Mercy Malaysia – Malaysian Orthopaedic Association Collaboration

Project Name: MM-MOA Humanitarian Project Collaboration

Location: Ormoc, Leyte Island, Philippines

Date: 4th Jan 2014 – 17th Jan 2014

Outline of Report

Background:

Typhoon Haiyan devastated much of Leyte Island in November 2013. Ormoc is a large city on Leyte island and its only public hospital, Ormoc District Hospital (ODH) sustained 90% damage with major flooding and devastation to its wards and operating theatre. Mercy Malaysia assisted in repairing the roof the wards and operating theatre and by 1 month post-typhoon, both were functioning.

The hospital offers services in Obstetrics and Gynaecology, Internal Medicine, Paediatrics and General Surgery. Their surgical services are made up of 2 general surgeons, 2 anaesthetists and 1 orthopaedic surgeon. However the orthopaedic surgeon had suffered loss of his house and extended family's houses thus he was unable to return to work. On our arrival the orthopaedic ward was full with overflow of patients into the corridors and surgical wards.

Objectives:

1. To support orthopaedic services post-typhoon Haiyan
2. To assist in reducing the number of patients in the overcrowded wards
3. To establish links with the local district hospital (ODH)
4. To facilitate exchange of ideas with the local district hospital (ODH)

5. Assess Mercy Malaysia's orthopaedic equipment with suggestions to delete or add essential equipment for future MM deployments
6. Assess flowchain of orthopaedic plates, screws, pins for possible future advanced orthopaedic support (ie local implant distributors, companies)
7. Assess future projects with Malaysian Orthopaedic Association and Philippines Orthopaedic Association with regards to teaching / subspecialised orthopaedic services

Key Activities:

1. Daily ward rounds in ODH for the orthopaedic ward
2. Daily prioritizing of a list of operative cases for both orthopaedic emergency and elective cases
3. Support Emergency Room in dealing with orthopaedic cases - eg CMR (closed manipulation and reduction), open fractures, toilet suturing
4. Assess cases in Emergency Room which may require orthopaedic surgical intervention
5. Conduct orthopaedic clinic for wound follow-up and fracture care
6. Undertake daily dressings for wounds and diabetic feet
7. Support any general surgical / medical patients with wounds
8. Receive orthopaedic referral cases from OPD (outpatient department)

Key Results:

1. Wound dressings and management of all orthopaedic wounds in ODH
2. Open reduction and internal fixation / external fixation for 10 patients
3. Wound debridements for 15 patients
4. Amputations for 4 patients
5. Severe contracture release and skin grafting for 1 patient

From Jan 4th till Jan 9th, the first surgical team carried out 19 orthopaedic procedures. An average of 3 cases were done each day with the team working back to back from 8am to 8pm daily. With such a high turnover, the orthopaedic cases were nearly all mopped up. From Jan 12th till 17th, the second surgical team commenced their operations. We did a **grand total of 32 operations** in 12 days.

Team Composition:

Orthopaedic Team Lead and Coordinator:	Dr Shalimar Abdullah
TEAM 1 (Jan 4th – 10th)	
Primary Surgeon:	Dr Nor Hazla Mohamed Haflah
Assistant Surgeons:	Dr Ikraam Ibrahim / Dr Amir Adhan
OT Scrub Nurse:	SN Norizan Jusoh
OT Circulating Nurse / Anaes Nurse:	SN Melvin de la Torres
Anaesthetist:	Dr Shahridan Fathil / Dr Amir Adhan
TEAM 2 (Jan 12th-17th)	
Primary Surgeon:	Dr Mohamed Ashraff Mohd Ariff
Assistant Surgeon:	Dr Muhammad Ilyas Muhammed Ali Noor
OT Scrub Nurse:	SN Mohd Zulkarnaeen Mohd Yusoff
Anaesthetist:	Dr Mafeitzeral Mamat

LOCAL HOSPITAL (ODH) HOSTS:

Chief of Hospital	Dr Maria Lourdes Banquesio
Hospital Administrator	Ms Brenda
Orthopaedic Surgeon	Dr Henry Salubon
Anaesthetists	Dr Vanessa Pelikana
	Dr Donna

MERCY MALAYSIA SUPPORT STAFF

Relief Officers:	Mr Saw Yu-Shen
	Ms Hayati
Health Coordinator:	Ms Masniza Mustaffa

