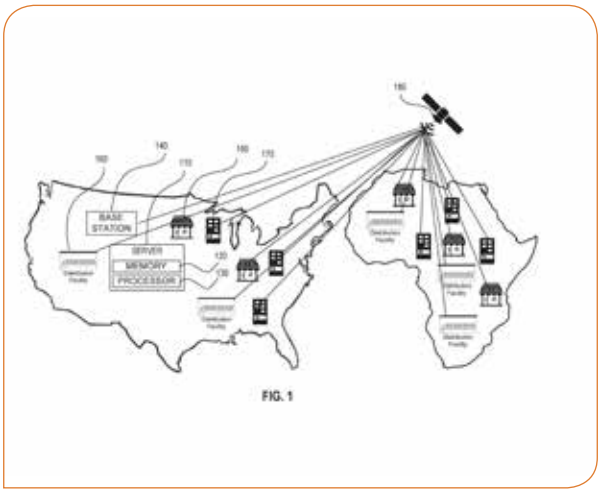


FIG. 1

Health problem addressed

Globally, public health efficiency is inhibited by stock outs and medicines being unavailable for patients when needed. Public health authorities, donors and implementing partners need to take ownership of the issues. This device is a solution that improves visibility, inventory management and availability. It eliminates stock outs, identifies corruption and theft and enhances patient adherence.

Disease addressed

The technology does not address a specific disease.

Product information

Apply bar codes to all drugs in existing manufacturer facilities and establish coding capabilities, including training at each supply chain location. Create unique patient identification for all patients. Provide vending machines or vending storage rooms at all dispensing areas, linking responsible pharmacists. Integrate activities for real time supply chain pipeline visibility for every chosen product, from manufacturer to patient consumption.

Use and maintenance

User: Pharmacist.

Training: About 2 hours of training and 2 hours of on-the-job monitoring.

Environment of use

Setting: Rural settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), dispensaries.

Energy requirements: Replaceable batteries, rechargeable battery, solar power.

Product specifications

Consumables: Bar code labels.

Other features: Bar code reader; connection to continuous or part time cellular or internet connectivity; specific ambient temperature and/or humidity range.

Commercial information

Reference price (USD): 1

Contact Ronald Cruse | Telephone +1 703 256 4882 | Web https://bit.ly/2uDyBtd

Biometric mobile tools for patient identification

Country of origin | United Kingdom

Primary function | Data management

Health problem addressed

The World Bank estimates that over 1 billion people worldwide lack any type of formal identification. This prevents non-governmental organisations (NGOs), governments, and United Nation agencies from extending essential healthcare services (from maternal health, to tuberculosis treatments and vaccinations) to the people in need. This problem is global and particularly affects the most vulnerable populations, who are often excluded from national and local healthcare systems as a result of lacking identification.

Disease addressed

The technology does not address a specific disease.

Product information

This device consists in an innovative biometric hardware (fingerprint scanner) and interoperable software which is cost effective for the frontlines of global health care delivery. The fingerprint scanner is rugged, wireless, shockproof, waterproof, affordable, and easy to use. The Android application is secure and integrated seamlessly into major mobile platforms already used by organisations across the developing world.

Use and maintenance

User: Midwife, nurse, community health worker

Training: An initial 2 to 3 days training is needed (based on an extensive research of community health worker training sessions). Standardized training materials are available. Additional training on site for bigger projects can be offered.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors.

Energy requirements: Rechargeable battery.

Product specifications

Accessories: Android mobile phone.

Other features: Android mobile phone.

Commercial information

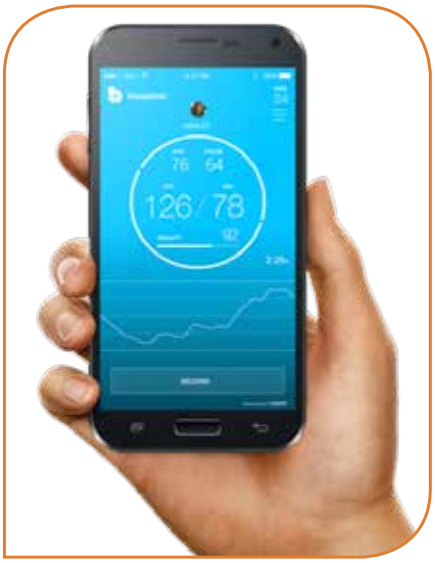
Reference price (USD): 50

Contact Sebastian Manhart | Telephone +44 75 022 16 548 | Web https://bit.ly/2zHN4dj

Blood pressure measurement and management, smartphone application, device independent

Country of origin | Switzerland

Primary function | Diagnosis and management of blood pressure



Health problem addressed

High blood pressure (BP) affects more than 30% of the adult population worldwide. In 2016, it has caused more than 10 million deaths worldwide and increases by a factor of 3 the risk of sustaining stroke or cardiovascular disease. BP is measured with cumbersome devices, ranging from manual sphygmomanometer with a stethoscope to fully automated equipment, available at doctors' offices, pharmacies or community providers, leading to poor patient compliance and control rate lower than 50%.

Current devices used to measure and manage blood pressure, such as the traditional blood pressure cuff, are difficult to distribute, and prone to breakage. This creates a barrier to gathering and analyzing accurate and consistent data that are needed to address this global hypertension crisis.

Disease addressed

Hypertension and all related cardiovascular diseases.

Environment of use

The technology is a smartphone-based application that allows the user to instantly record accurate blood pressure measurements. Smartphones are widely available, even in the most remote areas or low-resource settings. Yet progress in smartphone related blood pressure monitoring has been limited to hardware restricted solutions in the form of accessory devices or integrated hardware built into a device. The software based platform, on the other hand, transforms existing smartphones into a medical device capable of measuring blood pressure with a medical accuracy with no need to add any devices or accessories.

Product information

Based on research conducted and validated in several Swiss University Hospitals and the Centre Suisse d'Electronique et de Microtechnique a solution that leverages a smartphone application for measuring and managing blood pressure and hypertension with clinical level accuracy. The proprietary algorithm drives the embedded smartphone's camera to generate a signal collected at the patient's finger and transforms it "live and locally" into blood pressure values. No more need for additional hardware to record and store blood pressure values. Depending on the specific fields of use, the readings can be stored locally on the smartphone or transmitted through cloud information services to health centres, electronic health record solutions, health services or ministries of health.

Use and maintenance

User: Self-use/patient. Untrained or trained individual, caregiver, medical professional or community provider using a commercially available off-the-shelf smartphone.

Environment of use

Setting: At home, in field, or primary level (community health, hospital or clinics).

Product specifications

Software specifics: Smartphone app and cloud based software platform.

Other features: Android and iOS, EMR integration.

Commercial information

Reference price (USD): 0

Web https://bit.ly/2NUYKfL

Bubble CPAP with built-in pulse oximeter

Country of origin | Vietnam

Primary function | Treatment

Health problem addressed

Continuous Positive Airway Pressure (CPAP) therapy is a common form of respiratory support for spontaneously breathing infants in respiratory distress. Unfortunately, the high cost of consumables associated with CPAP therapy can make it hard to access by low-resource hospitals. A CPAP device with lower upfront and continuous costs compared to existing technologies would increase accessibility of CPAP therapy in low-resource settings.

Disease addressed

Diseases of the respiratory system.

Product information

Bubble CPAP therapy is provided by precisely blended, heated and humidified gas at user-specified percentage of oxygen, flow rate and pressure. Operating the device requires electricity and compressed oxygen. The device can be made to operate with built-in air pump or with compressed air available at the hospital. Pulse Oximetry Monitoring measures the patient's pulse rate and functional oxygen saturation of arterial hemoglobin.

Use and maintenance

User: Nurse, general physician, specialized physician.

Environment of use

Setting: Secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: 1 m^2 solar panel or AC power supply for 12 hours.

Product specifications

Accessories: Humidifier (reusable), PEEP chamber (reusable), heated breathing circuit (reusable), pulse-oximetry sensor (reusable).

Consumables: Nasal interface.

Weight (kg):17

Lifetime: 5-10 years

In UN catalog: No

Other features: Clean water supply; gas supply; sterilization or chemical disinfection.

Commercial information

Reference price (USD): 3100

Model: Dolphin CPAP

Contact Gregory Dajer | Telephone +84 43 766 6521 | Web https://bit.ly/2Noopwa

Clinical assessment for children, integrated platform

Country of origin | United States of America

Primary function | Diagnosis

Health problem addressed

99% of under-five-mortality occurs in resource poor countries, equating to approximately 5.9 millions children death per year, or 16 000 children per day in 2015. Over 50% of these deaths could be prevented with early clinical assessment and treatment. Ministries of Health and international agencies are developing a Community Health Worker workforce with minimal skills to increase equitable healthcare capacity.

