JHARKHAND
Rai University
UGC RECOGNISED UNIVERSITY
ACCREDITED BY NAAC

PRACTICAL LAB MANUAL

SOCIAL PHARMACY

D. Pharm Ist Year

LIST OF EXPERIMENTS

Sl. No.	EXPERIMENTS
1	To Study about National Immunization Schedule for children, adult vaccine, which are included in the National Immunization Program
2	To study about R.C.H-Reproductive & Child Health Program.
3	To Study about Family Planning Devices.
4	To Study about the Microscopical observation of different microbes through readymade slides.
5	To Study & Understand the Oral Health & Hygiene.
6	To Learn Hand Washing technique.
7	To Learn Cough & Sneeze Etiquette.
8	To Learn a Standard Operating Procedure to Wear the PPE Kit.
9	To Learn how to Wear & Dispose Masks.
10	To study different types of Disinfectant & Marketed Preparation.
11	To Study Antiseptic & Marketed Products.
12	To Study Fumigating Agent & its Marketed Product.
13	To Study Antiviral Agent & its Marketed Products.
14	To Prepare Chart/video or Slides on Corona Virus, way of Spreading, Precaution, treatment etc.

EXPERIMENT NO:01

AIM OF THE EXPERIMENT:

To study about National Immunization Schedule for Children adult Vaccine, which are included in National immunization Program.

THEORY:

- **Immunity:-** Ability of human body to tolerate to presence of material indigenous to the body to eliminate Foreign material.
- **Vaccine:-** Vaccine are whole or part of micro-organism administered to prevent an infectious Disease.

Immunization schedule: Ideal Immunization Schedule..

- Epidemiologically relevant
- Immunologically Competent
- Technologically feasible.
- Socially Acceptable.
- Affordable.
- Sustainable.

VACCINES NAME;

1 .BCG (Bacilli Calmette Guerin Vaccine)

- **Storage:-** for 12 months at 2-8^0 C
- **Dose:-** Independent of age & weight of the body.

2. Polio Vaccine

- Two types of Polio Vaccine-
- (i) OPV

  Storage:-Most heat Sensitive Vaccine, Strict cold chain maintenance

  Dose:- Given Orally two drops.
- (ii) IPV

  Storage:- at 2-8^{0}C

Dose:-0.5ml (i.m.)

3. DT:- Diphtheria & Tetanus toxoids.

- **Storage:**- at 2-8^{0}C
- **Dose:**-0.5ml deep (i.m.)

4. DTP vaccine:-components of Pertussis Bacilli

- **Storage:**- at 2-8^{0}C
- **Dose:**-0.5ml deep (i.m.) 6-12 years of children

5. Measles Vaccine:-

- **Storage:**- stored frozen at 2-8^{0}C
- **Dose:**-0.5ml by S.C route at the age completed 9 months.

6. MMR Vaccine:-

- **Storage:**-at 2-8^{0}C, Protected from light , Used within 4-6 hours.
- **Dose:-**at the age of 12-15 months & 2nd at 4-6 years of age.

7. Hib Conjugate Vaccine:-

- Vaccination started between 6-12 month: two primary dose & one booster at 18 months.
- Vaccination started between 12-15 months: One Primary Dose & One booster dose at 18 months.

- Children>15 months: Single dose only.
- Not recommended for NORMAL children>5 year of age.

8. Hepatitis B Vaccine:-

- **Storage:**-at 2-8^{0}C
- **Dose:**- 0.5ml (i.m.)
- **For <18 years & 1ml in those> 18 years of age.**

Schedules:-

- Birth 1&6 months
- Birth 6&14 weeks.
- Birth 6 weeks & 6 month
- No booster dose.
- Catch up Vaccination:0,1&6 months

9. Typhoid Vaccines:-

- **Storage:** at 2-8^{0}C
- **Dose:** 0.5ml(i.m.)

10. Varicella Vaccine:-

- **Storage**: Should be protected from light & needs to be used within 30 minutes of it reconstitution.
- **Dose:** 0.5ml by route : minimum
  *****1st age of 15 months & Second dose at 4-6 years.

11. Hepatitis A Vaccine:-

This Vaccine is given into two dose schedule 6 months apart

- **Storage:** at 2-8^{0}C
- **Dose:** 0.5 ml(i.m)

12. Rotavirus Vaccines:-

- **Storage:** at 2-8^{0}C
- **Dose:** The Vaccine should be administered after reconstitution as 1ml orally.

13. Influenza Vaccine:-

There are two types of Influenza Vaccine

(i) Inactivated

(ii) Influenza Vaccine

- **Storage:** at 2-8^{0}C
- **Dose:** Used in children > 6 months.

14. Cholera Vaccines:

- **Storage:** at 2-8^{0}C
- **Dose:** used for aged 2 year & above.

15. Rabies Vaccine:

- **Storage:** at 2-8^{0}C
- **Dose:** Should be used within 6 hours of reconstitution.

COLD CHAIN

- System of transporting & storing Vaccine within recommended temperature from the place of manufacture to the point of Administration.
- Three main Components.
- Trained Personal.
- Transport & storage equipment.
- Efficient Management Procedure.

RESULT: Understood the study about National Immunization Schedule for Children adult Vaccine, which are included in National immunization Program_____

EXPERIMENT NO: 02

AIM OF THE EXPERIMENT:

To study about RCH Reproductive & Child Health Program.

THEORY:

The reproductive health & child health Program is implemented in the state since 1997.

The Program monitored by the state Family Welfare bureau which is located at Pune.

OBJECTIVE:

In the year 1994. The international Conference on Population & development (ICPD).

The entire strategy was changed & the Following issues were given priority.

- Women empowerment.
- Reproductive Rights.
- Reproductive Health.
- Quality of Care

DEFINITION OF (RCH)

- It has the ability to reproduce & regulated their facilities.
- Women are able to go through Pregnancy & Child birth safely.
- The Outcome of Pregnancy is successful in terms of maternal & infant wellbeing.

Components of RCH Program

- Women health, safe motherhood.
- Child health, child development
- Adolescent health (sexuality development, education & vocational component)
- Effective Family Planning.
- Prevention, detection & management of reproductive tract infections.
- Prevention, & management of infertility & other reproductive disorders.
- Prevention, detection & management of genetic.
- Reproductive health care of elderly persons.

Referral Transport

It is observed that for maternal death, the unavailability of transport is one reason. Therefore, under the scheme. It is proposed to place Rs 5000/- to the local gram panchayat for first year & 4000/-, Rs3000/-, Rs 2000/-, Rs1000/- subsequently. The scheme is not be in completed in selected 50 villages of 10 Districts viz Nanded, Nandurbar, Dhule, Solapur, Pharbhani, Bhandara, Gadchiroli, Aurangabad, Jalna & Osmanabad.

- Beneficiary will get Rs300/- for Transport.

Utilization of services of private Gynecologist & Anesthetics on Contract basis.

In order to provide emergency obstetric services the specialists are required. They are not available at many of the first Referral Units.

Therefore a provision has been made to utilize the services of private Gynecologists & Anesthetics by paying them consultation charges.

Training of DAIs

In the number of villages, the delivery is conducted by traditional birth attendants. In order to reduce maternal mortality & Infants mortality, safe delivery Practices are essential under the scheme, the DAIs, who are conducting the delivery will be trained at selected FRUs & also required orientation training will be given.

NGO Involvement

The Government of India has selected four mother NGOs in the state. These NGOs are working since 1998-1999. They have to register 110 field NGOs form the districts assigned to them.

