**CHAPTER ONE**

1. **0 DEFINITION OF THE INTERNSHIP**

An internship is a pre-professional experience that provides an opportunity to gain relevant knowledge and skills prior to starting out in a particular career.

**OBJECTIVES OF THE INTERNSHIP**

Or main objective was to blend theory with practice, others were

* To know the history of the health area, that of the indigenes and their cultural values.
* How to organize reagents, equipments and quality control measures employed in the lab.
* Receiving patients and general sample collection.
* Experience in good pipetting, weighing, and preparation of culture media.
* Routine urinalysis, stool analysis and culture.
* Rapid malaria Identification using the fluorescence microscope.
* The use of automated and/or manual techniques in full blood count, CD4/CD8 count.
* Techniques in bleeding and clotting time, bone marrow aspirate for leukemia, preparation of buffy coat for tumor cells.
* Routine serological diagnostic techniques using different test kits that employ the antigen antibody complexing principle.
* ABO and Rhesus blood grouping techniques, Hb electrophoresis and other hematological methods for HbS screening, standard cross matching procedures and blood banking.
* Spectrophotometric procedures and or colourimetric procedures used in the measurements of analytes such as creatinine, urea, sodium, potassium, calcium and diagnostic enzymes such as AST, ALT and hormonal values.
* Medical microbiological techniques such as Gram’s staining, Ziehl Neelsen staining technique and other microbial staining techniques.
* Medical mycology.
  1. **GEOGRAPHICAL LOCATION OF THE AREA**

Saint Padre Pio Hospital is situated in a quarter called Bonewonda, Akwa Nord on the Bonamoussadi road N° 118 found in Douala 1st sub division in the Wouri Division of the Littoral Region in Cameroon.This hospital is bounded to the North by Deido, to the south by Bonamoussadi, to the East by Douala 5th sub division and to the West by the banks of the River Wouri.

* 1. **HISTORY OF THE INDIGENES**

The indigenes are immigrants of Congo, who followed one of their ancestors BONGO who settled in Douala in a quarter called Bonewonda. At that time their main activities were agriculture and fishing, but today with advance development they are engaged with other activities.

**1.4 CULTURAL VALUES OF THE AREA**

The people of Bonewonda have the following beliefs

* If the male child eats inside the pot he will be powerless.
* Pregnant women should not eat eggs if not the child will end up stealing. They have as traditional dance the NGONDO, SEKE, ASSIKO and their main dish is “MIONDO and NDOLE”.

**CHAPTER TWO**

**The hospital setting**

**2.1 the hospital**

St. Padre Pio hospital started as a private clinic owned and run by **Dr.ARNOLD YONGBANG** a gynecologist**. In 2001** he decided to sell the clinic and he informed the Archbishop of Douala at that time **Christian cardinal TUMI**, who then hinted the Franciscan sisters about the possibility of getting a clinic in Douala**. On the 16th of June 2002** the agreement was made to buy the clinic. That day coincidentally happened to be the day **Padre Pio** was declared saint by **Pope John Paul II**. The superiors decided to name the health centre after **St.Padre Pio**.

**On the 16th of October 2002**, the first two sisters arrived: **Sr. Christa** **PADERLLER(**the present matron) **and Sr. Veronica LEM** accompanied by **Mr.SHEY Austin B**(the technician) and **Mr. Cyprian WIRSIY** to start off.

They started with one block, block A. on the **7th of January 2003** they had their first delivery. The health center was registered on the **31st December 2003** by the minister of public health with **Art N°4046** with the help of **Mr. Etienne**. The health centre finally became a hospital on the **8th of June 2009** following the declaration of the Minister of public health **André MAMA FOUDA** through the documents forwarded to him by the sisters. Now the hospital has extended to blocks B and C.

**2.1.1 Staff strength and bed capacity of the hospital**

The hospital has fifty eight workers including seven sisters and a bed capacity of eighty. The fifty eight workers are partitioned as follows:

* Five doctors (one gynecologist, one surgeon and general practitioners)
* Two nurses anesthetics
* Twelve diplome nurses
* Three breveté nurses
* Five midwives
* Fourteen nurses assistants
* Six lab technicians
* Four security guards
* Three word mates(cleaners)
* Two technician drivers.

