

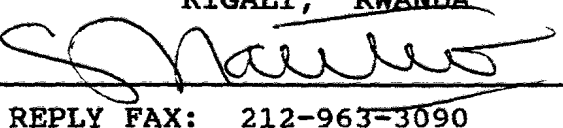

28 NOV 1995

PLEASE RETAIN
ORIGINAL ORDER

CONFIDENTIAL
EL/WG MAY 2009

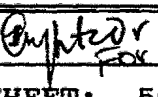
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UNAMIR
1995 NOV 28 P 6:48

OUTGOING FAX NO: 6415	DATE: 28 NOVEMBER, 1995
TO: MEDICAL ADVISER DPKO UNHQ-NEW YORK	FROM: SUSAN MATTHEW CAO, UNAMIR KIGALI, RWANDA 
ATTN: DR A. DECKNER/DR ADLER	
FAX: 212 963 2614 	REPLY FAX: 212-963-3090
INFO:	
SUBJECT: REQUEST FOR MEDICAL DOCUMENTS	

MIR-4036

1. I am forwarding the following documents under cover of this letter for your information and appropriate action:
 - a. UNAMIR MEDICAL SOP's.
 - b. CASEVAC SOP'S.
 - c. MALARIA TREATMENT PROTOCOLS (FM OPD).
2. This office Fax No.6312, MIR No. 3987 paragraph 3 dated 22 Nov 95 refers.
3. Submitted for your kind attention.

DRAFTED BY: MAJ ME FENSOM (FMO)	CLEARED BY:  For FMO
NUMBER OF TRANSMITTED PAGES INCLUDING COVER SHEET: 50	

UNAMIR
1995 NOV 28 P 8:13

 CAO → FMO



2

OUTGOING FAX NO:	DATE: 28 NOVEMBER, 1995
TO: MEDICAL ADVISER DPKO UNHQ-NEW YORK	FROM: SUSAN MATTHEW CAO, UNAMIR KIGALI, RWANDA
ATTN: DR A. DECKNER/DR ADLER	<i>[Signature]</i>
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NUMBER OF TRANSMITTED PAGES INCLUDING COVER SHEET: 50	

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SECTION ONE -- COMMAND AND CONTROL

GENERAL

1. This SOP details the method of comd and con of Medical Branch. Medical Branch is responsible to the FC on all matters affecting the health of UNAMIR.
2. Role. The role of Medical Branch is the co-ordination of all medical support to the force and to Humanitarian relief in Rwanda. It also provides advice to the FC on matters designed to promote health and prevent disease.
3. ORBAT. Med Branch is organised as follows:
 - a. Force Med Officer (FMO);
 - b. Staff Officer Grade Two - Health Operations (SO2 Hlth Ops);
 - c. Staff Officer Grade Two - Health Logistics (SO2 Hlth Log); and
 - d. Chief Clerk (CCLK).
4. From time to time other staff members will be attached to Med Br. These may be liaison off/representatives from the force medical units as follows:
 - a. Australian Medical Support Force (AS MSF);
 - b. 23 Parachute Field Ambulance, UK (23 PFA); and
 - c. Unit Medical Station, Canadian Divisional Signals Regiment (UMS).
5. An advisory position of FHO on Med Br is held by the senior Pvnt Med Officer at the AS MSF.

METHOD AND SUCCESSION OF COMMAND

6. FMO will normally exercise comd of Med Br from Force HQ. However he may temporarily exercise comd from another loc. The succession of comd in Med Br is as follows:
 - a. SO2 Hlth Ops;
 - b. SO2 Hlth Log; and
 - c. Senior Medical Officer from AS MSF.

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ORDERS GROUPS

7. The Med Br OGP will comprise all members and attached personnel. A representative of each Medical unit will usually be required to attend.

RECON GROUP

8. The composition of the R GP will generally be as follows:

- a. FMO;
- b. Representative from Med Br (usually Lo);
- c. Linguist;
- d. Int rep;
- e. Med asst;
- f. Driver; and
- g. Protection party

9. Variations to the above list will be made based on the situation and task.

DISTRIBUTION OF ORDERS/PLANS AND DIRECTIVES

10. The distribution list for orders, plans and directives is as per UNAMIR distribution list. All health units under comd or in spt of UNAMIR are to submit an info copy of orders and plans to Med Br.

LIAISON

11. Liaison between Med Br and health units is frequently required for comd and con purposes. Initiative should be taken to arrange contact without direction.

12. LOs will be used as follows:

- a. to convey orders and future intentions of the FMO; and
- b. to provide info on the situation to the FMO;
- c. to interface with other UN authorities, NGO and government offices.

13. LOs are to attend all conferences at their own HQ whenever possible, as well as attending O Gp of the HQ to which they are attached.

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ANNEX A TO
UNAMIR SOPs
PART 7 SECTION 1

AIDE MEMOIRE FOR LIAISON OFFERS

1. Liaison Offers are to:

a. Before Departure.

- (1) Be prep to spend the night away from HQ.
- (2) Check comms and SOI details
- (3) Take with them the latest SITREP from the HQ.
- (4) Inform HQ of their whereabouts.
- (5) Check their routine with the Ops Room and the latest grid ref of the HQ unit they are visiting.
- (6) Know the next likely loc of the HQ.
- (7) Inform the HQ/unit they are visiting of their ETA.

b. At the Destination

- (1) Obtain latest SITREP and pass on latest info.
- (2) Advise parent HQ of ETD and ETA as soon as known.

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14. An Aide Memoire for LOs is at Annex A.

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SECTION TWO - RESPONSIBILITIES OF KEY PERSONNEL

GENERAL

1. All personnel within Med Br are responsible to the FMO for the smooth functioning of the Branch. While each has a specialist field, all should be prepared to assist in the functioning of the Branch as a whole.

Responsibilities. Responsibilities of key personnel are as follows:

a. Force Medical Officer (FMO):

- (1) Plans, directs, and advises and supervises all activities related to the medical support plan. Provides medical expertise to the Force Commander (FC) and to all contingent Senior Medical Officers (SMedOS) of the mission.
- (2) Conducts initial and on-going deployment medical assessments and surveys. Gathers and distributes information of general medical situation in the operational area and of medical threats.
 - (a) Assesses the local medical facilities and advises on their suitability.
 - (b) Evaluates and coordinates medical support received from Host Nation Support.
- (3) Oversees medical standards of all medical care functions. This will also include inspections of military medical facilities in-theatre.
- (4) Ensures all military medical units extend their services to the UN civilian support staff, and other UN staff members assigned to that particular mission.
- (5) Recommends Holding/Evacuation Policies to FC, and to UN HQ.
- (6) Provides guidelines for MEDEVACS and coordinates inter and intra-theatre MEDEVACS.
- (7) In concert with UN HQ, and the FC, provides guidance in the treatment of non-UN force personnel.

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(8) Responsible for coordination of medical matters with Non-Government Organizations (NGOs), Private Organizations (PVOS), and with local medical authorities.

(9) Responsible for collection of medical information/statistical reporting as required by UN HQ.

(10) Resolves clinical differences between national contingents.

(11) Responsible for the economic considerations for all of the above.

b. SO2 Health Ops. Responsible to the FMO for:

(1) the overall co-ordination of the Med Br Ops Rm;

(2) assisting in preparation of orders and plans;

(3) keeping the FMO informed of the loc, situation and capabilities;

(4) the co-ordination of all evacuation matters;

(5) the co-ordination of all repatriation matters as they apply to Med Br; and

(6) compilation of med ops returns.

c. SO2 Health Log Responsible to the FMO for:

(1) the overall supervision of medical procurement and resupply to units;

(2) the provision of advice on health logistics matters;

(3) assisting in the preparation of orders and plans;

(4) keeping the FMO informed of all health resupply problems that arise;

(5) acting as a duty officer in the Branch Ops Room; and

(6) compilation of medical logistics returns

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SECTION THREE - REPORTS AND RETURNS

General

1. The FMO is required to submit periodic reports and returns to both Force HQ and HQ UN NY. To assist in this reporting, medical establishments are required to provide information to Med Branch on a regular basis. The requirements for reports and returns are laid down as follows:

Annexes: A. Medical Operations Returns

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d. Force Health Officer Responsible to the FMO for:

(1) the provision of health advice to staff and national contingents on preventive measures;

(2) inspection and auditing of national measures to ensure international standards are maintained in the area of:

(a) food;

(b) water; and

(c) sanitation.

