**TRIBHUWAN UNIVERSITY**

**INSTITUTE OF MEDICINE**

**POKHARA NURSING CAMPUS**

**RAMGHAT-12, POKHARA**

**Lesson Plan on: Human immunodeficiency Virus**

**Submitted to: Submitted by:**

Respected madam, Himali Thapa

Saphalta Shrestha Roll no: 08

Lecturer BNS 2nd year

BNS 1st year

Date of subission: 2080/09/16

Lesson plan on Human immunodeficiency Virus

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| --- |
| Name of student teacher: Himali Thapa |
| Subject: Adult Health Nursing I |
| Unit: Common health problem of young Adult |
| Topic: Physical problem (Human Immunodeficiency Virus) |
| Date: 2080- 09-16 |
| Venue: BNS 1st year |
| Time:1-2PM |
| Duration: 1 hour |
| Number of participants: 36 |
| Level of participants: BNS 2nd year |
| Language: English + Nepali |
| Teaching/ Learning method: Brainstorming, interactive lecture, Discussion |
| Teaching, Learning media: PowerPoint, Whiteboard, poster |
| Name of supervisor: Respected madam,  Saphallta Shrestha |

**General Objective:**

At the end of teaching session, BNS 1st year student will be able to explain about Human Immunodeficiency Virus.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SN**  1.  2.  3.  4.  5.  6.  7. | **Specific objectives**  At the end of the teaching session, participants will be able to:  introduce  HIV  state the types of HIV  enlist the etiology and risk factors of HIV  Enlist the mode of transmission of HIV  classify HIV according to WHO  enumerate the different clinical manifestation of HIV  discuss different diagnostic test of HIV | **Content**   * Greetings * Introduction   . self  . topic  . objectives  . pretest  Introduction of HIV  Types of HIV  Etiology and risk factors of HIV  Mode of transmission of HIV  Classification of HIV according to WHO  Clinical manifestation of HIV  Diagnostic test of HIV | **Time**  3 min  2 min  2 min  3 min  5 min  5 min  5 min  10 min | | **Teaching/**  **Learning**  **Method**  Brainstorming  Question Answer  Interactive lecture  Interactive lecture  Interactive lecture+ discussion  Interactive lecture+ discussion  Lecture  Interactive lecture  Interactive lecture+ discussion | | **Teaching/ Learning**  **media**  picture  PowerPoint  Poster  PowerPoint  PowerPoint  PowerPoint  PowerPoint  PowerPoint | **Evaluation**  What do you know about HIV?  What is HIV?  What are the types of HIV?  What are the etiology and risk factors of HIV?  What are the mode of transmission of HIV?  What are the classifications of HIV according to WHO?  What are the clinical manifestations of HIV?  What are the diagnostic tests for HIV? |
| 8.  9.  10. | Discuss medical and nursing management of HIV  State the preventive of HIV  Summary of topic | Medical and nursing management  Preventive measures of HIV  Summarization  References  Question  Home assignment  Plan for next class | 15 min  5 min  3 min  1 min  1 min | Interactive lecture  Interactive lecture + discussion | | PowerPoint  PowerPoint | | What are the management for HIV?  what are the preventive measures of HIV? |

**UNIT: 4.1 Common health problem of young adult**

* **Physical problem;**
* Accidents
* HIV
* Hepatitis
* Tuberculosis
* Sub-fertility
* Pregnancy related complication

* **Psychosocial problem;**
* Substance abuse
* Suicide
* Homicide
* Depression
* Divorce
* Singlehood
* Unmarried mother

**Human Immunodeficiency Virus (HIV)**

**Introduction:**

HIV was first identified in 1981 in USA among homosexuals.In Nepal, first case of HIV/AIDS was diagnosed in 1988.HIV (human immunodeficiency virus) is a virus that attacks cells that help the body fight infection, making a person more vulnerable to other infections and diseases.

HIV is an acquired infection in which the HIV integrates itself into CD4 ( helper T4) cells, causing severe immune dysfunction.

