Vidya Siri College of Pharmacy #67/4, Off Sarjapur Road, Bangalore East Taluk, Chikkakannalli, Bengaluru – 560 035

SOCIAL PHARMACY LABORATORY RECORD

Name of the Student :

…….

Reg.No. : …….

Class :……..

Batch : …….

Vidya Siri College of Pharmacy
#67/4, Off Sarjapur Road, Bangalore East Taluk, Chikkakannalli, Bengaluru – 560 035

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CERTIFICATE

This is to certify that Mr./Ms.

_____

is a student of ***D.Pharm PART-I (ER 2020)*** *and has satisfactorily completed the Practical prescribed by Board of Examination Authority, Bangalore in* ***SOCIAL PHARMACY*** *during the academic year……..Reg. No. Date:*

Signature of the Subject Teacher

EXPERIMENT NO : 1

NATIONAL IMMUNIZATION SHEDULE FOR CHILDREN, ADULT VACCINE SHEDULE,VACCINES WHICH ARE NOT INCLUDED IN THE NATIONAL IMMUNIZATION PROGRAMME

AIM : To study and understand the immunization schedule for children and Adult vaccine schedule.

THEORY :

IMMUNIZATION:

Immunization is the process of giving a vaccine to a person to protect them against disease. Immunity (protection) by immunization is similar to the immunity a person would get from disease, but instead of getting the disease you get a vaccine. This is what makes vaccines such powerful medicine. Most vaccines are given by needle (injection) but some are given by mouth (orally) or sprayed into the nose (nasally). Immunizations are also called vaccinations, needles, shots or jabs.

As per WHO (World Health Organization), **immunization is the procedure by which an individual is made resistant or immune to a disease by administrating a vaccine**. Immunizations also known as vaccines

VACCINE :

A vaccine is defined as **any substance which is used to stimulate the production of antibodies, in turn providing immunity against one or a few diseases**.

VACCINATION :

Vaccination is the adm **There are several types of vaccines, including:**

- Inactivated vaccines.
- Live-attenuated vaccines.
- Messenger RNA (mRNA) vaccines.
- Subunit, recombinant, polysaccharide, and conjugate vaccines.
- Toxoid vaccines.
- Viral vector vaccines.

inistration of a vaccine to help the immune system develop immunity from a disease. Vaccines contain a microorganism or virus in a weakened, live or killed state, or proteins or toxins from the organism. In stimulating the body's adaptive immunity, they help prevent sickness from an infectious disease.

NATIONAL IMMUNIZATION SHEDULE:

Immunization is one of the most important and cost effective strategies for the prevention of childhood sicknesses and disabilities and is thus a basic need for all children. The following schedule has been recommended by the Ministry of Health, Govt. of India and is one of the most widely followed by the child health care providers.

National Immunization Schedule				
Vaccine	**When to give**	**Dose**	**Route**	**Site**
For Infants				
BCG	At birth or as early as possible till one year of age	0.1ml (0.05ml until 1 month of age)	Intra -dermal	Left Upper Arm
Hepatitis B Birth dose	At birth or as early as possible within 24 hours	0.5 ml	Intramuscular	Anterolateral side of mid thigh-LEFT
OPV Birth dose	At birth or as early as possible within the first 15 days	2 drops	Oral	-
OPV 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	2 drops	Oral	-
IPV (inactivated Polio Vaccine)	14 weeks	0.5 ml	Intramuscular	Anterolateral side of mid thigh-RIGHT
Pentavelant 1,2 & 3	At 6 weeks, 10	0.5 ml	Intramuscular	Anterolateral side of mid thigh-LEFT

	weeks & 14 weeks			
Rota Virus Vaccine	At 6 weeks, 10 weeks & 14 weeks	5 drops	Oral	-
Measles 1st Dose	9 completed months-12 months. (give up to 5 years if not received at 9-12 months age)	0.5 ml	Subcutaneous	Right Upper Arm
Vitamin A, 1st Dose	At 9 months with measles	1 ml (1 lakh IU)	Oral	-
For children				
DPT 1st booster	16-24 months	0.5 ml	Intramuscular	Anterolateral side of mid thigh-LEFT
OPV Booster	16-24 months	2 drops	Oral	
Measles 2nd dose	16-24 Months	0.5 ml	Subcutaneous	Right Upper Arm
Vitamin A (2nd to 9th dose)	16 months with DPT/OPV booster, then, one dose every 6	2 ml (2 lakh IU)	Oral	-

	month up to the age of 5 years)			
DPT 2nd Booster	5-6 years	0.5 ml.	Intramuscular	Left Upper Arm
TT	10 years & 16 years	0.5 ml	Intramuscular	Upper Arm

VACCINES WHICH ARE NOT INCLUDED IN THE NATIONAL IMMUNIZATION PROGRAMME

National Immunization Schedule

Vaccine	**When to give**	**Route**
OPV 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	Oral
IPV (inactivated Polio Vaccine)	14 weeks	Intramuscular
Pentavelant 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	Intramuscular

RESULTS:

The national immunization schedule is studied and understood.

Abbreviations:

1. **BCG:** Bacillus Calmette Guerin
2. **OPV:** Oral poliovirus vaccine
3. **DTP:** Diphtheria, tetanus, whole cell Pertussis
4. **DT:** Diphtheria and tetanus toxoids
5. **TT:** Tetanus toxoid
6. **Hep B:** Hepatitis B vaccine

7. **MMR:** Measles, Mumps and Rubella Vaccine
8. **Hib:** Hemophilus influenzae Type ‘b’ Vaccine
9. **IPV:** Inactivated poliovirus vaccine
10. **Td:** Tetanus, reduced dose diphtheria toxoid
11. **HPV:** Human Papilloma Virus Vaccine
12. **PCV:** Pneumococcal Conjugate Vaccine
13. **DTP:** Tetanus and Diphtheria Toxoids and a Cellular Pertussis Vaccine

For the complete IAP recommended immunization schedule, visit Immunization schedule

EXPERIMENT NO:2

RCH – reproductive and child health – nutritional aspects, relevant national health programs

AIM: To understand the reproductive health and child health programme.

THEORY : The International Conference of Population and Development (ICPD) 1994 established an International consensus on a new approach to policies to achieve population stabilisation. Fertility reduction should be addressed at the level of broad social policy, including reduction of gender discrimination in education, health care and income generation. Reproductive health programmes should focus the needs of actual and potential clients, not only for limiting births but also for healthy sexuality and child bearing.

World Health Organization (WHO) has defined reproductive health as follows: "Within the framework of WHO's definition of health as a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity; reproductive health addresses the reproductive processes, functions and systems at all stages of life.

Essential Components of RCH Programme

1. Prevention and management of unwanted pregnancy.

2. Maternal care that includes antenatal, delivery and postpartum services.

3. Child survival services for newborns and infants.

4. Management of Reproductive Tract Infection (TRIs) and Sexually Transmitted Infections (STIs).

GOALS

- Provide facilities to understand and build up productive health
- Provide support for building up reproductively healthy society
- Create awareness among people about various aspects related to reproduction

Nutrition – school-age to adolescence

All children and adolescents need healthy snacks and meals to support their growth and development. A nutrient-rich diet plays an important role in your child's mental and physical development.

A healthy diet with the right nutrition also plays a vital role in maintaining a healthy weight in children and adolescents. Eating patterns established in childhood continue into adulthood, so the more healthy choices children are offered, the better.

Signs and symptoms of a poor diet

Symptoms of poor diet can include:

- being underweight, overweight or obese
- constipation or changes in bowel habits
- being pale or lethargic
- tooth decay
- poor physical growth.

In some children, poor diet may be associated with:

- behavioural problems
- sleep issues
- problems with emotional and psychological development
- poor concentration or difficulties at school.

OVER NUTRITION AMONG Adolescents:

Adolescent overnutrition is becoming a global public health problem, increasing at an alarming rate in developing countries. Overnutrition increases the risks of serious diet-related chronic diseases, including type 2 diabetes, hypertension, cardiovascular disease, and stroke.

Adolescence is a critical time of development and nutritional status in adolescence influences both current and future adult health outcomes. However, data on adolescent nutritional status is limited in low-resource settings. Mid-upper arm circumference (MUAC) has the potential to offer a simple, low-resource alternative or supplement to body mass index (BMI) in assessing nutrition in adolescent populations

The majority of adolescents (75%) were of normal nutritional status defined by BMI. Significantly more males were stunted than females, while significantly more females were overweight than males. Among those identified as outside the normal nutrition ranges, there was inconsistency between MUAC and BMI cut-offs. Bivariate analyses indicate that BMI and MUAC show a positive correlation for both female and male participants, and the relationship between BMI and MUAC was more strongly correlated among adolescent females. Conclusions: Further studies are needed with more nutritionally and demographically diverse populations to better

IMPORTANCE OF NUTRIENTS FOR AN ADOLESCENT

- calcium, to build strong bones and teeth.
- vitamin D, to keep bones healthy.
- potassium, to help lower blood pressure.
- fiber, to help you stay regular and feel full.
- protein, to power you up and help you grow strong.
- iron, to help you grow.

BASIC ADVISE

- Recommend **diets low in saturated and trans fats**.
- Healthy foods include fruits,
- vegetables, whole grains, legumes, low-fat dairy products,
- fish, poultry, and lean meats.
- Fruits, vegetables, and fish are often inadequately consumed by children

Key points to remember

- A nutrient-rich diet is important for healthy growth and development.
- Generally, most vitamin deficiencies can be managed at home with minor changes to diet.
- You should take your child to see your GP if you are unsure about their weight or diet or if you are concerned they may have an allergy to particular foods.

Results : Reproductive health and child health program is understood

EXPERIMENT NO : 3

FAMILY PLANNING DEVICES

AIM : To understand family planning methods.

THEORY : Family planning is "the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility."[1] Family planning may involve consideration of the number of children a woman wishes to have, including the choice to have no children, and the age at which she wishes to have them.