(3) the co-ordination of mission dependant preventive medicine services such as regional spraying or vector control;

(4) reporting on, and maintaining standards of occupational Health and Safety as they apply to national contingents.

e. LO Representatives from force medical units.
Responsible to the FMO for:

(1) all co-ordination matters between their unit and Med Br;

(2) assisting SO2 Health Ops and SO2 Health Log as required; and

(3) acting as a duty officer in the Med Br Ops Room.

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ANNEX A TO
UNAMIR SOPs
PART 7 SECTION 3

MEDICAL OPERATIONS
SCHEDULE OF REPORTS, RETURNS AND TIMINGS

Serial/ Appendix	Title of Report/ Return	Correct as at	Originator		Sent To	By Time	Means of Transmission	Remarks
			Medical Unit	Medical Branch				
1	Daily Medical SITREP	Midnight	(Levels 2 and 3 only)		Medical Branch	0800 following day	Hard Copy	
2	Weekly Medical SITREP	Midnight on Sunday	Level 1 only		Medical Branch	0800 following day	Hard Copy	
3	Location levels and capabilities return	Last day of the month	(Levels 2 and 3 only)	X	Unit to Med Br Med Br to UN NY	1st of following month	Hard copy fax or message	Initial notification to be made by verbal means
4	Medical Flash Report	ASAP	ALL		Med Branch	ASAP after incident	Hard copy fax or message	
5	Medical Treatment Report	Midnight Sunday of each week	ALL	X	Med Branch	0800 hrs Monday	Hard copy fax or message	
6	Health Surveillance Report	Midnight on Sunday of each week	level 1 only		Med Branch	1200 Monday	Hard Copy	

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APPENDIX I TO
ANNEX A

DAILY MEDICAL SITUATION REPORT
LEVELS 2 AND 3 ONLY

Purpose of Medical Situation Report (MEDSITREP): To inform medical staff at operational level headquarters of the Health Service situation.

1. From:
2. To:
3. Info:
 - a. DTG of release.
 - b. Report as at (DTG)
 - c. Medical evacuation status:
 - (1) Number of pers unit supporting.
 - (2) Number of patients treated since last report.
 - (3) Number of patients admitted since last report.
 - (4) Number of patients evacuated since last report.
 - (5) Number of patients returned to duty since last report.
 - (6) Number of patients died since 1st report.
 - (7) Number of patients presently held.
 - (8) Number of patients awaiting evacuation.
 - d. Hospital status:
 - (1) Name of unit/org (1).
 - (2) Number of operational beds (2).
 - (3) Number of available beds (3).
 - (4) Significant personnel shortages.
 - (5) Significant major equipment deficiencies.

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APPENDIX I TO
ANNEX A

- e. Medical logistic situation - Significant shortages of medical and dental (Class 8) supply items.
- f. Mass casualty situation (As required)
- (1) Cause.
 - (2) Location (name/grid reference).
 - (3) Number of casualties.
 - (4) Unit(s) affected.
4. Epidemic situation (As required)
- (1) Disease.
 - (2) Location (name/grid reference).
 - (3) Number of patients.
 - (4) Unit(s) affected.

a. Remarks:

Notes:

- 1. Repeat as necessary.
- 2. Beds supported by personnel and equipment to provide treatment appropriate to unit role.
- 3. Beds that are operational and NOT occupied by patients.

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APPENDIX II TO
ANNEX A

WEEKLY MEDICAL SITUATION REPORT
LEVEL ONE ONLY

Purpose of Medical Situation Report (MEDSITREP): To inform medical staff at operational level headquarters of the Health Service situation.

1. From:
2. To:
3. Info:
 - a. DTG of release.
 - b. Report as at (DTG)
 - c. Medical evacuation status:
 - (1) Number of pers unit supporting.
 - (2) Number of patients treated since last report.
 - (3) Number of patients admitted since last report.
 - (4) Number of patients evacuated since last report.
 - (5) Number of patients returned to duty since last report.
 - (6) Number of patients died since 1st report.
 - (7) Number of patients presently held.
 - (8) Number of patients awaiting evacuation.
 - d. Hospital status:
 - (1) Name of unit/org (1).
 - (2) Number of operational beds (2).
 - (3) Number of available beds (3).
 - (4) Significant personnel shortages.
 - (5) Significant major equipment deficiencies.

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- e. Medical logistic situation - Significant shortages of medical and dental (Class 8) supply items.
- f. Mass casualty situation (As required)
 - (1) Cause.
 - (2) Location (name/grid reference).
 - (3) Number of casualties.
 - (4) Unit(s) affected.
- 4. Epidemic situation (As required)
 - (1) Disease.
 - (2) Location (name/grid reference).
 - (3) Number of patients.
 - (4) Unit(s) affected.
- a. Remarks:

Notes:

- 1. Repeat as necessary.
- 2. Beds supported by personnel and equipment to provide treatment appropriate to unit role.
- 3. Beds that are operational and NOT occupied by patients.

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APPENDIX III TO
ANNEX A

LOCATION, LEVEL, CAPABILITIES - level 2 and 3 only
(Report is requested on the first of every month)

Date of report:_____

Name of Mission/medical
unit_____

Change in location, level, capabilities:
NO - see former report
YES - see report below

1. Organization:

Name, rank, title of header_____

Location:_____

Point of contact:_____

Phone number:_____

Other communication system (numbers, radio frequencies, call
sign etc):_____

Next airfield or helicopter/distance:_____

2. Personnel:

physicians/specialists:_____

nurses:_____

medics:_____

other:_____

total:_____

3. Beds and/or cots:total:_____

surgical:_____

maximum number in case of mass casualty:_____

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APPENDIX III TO
ANNEX A

4. Medical capability: specialities_____

isolation ward:_____

5. Intensive care unit: ICU beds:_____

equipment:_____

6. Surgical capability: specialities:_____

operating rooms:_____

operating teams:_____

7. Laboratory capabilities: microbiology:_____

virology:_____

parasitology:_____

8. X-RAY: skeleton:_____

abdominal:_____

ultrasound:_____

others:_____

9. Blood bank: screening methods:_____

10. Dental Capability:_____

11. Other special capabilities:_____

12. Preventative medicine assets:_____

13. Veterinarian service:_____

14. Medevac capability:

ground: (number of ambulances):_____

air: (number of aircraft (Capacity and location)

request procedures incl. phone number or frequencies:_____

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APPENDIX IV TO
ANNEX A

Medical Flash Report

(Report must be submitted immediately, with follow-up reports as soon as additional information is available)

Mission/Unit: _____ Date of report: __/__/__
Type of incident: _____
Place of incident: _____
Time of incident: _____

DEAD	DNBI	DOW	KIA	TOTAL
Military UN				
Civil UN				
Local hired UN				
Military Observers				
Civil Police				
Civilians				

WOUNDED, INJURED, SICK	DNBI	NBI	WIA	TOTAL
Military UN				
Civil Un				
Local hired UN				
Military Observers				
Civil Police				
Civilians				

DNBW = dies as result of non-battle wound/injury
DOW = died in hospital as result of battle wound/injury
KIA = killed in action (dies out of hospital)
DNBI = disease and non battle injury
NBI = non battle injury
WIA = wounded in action

