

APPROPRIATE TECHNOLOGY IN HEALTH CARE



Jan Swasthya Sahyog

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JAN SWASTHYA SAHYOG

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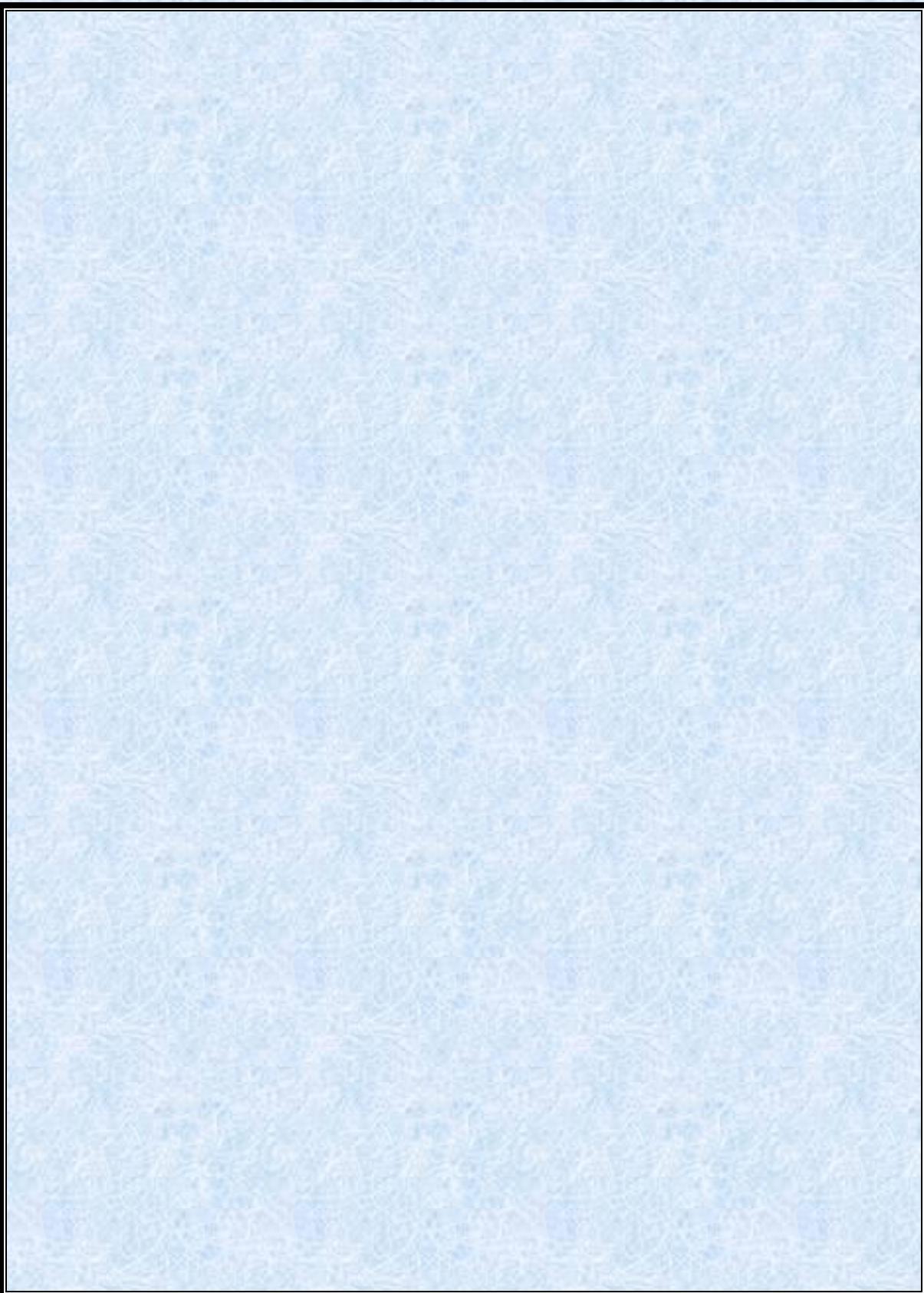
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INTRODUCTION

Technology is involved in every step of healthcare from prevention and diagnosis to treatment and rehabilitation. Health related technology has developed at a rapid pace in the last few decades. However, its impact on public health indices has been minimal. While in urban areas technology has influenced health care significantly, its role and relevance in rural areas has been poor in both the public and the private sector. The situation is worse at the level of health workers actually living and working in villages, where public health problems are most often seen, as they have even poorer or no access to technology. We are now faced with a situation where we have very advanced technology that cannot be used by the majority of the population because of its expense, inaccessibility and inappropriateness to the problem being encountered.

At Jan Swasthya Sahyog, a Chhattisgarh-based voluntary organisation of professionals working towards better health care for the poor, we have been working over the last seventeen years on developing “Appropriate Technology” health-related technology for people with limited resources at the field level. We strive to ensure that the techniques are as accurate as prevailing ones if not more, and yet are affordable, acceptable and practical in low-resource rural and community settings. We believe that all levels of health workers can use them, especially the most peripheral health workers, to make diagnosis more rational and decrease misuse of drugs.

How these technologies have been developed

Development of these appropriate techniques follows a path of problem identification, technology development, technology validation and then its application after training of the end-users.

First, the need for a certain technology for the diagnosis, treatment or prevention of a disease of public health importance is identified when the existing technology is either expensive or inaccessible or too complicated are identified in the community health programme or at the referral centre or in the laboratories of Jan Swasthya Sahyog or by interaction with similar groups. Thereafter, the development of appropriate technology is done using the principles of science. Kits are fabricated for initial laboratory validation under controlled conditions against the gold standard. Once validated, these kits are made available to limited organisations for

field validation after training them. If validated, these kits are available for general use.

Given below are the details of the instruments, tools and diagnostics kits developed by us. These details are rather brief, and we would be happy to provide more detailed information, in case you need it. In this list, some of the items have successfully completed a few rounds of field trials and some are at the field evaluation stage. In case you have a need for any of the listed technologies/ kits, you can place your orders with us. The costs indicated in the brochure are an estimate and the exact cost and the delivery time will be communicated after receiving confirmed orders. However, we can assure you that as JSS works with a non-profit ethos, the rates reflect primarily the production costs. Also, we conduct training programmes for interested individuals/groups for use of these equipment and tests.