Training under RCH Program.

The government of India has identified national Institute of health & Family welfare as the Nobel agency for training activities under the RCH Program.

The states has been formed the state level RCH training Co-Ordination with committee. According to the guidelines of NIHFW & in consultation with the collaborating training Institute (CTI).

- Integrated skill development Training (ISDT) for MD, LHV, ANM (12 Days)
- Integrated skill development Training (ISDT)
- Specialized skill development Training (SST)
- Management Training (1 week)
- Communication(11 days)

Nav Sanjeevani Yojana:

The state government has selected the districts having tribal Population for the implements of special Program. In following districts Nav Sanjeevani Yojana has been introduced..

District Covered.. Thane, Raigad, Nasik, Jalgaon, Amravati , Pune,

Gondia, Chandrapur, Dhule etc..

Following Activities are implemented

- Pre Monsoon health check up to tribal mothers & children & treatment.
- Regular water quality monitoring.
- Filling of Vacancies.
- Monthly examination of grade III & grade IV children.
- Facility of diet to patient or one at PHC & RH.
- Maintains the mobility of the vehicles.
- Ensuring availability of drug for epidemic control at the health institutions.

Integrated Tribal Development Project (ITDP)

Following tribal district are covered:

Thane

Nasik

Nandubar

Amravati etc..

Matrutwa Anudan Yojna:

The schemes are implemented throughout the year. The beneficiary is Pregnant mother Rs400/- in cash & drug worth Rs400/- are given to the beneficiary.

The objective is to support the diet & encouraging the beneficiary to accept safe motherhood concept.

DAI Training:

The DAI conducting the delivery are called for quarterly one day orientation training, they are paid Rs 40/- as honorarium & Rs 10/- as meeting expenses. The dais are oriented about safe delivery Practices & new born care.

Pada Swayamsevak:

The scheme is implemented from May to December every years. The Pada workers is paid Rs 300/- per month.

5530 posts of Pada workers have been sanctioned.

They are expected to perform following activities:-

- Water disinfection.
- Tablet Chloroquine distributed to fever Patients.
- ORS packets to diarrhea Patients.
- Information of epidemic outbreak to PHC.
- Assistance in the distribution of supplementary diet.

Appointment of Honorary Doctors:

The scheme is implemented from June to December. The appointmented Doctors is paid Rs 6000/- per month.

132 Posts have been sanctioned.

The Doctor is expected to carry out.

- Health checkup of mother & child in every Pada /village in the area.
- Treatment of mothers & children having health problems.
- Examination of children in Anganwadi.

RESULT: understood the study about RCH Reproductive & Child Health Program.

EXPERIMENT NO:-03

AIM OF THE EXPERIMENT:

To study about Family Planning Devices.

THEORY:

Family Planning means to decide the number of & timing of child in the family. According to WHO it is defined as way of Living on the basis of knowledge, attitudes & responsible decisions by individual & couples in order to promote health care & welfare of the family group.

Why Use family Planning?

You have the rights to choose how many Children to have & When…

How can Family Planning help you?

- Healthier Mother & Children
- Fewer Children means more time & more for each one.
- Delaying Pregnancy lets young People stay in School.

Why use Family Planning?

Benefits:-

- Mothers & babies are healthier when risky Pregnancy are avoided.
- Smaller Families mean more money & food for each child.
- Parents have more Time to Work & to be with Family.
- Delaying First or Second Pregnancy lets Young People stay in School.

Things to Consider:-

- Many Young People use contraceptives to delay Pregnancy. Ideally Young women & Men should wait until at least 18years or have finished studies & are ready before having Children.
- After having a child, it is healthier to wait at least 2 years to try to become Pregnant again.
- Having more than 4 children makes children riskier.

There are many Method available:-

- Do you have children? Do you want (more) children in the future?
- Do you want to prevent Pregnancy Now?
- Are you using family Planning method before?
- Have you use a Family Planning Method Now?
- Is there a Method you would like to use? What is it about that method that you like?
- Are you or your partner breastfeeding infant less than 6 months old?
- Are you concerned about STDs or HIV/AIDS?
- Do you have any health problems? If yes or No.

Comparing Family Planning Methods:

There are many methods to choose from.

- Some are more effective than others.
- Some are easier to use & some are harder to use.
- Methods that are harder to use may be less effective if you don't use them correctly.

Methods I can provide now:

- Condoms
- Pills
- Injections
- Breastfeeding Method counselling.
- Standard days Method counselling.
- Withdrawal counselling.
- Emergency contraceptive Pills.

Methods provide at the clinics:

- Implants
- IUD
- Female Sterilization
- Vasectomy.

THE PILLS:

- Safe
- Effective when a pill is taken every day.
- Less monthly bleeding & Cramps.

What it is..

- A Pill with hormones in it that is taken every day.
- Prevent release of egg & blocks Sperm from meeting egg.

How to use:

- Take One Pill every day.
- When you finish a Pack of pills, start a new pack next day.

If you miss a Pill:

- Take missed Pill as soon as possible.
- Okay to take 2 Pills at the same time.
- If you miss more than 2 days of Pills in a row, use condom for 7 days & keep taking Pills. If you miss these Pills in week 3, also skip the reminder Pills & start a new Pack.

What to expect..

- Sometimes irregular bleeding at first, then followed by lighter monthly bleeding with less cramping.
- Some women have stomach upset or mild headaches that go away after first few months.

Key Points:-

- Take a Pill every day.
- Be sure you have enough Pill. Get more before you run out.
- Use condoms if you needed Protection from STDs or HIV/AIDS

INJECTIONS:

- Safe
- Hormone injections given every 2 months (NET-EN) or 3 months (DMPA)
- Very effective when injections are on time.
- Use can be Kept Private.

What it is..

- Hormone Injection**.**
- Prevent release of egg.

How to use..

- Get An Injection every 2 months (NET-EN) or 3 months (DMPA)
- If breastfeeding, can start 6 weeks after childbirth.
- Works best if you get your Injection on time.

If Late for an Injection:

- DMPA: can still get an injection up to 4 week late.
- NET-EN: can still get an injection up to 2 week late.

What to expect…

- Irregular bleeding at first, then spotting or no monthly bleeding. This common & safe.
- Possible slight weight change.

Key Point..

- Does not cause infertility.
- Be sure to get next injection on time.
- Use condom if you need protection from STDs/HIV/AIDS.

MALE CONDOMS:-

- Prevent both Pregnancy & sexually transmitted infections including HIV/AIDS.
- Effective when used correctly every time you have Sex.
- Easy to get & use.

What it is…

- A thin rubber covering that fits over the erect Penis.
- Is a barrier that keeps Sperm out of the Vagina?

How to Use..

- Put a new Condom onto erect Penis before each Sex act.
- Dispose of properly, in dustbin or latrine.

What to expect..

- No Side-effect.

Key Points:

- Can be used with other Family Planning Methods to prevent sexually transmitted infection including HIV.
- Important to use correctly.
- Partners must agree to use.

FEMALE CONDOM:

- Prevents both Pregnancy & STDs including HIV/AIDS.

- Effective when used correctly every time you have Sex.

What it is..

- Plastic covering inserted into the Vagina before Sex.
- Is a barrier that keeps Sperm out of the Vagina?

How to Use..

- Insert new female condom into Vagina before every Sex act.
- Dispose of properly in dustbin.

What to expect..

- No side-effect.