Diagnoses of infectious disease outbreak or other illnesses:

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APPENDIX IV TO
ANNEX A

Verified: _____
Decisions made: _____

Additional information: _____

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WEEKLY HEALTH SURVEILLANCE REPORT

LEVEL 1F/CY LOCATION:

LEVEL 1F/CY LOCATION: REPORT PERIOD:

SERIAL	DIAGNOSTIC CATEGORIES	PERS	REMARKS
	GENERAL DIAGNOSTIC CATEGORIES		
A	DERMATOLOGICAL ILLNESSES (DER)		
B	OPHTHALMIC ILLNESSES/INJURIES (EYE)		
C	RESPIRATORY ILLNESSES (RES)		
D	GASTRO-INTESTINAL ILLNESSES (G-I)		
E	MEDICAL ILLNESSES (MED)		
F	SURGICAL INJURIES (SUR)		
G	ORTHOPAEDIC INJURIES:		
	SPORTS INJURIES (OSP)		
	OTHER INJURIES (OOI)		
	OTHER (OTH)		
H	HEAT/COLD INJURIES (H/C)		
I	ANIMAL BITES (BIT)		
J	SEXUALLY TRANSMITTED DISEASES (STD)		
K	UNEXPLAINED FEVER (FEV)		
L	PSYCHIATRIC ILLNESSES (PSY)		
M	SUBSTANCES ABUSE (ABU)		
N	DENTAL (DEN)		
O	GYNAECOLOGICAL ILLNESSES (GYN)		
P	MISCELLANEOUS (MIS)		
	SPECIAL DIAGNOSTIC CATEGORIES:		
	COMMENTS/REMARKS		

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SECTION FOUR - FUNCTIONING OF THE OPS ROOM

General

1. The Med Br Ops room is to be manned 24 hr/day. It is located in room 2084 of UNAMIR HQ. Manning of ops room will be a minimum of one person at all times. After hours, this is to be the rostered duty officer. The main purpose of manning the Ops room is to provide a point of contact for medical requirements after hours, primarily CASEVAC which is dealt with in a separate section.
2. SO2 Hlth Ops is responsible for formulating the duty officer roster. He is also responsible for briefing oncoming duty officers before they mount duty.

Responsibilities

3. The responsibilities of the duty officer are at Annex A. He is the representative of the FMO after hours and should be prepared to give an up to date brief/sitrep at any time. A handover procedure checklist is also contained in Annex A.

Duty Logs

4. Duty officers are to maintain a duty log, a copy of which is at Annex B. Details are to include a summary of voice, radio, telephone info received/sent.

Communications

5. Communications play a vital role in the operation of the Ops cell particularly after hours. The communication facilities listed below will be located in the Ops room and are to be monitored 24 hrs per day.
 - a. Force VHF Command Net;
 - b. Motorola Command Net; and
 - c. Inmarsat telephone link.
6. Other communications links may be established as required. Net diagrams and procedures are listed in the UNAMIR communications SOP, part 6. An administrative telephone link will operate internally.

Annexes: A. Duty Officers Responsibilities
B. Duty Officer's Log

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ANNEX A TO
UNAMIR SOPs
PART 7 SECTION 4

DUTY OFFICERS RESPONSIBILITIES

Duty Offr

1. All Ops Cell Duty Offr are responsible for the gen op of the ops cell and handling all occurrences. Duty Offr are to understand fully the med plan and must ensure it is being implemented properly. Duty Offr are to make the FMO/SO2 HLTH Ops aware of any significant occurrences that may jeopardise the execution of the plan.
2. The on coming Duty Offr must be fully briefed by the off going Duty offr on the following:
 - a. activities up to the present time;
 - b. current sit;
 - c. future intentions;
 - d. outstanding action;
 - e. codewords and nick names;
 - f. comm state, codes SOI and Net diagrams; and
 - g. loc of FMO and SO2 HLTH Ops
3. The Duty Offr is to:
 - a. record occurrences in the duty log in sufficient detail to be understood
 - b. cfm accuracy of all locstats given and sent;
 - c. follow up late returns from units;
 - d. submit reports and returns IAW section three of this SOP;
 - e. be prepared to brief on current sit as req;
 - f. spr maint and tidiness of the Ops Cell; and
 - g. brief the relief Duty Offr.

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ANNEX B TO
UNAMIR SOPs
PART 7 SECTION 4DUTY LOG

DATE: PERIOD FROM: HRS TO: HRS

SERIAL	TIME	TO	TEXT	ACTION BY DO	CP ACTION COMPLETED

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SECTION FIVE - EVACUATION AND REPATRIATION

General

1. This SOP is divided into three areas;
 - a. Casualty Evacuation;
 - b. Medical Evacuation; and
 - c. Medical Repatriation.

CASUALTY EVACUATION

General

2. Casualty evacuation (CASEVAC) is the process of moving any person who is wounded, injured or diseased to and or between medical treatment facilities. It includes surface evacuation and aeromedical evacuation (AME).
3. The purpose of this SOP is to define the casualty evacuation process and to describe the procedures in the evacuation of all casualties.

Evacuation Priorities

4. All cas and especially those with major injuries require special consideration of their individual treatment and evacuation needs. Consequently the following priorities are assigned to cover this requirement:
 - a. Priority one. Pri one cas are those whose life is immediately threatened. Rapid evacuation, urgent resuscitation and or surgery are required.
 - b. Priority two. Pri two cas are those whose life or limb is in serious jeopardy. Evacuation to allow early resuscitation and or surgery is required.
 - c. Priority three. Pri three cas are those for whom neither life nor limb are in serious jeopardy. Evacuation should be as soon as possible.

Types of Evacuation

5. Aeromedical evacuation (AME). AME is the movement of patients to a medical facility by air transportation. It may be by fixed wing or rotary wing aircraft. AME is the preferred means of evacuation for all priority one and two casualties.

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6. Road evacuation. Is the movement of patients to a medical facility by any road means. Road evacuation should be used for all pri three casualties. The preferred road means is a dedicated ambulance.

Casualty Regulation

7. Casualty regulation in the AO is necessary to ensure that the most appropriate evacuation assets are used. The control of casualty evacuation also ensures that the casualty is transported to the most appropriate medical facility.

CASEVAC Procedures

8. Request for CASEVAC. All CASEVAC request will be transmitted on the force command net and should be in the message format described at Annex A. This format is to be repeated in all unit SOPs.

9. Casualty Regulation. All requests for CASEVAC will be transmitted to Ops Br HQ UNAMIR. Casualty regulation will be conducted by Medical Branch, HQ UNAMIR. Ops staff will consult Medical Branch for advice on the most suitable means of evacuation and the destination of the casualty. The use of the AME dedicated aircraft will be authorised by the FMO or his representative. The use of other aircraft requires authorization by COO on the advice of FMO. Procedures with respect to CASEVAC are outlined at Annex B.

10. AME. If AME is the preferred means of evacuation then the:

- a. AME medical team will be drawn from AS Med Spt Force (AS MSF) and CANSIG med elements. The roster for the on-line AME team will be maintained by med br. The team will be dispatched from the providing unit location to KIGALI airfield.
- b. Aircrew will be notified of the CASEVAC request by Air Ops staff.
- c. Air Ops staff should also advise the control tower at KIGALI airport and gain clearance for the AME team to approach the CASEVAC aircraft; and
- d. Receiving medical facility will be notified of incoming cas by Med Br.

11. Road Evac. Will be used for all pri three cas that occur in the KIGALI area. The process of arranging road evac will be:

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- a. Road evac from RAP to AS MSF facilities will be provided by AS MSF assets; and
- b. AUS MSF will be tasked by Med Br to conduct road evac.