Technologies at Community Level

H₂S PAPER STRIP TEST

Access to safe drinking-water is a fundamental requirement for good health and is also a human right. In rural areas, open faecal defecation is a common practice which can contaminate the nearer water source, due to these habits many communities are facing elevated disease burden from waterborne disease. Water contamination is caused by a variety of microorganisms, biotoxins, and toxic contaminants which lead to devastating illnesses such as cholera, schistosomiasis and other gastrointestinal problems. Proper water testing is a public health need to reduce this disease burden.

A simple “H₂S paper strip test kit” has been devised to detect faecal contamination of drinking water which can be used by the community itself. This test was developed by the DRDO in Gwalior as a simple test for the detection of faecal contamination of drinking water. It was used during an outbreak of waterborne illnesses to identify safe sources of drinking water.



The technique involved incubation of the water sample in the H₂S Paper Strip Test bottle in the laboratory for 24 hours. Jan Swasthya Sahyog has adapted this test for use at the village level and has increased its ability to detect low-level contamination by a factor of ten. Instead of laboratory based incubation it was found

that if the water sample is incubated by contact with the body, comparable results are obtained. If there is faecal contamination, the water turn black and if not contaminated water remains yellow and clear. We recommend periodic and regular testing of all drinking water sources, and any blackness detected then would be an early sign of contamination. After that, disinfection process can be started in the area.

UV LAMP BASED WATER DISINFECTION APPARATUS

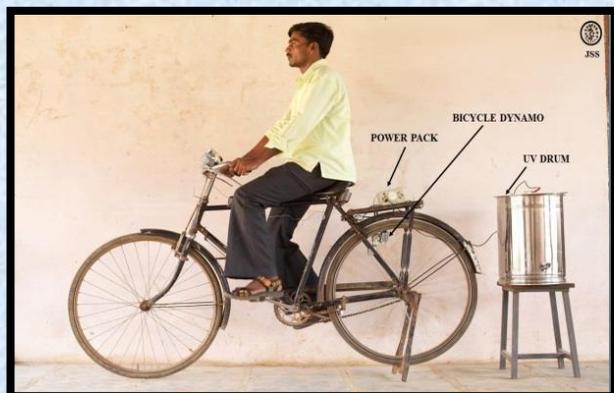
As diarrhoeal disease is a major public health problem, there is a need for simple and reliable method for disinfection of drinking water. The genetic information of germs and all other creatures is stored in either DNA or RNA. Short-wavelength (254 nm) ultraviolet radiation, also known as UV-C radiation, damages DNA and RNA thus destroying the genetic information. Small creatures, such as germs, are

particularly likely to be killed because their small size allows UV-C to reach all their cells. Treating drinking water with UV-C kills the germs that cause diarrhoea (including cholera), dysentery, typhoid fever and polio; waterborne viruses (Hepatitis A and Hepatitis E) that cause jaundice and the eggs and larvae of worms.



Our water disinfection apparatus (The UV drum) helps in destroying disease producing germs in the drinking water with the help of short-wave ultraviolet radiation. It can be used where there is no electricity and also can be shared by many households. Its versatility is a major benefit, thus, making it

convenient to use in rural areas. There are three different sources of electricity: 220 V AC, 12 V car battery or bicycle dynamo. This apparatus consumes less energy than disinfection by boiling water. Another, price advantage of using UV radiation over boiling water is the scarcity and rising cost of fuels required in the latter procedure. It also does not leave any residue, unlike the use of chlorine that leaves behind an unpleasant taste and corrosion of the metal drum holding the drinking water.



“MANGSAJHAAR” MOSQUITO REPELLENT OIL

Falciparum Malaria has been a major public health problem and the usage of mosquito nets have helped to protect from mosquito bites while sleeping but in tribal areas, people often get bit in the early morning hours while going out to work, in the evening hours and at night while guarding the harvest, hence using only mosquito nets is not enough. The usage of a mosquito repellent would help prevent this and an effective, yet cheap form would be advantageous for the community.



Here, we have developed an effective mosquito repellent oil “Mangsaajhaar” with the following contents- Dimethyl Pthallate (DMPA) (10%), DEET (27%) and Citronella (5%). It has been evaluated by us and found to be effective for at least up to 6 hours after an application. Also, has a good odour and is cheap- about a fraction of the commercial cost.

Each bottle contains 100 ml of the oil.

ORS PACKETS

Dehydration due to diarrhoea, vomiting etc. can prove to be fatal if not replenished with required amount of fluid and electrolytes. Oral rehydration solution (ORS) is universally accepted as one of the most important lifesaving drug during a diarrhoeal episode. Homemade ORS have some limitations of not containing potassium salts and not being weighed accurately. It is also often observed that poor families do not have sugar at home to make the ORS solution and have to buy afresh. The commercially available oral rehydration solution packets are expensive.



To circumvent this problem Jan Swasthya Sahyog trained village health workers to make their own ORS in a packet form. Plastic spoons have been prepared of such volume so as to contain the required amount of salts and table sugar. The packs are sealed by a

packetsealing machine by the village health workers themselves. This cheap and easily available Low osmolarity ORS has thus helped in reducing the complications of dehydration.

Material used:

- Sodium Chloride: 2.6 g.
- Sodium citrate: 2.9 g.
- Potassium chloride: 1.5 g.
- Sucrose: 27 g.