**2.1.2 Functional departments of the hospital**

The functional departments of the hospital include;

-The laboratory,

-The maternity,

-The surgical ward,

-The children’s ward

-The men’s ward,

-The female’s ward,

-The administrative block,

-The laundry,

-The canteen,

-The pharmacy,

-The echography room,

-The consultation room.

**2.1.3 The organigram of the hospital**

MINISTRY OF PUBLIC HEALTH

DELEGATION OF HEALTH

DISTRICT MEDICAL OFFICERS

PROVINCIAL COUNCIL

MATRON

CHIEF MEDICAL OFFICER

STAFF REPRESENTATIVE

WARD AND DEPARTMENTAL CHARGES

WORKERS

PATIENTS

**2.2 THE LABORATORY**

**2.2.1 STRUCTURE OF THE LABORATORY**

The laboratory comprises three rooms. The first room consists of the parasitology and bacteriology benches. The second room is for VS, US, skin snip collection and fungal scrappings. The third comprises the biochemistry, serology, haematology bench and the central table for recording results. Outside the lab is a unit for blood collection and another for dispatching of patients’ results. The sterilization room is found upstairs.

Below is the schematic structure of the laboratory.

**2.2.2 LABORATORY STAFF STRENGTH**

The laboratory is made of one lab scientist and five state registered laboratory technician

**2.2.3 SPECIMEN FLOW CHART**

Patients were received at the collection room, their cards were collected and checked if they have paid for the test requested, if not they were sent back to the cashier. The patient’s name, address, and tests requested were registered in the main register, different tubes and containers were labeled depending on the test requested and the samples were collected and sent to the various benches in the laboratory. Patients who were referred to the lab for tests like VS, US, skin snip, had a specific room where the samples were collected. Samples for in- patients were collected by the nurses and sent to the laboratory for registration and analysis.

**2.2.4 LABORATORY ORGANISATION OF REAGENTS, EQUIPMENT AND QUALITY CONTROL**

**Organization of reagents**

Liquid reagents were placed on the shelf under the parasitology/bacteriology bench while powdered reagents were placed on the shelf under the bench carrying the incubator. The reagents for serology and biochemistry apart from test strips were stored in the refrigerator at a temperature of 2ºC to 8ºC. The strips were placed on the shelf under the serology bench.

**Major equipments in the laboratory**

\*The laboratory is made up of the following equipments

\*A drier,

\*A hot plate,

\*A urine chemistry analyser machine (the cybow reader)

\*Three light microscopes,

\*A fluorescent microscope (cytoscope),

\*A centrifuge,

\*Two electrophoretic machines,

\*Two incubators,

\*A coagulation factor analyser machine,

\*A distiller,

\*A rotator,

\*An ELISA washer,

\*An ELISA reader,

\*A spectrophotometer,

\*A full blood count machine,

\*A CD4+/CD8+ count machine,

\*Two LaserJet printers,

\*A DeskJet three in one printer,

\*A computer,

\*Two fridges,

\*Haemoglobinometers,

\*Glucometers,

\*A hot air oven,

\*An autoclave,

\*A BIOCARD Quant reader

**Quality control**

To ensure reliable results the lab staffs carry out quality control as follows:

* Testing of new kits with positive and negative control samples.
* The automatic washing of the full blood count machine six hourly with sodium hypochloride solution.
* Proper check of the results displayed on the screen.

**2.2.5 ANALYTICAL RUNS**

Various procedures were carried out on their respective benches, they include:

**COLLECTION BENCH**

Procedures carried out here include**:**

* Blood collection
* Skin snip
* Urine collection
* Stool collection
* Vaginal smear/high vaginal smear collection
* Urethral smear collection
* Semen collection
* Sputum collection

**1-Blood collection:**

**Venous blood collection**

The client was asked to sit comfortably. The tubes were then labelled depending on the test requested. Two swabs were prepared (one soaked in 70% alcohol and the other dry), a tourniquet was tight at the upper arm of the client, and he or she was asked to make a fist. A suitable vein was selected and the area cleaned with the wet swab. A needle syringe was used to puncture the vein with the bevel facing upward, the plunger of the syringe was pulled and Blood collected in the syringe. The tourniquet was removed and a dry swab was placed on the punctured area, the client was then asked to release the fist and the syringe removed, capped and the needle removed. The sample was then transferred into the various tubes.