12. Reporting. The receiving medical facility is to notify Ops Br on the completion of the CASEVAC task.

MEDICAL EVACUATION

GENERAL

13. Medical evacuation (MEDEVAC) is the movement of any person to a medical facility beyond those provided by UNAMIR. MEDEVAC generally occurs when the UNAMIR medical facility is unable to provide the services or level of care required in-theatre.

14. The purpose of this SOP is to define the procedures for MEDEVAC.

ELIGIBILITY

15. As MEDEVAC is usually at UN expense the MEDEVAC will be to either the nearest suitable destination or that which is most economical. The CAO or Head of Mission (HOM) will decide the most appropriate location to use. As a guide the following locations are acceptable for use by UN missions in Africa or the Middle East:

a. Africa:

- (1) Nairobi;
- (2) Harare;
- (3) Abidjan;
- (4) Dakar; or
- (5) Johannesburg.

b. Middle East:

- (1) Amman;
- (2) Jerusalem; or
- (3) Cairo.

16. There are basically three means for MEDEVAC out of UNAMIR theatre, namely:

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- a. By dedicated UNAMIR Fixed Wing Aircraft. At present UNAMIR does not have access to a dedicated aircraft. When available this aircraft will be stationed at Kigali International Airport (KIA).
- b. By Opportunity Aircraft. Regular scheduled UNAMIR flights operating between Kigali and other locations will generally be used for routine MEDEVAC. Other aircraft flying into Kigali may also be considered.
- c. Swiss Air Ambulance. In 1989 the government of Switzerland made available to the UN, air ambulance facilities for the evacuation and repatriation of UN personnel. The organisation which provides the service is La Garde Aerienne Suisse de Sauvetage (REGA). More detail about this service will be provided later in this SOP.

MEDEVAC PROCEDURES

17. MEDEVAC must be approved by FOD at HQ UN NY. Requests to FOD will be made by the CAO through the Medical Director. At UNAMIR HQ, Medical Branch will liaise with CAO on the MEDEVAC request. For routine MEDEVAC, CAO will notify UNNY who will seek authorization before informing HQ UNAMIR of the approval. When initial request is made, a medical report on the patients condition is to be sent.

18. In the event of an emergency, the CAO or HOM may authorise the MEDEVAC on the advice of the FMO. When available, all details of the MEDEVAC are to be forwarded to UNNY HQ.

RESPONSIBILITIES

19. Medical Branch is responsible for all medical aspects of the MEDEVAC. This includes making the initial request, the provision of reports on patient condition and co-ordination of the preparation of the patient for evacuation.

20. CAO's office is responsible for forwarding the initial request to UNNY and all administrative aspects such as organising the means of MEDEVAC and informing the receiving medical facility of patients details and requirements.

21. Medical Director at UNNY will determine if the patient is to be returned to the mission area.

USE OF REGA AIRCRAFT

22. The use of REGA evacuation means involves special authorization procedures to those outlined above. Once it has been established that an air ambulance is required the CAO will immediately advise FOD. The request from CAO is to include the following details:

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a. Evacuation.

From: To:
Date evacuation required:

b. Details of Patient.

Name:
Date of Birth:
Nationality:
Nature of illness/injury:
Present location:

c. Attending Medical Officer.

Name:
Address:
Contact Number:

d. UN Contact. (Usually CAO)

Name:
Appointment:
Contact Number: (incl Fax)

23. FOD will review the request and advise REGA, who will in turn advise UNAMIR of details. At the completion of the evacuation the CAO is to inform the FOD.

24. There is a monetary ceiling on the use of the REGA facility. Before a request to use REGA is made, all options especially the use of scheduled flights should be examined. Countries who organise their own evacuation without correctly requesting it should be aware that the UN may not reimburse costs.

25. REGA provides all evacuation teams and equipment. Countries are not required to provide escorts or evacuation teams.

REPATRIATIONGENERAL

26. The administration procedures for Repatriation are contained in Personnel Branch SOP. The information detailed below provides guidance on Medical Procedures.

27. Repatriation on medical grounds will normally be at UN expense. It is required when the person concerned:

- a. will not be fit for duty within 30 days including the time for hospitalisation;

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- b. requires treatment which is not available in the mission area: or
- c. requires special treatment in a national institution.

AUTHORIZATION

28. Repatriation on medical grounds is to be authorised by the FC on the recommendation of the FMO. The standard format for requests is contained in Personnel Branch SOP.

29. Once the FC authorises the repatriation the CAO may approve and proceed with the arrangement for having the individual repatriated. The CAO will consider the urgency of the requirement and the most economical means. The CAO will either make the arrangements through UNAMIR HQ or task the contingent to do so through their national agencies if this is considered most efficient.

MEDICAL BRANCH RESPONSIBILITIES

30. Medical Branch will receive the repatriation request from the unit concerned and the FMO will make a recommendation on the request before passing it to Personnel Branch. Once approved, Medical Branch will only become involved in the co-ordination of patient preparation and movement between UNAMIR medical facility and the departure airfield.

31. The UNAMIR medical facility will be responsible for providing transport to the airport. Medical Branch is to co-ordinate liaison between contingents/units.

Annex: A. CASEVAC REQUEST PROFORMA
B. CASEVAC procedures

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UNAMIR MEDICAL SOP - CASUALTY EVACUATION

CASEVAC REQUEST

Purpose

1. The purpose of this form is to standardise the format of CASEVAC requests. This proforma is to be used when requiring CASEVAC Request

Time Received: _____

Serial	Description of Serial
A	Unit Name
B	Callsign and Frequency of Unit
C	Priority of Casualty
D	Number of Casualties - Lying
E	Number of Casualties - Walking
F	Nature of Injury or Illness
G	Grid Reference and Description of location of Casualty
H	Requirement for Special Equipment

Actual CASEVAC Information

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ANNEX B TO
UNAMIR SOPs
PART 7 SECTION 5

CASEVAC PROCEDURES

1. Monitor comd net for CASEVAC request.
2. On receipt of CASEVAC request, notify Medical Branch. (Medical Branch advises on means of evacuation and the destination of the casualty.) Med Br will carry out the following actions:
3. AME
 - a. Task AME team to move to airfield. Tasking is to include all details of CASEVAC request.
 - b. Notify Air Ops to task aircraft.
 - c. Notify receiving medical facility of CASEVAC.
4. ROAD EVAC:
 - a. Task AS MSF to conduct road evac. Tasking is to include all details of CASEVAC request.
5. Reporting:
 - a. Inform Ops when CASEVAC has commenced and when it is completed.

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SECTION 6 - HEALTH LOGISTICSGENERAL

1. National contingents are to arrive in theatre with 90 days Class VII medical stock for organic levels one and two medical support as directed by UNNY. Force Class VIII stock for 60 days is to be held and maintained at the Australian Medical Support Force (AS MSF) pharmacy located at Central Hospital Kigali (CHK). Subsequent replenishment of National contingent stocks will be provided from Force stock.

HEALTH LOGISTICS REPORTS AND RETURNS

2. Health logistics reports and returns are detailed in the schedule at Annex A and are to be submitted in signal or written format in accordance with the schedule.

3. Commodity codes are to be used when practicable. Commodity codes for level one medical supplies are listed at Annex B.

STOCK LEVELS

4. In general terms stock levels within theatre are determined by operational activity levels, the total strength/dependency of the Force, and the ability of the civil infrastructure to provide support.

5. All units will deploy with 90 days Class VIII medical stock for organic levels one and two medical facilities. Subsequently a minimum of 14 days stock is to be held and maintained at all times by units deployed in the field.

6. Force Class VIII stock for 60 days is to be held and maintained at the AS MSF pharmacy. The management of this stock is to be the responsibility of HQ UNAMIR (G4 MED). Dispersing of pharmaceuticals is to be carried out at the AS MSF pharmacy.