Summary of Selected Cases:

Case 1 (BS)

One 2 year old baby boy with a severe burn contracture of his right knee and ankle had to be done in the private hospital due to inadequate facilities of general anaesthesia in Ormoc District Hospital (the GA machine was damaged during the typhoon). The patient's house burnt down and he was injured. However with no available specialist treatment he was unable to walk and family lived in much shame covering his disability as much as possible. Other international teams had seen the boy but no attempt of surgery due to the severity of the case. We were successful in releasing the contracture with bilateral FTSG from the groin and right antecubital fossa. Since this was an elective case requiring 4 hours of surgery, we felt it was safer for the child undergo the operation in the private hospital.

Case 2 (JN)

18-year-old male who was allegedly involved in motor vehicle accident. He sustained severe injury to his right foot with a large laceration of the dorsum of the foot. Radiograph revealed fracture dislocation of the first tarsometatarsal joint and fracture dislocation of the 2nd metatarsal bone. On our first consultation in the ward the patient was treated with dressing and antibiotics for 6 days. He underwent immediate wound debridement with application of backslab. Three days later he underwent wound debridement and K wiring of the first ray to increase stability. The K wiring procedure was difficult since we were required to use Borsh drill. Thus, only K wiring of the first ray was attempted. Due to the extent of the injury it was difficult to do ward inspection without anaesthesia. Therefore in the immediate future, wound inspection would have to be performed under anaesthesia. The long term plan for this patient is to prevent infection. I anticipate further debridement is required. If this can be achieved the next step is for skeletal reconstruction and skin closure either with skin graft or flap depending on the extent of skin and tissue loss post debridement.

Case 3 (MV)

A 40-year-old lady who was allegedly shot by her boyfriend. She sustained open fracture left tibia and fibula (Grade 3B). At the first consultation the patient treated with a splint and antibiotics. She underwent immediate surgery on 4th January. Intra-operatively the wound was foul smelling with presence of pus and maggots. There was severe tissue loss as well as necrosis. After debridement, backslab was applied. Due to lack of instruments at that stage we were unable to proceed with external fixation. She underwent external fixation the next day. However, our external fixator set was not complete lacking various items thus were unable to construct a

stable external fixator. Consequently, we supplemented it with a backslab. As with the first case she will require further wound debridement under anaesthesia. If the infection is overcome it may be possible to salvage her limb. For this she would require plastic surgeon to perform a flap. She would also need a trauma surgeon or an orthopaedic surgeon that specializes in major bone loss to reconstruct the tibia and fibula. In the event that limb salvage is considered, the estimated time of recovery is no less than 6 months although most likely up to 1 year. She requires intense and aggressive physiotherapy and rehabilitation. There is a also no guarantee that the limb will not be overwhelmed by infection making limb salvage impossible. Patient herself request that we try to save her limbs. The second option is the to perform an amputation whereby the patient can go back to her daily activity sooner and with less expense.

Case 4 (AP)

A 42-year-old gentleman who sustained an open fracture of the left tibia on 31st December 2013. He was treated with a splint. He underwent wound debridement on 4th January and plating of the tibia on 8th January. We aided him by donating a broad dynamic compression plate (DCP) as well as intravenous antibiotics. He had not received antibiotics because he was unable to afford it. However, the length of the plate was inadequate since we had no further supply of a longer plate.

Case 5 (NT)

A 27-year-old gentleman who sustained an open fracture of the right femur. He was treated on skin traction. He underwent debridement on 4th Jan and plating of the femur on 7th January. We aided him by donating a broad (DCP). As with case 4 the plate length was inadequate due to lack of supply.

Case 6 (JM)

A 11-year-old girl who sustained a large laceration wound on her left leg extending down her left foot. She underwent wound debridement on 5th January. At the last follow up was clean. The long term plan for her is to continue dressing with Acticoat dressing which we donated to her family.

Case 7(MA)

A 23-year old gentleman sustained open fracture of the left tibia. He underwent wound debridement and application of backslab on 6th January and later plating of the tibia on 9th January. We donated a broad DCP for the procedure.

Case 8 (AS)

A 8-year-old boy sustained a closed fracture of the right femur 3 weeks prior to our consultation was put on skin traction. On examination the fracture site was still mobile with limb length

discrepancy of 3cm. He underwent plating right femur on 6th January. We donated a narrow DCP for the procedure.