HIV infection renders the person unusually susceptible to other life-threatening infections and malignancies.In its most serious form, HIV results in acquired immunodeficiency syndrome(AIDS)

**Epidemiology**

There were an estimated 39.0 million (33.1–45.7 million) people living with HIV at the end of 2022, two thirds of whom (25.6 million) are in the WHO African Region.

In 2022, 630 000 (480 000–880 000)people died from HIV-related causes and 1.3 million (1.0–1.7 million) people acquired HIV.

WHO, the Global Fund and UNAIDS all have global HIV strategies that are aligned with the SDG target 3.3 of ending the HIV epidemic by 2030.

**Types of HIV**

1. HIV type 1
2. HIV type 2

HIV Type 1

* Most common type in worldwide.
* Responsible for majority of HIV infection cases
* Usually progress to AIDS within 10 years.

HIV type 2

* Found in West Africa and also in European countries.
* Less Virulent, doesn’t tend to progress to aids as quickly as type 1.

|  |
| --- |
| **Comparison of HIV species** |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Species** | **[Virulence](https://en.wikipedia.org/wiki/Virulence" \o "Virulence)** | **[Infectivity](https://en.wikipedia.org/wiki/Infectivity" \o "Infectivity)** | **Prevalence** | **Inferred origin** |
| HIV-1 | High | High | Global | [Common chimpanzee](https://en.wikipedia.org/wiki/Common_chimpanzee" \o "Common chimpanzee) |
| HIV-2 | Lower | Low | West Africa | [Sooty mangabey](https://en.wikipedia.org/wiki/Sooty_mangabey" \o "Sooty mangabey) |

**Causative agent:** retrovirus (belonging the lentivirus subfamily)

## Risk factors

Behaviours and conditions that put people at greater risk of contracting HIV include:

* having condomless anal or vaginal sex;
* having another sexually transmitted infection (STI) such as syphilis, herpes, chlamydia, gonorrhoea and bacterial vaginosis;
* sharing contaminated needles, syringes and other injecting equipment and drug solutions when injecting drugs;
* receiving unsafe injections, blood transfusions and tissue transplantation, and medical procedures that involve unsterile cutting or piercing
* experiencing accidental needle stick injuries, including among health workers

**Mode of transmission:**

HIV can be transmitted via the exchange of a variety of body fluids from people living with HIV, such as blood, breast milk, semen and vaginal secretions. HIV can also be transmitted during pregnancy and delivery to the child.

People cannot become infected through ordinary day-to-day contact such as kissing, hugging, shaking hands, or sharing personal objects, food or water.

It is important to note that people with HIV who are taking ART and have an undetectable viral load  do not transmit HIV to their sexual partners.

HIV mode of transmission are:

* **Sexual transmission**: unprotected sexual contact with an HIV infected partner is the **most common mode of** **transmission.** Sexual activity provides an opportunity for contact with semen, vaginal secretions or blood, all of which have lymphocytes that may contain HIV.

**Heterosexual** has become **most common method** of infection for women.

During any form of sexual intercourse (anal, vaginal or oral), the risk of infection is greater for the partner who receives the semen, although infection can also transmitted to an inserting partner.

Sexual activities that involve blood, such as menstruation/trauma, lesion by other sexually transmitted disease( herpes, syphilis) significantly increases the likelihood of infection.

* **Contact with Blood and Blood products:** HIV can be transmitted during exposure to blood through drug using equipment.

Puncture wounds are the **most common means of work related transmission.**

The risk of infection is 0.3% to 0.4% (3 to 4 out of 1000) after needle stick exposure.

The **risk is higher** if the exposure involves blood from a patient with **high viral load, deep puncture wound**, needle with hollow bore and visible blood, **device used for arterial or venous or a patient who dies within 60 days.**

Splash exposures of blood on skin with an open open lesion present some risk but it is much lower than from puncture wound.