**Capillary blood collection**.

The patients were asked to sit comfortably. The MP slide was labelled, an appropriate strip was inserted in the glucometer for fasting blood sugar and haemoglobinometer for Haemoglobin measurement. The ring finger was massaged and a wet swab was used to clean the finger. It was allowed to air dry. A lancet was used to prick the finger by the side. The first drop of blood was wiped off with a dry swab and a full drop of blood was then placed on the slide or on the strip depending on the test. For neonates the toe was massaged and cleaned with a wet swab, it was allowed to air dry and was pricked with a pricker. Blood was then collected using a capillary tube for CRP and a drop placed on the MP slide.

**2-Skin snip**

The patient was asked to move under the sun for 30minutes, after which the patient was asked to sit on a chair and educated on what was to be done. Then patient’s consent was sought. The patient was asked to undress depending on the area of collection. Either the shoulders or the buttocks were cleaned with 70% alcohol, a lancet was used to lift up the skin and a new blade used to cut off the skin while avoiding blood flow. The cut skin was transferred to a test tube containing normal saline.

**3- Urine collection**

A clean, labeled, leak proof container was given to the patient and he or she was instructed on how to collect midstream urine for routine analysis.

**4- Stool collection**

A clean stool bottle was given to the patient and he/she was instructed on how to collect a representative sample of the stool for routine analysis.

**5- VS/HVS collection**

Before collection the following questions were asked to the patient:

* If she is on her menses.
* If she has done douching.
* If she is a virgin.
* If she abstained from sexual intercourse for two days.

**Collection procedure**:

* The patient was asked to remove her pant and assume a gynecological position.
* A disposable speculum was inserted into the vagina up to the level of the cervix.
* The labeled swab was used to collect the mucoid substance from the cervix.
* The swab and the speculum were removed and the patient asked to dress up.
* A smear was made on a labeled slide for Gram’s staining and few drops of normal saline were placed into the tube for wet mount.

**6- Urethral Smear collection:**

The patient was educated on what was to be done.

* He was asked to pull down the pant
* The penis was massaged until a slimy liquid was observed, if not few drops of normal saline were dropped on the swab to moisten it.
* The swab was used to swab in the urethra.
* A smear was made for Gram’s staining.

**7- Semen collection:**

* The patient was asked the length of time he has abstained from sexual intercourse.
* A labelled container was given to the patient and he was instructed on how to collect the specimen by masturbation or coitus interuptus and to make sure he collects the first shooting fluid.
* The time of collection and the time the specimen arrived the lab were recorded.
* The specimen was allowed to stand for approximately one hour for liquefaction to take place, after which analysis was done.

**8– Sputum collection:**

* Three leak proof screw containers were labelled for the patient
* The first container was given to the patient to make a deep breath and cough from within.
* The second one was given to the patient to cough very early in the morning without eating.
* The third one was given after the second to produce sputum in the hospital.
* It was then smeared and Ziehl Nelsen staining technique was done to look for Acid Fast Bacilli.

**Parasitology bench**

procedures carried out on this bench include:

* MP detection.
* Stool analysis
* Urine analysis
* Vaginal smear analysis
* Skin snip observation (for cutaneous microfilaria)

**Malaria Parasite detection** (using the fluorescence microscope):

**Principle:** The slide is coated with a dye called fluorescein, which Coats the DNA of the parasite, and when ultraviolet light is passed through, it fluoresces and is seen as shiny tiny dots (stars).

**Procedure:**

* A slide was labeled with the patient’s number.
* A drop of venous or capillary blood was dropped on the central portion of the slide coated with the dye.
* It was covered with a cover slip and allowed for 5minutes
* It was then observed under the fluorescent microscope using the 40X objective and graded as follows:

1-10 parasite per 100 high power field (+)

11-100parasites per 100 high power field (++)

1-10 parasites per high power field (+++)

Greater than 10 parasites per high power field (++++).