FAMILY PLANNING SERVICES INCLUDE

- Contraceptive services.
- Pregnancy testing and councelling
- Pregnancy achieving services including pre-conception health services
- Basic infertility services
- Sexually transmitted disease services
- Broader reproductive health services, including patient education and counseling
- Breast and pelvic examinations
- Breast and cervical cancer screening
- Sexually transmitted infection (STI) and immunodefieciency virus (HIV) prevention education,counseling,testing, and referral.

METHODS OF CONTRACEPTION

There are different methods of contraception, including:

Contraception options

- long-acting reversible contraception - the implant or intra uterine device (IUD)

- hormonal contraception - the pill or the Depo Provera injection
- barrier methods - condoms
- emergency contraception
- fertility awareness
- permanent contraception –

1.LONG-ACTING REVERSIBLE CONTRACEPTION (LARC) LASTS FOR A LONG TIME.

There are two types of LARC.

- the intra uterine device, which lasts for three, five or ten years
- the implant, which lasts for five years.

Once you have a LARC put in, you don't need to remember to take contraception every day or every month.

LARCs are the most effective types of contraception. They are more than 99% effective at preventing pregnancy.

2.HORMONAL CONTRACEPTIVES:

These contraceptives use hormones to prevent pregnancy.

Hormonal contraceptives include the Pill and the Depo Provera injection.

There are two types of pill:

- combined oral contraceptive pill
- progestogen-only contraceptive pill

You take one pill each day. If you take the pill correctly, it is more than 99% effective at preventing pregnancy.

The Depo Provera injection is an injection you get every three months. If you get your injections on time, Depo Provera is more than 99% effective.

3.BARRIER METHODS:

Barrier methods stop sperm from entering the vagina. The two barrier methods are:

- condoms

- internal condoms

Condoms protect against sexually transmissible infections (STIs) and from unintended pregnancy.

You can buy internal condoms from our website and from some pharmacies.

You can get a prescription for condoms from Family Planning or your doctor, or you can buy them from this website, pharmacies, supermarkets, and other shops.

4.EMERGENCY CONTRACEPTION:

There are two options for emergency contraception: the emergency contraceptive pill (ECP) or a copper IUD.

ECP can be taken up to three days after unprotected sex. If you are an average weight, the ECP is 98% effective. If you weigh more than 70kg, the ECP is less effective and a copper IUD is recommended. If you weigh more than 70kg and you choose to take ECP, you should ask if taking a double dose is the right option for you.

The copper IUD can be inserted up to five days after unprotected sex, and is more than 99% effective at preventing pregnancy.

Emergency contraception can be used to prevent pregnancy if:

- you haven't used protection
- your normal contraception fails e.g. condom splits
- you have missed more than one contraceptive pill
- you have been vomiting or had diarrhoea while on the pill
- you have missed your injection
- you have been forced to have sex without contraception.

It is not a good idea to use ECP as your regular method of contraception - it is less effective than if you were using a LARC or hormonal method.

5.FERTILITY AWARENESS:

Fertility awareness is learning the signs of fertility in your menstrual cycle to help you plan or avoid a pregnancy.

6. PERMANENT CONTRACEPTION:

Permanent contraception, sometimes called sterilisation, prevents all future pregnancies. It is very difficult or impossible to reverse. Permanent contraception is either a vasectomy or a tubal ligation.

7.SPACING METHODS

spacing methods use baseline grids, keylines, padding, and incremental spacing to adjust ratios, containers, and touch targets.

Use of female condom

Use of male condom

TERMINAL METHODS

1.vasectomy:

A vasectomy is an operation that prevents sperm travelling from the testicles to the penis. It is done by cutting the tubes that allow sperm to leave the testicles. This process is also known as male sterilisation, or 'the snip'. Vasectomy is more than 99 per cent effective at preventing pregnancy.

When you ejaculate (cum) the fluid or semen from your penis contains sperm.
Sperm are made in your testicles (balls) and travel up your vas deferens (tubes) to mix with your semen. These are the tubes that are cut and tied when you have a vasectomy.

After a vasectomy there are no sperm in your semen. Your testicles still make sperm but they are absorbed by your body.

2. Tubectomy :

Tubal ligation or tubectomy is a surgical strategy for cleansing in which a lady's fallopian tubes are clasped and blocked or separated and fixed, both of which keeps eggs from achieving the uterus for implantation. Tubal ligation is viewed as a lasting technique for disinfection and conception prevention.

RESULTS:

Understood the various family planning methods and about contraception.

EXPERIMENT NO :4

MICROSCOPICAL OBSERVATION OF DIFFERENT MICROBES (Readymade slides)

AIM: To observe different micro organisms using a microscope.

EQUIPMENTS : Slides of different micro organisms – microscope.

THEORY:

Microorganisms are observed and studied with the help of microscopes. The unit of measurement used to measure microorganisms is the Metric System. The size of the specimen determines which microscopes can be used to view the specimen effectively. Modern microscopes produce images with great clarity, magnifications that range from ten to thousands of times.

Types of Microscopes

Simple Microscopes

Simple microscopes have only one lens like a magnifying glass. It has a double convex lens with a short focal length. The examples of this kind of instrument include the hand lens and reading lens.

When an object is kept near the lens, its principal focus with an image is produced, which is erect and bigger than the original object. Leeuwenhoeck's simple microscopes allowed him to magnify images from 100 to 300 X.

Compound Light Microscopy

These are the most basic type of microscopes used in microbiology. It consists of a series of lenses that utilizes visible light as its source of illumination. Various small specimens can be studied to find details with a compound light microscope.

In a compound light microscope, light originates from an illuminator and passes through condenser lenses, which direct light onto the specimen. The light then enters the objective lenses, which further magnifies the image.

Labeled Diagram of a Compound Microscope

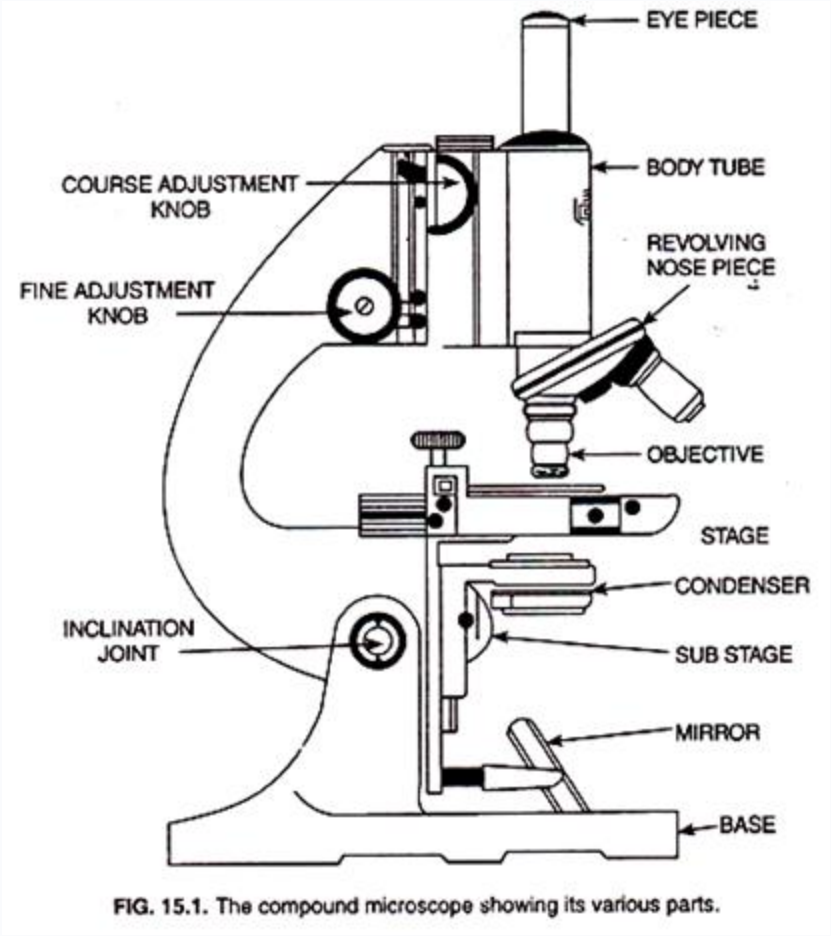

FIG. 15.1. The compound microscope showing its various parts.

Components of a Compound Microscope

The major components of a compound microscope are :

Framework: The basic frame structure is made up of metal, which includes the arm and base to which whole of the magnification and optical components are attached. The metallic arm is connected to a U shaped strong and heavy base that provides stability to the instrument.

Stage: this is the flat horizontal platform positioned at about halfway through the length of the microscope with a hole at the centre that allows the passage of light for illumination of the sample.

Focus knobs: Two pairs of knobs are attached to the arm that help in up and down movement of the stage and in adjustment and focusing of specimens of different thickness.

Lens Systems: All microscopes employ a set of different types of lens systems: the oculars, the objectives, and the condenser, that have different focusing power, and contribute to the complete magnification system.

Nose piece: A revolving nosepiece which holds the objectives is attached to the curved upper part of the arm of the microscope. The nosepiece can be rotated to position the objective with the required magnification in path of the magnification system, beneath the body assembly and the eye piece.

Eyepiece (ocular lens): The eyepiece or ocular lens is a set of lenses held in a cylindrical tube kept inserted in a tubular structure on the curved upper part of the arm, above the nose piece. It consists of two or more lenses which focus the image into the eye. The newest microscopes consist of a pair of eye pieces that allows the observer to use both the eyes to observe the specimen in the microscope. Such microscopes are called binocular microscopes. The normally used eye pieces have 2X, 50X and 10X magnifications.

Objective: The objectives are usually small cylindrical objects containing a single or a set of lenses attached to the nosepiece. The nosepiece holds three to five objectives, which contain lenses of varying magnifying power (2X-400 X). The total arrangement of the lenses is parfocal, which means that the sample stays in focus even when the lenses are changed from one to another in a microscope.

Condenser: A condenser is also a lens which is fixed below the stage and it focuses the beam of light coming from the light source onto the slide. The condenser is usually aided with diaphragm and/or filters, to control and manage the quality and intensity of the light passing through the sample.

Light Source: The light source is mounted at the base of the microscope. The source of light may be the day light, a halogen light, or even LEDs and lasers, as used in the latest microscopes. The microscopes have some provision for reducing light intensity with a neutral density filter.