Disease addressed

The technology does not address a specific disease.

Product information

The platform employs the same logic/clinical approach used by physicians to complete an integrated clinical assessment of a child. It does not use a decision tree approach, but instead guides users through a series of questions/tasks to acquire key clinical data points. It compares these data points with age-specific normative/corrective databases and each data point is assigned a "weight," then analyzed by an artificial intelligence/ Bayesian rules engine to determine up to 20 integrated clinical severity assessments.

Use and maintenance

User: Untrained individual, trained caregiver (e.g family member), midwife, nurse, general physician, pharmacist.

Training: A training of trainers approach will be used to train a cohort of health professionals (HP) and other individuals designated by the implementing body, and will include a presentation, one-page instruction sheet and platform 'test cases'. These trained HPs will then go on to train the local HCWs for implementation. Depending on the size of the HP group, training can take between 1-2 hours; however, users can learn how to use the platform in under 5 minutes.

Environment of use

Setting: Anywhere.

Energy requirements: Rechargeable battery.

Product specifications

Accessories: Mobile device capable of downloading web browser.

Other features: Non-continous Internet connection.

Commercial information

Reference price (USD): 0

Model: Medsinc v. 1.0

Contact Barry Finette | Telephone +1 802 656 0020 | Web https://bit.ly/2mPDoS8

Connected medical devices

Country of origin | India

Primary function | Treatment

Health problem addressed

While 70% of India's population lives in rural areas, 80% medical facilities are concentrated in urban areas. Rural patients are left to semi and non-qualified practitioners. More than 20 millions of the population is pushed below poverty line every year. This cloud solution can be applied to countries with weak health infrastructure, where trained human resources are a key constraint in providing quality healthcare. Solution would be applicable to regions including South and South-East Asia, Africa, Central and South America.

Disease addressed

Certain infectious and parasitic diseases; diseases of the skin and subcutaneous tissue; pregnancy, childbirth and the puerperium; certain conditions originating from the perinatal period; factors influencing health status and contact with health services.

Product information

This system consists of a mobile application connected to medical devices for various physiological, blood and urine tests. The devices connect to PC or Android mobile/tablet on Bluetooth Low Energy (BLE) or USB. BLE devices use rechargeable batteries and can last up to one week on a full charge. The PC or Android app enables users to measure vitals like blood pressure (BP), temperature, SpO2, auscultation and electrocardiograms (ECG), as well as quite a few infectious and chronic diseases. Routine urine investigations are also included in the set of available diagnostics.

Use and maintenance

User: Untrained individual, trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialized physician.

Training: Users need to be trained to attach the diagnostic sensors to human body, as well as to collect body fluid samples and place them on the appropriate test strips for measurement. However, the use of these devices is very straightforward and training on the use of sensors is fast. Training to field personnel and potential end-users may be imparted directly by the producer or by staff of partners previously trained by the producer.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Rechargeable battery.

Product specifications

Accessories: BP, SpO2 and infrared thermometer can operate with or without an accessory. However, the ECG, spirometer and optical reader require a computer, a mobile phone or a tablet.

Consumables: Test strips, disposable electrodes, disposable caps, etc. (supplied by producer).

Other features: Specific ambient temperature and/or humidity range; healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.); access to the Internet; connection to a laptop/computer.

Commercial information

Reference price (USD): 2000

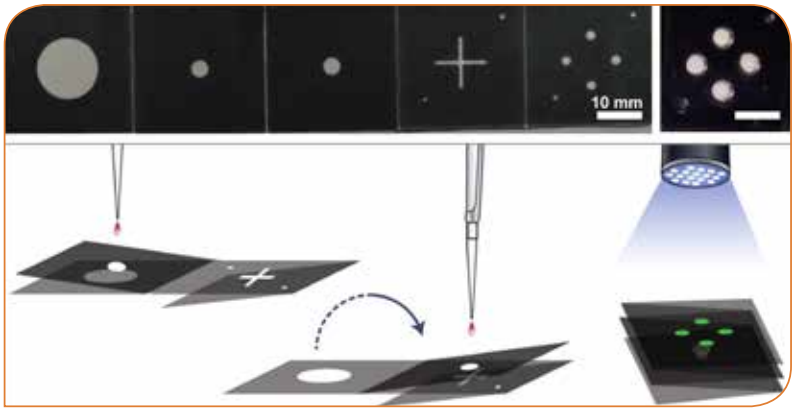
Model: ReMeDi Healthcare Solution

Contact Sameer Sawarkar | Telephone +91 80 4131 3168 | Web https://bit.ly/1krHtJC

Detection system for malaria

Country of origin | United Kingdom

Primary function | Diagnosis



Health problem addressed

97 countries still report malaria transmission in 2014, which caused an estimated 584 000 deaths in 2013, with children <5 years of age in sub-Saharan Africa suffering the largest burden. Prophylaxis exist but is not affordable. The disease has been outlined for elimination by the WHO, but this requires a field-based diagnostics with a significant increase in sensitivity, with respect to current tests. This device is a multiplexed network address translation (NAT) detection system for malaria.

Disease addressed

Certain infectious and parasitic diseases.

Product information

The device can perform the multiplexed determination of microbial species from whole blood using the paper-folding technique of origami to enable the sequential steps of DNA extraction, loop-mediated isothermal amplification (LAMP) and array-based fluorescence detection. A low cost handheld flashlight reveals the presence of the final DNA amplicon to the naked eye, providing a "sample-to-answer" diagnosis from a fingerprick volume of whole blood, within 45 mins, with minimal user intervention.

Use and maintenance

User: Trained caregiver, technician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, primary level (health post, health centre), secondary level (general hospital), ambulances.

Energy requirements: Replaceable batteries, rechargeable battery, continuous power supply, solar power.

Product specifications

Accessories: Dropper, hotplate or heat source with temperature control, flash light.

Other features: Healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.).

Commercial information

Reference price (USD): 0.5

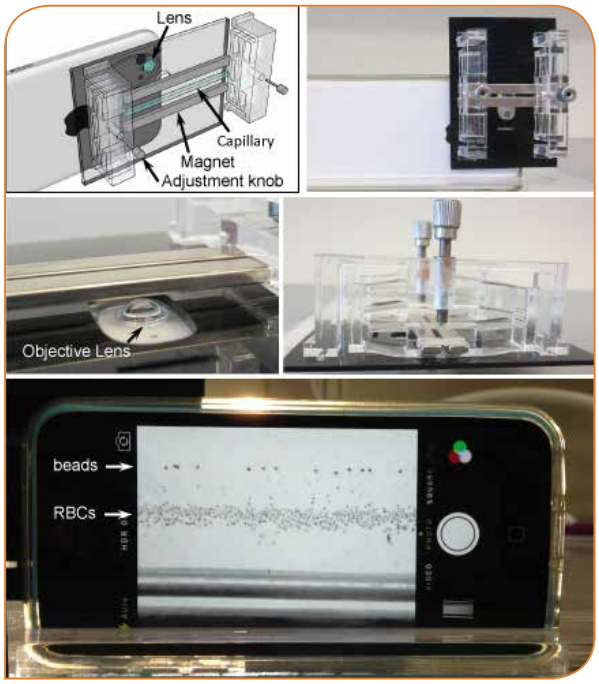
Model: Paper Origami

Contact Julien Reboud | Telephone +44 14 133 07 185 | Web https://bit.ly/2k5R6VA

Disease screening and detection using magnetic levitation

Country of origin | United States of America

Primary function | Monitoring



Health problem addressed

The most common monogenic diseases are sickle cell disease (SCD) and thalassemia. Every year, over 275 000 children are born with SCD, predominantly in Africa. Simple and inexpensive screening tests for SCD in resource-limited areas are lacking. The greatest burden of SCD is in sub-Saharan Africa, with about 75% of the all affected children, with estimates suggesting that between 50-80% of these patients will die die before reaching adulthood.

Disease addressed

Certain infectious and parasitic diseases; neoplasms; diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; diseases of the circulatory system.

Product information

The technology uses the principles of magnetic levitation, where diamagnetic objects such as cells are repelled by magnetic fields when suspended in a paramagnetic solution. Cells will levitate at heights that depend entirely on their intrinsic densities. Sickle red cells are less dense than healthy red cells, a property which allows them to be detected based exclusively on their levitation height when compared to reference density beads. Images are then captured on a cell phone for yes/no diagnostic.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), technician, general physician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, anywhere.