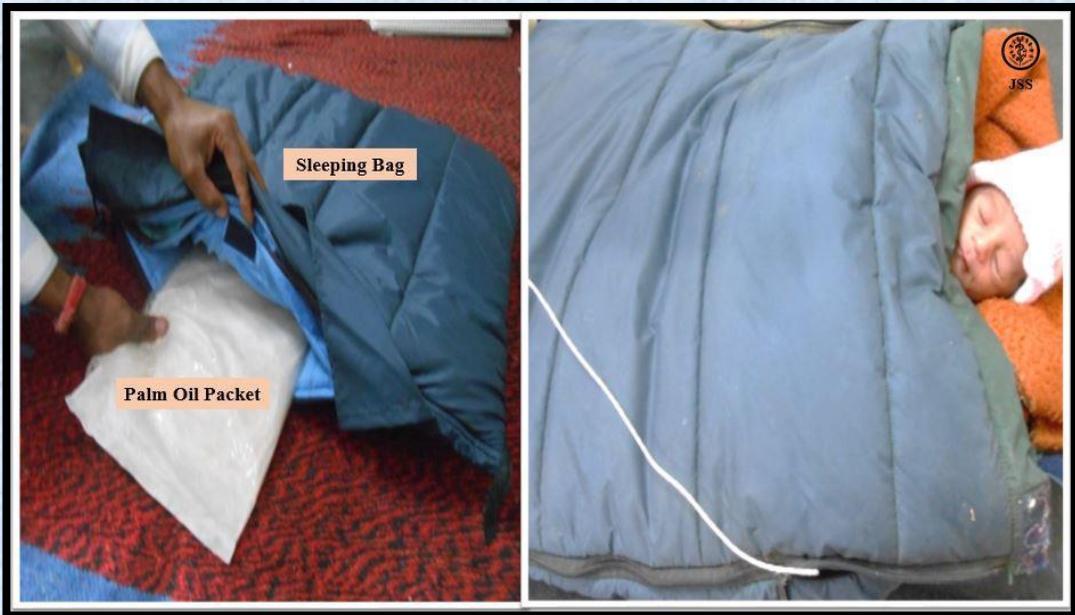
“SLEEPING BAG”

Hypothermia is one of the most important risk factors for morbidity and mortality in newborns, more so in those with low weights at birth or those born prematurely. Such newborns not only require good thermal insulation to conserve their heat, they also require additional thermal energy in the few initial days to prevent hypothermia. In the health care settings of rural areas, neonatal intensive care units or even equipment required in these conditions are unavailable. The rural community thus has to face various challenges to prevent new-born deaths that can be avoided by simply keeping the baby warm.



We have designed a sleeping bag for new-borns with a unique warmer. This sleeping bag has a foldable top which is zipped to cover the baby and a cap, and two washable urine soaks. It has thick inner thermal insulation to minimize heat losses. There is a zippered pocket at one of its ends and the unique warmer pouches are placed inside this pocket. The warmer pouch works on the principle of phase transition. These pouches are filled with 1 kg of crude palm oil. Crude palm oil melts at around 30-37°C which is also the mean human body temperature. When the warmer pouch is kept at temperatures higher than 37 °C such as in a hot water bath, the oil absorbs heat energy and melts. As soon as the entire oil in the warmer pouch melts, it is then placed inside the sleeping bag in its designated pocket.

Palm oil pouch is inside the sleeping bag hence the child is never in direct contact with the oil pouch. The molten oil begins to provide thermal energy to the baby until all the oil becomes solid. Crude palm oil has been chosen to ensure that the baby will never be exposed to temperature higher than 37°C. When two pouches, each having just-melted 1 kg crude palm oil, are placed inside a sleeping bag, the temperature inside the bag reaches 35 °C within 30 minutes and drops to 30 °C only after 7–8 hours. It is possible to use common „hot water rubber bottles“ as pouches for filling the crude palm oil.



This sleeping bag with a heat source can be used for low-birthweight babies who are either born at home or go home after discharge from new-born nurseries. They can also be useful in new-born care units, especially where the power supply is erratic and infant warmers and incubators are scarce. To prevent hyperthermia, we recommend stopping the use of warmer pouches when the baby's weight increases to above 2.5 kg.

KANGAROO MOTHER CARE

The transition from foetal to neonatal life represents one of the most dynamic and potentially hazardous events in the human life cycle. The initial postnatal period is characterized by high levels of stress.

The preterm new-borns are at the highest risk of dying if proper care is not provided. Out of all the important causes of new-born mortality, hypothermia is one. Very small newborns and those with complications are best cared for in incubators, where they can receive the necessary attention and care. Availability and accessibility of such hospital based care for those new-borns that need it is minimal.

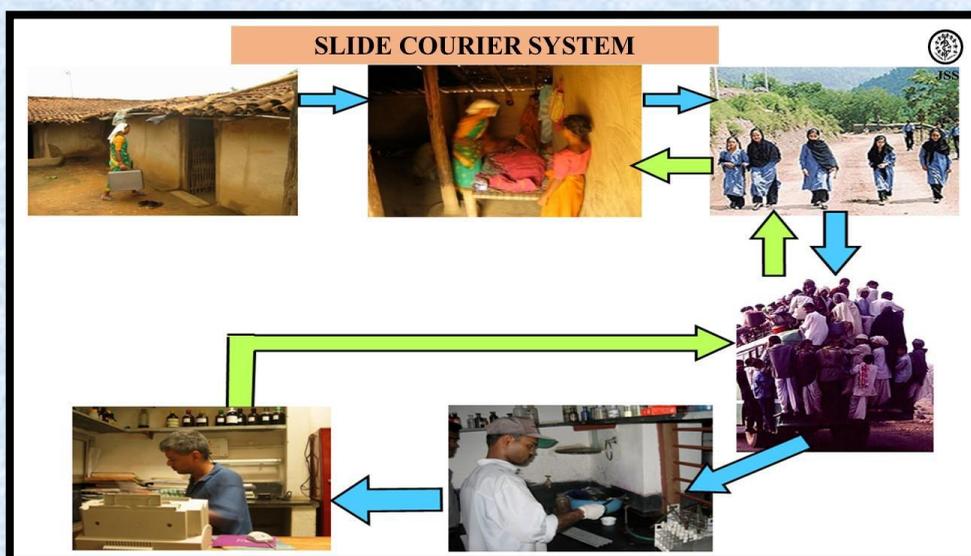


We have developed a kangaroo care blouse for mothers of such preterm low birth weight newborns. The blouse is made of a warm fabric that keeps the baby close to the mother so that the mother's warmth is retained. It also has a separate pocket on the inside of blouse to keep the newborn. The blouse allows mother to keep the new-born close to skin.

SLIDE COURIER SYSTEM

In the tribal areas of Chhattisgarh, Falciparum malaria is a major public health problem. It is a common cause of fever in these areas especially the forest fringe villages, and one that can kill rapidly with its complications even in a span of 2-3 days. In the absence of rational and early care of this infection, patients develop severe malaria, which demands intensive care for its management. Yet for people living in remote villages, travel to the health facility for testing and diagnosis is not feasible. While slides periodically would make it to the lab, the turnaround time for results was extremely variable and more often than not, the reports would fail to make it back to the people. In such cases, treatment was either delayed or health workers would start treating potential case with Chloroquine. Unfortunately, this presumptive approach led to increased malarial resistance in addition to a frustration among community members that they were receiving inadequate information and treatment. Hence, a question was raised- Is it possible for a person in an off the road village to get a report for a blood smear for malaria in good time?