Types of Compound Microscopes

1. **The Bright-Field Microscope** – It is the simplest of all the optical microscopy illumination. It helps to see the dark objects against a bright background.
2. **Dark Field Microscope** – This is used to examine live or unstained microorganisms and other specimens like light-sensitive organisms or specimens that lack contrast with their background.

3. **Phase-Contrast Microscope** – It is useful to examine live specimens and does not require fixing or staining, as it can kill or discomfort the living microorganism and will make the observation inaccurate.
4. **The Differential Interference Contrast Microscope** – This type of microscopy takes advantage of differences in the light refraction by different parts of living cells and transparent specimens and allows them to become visible for microscopic evaluation.
5. **The Fluorescence Microscope** – This microscope uses UV light to magnify Fluorescent substances. They can absorb UV light and emit visible light. Sometimes cells are also stained with fluorescent chemicals (fluorochromes) to be studied under this microscope.
6. **Confocal Microscope** – Confocal microscope is majorly used to study the detailed structure of specific objects within the cells.
7. **Two-Photon Microscope** – Also known as two-photon laser scanning microscopy, it is a further refinement of precision fluorescence microscopy.
8. **Electron Microscopes** – It uses electrons, electromagnetic lenses, and fluorescent screens. Electron wavelengths are 100,000 x smaller than visible light wavelength which helps to magnify the specimen. Here the specimens are stained with heavy metal salts to be observed .

All these types of microscopes yield a distinctive image and are used for different types of observation of microorganisms.

RESULTS:

The study of observation of different micro organisms using a microscope was done.

EXPERIMENT NO : 5

ORAL HEALTH AND HYGEINE

AIM : To study and understand the oral health and hygiene.

THEORY : Oral hygiene is the practice of keeping your mouth clean and disease-free. It involves brushing and flossing your teeth as well as visiting your dentist regularly for dental X-rays, exams and cleanings.Normally the body's natural defenses and good oral health care, such as daily brushing and flossing, keep bacteria under control. However, without proper oral hygiene, bacteria can reach levels that might lead to oral infections, such as tooth decay and gum disease.

COMMON ORAL PROBLEMS

- Tooth decay. Tooth decay is also known as dental caries or dental cavities.
- Gum disease.
- Bad breath.
- Sensitive teeth.
- Cracked or broken teeth.
- Receding gums.
- Root infection.
- Enamel erosion.

Symptoms of tooth cavities

- tooth sensitivity
- tooth pain
- a visible hole in your teeth
- black or white staining on your teeth

Objectives of tooth brushing:

- The main objectives of tooth brushing include
- To prevent plate formation plaque removal,cleaning the tongue,massage the gingival tissue

Brushing Technique

Bass or Sulcular Technique

The key to preventing and controlling gum disease is brushing thoroughly around and under the gumline where bacteria and plaque tend to accumulate. This technique is good for those with periodontitis. In the Bass method of brushing, the toothbrush bristles reach under the gums to scrub off plaque before it hardens into tartar and causes gum disease:

- Place the toothbrush parallel to your teeth with the bristles toward the gums.
- Tilt the brush to a 45-degree angle and move the bristles slightly under the gumline.
- With firm but gentle pressure, and while maintaining the bristles under the gum tissue, wiggle or vibrate the brush back and forth or use a small circular motion 15 to 20 times, before moving to the next area. The brush should cover two to three teeth at a time.
- Brush the entire outer surface of the teeth and then continue the same technique on the tongue side.
- To brush the insides of the front teeth, hold the toothbrush in a vertical position and use the bristles on the toe of the brush, but make sure they are getting under the gum tissue.
- Brush the chewing surface of the molar teeth and don't forget your tongue.

Advantages:

- Effective method for removing plaque
- Provides good gingival stimulation
- Easy to learn

Disavandages

- Time consuming
- In certain patients dexterity requirement is too high

Stillman Technique

The Stillman method of brushing is similar to the Bass technique; however, it may help clean more debris from between the teeth. It is recommended for those with gingivitis. To implement this method, follow the Bass technique, but after vibrating the brush under the gum area, move the brush toward the chewing surface of the tooth and use short back-and-forth strokes. With this technique, half of the bristles should be covering the gums, and the other half of the bristles should be on the tooth surface.

Disadvanges:

Time consuming, Improper brushing can damage the epithelial attachment.

Charter Technique

If you have spaces between your teeth, see exposed root surfaces or have had periodontal surgery or gum recession, your dentist may recommend the Charter method of brushing. This technique is also effective for people with orthodontic appliances or fixed partial dentures.

- Place the bristles on the gumline at a 45-degree angle pointing toward the chewing surface or crown of the tooth. This position is the opposite of the Bass and Stillman technique.
- Gently vibrate the brush for 15 to 20 counts, using short circular strokes or small back and forth motions, and then reposition the brush to the next area.
- Move around the mouth in the same pattern, brushing all tooth surfaces, both inner and outer, as well as the chewing surfaces of the molars.

Advantages:

- Massage end stimulation of marginal and interdental gingiva

Disadvantages:

- Brush end do not engage in the gingival sulcus to remove sub gingival bacterial accumulations.
- Requirement in digital dexterity are high

Circular /Fones/Scrub Brushing Method:

The bristles are held at a 45° angle toward the gum line. Make small and light circular shaped brush strokes overlapping each tooth surface until all surfaces are reached

Advantages:

- It is easy to learn
- Shorter time is required

Disadvantages:

- Possible trauma to gingival
- Interdental areas not properly cleaned
- Determental for the adults especially who use the brush vigorously

Way to keep your teeth healthy

- Don’t go to to bed without brushing your teeth
- Brush properly
- Don’t neglect your tongue
- Use a fluoride toothpaste
- Treat flossing as important as brushing
- Don’t let flossing difficulties stop you
- Consider mouthwash
- Drink more water
- Eat crunchy fruits and vegetables
- Limit sugary and acidic foods
- See your dentist at least twice a year

RESULTS:

Understood about the oral hygiene

EXPERIMENT NO : 6

PERSONAL HYGEINE AND ETIQUETTES- HAND WASHING TECHNIQUE AND COUGH AND SNEEZE ETIQUITTE

AIM: To learn hand washing technique

THEORY:

Bacteria and viruses are easily spread when a sick person sneezes, coughs and talks within close distance to you. You can also get sick when you touch germ-infected surfaces and then touch your face. A simple 20-second hand washing remains one of the best ways to keep yourself healthy and stop the spread of bacteria and viruses.

Hand washing (or handwashing), also known as hand hygiene, is the act of cleaning one's hands with soap or handwash and water to remove viruses/bacteria/microorganisms, dirt, grease, or other harmful and unwanted substances stuck to the hands.

IMPORTANTANCE OF HAND WASH

Washing your hands is one of the easiest and most important things you can do to stay healthy and stop the spread of bacteria and viruses such as colds and flu and perhaps even coronavirus COVID-19

HAND CARE

When both hand washing and using hand sanitizer are not available, hands can be cleaned with uncontaminated ash and clean water, although the benefits and harms are uncertain for reducing the spread of viral or bacterial infections. However, frequent hand washing can lead to skin damage due to drying of the skin. Moisturizing lotion is often recommended to keep the hands from drying out; dry skin can lead to skin damage which can increase the risk for the transmission of infection.

PROPER TECHNIQUE FOR WASHING MY HANDS

There are only a few simple steps to take to give your hands a thorough cleaning and prevent the spread of illness. The steps are:

1. Wet your hands with clean running water (warm or cold).
2. Lather up your hands with soap. Rub your hands together for at least 20 seconds. Silently “singing” the birthday song twice is an easy-to-remember 20-second timer tool. Don’t forget to wash your wrists, the back of your hands, between your fingers and under your fingernails.
3. Rinse your hands well under running water.
4. Turn off the water with your elbow.

5. Dry your hands with a clean towel or air dry them.
6. If you used a towel to dry your hands, use the same towel to open the bathroom door to leave the room. Discard the towel in a wastebasket.

RESULTS: Understood hand washing techniques.

EXPERIMENT NO : 7

COUGH AND SNEEZE ETIQUITTE

Aim: To learn cough and sneeze etiquette

THEORY:

Cough and sneeze etiquette refers to simple hygiene practices everybody can take to prevent passing on respiratory infections like cold and flu to other people.
It is especially important that people who are sick with cold or flu practise good cough and sneeze etiquette. However, infections like cold and flu can be transmitted even before symptoms like sore throat and cough let you know you're sick. So even when you're perfectly healthy, it's important to practise proper cough and sneeze etiquette.

Importantance Of sneeze Etiquette Important

When someone with a cold or flu infection coughs or sneezes, they release respiratory droplets. These droplets contain cold and flu virus particles that can cause infection if they enter another person's respiratory tract (e.g. when they come into contact with their nose).

The droplets released during coughing and sneezing may be inhaled, or they may land on a person's hands or hard surfaces where the virus particles can survive for hours. If a person touches contaminated surfaces, the virus particles may be transferred to their hands. If a person touches their face with contaminated hands, it may cause infection.

Covering coughs and sneezes and keeping hands clean can help prevent the spread of serious respiratory illnesses like influenza, respiratory syncytial virus (RSV), whooping cough, and COVID-19. Germs can be easily spread by:

- Coughing, sneezing, or talking
- Touching your face with unwashed hands after touching contaminated surfaces or objects
- Touching surfaces or objects that may be frequently touched by other people

- Cover your mouth and nose with a tissue when you cough or sneeze
- Throw used tissues in the trash
- If you don't have a tissue, cough or sneeze into your elbow, not your hands

Washing your hands is one of the most effective ways to prevent yourself and your loved ones from getting sick, especially at key times when you are likely to get and spread germs.

- Wash your hands with soap and water for at least 20 seconds
- If soap and water are not readily available, use an alcohol-based hand sanitizer that contains at least 60% alcohol to clean hands

AWARENESS

Teach children how to cover their coughs and sneezes.
For information about preventing the spread of COVID-19, see CDC's COVID-19: Prevent Getting Sick
To help prevent the spread of respiratory disease, you can also avoid close contact with people who are sick. If you are ill, you should try to distance yourself from others so you do not spread your germs. Distancing includes staying home from work or school when possible.