**Stool analysis**

A slide was labelled with the patient’s number and the consistency of the stool. A wet mount was prepared by emulsifying a small portion of the stool in a drop of normal saline, the smear was then covered with a cover slip. The slide was then placed under the microscope, focused and observed using 10X objectives. Confirmation was done using 40X objectives.

**Urinalysis (ECBU)**

After the biochemistry of the urine sample was done, about 5ml of the sample was centrifuged and the supernatant discarded. A drop of the sediment was placed on the slide. It was then covered with a coverslip, mounted on the microscope and observed under 10X objective. Confirmation was done using 40X objective of the light microscope.

**Vagina swab (PCV) observation**

After collection, a small quantity of normal saline was introduced into the swab’s tube. The vagina swab was then introduced into the normal saline and allow to stand while waiting for the observation time. The swab was rinsed in the normal saline and, using the swab, a drop of the liquid was placed on the slide and the coverglass placed on top of it. The preparation was observed microscopically.

**Skin snip**

**Procedure**:

A small volume of normal saline was pipetted into a test tube and the skin snip introduced into it and centrifuged at 3000 rpm for five minutes. A drop of the sediment was placed on a slide and observed microscopically for cutaneous microfilariae. A drop of blood flowing from the site of skin snip collection was pipetted on to a glass slide and observed microscopically for blood microfilariae.

**Haematology bench**

Procedures carried out on this bench include:

* Full Blood Count
* CD4/CD8 count
* ABO Blood grouping
* Hb electrophoresis
* Erythrocyte Sedimentation Rate
* Coagulation factors (PT, APTT)

**Full Blood Count (using the ERMA inc – automatic full blood count machine)**

**Principle:**

The machine has an inbuilt system in which washing reagents (sodium hypochloride solution), waste removal, diluting factors for the various blood cells functions automatically. When the machine is switched on, there is automatic washing with sodium hypochloride solution. Full blood count also known as **HAEMOGRAM** is a test that count all the parameters in a whole blood sample (eg WBC, RBC, platelets etc).

**Procedure:**

* An EDTA- blood sample was well mixed using the swing roller mixer for approximately 10minutes.
* The patient’s name and number was entered in the machine.
* The sample was introduced in the machine and was aspirated automatically.
* Counting was done automatically and the results displayed on the screen were then printed.

**ABO blood grouping**

Anticoagulated blood and monoclonal antibodies (commercially prepared antisera) were used to detect the presence of antigens on the surface of the red cells.

**Procedure:**

* Four drops of blood were placed separately in a white tile
* The corresponding anti-sera (Anti A, Anti B, Anti AB and Anti D) were added to the respective wells.
* It was mixed, rocked for two minutes and observed for agglutination.
* The presence of agglutination indicated that the corresponding antigen was present.

**Erythrocyte Sedimentation Rate (ESR)**

**Principle:**

The erythrocyte sedimentation rate (ESR), measures the settling of erythrocytes in diluted human plasma over a specified period of time. This numeric value is determined (in millimeters per hour) by measuring the distance from the bottom of the surface meniscus to the top of erythrocyte sedimentation in a vertical column containing diluted whole blood that has remained perpendicular to its base for 60 minutes. Various factors affect the ESR, such as RBC size and shape, plasma fibrinogen, and globulin levels, as well as mechanical and technical factors.

The ESR is directly proportional to the RBC mass and inversely proportional to plasma viscosity. In normal whole blood, RBCs do not form rouleaux, the RBC mass is small and therefore the ESR is decreased (cells settle out slowly). In abnormal conditions when RBCs can form rouleaux, the RBC mass is greater, thus increasing the ESR (cells settle out faster).

**Procedure:**

* The EDTA blood was well mixed.
* The westergreen tube was introduced into the blood tube until blood reaches the mark.
* The tube was allowed to stand vertically on a westergreen stand for one hour.
* The results were read twice at an interval of an hour.