Product specifications

Consumables: Capillary tube, phosphate-buffere saline (PBS) and sodium metabisulfite.

Commercial information

Reference price (USD): 10

Contact Ionita Ghiran | Email ighiran@bidmc.harvard.edu | Telephone +1 617 735 4114

Floss pick fastener

Country of origin | Colombia

Primary function | Replacement, modification, or support of the anatomy or of a physiological process

Health problem addressed

Currently, people living with disability or elderly people with motor or coordination deficiency, particularly those who can not do pincer grasp between index finger and thumb, are in need of a carer to help them develop oral care with dental floss; or without its use, exposing themselves to risks of periodontal complications and caries. This extends the third part dependency and lack of autonomy.

Disease addressed

Diseases of the nervous system; diseases of the circulatory system; diseases of the musculoskeletal system and connective tissue; congenital malformations, deformations, and chromosomal abnormalities; injury, poisoning and certain other consequences of external causes.

Product information

This device is a holder for floss picks that allows the self use of dental floss without help from third parties, including people with motor and coordination deficiencies from different origins. Due to its shape, length and other characteristics, the floss picker allows for a fast and easy use.

Use and maintenance

User: Self-use/patient, untrained individual.

Environment of use

Setting: Rural settings, urban settings, at home, primary level (health post, health centre).

Product specifications

Consumables: Common floss pick

Other features: Clean water supply

Commercial information

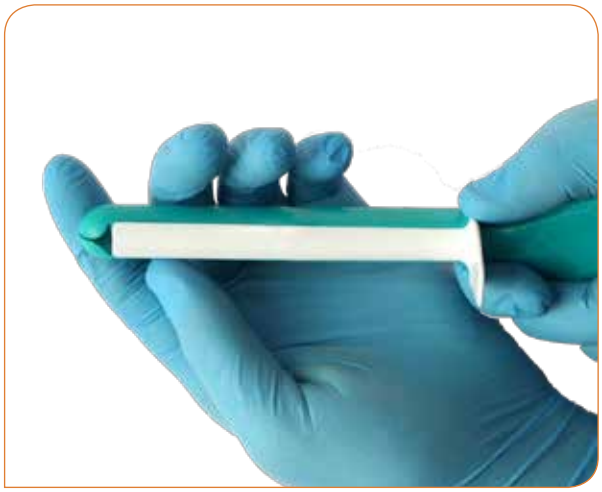
Reference price (USD): 4

Contact Lucero Galeano | Telephone +57 310 342 4949 | Web https://bit.ly/2JvMUFk

Hygienic enema device

Country of origin | India

Primary function | Prevention



Health problem addressed

Over 100 millions patients globally are bedridden and pass stool into a diaper or bedpan, with caretakers spending up to 1hr cleaning for each episode. Approximately 20% of these will use an enema to manually evacuate, with spinal cord injury patients receiving at least one procedure/day and constipation and liver failure patients up to five/day to flush toxins from their body. These conditions lead to an increased risk of infections and pressure ulcers, which increase length of hospital stay (LOS) and cost $10 000-40 000 to manage.

Disease addressed

Diseases of the nervous system; diseases of the digestive system.

Product information

By utilizing a self-expanding ring to create a closed system inside the rectum, the device ensures that bedridden patients receive quick and hygienic enema procedures. The unique shape conforming design allows natural defecation into a collection bag without exposing patient or caretaker to stool. With a simple and intuitive applicator, this product can be safely and effectively used in any care environment, including the home.

Use and maintenance

User: Trained caregiver (e.g family member), nurse.

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Product specifications

Other features: Healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.).

Commercial information

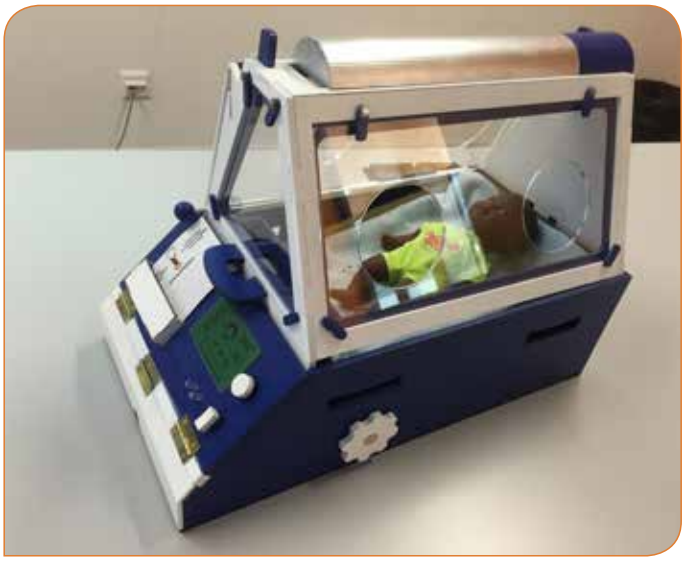
Reference price (USD): 30

Contact John Martin | Telephone +91 81 309 35 826 | Web https://bit.ly/2ulfgXC

Infant incubator

Country of origin | Switzerland

Primary function | Supporting or sustaining life



Health problem addressed

Over three million children die within one month of life each year in the world. 98% of these deaths occur in low and middle income countries (LMICs). One of the main causes of neonatal mortality is hypothermia, though up to 40% of these deaths could be prevented by simple and appropriate thermal management. When Kangaroo mother care is not possible, other solutions are necessary to help the newborn maintain its body temperature. New appropriate solutions are needed for the contexte of district hospitals in LMIC.

Disease addressed

Certain conditions originating from the perinatal period.

Product information

The essential infant incubator allows adequate thermal management of low birth-weight and preterm infants, adapted to the context of district hospitals in LMIC. A thermal battery ensures continuous operation of the heating system even in case of power cuts. A robust power supply protects against the main type of electrical instabilities. Integrated removable LED phototherapy allows for the treatment of neonatal jaundice. The device is easy to clean, easy to use and robustly designed.

Use and maintenance

User: Trained caregiver, midwife, nurse, general physician, specialized physician

Training: Whenever an incubator is provided to a hospital, the appropriate training will be provided to the health care workers and technicians susceptible to use, clean and repair the incubator. Importantly, this knowledge must remain with the incubator even when staff changes. An intuitive user interface, partly relying on pictograms, will assure optimal and secure use of the incubator even by untrained staff.

Environment of use

Setting: Rural settings, urban settings, indoors, secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Energy requirements: Continuous power supply.

Commercial information

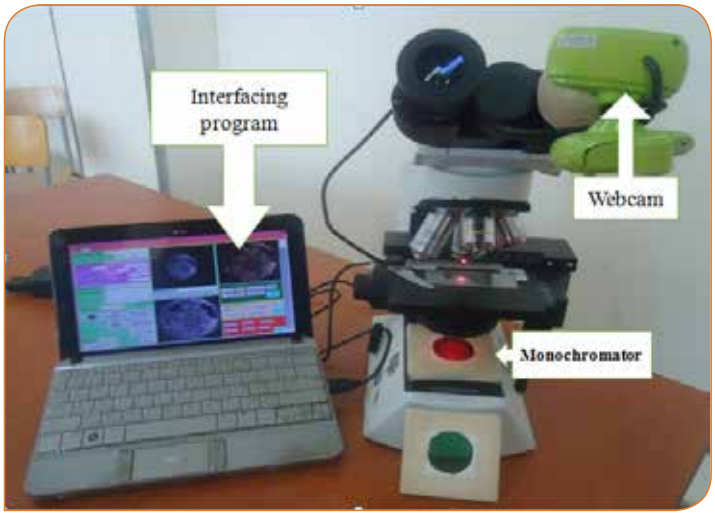
Reference price (USD): 3000

Contact Klaus Schonenberger | Telephone +41 21 693 60 83 | Web https://bit.ly/2mkLvsa

Light microscope for low-income settings

Country of origin | Ethiopia

Primary function | Diagnosis



Health problem addressed

The microscope innovative design tries to address or fill the gap of procedures done using ordinary compound light microscope in low income setting. It renders the diagnostic procedure easy, reliable and comfortable. Patients' data are stored for future use.

Disease addressed

Certain infectious and parasitic diseases.

Product information

The design incorporates different sub-systems that enable integration of a compound light microscope with a computer, as well as improvement of the illumination system. The microscope is connected to a computer via USB, which allows to display the specimen images taken with the camera in real-time on the screen. A software was developed to display and process the image and to save all patients' and users' data in a database (feedback system).

Use and maintenance

User: Laboratory professionals.

Training: General training for microscope and specific training for the software are required.

Environment of use

Setting: Urban settings, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Continuous power supply.