RESULT:

Understood cough and sneeze etiquettes

EXPERIMENT NO: 8

VARIOUS TYPES OF MASKS,PPE GEAR,WEARING/USING THEM,AND DISPOSAL

AIM : To learn about various types of mask and PPE gear, dispose mask

THEORY:

Wearing face masks is recommended in many scenarios, mostly in clinical contexts, when infected by certain respiratory diseases or in times of epidemics where the risk of potential transmission through air passages has to be reduced (Jefferson 2008). During the corona virus disease 2019 (COVID-19) pandemic, most countries and health organizations like the WHO propagated wearing face masks by early 2020 as a key strategy to reduce the spread of the severe acute respiratory syndrome 2 (SARS 2) corona virus.

A surgical mask helps stop germs in your nose and mouth coming from outside and stops spreading. It can also keep you away from breathing in some germs.

TYPES OF MASKS

Choosing the Right Mask Type

In general, you should wear a mask that:

- Has two or more layers
- Completely covers your nose and mouth
- Fits snugly against the sides of your face and doesn't have gaps
- Has a nose wire (metal strip along the top of the mask that helps prevent air from leaking out)

N95 and KN95 Masks

Also called respirators, N95s and KN95s are designed for a very close facial fit. If they meet requirements and proper fit is achieved, both can capture and filter at least 95% of tiny particles or aerosols that carry the virus that causes coronavirus disease (COVID-19).
When COVID is highly prevalent in the community, our experts recommend that **all individuals wear a well-fitting, high-quality mask such as a KN95 or N95 mask** to protect themselves and everyone around them.

Surgical Mask

Surgical masks (also called disposable masks or medical procedure masks) are made of a combination of paper and plastics.

When worn properly, surgical masks help block large droplets, splashes and sprays or splatter that may contain germs. However, surgical masks are not highly effective at blocking out tiny particles

in the air — "aerosols" that are generated by breathing, talking, coughing, or sneezing and are the primary mode of transmission of the germ (virus) that causes COVID-19.

Because of the loose fit between the surface of the mask and your face, they do not provide complete protection from the COVID-19 virus.

Choose surgical masks with:

- A proper fit over your nose and mouth (to prevent leaks)
- Multiple layers of non-woven material
- A nose wire

Cloth Mask

Cloth masks can be made from a variety of fabrics. Many types of cloth masks are widely available. In general, cloth masks are unlikely to provide adequate protection against the highly transmissible Omicron variant of COVID-19, and are not recommended as a primary strategy.

If you prefer to wear a cloth mask for comfort, then you should wear one that:

- Has multiple layers of tightly woven, breathable fabric
- Fits properly over your nose and mouth
- Has a nose wire
- Has the ability to insert a filter

Avoid cloth masks with:

- Gaps around the sides of the face or nose
- Exhalation valves, vents or other openings through which droplets can escape
- Single-layer fabric or thin fabric that doesn't block light

Face Shield

The CDC does not recommend the use of face shields as substitutes for face masks for protection against COVID-19.

Face shields are not effective at protecting you and others from respiratory droplets. They have large gaps below and alongside the face through which droplets can escape and reach others around you.

HOW TO DISPOSE OF MASKS CORRECTLY

The World Health Organisation (WHO) recommends discarding them in the "correct" rubbish bin immediately after use and not reusing them. What is the "correct" bin? Masks and other disposable material that are used to contain the pandemic, such as gloves, must not be disposed of in the

recycling bin with packaging, cans, etc. or with organic waste. Do not throw them away with your general household rubbish.

The Brazilian Sanitary and Environmental Engineering Association (ABES) has issued advice on the correct way to dispose of used masks and gloves. The materials should be placed into two small plastic bags - one inside the other. Tie the bags firmly and throw them away with your general domestic waste. If the materials have been in contact with an infected person, take extra care and write "RISK OF CONTAMINATION". on the bag.

Result: Understood about the types of mask and their use.

EXPERIMENT NO:9

PPE GEAR

AIM: To learn a standard opening procedure to wear the PPE gear

THEORY: Personal Protective Equipment (PPE) is specialized clothing or equipment worn by an employee for protection against infectious materials.PPE prevents contact with an infectious agent or body fluid that may contain an infectious agent,by creating a barrier between the potential infectious material and the health care worker.

COMPONENTS OF PERSONAL PROTECTIVE EQUIPMENT(PPE)
Specific components of PPE includes gloves,gowns,shoe covers,head covers,masks,respirators,eye protection,face shields,and goggles which have following functions.

1.GLOVES:

Gloves help protect you from the contamination of clothing with potentially infectious materials or contaminated surfaces.

2.GOWNS:

Gowns help protect you from the contamination of clothing with potentially infectious material.

3.SHOE AND HEAD COVERS :

Shoe and head covers provide a barrier against possible exposure within a contaminated environment.

4.MASKS AND RESPIRATOS:

Surgical masks help protect your nose and mouth from splattered of body fluids, respirators filter the air before you inhale it.

OTHER FACE AND EYE PROTECTION:

Goggles help protect only your eyes from splatters.A face shield provides splatter protection to facial skin,eyes,nose,and mouth,

STEPS TO PUT ON PERSONAL PROTECTIVE EQUIPEMENT(PPE) :

1.Always put on essential required PPE when handling either a suspected, probable or confirmed case of viral hemorrhagic fever.
2.The dressing and undressing of PPE should be supervised by another trained member of the team.
3.Gather all the necessary items of PPE beforehand.Put on the scrub suit in the changing room.

4.Put on rubber boots.If not available,make sure you have closed,puncture and fluid resistant shoes and put on overshoes.
5.Place the impermeable gown over the scrubs.
6.Put on face protection
a) Put on medical mask b) Put on goggles or a face shield
7.Perform hand hygiene
8. Put on gloves(over cuff)

While wearing PPE:

- Avoid touching or adjusting PPE
- Remove gloves if they become torn or damaged
- Change gloves between patients
- Perform hand hygiene before putting new gloves

Steps to taking off personal protective equipment(PPE)

a. Remove shoe covers
b. Remove gown and gloves together
c. Perform hand hygiene
d. Remove eye protection
e. Remove mask/respirator
f. Perform hand hygiene

After you use PPE:

Remove and dispose of PPE safely to protect others from being exposed to germs. Before leaving your work area, remove all PPE and put it in the right place .This may include:

- Special laundry containers that can be reused after cleaning
- Special waste containers that are different from other waste containers
- Specially marked bags for cytotoxic PPE.

RESULT: Understood the SOP's of PPE kit.

EXPERIMENT:10

MENSTRUAL HYGIENE,PRODUCTS USED

AIM: To study on menstrual hygiene.

THEORY: menstruation or menses, is normal vaginal bleeding that occurs as part of a woman's monthly cycle. Every month, your body prepares for pregnancy. If no pregnancy occurs, the uterus, or womb, sheds its lining. The menstrual blood is partly blood and partly tissue from inside the uterus. It passes out of the body through the vagina.

MENARCHE:

Menarche that is, the onset of spontaneous menstruation, and each successive menstrual cycle is the end result of successful team play by a number of endocrine glands (hypothalamus–pituitary–ovary) and end organs (pituitary–ovarian follicle–endometrial). not only does menarche herald the period of reproductive competence, but appropriate timing of the event holds both short- and long-term health implications.

menstrual hygiene management (MHM). Inadequate WASH (water, sanitation and hygiene) facilities, particularly in public places, such as in schools, workplaces or health centers, can pose a major obstacle to women and girls. The lack of separate toilets with doors that can be safely closed, or the unavailability of means to dispose of used sanitary pads and water to wash hands, means that women and girls face challenges in maintaining their menstrual hygiene in a private, safe and dignified manner. A growing body of evidence shows that girls' inability to manage their menstrual hygiene in schools, results in school absenteeism, which in turn, has severe economic costs on their lives and on the country.

MENSURAL HYGIENE MATERIALS

Menstrual hygiene materials are those used to catch menstrual flow, such as cloths, reusable and disposable pads, menstrual cups and tampons. Menstrual supplies are other supportive items for menstrual hygiene and health more broadly, such as soap, underwear and pain relief.

HYGIENIC PRACTICES DURING MENSTURATION

- Change your sanitary napkin every 4-6 hours
- Wash yourself properly
- Don't use soaps or vagina hygiene products
- Discard the sanitary napkin properly
- Stick to one method of sanitation

TYPES OF SANITARY PROTECTION MATERIAL

1.Reusable and Washable Cloth Pads

They may be sustainable sanitary option but must be hygienically washed and dried in the sunlight. The sun's heat is a natural sterilizer and drying the cloths/cloth pads under it sterilizes them for future use. These cloth pads are reusable so they are cost-effective, easily available, and ecofriendly. They also need to be stored in a clean dry place for reuse to avoid contamination.

2. Commercial Sanitary Pads

They are easily available at many stores, chemist shops, or online. They are expensive, compared to cloth pads, nonreusable, and not very environment-friendly. The cotton used in their making is not 100% natural and may contain pesticides.

3. Tampons

They are the type of absorbent that provides internal protection. They are kind of plug of soft material (cotton) which is inserted into the vagina to absorb the menstrual flow before it leaves the body. They are expensive, not easily degradable in nature and, hence, not very environmental friendly. Nowadays, sea sponge tampons are available in the market which are a natural alternative to synthetic tampons.

4.Reusable Tampons

These are washable tampons made up of natural materials like bamboo, wool, cotton, or hemp. They are also knitted or crocheted using the natural absorbent material like cotton or wool. They are inserted into the vagina to absorb menstrual flow same as the disposable tampons.

5. Menstrual Cups

They may be a new technology for poor women and girls and an alternative to sanitary pads and tampons. They are like cups made of medical grade silicone rubber which makes the cup easy to fold and get inserted into the vagina to collect menstrual blood. They can be worn up to 6–12 hours depending upon the amount of menstrual flow, so it needs to be removed and emptied less frequently. They are reusable and environment-friendly. It offers sustainable, practical, and cost-effective alternative where sanitation conditions are not good.