**CD4 (Cluster of Differentiation)**

This was done using the cyflow counter that operates on the principle of flow cytometry which uses illuminating light source consisting of a laser (green or blue) that emits a monochromatic beam of light, fixed at 488 nm or 518 nm. As cells flow in a single file past the intersection of the light beam, light is scattered in various directions. Fluorochrome labelled monoclonal antibody associated with the CD4 cells become excited by the laser and a fluorescent emission results. The resulting signals are processed to gather information about the relative size of the cell (forward light scatter), its shape or internal complexity (side light scatter) and then results displayed on the screen.

**Procedure:**

* 20µl of whole blood(EDTA as anticoagulant) was pipette in a partec test tube
* 20µl of CD4 monoclonal antibody was added, mixed and incubated for 15mins in the dark
* 800µl of no lyse buffer was added. The preparation was mixed gently. The sample was then analysed on a partec device and the results were displayed on the screen.

**Hb ELECTROPHORESIS (using cellulose acetate paper)**

**Principle:**

Electrophoresis is the movement of charged particles in an electric field. The principle is based on the movement of charged particles in an electric field when subjected to electrical voltage. Different normal and abnormal haemoglobins show different mobility of migration patterns in an electric field at a fixed pH 8.5.

**Procedure:**

* EDTA blood was centrifuged at 3000rpm for 20mins and the plasma and buffy coat removed
* The red cells were washed three times in physiological saline
* Six drops of the haemolysate reagent (distilled water) was added to one drop of the packed red cells
* It was then allowed to stand for one minute
* The sample and the control were applied on the wick
* The wick was placed in the electrophoretic chamber ensuring that both sides of the wick are dipped in the buffer.
* Then it was allowed to migrate for 30mins at 300volts.
* The results were read and compared with the control.

**Serology bench**

The various tests carried out on this bench are:

* TPHA/VDRL
* ASLO/RF
* WIDAL
* CRP/hsCRP
* HIV (determine and bioline)
* HBsAg/HCV
* *H. pylori*
* Blood Pt
* ELISA
* **ASLO,RF,VDRL**

These tests used antigen suspensions to detect presence of its corresponding antibodies in patient’s serum.

**Procedure:**

* 50µl of the patient’s serum was pipetted on a tile
* One drop of the antigen suspension was added,
* The preparation was mixed and rocked for two minutes
* It was then observed for agglutination.
* If positive, titration was done (double dilution) and the titre recorded.
* **CRP**

**Principle:**

The CRP reagent is a suspension of polystyrene latex particles, coated with the gamma globulin fraction of anti human CRP specific in serum. When it comes in contact with the human CRP of a concentration equal or greater than 6 mg/l, there is visible agglutination indicating a positive result. When the CRP concentration is less than 6mg/l, there is no agglutination.

**Procedure:**

The reagent was brought to room temperature prior to use. 50µl of the sample plasma or serum was placed on a black tile and a drop of the reagent placed beside it. The two were mixed together and allowed to rotate for two minutes. The tile was read for agglutination. When there was agglutination, the titration was done by double dilution in saline and the titre reported.

* **High sensitive CRP (hsCRP)**

**Principle**

The BiocardTM hsCRP test is based on immunochromatography. The reaction takes place in a nitrocellulose membrane. A CRP-specific monoclonal antibody has been applied to the membrane to form test reaction zone. The other antibody is bound to coloured gold particles to form the label, which is applied on the filter. CRP in the sample reacts with the label antibody. In the test zone the testing is performed by adding 3 drops (approximately 30 µl) of diluted whole blood sample into the round sample well of the BiocardTM testing device. The sample flows through the membrane in 15 minutes. The result can then be read with the Biocard Quant reader unit. The intensity of the test line depends on the concentration of CRP in the sample.

**The widal test**

**Principle**

The Widal test is applied for the diagnosis of enteric fever that includes typhoid and paratyphoid fever caused by *Salmonella typhi* and *Salmonella paratyphi* respectively. When the coloured,smooth, atternuated widal antigens suspensions are mixed/incubated with patient’s serum, anti salmonella antibodies present in serum reacts with the antigen suspensions to give agglutination. Agglutination is a positive test result indicating the presence of anti salmonella antibodies in the patient’s serum. No agglutination indicates negative test results.