Product specifications

Accessories: Software

Other features: Computer, camera, printing accessories

Commercial information

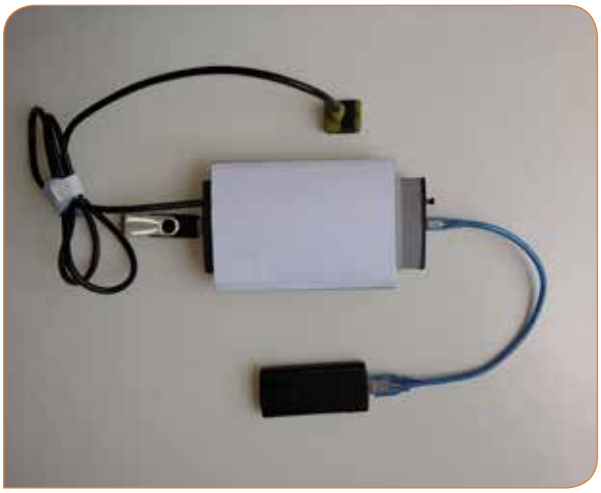
Reference price (USD): 3000

Contact Abel Worku | Email abelworku1221@gmail.com | Telephone +251 91 825 99 91

Light scan to determine skin age

Country of origin | Brazil

Primary function | Monitoring



Health problem addressed

Uncertainties in the chronology of pregnancy are potential risk situations and constitute a challenge to current methods of gestational age detection. The perinatal morbidity and mortality associated with short duration of pregnancy to birth are considered a world public health problem. The main cause of infant death in developing countries are perinatal conditions, mostly associated with prematurity, a condition with increasing prevalence in the world.

Disease addressed

Pregnancy, childbirth, and the puerperium.

Product information

This is a portable device to measure epidermal properties of the skin and evaluate its ability to determine gestational age in newborns. The skin epidermis is known to change during fetal development. The device will exploit a non-invasive optical technique called photoelectric plethysmography that characterizes a material by analyzing its effect on the properties of an LED light shone on it.

Use and maintenance

User: Nurse, specialized physician, pediatrician.

Environment of use

Setting: Secondary level (general hospital).

Energy requirements: Rechargeable battery.

Product specifications

Other features: Power supply after 9 hours

Commercial information

Reference price (USD): 100

Model: Light Scan Skin Age

Contact Zilma Reis | Telephone +55 75 992871205 | Web https://bit.ly/2zOlcEs

Mechanical device for treatment of hemorrhoids

Country of origin | India

Primary function | Treatment

Health problem addressed

Hemorrhoids have a prevalence rate of 5% in any population, at any given time. 50% hemorrhoid cases can be treated early through effective office procedures and with a high success rate (85%). But these procedures are cumbersome to perform, depend on the availability of external resources, and the patient numbers are very large, so physicians often cannot perform early treatment. This technology is a self-contained device that can be used by any physician without external resources, in any setting.

Disease addressed

Diseases of the digestive system.

Product information

Rubber band ligation is the gold standard for office-based treatment of hemorrhoids, with an 85% success rate. It consists in applying a band on the neck of the hemorrhoid to strangulate it; the hemorrhoid thromboses and falls off in a few days. However, this technique requires to manipulate the hemorrhoid and apply the band, which is challenging. Special training, equipment and a technician are needed. The present device eliminates these requirements: tissue ligation is done through an easy to use, push-button mechanical device.

Use and maintenance

User: Technician, nurse, general physician, specialized physician.

Training: Minimal training is needed. The user needs to be familiar with the sequence of operation of the device which consists in loading, locating and ligating.

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Product specifications

Accessories: Proctoscope

Consumables: Surgical gloves, gel

Other features: Clean water supply; healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.); a proctoscope is required.

Commercial information

Reference price (USD): 20

Contact Prateek Saraswat | Email prateekbmemit@gmail.com | Telephone +91 9999 33 8697

Mobile risk assessment application for pre-eclampsia

Country of origin | Canada

Primary function | Monitoring

Health problem addressed

The hypertensive disorders of pregnancy, and in particular pre-eclampsia, remain one of the top three causes of maternal mortality and morbidity globally. Pre-eclampsia also increases fetal risks. The majority of deaths associated with pre-eclampsia occur in the low- and middle-income countries (LMICs), in the absence of a trained health professional.

Disease addressed

Pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period; factors influencing health status and contact with health services.

Product information

This mobile health application (mHealth app) allows for "intelligent" risk assessment for the diagnosis and management of pregnant women with pre-eclampsia. This mHealth app may be used by a range of healthcare professionals, researchers, and community health workers. Clinical data collected in women with pre-eclampsia has been used as inputs for a predictive, "intelligent" model providing a risk score for the development of adverse outcomes. The application provides recommendations on treatment, referral, and reassessment.

Use and maintenance

User: Self-use/patient, trained caregiver (e.g family member), midwife, nurse, general physician, specialized physician, community health worker.

Training: Group training or one-to-one training is recommended, and uses case-based scenarios, which the user follows along to while using the app. A user/help guide has been developed for training purposes. A one-day training session has been implemented.

Environment of use

Setting: Anywhere.

Energy requirements: Rechargeable battery.

Product specifications

Accessories: Mobile device (Smartphone, Tablet or PC) and bio-sensors as required.

Consumables: Urine test strip.

Other features: Access to a working mobile device.

Commercial information

Reference price (USD): 1

Contact Mark Ansermino | Email anserminos@yahoo.ca | Telephone +1 604 875 2711

Newborn hearing screening device

Country of origin | India

Primary function | Diagnosis

Health problem addressed

The device is a non-invasive and safe newborn hearing screening device, specially designed for mass screening of newborns in resource constrained settings with high sensitivity and specificity. Every year, 800 000 babies are born with hearing loss globally, and 90% of them are born in developing countries. Early detection and intervention leads to prevention of speech loss, impaired communication skills, avoidable disability, possible mental illness and unemployment for lifetime.

Disease addressed

Diseases of the ear and mastoid process; pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period; congenital malformations, deformations, and chromosomal abnormalities.

Product information

The device uses brainstem auditory evoked response (BAER or ABR) technology, which is the gold standard in auditory testing and is recommended as the test of choice by the American Academy of Pediatrics (AAP, US) and the National Health Institute (NHS, UK). A series of stimuli is given in the ear and the response is collected with non invasive electrodes placed on the head of the baby. The device is used in an innovative way and is able to perform in a noisy environment, with reduced test time, automated results and an easy-to-use interface for healthcare workers to use.

Use and maintenance

User: Midwife, technician, nurse, general physician, specialized physician, audiologists, pediatricians.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Rechargeable battery.

Product specifications

Consumables: Cleaning scrub gel, cotton swabs, electrode gel.

Other features: Non magnetic zone, open electrical wires.

Commercial information

Reference price (USD): 5000

Model: Sohum newborn hearing screening

Contact Nitin Sisodia | Telephone +91 98 997 25 208 | Web https://bit.ly/1C2HGvb

Newborn resuscitation training device

Country of origin | United States of America

Primary function | Simulation

Health problem addressed

The training device is an add-on device for existing bag valve mask (BVM) resuscitators that monitors and records resuscitation performance, thus providing real-time and objective feedback regarding the user's ventilation technique. The aim is to help healthcare workers build confidence and skills for positive pressure ventilation.

Disease addressed

Diseases of the respiratory system; pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period.

Product information

The device is installed into the airflow path. It measures airway pressure and flow, and uses an algorithm to identify common ventilation errors, including face-mask leakage, airway obstruction, incorrect rate, or excessive ventilation pressure. The errors are recorded, and also displayed to the user for immediate correction.

Use and maintenance

User: Trained caregiver (e.g family member), midwife, nurse, general physician, specialized physician, pediatrician/neonatologist.

Training: Neonatal resuscitation training (Helping Babies Breathe (HBB).

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Rechargeable battery.

Product specifications

Accessories: Micro-USB charger

Other features: Training mannequin and bag valve mask (BVM)

Commercial information

Reference price (USD): 120

Model: EveryBreath Training Device

Contact Kevin Cedrone | Web https://bit.ly/2Nm6lNO

Open source health platform for reproductive and maternal health

Country of origin | India

Primary function | Data management

Health problem addressed

The burden of paper-based data collection and reporting in remote health settings takes time away from health service provision and results in the duplication of information across multiple registers. There is a clear and urgent need for an integrated health information system that can generate quality data, reduce the workload of frontline health workers (FHWs), improve the continuity of care, and provide data in real time for program managers and policy makers to guide strategy and improve health outcomes in LMICs.

Disease addressed

Pregnancy, childbirth, and the puerperium; factors influencing health status and contact with health services.