Key Point:

- Can be used with other family Planning methods to prevent sexually transmitted infection including HIV.
- Important to use correctly every time you have Sex.
- Make sure Penis enters inside the condom ring & stays in during Sex.
- Partners must be agree to use.
- Emergency contraceptive Pills can be used if condom slips or is not used correctly.

IMPLANTS:

- Safe to use.
- One of the most effective methods.
- Lasts for 3to5 years.
- Can be removed any time if you want to get Pregnant.

What to expect..

- Changes in monthly bleeding including irregular bleeding, spotting heavier bleeding or no monthly bleeding are common & safe

Key Point:

- Use another methods if waiting for appointment.
- Use condoms if you need Protection from STDs or HIV/AIDS.

IUD :-

- Safe to Use.

- One of the most effective methods.
- Can be used for up to 12 years.

What it is..

- **S**mall, flexible, Plastic"T" wrapped in Copper Wire that is placed in the Womb.
- Prevent Sperm from meeting the egg.

How to Use..

- Specially trained provider inserts & removes IUD.
- Nothing to remember to do after insertion

What to Expect..

- Some cramping & heavier bleeding during monthly bleeding in the first few months of use.

Key Points..

- Use another method if waiting for appointment.
- Use condoms if you need Protection from STDs or HIV/AIDS.

FEMALE STERILIZATION:

- Safe & Permanent method for women or couples who will not want more children.
- One of the most effective method.
- Simple operation

What to Expect..

- After Procedure, nothing to remember & no side-effects.
- Do not need to be put to sleep during Procedure.
- Usually you can go home a few hours after procedure.

Key Points…

- Permanent Method.
- Use Condoms if you need Protection from STDs or HIV/AIDS.

VASECTOMY:

- Safe & Permanent method for men or couples who will not want more children.
- One of the most effective methods.
- Simple Operation.
- Must use back-up method for first 3months.

What it is..

- Specially Trained provider makes two small cuts to reach the tubes that carry Sperm.
- Cut tubes, Testicles are not removed.

How to Use..

- 3 months delay in taking effect. Couples must use another method until then.
- After 3 months, nothing to remember.

What to Expect..

- Do not need to be put to sleeping during procedure.
- Usually you can go home a few hours after procedure.
- May have brushing & Soreness for a few day after procedure.

Key Point…

- Does not decrease Sex drive, erection or ejaculation.
- Permanent Method.
- Use condoms if you need protection from STDs or HIV/AIDS.

STANDARD DAYS METHOD: Using Calendar or Cycle Beads:-

- Help you know what days during the month you could get Pregnant.
- To prevent Pregnancy either avoid Sex or use condom on those days.
- Best used by women with regular monthly bleeding.

What it is…

- Learning which days each month you could get Pregnant (Fertile days).
- Avoiding Sex or use a condom during fertile days.

How to Use…

- Use cycle beads or calendar to count of the cycle. Start with first day of monthly bleeding.
- Days 8 to 19 of every cycle are "Fertile Days".
- Avoid unprotected Sex during fertile days.

What to expect…

- Partners must avoid sex or use condom for 12 days in a row, every month.
- No side-effect.

Key Points..

- Both partners must agree to avoid sex or use condoms on fertile days.
- If monthly bleeding becomes less regular, you may need to choose another method.
- Use condoms if you need protection from STDs or HIV/AIDS.

EMERGENCY CONTRACEPTIVE PILLS:

- Prevent pregnancy after unprotected sex.
- Work best when taken as soon as possible, up to 5 days after unprotected sex.
- Do not cause abortion.

What it is..

- Pill taken after unprotected sex to prevent Pregnancy.
- Prevent or delay release of egg.
- Does not cause abortion.

How to Use..

- Can take up to 5 days after unprotected sex.
- Works best when taken as soon as possible after unprotected sex.

What to Expect…

- Sometimes causes nausea, vomiting, vaginal discharge or bleeding for a few days.

Key Points…

- Does not prevent Pregnancy the next time you have sex does not protect against future acts of sexual intercourse.
- Regular methods are more effective, consider if there is a method you would like to use.
- Seek treatment if you may have been exposed to STDs

Where to get:

Emergency contraceptive pills**……..**

RESULT: Understood the study about Family Planning Devices

EXPERIMENT NO: 04

AIM OF THE EXPERIMENT:

To Study about the Microscopical observation of different microbes through readymade slides.

THEORY

Microorganism:-

Those Organism which are not seen with naked eyes. It is also known as microbes.

Classification of Microorganism:

Bacteria:

- They are single celled microorganism.
- Bacteria can be seen by microscope.
- Example: Lactobacillus.

Fungi:

- They are multicellular organism.
- Heterotopic nutrition.
- Fungi are non-green plants.
- They cannot synthesize their own food.
- Example: Penicillium.

Protozoa:

- They are both Unicellular and multicellular organism.
- They found in Water.
- They causes diseases in human & animals.
- Example: Amoeba, Plasmodium

Algae:

- They are both Unicellular and multicellular
- Autotropic nutrition.
- Chlorophyll present.
- Example: Spirogyra.

Virus:

- Virus are only microbes which require host cell to reproduce.
- Example:- Polio Virus, Influenza Virus

REQUIREMENTS:

- Slides of different microorganisms.
- Microscope.

PROCEDURE:

- Place the slide of a known microorganism on a microscope.
- Focus the microscope until the image is clear.
- Take a photo of image by placing your laptops cameras on the eye piece.
- Repeat experiment with other microorganism.

RESULT:

Draw the image.

The study of observation of different microorganism using microscope is done.

EXPERIMENT NO: 05

AIM OF THE EXPERIMENT:

To study & Understand the Oral health & Hygiene.

THEORY:

Oral Hygiene is the practice of keeping one's mouth clean & free of Disease & other problem (e.g. Bad breath) by regular brushing of the teeth (Dental hygiene) & cleaning between the teeth. It is important that Oral hygiene be carried out on a regular basis to enable prevention of Dental Disease & bad breath. The most common types of dental Disease are tooth decay (Cavity, dental caries) & Gum diseases, including gingivitis & Periodontitis.

The main method of prevention of various Oral diseases like dental caries, gingivitis & periodontitis is by effective Plaque removal. Self-oral hygiene maintenance is mainly by tooth brushing, mouth rinses & flossing.

- **OBJECTIVE OF TOOTH BRUSHING:** The main objective of tooth brushing include: To Prevent Plaque formation, plaque removal, cleaning the Tongue, massage the gingival tissue.

- **Brushing technique:** Brushing is the main method of self-removal of plaque & debris by an individual.

1. The bass or Sulcus cleaning method: It is the most accepted & effective method for the removal of dental plaque present adjacent to & underneath the gingival margin. It is most adaptable for open interproximal areas, cervical areas beneath the height of contour of enamel, exposed root surfaces. It is recommended for patients with or without periodontal involvement

Technique: The bristles are placed at a 45^0 angle to the gingiva & moved in small circular motions. Strokes are repeated around 20 times, 3 teeth at a time. On the lingual aspect of the anterior teeth, the brush is inserted vertically & the heel of the brush is pressed into the gingival sulci & proximal surfaces at a 45^0 angle. The Bristles are then activated. Occlusal surfaces are cleaned by pressing the bristles firmly against pit & fissures & then activating the bristles.

Advantages:

1. Effective method for removing plaque.
2. Provides good gingival stimulation.
3. Easy to Learn.

Disadvantages:

1. Overzealous brushing may convert very short strokes into scrub technique of brushing & cause injury to the gingival margin.
2. Time Consuming.
3. In certain patients dexterity requirement is too high.