* **Perinatal transmission:** most **common route** of infection for **children.**

Transmission from an infected HIV-infected mother to her infant can occur through pregnancy, at the time of delivery or after birth through breastfeeding.

On average, 25% of infants born to untreated HIV-infected women will be born with HIV.

This means that 75% of these infants would not have been infected even without treatment.

**Pathophysiology**

Primary infection of cells in blood, mucosa

↓ Drainage to lymph node, spleen.

Infection established in lymphoid tissue e.g. L.N.

↓

Acute HIV syndrome, spread of infection throughout the body.

↓

Immune response and partial control of viral replication.

↓

Clinical latency

-Other microbial infections.

-Extensive viral replication and CD4 + cell lysis

↓

Depletion of CD4 + cells

↓

AIDS

**Clinical staging of HIV**

**WHO Clinical Staging System of HIV**

|  |  |
| --- | --- |
| **HIV- Associated Symptoms** | **WHO clinical stage** |
| Asymptomatic | 1 |
| Mild symptoms | 2 |
| Advanced symptoms | 3 |
| Severe symptoms | 4 |

Clinical Stage 1 – Asymptomatic

* **No HIV related symptoms and no signs on examination.**
* Persistent generalized lymphadenopathy ( painless enlarged lymph nodes >1cm in two or more non-contiguous sites excluding inguinal in the absence of known cause and persisting for three months or more.

Clinical Stage 2 – Mild symptoms

* Unexplained moderate weight loss (<10% of presumed or measured body weight)
* Recurrent respiratory tract infection (sinusitis, tonsilitis, otitis media and pharyngitis)
* Herpes Zoster
* Angular cheilitis
* Recurrent oral ulceration
* Papular pruritic eruptions
* Seborrheic dermatitis
* Fungal nail infections

Clinical stage 3 – Advanced symptoms

* Unexplained severe weight loss (10% of presumed or measured body weight)
* Unexplained chronic diarrhea for longer than one month.
* Unexplained persistent fever (above 37.5 degree Celsius intermittent or constant, for longer than one month)
* Persistent oral candidiasis
* Oral hair leukoplakia
* Pulmonary tuberculosis
* Severe bacterial infections (pneumonia, empyema, pyomyositis, meningitis or bacteremia)
* Acute necrotizing, ulcerative stomatitis, gingivitis or periodontitis
* Unexplained anemia (<8 g/dl), neutropenia (<0.5 x 109/l), and/or chronic thrombocytopenia (<50 x 109/l).

Clinical Stage 4 – severe symptoms

* HIV-wasting syndrome
* Pneumocystis pneumonia
* Chronic herpes simplex infection (genital or anorectal) for more than one month or visceral at any site.
* Esophageal candidiasis
* Extra pulmonary tuberculosis
* Kaposi’s sarcoma
* Cytomegalovirus infection
* HIV encephalopathy
* Recurrent septicemia
* Lymphoma (cerebral or non-Hodgkin)
* Symptomatic HIV-associated nephropathy or symptomatic HIV-associated cardiomyopathy.

**Clinical features**

**1. Acute Infection;**

Mild illness, fever, sore throat, rashes.

Window period: Period before antibodies are produced when tests are negative on standard antibody tests for AIDS.

**2. Asymptomatic Carrier Stage:**

Generalized LN (Lymph nodes) enlargement.

**3. AIDs related Complex:**

Diarrhea for > 1 month,

Fever, Night sweats,

Oral Thrush,

Enlarged spleen/Lymph nodes

**4. End Stage AIDS:**

Opportunistic infections are present like TB, Kaposi sarcoma, candida esophagitis etc.

**Diagnosis**

* History Taking
* Physical Examination
* **Laboratory investigation:**

**1.Virus isolation:** HIV can be **cultured from lymphocytes**(occasionally from other specimens) in the pheripheral blood.

**2.Serological test**

**An antigen/antibody test** performed by a lab on blood from a vein can usually detect HIV **18 to 45 days** after exposur**e.**

**-ELISA test (** It detects antibodies to HIV and is used for routine screening)Highly specific test that is close to 99.6% sensitive for HIV-1 antibodies.If serum is reactive, the patient is considered seropositive for HIV antibodies.