6.Bamboo Fibre Pads

Instead of wood pulp, bamboo pulp is used as an absorbing material in these sanitary pads. It has more absorbing capacity and is safer to use. They are affordable, easily decomposed, and environment-friendly pads which also possess antibacterial properties. This provides infection and irritation-free menstruation. Also, bamboo charcoal pads are available in the market with advantage that blood stains are not clearly visible and are also reusable in nature.

7.Banana Fibre Pads

Nowadays, low-cost sanitary pads for rural women made from waste banana tree fibre were sold under trade name "Saathi" in India. They are environment-friendly and decompose within six months after use.

8.Water Hyacinth Pads

Menstrual pads manufactured using water hyacinth is sold under trade name "Jani." They are cost-effective, easily biodegradable, and ecofriendly in nature.

DISPOSING MENSTURAL WASTES:

Menstrual Waste Disposal Techniques Used by Women

Appropriate disposal of used menstrual material is still lacking in many countries of the world. Most of the countries have developed techniques to manage their fecal and urinary wastes but, because of lack of menstrual management practices in the world, most of the women dispose of their sanitary pads or other menstrual articles into domestic solid wastes or garbage bins that ultimately become a part of solid wastes. Toilet facilities in India lack bins for the disposal of sanitary pads and hand washing facilities for menstruating women to handle menstrual hygiene.

In urban areas, where modern disposable menstrual products are used they dispose of them by flushing in toilets and throwing in dustbins or through solid waste management , but, in rural areas, there are many options for disposing menstrual waste such as by burying, burning, and throwing in garbage or in pit latrines. In rural areas, mostly women use reusable and non-commercial sanitary materials like reusable pads or cloths. Thus, they generate lesser amount of menstrual waste as compared to women in urban areas who rely on commercial disposable pads.

The menstrual material was disposed of according to the type of product used, cultural beliefs, and location of disposal. In slum areas, women dispose their menstrual waste into pit latrines as burning and burial were difficult due to limited privacy space. The reason behind that is it was seen by men or used in witchcraft.

RESULT: Understood about the sanitary products.

EXPERIMENT NO:11

FIRST AID-THEORY,BASICS,DEMONSTRATION,HANDS ON TRAINING,AUDIO VISUALS,AND PRCTICE,BSL(basic life support),SCA-sudden cardiac arrest, FBAO-Foreign Body Airway Obstruction,CPR,Defibrillation(usingAED) (Includes CPR techniques,First Responder)

AIM: To learn about basics of first aid.

THEORY:

First aid is the first and immediate assistance given to any person with either a minor or serious illness or injury, with care provided to preserve life, prevent the condition from worsening, or to promote recovery. It includes initial intervention in a serious condition prior to professional medical help being available, such as performing cardiopulmonary resuscitation (cpr) while waiting for an ambulance, as well as the complete treatment of minor conditions, such as applying a plaster to a cut. First aid is generally performed by someone with basic medical training

Basic First knowledge include:

- Catastrophic bleeding (massive external bleeding)
- Airway (clearing airways)
- Breathing (ensuring respiration)
- Circulation (internal bleeding)
- Disability (neurological condition)
- Environment (overall examination, environment)

A major benefit of these protocols is that they require minimum resources, time and skills with a great degree of success in saving lives under conditions unfavourable for applying first aid

The primary goal of first aid is to prevent death or serious injury from worsening.

- **Preserve life:** The overriding aim of all medical care which includes first aid, is to save lives and minimize the threat of death. First aid done correctly should help reduce the patient's level of pain and calm them down during the evaluation and treatment process.
- **Prevent further harm:** Prevention of further harm includes addressing both external factors, such as moving a patient away from any cause of harm, and applying first aid techniques to prevent worsening of the condition, such as applying pressure to stop a bleed from becoming dangerous.
- **Promote recovery:** First aid also involves trying to start the recovery process from the illness or injury, and in some cases might involve completing a treatment, such as in the case of applying a plaster to a small wound.

Some common accidents and emergencies

1.Anaphylaxis

- Anaphylaxis (or anaphylactic shock) is a severe allergic reaction that can occur after an insect sting or after eating certain foods. The adverse reaction can be very fast, occurring within seconds or minutes of coming into contact with the substance the person is allergic to (allergen).During anaphylactic shock, it may be difficult for the person to breathe, as their tongue and throat may swell, obstructing their airway.

- You need to call 999 or 112 immediately if you think someone is experiencing anaphylactic shock.

- Make sure they're comfortable and can breathe as best they can while waiting for medical help to arrive. If they're conscious, sitting upright is normally the best position for them.

2.Heavy Bleeding

If someone is bleeding heavily, the main aim is to prevent further blood loss and minimise the effects of shock .First, phone 999 and ask for an ambulance as soon as possible.If you have disposable gloves, use them to reduce the risk of any infection being passed on.Check that there's nothing embedded in the wound. If there is, take care not to press down on the object.Instead, press firmly on either side of the object and build up padding around it before bandaging, to avoid putting pressure on the object itself..

3**.Burns and scalds**

If someone has a burn or scald:

- cool the burn as quickly as possible with cool running water for at least 10 minutes, or until the pain is relieved
- while cooling the burn, carefully remove any clothing or jewellery, unless it's attached to the skin
- if you're cooling a large burnt area, particularly in babies, children and elderly people, be aware that it may cause hypothermia (it may be necessary to stop cooling the burn to avoid hypothermia)
- cover the burn loosely with cling film; if cling film isn't available, use a clean, dry dressing or non-fluffy material; don't wrap the burn tightly, because swelling may lead to further injury
- don't apply creams, lotions or sprays to the burn

For chemical burns, wear protective gloves, remove any affected clothing, and rinse the burn with cool running water for at least 20 minutes to wash out the chemical. If possible, determine the cause of the injury.Be careful not to contaminate and injure yourself with the chemical, and wear protective clothing if necessary.You need to call 999 or 112 for immediate medical help.

4.Choking

The information below is for choking in adults and children over one year old.

Mild choking

If the airway is only partly blocked, the person will usually be able to speak, cry, cough or breathe. In situations like this, a person will usually be able to clear the blockage themselves.If choking is mild:encourage the person to cough to try to clear the blockage,ask them to try to spit out the object if it's in their mouth,don't put your fingers in their mouth to help them because they may accidentally bite you.

5.Drowning

If someone is in difficulty in water, don't enter the water to help unless it's absolutely essential.

Once the person is on land, if they're not breathing, open the airway and give five initial rescue breaths before starting CPR. If you're alone, perform CPR for one minute before phoning for emergency help.

6.Electric shock (domestic)

If someone has had an electric shock, switch off the electrical current at the mains to break the contact between the person and the electrical supply.If you can't reach the mains supply:don't go near or touch the person until you're sure the electrical supply has been switched off ,once the power supply has been switched off, and if the person isn't breathing, phone 999 or 112 for an ambulance,Afterwards, seek medical help - unless the electric shock is very minor.

7.Fractures

It can be difficult to tell if a person has a broken bone or a joint, as opposed to a simple muscular injury. If you're in any doubt, treat the injury as a broken bone.If the person is unconscious, has difficulty breathing or is bleeding severely, these must be dealt with first, by controlling the bleeding with direct pressure and performing CPR.

8.Heart attack

A heart attack is one of the most common life-threatening heart conditions in the UK.If you think a person is having, or has had, a heart attack, sit them down and make them as comfortable as possible, and phone 999 or 112 for an ambulance.

Symptoms of a heart attack include:

- chest pain – the pain is usually located in the centre or left side of the chest and can feel like a sensation of pressure, tightness or squeezing
- pain in other parts of the body – it can feel as if the pain is travelling from the chest down one or both arms, or into the jaw, neck, back or abdomen (tummy)

Sit the person down and make them comfortable.If they're conscious, reassure them and ask them to take a 300mg aspirin tablet to chew slowly (unless you know they shouldn't take aspirin – for example, if they're under 16 or allergic to it).If the person has any medication for angina, such as a spray or tablets, help them to take it. Monitor their vital signs, such as breathing, until help arrives.If the person deteriorates and becomes unconscious, open their airway, check their breathing and, if necessary, start CPR. Re-alert the emergency services that the casualty is now in cardiac arrest.

9.Poisoning

Poisoning is potentially life-threatening. Most cases of poisoning in the UK happen when a person has swallowed a toxic substance, such as bleach, taken an overdose of a prescription medication, or eaten wild plants and fungi. Alcohol poisoning can cause similar symptoms.You need to call 999 or 112 to get immediate medical help and advice.The effects of poisoning depend on the substance swallowed, but can include vomiting, loss of consciousness, pain or a burning sensation.

The following advice is important: Find out what's been swallowed, so you can tell the paramedic or doctor,Do not give the person anything to eat or drink unless a healthcare professional advises you to,Do not try to cause vomiting.,Stay with the person, because their condition may get worse and they could become unconscious.

10.Shock

Shock is a life-threatening condition that occurs when the circulatory system fails to provide enough oxygenated blood to the body and, as a result, deprives the vital organs of oxygen.This is usually due to severe blood loss, but it can also occur after severe burns, severe vomiting, a heart attack, bacterial infection or a severe allergic reaction (anaphylaxis).The type of shock described here isn't the same as the emotional response of feeling shocked, which can also occur after an accident.

Signs of shock include:

- pale, cold, clammy skin,sweating,rapid, shallow breathing,weakness and dizziness,feeling sick and possibly vomiting,thirst,yawning,sighing ,You need to call 999 or 112 as soon as possible and ask for an ambulance

Stroke :The FAST guide is the most important thing to remember when dealing with people who have had a stroke. The earlier they receive treatment, the better. Phone for emergency medical help straight away.

- Facial weakness
- Arm weakness
- Speech problems

First aid kit: Consider purchasing a commercially available first aid kit or making your own. Having a kit in your home, your car, and at your place of work is essential to stay prepared

RESULT: Understood the first aid technique

FIRST AID DEMONSTRATION

The course combines both theory and practical demonstrations including the recovery positions (Cardiopulmonary resuscitation (CPR) and fracture management the lecture/demonstration provides a good foundation on which to build further first aid knowledge and skills.