2. Modified Bass Technique: This method differs from bass technique in that it has sweeping

motion from cervical to incisal or occlusal surface.

Technique: Technique combines the vibratory & circular movement of the bass technique with the sweeping motion of the roll technique. The toothbrush is held in such a way that the bristles are at 45^0 to the gingiva. Bristles are gently vibrated by moving the brush handle in a back & forth motion. The bristle are then swept over the sides of the teeth towards their occlusal surfaces in a single motion. Brush position on the occlusal surface used with Bass, Stillman, Charter's method .Palatal position on incisors. Intrasulcular position of the brush at 45^0 angle of the long axis of the tooth.

Advantages:

1. Excellent sulcus cleaning.
2. Good inter Proximal & Gingival cleaning.
3. Good gingival Stimulation.

Disadvantage:

1. Dexterity of wrist is required.
2. Toothbrush positioned on facial & maxilloproximal surfaces of maxillary molars palatal position on molars & pre molars.

3. Modified Stillman's technique indication: Dental Plaque removal from cervical areas below the height of contour of enamel & from exposed Proximal surface cleaning tooth surfaces & gingival massage. It is recommended for cleaning in areas with progressing gingival recession & root exposure to prevent abrasive tissue destruvtion. A soft tooth brush is indicated for this technique.

Technique: The sides of the bristles are pressed against the teeth & gingiva, while moving the brush with short 'back & forth' strokes in a coronal direction. The bristles are pointed apically with an oblique angle to the long axis of the tooth. The bristles are positioned partly on the cervical aspect of tooth & partly on the adjacent gingiva. The bristles are activated with short back & forth motion & simultaneously in coronal direction. 20 strokes are applied & procedure is repeated systematically on adjacent teeth.

Disadvantage:

Time consuming. Improper brushing can damage the epithelial attachment.

4. Fones Method or Circular/Scrub Method: This method is recommended for young children, physically or emotionally handicapped individuals, Patients who lack dexterity.

Technique: The child is asked to stretch his/her are such that they are parallel to the floor. The child is asked to draw big circles using whole arm in the air. The diameter of circles is reduced until small circle are not formed in front of the mouth. The child is now ready to make circles on the teeth with the tooth brush, making sure that all teeth & gums are covered.

Advantages:

1. It is easy to learn.
2. Shorter time is required.

Disadvantages:

1. Possible trauma to gingiva.

2. Interdental areas not properly cleaned.
3. Detrimental for the adults especially who use the brush vigorously.

5. **Vertical Method-Leonard's Method:** Vertical stroke is used. Maxillary & mandibular teeth are brushed separately.

   Technique: The bristles of the tooth brush are placed at 90^0 angle to the facial surface of teeth. With the teeth edge to edge, place the brush with filaments against the teeth at right to the long axis of teeth. Brush vigorously without big pressure with a stroke which is mostly up & down the tooth surfaces with a slight rotation or circular movements after striking the gingival margin with force. It is not intended that the upper & lower teeth shall be brushed in the same series of strokes. The teeth are placed edge to edge to keep the brush slipping over the occlusal or incisal surface.

   Advantages:
   It is the most convenient & effective for small children with deciduous teeth.

   Disadvantages:
   Interdental space of the permanent teeth of adult are not properly cleaned.

6. **Charter's Method:** This method is used for

- Individuals having open inter dental spaces with missing papilla & exposed root surfaces.
- Those wearing fixed partial dentures or orthodontics appliances.
- For Patients who have had periodontal surgery.
- Patients with moderate interproximal gingival recession**.**

Technique: A soft /medium multi tufted tooth brush is indicated for this technique. Bristles are placed at an angle 45^0 to the gingiva with the bristle directed coronally. The bristles are activated by mild vibratory strokes with the bristle ends lying interproximally.

Advantages:
1. Massage & stimulation of marginal & interdental gingiva.

Disadvantages:
1. Brush ends do not engage in the gingival sulcus to remove sub gingival bacterial accumulation.
2. The correct brush placement is limited or impossible, therefore modifications become necessary which add to the complexity of the procedure.
3. Requirement in digital dexterity are high.

7. **Scrub Brush method:** This method of brushing requires vigorous horizontal, vertical & circular motion. It is the virtual free style of the brushing scene.

   Disadvantages:
   Not very effective at plaque removal. Too abrasion & gingival recession.

8. The Roll technique: This method of brushing is also known as the Rolling stroke method or ADA method or the Sweep method. It works fairly well for patients with anatomically normal gingival

tissue.

Technique: The bristles are placed at a 45^0angle. Tooth brush is rolled across the tooth surface towards the occlusal surface. This technique requires some flexibility around the wrist.

Advantage:
Provide gingival massage & stimulation.

Disadvantages:
1. Brushing too high during initial placement can lacerate the alveolar mucosa.
2.Tendency to use quick ,sweeping strokes resulting in no brushing for cervical third of the tooth, since the brush tips pass over rather than into the area & likewise for the interproximal area.
3. Replacing the brush with filament tips directed into the gingiva may produce punctuate lesions.

9. Physiologic Method or Smith Method: The Physiologic method was described by smith & advocated later by Bell. It was based on the principle that tooth brush should follow the physiologic pathway that is followed by food when it transverses over the tissues during mastication.

Technique: Bristles are pointed incisally or occlusally & then moved along & over the tooth surfaces & gingiva. The motion is gentle sweeping from incisal or occlusal surface over tofacial surface & progressing towards & over the gingiva. It is almost an attempt to duplicate nature's self-cleansing & gingival stimulation mechanism during mastication of food.

Advantages:
1. Natural self-cleansing mechanism.
2. Supragingival cleaning is good.

Disadvantages:
Interdental spaces & sulcular area of teeth are not properly cleaned.

Floss after Brushing:
As important as brushing is, flossing your teeth every day is just as important. Flossing will help to remove plaque & food particles between teeth & at the gum line & hard to reach places. Be gentle, threading the floss carefully between the tooth & braces wire. Then work it slowly back & forth under the braces. Be careful, take your time, & get under the gum line.

Brushing & flossing with braces can be a challenge. But it takes only a little extra effort, & when your braces come off & you have your beautiful new smile you'll realize it is well worth it.

Ways to keep your teeth healthy
1. Don't go to bed without brushing your teeth.
2. Brush properly.
3. Don't neglect your Tongue.
4. Use a fluoride tooth paste.
5. Treat flossing as important as brushing
6. Don't let flossing difficulties stop you.
7. Consider mouthwash.
8. Drink more water.
9. Eat crunchy fruits & vegetables.

10. Limit sugary& acidic foods.
11. See your dentist at least twice a year.

Result: Understood about the oral hygiene.

EXPERIMENT NO: 06

AIM OF THE EXPERIMENT:

To learn Hand Washing technique.

THEORY:

Thousands of people die every day around the world from infections acquired while receiving health care. Hands are the main pathways of germ transmission during health care. Hand hygiene is therefore the most important measure to avoid the transmission of harmful germs & prevent health care associated infections.

Hand hygiene helps to stop the spread of germs, including ones that can cause antibiotic resistant infections. Antibiotic resistance happens when germs like bacteria & fungi develop the ability to defeat the drugs designed to kill them. That means the germs are not killed & continue to grow. Infections caused by antibiotic resistant germs are difficult & sometimes impossible, to treat. Keeping your hands clean by washing your hands with soap & water or using alcohol based hand sanitizer is one of the best ways to prevent germs from spreading & avoid infections.