Case 9 (D)

A 57-year-old gentleman was admitted with infected left diabetic foot ulcer. His surgery was initially postponed due to low Hb. The patient was required to buy blood for transfusion prior to surgery. He underwent above knee amputation on 6th January.

Case 10 (AS)

A 56-year-old lady presented with infected right diabetic foot ulcer. The initial plan was to perform a ray amputation. However, due to the extent of the disease, a below knee amputation was performed.

Case 11 (DY)

A 24-year-old gentleman sustained a closed fracture of the right femur. He underwent plating of the right femur on 9th January. We donated a broad DCP for the procedure.

Case 12

A young boy who previously had wound debridement of his right calf was scheduled to have SSG. However, the patient declined surgery and prefer to have long term dressing with Acticoat which was donated to him.

TEAM 1: JAN 4th - 10th 2014

NAME	AGE	DIAGNOSIS	TREATEMNT	IMPLANT	DATE	ANAESTHESIA
Monaliza Villamino	40	Open fracture left tibia fibula (Grade 3b)	Wound debridement		4-Jan	Spinal
Jimmy Noya	18	Open fracture dislocation right 1st TMTJ and 2nd MTB (grade 3b)	Wound debridement		4-Jan	Spinal
Alfredo Felipe	42	Open fracture left tibia (Grade 1)	Wound debridement		4-Jan	Spinal
Noel Tabaranza	27	Open fracture right femur	Wound debridement		4-Jan	Spinal
Monaliza Villamino	40	Open fracture left tibia fibula (Grade 3b)	external fixation	AO External fixator (Lower limb)	5-Jan	Spinal
Jocelyn Matagas	11	Laceration wound left leg	Wound debridement		5-Jan	Spinal
Balsa	2	Burn contracture right knee and akle	Contracture release/ FTSG		5-Jan	GA
Mark Anthony	23	Open fracture left tibia (Grade 1)	Wound debridement		6-Jan	Spinal
Andre Sesnorio	8	Closed fracture right femur	Plating	Narrow DCP	6-Jan	Spinal
Desario	57	Infected left diabetic foot ulcer	AKA		6-Jan	Spinal
Noel Tabaranza	27	Open fracture right femur	Plating	Broad DCP 9 hole	7-Jan	Spinal
Jimmy Noya	18	Open fracture dislocation right 1st TMTJ and 2nd MTB (grade 3b)	K wiring,wound debridement		7-Jan	Spinal
Alicia Salino	56	Infected left diabetic foot ulcer	BKA		7-Jan	Spinal
Monaliza Villamino	40	Open fracture left tibia fibula (Grade 3b)	Wound debridement		8-Jan	Ketamine
Alfredo Felipe	42	Open fracture left tibia (Grade 1)	Plating	Broad DCP 8 hole	8-Jan	Spinal
	17	laceration wound right leg	Wound debridement		8-Jan	Ketamine
Donald Yap	24	Closed fracture right femur	Plating	Broad DCP 9 hole	9-Jan	Spinal
Mark Anthony	23	Open fracture left tibia (Grade 1)	Plating	Broad DCP 8 hole	9-Jan	Spinal
Jocelyn Matagas	11	Laceration wound left leg	Dressing		9-Jan	Ketamine