False positive are possible if it is from recent influenza, hepatitis B vaccines, multiparous women with multiple blood transfusion or multiple myeloma, alcoholic hepatitis.

**-western blot (** it is the confirmatory test for HIV infection)If ELISA came positive then it is confirmed by Western Blot technique, another more sensitive test for HIV-1 antibodies.

Like ELISA it relies on the production of antibodies and may not detect antibodies during early stage of infectio

**.Rapid test** ( rapid tests are simple, inexpensive and results are obtained within 30 minutes, though this test is less sensitive than ELISA)

Rapid HIV antibody test are being **more widely used** because of ease of use and convenience.

Many have comparable sensitivities to the ELISA and Western Blot.

**3.Viral Load:**

Measured periodically in HIV positive persons to assess their disease progression and to **monitor** the **effectiveness of antiretroviral therapy.**

It is aimed at reducing plasma HIV RNA level of below the limit of detection by assay.

**4. Non specific test:** The following parameters are used to detect immunodeficiency and to monitor therapeutic response.

* **Blood counts**

Leucopenia

Lymphocyte count less than 400/cmm

Thrombocytopenia

* **T-cell subset assay**

**CD4** count below **200/cmm**

**Normal CD4:CD8 ratio 2:1.** Reversed in **AIDS to 0.5:1.**

Measure the extent of immune damage that has occurred as a result of HIV infection and it’s complication.

CD4 cell counts are obtained on newly diagnosed patients to establish a baseline and every 3 to 4 months thereafter if counts are above 350/ mm and the patient is asymptomatic and not receiving any drug therapy.

Once drug is initiated, counts are monitored every 2 to 4 weeks initially and every 3 to 4 months if the patient is stabilizes.

CD4 cell counts are used in conjunction with viral load to predict the possibility of disease progression, determine when to start antiretroviral therapy, and monitor the effectiveness of treatment.

**Treatment: Antiretroviral therapy**

* Nucleoside Reverse Transcriptase Inhibitors (NRTI): Zidovudine, Lamivudine, Abacavir
* Nucleoside Analogue Reverse Transcriptase inhibitor (NtRTI): Tenofovir
* Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI): Efavirenz,
* Protease inhibitor (PI): Atazanavir, Indinavir, Lopinavir/Ritonavir
* Fusion inhibitors: Enfuvirtide
* Integrase inhibitors: Raltegravir
* Chemokine Receptor Antagonists (CCr5 Antagonists): Maraviroc

**Special treatment**

* Tuberculosis: Anti-tubercular drugs
* Fungal infection: Anti-fungal drugs
* Bacterial infection: anti-bacterial drugs
* Pneumo-cystitis: Trimethoprim, Sulfamethoxazole
* Post exposure prophylaxis for accidental needle sticks involve treatment with transcriptase inhibitors
* Anti-diarrhoeal therapy, Nutritional therapy

**Nursing management**

Assessment

Include identification of potential risk factors, including a history of sexual practices and IV/Injection drug use history.

Assess physical and psychological status.

1)Respiratory Status:

-Monitor for cough, sputum production, shortness of breath, orthopnea, tachypnea and chest pain.

2)Neurological status:

-Assess level of consciousness, orientation to person, place and time

3)Fluid and electrolyte status:

-Examine skin and mucous membrane for turgor and dryness.

-Asses for dehydration (increased thirst, decreased urine output, low blood pressure, weak rapid pulse)

-Assess electrolyte imbalance through laboratory investigations.

4) Nutritional status:

-Dietary history

-Factors interfere oral intake, such as anorexia, nausea, vomiting, oral pain or difficulty in swallowing.

-Patient’s ability to purchase and prepare food

-Weight history (change over time)

1. Skin and mucous membrane:

-Inspect daily for breakdown, ulceration and infection.