Any health care worker, caregiver or person involved in direct or indirect patient care needs to be concerned about hand hygiene & should be able to perform it correctly & at the right time.

Clean hands by rubbing them with an alcohol based formulation, as the preferred mean for routine hygienic hand antiseptics if hands are not visibly soiled. It is faster, more effective & better tolerated by your hands than washing with soap & water. Wash your hands with soap & water when hands are visibly dirty or visibly soiled with blood or other body fluids or after using the toilet.

If exposure to potential spore-forming pathogens is strongly suspected or proven, including outbreaks of Clostridium difficile, hand washing with soap & water is the preferred means.

If you don't have soap & water, use a hand sanitizer with at least 60% alcohol. If you don't have hand sanitizer or soap, but do have water rub your hands together under the water & dry them with a clean towel or air dry. Rubbing your hands under water will rinse some germs from your hands, even though it's not as effective as washing with soap.

Hand Care:

Take care of your hands by regularly using a protective hand cream or lotion, at least daily. Do not routinely wash hands with soap & water immediately before or after using an alcohol based hand rub. Do not use hot water to rinse your hands. After hand rubbing or hand washing ,let your hands dry completely before putting on gloves. Washing hands with soap & water is the best way to remove all types of germs & chemicals.

If soap & water are not available, use an alcohol based hand sanitizer with at least 60% alcohol.

Points to remember

- Do not wear artificial fingernails or extenders when in direct contact with patients.
- Keep natural nails short.

Result: Understood Hand washing techniques.

EXPERIMENT NO:07

Aim of the Experiment:

To Learn Cough & Sneeze Etiquette.

Theory:

Coughing and sneezing are a body's natural reaction to an allergy or infection. But since they can potentially transmit the disease to another person, we must not forget to follow cough and sneeze manners. A Cough produces approximately 3000 droplets, whereas a sneeze releases an estimated 40,000 droplets.

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

People cough and sneeze etiquette:

1. Step far away from people and cover your mouth and nose when coughing or sneezing.
2. Do not roughly clear your nose or throat while in the presence of others. Not only is it unhygienic, but it also revolts another person.
3. If you have an urge to cough or sneeze, do it by folding of your elbow or into a tissue.
4. If and when you use tissues, dispose them in a responsible manner. Bin it as 'medical waste' and do not toss it around like it was harmless stuff.
5. Bin the used tissues in no-touch receptacles for disposal as touching the receptacle, again and again, is not advisable.
6. Wash your hands or use a hand sanitizer every time you touch your mouth or nose.
7. Wear an N95 or N99 mask when you are in the company of others.
8. If you know you have any kind of flu - however serious or not - sit as far away from others as possible.
9. Avoid touching your face with your hands (or even if you have just wiped your sick child's nose). When one touches the face with unwashed, uncleaned hands, the cold and flu viruses get a chance to enter the mucous membranes of the nose and eyes and cause infection.

RESULT: Understood Cough & Sneeze Etiquette.

EXPERIMENT NO: 08

Aim of the Experiment:

To Learn a Standard operating procedure to wear the PPE kit

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 contains an infectious agent. by creating a barrier between the potential infectious material and the health care worker.

Moreover, PPE kits are not made exclusively only for healthcare personnel but are manufactured for several purposes. This is primarily to protect workers in all professions from occupational health hazards and avert injuries from perilous physical, chemical, heat/inflammable and electrical materials, besides ppollutants, biohazards and airborne particulate matter. People in jobs such as chemical plant operators, mining industry workers, waste collection and disposal sectors, construction units, burial ground laborers etc. are examples of non-healthcare activities wherein PPE kits are necessary.

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.

Gloves: Gloves help protect you when directly handling potentially infectious Materials or contaminated surfaces.

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

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

Masks and Respirators: 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.

Sequence for donning (put on) and doffing (Taking off) personal protective equipment (PPE)

Steps to put on personal protective equipment (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 & fluid resistant shoes & put on over shoes.
5. Place the impermeable gowns over the scrubs.
6. Put on face protection;

   (a) Put on a medical mask.

(b) Put on goggles or a face shield.

7. If available, put a head cover on at this time.

8. Perform hand hygiene.

9. 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 on new gloves.

10. If an impermeable gown is not available, place water proof apron over gown.

Use double gloves if any strainers activity (example carrying a patient or handling a dead body) or task in which contact with blood & body fluids are anticipated. Use heavy duty/rubber gloves for environmental cleaning & waste management.

Steps to taking off personal protective equipment (PPE):

- Remove shoes cover(if applicable)
- Remove gown & gloves together.
- Perform hand hygiene.
- Remove eye protection (if applicable)
- Remove masks/respirator(if applicable)

If gloves are removed first, hands must only touch un contaminated surfaces of the gown, typically behind the neck (ties) at the back of the shoulders. The gown is then peeled down of the body & arms, balling or rolling in the contaminated surfaces (front &sleeves). This is difficult to do, however, without contaminating the hands. The preferred method for doffing a disposable gown & gloves is therefore, to break the ties & neck by pulling on the upper front portion of the gown with the hands still gloved, balling or rolling in the contaminated surfaces, & pulling the gloves off inside out as the hands are withdrawn from the gowns, sleeves. The gown & gloves can then be placed in a disposal receptacle together.

Hand hygiene is the corner stone of preventing infection transmission. You should perform hand hygiene immediately after removing PPE. If your hands become visibly contaminated during PPE removal, wash hands before continuing to remove PPE.

Wash your hands thoroughly with soap & warm water or, if hands are not visibly contaminated, use an alcohol based hand rub.

After you use PPE:

Remove & dispose of PPE safely to protect others from being exposed to germs. Before leaving your work area, remove all PPE & 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 SOPs of PPE kit.

EXPERIMENT NO:-09

AIM OF THE EXPERIMENT:

To learn how to wear and dispose masks.

THEORY:

Mask are a key measure to suppress transmission and save lives. Mask cover your mouth and nose .depending on the type, mask can be used for either protection of healthy person to prevent onward transmission.

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

Types of Masks:

There are many types of masks you can use to protect yourself & others from getting & spreading COVID-19. When choosing mask, choose one that fits snugly.

1. **Bandana:** A bandana is a triangular or square piece of cloth that's often worn as a head or neck covering. Tying a bandana over your mouth & nose is a time honored way to keep dust & other particles out to the respiratory system. Bandanas provide protection against droplets from cough or sneeze related "spray".
2. **Home Made cloth Mask:** not ideally recommended when taking care of infected patients as they do not provide adequate protection but they are still better for routine use than not covering your mouth & nose. Densely woven cotton fabrics, such as quilting cotton are best. Single layer fabric masks are less effective than double layer masks, which may be less effective than triple layer masks,
3. **Disposable surgical masks:** loose fitting, a disposable device made of polypropylene, may be effective in blocking particle droplets, splashes, sprays which may contain germs, keeping them from reaching mouth & nose. It does not block small particles in the air that may be transmitted by nearby coughing or sneezing. It is used by persons caring for sick persons with respiratory infections & symptoms as cough, sneezing, fever, health care & front line workers. Surgical masks are not designed to be used more than once. Ideally, you should dispose of a mask after wearing it.
4. **N95, KN95 & other respirators:** A special respiratory mask (respirator) forms a tight seal around your nose & mouth. It may be needed so that you do not breathe in small germs like tuberculosis bacteria, measles or chicken pox viruses N95 face respirators offer the most protection against novel corona virus & other respiratory diseases. N95 protects the person wearing the mask because they filter out 95 % of particles from the air breathed in. wearing any of the other masks in the list (cotton & disposable) are intended to protect others around you from your own respiratory droplets & "spray" .