The malaria slide courier system which addresses the above issues by providing diagnostic test results and appropriate treatment to patients within 48 hours. The process of the Malaria Courier System begins with identifying a patient with fever. For those suspected of malaria, a blood smear is made by the village health worker. The smear is then transported to the JSS clinic at Ganiyari through a series of steps, which are listed below.



After testing, results and any needed medication are returned to the village through the same transport process.

The steps involved in the transport system are:

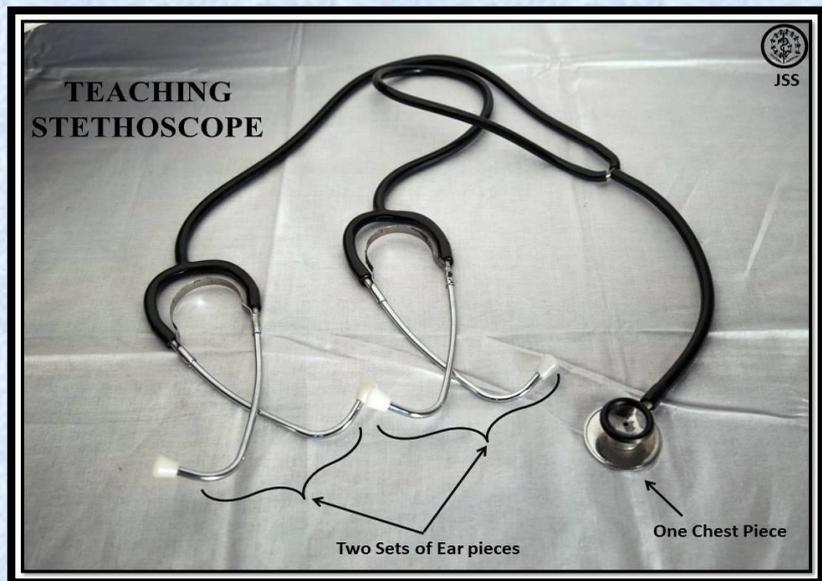
- Village Health Worker (VHW) visits patient's house and makes smear.
- Smear is dried, labelled and packed in a plastic box.
- Box is given to a student going to school on the main road.
- Student takes box to roadside shop at bus stop on main road.
- Roadside shop owner hands over box to bus conductor.
- Bus conductor drops box at Jan Swasthya Sahyog Health Centre, Ganiyari.
- Smear is stained and examined at Ganiyari.
- Smear report (along with Primaquine tablets and written advice for VHW in case of positive reports) is packed in the same plastic box as well as replacement for used slides and lancets.
- Box is handed over to the bus conductor on the return trip.

Technologies for Health Workers

TEACHING STETHOSCOPE

In rural areas, there is a huge scarcity of health professionals. To bridge this gap, the cadre of community health workers can be trained to diagnose some diseases and hence enable early treatment or referral services. A stethoscope is a basic tool for diagnosing various respiratory disorders, chronic disorders like hypertension and detecting foetal heart sounds during antenatal check-up. It is often difficult to teach and make the health workers comprehend and differentiate the sounds heard with a stethoscope. To ensure a better understanding a simple technique has been identified that will help the community health workers diagnose correctly.

The stethoscope is an acoustic medical device for auscultation, or listening to the internal sounds of human body. It is often used to listen to lung and heart sounds and to check blood pressure. In primary care, a stethoscope is required in the measurement of



blood pressure finding and counting foetal heart sounds in pregnant women and listening to breath sounds to diagnose chest problems and in several other situations.

Usually a stethoscope has one chest piece and one set of earpieces which makes difficulty in training the health workers. our teaching stethoscope has one chest piece and 2 sets of earpieces, one each for the trainer and the trainee, and this training aid allows a trainer to teach and evaluate the use of a stethoscope in clinical care.

COPPER SULPHATE BASED ANAEMIA CHECK KIT

Anaemia is more common in adolescent girls and women which affects their health and daily working. In this situation, early check-up of Hb is important to detect the anaemia which lead to proper treatment.

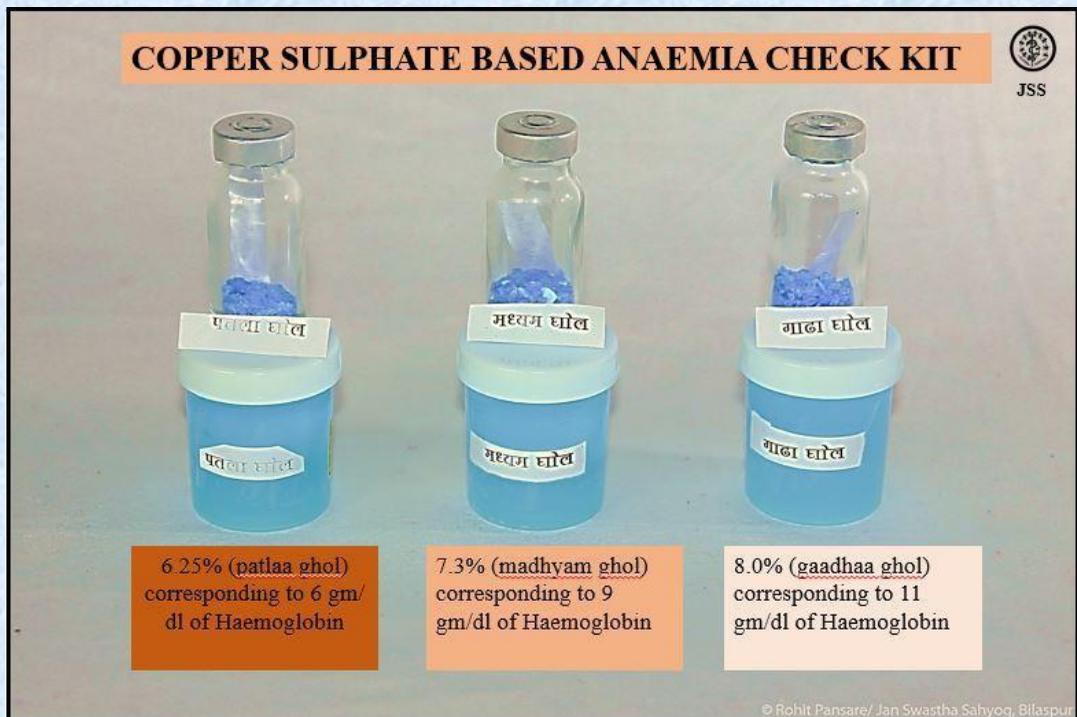
The Copper Sulphate based anaemia check kit is an easy method to detect the range of Haemoglobin of an individual. The scientific principle behind this method is that most of the density of blood is contributed by haemoglobin and can find out how dense someone's blood is by putting a drop of it in a copper sulphate (CuSO_4) solution of known density. If the sample of blood is heavier than the CuSO_4 solution, the drop will sink and if it is lighter than the solution, the drop will float.

