



Maritime and Coastguard Agency

MARINE GUIDANCE NOTE

## MGN 399 (M)

# Prevention of Infectious Disease at Sea by Immunisations and Anti-Malaria Medication (prophylaxis)

**Notice to all Ship Owners, Ship Operators and Managers, Manning Agencies, Port Operators, Ship Masters and Seafarers**

*This Note should be read in conjunction with Merchant Shipping Notices MSN 1765(M), MSN 1768(M+F) and amendment and Marine Guidance Note MGN 219(M)*

*This note replaces MGN 257*

### **PLEASE NOTE:-**

Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from vessel to vessel and you should consider seeking independent legal advice if you are unsure of your own legal position.

### **Summary**

This guidance note provides information and recommendations on how to obtain:

- appropriate immunisations against infectious diseases likely to be encountered by seafarers in the course of their duties: and
- medication for protection against malaria.

Annexes are attached in respect of:

1. Useful references for further information
2. UK routine and job specific immunisations and geographical requirements
3. Immunisations schedule
4. Summary of malaria medication needs
5. Malaria emergency standby medication

It is based on a detailed review undertaken for the MCA which is available at [www.mcga.gov.uk/news and publications/research](http://www.mcga.gov.uk/news_and_publications/research) or from the MCA's Research Programme Manager, Spring Place, at the address at the end of this Notice.

## 1. Background

- 1.1 Infections can be life-threatening health problems for seafarers and lead to major costs and disruption for maritime employers. Preventive measures are therefore essential.
- 1.2 Infection may be transmitted by food and water, from person to person or by insect bites.
- 1.3 The major means of infection control on board ship are through work practices designed to minimize infection risks and effective personal hygiene measures, but these are not the subject of this MGN. To prevent insect transmitted infections including malaria, dengue fever and yellow fever, bite avoidance measures are required. Information can be found in the Code of Safe Working Practices for Merchant Seamen<sup>1</sup>.
- 1.4 Good hygiene and bite avoidance must be supplemented by clinical preventive measures:
- *immunisations* for a range of infectious diseases
  - preventive *medication* in the case of malaria
- 1.5 Treatment after suspected exposure to an infection or on suspicion of signs suggestive of infection is recommended for a few conditions. This is described for malaria in Annex 5. Post exposure treatment may also be recommended if there is a risk of HIV or rabies infection as well as for some other rare bacterial and viral illnesses. Use depends on an expert clinical risk assessment and this is not considered here.

<sup>1</sup> Available from any branch of The Stationery Office (Tel: 0870 600 5522)

## 2. Infection risks

- 2.1 The risk of contracting an infectious disease will depend on its frequency in the area of the world where the ship is calling at or passing close to, the duties of seafarers, their exposure to the source of infection and the readiness with which they become infected. Hence requirements are determined by:
- the route of the vessel, especially the location of ports visited
  - the job of each seafarer
  - the hygienic and clinical preventive measures taken.

## 3. Route and ports

- 3.1 *Within Europe, USA and Canada, Japan and Australasia* the risks are no greater than those onshore in the UK and no immunisations over and above those given to the general population are needed.
- 3.2 *For all other parts of the world*, location specific requirements must be determined. A wider range of immunisations is likely to be needed and these must be carried out before the voyage and kept up to date as long as they are relevant. A full course of immunisations may take a month to complete so prior planning is essential.
- 3.3 *Tropical and subtropical regions* - Malaria is a particular risk in these areas. Guidance on prevention and treatment is given in paragraph 7 below.

#### 4. Job related risks

- 4.1 *Maintenance of Sewage Systems* - seafarers whose work involves maintaining shipboard sewage systems are at increased risk of faecal contamination. Immunisation against *typhoid and hepatitis A* is therefore recommended.
- 4.2 *Food Handlers* - These seafarers will, if infected, pose a risk of transmitting foodborne infections to other crew members or passengers. They too should have *typhoid and hepatitis A* immunisation.
- 4.3 *Cruise Liners* - Where large numbers of susceptible passengers are carried, as on cruise ships, outbreaks of *influenza* can be severe and crew immunisation should be considered.
- 4.4 *Night Work* - Crew who are required to spend periods on deck, particularly at night, in places where malaria is rife, will be at high risk of mosquito bites, and correct use of antimalarial tablets is particularly important
- 4.5 *Travel Away from Vessel* - If a seafarer is planning to spend time away from the ship and harbour area either on business or for leisure, additional advice is needed before departure on whether the precautions used on account of the ship's voyage remain adequate.
- 4.6 *Crew Providing Medical Care* - Health professionals working on board ship should be fully immunised, including confirmed protection from hepatitis B. The provision of routine hepatitis B immunisation may need to be considered if non-health care specialists are regularly required to provide such care.