REPLENISHMENT PROCEDURES

7. Demand Replenishment. Units are to submit message demands to HQ UNAMIR (G4 MED), in the format at Annex C, for routine and urgent replenishment of medical supplies. Demands will be staffed by HQ UNAMIR to AS MSF pharmacy for issue. Routine demands will normally be satisfied within 7 days and supplies will be made available for collection by the demanding unit from AS MSF pharmacy.

8. Items which are peculiar to or specific to a National contingent's requirements are to be procured through National lines of supply at that Nation's expense.

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9. Demands for items which are not held in Force stock are to be staffed by G4 Med to CSUPO for local procurement action.

10. Items required by UNAMIR, which are to be procured through donor Nation supply channels are to be the subject of IOR Requests for Medical Supplies raised by HQ UNAMIR (CAO) and will be subject to reimbursement from the UN.

11. Force Stock Replenishment. Force Stock will be replenished through UN sources under local purchase arrangements every 60 days. G4 Med is to submit a Request for Supplies, covering the relevant inventory, to CSUPO six weeks prior to the required delivery date.

12. Humanitarian Supplies. Request for humanitarian medical supplies are to be submitted to HQ UNAMIR (G4 MED) utilising requisition forms issued separately by G4 MED. Humanitarian medical supplies and pharmaceuticals will be procured through Non Government Organizations and other agencies under arrangements advised by G4 MED. UN medical supplies are not to be utilized for humanitarian relief other than under those circumstances directed by the FMO.

BLOOD SUPPLY

13. Force blood stock is to be maintained at the AS MSF pathology laboratory. AS MSF is to maintain the capacity to store 140 units of blood. Force blood stock levels will be directed by the FMO.

14. Replenishment of blood and perishable blood reagents is to occur every 21 days under arrangements advised by G4 MED. AS MSF is to be responsible for the safe transit of blood and blood reagents from the airhead to the laboratory.

HANDLING OF THERMO-LABILE MEDICAL SUPPLIES

15. Personnel responsible for the procurement, storage, handling and movement of thermo-labile (temperature sensitive) medical supplies are to ensure that such supplies are packaged and stored at the prescribed temperature before, during and after transit. Furthermore, such supplies are to be handled expeditiously to prevent damage from temperature fluctuation caused by undue delays. Medical advice is to be sought wherever necessary in relation to the handling of thermo-labile medical supplies.

MEDICAL GASES

16. replenishment of medical gases is to occur every 14 days under arrangements advised by G4 MED.

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ANNEX A TO
UNAMIR SOPs
PART 7 SECTION 6

SCHEDULE OF HEALTH LOGISTICS REPORTS AND RETURNS

Serial (a)	Return/Report (b)	Format (c)	Time (d)	From (e)	To (f)
1.	Message Demand	Message	When req.	Units	HQ UNAMIR
2.	Request for Humanitarian Medical Supplies	Form	When req.	Units	HQ UNAMIR
3.	EMEFIX	Message	When req.	Units	HQ UNAMIR

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17. Units requiring medical gas replenishment are to deliver empty gas cylinders to the AS MSF pharmacy. Cylinders will be re-filled by the UN contractor in NAIROBI and subsequently returned to the AS MSF pharmacy within 14 days. Collection of cylinders from the AS MSF pharmacy is to be a unit responsibility.

REPAIR OF MEDICAL EQUIPMENT

18. First line repair of medical equipment is to be a unit responsibility. Requests for the repair of equipment requiring second line repair are to be submitted, on an EMEFIX form, to HQ UNAMIR (G4 EME). Equipment which is beyond the capability of UNAMIR to repair is to be repaired or replaced through National contingent arrangements. Medical equipment is only to be repaired and maintained by appropriately qualified medical equipment technicians.

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ANNEX C TO
UNAMIR SOPs
PART 7 SECTION 6

FORMAT FOR MEDICAL RESUPPLY MESSAGE DEMAND

PRECEDENCE

FROM:

TO:

FORMAT (EXPLANATION)

SUBJECT: DEMAND FOR MEDICAL SUPPLIES (OPDEM/PRIDEM/MAINTDEM)

A. UNIT/LOCATION AND DEMAND NUMBER

B. REASON FOR DEMAND (UNAMIR or Humanitarian use.)

C. ITEM/S DESCRIPTION AND QUANTITY (Generic description of item/s.)

D. COLLECTION/DELIVERY REQUIREMENTS (Units will normally be required to collect.)

E. LATEST DATE/TIME SUPPLIES REQUIRED (BRAVO time zone.)

F. SIGNALS AT DEMANDING LOCATION (Frequency and Call Sign.)

Notes:

1. OPDEM - Operationally urgent demand required up to 6 hours.
2. PRIDEM - Priority demand required up to 24 hours.
3. MAINTDEM - Maintenance demand required up to 7 days.
4. OPDEM and PRIDEM normally passed over radio communications net or facsimile.
5. MAINTDEM normally passed in written format.

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ANNEX B TO
UNAMIR SOPs
PART 7 SECTION 6

MEDICAL SUPPLY COMMODITY CODES

(To be issued)



UNAMIR FORCE HOSPITAL CASEVAC/MEDEVAC PROCEDURES

1. Effective 4 September 1995, any casevac requests will be passed through UNAMIR Medical Branch Operations (M93 on Ch 4 or LL ext 11115 or 11116). Med Ops will pass the tasking to either the Force Medical Hospital or INDBATT RAP. If the Force Hospital is tasked, the casevac request will be passed to the Casevac Co-ordinator (CasEvac 1 on Ch 4 or LL 11730/11731). NORMED Operations (NORMED on Ch 4) will monitor the request, and must be prepared to take the casevac request if Casevac Co-ord is unavailable. The following steps must be followed once a casualty evacuation request has been received from Med Ops.

- A. Ensure casevac request form has been completed with information supplied by M93;
- B. Determine mode of casevac - by road or by air. If by air, request time of aircraft availability;
- C. Inform the Duty Ambulance Driver (NM 1 to report to the Force Hospital; on the NORMED administrative net (Ch 1))

If casevac is by road:

D. Inform the Duty Paramedic (NM 2 on the NORMED administrative net (Ch 1)) to report to the Force Hospital. The Duty Paramedic will assemble equipment, and recruit additional medical assistance if deemed necessary. Once the ambulance is prepared, the Duty Paramedic inform Casevac Co-ord (CasEvac 1) of departure on channel 4 using callsign Medic 1, and will proceed to casevac location and recover the patient.

E. Once the paramedic has stabilized the patient for transport, the patient will be loaded aboard the ambulance for the return to the Force Hospital. Medic 1 will inform Casevac Co-ord that the ambulance is returning, and will provide a brief report on the patient's condition and any necessary equipment/staff, which should be standing by at the to the hospital;

F. Should a second ambulance and crew be required, the secondary ambulance team will be assembled, and dispatched (using c/s Medic 2). Medic 2 will follow the same procedures as outlined above.

If Casevac is by air:

G. Casevac Co-ord will inform AME Duty Medical Crew Director (MCD) (CasEvac 1A on Ch 4) to report to hospital for casevac;

H. AME Duty MCD, in conjunction with Casevac Co-ord is to assemble a team which must consist of at least 1 AME trained member. Once assembled, the team and equipment is to

proceed to Kigali International Airport, Presidential Hangar (reporting upon departure from hospital to Casevac 1 on Ch 4);

I. The AME team will proceed by helicopter to patient's location and once the patient has been stabilized, he/she will be loaded on the helicopter for the return flight.

J. As per current SOPs, Air Ops will advise Casevac 1 on Ch 4 when the helicopter is 10 minutes from Kigali.

K. Once the helicopter has been shut down, the patient will be loaded aboard the ambulance for the return to the Force Hospital. Medic 1 will inform Casevac Co-ord that the ambulance is returning, and will provide an ETA, a brief report on the patient's condition and any necessary equipment/staff which should be standing by at the hospital.