EXPERIMENT NO :12

HANDS ON TRAINING ON CPR

AIM : To perform hands on training on CPR,

THEORY: Hands-only cpr is the recommended form of cardiopulmonary resuscitation (CPR). it not only increases the likelihood of surviving breathing and cardiac emergencies that occur outside of medical settings, but it's simple to learn and easy to remember. for a refresher any time, you can print up this page and keep it with the rest of your first-aid supplies.

- CHECK the scene for safety, form an initial impression and use personal protective equipment (PPE)
- If the person appears unresponsive, CHECK for responsiveness, breathing, life-threatening bleeding or other life-threatening conditions using shout-tap-shout
- If the person does not respond and is not breathing or only gasping, CALL 9-1-1 and get equipment, or tell someone to do so
- Place the person on their back on a firm, flat surface
- Give 30 chest compressions
- Hand position: Two hands centered on the chest
- Body position: Shoulders directly over hands; elbows locked
- Depth: At least 2 inches
- Rate: 100 to 120 per minute
- Allow chest to return to normal position after each compression
- Give 2 breaths
- Open the airway to a past-neutral position using the head-tilt/chin-lift technique
- Ensure each breath lasts about 1 second and makes the chest rise; allow air to exit before giving the next breath
- **Note:** If the 1st breath does not cause the chest to rise, retilt the head and ensure a proper seal before giving the 2nd breath If the 2nd breath does not make the chest rise, an object may be blocking the airway
- Continue giving sets of 30 chest compressions and 2 breaths. Use an AED as soon as one is available

Types of CPR Training

1.<u>PALS training</u> is ideal for healthcare professionals and medical personnel who may encounter pediatric emergencies. The training emphasizes a variety of topics, including:

- How to take a systematic approach to pediatric assessment
- The importance of proper management of pediatric respiratory emergencies

- Vascular access
- Airway management
- PALS pharmacology terms and definitions
- Evaluation of various pediatric case studies and simulations

2.Basic Life Support CPR Training

CPR Training for healthcare providers, also know as Basic Life Support (BLS) for Healthcare providers is a required pre-requisite for all the advanced classes mentioned above.

The benefits of BLS training include:

- **One-of-a-Kind Learning Experience:** Many BLS classes feature instructors who work in the healthcare or medical field and can provide students with an informative and engaging CPR learning experience.
- **Immense Flexibility:** Many BLS training programs are available in cities and towns nationwide, ensuring anyone can learn the ins and outs of CPR at their convenience.

3.NRP Certification

NRP training is recommended for healthcare personnel who are involved in the delivery of newborns. Healthcare professionals who may benefit from NRP certification include:

- Labor and Delivery Nurses
- Neonate Intensive Care Unit (NICU) Nurses
- Respiratory therapists
- NICU Physicians

4.ACLS(Advanced Cardiovascular Life Support)

Advanced Cardiovascula Life Support(ACLS) teaches healthcare professionals how to treat an emergency,including coronary syndromes and stroke.Heart & Stroke's ACLS program, based on the 2020 Guidelines, provides hands-on learning that builds on your Basic Life Support (BLS) skills, teaches you when and how to use the latest treatment recommendations for your patients, and takes your skills as an advanced healthcare provider to the next level.

RESULTS :CPR techniques are performed.

EXPERIMENTS:13

FIRST AID DEMONSTRATION

The course combines both theory and practical demonstrations including the recovery positions (Cardiopulmonary resuscitation (CPR) and fracture management the lecture/demonstration provides a good foundationon which to build further first aid knowledge and skills.

AUDIO VISUALS AND PRACTICE

EXPERIMENT NO:14

BSL(Basic Life Support)system

AIM: To understand the basic life support technique

THEORY: Basic Life Support (BLS) is performed to support the patient's circulation and respiration through the use of cardiopulmonary resuscitation (CPR) until advanced life support arrives. Victims who have had early and correct BLS intervention will be better oxygenated and are more likely to respond to advanced techniques to revive them, thereby increasing their chance of survival.

- 100 – 120 compressions per minute (for all ages)
- Push down firmly on the sternum to 1/3 of the depth of the chest
- Push in a regular rhythm, for example counting '1, 2, 3'
- Compression/relaxation ratio should be 50:50 with complete recoil of chest between each compression.
- Frequent rotation of personnel should be taken after approximately 200 compressions or approximately every two (2) minutes.
- Avoid compression below lower limits of sternum as may cause regurgitation and/or damage to liver/spleen/stomach.
- Interruptions to chest compressions should be minimized.
- Avoid compressions applied too high as ineffective depth is achieved.
- After each 30 compressions there is an interruption in chest compressions for two (2) rescue breaths (optional).

REPORT: Basic life support technique was studied.

EXPERIMENT NO : 15

AIM: To understand the sudden cardiac arrest(SCA)

THEORY: Sudden cardiac arrest is the abrupt loss of heart function ,breathing and consciousness. The condition usually results from a problem with your hearts electrical system. which disrupts your hearts pumping action and stops blood flow to your body.

Sudden cardiac death describes the unexpected natural death from a cardiac cause within a short time period, cardiac arrest isn't the same as a heart attack, when blood flow to a part of the heart is blocked. However, a heart attack can something trigger an electrical disturbance that leads to sudden cardiac arrest. If not treated immediately , sudden cardiac arrest can lead to death sudden

Symptoms

Signs of sudden cardiac arrest are immediate and drastic and include:

- Sudden collapse
- No pulse
- No breathing
- Loss of consciousness

Sometimes other signs and symptoms occur before sudden cardiac arrest. These might include:

- Chest discomfort
- Shortness of breath
- Weakness
- Fast-beating, fluttering or pounding heart (palpitations).

Call 911 or emergency medical help if you experience any of these signs and symptoms:

- Chest pain or discomfort
- Heart palpitations
- Rapid or irregular heartbeats
- Unexplained wheezing
- Shortness of breath
- Fainting or near fainting

- Lightheadedness or dizziness.

Heart conditions that can lead to sudden cardiac arrest

Sudden cardiac arrest can happen in people who have no known heart disease. However, a life-threatening arrhythmia usually develops in a person with a preexisting, possibly undiagnosed heart condition. Conditions include:

- Coronary artery disease.
- Heart attack. Enlarged heart (cardiomyopathy).
- Valvular heart disease.
- Heart defect present at birth (congenital heart disease).
- Electrical problems in the heart.

  If someone is unconscious and not breathing normally, it's very important to perform cardiopulmonary resuscitation (CPR) immediately. Doing so can save lives, for instance after a heart attack. In hospitals or doctors' practices, medically trained staff can help fast in emergencies. Everywhere else, immediate first aid by other people is vital.

- Then the main thing to do is stay calm and do the following:

  Check whether the person is conscious and breathing normally.

  If they aren't, call the emergency services (112 in Germany and many other countries, 911 in the U.S.)

  Start doing chest compressions.

If you follow these three steps right away, you can't go wrong. The most important thing is to start helping immediately! Don't hesitate for fear of doing something wrong. Good to know: If you're not trained in CPR, you don't need to give rescue breaths. In this article we will only describe how to do CPR without rescue breaths (hands-only CPR).

If you have access to an automated external defibrillator (AED) and someone else is there to help, you can resuscitate the patient using that too. But make sure that you only stop performing chest compressions when the defibrillator device tells you to stop.

RESULTS: Understood the sudden cardiac arrest.

EXPERIMENT NO:16

FORGEIN BODY AIRWAY OBSTRUCTION (FBAO)

AIM: To understand the foreign body obstruction.

THEORY: Choking is the physiological response to sudden obstruction of airways. Foreign body airway obstruction (FBAO) causes asphyxia and is a terrifying condition, occurring very acutely, with the patient often unable to explain what is happening to them. If severe, it can result in rapid loss of consciousness and death if first aid is not undertaken quickly and successfully. Immediate recognition and response are of the utmost importance.

Choking due to inhalation of a foreign body usually occurs whilst eating; it need not have been a formal 'sit-down' meal - a snack eaten 'on-the-go' or chewing gum can also be inhaled.

The most common signs and symptoms of choking are:

- A cough
- Struggling to breathe or talk
- Cyanosis
- Grasping or reaching for the throat

If the patient shows signs of severe airway obstruction

call for help /pull the emergency buzzer immeadietely and encourage the patient to cough (or your local emergency phone number) for emergency help. If you're the only person present, begin first aid treatment:

1. Get the person to stand up.
2. Position yourself behind the person.
3. Lean the person forward and give five blows to their back with the heel of your hand.
4. Place your arms around their waist.
5. Make a fist and place it just above the navel, thumb side in.
6. Grab the fist with your other hand and push it inward and upward at the same time. Perform five of these abdominal thrusts.

7. Repeat until the object is expelled and the person can breathe or cough on their own.

Alternatively, if the person can't stand up, straddle their waist, facing their head. Push your fist inward and upward in the same manner as you would if they were standing.

Causes of FBAO

- Altered level of consciousness;
- Drug and/or alcohol intoxication;
- Neurological impairment, with reduced swallowing and cough reflexes (for example, stroke);
- Respiratory disease;
- Mental impairment;
- Dementia;
- Poor dentition;
- Older age

- Treatment of FBAO in adults
- The Resuscitation Council (UK)'s (2017) adult choking algorithm provides guidance on the treatment of choking in adults. If FBAO is suspected, it is important to assess its severity and always ask the patient "are you choking?". Their response will help distinguish between a mild or severe obstructive airway

Mild airway obstruction (effective cough)

Coughing generates high and sustained airway pressures and may expel a foreign body, so it is important to encourage the patient to cough. A patient with mild airway obstruction should remain under continuous observation Severe airway obstruction (ineffective cough)

- Call for help/pull the emergency buzzer immediately and encourage the patient to cough;
- Stand at the patient's side, slightly behind them;
- Support the patient's chest with one hand and lean them forward – if this dislodges the foreign body, it will hopefully fall out of the mouth instead of slipping further down the airway;
- If symptoms continue, deliver up to five back blows (slaps) between the scapulae using the heel of the hand (Fig 2). Following each back blow, check to see if the obstruction has been dislodged;
- If the back blows fail, proceed to abdominal thrusts (Fig 3);
- Stand behind the patient, placing both arms around the upper abdomen;

- Lean the patient forward;
- Place a clenched fist between the patient's umbilicus and the ribcage, and clasp it with the other hand;
- Deliver up to five sharp thrusts to the abdomen, inwards and upwards;
- Take care not to apply pressure to the diploid process or the lower ribcage as this may cause abdominal trauma.
- If the obstruction remains, alternate up to five back blows with up to five abdominal thrusts.