With the help of the contents of the kit, three solutions of CuSO_4 of different strengths can be prepared:

6.25% (patlaa ghol) to correspond to 6 g / dl of haemoglobin

7.3% (madhyam ghol) to correspond to 9 g / dl of haemoglobin

8.0% (gaadhaa ghol) to correspond to 11 g / dl of haemoglobin



Thus, if a drop of blood floats in the 6.25% CuSO_4 (patlaa ghol) it means the Hb content is less than 6 grams /dl and if the blood drop sinks it means the Hb content is more than 6mg/dl but less than 9mg/dl. Similarly, for the other two concentrations- If the drop of blood floats in the 7.3% CuSO_4 (madhyam ghol) it means the Hb content is less than 9mg/dl and if the blood drop sinks, the Hb is more than 9mg/dl but less than 11 mg/dl, if the drop of blood floats in the 8% CuSO_4 (gaadhaa ghol) it means the Hb content is less than 11 mg/dl and if the blood drop sinks the Hb is more than 11mg/dl.

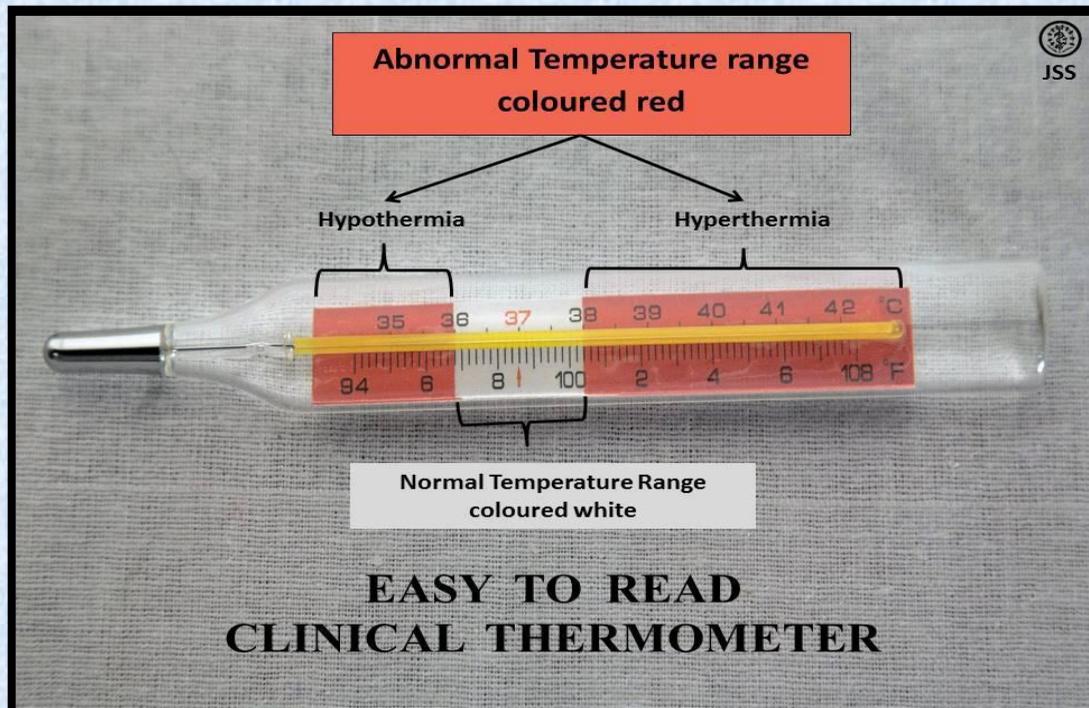
Thus, this method helps in identifying any individual who needs urgent medical attention especially in case of pregnant women or who can be treated by the Village Health Worker, especially if done in a small group at the community level such as in a women's self-help group This kit serves as an easy to use, affordable as well effective method to determine the interventions that need to be undertaken to prevent the morbidity and mortality related to anaemia.

Refer the link to understand the process better -
<https://www.youtube.com/watch?v=ZmuZhPZnm78>

EASY TO READ THERMOMETER

Measurement of temperature is a useful clinical tool. It distinguishes those illnesses that are associated with fever (and require a different work up) from those that are not associated with fever e.g. iron deficiency anaemia.

Thermometer also allows one to assess the effect of medicines or non-drug therapy given to bring the fever down.



However, usual thermometers are difficult to read for those health workers who have limited literacy levels. Our thermometer has the abnormal temperature range highlighted in red colour for both low body temperature hypothermia, as in newborn illnesses) and in fever (above 38 Celsius or 100.2 Fahrenheit and white for normal range of temperature and hence easily read and understood by these groups of health workers.

PORTABLE STADIOMETER

Height is arguably the best way to measure the nutritional status of the entire community, but is sparingly used for the want of a simple technology that is portable. Use of height is also necessary to identify high risk pregnancy that should be advised to undergo institutional deliveries. It can be used to assess the body mass index (weight/ height squared) which is a robust marker of nutritional status. Using a flexible tape stuck to a wall is liable to be inaccurate.



A stadiometer is a medical equipment used for measuring human height. It is usually constructed out of a ruler and a sliding horizontal headpiece which is adjusted to rest on the top of the head. Stadiometers are used in routine medical examinations and also clinical tests and experiments.

Our portable and inexpensive device can measure heights in the field, or even in the clinics.

BREATH COUNTER

Measurement of respiratory rates is essential for the early diagnosis of lower respiratory tract infections in children that accounts for a large number of deaths in the community.