   KN95 are made to china specifications & standards & N95s are made to US design standards. Both are rated to filter out 95% of very small particles. Buy KN95s that meet the National Institute of occupational safety & Health (NIOSH) requirements. About 60% of KN95s in the US may be fake & do not meet NIOSH requirements, according to the CDC.

   Even more effective than N95 respirators are the N99 (99% filtration), N100 (99.97% filtration) , R95(95% filtration & partially resistant to oil) &P95, P99 & P100(95%,99% & 99.97% filtration respectively & strongly oil resistant).

It should be worn by:

1. Health care & frontline workers who are attending to patients with respiratory infections as cough, cold & patients under investigation.
2. While entering rooms of confirmed or suspected COVID patients.
3. While obtaining clinical specimens, soiled medical supplies & equipment or who so ever come in contact with potentially contaminated environmental surface.

Dispose of a used mask: (remember mask should be treated as medical waste)

Different germs can survive on a used mask for different durations. Experts feel that viruses, when left exposed, can survive for few hours or few days too. The infected masks have respiratory secretions on them & can be dispersed & transmitted through the air. So, please be sensitive. Always wash your hands before & after taking off the mask.

The World Health Organization (WHO) recommends discarding them in the "correct" rubbish bin immediately after use & not reusing them. What is the "correct" bin? Mask & other disposable material that are used to contain the pandemic such as gloves, must not be disposed off in the recycling bin with packaging, cans etc or with organic waste . Do not through them away with your general household rubbish.

The Brazilian sanitary and environmental engineering association (ABES) has issued advice on the correct way to dispose off used mask & gloves. The materials should be placed into two small plastic bags-one inside the other. Tie the bags firmly & through them away with your general domestic waste if the materials have been in contact with infected person, take extra care & write "RISK OF CONTAMINATION "on the bag.

RESULT: Understood about the mask & their uses.

EXPERIMENT NO: 10

AIM OF THE EXPERIMENT:

To study different types of disinfectants & marketed preparation.

THEORY:

Disinfection is a process in which chemical or physical means is used to control or destroy the microorganisms that are capable of causing diseases. There are three levels of disinfection (i.e. high, intermediate & low level) with respect to the effectiveness of the disinfection. Disinfecting agents are substances used to control or destroy harmful microorganisms such as bacteria, viruses or fungi. Many disinfectants are non-specific in their action & will act against a spectrum of microorganisms.

Chemical disinfectants can be grouped I accordance with their chemical properties. They work on various modes of action to destroy the microorganisms such as by rupturing the cell wall, denaturing protein or lipids, oxidation, alkylation etc. the efficacy of a disinfectant hinges on various factors including concentration, contact duration, temperature pH, the presence of organic matters & metal ions.

Choice of the disinfectant to be used depends on the particular situations. Some of the disinfectants are adopted because of the wide spectrum of destroying microorganisms in order to achieve effective disinfections. Others destroy a smaller range of disease causing organisms but are preferred because the chemical disinfectants are less or non-toxic to human & the level of disinfections required is low.

There are disinfectants which possess surfactant effect & are used to clean & disinfect in "one-step" process. Workers in hospital, health care facilities, poultry facilities, abattoirs, food products manufacturing plants, sanitary & similar service etc. frequently use chemical disinfectants to destroy diseases causing microorganisms. Some of the chemical disinfectants are flammable & explosive. There are disinfectants that would react with incompatible chemicals violently & generate toxic gases posing hazard to workers. All chemicals disinfectants are, by their very nature, potentially harmful or toxic to living organisms. Like other toxic substances, the chemical disinfectants can enter the body through several routes, including absorption through skin or mucous membrane, inhalation & ingestion. Sometimes a chemical substance can enter through various routes. However, chemical disinfectants would be effective & safe tools when handled properly with the safety measures in place. If misused, they can be hazardous & harmful to workers & the environment.

Disinfectant can be divided into classes on the basis of their chemical compositions & each class has its characteristics, hazards, toxicities & efficacy against various microorganism. The classes are as follows:

- **Alcohols:** It is usually in the form of 70% IPA or 60 to 80% ethyl alcohol, are commonly used topical disinfectants. They are effective against bacteria & enveloped viruses. Alcohols are not effective against bacterial spores & non enveloped viruses. Alcohols are somewhat slow in their germicidal action.

- **Aldehydes:** it is broad spectrum disinfectants. The most commonly used agents are formaldehyde & glutaraldehyde. Aldehydes are very effective against bacteria, fungi, viruses, mycobacteria & bacterial spores.

- **Chlorine Compounds:** It is considered broad spectrum, being effective against bacteria, enveloped & non enveloped viruses, mycobacteria & fungi. At high concentration, chlorine compound can be sporicidal. The most common used agents are chlorine dioxide, sodium hypochlorite (chlorine bleach) & calcium hypochlorite.

- **Iodine Compounds:** iodine compounds are broad spectrum & considered effective for a variety of bacteria, mycobacteria, fungi & viruses. Tincture of iodine is used as an antiseptic for skin cuts & scrapes. Iodine agents are inactivated by quaternary ammonium compounds & organic debris. An

iodophor is a combination of iodine & a solubilizing agent or carrier; the resulting complex provides a sustained release reservoir of iodine & releases small amounts of free iodine in aqueous solution to kill microbes.

- **Phenolics:** the disinfectants are phenol (carbolic acid) derivatives. They have a characteristic pine tar odour & turn miky in water. Phenols at 5% concentration are considered bactericidal, tuberculocidal, fungicidal & virucidal for enveloped viruses. They retain more activity in the presence of organic material than iodine or chlorine-containing disinfectants. Cresols, hexachlorophene, alkyl & chloro derivatives & diphenyl are more active than phenol itself.

- **Quaternary ammonium compounds:** such as benzalkonium chloride, are generally odorless, colorless, non-irritating and deodorizing. The compounds has disinfectant effect and some have detergent action. However some quaternary ammonium compounds are inactivated in the presence of some soaps or soap residues. Their antibacterial activity is reduced in the presence of organic material. Quaternary ammonium compounds are effective against bacteria but only and somewhat effective against fungi and viruses.

- **Oxidizing agents**: common oxidizing agents are hydrogen peroxide ozone per acetic acid and potassium permanganate. The hydrogen peroxide is used as an antiseptic and also effective in dis infection of in inanimate objects. It could be sporicidal if operated at high temperature. Per acetic acid is one of the effective liquid sporicidal and is used widely in disinfection of food processing equipment & medical instruments because it does not leave toxic residues. Potassium permanganate has broad anti-microbial properties. It is an effective algicide (0.01%) and virucide (1%) for disinfection but tends to irritate tissues at concentration >1:10000.

- **Others**: Ethylene oxide has wide use as a disinfecting agent with very broad biocide activity against micro-organism including bacterial spores and viruses. It is highly flammable chemical. it is toxic mutagenic and carcinogenic. Chlorohexidine is a biguanide compound is one of the widely used disinfectant, it is effective against most bacteria and it is nonirritating to tissues. Biguanides has broad antibacterial spectrum, however it is limited its effectiveness against viruses and is not sporoicidal, mycobactericidal, fungicidal.

RESULT: Understood the study about Disinfectant & their marked products.

EXPERIMENT NO: 11

AIM OF THE EXPERIMENT:

To study antiseptic and marketed products.

THEORY:

An antiseptic is a chemical agent that slows or stops the growth of microorganisms on external surface of the body and help to prevent infections.