**Procedure:**

* All the reagents were brought to room temperature.
* 20µl of the patient’s serum was pipetted into six test circles of the tile.
* A drop of each antigen suspension (TO,TAO,TBO,TH,TAH,TBH) was placed beside the corresponding drops of serum.
* The two drops were mixed and rotated for exactly two minutes after which the tile was observed for agglutination.
* When no agglutination was observed the test was referred to as a negative test.
* The antigen suspension that showed agglutination was then titrated by double dilution of the serum.

**TPHA, HIV, HBsAg/HCV,H. pylori, Blood Pt**

**Principle:**

These test strips are coated with antigens or antibodies to detect the presence of antibodies or antigens in serum, plasma or whole blood.

**Procedure:**

50µl of the patient’s sample was pipetted and placed on the test application area of the strip and allowed to migrate by chromatographic method. Within 15minutes the appearance of a double band indicated positive results while a single band indicated negative result or invalid results. The absence of bands indicated an invalid result.

**ELISA (HIV, CHLAMYDIA, HSV 1&2, TOXO AND HORMONES)**

**Principle:**

The solid phase of a microtitre well is coated with antigens which has the ability to maintain its immunologic properties and is used to detect antibodies in patient sample.

**Procedure:** the procedures were carried out following the manufacturer’s instructions.

**Biochemistry bench**

The various assays carried out on this bench include:

* SGOT/SGPT
* Uric acid
* Urea
* Electrolytes (Mg2+, Ca2+,Na+ and K+)

**Procedure:** these tests were done following the manufacturer’s instructions.

**Bacteriology bench**

Procedures carried out on this bench include:

1. Media preparation:

The various media were prepared following the manufacturer’s instructions while maintaining asceptic conditions.

1. Smear preparation:

* For US and VS, after collection, the sample was smeared on the slide and allowed to air dry.
* For urine, a drop of the sediment was smeared on the slide and allowed to air dry.
* For sputum, a Bunsen burner was lighted and the smear was done behind the Bunsen flame.

1. **Staining procedures:**

**Gram staining**

**Principle:** it is based on the difference in the cell wall composition of bacteria. Some bacteria have a thick peptidoglycan layer(Gram+ bacteria) while others have a thin peptidoglycan layer(Gram- bacteria). When the primary stain is applied, both pick up the stain, when decolorizing with alcohol, those with thick peptidoglycan layer do not lose the stain and appear blue or purple while those with thin peptidoglycan layer easily lose the stain and pick up the secondary stain and appear pink or red.

**Procedure:**

* The slide was placed on the staining rack and Gentian violet was applied for thirty to sixty seconds and then rinsed with tap water.
* Lugol’s iodine was applied for thirty to sixty seconds and rinsed with tap water.
* The smear was decolourised with 70% alcohol and rinsed with tap water.
* Diluted carbol Fuschin was then applied for two minutes, the smear was rinsed and allowed to air dry.
* The slide was then observed with the oil immersion objective of the microscope and the type of Gram organism reported.

ZIEHL NEELSEN TECHNIQUE

For Ziehl Neelsen technique, the sputum was smeared on a slide and fixed by passing over a flame three times. The slide was stained with concentrated carbol fuchsin for 5 minutes while heating until vapour rises. The preparation was then washed. It was decolorised with 3% acid alcohol for 3 minutes and washed. It was then counterstain with methylene blue for 1 minute and washed with tap water. The slide was air dried and observed using oil immersion objective for the presence of acid fast bacilli.

1. **Culture**: CLED and MCA were used for urine culture, SSA for stool, Manitol Salt Agar (Chapman’s medium) and SDA for VS,MHA and SDA for antibiogram and antifungigram respectively. In suspected cases of mycoplasma, the mycoplasma system plus was used as follows:

**MYCOPLASMA SYSTEM PLUS**

**Principle:** The Mycoplasma System *plus* is a 24-well system containing desiccated biochemical and antibiotic substrates. MYCOPLASMA SYSTEM *Plus* allows the detection, semi-quantitative count, presumptive identification and susceptibility test of *Mycoplasma hominis* and *Ureaplasma urealyticum* isolated from clinical samples and the detection and presumptive identification of the microorganisms most frequently isolated from vaginal and urethral swabs and seminal fluid, such as *Trichomonas vaginalis* and Candida spp.