2. Special Situations - Mass Casualty:

When report of a mass casualty accident (more than 2 pers) has been received from M93, the following actions should be taken:

A. Ensure casevac request form has been completed with information supplied by M93;

B. Determine mode of casevac - by road or by air. If by air, request time of aircraft availability;

C. Casevac Co-ord will order a recall of all available hospital personnel. If the casevac is by air, the AME MCD in conjunction with Casevac Co-ord will assemble team and necessary equipment (including mass casualty kits) and will proceed to heliport for transportation to accident site. If the Casevac is by road, the Duty Paramedic in conjunction with Casevac Co-ord will assemble team and necessary equipment (including mass casualty kits) to proceed to the accident site. At the Casevac Co-ordinators discretion, he may proceed to the site with the team to coordinate recovery/resuscitation of the patients from the scene.

D. A request for assistance shall be made to INDBATT RAP (LL 11019) for additional ambulances and crews assist on scene and/or to transport patients from the site/heliport to the hospital. During silent hours it may be necessary to contact INDBATT HQ to facilitate request.

E. A request for assistance shall be made to 95 CMSG if stretcher bearers/first aid attendants are required;

F. Triage at scene will be conducted by the most experienced medical person available, and at hospital by a person designated by the NORMED Medical Director.

G. Medic 1 and 2 will report when leaving accident scene/heliport enroute to hospital with ETA, a brief description of their patient's condition and any necessary equipment/staff which should be standing by at the hospital.

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2. Special Situations - Medevac to Nairobi:

If required, NORMED Medical Director will advise Casevac Coordinator of need for medevac to Nairobi. The following actions will be taken:

A. The physician originating medevac request shall consult with Nairobi Hospital (LL 722160) or Aga Khan Hospital (LL 742531) to determine if a bed is available, and a specialist is available to take over case;

B. Casevac Co-ord (CasEvac 1 on Ch 4, LL 11730/11731) will advise Medical Operations Branch (M93 on Ch 4, LL 11116/11115) of medevac requirement and will supply information regarding nature and condition of the patient, name/contact number of referral specialist in Nairobi, and any special equipment required by ambulance crew in Nairobi;

C. Casevac Coord will ensure Duty AME MCD is advised of medevac, and that steps are taken in assembling crew/equipment;

D. Med Ops will inform Air Ops (WZ1 or WZ4 on Ch 11, LL11714) of medevac requirement. Air Ops will advise if aircraft is available, and the ETA;

E. Med Ops will advise Casevac Co-ord of ETA of aircraft. Med Ops should be provided with the following crew/patient particulars:

- i. name,
- ii. UNID number,
- iii. passport numbers, with date and place of issue,
- iv. date and place of birth,
- v. nationality;

F. Med Ops will advise Liaison Officer Nairobi (LL622598) of medevac and provide details regarding crew/patient particulars, ETA Nairobi, special equipment required at off load site;

G. Med Ops will advise Airport MovCon staff of AME, and provide ETA of aircraft, patient and crew particulars as listed in para 3.E. MovCon staff must be available to expedite passage of crew/patient onto aerodrome and assist with passage through immigration at both Kigali and Nairobi;

H. Force Medical Hospital staff are to ensure the patient is available to move on 15-30 minute notice, and should be accompanied by:

- i. UNID card,
- ii. passport,
- iii. vaccination certificate (yellow book)
- iv. specialist referral,
- v. copy of chart,
- vi. nursing transfer record,
- vii. any medications required in flight,
- viii. any personal articles the patient may require (toiletries, money, clothes);

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I. AME Duty MCD is to ensure appropriate crew/equipment is prepared, and that crew members have the following:

- i. UNID card,
- ii. passport,
- iii. vaccination certificate,
- iv. money,
- v. clothes and toiletries in case of overnight stay,
- vi. water;

J. Thirty minutes in advance of scheduled ETA of flight, the patient is to be loaded on a stretcher (military pattern), and placed in military pattern ambulance with all equipment/crew. A second vehicle should accompany with escort personnel. Note that weapons are not allowed at the airport;

K. The ambulance and escort vehicle should proceed to the Kigali International Airport flightline gate. A MovCon member shall be available to clear the patient/crew through immigration. The MCD shall be in possession of the passports and \$20.00 US per person, and will pass these items to the Movements Officer/crew member or escort person must be designated to clear the team/patient through immigration. At that time the RPA may allow the ambulance and escort to proceed onto the flightline once the aircraft has landed and shut down;

L. If the MovCon person is not present, a team member or escort must be available to clear the crew/patient through immigration. If this is necessary, the member should proceed to the UNAMIR office in the departures area to be manifested. Once processed by the flight office, proceed to the departure fee booth and pay \$20.00 US for the patient and each crew member. Proceed up the stairs to the immigration area where the departure cards/passports will be processed. A member of the immigration staff will usually escort the member out to the aircraft;

M. Once the patient is loaded the ambulance and escort are to proceed off the flightline, and hold on the apron until the aircraft has taken off. Once the aircraft has departed, the ambulance and escorts are to return to base;

N. Upon arrival at Nairobi Airport, the UNAMIR Coordination Officer will meet the aircraft, and the ambulance will be present to transport the patient to the Nairobi Hospital. The AME Duty MCD may make the decision to hand over the patient to the ambulance crew, or attend the patient to the hospital. MovCon personnel shall be available to process the patient/crew through immigration, however in the unlikelyhood that the person is not available, a crew person must be available to take the travel documents through Kenyan immigration. Note that the UNAMIR Coordination Officer should not be made responsible to take the passports through immigration as he is required to facilitate admission of the patient to the hospital;

O. Under usual circumstances, the Coordination Officer will arrange for return flight bookings, transfer of staff from hospital to hotel, and any other coordination details;

(4)

P. Upon return to base, the AME MCD is responsible to clean, replenish, recharge the AME equipment as soon as possible. The AME report is to be completed as soon as possible following the mission, and should be passed to the Casevac Co-ord for furtherance to Med Ops.

Drafted by: Capt. D. Schell

Dated: 1 Sep 95

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FALCIPARUM MALARIA : KEY FACTS

By Major A. Henderson 7 Mar 95 Kigali

PARASITOLOGY

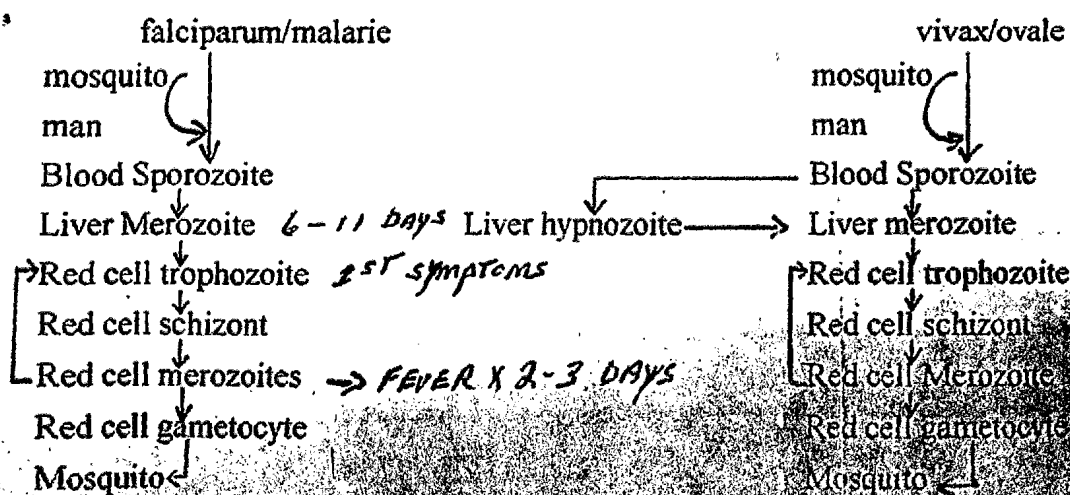
1. Four species of Plasmodia cause disease in man:
 - a. *P. falciparum*.
 - b. *P. vivax*.
 - c. *P. malariae*.
 - d. *P. ovale*.
2. Of these, only *P. falciparum* is likely to kill during acute attacks.