Antiseptics should be distinguished from antibiotic that destroy microorganisms inside the body and from disinfectants which destroy microorganisms found on in inanimate (non-living) objects. Antiseptic & disinfectants are non-selective anti-infective agents that are applied topically.

Their activity ranges from simply reducing the number of microorganism to within safe limits of public health interpretations (sanitization), to destroy all microorganisms (sterilization), on the applied surface. However antiseptics are often refer to as skin disinfectants.

Most Chemical agents can be used as both an antiseptic & a disinfectant. The purpose for which it is used as both an antiseptic & a disinfectant. The purpose for which it is used is determined by its concentration. For example, Hydrogen peroxide6% solution is used for cleansing wounds, while stronger solution (>30%) are used in industry as bleach & oxidizing agents.

Classification of Antiseptics:

Antiseptics can be classified according to their chemical structure. Commonly used antiseptic groups include Alcohols, Quaternary Ammonium Compounds, Chlorhexidine & other Diguanides, Antibacterial dyes, chlorine & hypochlorite, Inorganic Iodine compounds, Metals, peroxides & permanganates, halogenated phenol derivatives & Quinolone derivatives. The following table lists some of the agents within these groups.

Uses of Antiseptics:

Antiseptic is mainly used to reduce levels of microorganisms on the skin & mucous membranes, The skin & mucous membranes of the mouth, nose& vagina are home to a large number of microorganism (which are normally harmless).

When the skin or mucous membranes are damaged or breached in surgery, antiseptic is used to disinfect the area & reduce the chances of infection. People who are treating patients with wounds or burns should wash their hands with an antiseptic solution to minimize the risk of cross infection.

Antiseptics are used for:

- **Handwashing:** chlorhexidine gluconate & povidone iodine solutions are often used in hand scrubs & hand rubs in hospitals settings. Alcohol in concentration>60% will destroy pathogens such as the SARS-CoV-19 VIRUS**.**
- **Pre -operative Skin disinfection:** Antiseptics applied to the operation site to reduce the resident skin flora. Caution should be used in facial use of solutions containing chlorhexidine, as these can injure the eye causing keratitis**.**
- **Mucous Membrane disinfection:** Antiseptic irrigation may be instilled into the bladder, urethra or Vagina to treat infections or cleanse the cavity prior to catheterization.
- **Preventing & Treating infected Wounds & burns:** Antiseptic preparations are available over the counter from your Pharmacist to treat minor cuts, abrasions & burns.
- **Treating Mouth & Throat Infections**: Dequalinium chloride has both antibacterial & antifungal properties & is the active ingredient in Antiseptic throat Lozenges.

RESULT: Understood the study about antiseptic & their marked products.

EXPERIMENT NO: 12

AIM OF THE EXPERIMENT:

To study Fumigating agent & its marketed Product.

THEORY:

It is a technique that employs various chemicals (fumigants) to eliminate pests & insects from homes, buildings & processed goods. The operation is hazardous & all fumigants are harmful to humans to some degree.

A fumigants is a chemical which, at a required temperature & pressure, can exist as a vapors or gas that, when released penetrates objects or enclosed areas in concentrations that are lethal to pest organism.

Fumigation techniques have great adaptability in pest control. They can be used to control wood-destroying insects in structures & furniture where liquid or dust formulation are ineffective or where these materials may cause damage. Under some conditions, fumigants can be applied to control burrowing rodent that can't be reached with other types of rodenticides. Most commonly, fumigants are used to control insects & diseases, weed & disease control in soil, commodity fumigations for insects in fresh & stored food products such as grains, fruits, vegetables, nuts & dried fruits & ground burrowing rodent control. Limited fumigations take place to control infestations of wood destroying insects in structures.

Fumigation may take place in a variety of locations at a customers home or storage facility or it can occur in a common carrier, such as truck or railway car.

One important factor to consider during fumigation is to take precautionary measures to stay away from the home or area that is being fumigated while the area is still sealed. Don't be in a hurry to return back to your home or place of business, but allow the area to be properly ventilated & cleaned before entering back into the premises. If your home or place of business is experiencing a pest infestation of any kind & required fumigation services.

TYPES & NATURE OF FUMIGANTS:

Gas Fumigation

It employs fumigants in their gaseous states for pest control. Gas fumigation is performed within enclosed chambers or by enclosing a space with a gas-proof covering.

This method is called space fumigation, ensure toxic fumigants are not dispersed to the external environment. Methyl bromide is a gaseous fumigant that is used to control rodent, termites, insects, nematodes & weeds.

Sulfuryl fluoride is a gas fumigant that is used to control pests in cereal grains, tree nuts & dry fruits. Gas fumigation must only be attempted after an area is cleared of humans & animals.

Solid Fumigation

This system & technique employs solid fumigants for insect control. It is carried out by sprinkling tablets, powders or pellets of measured quantities of fumigants. These are typically easier to use & safer than gaseous fumigants & are less harmful to the environment,

Aluminium Phosphide is a solid fumigants that eliminates pests & insects in all stages of development (eggs, larvae, pupae &adult).It is typically used for pest control in flour, tea, doffer, cotton & grain.

Calcium cyanide is a solid fumigants that reacts with water vapour to form hydrogen cyanide. It

effectively eliminate wide range of pests.

Liquid Fumigation

It employs for mold, pests & insects. Liquid fumigation is carried out by sprayers, which disperse large quantities of liquid over a desire area. Most liquid fumigants are toxic to humans, flammable & volatile. Liquid fumigation acts faster than solid fumigation. It is safe when performed outdoors or within an enclosed fumigation chamber. Examples of liquid fumigants include carbon disulfide, ethyl acetate chloroform, carbon tetrachloride, sulfuryl fluoride, ethylene dichloride & methyl bromide.

CHEMICAL USED FOR FUMIGATION:

Many types of chemicals are used for fumigation. Fumigants are used to control a broad spectrum of pest in many different settings including agriculture work, home pest control & industrial applications. Fumigation chemicals come in both solid & gaseous forms to accommodate a variety of pest control requirements.

Magnesium Phosphide:

It is dark grey solid that is typically used in a powder or granules form. This chemical produces phosphine gas when introduced to moisture or an acid. This highly toxic gas is typically used to fumigate agricultural commodities & to exterminate burrowing pests.

Methyl Bromide:

It is effective fumigants against a wide variety of pests, It is applied in either a gaseous or solid form depending on how & where it is used. Methyl bromide is most commonly used in agriculture settings for pests used as a residential fumigant as recently as 2006.

Sulfuryl Fluoride:

It is a pressurized liquid gas that is typically used for pest control in residential settings. This chemical is also used (less frequently) to control infestations in lumber & automobiles. In addition to being highly toxic in its gaseous state, physical contact with sulfuryl fluoride in its liquid state causes burns & severe skin irritation.

Some Marketed Fumigants are:

1 Methyl bromide (meth-o-gas 100)

2. Chloropicrin (chlor-o-Pic)

3. Aluminum phosphide (fumitoxin)

4. Magnesium Phosphide (magtoxin)

5. Sulfuryl fluoride (Vikane)

6. Carbon dioxide.

Application:

While the fumigants is being applied, all persons engaged in or associated with this operation should wear respirators (gas Masks). The only permissible exception to this rule concerns the operators working in the open or in some well ventilated place, under conditions in which any gas that escapes from the equipment is immediately diluted & dissipated. The respirators should not be removed until the workers indoor have reached fresh air, the fumigants has been completely discharged, & all the valves & piping have been closed to that no fumigants can escape from the system. During the application, unauthorized persons should not be allowed to approach or talk to the operators engaged in the discharge of the fumigants.