If the patient loses consciousness you should:

- Carefully support them to the ground;
- If you have not done so already, summon help following local protocols – call 999 for an ambulance or contact your cardiac arrest team;
- Start cardiopulmonary resuscitation (CPR) – do 30 chest compressions first as these may relieve the obstruction;
- After 30 compressions, attempt two ventilations, then continue CPR until the patient recovers and starts to breathe normally

- Use of airway clearance devices
- Although there are several airway clearing devices for the treatment of FBAO currently available, their routine use is not recommended by the Resuscitation Council (UK) (Perkins et al, 2017). However, appropriately trained health professionals can use advanced techniques – such as suction or laryngoscopy and forceps – to remove a foreign body from the airway

PREVENTION:

Tragedy due to FBAO is unpredictable. In our risk-adverse society,we can try to iron out some elements of increased risk, such as:

- Not eating while exercising.
- Remembering to chew food properly
- Avoiding drunkenness
- Cutting up grapes and not giving peanuts to small children.

RESULT: Understood and take hands on training about foreign body airway obstruction.

EXPERIMENT NO:17

DEFIBRILATION (Using AED)

AIM:To study and understand working of automated external defibrillator

THEORY : An AED may save your life during cardiac arrest. The machine being used is called a defibrillator, and its use isn't limited to a hospital setting. Devices called automated external defibrillators (AEDs) can be used at home and in schools and are also found in a number of public places. These lightweight, portable devices are available without a prescription.

AEDs are used to revive someone from sudden cardiac arrest. This usually occurs when a disruption in the heart's electrical activity causes a dangerously fast heartbeat (ventricular tachycardia) or a fast and irregular heartbeat (ventricular fibrillation). Either of these irregular heart rhythms keeps the heart from pumping effectively and can cause it to stop.

Application an AED:

The first step is to determine whether a defibrillator is actually needed.An automated external defibrillator (AED) is a portable electronic device that automatically diagnoses the life-threatening cardiac arrhythmias of ventricular fibrillation (VF) and pulseless ventricular tachycardia, and is able to treat them through defibrillation, the application of electricity which stops the arrhythmia, allowing the heart to re-establish an effective rhythm.

It should never be used on a patient suffering a heart attack,who is still conscious and breathing.if a person is suffering fron cardiac arrest,they will be un responsive without a palpable pulse,and no breathing or just gasping(in the case of agonal respirations)Start by shouting their name and askingfor a response,while gently shaking the victim.Then check for bsigns of breathing.Administer CPR and defibrillation only if they are not breathing and unresponsive.For more details,see our comprehensive guide detailing when not to use a defibrillator.

- Before Using an AED
- Turn on the AED and follow the visual and /or audio prompts
- Open the person’s shirt and wipe his or her bare chest dry
- Attach the AED pads, and plug in the connector(if necessary)
- Make sure no one is,including you,is touching the person.

However,even after training,remembering the steps to use an AED the right way can be difficult.Here are some easy to follow step to using an AED.

Step by step instructions for using a defibrillator on an adult:

1. Confirm that the patient is experiencing in cardiac arrest(no breathing unconscious)
2. Turn on the AED.This is achieved by lifting the lid and /or pressing an”On”
3. Button
4. Expose the patient’s chest and apply the pads their bare skin. use the diagram on each pad as a guide.

5. Connect the pads to the defibrillator if they are not already connected
6. Stand clear of the patient while the AED searches foe a shakable rhythm.
7. Follow the AED's audible instructions. Press the' Shock"button only if instructed,or allow the AED to shock automatically foe automatic AED models.
8. When shock is complete(or if shock is not recommended),perform CPR until emergency services arrive or the patient regains consciousness.
9. After 2 minutes of CPR, the AED may again prompt you to stop CPR to analyze, potentially resulting in additional shocks. Continue to follow the AED prompts, with in 2 minutes of CPR between each analysis, until emergency service arrive.

Effective AED Programs are designed to deliver a shock to a victim within three to five minutes after the person collapses.Use a three-minutes response time as a guideline ti help in determine hoe many AED s needed and where to place them.

RESULT: A working of AED is understood.

EXPERIMENT NO:18

EMERGENCY TREATMENT FOR ALL EMERGENCY CASES VIZ.

SNAKE BITE,DOG BITE,INSECTICIDE POISONING,FRACTURES,BURNS,

EPILEPSY ETC

SNAKE BITE

The Bite

- Poisonous snakes inject venom using modified salivary glands.
- During envenomation (the bite that injects venom or poison), the venom passes from the venom gland through a duct into the snake's fangs, and finally into its prey.
- Not all bites lead to envenomation. Snakes can regulate whether to release venom and how much to release. "Dry Bites" (a bite where no venom is injected) occur in between 25%-50% of snake bites.
- This variation is species-specific with approximately 25% of pit-viper bites and up to 50% of coral snake bites being "dry." Snake venom is a combination of numerous substances with varying effects.
- In simple terms, these proteins can be divided into 4 categories:
    1. **Cytotoxins** cause local tissue damage.
    2. **Hemotoxins** cause internal bleeding.
    3. **Neurotoxins** affect the nervous system.
    4. **Cardiotoxins** acts directly on the heart.
- The number of bites and fatalities varies markedly by geographic region. Reporting of snakebites is not mandatory in many areas of the world, making it difficult to determine

the number of bites. Many articles are based on population models with multiple assumptions leading to a wide range of statistical reporting.

- Snakebites are more common in tropical regions and primarily agricultural areas. In these areas, large numbers of people coexist with numerous snakes. Very few deaths occur per year from snakebites in the United States.
- People provoke bites by handling or even attacking snakes in a significant number of cases in the United States.

Snakebite Symptoms

Bites by venomous snakes result in a wide range of effects. They range from simple puncture wounds to life-threatening illnesses and death. The findings following a venomous snakebite can be misleading. A victim can have no initial significant symptoms, and then suddenly develop breathing difficulty and go into shock.

Signs and symptoms of snakebites can be broken into a few major categories:

- **Local effects:** These are the effects on the local skin and tissue surrounding the bite area. Bites by vipers and some cobras (*Naja* and other genera) are painful and tender. They can be severely swollen and can bleed and blister. Some cobra venoms can also kill the tissue around the site of the bite.
- **Bleeding:** Bites by vipers and some Australian elapids can cause changes in the victim's hematologic system causing bleeding. this bleeding can be localized or diffuse. Internal organs can be involved. A victim may bleed from the bite site or bleed spontaneously from the mouth or old wounds. Unchecked bleeding can cause shock or even death.
- **Nervous system effects:** The effect on the nervous system can be experienced locally close to the bite area or affect the nervous system directly. Venom from elapids and sea snakes can affect the nervous system directly. Cobra (*Naja* and other genera) and mamba

(*Dendroaspis*) venom can act particularly quickly by stopping the breathing muscles, resulting in death without treatment. Initially, victims may have vision problems, speaking and breathing trouble, and numbness close to or distant to the bite site.

- **Muscle death:** Venom from Russell's vipers (*Daboia russellii*), sea snakes, and some Australian elapids can directly cause muscle death in multiple areas of the body. There can be a local effect of muscle death (necrosis), or distant muscle involvement (rhabdomyolysis). The debris from dead muscle cells can clog the kidneys, which try to filter out the proteins. This can lead to kidney failure.
- **Eyes:** Spitting cobras and ringhals (cobralike snakes from Africa) can actually eject their venom quite accurately into the eyes of their victims, resulting in direct eye pain and damage.

Spitting cobra bite. Many elapid bites result in little local swelling, but the spitting cobras are known for the amount of swelling and tissue damage they can cause.

Western diamondback rattlesnake (*Crotalus atrox*) bite. Rattlesnake bites can cause severe swelling, pain, and permanent tissue damage.

Copperhead (*Agkistrodon contortrix*) bite. These bites usually result in local pain and swelling but usually have less tissue loss than rattlesnake bites.

Timber rattlesnake (*Crotalus horridus*) bite. Pit viper bites can cause a leakage of blood cells out of the blood vessels, even on parts of the body away from the bite site. Note the significant bruising of the upper forearm and arm.

EXPERIMENT NO:19

WATER PURIFICATIONTECHNIQUES,USE OF WATER DRINKING KIT,CALCULATION OF CONCERNED/ PERCENTAGE OF $Kmno_4$ BLEACHING POWDER USED FOR WELLS/TANKS.

AIM:To study drinking water treatment by potassium permanganate

THEORY : Potassium permanganate $KMnO_4$ is a strong oxidizing agent.It Oxidises the impurities in water and hence it is used for purifying drinking water.Posssium permanganate is a point-of- entry treatment method that oxidizes dissolved iron, manganese, and hydrogen sulfide into solid particles that are filtered out of the water.

There are many uses for potassium permanganate. It is mostly used as a pretreatment. It is better at getting rid of the smell of sulfide than chlorine. Potassium permanganate is often used to control taste and odors, remove colour,control biological growth in treatment plants,intake structures, and pipelines. Potassium permanganate is used wells to control iron bacteria and other biological growth. It also keeps well water's taste and smells under control.

Steps on Potassium permanganate water treatment:

There are three simple steps in order to use potassium permanganate water treatment successfully.

Step 1 : First, do a water sample test to check the water's pH ,temperature, manganese and iron levels. Monitoring the pH of water is important to do all the time

Use 0.94 mg of potassium permanganate per milligram of iron and 1.92 mg per milligram of manganese foe oxidation. Pre-made tablets are also available in the market. Follow the manufacture's instructions for dose when treating water for odour and taste.

Step 2: Next, filter the drinking water to remove the manganese dioxide and the elemental sulfur precipitate.

Step3: Keep your leftover potassium permanganate in an air- tight container. Store it in a cool, dry area that is well away from acids, peroxides, and combustible and oxidizable materials.