TEAM 2: JAN 12TH – 17TH 2014

NAME	AGE	DIAGNOSIS	TREATMENT	IMPLANT	DATE	ANAESTHESIA
PEDRO MONYO	58	RIGHT HEEL SQUAMOUS CELL CARCINOMA	RIGHT ABOVE KNEE AMPUTATION	-	12/1/14	SPINAL
RAMIL MAASIN	32	OPEN FRACTURE RIGHT TIBIA FIBULA GRADE 3B	WOUND DEBRIDEMENT EXTERNAL FIXATION	AO LOWER LIMB EXTERNAL FIXATOR	12/1/14	SPINAL
JIMMY MOYA	18	OPEN FRACTURE DISLOCATION RIGHT 1ST TMTJ AND 2ND MTB	WOUND DEBRIDEMENT	-	13/1/14	SPINAL
MONALIZA VILLARINO	40	GSW: OPEN FRACTURE GRADE 3B LEFT TIBIA FIBULA	WOUND DEBRIDEMENT	-	13/1/14	SPINAL
JIMMY MOYA	18	OPEN FRACTURE DISLOCATION RIGHT 1ST TMTJ AND 2ND MTB	WOUND DEBRIDEMENT	-	15/1/14	SPINAL
MONALIZA VILLARINO	40	GSW: OPEN FRACTURE GRADE 3B LEFT TIBIA FIBULA	WOUND DEBRIDEMENT	-	15/1/14	SPINAL
CAVIZ BIENHEDIVO	22	CLOSED FRACTURE RIGHT HUMERUS WITH WRIST DROP	PLATING RIGHT HUMERUS WITH RADIAL NERVE EXPLORATION	NARROW DCP 6 HOLE	15/1/14	INTERSCALENE BLOCK
DARIO ANDRADE	29	NEGLECTED MALUNION LEFT PROXIMAL TIBIA	OSTEOTOMY AND PLATING	7 HOLE NARROW DCP	15/1/14	SPINAL
REDULLA ESRELLA	64	RIGHT BIG TOE WET GANGRENE	RAY AMPUTATION RIGHT BIG TOE	-	16/1/14	ANKLE BLOCK
RAMIL MAASIN	32	OPEN FRACTURE GRADE 3B RIGHT TIBIA FIBULA	WOUND DEBRIDEMENT	-	17/1/14	SPINAL
JAY ANN ESTENZA	19	CLOSED FRACTURE RIGHT PROXIMAL HUMERUS	OPEN REDUCTION K WIRES	K WIRES	17/1/14	INTERSCALENE BLOCK
MONALIZA VILLARINO	40	GSW: OPEN FRACTURE GRADE 3B LEFT TIBIA FIBULA	WOUND DEBRIDEMENT	-	17/1/14	SPINAL
JIMMY MOYA	18	OPEN FRACTURE DISLOCATION RIGHT 1ST TMTJ AND 2ND MTB	WOUND DEBRIDEMENT	-	17/1/14	MIDAZOLAM KETAMINE

GRAND TOTAL OF 32 OPERATIONS IN 12 DAYS

Funding:

Total of 11 personnel: 8 surgeons and 3 staff nurses

Mercy Malaysia – All Transport, Food and Accommodation for 11 personnel

MOA - Implant and GA Budget = **RM 4208.50**

Breakdown of MOA Budget

Implants

Broad DCP – 5 pieces x RM 95 = 475

Narrow DCP - 3 pieces = 3 X RM 75 = 225

One-third tubular plate – 1 piece = RM 20

9 plates with 63 screws each = 63 screws x RM 5.50 per screw = 346.50

AO External Fixator (Lower limb) X 2 = RM 500 X 2 = RM 1000

Total = RM 2066.50

Rental of General Anaesthesia machine for paediatric case (due to malfunctioning local district hospital GA machine unsafe for paediatric cases)

4 hours Sevofluorane anaesthetic gas + Sutures + OT usage : RM 2142

GRAND TOTAL = RM 2066.50 + 2142 = 4208.50

Refer to Appendix A for Team Two's reporting

Refer to Word file for selected photographs

Summary and Recommendations:

1. Each volunteer was very satisfied with the amount of work done and assistance to the patients
2. Each volunteer was exposed to a totally different working environment, system and methods
3. ODH staff were very thankful for the added help during the period of overcrowding in the ward
4. ODH staff were exposed to different operative techniques

5. ODH Chief of Hospital, Dr Maria Lourdes Banquesio welcomes future support
6. Future collaboration is possible once the resident orthopaedic surgeon is fully back to work
7. The wards and operating theatre requires major upgrading of sterility for major open reduction and internal fixation cases
8. Philippines health insurance system is an obstacle to complete management and treatment of indigent and poor patients

Prepared by: Dr Shalimar Abdullah (Orthopaedic Team Lead and Coordinator)

Date: 8th February 2014

APPENDIX A

Title:	Mercy Malaysia – Malaysian Orthopaedic Association Collaboration for Typhoon Haiyan (Team Two's Report)
Prepared by:	Dr Mohamed Ashraff Bin Mohd Ariff
Assignment:	As above
Date:	11/1/14 – 19/1/14

Background of Project:
(Explain briefly on the ongoing project that you are currently involved in. Please include some gaps analysis, reason of intervention & other relevant information)

Typhoon Haiyan (Yolanda) devastated much of the island of Leyte on the 8th November 2013. Whilst the city of Taclobantook a direct hit and sustained severe damage and casualties, serious damage was also inflicted on the city of Ormoc approximately 100km away. There is one major hospital servicing Ormoc City and it sustained 90% damage. Our brief was to restore acute orthopaedic care in the wards and the operating theatre of ODH. Our team comprised of two orthopaedic surgeons, an anesthetist and a scrub nurse. Our complete team enabled us to function independently with minimal disruption to ODH staff.