RESULT: Understood Fumigation Process.

EXPERIMENT NO: 13

AIM OF THE EXPERIMENT:

To study Antiviral Agent & its marketed Product.

THEORY:

A Larvicide (alternatively larvacide) or antiviral agent is an insecticide that is specifically targeted against mosquitoes. Larvicides may be contact poisons, stomach poisons, growth regulators, or (increasingly) biological control agents.

Larvicides are chemical designed to be applied directly to water to control mosquito larvae, adulticides are used in fogging & spraying to control adult mosquitoes. Synergists are not toxic to the mosquitoes themselves, but they make adulticides more effective. A variety of products available in market for the public & for professionals when it comes to mosquito control. Larvicide is a type of insecticide used to control mosquitoes indoors & outdoors around your home. They work by killing mosquito larvae before they can grow into adults. Some formulations work when they come into contact with the larvae.

Mosquito repellents are divided into two chemical classes, namely, synthetic chemicals such as DEET (N, N-diethyl-3-methylbenzamide), picaridin & plant derived oils, such as oil of lemon eucalyptus & oil of citronella.

Biological Control:

Bacteria are used for the control of mosquito larvae. Bacillus thuringiensis H 14 & Bacillus sphaericus. Available as wettable powder & granules which contain bacteria, spores & toxic crystals. Safe to environment, human being & animals but are expensive.

Bacillus thuringiensis H 14-gram positive, spore forming bacteria which is specifically acts against mosquito larvae. Produces endotoxin which after ingestion causes gut paralysis & leakage of contents into body cavity leading to death. It is applied at 0.5gm/sq.m 250gm of B.thuringiensis is mixed with 10L of water to make 2.5% suspension & sprayed at 1L over 50 sq.m every 2 weeks.

BACILLUS SPHAERICUS:

It also produces toxin which is more effective in polluted water suitable for treatment of breeding sites of Culex. 500gm of B. sphaericus with 10L of water to make 5% suspension & it is sprayed at 1L over 50 sq.m. Every 3 weeks.

OTHER BIOLARVICIDES:

- **Fungi-** Coelomyces, culicinomyces,
- **Nematodes-** Romanomermis cluici vorax & R.iyengari.

Marketed Products:

Bactivec, Bacticide, Aquabac, teknar, vectobac, larvx & VectolexCG.

Chemical Control:

Methoprene is an insect growth regulator agents that interrupts the growth cycle of insect larvae, preventing them from development beyond the pupa stage. They are usually applied to larger bodies of water in the form of time release formulations that can last from one to five months. Use of this larvicide does not pose an unreasonable health risks to humans or other wildlife & it will not leach into the ground water supply. Methoprene is moderately toxic to some fish, shrimp, lobster & catfish & highly toxic to some fish & freshwater invertebrates; it bio accumulates in fish tissues.

Marketed Products:

Abate & proVect.

Acoustic Control:

Sound energy transmitted into water at specific frequencies cause larvae air bladders to instantly rupture, severely damaging internal tissues causing death or latent effects prohibiting further maturity.

Environmental Control:

The most important step in reducing the number of mosquitoes (success depends on community involvement & multisectoral co-ordination)

- Elimination of breeding places (source reduction) like filling & leveling, drainage of breeding places.
- Proper disposal of wastes.
- Cleanliness in & around the house.
- Observing 'dry day'-intermittent irrigation.

LEGISLATIVE MEASURES:

Suitable laws & byelaws should be enacted & implemented for regulating storage/utilization of water by communities, various agencies & avoidance of mosquitogenic conditions at construction sites, factories.

RESULT: Antiviral agent & its marketed products are studied.

EXPERIMENT NO: 14

AIM OF THE EXPERIMENT:

To prepare chart/video or slides on corona virus about virus, way of spreading, precautions treatment etc.

THEORY:

Corona virus area large family of viruses which may cause illness in animals or humans. In humans, several corona viruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East respiratory syndrome (MERS) & severe acute respiratory syndrome (SARS). The most recently discovered corona virus causes COVID-19.

COVOD-19 is the infectious disease caused by the most recently discovered corona virus. This new virus & disease were unknown before the outbreak began in Wuhan, China in December2019

SYMPTOMS OF COVID-19:

The most common symptoms of COVID-19 are fever, tiredness & dry cough. Some patients may have aches & pains, nasal congestion, runny nose, sore throat or diarrhea. These symptoms are usually mild & begins gradually. Some people become infected but don't develop any symptoms & don't feel unwell. Most people about 80% recover from the disease without needing special treatment. Around 1 out of every 6 people who gets COVID-19 becomes seriously ill & develops difficulty breathing. Older people & those with underlying medical problems like high blood pressure, heart problems or diabetes are more likely to develop serious illness. People with fever, cough & difficulty breathing should seek medical attention.

CORONA VIRUS SPREAD:

PERSON TO PERSON TRANSMISSION

Experts believe the virus that causes COVID-19 spreads mainly from person to person. There are several ways this can happen.

- **Droplets or Aerosols:** This is the most common transmission. When an infected person coughs, sneezes or talks droplets or tiny particles called aerosols carry the virus into the air from their nose or mouth. Anyone who is within 6feet of that person can breathe it into their lungs.
- **Airborne transmission:** Research shows that the virus can live in the air for up to 3 hours. It can get into your lungs if someone who has it breathes out & you breathe that air in. experts are divided on how often the virus spreads through the airborne route & how much it contributes to the pandemics.
- **Surface transmission:** A less common method is when you touch surfaces that someone who has the virus has coughed or sneezed on. You may touch a countertop or door knob that's contaminated & then touch your nose, mouth, or eyes. The virus can live on surfaces like plastics & stainless steel for 2 to 3 days. To stop it clean & disinfect all counters, knobs & other surfaces you & your family touch several times a day.
- **Fecal-oral:** Studies also suggest that virus particles can be found in infected people's poop. But experts aren't sure whether the infection can spread through contact with an infected person's stool. If that person uses the bathroom & doesn't wash their hands, they could infect things & people that they touch.

Protection from Covid:

There are COVID-19 vaccines available & you are encouraged to be vaccinated when it becomes available to you. You should still try to limit your contact with other people. CDC guidelines suggest:

- Work from home
- Avoid travel especially if you live with older & poor health condition person that raises the chance of serious COVID-19 illness.
- Visit with family & friends by phone & computers.
- Maintain 6 feet distance from people.
- Wear a face mask when you go out.
- Wash your hands often.

Quarantine or isolate:

To stop the spread of corona virus people who are sick needs to self-quarantine or stay away from those who are well. Because you may not show symptoms right away, you should also self-quarantine if you know that you have come into contact with someone who has COVID-19.

- Stay at home
- Don't have visitors.
- Wash your hands often with soap.
- Don't share personal items like dishes, utensils & towels etc.

If you have tested positive for COVID-19 isolate yourself. If your symptoms get worse call your doctor or hospital before you go in follow their instruction to get medical help.

Medical treatment:

- Treatment for patients with mild / asymptomatic disease in home isolation.
- Patients must be in communication with a treating physician & promptly report in case of any worsening.
- Continue the medication.

Immediate medical attention.

- Difficulty in breathing
- Dip in oxygen saturation (sp O_2<94% on room air)
- Persistent pain /pressure in the chest.
- Mental confusion.

RESULT: Chart on corona virus is prepared & submitted.