VECTOR

3. Plasmodia are transmitted to man via female anopheline mosquitoes. While a large number of anophelines may transmit malaria, in tropical Africa, *A. gambiae* is the most important vector species. Danger periods for transmission are around dusk and dawn but no time is safe. The mosquitoes detect targets for biting by carbon dioxide concentration, not by vision.

PARASITE CYCLE

4. When an infected mosquito bites a human host, spindle shaped plasmodia called **SPOROZOITES** are injected with the mosquito's saliva. The sporozoites are rapidly taken up by liver cells to begin the first stage of development. The details vary according to Plasmodial species:



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5. Each trophozoite multiplies into numerous merozoites which rupture the red cell and each then invades a new red cell to form a trophozoite which restarts the cycle.

6. In ovale and vivax malaria sleeping forms or hypnozoites develop in the liver. At some later time (weeks to years) they awake, form merozoites and a relapse occurs. Hypnozoites can only be eradicated by Primaquine, hence the need for this drug on returning home. I shall now focus on falciparum malaria.

RESISTANCE TO FALCIPARUM MALARIA

A. **Innate.** A number of factors protect against death from falciparum malaria. They include:

- i) Thalassaemia trait
- ii) Sickle trait
- iii) G6PD deficiency
- iv) Iron deficiency
- v) Ovalocytosis

B. **Acquired.** In Africa heavy falciparum transmission occurs. Young children acquire repeated infections. They either:

- i) **Die.** From an acute attack (the WHO estimates at least 1 million children die from falciparum malaria each year.)
- ii) **Become Resistant.** In heavy transmission areas, children over 5 years are solidly resistant. They have splenomegaly. Future infections produce little or no symptoms. They have chronic low grade parasitaemia (as do adults). Resistance depends upon repeated infection, so if they move to a non malarious area for over one year, their immunity wanes and they will get a severe attack on returning to the malarious area.

C. **Reduced Immunity.** Pregnancy, steroids, splenectomy and ? AIDS greatly reduce resistance to death from falciparum malaria.

EPIDEMIOLOGY

9. **Stable Malaria.** Much of tropical Africa and coastal PNG. Very heavy transmission all year. This causes

- a Heavy death rate in children under 5 years
- b Older children and adults are immune and do not suffer clinical malaria.

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10. **Unstable Malaria.** Transmission is not so heavy and varies with the season. The children do not acquire solid immunity. This causes:

- a. Clinical malaria in all ages;
- b. Partial immunity which reduces the severity of acute attacks.

WHY DOES FALCIPARIUM MALARIA KILL

11. Falciparum malaria in a non-immune subject is a very dangerous disease and may cause death within a week or ten days. The reason falciparum kills and the other forms of malaria do not, relates to the interaction of the parasite with the red cell membrane. The falciparum schizont deforms the red cell membrane and causes it to adhere to other red cells and to the vascular endothelium in the deep tissue beds. The microcirculation eventually becomes obstructed. The arrest of blood flow in the deep capillary bed causes global organ ischaemia and accounts for much of the morbidity and severe falciparum malaria.

CLINICAL PICTURE OF FALCIPARUM MALARIA IN NON IMMUNES

12. The incubation period is 7-21 days after an infected bite. The early symptoms are not specific to malaria and are easily mistaken for 'flu'.
13. Fever, shivers, headache, generalised aches and pains (especially backache). During the shivering stage there is vasoconstriction. This is followed by flushing. The fever is usually constant. Periodic fever is less common and occurs later.
14. Investigations may reveal anaemia, jaundice, elevated transaminases, leucopenia and thrombocytopenia.
15. Falciparum trophozoites are seen on blood films. Treatment at this stage usually produces a prompt response, although it may take three days for the fever to abate and the parasites to clear.

A NOTE ON BLOOD FILMS

16. The best stain is the Giemsa at pH of 7.0 to 7.2.
- a. **Thick film** answers the question: Are malarial parasites present or not?
 - b. **Thin film** answers the question: Which species of malaria is present?
17. In untreated patients not taking prophylaxis, trophozoites are easily found. In partially treated malaria and in those with breakthrough on prophylaxis, parasites may be scanty. A negative slide does not exclude malaria. Some hints:
- a. If in doubt assume it is malaria.
 - b. Be vigilant for mixed infection.

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- c. If the patient is sick and parasites are seen on the film, treat as for falciparum.

SEVERE MALARIA

18. Only falciparum causes severe acute malaria, therefore a severely ill patient with malaria should be treated for falciparum regardless of the species of parasites identified on the blood film. The usual picture of severe malaria is cerebral malaria with confusion, depression of consciousness and fits. This is a grave medical emergency which needs immediate treatment. Apart from cerebral malaria, other indications of severe disease are:

- a. Very high parasite count;
- b. Metabolic Acidosis;
- c. Hypotension;
- d. Hypoglycaemia;
- e. Organ failure, especially renal failure, pulmonary oedema or severe haemolysis

A NOTE ON HYPOGLYCAEMIA

19. Hypoglycaemia may occur in any severe case of falciparum malaria. It is especially common in children and in pregnancy. It is an important cause of depressed consciousness or falling consciousness during treatment. Importantly, Quinine releases insulin from the pancreas and may worsen hypoglycaemia.

PITFALLS IN THE DIAGNOSIS OF FALCIPARUM MALARIA

<u>Presentation</u>	<u>Misdiagnosis</u>
a. Typical Acute attack	Flu
b. Jaundice, hepatosplenomegaly with raised transaminases	Viral hepatitis
c. Microcirculatory arrest in the gut causing severe diarrhoea	Cholera Dysentery
d. Cerebral Malaria	Meningitis Encephalitis
e. Microcirculatory arrest in the kidney	Acute nephritis
f. Microcirculatory arrest in the gut with bacterial translocation (Aldid Malaria)	Septic shock

g. Massive haemolysis and blackwater fever G6PD deficiency

h. Prolonged fever with hepatosplenomegaly Typhoid

CHRONIC COMPLICATIONS OF FALCIPARUM MALARIA

a. Anaemia

b. Tropical Splenomegaly Syndrome: massive splenomegaly with hypersplenic pancytopenia and immunoparesis. Death from infection, especially pneumococcal.

c. Burkitt's Lymphoma: Highly malignant lymphoma, usually of the jaw in children with chronic falciparum malaria infected with EB virus.

DRUG RESISTANCE

20. Plasmodium falciparum, unlike other species acquires resistance to commonly used antimalarials. This has caused problems with regard to treatment and prevention. Chloroquine resistance is now so widespread that the drug should no longer be used against P. falciparum. There are areas where resistance to Proguanil, Fansider, Maloprim and Mefloquine has been reported. There may be low grade resistance to quinine in some areas.

PREVENTION OF MALARIA

21. **Physical Measures.** Sleeping under nets, use of knockdown sprays, insect repellents, long sleeves and trousers after dusk.

22. **Drugs.** There is no 100% protection. Daily doxycycline or weekly mefloquine are popular.

23. **Vaccines.** Experimental

TREATMENT FOR FALCIPARUM MALARIA

24. Falciparum Malaria in a non-immune is a medical emergency.

25. **Exclude hypoglycaemia.** Any drowsy patient merits 20 mls of 50% glucose IV. Patients with severe malaria need 2 hourly finger prick glucose estimates while seriously ill.