Product information

The open smart register platform provides an integrated health platform to improve the efficiency, data quality, and timeliness of reproductive, maternal, newborn, child and adolescent health (RMNCH) interventions to improve maternal and neonatal health outcomes. The platform is an electronic-register-based mobile health platform that covers the entire RMNCH continuum of care and related core interventions, such as antenatal care, birth planning, and vaccination. It combines data collection, client management, and reporting workflows into one linked mobile interface.

Use and maintenance

User: Midwife, nurse, frontline health workers.

Training: Across the platform deployments to date, the average training period is 2-3 days of classroom training, followed by field-level assistance as required. The on-site training includes basics of tablet use (depending on the skill level of the health worker and familiarity with smartphone technology) as well as the basics of the smart register interface, including searching, sorting and filtering clients in the register, registering new clients, entering service data, and viewing reporting indicators.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, primary level (health post, health centre), anywhere.

Energy requirements: Rechargeable battery.

Product specifications

Other features: Android smartphone or tablet, open source application. Access to the Internet; access to a cellular phone network.

Commercial information

Reference price (USD): 0

Model: Open Smart Register Platform (OpenSRP)

Contact Carolyn Gulas | Telephone +254 71 787 7206 | Web https://bit.ly/2NY64qP

Packaging solution for authentication

Country of origin | Sweden

Primary function | Prevention

Health problem addressed

Substandard, spurious, falsely labelled, falsified and counterfeit (SSFFC) medical products (medicine and devices) account for at least 10% of sales globally and much more in low income countries. It is the cause of many deaths annually, harm to patients, resistance to medicine, and leads to loss of confidence in medicines, healthcare providers and health systems. More countries are mandating a unique number on each package and tamper evident seals for authentication. However, the currently used seals are far too easy to open and reclose without being detected. The market share of counterfeit products increases. This product offers a seal that is much more secure.

Disease addressed

The technology does not address a specific disease.

Product information

The product together with a sensor unit is placed in a vacuum plastic bag (shrink wrap). Some air is evacuated. If someone opens it for stealing, placing a falsified product or tampering with the sensor, the vacuum disappears, which is detected and memorized by the sensor. Before opening and using the product, authenticity is verified by checking the status and serial number in the sensor. If the product is authentic and has not been tampered with, it can be safely used.

Use and maintenance

User: Midwife, nurse, general physician, logistics worker, storage, pharmacy.

Environment of use

Setting: Primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), pharmacy.

Energy requirements: Replaceable batteries, rechargeable battery.

Product specifications

Other features: Vacuum plastic bags at place of manufacturing pharma/devices. Access to the Internet; access to a cellular phone network; connection to a laptop/computer.

Commercial information

Reference price (USD): 30

Model: TamperSeal (Tamper Evident Packaging for Autentication)

Contact Sten Wandel | Telephone +46 70 728 4773 | Web https://bit.ly/2NoGwSN

Personal protective equipment, breathable

Country of origin | Japan

Primary function | Protection

Health problem addressed

Emerging pandemic disease outbreaks such as Ebola increasingly threaten global public health and world economies. Wearing appropriate protective equipment (PPE) is a key in the treatment of infectious diseases. Since the outbreaks tend to be less properly managed in low-resource settings, improvement of the equipment for the use, including personal protective clothing, is becoming increasingly important.

Disease addressed

Certain infectious and parasitic diseases.

Product information

The clothing offers a superior balance of protection, durability, and comfort. The material components include breathable porous film with virus barrier and polypropylene spunbond nonwoven fabric, designed to achieve a high barrier (ex. Class 6 in virus barrier) and high moisture permeability (over 300g/m2/hr). The clothing is also designed to have sufficient durability under use in outdoor works.

Use and maintenance

User: Technician, nurse, general physician, specialized physician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Product specifications

Other features: Mask, goggles and gloves.

Commercial information

Reference price (USD): 25

Contact Hara Toshinori | Telephone +49 610 27 999 1002

Personal protective equipment, integrated

Country of origin | Switzerland

Primary function | Protection

Health problem addressed

Currently available personal protective equipment (PPE) against threats like Ebola and other emerging diseases are inappropriate for use in hospitals in low and middle income countries. Healthcare workers (HCW) using them are quickly exhausted and dehydrated, they do not have a good visibility of their patients and surroundings, and cannot provide appropriate and empathic care. The equipment are also cumbersome to put on and remove, which increases the risk of self-infections for HCW.

Disease addressed

Certain infectious and parasitic diseases; factors influencing health status and contact with health services.

Product information

This PPE focuses on three aspects: the whole equipment must be reusable, it must be simple and safe to use, and it must provide HCW with comfortable working conditions during at least 3 hours. To achieve this, a multidisciplinary team is working on the design of the suit, its material, the ventilation system, as well as on non-technical aspects of the industrial value chain (manufacturing, distribution, training, disinfection, etc.) that is necessary to efficiently deploy the PPE in the field.

Use and maintenance

User: Trained caregiver (e.g family member), nurse, general physician.

Training: Basic training on infection prevention and control as well as 2-3 times practice of donning and doffing the suit.The training lasts between half a day and a day.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, secondary level (general hospital).

Energy requirements: Replaceable batteries, rechargeable battery.

Product specifications

Accessories: Potentially: standard batteries.

Other features: 0.5% chlorine solution.

Commercial information

Reference price (USD): 250

Contact Matthieu Gani | Telephone +41 21 693 70 49 | Web https://bit.ly/2utgZB3

Phototherapy, portable LED system

Country of origin | United States of America

Primary function | Treatment

Health problem addressed

Severe neonatal jaundice occurs in approximately 10% of all newborns. If untreated, newborns are at risk for permanent brain injury manifesting as deafness, vision impairment, cerebral palsy or death. Nearly all cases can be cured by timely treatment with high intensity blue light phototherapy. Infants in developing areas often lack access to effective phototherapy and are at high risk for poor outcomes from jaundice.

Disease addressed

Certain conditions originating from the perinatal period.

Product information

This is a high intensity, LED neonatal phototherapy device that delivers the recommended irradiance and wavelength to treat neonatal jaundice (hyperbilirubinemia). It is collapsible and can be rolled to fit in a shipping tube. When assembled for use the light array is in a curved configuration at a fixed height above the infant to maximize skin exposure and eliminate risk of decreased efficiency due to lamp position error. Very low energy requirements enable long battery operation (>10hrs).

Use and maintenance

User: Trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialized physician.

Training: Device setup and operation instructions will be provided. This may be done in person or with the written user manual. The device is very intuitive with minimal training time required.

Environment of use

Setting: Rural settings, urban settings, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Rechargeable battery, continuous power supply.

Product specifications

Accessories: Infant eye shield.

Commercial information

Reference price (USD): 1500

Contact Donna Brezinski | Telephone +1 781 725 2460 | Web https://bit.ly/2JutfG7

Point-of-care hemoglobin test with associated mobile application

Country of origin | Sweden

Primary function | Diagnosis

Health problem addressed

Millions of people are affected by anemia. Patients and healthcare workers require feedback on hemoglobin level in order to follow up treatment and anemia condition, considering age, gender, height, weight as well as location. Public Health surveys, nutrition programs and anemia programs would benefit from such data on hemoglobin level.

Disease addressed

Endocrine, nutritional, and metabolic diseases; pregnancy, childbirth, and the puerperium; symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified.

Product information

The solution includes two parts: a well-established point-of-care hemoglobin test (Hb test) system often used in large screening programs, and a portable monitor to read the tests results. The portable monitor provides immediate results for real time insight. The results from the Hb test can then be transferred using the applied Bluetooth dongle to a mobile tablet/cell phone. Demographic information is added and sent to a cloud-based database, together with the results of the Hb test. The project leader can review outcome from a remote location and act as required.

Use and maintenance

User: Untrained individual, trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialized physician, Public Health project team.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Energy requirements: Replaceable batteries, continuous power supply.

Product specifications

Accessories: Company Bluetooth dongle.

Consumables: Company hemoglobin microcuvettes, lancets, cleaners.

Other features: Specific ambient temperature and/or humidity range; healthcare waste disposal facilities (pathological waste, sharps, chemicals, etc.); access to the Internet; access to a cellular phone network; connection to a laptop/computer.