We believe that accurate measurement of respiratory rates and remembering different cutoffs for different age groups is not easy. Since many village health personnel available in the community have limited literacy and clinical skills, early diagnosis of pneumonia is a public health problem.



Semi-literate and neo-literate health workers find it difficult to measure rates in young children, particularly where rates are high and also to maintain coordination between counting the breaths and looking at the watch and to remember various age specific cutoffs for abnormal respiratory rates. In fact, it is difficult even for higher levels of health workers including nurses and doctors.

Our breath counter is a micro-controller based counter that runs on a 9V battery. The rate of breathing can be recorded by just pressing on a button and the output comes in the form of a red or green signal for an abnormally high rate or otherwise.

NAINA CHALEESA

Women, more often than men often need fine near vision to do many additional tasks such as looking for small pebbles in food grain before cooking, or when looking for lice, or for doing any fine handiwork in the house, after turning 40, muscles of the eye become weak, many people normally face problem of near vision called presbyopia due to this they faced problem in doing these works.

We also have been able to evolve a presbyopia support programme called Naina-Chaleesa (naina for eyes, and chaleesa for 40 years!) wherein women and men above the age of 40 years can choose spectacles that suit their needs for near vision, from the collection that their village health worker or their nearest health centre has, without going to an optician, thereby avoiding unnecessary expense to travel to a town and also demystifying medical technology.



Especially Women health workers who cross the age of 40 require to look at the thermometer reading, or the Blood pressure readings, as well as the line on the urine pregnancy testing kit or on the Malaria rapid diagnostic kits, particularly in dim light it will be useful.

We can stock spectacles of 0.5, 1.0, 1.5, 2.0 and 3.0 Dioptres and ask people to choose the smallest number that allows them to do any near work that demands fine vision. Each interested person is asked to thread a needle as a marker of fine near vision work.

MODULAR SAFE DELIVERY KIT

In rural areas, non-institutional deliveries are common and attended by dais. The required items during childbirth are often improper and unavailable. Thus, there is clearly a need for an assortment of items that should be clean, appropriate and readily available. It has been a common practice in public health care to make delivery kits available to pregnant women. However, most of the delivery kits that we have seen do not contain all the things that are required at the time of delivery, both for the new-born and the mother for at least one postpartum day, and which is convenient to use.



The delivery kits that have been developed here have looked at these issues and have evolved over time on basis of feedbacks from the users. The modular safe delivery kit consists of three pictorial booklets and three kits. The pictorial booklets contain information on the use of the kit, list of advices for the mother and new-born. The three kits consist of items required for pre, intra and postpartum delivery process, that are segregated accordingly.

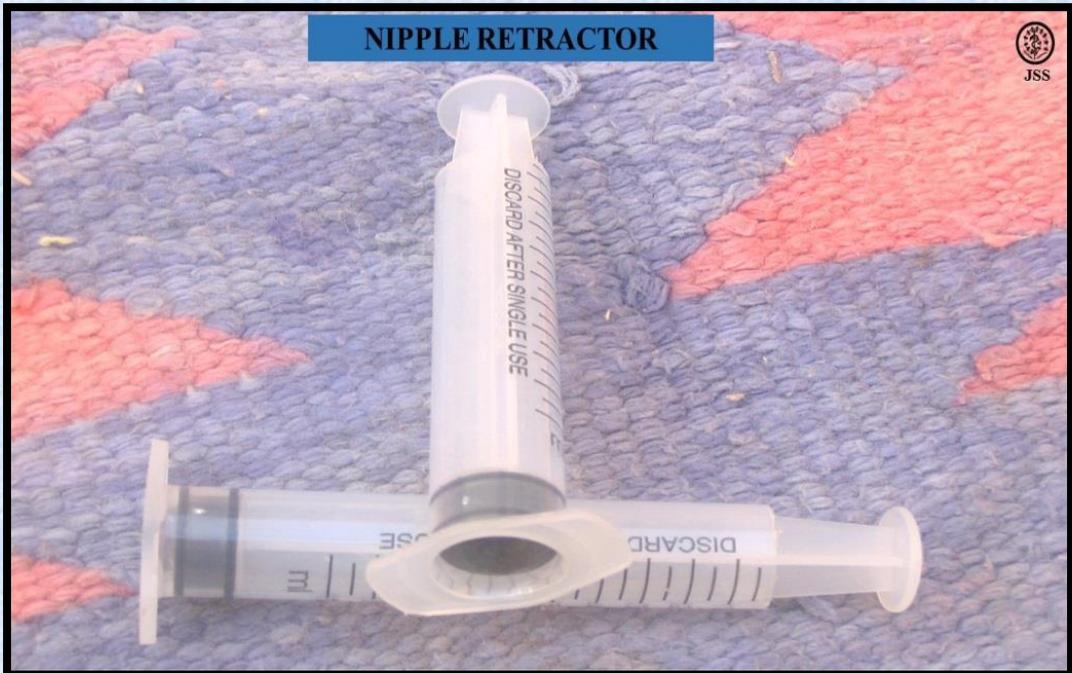
The First module contains items required for the pre-delivery process. They are used for cleaning the place for delivery as well as clean the perineum, thus maintaining hygiene. The Second module contains items required during the birth process in stage 2 - gloves to be worn by the birth attendant, sterile blade for cutting the

umbilical cord and sterilized threads to tie the cord, autoclaved gauze pieces and cotton swabs for cleaning the newborn. The Third module is used for post-partum process- three thick pads for the mother to take care of the afterbirth bleeding, two cloth pieces (one to wipe the baby dry and the other to wrap the baby for thermal protection) and misoprostol tablets (to help prevent or minimise postpartum haemorrhage). Hence, this kit contains all the basic items that are needed by the baby, the mother and the midwife for a safe delivery process and will help reduce the morbidity and mortality associated with delivery.



NIPPLE RETRACTOR

Breast feeding should be initiated after delivery to the new born baby as early as possible. There are various reasons which can be a hindrance in proper breastfeeding of the baby. Inverted nipples of the breast can be one of the reasons, which might cause difficulty in breastfeeding for the new-born. Inexperienced mothers may experience pain and soreness initially when attempting to breastfeed.