#### 5. Responsibilities

- 5.1 *Ship operators and employers* have a duty to protect the health and safety of workers (so far as reasonably practicable). In practical terms, implementing this general duty of care means that they are responsible for minimising the risks of infection by ensuring that hygiene measures are effective and suitable. They will also know the routes and destinations of ships and so must make arrangements for infection control, including supply of medical stores, with these in mind. As the risks of infection arise out of the work activities of the seafarer it is the responsibility of the *maritime employer* to provide and pay for preventive measures such as immunisations. It is the *seafarer's* responsibility to comply with these measures. The discharge of these duties needs to be encompassed within a procedural system which is effective and which can be audited.
- 5.2 Before a seafarer is appointed to a ship, the *maritime employer, including the manning agency or ship management company* where they formally employ the seafarer(s), needs to know where each crew member will be travelling to and the risks of infection. They should check the immunisation status of the seafarer and ensure that any missing immunisations are given. They should also check that the appropriate malaria medications and insect bite avoidance measures (e.g. insect repellent sprays) are available on board if the ship is travelling to a destination where there is a risk of malaria.
- 5.3 *Doctors* approved by the MCA to undertake seafarer medicals (Approved Doctors) are able to advise on requirements and either provide them or refer seafarers for immunisation to specialist centres. Immunisation can often conveniently be undertaken at the same time as medical certification. Approved Doctors may also advise individual seafarers when there are any medical reasons for not giving one of the specific antimalarial treatments used where there are drug resistant parasites. In the UK, routine immunisations (see Annex 2) recommended for all members of the population are provided by General Practitioners (GPs) under the NHS. Travel health clinics can also provide immunisations, malaria medications and advice. *Employers* need to give the seafarer or the Approved Doctor information on likely destinations so that the correct advice regarding immunisations and

where appropriate, malaria medications are given. The *doctor* should give the seafarer a record of immunisations administered and any specific individual requirements concerning the use of malaria medication as well as maintaining his/her own records.

- 5.4 Where *manning agencies* are recruiting without adequate briefing on destinations, the possible lack of immunisations and where appropriate, malaria medication must be clearly indicated to the ship operator and the seafarer. The *ship operator* then has the duty to arrange them. When the pattern of voyage differs from that originally envisaged when the seafarer was immunised, ensuring that additional immunisations required and where appropriate, malaria medication are given is necessarily a responsibility of the *ship operator*, even when they are not the formal employer of the seafarer.
- 5.5 When seafarers are recruited from countries with different patterns of disease and immunisation from the UK, the *employer* must obtain medical advice from an Approved Doctor or travel medicine specialist on immunisation and anti-malaria requirements.
- 5.6 *Seafarers* should retain a record of immunisations, malaria medications used and any side effects from them and present it to the Approved Doctor at medicals and when requested by employers. They should also be aware of the importance of informing any doctor of their recent locations of work if they develop symptoms such as a flu-like illness, fever or diarrhoea, especially if they have recently flown home from a vessel in an area subject to infections. The seafarer's record should be checked before departure by the *ship operator* and finally by the *ship's master*.

## **6. Schedules for immunisation**

- 6.1 The table and schedule in Annexes 2 and 3 to this Notice indicate the requirements for immunisation in broad terms. The doctor providing the immunisations will be able to check precise recommendations and advise on the correct immunisation schedule.