Commercial information

Reference price (USD): 15000

Model: Health Trender and Hb 201+

Contact Lena Wahlhed | Telephone +46 733 45 7311 | Web https://bit.ly/2L0wPxc

Portable autorefractor for eyeglasses prescription

Country of origin | India

Primary function | Diagnosis

Health problem addressed

Over 1 billion people suffer from poor vision (uncorrected refractive errors, URE) because they do not have the prescription eyeglasses necessary for vision correction. Over 153 million people have severe visual impairment, >90% of which live in developing countries. URE is also the second leading global cause of blindness even though effective treatment is simply an appropriate pair of eyeglasses. URE has been identified as a priority condition within VISION 2020, a WHO global initiative.

Disease addressed

Diseases of the eye and adnexa.

Product information

The portable autorefractor aids a user (optometrist or technician) to quickly determine what eyeglasses a patient needs by objectively measuring the patient's refractive errors. The device utilizes the same optical principle that is used to guide laser-assisted in situ keratomileusis (LASIK) surgery — wavefront aberrometry. The device passes a low intensity beam light into the patient's eye, which, after bouncing back off the retina, is collected and analyzed to determine the refractive error of the eye.

Use and maintenance

User: Untrained individual, technician, nurse, general physician, specialized physician, optometrist, optician.

Training: The trainee will first be shown a short instructional video illustrating how to use of device. The device will then be used on the trainee to provide experience from the patient's point-of-view. The trainee will then obtain hands-on experience by using the device test subjects. Overall, a complete training session is expected to take less than one hour.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Energy requirements: Replaceable batteries, continuous power supply.

Commercial information

Reference price (USD): 1600

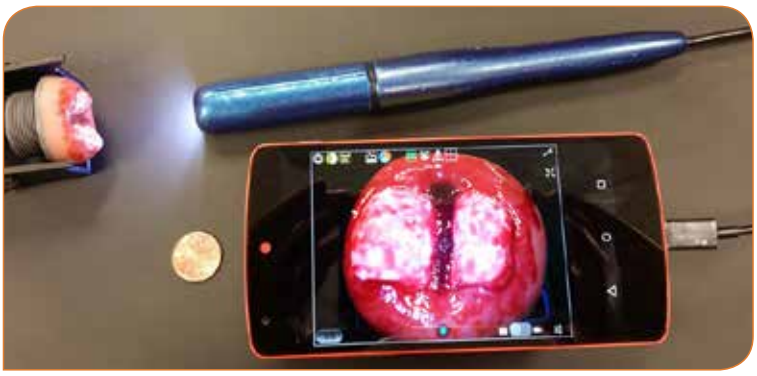
Model: E-See/ QuickSee

Contact Dave R. Shivang | Telephone +1 617 862 2203 | Web https://bit.ly/2O0dom6

Portable colposcope using mobile health

Country of origin | United States of America

Primary function | Diagnosis



Health problem addressed

Cervical cancer kills 270 000 women each year, including 85% of deaths occurring in low and middle income countries (LMICs). Precancerous lesions are asymptomatic, so without common preventative screening, cervical cancer is typically detected only at an advanced stage. However, cervical cancer is preventable when precancerous lesions are detected and treated. Early detection of precancerous lesions may be the best strategy to reduce the burden of cervical cancer in LMICs.

Disease addressed

Neoplasms.

Product information

This cellphone based low-cost ultraportable colposcope can be used for the detection of cervical cancer. The system was demonstrated to be able to capture cervical images comparable to images captured with a commercial high-end $20 000 digital colposcope. This is achieved through closer placement of a consumer grade camera and LEDs on the tip of a tampon at a working distance of 35 mm versus the 300 mm distance used with the high-end system.

Use and maintenance

User: Self-use/patient, midwife, technician, nurse, general physician, specialized physician.

Training: Basic training will involve showing the user how to sterilize and set up the device. Steps include sterilizing with bleach, how to set up the work station, plug in the colposcope, start the software application, turn on the device, enter patient information, visualize the cervix, apply acetic acid, place the probe, capture and save a picture, turn off the device, and send the picture to the appropriate provider for diagnosis. There will be a built-in training module within the mobile app.

Environment of use

Setting: Rural settings, urban settings, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Rechargeable battery.

Product specifications

Accessories: Smartphone or tablet with the mobile app installed, speculum or custom expansion mechanism to view the cervix, cylinder to hold the bleach solution for disinfection between patients.

Other features: Bleach solution (0.6% or higher) to disinfect the colposcope between patients..

Commercial information

Reference price (USD): 350

Model: Point of Care Tampon (POCkeT) Colposcope

Contact Ramanujam Nimmi | Telephone +1 919 660 5307 | Web https://bit.ly/2uGgQcG

Portable sterilizer

Country of origin | Switzerland

Primary function | Disinfection of medical devices

Health problem addressed

This technology decreases the cost of sterilization cycle by a factor 100 compare to traditional autoclave method: water consumption is divided by 1 000 and energy need by 100. A functional prototype is up and running.

Disease addressed

The technology does not address a specific disease.

Product information

Disinfection is obtained through UV lamps which generate ozone from ambient air. Ozone is generated inside the boxes and it reacts with 1 ml of water to sterilize the content of the boxes. At the end of the cycle, the ozone is destroyed with UV lamps.

Use and maintenance

User: Technician, nurse, general physician.

Training: 1 day training on the importance of sterilization, as well as on safe and appropriate use. Training on the machine is less than 1 hour.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Energy requirements: Replaceable batteries, rechargeable battery, continuous power supply, solar power.

Product specifications

Accessories: Chemical indicator.

Other features: 1 ml of water and 0.01 kWh of electricity per cycle.

Commercial information

Reference price (USD): 12000

Contact Marc Spaltenstein | Telephone +41 79 778 53 73 | Web https://bit.ly/2NY7HVt

Portable vaccine refrigerator

Country of origin | United States of America

Primary function | Monitoring

Health problem addressed

Vaccination is one of the safest and most cost-effective healthcare interventions available, especially in developing countries and low-resource populations. Children in these settings are particularly vulnerable, and routine vaccination is critical to reduce deaths for children under 5 years of age. Worldwide, 1 in 5 children are not receiving routine vaccinations for preventable diseases. An estimated 2 million deaths could be avoided annually with improved vaccine distribution.

Disease addressed

The technology does not address a specific disease.

Product information

This technology combines a Peltier cooling system with vacuum insulation to maintain the vaccine storage compartment at controlled temperatures. The unit can be powered and charged with AC power, on-board battery, vehicle battery, or solar energy. Current battery life, internal temperature, ambient temperature, and alarm states are displayed on the unit LCD. The aggregate data is collected to a cloud server where personnel can monitor and analyze device performance over time.

Use and maintenance

User: Technician, nurse, general physician, supply chain or transport personnel.

Training: Training is required to detail the various controls and indicators that can be found both on the device and on the online portal. The training will also offer troubleshooting options for various failure modes. These details can be found in a user manual. The device is self-regulated. Training time should be no longer than 1 hour.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, primary level (health post, health centre), secondary level (general hospital), ambulances, vaccination campaign outreach posts.

Energy requirements: Rechargeable battery, continuous power supply, solar power.

Product specifications

Other features: Access to a cellular phone network.

Commercial information

Reference price (USD): 2000

Model: E-10

Contact Robert Miros | Telephone +1 415 454 3005 | Web https://bit.ly/2JuKyXe

Radiographic system, digital

Country of origin | Switzerland

Primary function | Diagnosis

Health problem addressed

According to WHO figures, more than two thirds of the world's population does not have access to diagnostic imaging. Too often in developing countries, patients die of trivial problems, which take dramatic proportions due to a lack of access to diagnosis. Road accidents, tuberculosis, and complications from childhood pneumonia are the most recurrent examples of pathologies causing complications that could be prevented with functional and efficient X-ray imaging service.

Disease addressed

Certain infectious and parasitic diseases; diseases of the circulatory system; diseases of the respiratory system; diseases of the digestive system; congenital malformations, deformations, and chromosomal abnormalities; injury, poisoning and certain other consequences of external causes.

Product information

The project aims to develop an all-in-one digital radiography system for images acquisition, storage and review, specifically adapted to low and middle income countries (LMICs). The system has to be cost-effective, very robust and require minimal maintenance while being performant and easy to use. The digital X-ray detector, the mechanical positioning system, the high voltage generator and an uninterruptible power supply have been completely redesigned to match the needs and the constraints of the context.

Use and maintenance

User: Technician, specialized physician

Training: The equipment should be operated by health professionals (radiography technicians). However, the system is much easier and simpler to use than any other similar devices. Integrated multimedia tutorials guide the user through the whole process and ensure that the safety concerns are followed (radioprotection). A training program will be established and one day of training on a simulator will be necessary to ensure that the device is used correctly.

Environment of use

Setting: Rural settings, primary level (health post, health centre), secondary level (general hospital).

Energy requirements: Rechargeable battery, continuous power supply, solar power.