A nipple retractor can be used to draw out the inverted nipple. The plunger should be pushed inside the syringe and the syringe should be put on the inverted nipple. On slowly pulling the plunger, the nipples get protracted. If done several times a day for a few days, the nipple retraction resolves and breast feeding can be reinstated. Thus, it is an easy method to facilitate proper breastfeeding practice.

Technologies at Hospital Level

HAEMOGLOBIN ELECTROPHORESIS

Sickle cell disease is an important problem in several parts of India, particularly central and southern India. This disease is common in several tribal groups and in several castes, causing lifelong morbidity, and often death.

An accurate diagnosis is essential to plan treatment properly. Although the screening test is often available in several health-care set ups, the confirmatory test, i.e. haemoglobin electrophoresis is not easily available and even when available, rather expensive because of the price of the equipment and the running costs.



Our kit is based on conventional electrophoresis but is available at a fraction of the cost of the models available in the market. The kit has been evaluated extensively and it can use both agarose gel and nitrocellulose paper as the medium.

SPACER DEVICE

Inhalation of drugs plays an important role in the management of asthma. Thus, aerosol therapy is a treatment of choice during an acute exacerbation of Asthma and also to prevent recurrence. Drugs that are commonly given as aerosols are beta agonists (short and long acting), steroids and anticholinergics (e.g. Ipratropium).

To achieve an optimal effect, drug and the delivery device should work with synchronization. Spacers are used to bring about effectiveness by synchronizing the act of inhalation and the aerosol reaching the small airways. Spacer is first loaded with aerosols and later deep inspiration movements allow the aerosol to reach the smaller airways. The spacers that are made of plastic develop a lot of static over the time, which causes deposition and accumulation of the aerosols on the inner walls of the spacer, which limits the availability and effectiveness of the aerosol.



The spacer developed here is an improved inhalation device using metal for better deposition of the aerosol in asthma. It is a 250 ml steel glass with a rubber disc that holds the entry port of the inhaler to load the spacer as well as the port for the user to inhale the aerosol. Metal spacers have limited static and thus don't undermine the aerosol concentration. We have done radiometric

images using inert gases and have demonstrated that aerosol deposition in the peripheries of the lungs is best with our spacer device. Not only this, it also shows that our spacer generates nanoparticles which are so small that it can enter blood capillaries directly.

Technologies at Peripheral Level

CHOONA NAMAK

A dietary source of calcium is essential as the drug based calcium is either expensive, or most formulations contain very little calcium. In rural and tribal areas people are mostly poor and not able to afford expensive calcium tablets. Choona namak is cheap and affordable to these people and also supplements their calcium need.

Our preparation- presently in sachet form is called choona namak- literally calcium salt- and is actually 1.25 grams of calcium carbonate, which provides 500 mg of elemental calcium, is supposed to be added to food, like salt.



Three spoonful of this should provide 1.5 gram of elemental calcium enough as a therapeutic measure for pregnant and lactating women, for osteomalacia and osteoporosis and for rickets.

HAND WASH STATION

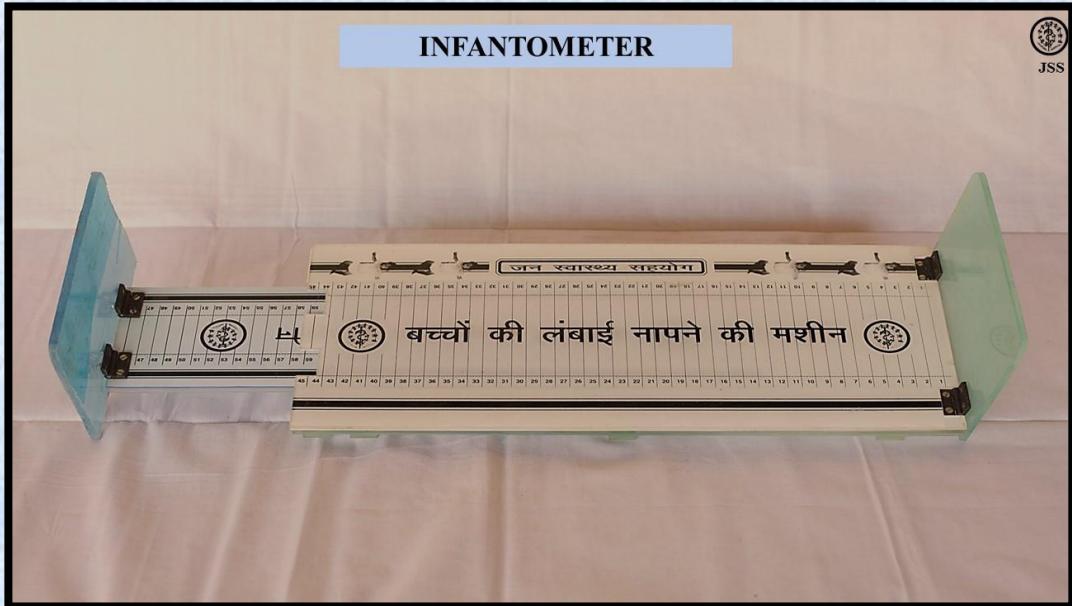
In order to avoid diseases like diarrhoea, typhoid, cholera as well as some respiratory diseases it is necessary to wash our hands before eating. Hand-washing basically requires three things- water, washing agent and a washing station. In rural areas, a washing station is often not available or given less priority.



This Hand Wash station is made up of simple, easily available and inexpensive materials like – a 5- 10 litre plastic can with tap as the water storing agent and one plastic container as the outflow basin with pipe to drain the used water into a soak pit. It is easy to use and can be easily maintained. It can be installed inside the kitchen or outside the house, near toilet etc. A convenient method that uses minimum water and washing agent will help in improving the hand washing practices and keep the diseases at bay. This can be installed in people's homes, in community gathering places such as schools, anganwadis, creches and panchayat bhavans and social gatherings such as melas and marriages.

INFANTOMETER

Anthropometric measurements in the infant and the young toddler is the most robust way of measuring nutritional status in this most vulnerable period of one's life. While weights alone are often measured with portable spring balances as well as with digital balances, measurement of length in the first two years of life has been largely ignored, mostly due to lack of availability of convenient and accurate measurement tools for it.



We have developed a low cost and accurate infantometer using acrylic sheets that has a sliding length measurement scale. This infantometer is portable and convenient to use in minimum training. With the availability of length data, it is now possible for field workers who study nutrition to analyse wasting in children by now knowing weight for length or body mass index. Further they can measure chronic undernutrition or stunting by studying length for age.