6)Level of knowledge:

-Assess the level of knowledge of friends and family regarding the transmission of disease.

**Nursing Diagnosis**

* Ineffective airway clearance related to increased bronchial secretions and decreased ability to cough related to weakness and fatigue.
* Pain related to impaired perianal skin integrity secondary to diarrhea.
* Activity intolerance related to weakness, fatigue,malnutrion
* Risk for imbalance nutrition less than body requirement related to decreased oral intake.
* Risk for infection related to immunodeficiency.

**Nursing Interventions**

* Improving airway:
* Assess respiratory status, mental status and skin color.
* Note and document presence of cough and quantity and characteristics of sputum.
* Encourage adequate rest to minimize energy expenditure and prevent fatigue.
* Assist in positioning (high or semi-flower’s) that facilitates breathing and airway clearance.
* Provide pulmonary therapy; coughing, deep breathing, postural drainage, percussion and vibration every 2 hour to prevent stasis of secretion and promote airway clearance.
* Reliving pain and discomfort:
* Assess patient for quality and severity of pain associated with impaired perianal skin integrity and peripheral neuropathy.
* Communicate about exacerbating and relieving factors.
* Encourage to use soft cushions or foam pads while sitting and topical aesthetic or ointments as prescribed.
* Instruct to avoid irritating food.
* Use non pharmacologic approaches, such as relaxation technique.
* Administer non-steroidal anti-inflammatory agents as prescribed.
* Decreasing sense of social isolation

- Assess patient usual pattern of social interaction

- providing information regarding modes of transmission of HIV

- Assist patient to identify and explore resources for coping

- Encourage in participation in diversional activities such as reading ,television, etc.

* Improving nutritional status:
* Assess weight, dietary intake.
* Instruct about ways to supplement nutritional value of meals (e.g., Add egg, milk)
* Based on assessment of factors interfering with oral intake, implement specific measures to facilitate oral intake.
* Control nausea and vomiting; eat easy to swallow food, encourage oral hygiene before and after meal.
* Do not schedule meals after painful or unpleasant procedures.
* Provide enteral or parenteral feeding to maintain nutritional status as indicated.
* Preventing infection:
* Instruct patient and care givers to monitor for signs and symptoms of infection.
* Monitor laboratory values that indicate the presence of infection such as white blood cell count.
* Maintain for aseptic technique for invasive procedures.

**Prevention**

* Using a male or female condom during sex.
* Being tested for HIV and sexually transmitted infections.
* Screen all blood and blood products.
* Follow universal precaution.
* Sharing of needles and shaving blades should not practiced.
* Prevent the transmission from mother to child.
* Post exposure prophylaxis.
* Providing counseling and appropriate HIV therapy to those who are infected.
* Increase access to HIV testing facilities in all health care setting .
* ncrease access to new HIV testing technologies.

**Summary**

HIV was first identified in 1981 in USA among homosexuals.In Nepal, first case of HIV/AIDS was diagnosed in 1988.HIV (human immunodeficiency virus) is a virus that attacks cells that help the body fight infection, making a person more vulnerable to other infections and diseases.

HIV is an acquired infection in which the HIV integrates itself into CD4 ( helper T4) cells, causing severe immune dysfunction. **Causative agent:** retrovirus (belonging the lentivirus subfamily)Risk factorsBehaviours and conditions that put people at greater risk of contracting HIV include:having condomless anal or vaginal sex;having another sexually transmitted infection (STI) such as syphilis, herpes, chlamydia, gonorrhoea and bacterial vaginosis.

**References**

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* Basavanthappa B. (2015), Medical Surgical Nursing volume 1, third edition, Jaypee Brothers Medical Publishers (P) Ltd, page no 168 to 191.
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**Question**

Write True/False

* HIV can be transmitted by hugging and shaking hands. ­\_\_
* Sexually Transmitted people are more prone to HIV infection. \_\_

Home assignment: Write about diagnostic tests for HIV.

Next class: we will discuss about Hepatitis in our next class

**THE END**