Overview of the Project Site/ Hospital
(Brief on the hospital that you are working in including the setup, capacity, services, coverage, etc.)

Reconstruction and rehabilitation of ODH is ongoing however the hospitals' orthopaedic service has been severely disrupted as the sole orthopaedic surgeon based in the hospital has been absent from work. Ormoc District Hospital (ODH) has two operating theatres, one being used for obstetric and surgical cases whilst the other was kept vacant. ODH also only has 2 anaesthetist that are only able to attend to critical emergency cases. The absence of surgical expertise and a dedicated attending anaesthetist resulted in orthopaedic patients being uncared for.

Activities incl. surgeries performed
(Summary on each activities/ surgeries performed during the deployment)

11/1/14 Saturday
We travelled on Cebu Pacific from Kuala Lumpur to Cebu via Manila, arriving at 8am. We were met at Cebu airport by members of Team 12 who were on their way out. A brief handover was performed on the premises of an international coffee chain. We then departed via ferry and arrived in Ormoc at 2pm after a perilous crossing of the channel between Cebu and Leyte. We were met by the local Mercy representative YuShen. Right after checking into our accommodation we were accompanied by Dr Amir Adham to ODH to visit the facilities and review the set up of the operating theatre. A brief ward round was done to get to know the in patients. Dinner was hosted by Yati, who was on hand to take over from YuShen who was on his way back home.

12/1/14 Sunday
We commenced our duties in ODH at 8am starting with a full ward round of all the patients. Dressing of all postop (team 12s) patients ensued along with all other inpatients with wounds. We managed to discharge 2 patients who had plating tibia done and one patient who had plating femur done by team 12. We also managed to meet up and dress the wounds of both of team 12s outpatients, one being the child with severe contractures whom team 12 performed surgery on in a private hospital in Ormoc the week before and the other being the patient with a very large granulating wound of his right leg who refused a split skin graft.

Right after rounds we met Dr Harry Solubon, the resident Orthoaedic Surgeon who dropped by the wards briefly. He explained that due to the effects of Typhoon Yolanda he had personal matters to attend to and was planning to drop by the hospital intermittently.
After lunch we started with surgeries, the first case being Pedro Monyo 59yrs old with a fungatingsquamous cell carcinoma of the right foot requiring an above knee amputation. The second case was RamilMaasin 32yrs old post trauma sustaining an open fracture grade 3B of his left tibia fibula. We performed wound debridement and external fixators on his leg. After completing ourduties, we returned to base camp at 7pm.

13/1/14 Monday
Our second working day in ODH commenced late at 9.00am due to a shoe emergency. One of our team members suffered a shoe failure that required immediate attention of a cobblerenroute to ODH. We started with routine rounds and dressing of wounds. Two patients were taken to surgery on this day. The first being a Wound Debridement ofMonalisaVillarino who had an altercation with her ex-husbands M16 assault rifle the week before and suffered an open grade 3B fracture of her left tibia and fibula fracture of her left leg and which was attended to by team 12 with an external fixator. The second was Wound Debridement of Jimmy Moya who mangled his right foot in a motorvehicle accident several days prior, also attended to diligently by team 12 with K wires. Both wounds were noted to be dirty, foul smelling and covered with biofilm. A long term wound management plan was commenced for the both of them, consisting of multimodal antibiotics and aggressive alternate day debridements in the operating theatre. As we completed our work on time, we were able to report back early to base camp at an honourable time of 7pm.

14/1/14 Tuesday
We decided to cover the mobile clinic as a change of routine. The new covering team had their travels delayed and there were no medical personnels to run the mobile clinic.We stepped in to avoid cancellation of a very valuable programme. Eventhough our team comprise of specialized discipline doctors, we are still intouch with our bread and butter basics of MBBS.