SOLAR REFRIGERATOR

Rural areas of Bilaspur have abundant sunlight but poor electricity grid coverage. In such remote areas, it is essential to have access to electricity in order to run medical facilities and secure healthcare coverage. Adopting a renewable energy source not only reduces the large operating costs but also provides quality healthcare. A solar-powered refrigerator is a refrigerator which runs on energy directly provided by sun.



Solar powered refrigerator has immense benefits to keep heat labile biologicals and chemicals potent in those health facilities that lack power supply and is highly useful in preserving the antisera and the vaccines for snake and suspected rabid animal bites. As there are high numbers of cases of snake bites in the rural areas, this availability of primary treatment at the nearest area to the difficult to reach settlements is invaluable.

CHAIN LINK DEVICE

Four wheeled vehicles are predominantly used nowadays to provide health care services by the public health system or by voluntary organizations in rural areas. Vehicles often have to be run on mud roads as remote villages of rural and tribal forest areas invariably won't have tar roads.

Vehicles getting stuck in the mud is one of the major transport related problem faced by service providers, especially during rainy season.



Chain link is used around 4 wheel vehicular tyres to negotiate slush and excess water during the rainy season. We have developed one such chain link apparatus that is used in the rainy season for vehicles like Mahindra Bolero which usually get stuck into mud. This Chain link is applied to the rear tyres and allows the stuck tyres to be pulled out by the power of the engine, which otherwise would have required a crane or some other pull. The upgradation of this device, to reduce the time taken in applying the chain to the tyres, is currently under process.

ANIMAL BITE KIT

Many cases of animal bites are observed in the rural areas and most often the community is unable to differentiate between a venomous and non-venomous bite. Moreover, the knowledge regarding first aid and treatment available at health centres is not known to the community. An animal bite kit has been prepared with the purpose of providing awareness regarding animal bites, their toxicity and the treatment measures in a simplified and interesting manner.

This kit consists of animal bite care manuals in both Hindi and English languages, identification cards of animals, video cd on animal bites as well as posters. The identification cards are differentiated into red and black bordered cards- red ones depicting picture of venomous animals and the black ones depicting picture of non-



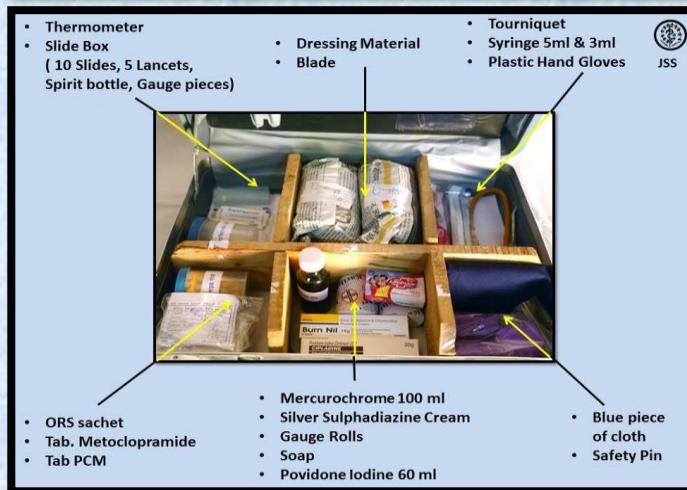
venomous animals. The people are asked to identify the picture and hence it can be known whether it was a venomous or non-venomous bite. Treatment and counseling is done accordingly. Hence, the kit is not only beneficial to raise awareness amongst the community but also helps deliver the required treatment. This kit is also helpful in talking about animal bites in the community as picture cards make the discussion easier to understand.

FIRST AID KIT

Primary care for acute health problems illnesses is a major lacuna in our health care systems, which results in considerable hardships and impoverishment, besides causing avoidable mortality and morbidity. Injuries and animal bites are common in the rural areas and appropriate first aid for them is very often found wanting. Similarly, care for common illnesses like fever, vomiting and diarrhoea is necessary.



We have fabricated a kit that looks at the needs of the rural people, and offers information, replenish able materials, and certain essential equipment that allows first aid to be administered by someone who will need a day long training programme in its use.



This kit has supplies needed for conditions like burns, minor injuries, dehydration, fever or pain and also includes things like bamboo splints for fractures of lower limb and upper limbs, a cloth to make a triangular sling for clavicular fracture, diagnostic

supplies like a peripheral blood smear making slide kit box, an easy to read thermometer and a few disposable syringes for safe injections. It also consists of a copy of the manual of the first aid kit as well as a notebook and pen to write details of patients.

**PRICE LIST OF APPROPRIATE TECHNOLOGIES
IN HEALTH CARE**

April 2017

Serial No.	APPROPRIATE TECHNOLOGIES	PRICE (Rs.)
A	TECHNOLOGIES AT COMMUNITY LEVEL	
	H ₂ S paper strip	30
	UV lamp based water disinfection Apparatus	2800
	Mangsajhaar Mosquito Repellent Oil	35
	ORS packets	5
	Sleeping bag with 2 packets of palm oil	1100
	Kangaroo blouse	350
B	TECHNOLOGIES FOR HEALTH WORKERS	
	Teaching stethoscope	350
	CuSO ₄ based anaemia kit	25
	Easy to read thermometer	60
	Portable Stadiometer	750
	Breath counter	500
	Naina chaleesa	50, 60, 100
	Modular Delivery kits	120
	Nipple retractor	5
C	TECHNOLOGIES AT HOSPITAL LEVEL	
	Haemoglobin electrophoresis	6000
	Spacer/ Nebuliser	60

D	TECHNOLOGIES AT PERIPHERAL CLINICS	
	CaCO ₃ (Chuna Namak) 75g	12
	Hand wash station	1350
	Infantometer	1500
	Solar refrigerator	40000
	Chain link device	To Be Discussed
	Animal bite kit	750
	First aid kit	800

Jan Swasthya Sahyog (JSS) is a voluntary, non-profit, registered society of health professionals running a low-cost, effective, health program providing both preventive and curative services for the past 8 years to people from the tribale and rural areas of Bilaspur, Chhattisgarh through a community health program and a rural health centre, which includes a hospital.



JAN SWASTHYA SAHYOG

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