Product specifications

Other features: Radiation isolation

Commercial information

Reference price (USD): 70000

Model: GlobalDiagnostiX

Contact Romain Sahli | Telephone +41 21 693 60 46 | Web https://bit.ly/2utgZB3

Reusable sanitary napkin

Country of origin | India

Primary function | Prevention

Health problem addressed

During mensuration period, 90% of women face yeast infection (candida) which will be uncomfortable during these days. This reusable sanitary napkin has an permanent anti-microbial bonding which will prevent and act as a barrier for any microbial infection.

According to India Environment Portal, globally 432 millions pads are disposed every month. This can be a problem in refugee camps also.

Disease addressed

The technology does not address a specific disease.

Product information

The sanitary napkin is designed for infection-free mensuration. It has a permanent anti-microbial shield, formed by a long molecular chain of carbon atoms with a positively charged nitrogen attached to a silica molecule that is covalently bonded to the fabric. Pathogens, which are negatively charged, come in contact with the positively charged molecular chain and undergo lysis. This mechanism provides continuous defense, achieving anti-microbial activity, and does not deplete over washes.

Use and maintenance

User: Self-use/patient, untrained individual, women.

Environment of use

Setting: Rural settings, urban settings, at home, refugee camps.

Commercial information

Reference price (USD): 1

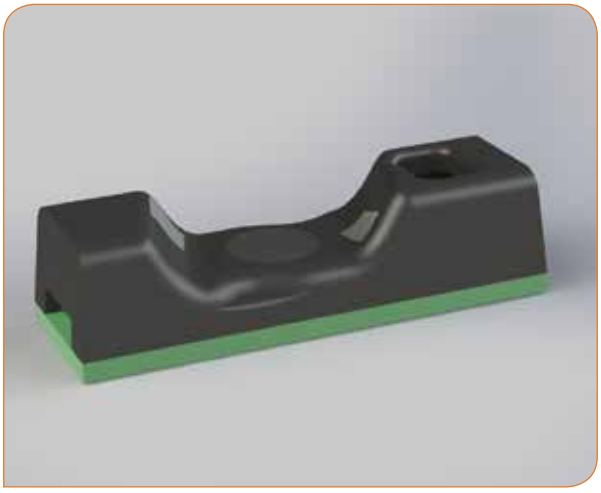
Model: Safepad

Contact Thangavel Karthik | Telephone +91 9600903831 | Web https://bit.ly/2uGEO7I

Self-measurement of blood pressure and other vital signs on a smartphone

Country of origin | Switzerland

Primary function | Monitoring



Health problem addressed

The system consits in a medically-accurate module for Blood Pressure (BP) measurement, as well as four other vital signs (VS) and one-lead electrocardiogram (ECG), built into smartphones for any adult consumer.

The self-measurement capability, available to a large number of smartphone owners, is an element of the evolution towards a greater involvement of the population in the control of their own health. It contributes to create a feedback loop, based on a familiar device, fundamental to improve lifestyle and monitor health status.

Disease addressed

Cardiovascular diseases.

Product information

Through a module inserted on the edge of the phone's case, one can measure blood pressure as well as pulse rate, blood oxygen concentration, respiration rate, body temperature and one-lead ECG. The blood pressure is measured through a variation of the classic Riva-Rocci technique of occluding an artery, applied to the one on the side of the index finger, and detecting occlusion optically (not through sound). The other signs are measured conventionally.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), midwife, nurse, general physician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), anywhere.

Product specifications

Other features: Specific ambient temperature and/or humidity range; access to the Internet.

Commercial information

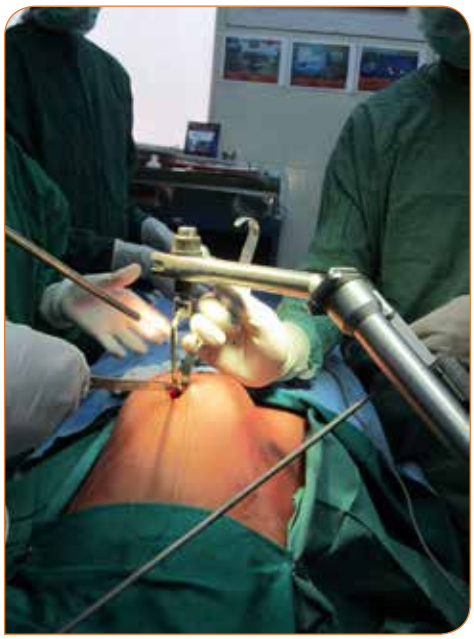
Reference price (USD): 0

Contact Christian Viollette | Telephone +41 79 176 9285 | Web https://bit.ly/2zVEzLZ

Single incision gasless laparoscopic surgical equipment

Country of origin | India

Primary function | Treatment



Health problem addressed

While 70% of the population in India lives in rural areas, less than 20% of the surgical workforce is available to them and while the estimated need is about 150 000 surgical procedures in the district, only about 1 500 are actually carried out. Surgical camps are a cost-effective way of meeting the surgical needs of rural patients.

Disease addressed

Neoplasms, diseases of the digestive system, diseases of the genitourinary system.

Product information

The equipment consists of an apparatus that lifts the anterior abdominal wall for laparoscopic surgeries. The apparatus can be easily and quickly attached to the operating table and can be fixed in the desired position during the surgical procedure. It does not use gas, which avoids adverse physiological changes, and could be carried out under spinal anesthesia.

Use and maintenance

User: Surgeon.

Training: Online course and on-site training.

Environment of use

Setting: Rural settings, secondary level (general hospital).

Product specifications

Accessories: Modified surgical instruments.

Other features: Sterilization; operating rooms.

Commercial information

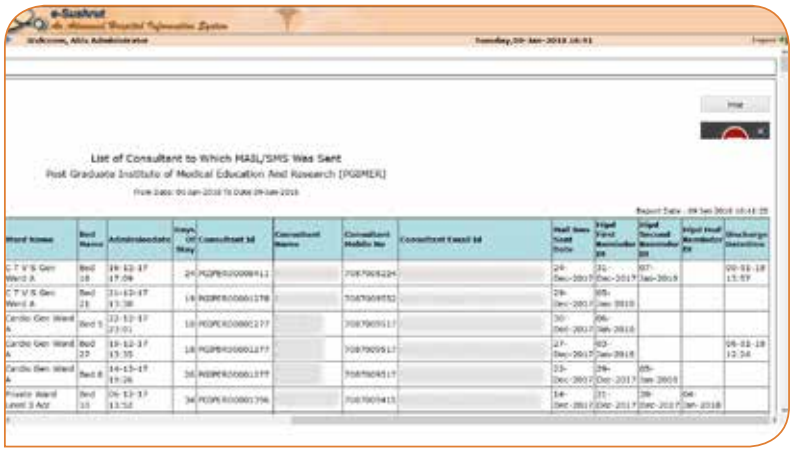
Reference price (USD): 1350

Contact Jesudian Gnanaraj | Telephone +91 9500127271 | Web https://bit.ly/2NW7Ngv

Software for efficient utilisation of hospital beds

Country of origin | India

Primary function | Data management



Health problem addressed

India is a developing nation with a population of 1 billion and around 0.9 hospital beds/1000 population. Majority of the population is uninsured and depends on public hospitals to meet their medical needs. Limited tertiary care hospital beds means long waiting times and delay in treatment. The only solution is efficient utilisation of available beds.

Disease addressed

Factors influencing health status and contact with health services.

Product information

This software embedded in Hospital Information System (HIS) tracked the length of stay of every patient using the date of admission in the HIS. The HIS was bridged with a closed user group mobile phone network. It was then programmed to communicate with respective consultants regarding the length of stay of their patients at the end of every week of stay of their patient, in the form of an automatically generated email and SMS. Similar communication was delivered to respective heads of departments at the end of one month of stay of a patient.

Use and maintenance

User: Hospital manager.

Environment of use

Setting: Secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Continuous power supply.

Product specifications

Accessories: Hospital Information System.

Other features: Specific ambient temperature and/or humidity range; access to a cellular phone network; connection to a laptop/computer.

Commercial information

Reference price (USD): 0

Contact Navin Pandey | Telephone +91 7087009801 | Web https://bit.ly/2JvbgPv

Tent for emergency setting for tropical and equatorial climates

Country of origin | Uganda

Primary function | Treatment

Health problem addressed

Frontline emergency workers in tropical and equatorial climates work under very stressful conditions, characterized by extreme heat and humidity, predisposing them to heat stress and its complications. In health emergencies, the extreme conditions also affect quality of patients care. Due to extreme heat and discomfort, health workers cannot spend more than an hour dressed in the full-body personal protective equipment (PPE), which diminishes the time that can be spent with the patient.