We were brought by the DHO team to a distant district clinic which is in Hibanuan. The route was challenging and we survived the humps and bumps of uneven gravel! We even had to hold on to the boxes of supplies we brought during the journey before it becomes a hazard to the passengers!
The beautiful Barangay of Hibanuan is surrounded by sugar cane plantation.

We held our mini clinic in the main church of the Barangay. We covered 155 patients til 4pm. The patients varied from a 1 month old baby to a 85 year old senior citizen of Ormoc. It was satisfying to treat the ones in need and to see how appreciative they were of our services.

On our way back, we had an emergency call for our multi-talented anaesthetist for an emergency Caesarean Section. There was no government anaesthetist cover on that day. It was unfortunate that the patient could not afford the private anaesthetist charges and she would have been delivered vaginally anyway. It was a 23 year old lady, G3P1, twin pregnancy with the indication of fetal distress for the Emergency Caesearean Section. Both the two babies and the mother was well post surgery.

The orthopaedics team did their PM rounds in preparation for surgeries to be done the next day. We met back at base camp at 9pm.

15/1/14 Wednesday
We started the day with the usual ward rounds. We were able to identify 4 orthopaedic cases needing surgical intervention. Our team split into two and we set about dressing the wounds of cases done in the previous few days. We were pleasantly surprised to be joined by the resident orthopaedic surgeon for our first case – Dario Andrade, a 29 year old gentleman who sustained a comminuted fracture of the left tibia 3 weeks ago and had not sought medical treatment. Open reduction and internal fixation was performed using a broad DCP plate.

Our second case was CavisBienvido; a 24 year old gentleman with a closed fracture of the distal 3rdhumerus on the right side sustained the night before. He complained of inability of extending the wrist and fingers. This case was particularly satisfying as our anaesthetist was well versed in performing scalene anaesthetic blocks which

allowed us to do the first upper limb operation in ODH since the tragedy of the Yolanda Hurricane. The local anesthetists were taught on the aspects of this block and they claimed that it was probably the first scalene block ever performed on the island of Leyte. We performed an open reduction and internal fixation of the right humerus with a narrow DCP plate. Dr mafeitz was mobbed by all the student nurses after successfully performing his block.

Our last two cases were repeat debridements for the cases mentioned before. We completed our list at midnight and went back to the hotel.

16/1/14 Thursday
Our day started with the usual morning rounds and dressing. We were then driven by the very able Mercy drivers to the city of Tacloban to meet up with the Hospital director of Leyte Provincial Hospital (please see adjoining report). We were able to meet up with team 14 at tacloban airport before returning to Ormoc at 8pm. We proceeded directly to ODH to review any new admissions and perform a right big toe ray amputation on EstrilliaRedulla, 74 years ld diabetic with big toe gangrene. She was also an aunt to the Consultant Pediatrician of ODH. We completed our work at midnight and returned directly to the accommodation.

17/1/14 Friday
This was another busy day for us commencing at 8am with the usual rounds and wound dressings. We performed four surgeries today, the first being RamilMaasin whom we performed eternal fixation on earlier and whose wound appeared infected. The second case was Jay annEstenza, 19year old involved in a motorvehicle accident and presented with a closed fracture of her head of humerus with anterior shoulder dislocation. Dr Mafeitz was able to weave his magic with his scalene block and Dr Ashraff performed an open reduction of the fracture and shoulder joint and Kirchner wiring. The third case was MonalisaVillarino's and Jimmy Moyas Wound debridement. We were very pleased to see both wounds clean, healthy and granulating well. We completed our work and returned to base camp at 7pm.

18/1/14 Saturday
This was to be our final day in ODH. All the patients had been operated on and were given plans once we were to leave. All the fractured patients were discharged home well with antibiotics. We completed an instrument inventory and moved all the surgical sets to base camp. We also presented a large bouquet of flowers to yati.

Assessment of need& recommendation
(based on discussion & observation what are the other need and if the services offered needed to be supported further)

ODH

Approximately 75% of the population of Ormoc are unable to afford the basic health insurance and are busy with rebuilding their lives. More needs to be done; however, it is impossible to financially support the medical rehabilitation in the long term.

Repairs of the plywood ceiling in OT
Leaks detected during heavy rain

Clean up of the immediate areas surrounding the hospital
Breeding ground for mosquitos and infectious diseases