Potassium permanganate is available as a dry, purplish solid. A device injects a solution of potassium permanganate into the water between the water pump and holding tank.

Potadssium permanganate oxidixes iron,manganese,and hydrogen sulfide into particles.The particles are then filtered with a multimedia fliter which can be either manganese-coated aluminium silicate above manganese-treated green sand or an 8-inch layer ofanthracite above manganese treated green sand. If an insufficient amount of iron, manganese , or hydrogen sulfide is oxidized prior to filtration ,the manganese coating on the filter media acts as backup oxidant to

treat any remaining contaminant. If too much potassium permanganate is fed into the water prior to filtration, the excess potassium permanganate serves as a regenerate for the filter media. The water should be colorless when it leaves the filter.

When treating water to remove iron bacteria, a solution of potassium permanganate is fed into the well. A concentration of 3.8 to 7.6 grams per gallon has been found to be very effective .After the solution is added in the well , continuous agitation will help loosen and disintegrate sediment and organic material produced by the bacteria, thus enhancing treatment effectiveness. Agitation can be accomplished by turning the well on and off, which brings water up through the well casing and then lets it fall back into the well.

Potassium permanganate supplies must be periodically refilled as part of the maintenance routine. If using potassium permanganate in a well .periodic treatment to dissolve iron deposits and mineral scale may also be necessary . Such treatment requires the use of strong acids, so consult a water treatment specialist for guidance. Potassium permanganate injection devices and pumps are similar to those used in chlorination systems.

Special considerations for potassium permanganate use:

Using potassium permanganate requires careful calibration, maintenance, and monitoring .Potassium permanganate is sensitive to temperature extremes and performs best between 50 and 72 degrees Fahrenheit. Well water is approximately 55 degrees Fahrenheit.

Special consideration for potassium permanganate use:

Using potassium permanganate requires careful calibration, maintenance, and monitoring. Potassium permanganate is sensitive to temperature extremes and performs best between 50 and 72 degree Fahrenheit. Well water is approximately 55 degrees Fahrenheit. Potassium permanganate is poisonous and irritates skin, so handle it carefully and ensure that there is no excess potassium permanganate in the treated water. The chemical gives water a slight pink tint. Water should be colorless after treatment. The concentrated chemical must be stored in its original container, away from children and animals. Protect storage containers from physical damage.

RESULT: Understood drinking water treatment by potassium permanganate.

EXPERIMENT NO :20

Aim: To learn calculation of bleaching powder to be used for wells/tanks.

THEORY: The well can be disinfected by adding enough chlorine to the well water to

produce a strong chlorine solution. This solution can then be used to rinse of the rest of the well and so disinfect it with bleaching powder which is also refers to us T.C.L. powder. Bleaching powder is nothing but a compound of lime and chlorine. In fresh Bleaching powder, normally chlorine content is 33 % or more. Bleaching powder unstable in nature and as the time passes the chlorine content reduces. To avoid loss of chlorine, it is necessary to store bleaching powder in dry condition and away from direct sun light. If the bleaching powder is in a bag, after use, the should be properly closed. The main content of the bleaching powder is the chlorine element which acts as a main disinfectant material. The process of chlorination has been used for a 1ong time to purity the drinking water. Bleaching powder in aqueous solution will produce Cl- and OCI ions. whereas OCI ion acts as a good bleaching agent by killing the germs and bacteria. So bleaching powder is widely used as a disinfectant agent. Bleaching powder when exposed to moisture will release chlorine and this chlorine kills off the germs and disinfects the area. If this is added to water, the chlorine released will react with water and will cause production of oxygen in the atomic state which is highly reactive. If any colored cloth is dipped in this water, the oxygen will react with the chemicals that give the colour and make them colourless. This is called the bleaching process. Also, bleaching powder on exposure to air reacts with CO_2 and liberates chlorine gas which is aqueous solution known as bleaching agent and kills the germs and bacteria.

When a system first starts chlorinating, it is normal for people to say they can taste and/or smell the chlorine. Over time, the system stabilizes, and any tastes or smells will decrease or go away. People also usually get used to chlorine in water over time. Public water systems work hard to keep the level of chlorine in the water at a level that effectively disinfects, while keeping taste and odour to a minimum.

Chlorination:

Quantity of bleaching powder required for disinfection as per above formula should be taken in a plastic bucket and adding small quantity of water, a thick paste is be prepared. Then the bucket should be filled up to 50% to 75% by water and the paste be thoroughly stirred with a wooden stick. This solution should be allowed to stand for some time and then the supernatant should be poured in another bucket. Then with the help of the rope, this bucket should be lowered in the elevated in the reservoirs (ESR), Ground Service. Reservoirs (GSR). GSR/ESR up to a depth of 0.3 to 0.5 and let the chlorine solution get properly mixed in the water stirring DO not mix/use the remnants of the first bucket in the tank water. It should be kept separately and disposed of properly.

Quantity of bleaching powder required:

1. Formula for circular Tanks:

Quantity of water in the tank (in liters) =785 (Tank diameter in meter 2 x (Height of water column in meter)

2. Formula for Square/Rectangular Tanks

Quantity of water in the tank (in lit) = length of tank (in m) x width of tank (in meter x height of water in the tank (in m) x 1000

Quantity of bleaching power required:

- If the bleaching powder contains 30% or more chlorine, then 5 gm bleaching
- Powder is required for proper disinfection of 1000 liters of water
- Let us understand this by an example.
- If a square tank of size 4 m x 4 m (inner dimension) has 2.5 m depth of water in it then
- Volume of water in the tank = 4 x 4x 2.5x 1000 = 40,000 lit

Hence, quantity of bleaching powder required for disinfection of this water

$$\frac{40000 \times 5}{1000} = 200 \text{ gm.}$$

However, if the chlorine content of the bleaching powder is less than 30% the quantity of bleaching powder for disinfection of the same quantity of water (40,000 lits) will have to be increased in the ratio of the theoretical content of chlorine and the actual content of chlorine.

Use of Bleaching Powder in excess of the required quantity

There is a possibility of the source getting polluted at the start of monsoon a and during heavy rains. This may result into epidemics. Hence it is very important to utmost care in disinfection during such periods. In such situations use of bleaching powder, in excess of required quantity, is recommended. The extra dose of bleaching powder should be adjusted in such a way that the residual chlorine is 1 ppm. Adequate O.T. Test should ensure this. Besides chlorine, there are several other types of disinfectants. Each has as trade of Chloramines may form lower levels of regulated DBPs than chlorine, but, depending on the on the source water characteristics, they have the potential to form other DBP and increase the risks of nitrate formation and corrosion in the distribution system. Ozone is effective and has no taste, but it can also create other DBPs and does not provide protection in the distribution system, so chloramines or chlorine must still be added to protect the water. Ultraviolet (UV) light is effective in clear water and a form DBPs. But like ozone, UV light does not provide protection in the distribution system, so chloramines or chorine must still be added to protect water from the treatment plant to the tap.

Result: Use and calculation of bleaching powder is understood.

EXPERIMENT NO :21

AIM: To learn the use water testing kit.

THEORY: In the whole world, a majority of the people rely on the private water supply this includes ponds, dugouts, and wells. A superior quality of water is crucial to the economic, health, and social well-being of the people. Monitoring the quality of your water and testing it regularly is very important to maintain reliable and safe water sources and eliminate the potential health risks related to water contamination.

Water Testing at Home:

- Identify a water source
- Choose a testing method
- Decide which contaminants to test
- Calibrate testing to EPA standards
- Ensure accuracy of results

Commonly conducted water quality tests include:

Temperature testing: Testing the temperature helps determine the rate of biochemical reaction in an aquatic environment and indeed whether they are able to occur at all. If the water temperature is too elevated, this can limit the water's ability to hold oxygen and decrease organisms capacity to resist particular pollutants.

pH testing: Measures the acidity of water. Most aquatic organisms are only able to survive within a pH range of 6 to 8.

Chloride test: Chloride is usually present in fresh and salt water. However, its levels can be exacerbated as a result of minerals dissolving and industrial pollution

Salinity testing: Measures the total of all non-carbonate salts dissolved in water Measuring groundwater salinity indicates how salty your topsoil may become the water table rises.

Dissolved Oxygen Test: Measures the amount of oxygen dissolved in water without this, aquatic life is unable to conduct cellular respiration and is thus a indicator of water health.

Turbidity test: Measures the amount of particulate matter that is suspended in the water, or more simply, how clear the water is. If high levels of turbidity are present photosynthesis is affected as light is unable to penetrate increasing water temperature.

Nitrate and Phosphate: The presence of these essential nutrients is a good indicator of strong plant life.However the addition of the artificial nitrates and phosphates through detergent fertilizer,sewage can be halmful and result in eutrophication generally in the form of unwanted algal blooms.

Pesticides: Measure whether any pesticides are present and their concentration level.

Redox: The measurement of the reduction oxidation potential of a solution which indicates the electron activity. Micro-organism growth is highly dependant on these levels.

Electrical conductivity: Estimates the total amount of solids dissolved in water. This can be a good indicator of the level of salinity.

Metals: Testing that indicates the presence of a suite of metals which are not naturally occurring in water. Heavy metals (aluminum, antimony, arsenic, beryllium, bismuth, copper, cadmium, lead, mercury, nickel, uranium, tin ,vanadium and zinc) can find their way into water bodies through natural processes or human activities such as mining, processing of minerals, use of metals as containers and transportation through metallic pipelines. Heavy metals are known to harm kidneys, liver, nervous system and bone structure. Lead poisoning in humans can cause problems in synthesis of hemoglobin kidneys, gastrointestinal tract, joints and reproductive systems and acute or chronic damage to the nervous system. Lead can also cause osteoporosis and weaken bones because it starts replacing calcium in the bones. Long-tem exposure of cadmium leads to renal dysfunction. High exposure can least to lung cancer and osteodystrophy. Nickel has numerous reported mechanisms o toxicity including redox cycling and inhibition of DNA repair as well as exhibiting allergic effects. Exposure to mercury can lead to tremors, gingivitis other psychological changes with spontaneous absorption and congenial malformation. Mono methyl mercury causes damage to the brain and