SPECIFIC THERAPY

26. **Quinine** 600mg TID x 5 days. If IV therapy is required use a carrier of 500 mls of 5% dextrose and infuse over four hours. Tinnitus and reduced hearing are common (and transient) and not an indication to stop therapy.

27. **Doxycycline** 100mg BID x 7 days. Nausea is common. Avoid in pregnancy and young children (under 8 years). In them give Quinine for 10 days.

(4)

RETURNING HOME

28. Continue Doxycycline prophylaxis for 2 weeks.

29. Two weeks of Primaquine to kill the hypnozoites of *P. ovale* or *P. vivax*. Primaquine also kills the mosquito infecting gametocytes of all species of plasmodium.

Note:

Despite the above malaria might still occur after returning home. Remember to tell the doctor that you have been heavily exposed to malaria and your current fever, even up to one year later might just be MALARIA.

A catch in immunes:

People immune to falciparum malaria usually have asymptomatic low grade parasitaemia. The finding of parasites in their blood, if very scanty does not mean their current fever is malaria. It is probably something else!!

FALCIPARUM MALARIA KILLS!!!

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APPENDIX 1: ANTIMALARIAL DRUGS.

1) **CHLOROQUINE**: A rapidly acting blood schizonticide. Gametocytocidal against *P. vivax*, *P. malariae* and *P. ovale*. Chloroquine is the drug of choice for the treatment of acute malaria due to *P. vivax*, *P. ovale* and *P. malariae*. Chloroquine does not eradicate hypnozoites. Because of increasing resistance of lethal *P. falciparum* to chloroquine **DO NOT ATTEMPT TO TREAT FALCIPARUM MALARIA WITH CHLOROQUINE**. There should no longer be any need to use chloroquine parenterally, a route previously associated with severe and fatal reactions. The main side-effects of oral chloroquine are nausea and itch.

DOSAGE: 1) Acute malaria - 10mg/kg base (max. 600mg) stat. followed by 5mg/kg base (max. 300mg) at 6, 24 and 48 hours.

2) Prophylaxis - chloroquine offers good prophylaxis against non-falciparum malaria. The dose is 5mg/kg base (max. 300mg) per week. Longterm, retinopathy is a problem.

2) **DOXYCYCLINE**: Doxycycline is an oral tetracycline with extensive enterohepatic recirculation and a long half life. It is active against chloroquine resistant falciparum malaria. The drug deposits in developing teeth and bones and is therefore not to be used in children under 8 years or during pregnancy. Side-effects include nausea, thrush and photosensitivity. It offers some incidental protection against cholera and other bacterial diarrhoeas, plague and the typhus group of fevers.

DOSAGE: 1) Acute falciparum malaria - 100mg 12 hourly for 10 days.

2) Prophylaxis - 100mg daily.

3) **FANSIDAR**: Antifolic acid preparation comprising **SULFADOXINE** 500mg and **PYRIMETHAMINE** 25mg. Active against chloroquine resistant falciparum malaria. Fansidar is not reliable against non-falciparum species. There is now increasing falciparum resistance to Fansidar. Side-effects include rashes, agranulocytosis and when combined with chloroquine **FATAL** skin reactions.

DOSAGE: 1) Acute falciparum malaria - Three tablets stat. For children:

a) under 4: 1/2 tablet

b) 4 - 8: 1 tablet

c) 9 - 14: 2 tablets.

2) Prophylaxis - Adults; 2 tablets every 14 days. Reduced dosage for children.

4) **MALOPRIM**: Maloprim is another antifolic acid preparation comprising **DAPSONE** 100mg and **PYRIMETHAMINE** 12.5mg. It is used for the prophylaxis of chloroquine resistant chloroquine malaria. Like Fansidar, it is unreliable against non-falciparum species. Side-effects include rashes, agranulocytosis and methaemoglobinaemia.

DOSAGE: 1 tablet weekly.

5) **MEFLOQUINE**: Mefloquine is a new antimalarial which was developed in response to the emergence of multiply resistant falciparum malaria. It has structural similarities to quinine. It is active against the blood forms of all Plasmodia but has no effect on hypnozoites. The half-life is three weeks and as yet there is no parenteral preparation. Some strains of falciparum are already resistant to mefloquine. Side-effects include fits, a range of psychological problems and electrophysiological effects on the heart. The cardiac side-effects are dangerous in people taking anti-arrhythmic drugs, especially beta blockers and quinine.

DOSAGE: 1) Acute falciparum malaria - for adults, 3 tablets followed at 8 hours by 2 tablets.
2) Prophylaxis - 1 tablet weekly.

6) PROGUANIL: A safe drug which was widely used for prophylaxis of falciparum malaria. Usually with chloroquine combined with chloroquine. There is now widespread resistance in P. falciparum. Nausea is the main side-effect.
DOSAGE: 200mg daily.

7) PRIMAQUINE: This is the only drug available to eradicate the hypnozoites of P. ovale and P. vivax and the gametocytes of P. falciparum. It is safe except in people with G6PD deficiency who are liable to severe haemolysis.

DOSAGE: 1) Normal subjects - 15 mg daily for 2 weeks.

2) Normal subjects infected with the Chesson variant of P. vivax (PNG), 21mg daily for 2 weeks.

3) G6PD deficient subjects, if treatment is essential, 45mg once a week for 6 weeks is safer than conventional dosing.

8) PYRIMETHAMINE: Antifolate acid drug which is rarely used alone but which is a core component of Fansidar and Maloprim.

9) QUININE: This, the earliest antimalarial remains the cornerstone of therapy for falciparum malaria. It is powerfully active against the blood forms of all Plasmodia and the gametocytes of the non-falciparum species. It does not destroy hypnozoites. In some areas, particularly parts of SE Asia and Brazil, low grade resistance has been described in multiply drug resistant species of P. falciparum. Side-effects include nausea, conduction defects and when used parenterally, hypotension. Quinine has major electrophysiological cardiac effects including conduction defects and torsade de pointes. Extreme care is required if the patient is using cardiac drugs. A very important side-effect is release of insulin from the islets cells of the pancreas exacerbating the spontaneous hypoglycaemia found in severe falciparum malaria.

~~DOSAGE: 10mg/kg orally or IV (max 800mg) 8 hourly.~~ If using the drug intravenously, infuse over 4 hours in 500ml 5% dextrose. For severely ill patients from the Thai-Cambodia border, the initial dose should be 20mg/kg. Switch to oral/NG administration as soon as possible. If this is not possible by 3 days reduce the IV dose to 5mg/kg. Use a loading dose of 5mg/kg if the patient has taken mefloquine within the last 24 hours.

10) NEW DRUGS: The emergence of multiply drug resistant falciparum malaria has stimulated a search for new drugs. Novel drugs include enpiroline, halofantrine and a drug from ancient Chinese medicine, qinghaosu.

BEFORE USING UNFAMILIAR DRUGS:

ALWAYS CHECK THE DOSAGE, SIDE-EFFECTS AND INTERACTIONS WITH THE MANUFACTURERS INSTRUCTIONS

APPENDIX 2: MALARIA IN PREGNANCY.

Falciparum malaria is lethal to the foetus and mother, even in previously immune subjects as the pregnancy impairs the immune response to the parasite. Pregnancy complicates therapy because of the potential injurious effects of drugs upon the foetus. A point to remember is the falciparum malaria is VASTLY MORE DANGEROUS TO MOTHER AND BABY THAN ANTIMALARIAL DRUGS. DO NOT THEREFORE BE AFRAID TO TREAT THE MALARIA. Avoid doxycycline and fansidar. Chloroquine is safe in non-falciparum infections and quinine in falciparum malaria. Ten days of therapy will be needed to prevent relapse. HYPOGLYCAEMIA is a major risk in pregnant women with falciparum malaria.