Disease addressed

Certain infectious and parasitic diseases; factors influencing health status and contact with health services.

Product information

The tent design overcomes key challenges of current tent designs through increase in natural cooling through convention, reduction in humidity, and reduced social exclusion. The tent ambient temperature is cooled by at least 5 degrees compared to the outside, and substantial reduction in extreme temperatures is achieved passively through smart integration of vents and window level meshes in the design, while keeping the design lean. This increases the time that a health worker can spend in PPE, allowing for a longer contact time in the tent for improved service delivery.

Use and maintenance

User: Self-use/patient, trained caregiver (e.g family member), midwife, technician, nurse, general physician, laboratory personnel.

Environment of use

Setting: Rural settings, urban settings, outdoors, primary level (health post, health centre), tertiary level (specialists hospital), anywhere.

Commercial information

Reference price (USD): 8500

Contact Roy William Mayega | Telephone +256 772 412455 | Web https://bit.ly/2Ln5xNr

Trainer for visual inspection with acetic acid

Country of origin | United States of America

Primary function | Simulation

Health problem addressed

Every year, 275 000 women die from cervical cancer. 80% of these cases occur in low and lower-middle income countries (LMICs). Screening for cervical cancer significantly reduces this mortality rate, given that most cervical cancer and pre-cancer cases caught early are treatable. Unfortunately, many LMICs lack the infrastructure for traditional screening. In Ghana, where cervical cancer is the number one cause of cancer-related death for women, less than 5% of women have ever been screened.

Disease addressed

Neoplasms.

Product information

This device is a box trainer constructed of locally available materials in Ghana. A simulated vaginal cavity allows the user to insert a speculum and inspect either a Jhpiego flashcard or a plastic tab. Each plastic tab presents a unique cervical situation before and after application of acetic acid. A modular electronic component and a LCD screen guide the user through the steps of visual inspection with acetic acid (VIA) and allow the user to test themselves on a variety of cervical situations.

Use and maintenance

User: Untrained individual, midwife, nurse.

Environment of use

Setting: Rural settings, urban settings, indoors, primary level (health post, health centre), secondary level (general hospital).

Energy requirements: Rechargeable battery.

Product specifications

Accessories: Jhpiego flashcards,

Commercial information

Reference price (USD): 40

Model: Visualize

Contact Maria Young | Email mariary@umich.edu

Ultrasound, portable

Country of origin | Republic of Korea

Primary function | Prevention

Health problem addressed

Everyday, around the world, approximately 800 women die from preventable caused related to pregnancy and childbirth. 40% of these deaths are due to injuries or conditions related to placenta complications, such as ectopic pregnancy, placenta previa, multiple pregnancy, fatal malposition or abnormal fetal growth.

Disease addressed

Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified.

Product information

The device is a pocket-sized, battery operation system for ultrasound imaging in emergency situations using a smartphone application. Images and videos can be transferred to hospital.

Use and maintenance

User: Midwife, nurse, general physician.

Training: Local healthcare workers can base their diagnostic on the video, which can be transferred through the application to hospitals for medical referral diagnosis. The training for using the device and the application takes about 1-2 hours.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, at home, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances, anywhere.

Energy requirements: Rechargeable battery.

Product specifications

Consumables: Gel, lithium ion battery.

Commercial information

Reference price (USD): 7500

Model: Sonon 300C

Contact Yong Hwa Kwon | Telephone +82 42 716 7085 | Web https://bit.ly/2Ld5IFf

Ventilator, battery powered

Country of origin | Canada

Primary function | Supporting or sustaining life

Health problem addressed

Poor electricity, expensive intensive care units and critical lack of trained health care workers have affected the delivery of adequate health care in resource-poor health facilities. In particular, the use of conventional medical mechanical ventilators is compromised in developing nations, urban and rural cities area. It was estimated that about 1.2 million units are needed to serve facilities in Nigeria, Southeast Asia and Africa. The price of conventional ventilator and its associated costs are too high for most health facilities in these regions.

Disease addressed

The technology does not address a specific disease.

Product information

The medical ventilator is powered by a rechargeable battery and contains levers that work with an electromechanical mechanism. Once activated, the mechanism compresses standard sized cardiopulmonary resuscitation (CPR) bags and is able to deliver air to the patient. It has a connector that allows it to be connected to a face mask, a laryngeal mask airway or an endotracheal tube. It has a button that allows the respiratory rate/number of compressions to be set. It has an alarm sound that loudly beeps once the unit is not compressing the bag

Use and maintenance

User: Trained caregiver (e.g family member), nurse, general physician, specialized physician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital), ambulances.

Energy requirements: Rechargeable battery.

Product specifications

Other features: Available airway devices (for example facemask, laryngeal mask airway and endotracheal tube).

Commercial information

Reference price (USD): 1000

Contact Dayo Olakulehin | Telephone +1 647 780 6413 | Web https://bit.ly/2NnjoUV

Wearable hand stretcher for post-stroke hand rehabilitation

Country of origin | Singapore

Primary function | Rehabilitation

Health problem addressed

Stroke is the second leading cause of death worldwide. Approximately 6 million people worldwide die from stroke yearly. Stroke survivors very often develop clenched fist deformity due to spastic hypertonia, which can lead to the loss of hand function. To restore the hand function, they need to undergo rehabilitation. This product is a wearable hand stretching device that provides assistance in hand opening exercises, which facilitates low-cost rehabilitation therapy for the patients.

Disease addressed

Diseases of the nervous system; diseases of the musculoskeletal system and connective tissue.

Product information

The device provides active finger extension for hand rehabilitative training, through its embedded inflatable actuators that are fabricated by heat bonding of flexible thermoplastic polyurethane (TPU) coated fabrics. Upon air pressurization, the actuators inflate, stiffen, extend the fingers and open the hand. The actuators were embedded in the finger pockets of a glove. The glove provides minimal mechanical impedance to the finger motion when it is being worn. The total weight of the device is approximately 150g.

Use and maintenance

User: Self-use/patient, untrained individual, trained caregiver (e.g family member), nurse.

Environment of use

Setting: Rural settings, urban settings, indoors, at home, primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Energy requirements: Mechanical energy (e.g manually powered).

Product specifications

Other features: Gas supply.

Commercial information

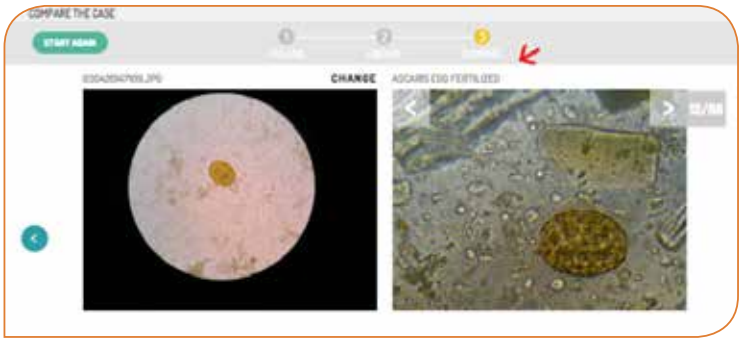
Reference price (USD): 50

Contact Hong Kai Yap | Telephone +65 83285520 | Web https://nus.edu/2utmYWx

Web app helper for local microscope images identification and diagnosis

Country of origin | Italy

Primary function | Diagnosis



Health problem addressed

This web-app is targeted at local health workers operating in rural low resourced and isolated areas. It assists them in the microscope identification of parasites responsible of several povert-related diseases (more of 80 % of preventable diseases in rural areas of developing countries). The visual matching of the images also constitutes a strong educative tool, allowing for a dual effect: helping local diagnosis and progressively training local health workers.

Disease addressed

Certain infectious and parasitic diseases.

Product information

The app allows for image identification by a simple visual comparison based on a double box mechanism. It provides an internal gallery of images with related meta-data and an external platform for support from a distance. It is possible to use an additional series of information meta-data and tags to help in the identification.

Use and maintenance

User: Untrained individual, trained caregiver (e.g family member), midwife, technician, nurse, general physician, specialized physician, laboratory technician.

Environment of use

Setting: Rural settings, urban settings, outdoors, indoors, public places (market, library, etc.), primary level (health post, health centre), secondary level (general hospital), tertiary level (specialists hospital).

Product specifications

Other features: Smartphone; access to the Internet; access to a cellular phone network.

Commercial information

Reference price (USD): 50

Contact Livia Bellina | Telephone +39 39 261 80 630 | Web https://bit.ly/2LCCPZf

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