**Procedure:**

The kit is provided with microtitre well plate and its sterile normal saline.

* After collection the swab was inserted into the sterile normal saline and allowed to stand for five minutes.
* 200 µl of the solution was pipetted into each well of the microtitre plate.
* All the wells except well sixth were filled with 200 µl of wax (Vaseline) and incubated for 24-48 hours and the results read and recorded according to the manufacturer’s manual as seen on the next page.

**2.2.6** **STATISTICS**

**Statistics of parasitic infections of the period 23rd April to 18th May 2012**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NUMBER OF PATIENTS | ORGANISMS IDENTIFIED | NUMBER OF INFESTED CASES | NUMBER OF NON INFESTED CASES | PERCENTAGE OF INFESTED CASES | PERCENTAGE OF NON INFESTED CASES |
| **250** | **Yeast cells** | **151** | **99** | **60.4** | **39.6** |
| ***Entamoeba histolytica*** | **11** | **239** | **4.4** | **95.6** |
| ***Giardia lamblia*** | **1** | **249** | **0.4** | **99.6** |
| ***Entamoeba coli*** | **8** | **242** | **3.2** | **96.8** |

STATISTIC OF CRP AND WIDAL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TEST** | **Number of patients** | **Positive cases** | **Negative cases** | **Percentage of positive cases** |
| **CR P** | **310** | **98** | **212** | **31.6** |
| **WIDAL** | **360** | **120** | **240** | **33.33** |
| **TOTAL** | **670** | **218** | **452** | **64.93** |

STATISTIC OF HIV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gender** | **Number of patients** | **Positive cases** | **Negative cases** | **Percentage for positive cases** |
| **Adult male** | **60** | **7** | **53** | **11.67** |
| **Adult female** | **83** | **14** | **69** | **16.87** |
| **Total** | **143** | **21** | **122** | **14.69** |

STATISTIC OF MALARIA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **age group** | **Number of patients** | **positive cases** | **negative cases** | **percentage of positive cases** |
| **new born to 6 month** | **450** | **50** | **400** | **11.11** |
| **Infants 7 months to 5 years** | **184** | **64** | **120** | **34.78** |
| **Children at school age 5 to 15 years** | **98** | **21** | **77** | **21.43** |
| **Adults >15years** | **123** | **22** | **101** | **17.89** |
| **Pregnant women** | **221** | **40** | **181** | **18.1** |
| **Total** | **1076** | **197** | **879** | **103.31** |

**Percentage positive cases=18.31%**

**CHAPTER THREE**

**DISCUSSION, CONCLUSION AND RECOMMENDATION**

**3.1 DISCUSSION**

From the statistics above, although Widal is having the highest percentage of positive cases, the increasing order of prevalent was: Malaria, HIV and Typhoid. This could be because most patients for widal were coming for control. Malaria being the most prevalent could be due to negligence, in hygienic conditions and climate which provide a suitable breathing grounds for mosquitoes. That of typhoid could be due to in hygienic conditions. For HIV it is mostly due to poverty and negligence.

* 1. **CONCLUSION**

St. Padre Pio hospital is a place for laboratory students to practise, this is due to the cordial relationship between the Staff and the students, the ability for students to practice freely, and to learn French as far as the Laboratory is concerned. Other skills we acquired were:

* Usage of automated machines (Cyflow,spectrophotometer,Full Blood Counter, ELISA Machine)
* Fluorescence microscopy
* Collection of VS, US, collecting skin snip for microfilaria
* Blood collection from neonates.
  1. **RECOMMENDATION**

For the time spent in this hospital, we observed and recommend the following:

* Laboratory staff should collect samples for laboratory analysis not nurses.
* Applicator sticks should be provided for mixing of antigen suspensions/serum.
* seperating the microbiology bench from the parasitology bench.

To the school administration.

* The internship period should be added so as to provide time for students to pass through all the benches.
* Culture should be requested for typhoid instead of widal.