## **7. Anti-Malaria Medication**

- 7.1 Since immunisation against malaria is not available, a course of preventive medication is required, usually starting before likely exposure. It is also important to remember to use insect bite avoidance measures when taking malaria medications. Detailed local information on risk is needed to decide on the medication to use. Some treatments are suitable for all seafarers but others require the individual to have medical clearance before administration. This is important where drug-resistant forms of malaria exist, and as a result, the first choice medications cannot be used.
- 7.2 It is the ship operator's responsibility to ensure that a vessel entering malarious areas carries appropriate medication against malaria in sufficient quantities (see [Annex 4](#)). The ship's stores may need to be further supplemented with the appropriate malaria medications if there are resistant strains present. Appropriate emergency standby medication should also be carried (see [Annex 5](#)). Preventive treatment (prophylaxis) needs to start shortly before entering a risk area and must be continued for a period thereafter.
- 7.3 Hence ships' masters must know when the crew should start to use it. This needs to be supplemented by knowledge of how to use emergency standby medication in the event of a suspected case, either in a location where anti-malarial tablets are not indicated because of the low level of anticipated risk, or because a seafarer has failed to take the appropriate preventive medicine.
- 7.4 It is the master's responsibility to determine the time at which anti-malarial tablets should be started and finished, based on the timing of visits to areas where there is a risk of infection. Based on specialist advice, the use of standby treatment alone may be justified

where the risks are low. The ships' master should refer to Annexes 4 and 5 where the schedules of taking malaria medications are listed. Standby treatment must always be followed-up with contact to a radio medical advisory service for recommendations on subsequent action.

7.5 The Approved Doctor will also be able to advise the seafarer whether they have any medical reasons for not using particular antimalarial medicines. There are reliable Internet sources, which specify the malaria risk in different locations, as well as providing information on any drug resistance, listed in [Annex 1](#) to this Notice. Additional valid local knowledge may be relevant to particular ports. It is normally best for the ship operator to obtain specific advice from a travel medicine specialist on the particular regime of prevention to be followed, to buy the appropriate medication accordingly and to ensure that ships' masters are familiar with the advice given with the medication.

7.6 Section 7 of this guidance only relates to anti-malaria medication. Advice on other preventive measures, such as the use of insect bite avoidance measures for example the use of mosquito nets, is included in The Ship Captain's Medical Guide and also in MSN 1768 (M+F) on Medical Stores.

## 8. Further Information

8.1 Further information on the contents of this Note or any issue relating to seafarer health and safety should be referred to the Maritime and Coastguard Agency at:

### More Information

Seafarer Safety and Health branch  
Maritime and Coastguard Agency  
Bay 1/29  
Spring Place  
105 Commercial Road  
Southampton  
SO15 1EG

Tel : +44 (0) 23 8032 9247  
Fax : +44 (0) 23 8032 9251  
e-mail: [seafarer.s&h@mcga.gov.uk](mailto:seafarer.s&h@mcga.gov.uk)

General Inquiries: [infoline@mcga.gov.uk](mailto:infoline@mcga.gov.uk)

MCA Website Address: [www.mcga.gov.uk](http://www.mcga.gov.uk)

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**Transport***

## Useful References

### Web sites

- General travel health and safety ([www.fco.gov.uk/travel/](http://www.fco.gov.uk/travel/))
- The World Health Organization: International Travel and Health; Vaccination Requirements and Health [www.who.int/ith/](http://www.who.int/ith/)
- "Fit for Travel" is a public access website provided by the NHS which gives travel health information for people travelling abroad from the UK ([www.fitfortravel.scot.nhs.uk](http://www.fitfortravel.scot.nhs.uk))
- The International Society of Travel Medicine: an information resource for both travel medicine practitioners and travellers [www.istm.org](http://www.istm.org)

### General

CDC Travellers' Health. Cruise Ship Travel: Health recommendations. CDC Health Information for International Travel 2008; Elsevier Mosby, 2008..

<http://wwwn.cdc.gov/travel/contentAirTravelCruiseShips.aspx>

CDC. Vessel Sanitation Program. International Conveyances (Airplanes and Cruise **Ships**) 2005. Available at: <http://www.cdc.gov/nceh/vsp>

Rooney R. Ship sanitation and health. The Global Occupational Health Network.2002; vol.3, pgs 4 - 5.

British National Formulary. British Medical Association and the Royal Pharmaceutical Society of Great Britain: <http://www.bnf.org>

### Travel Health Risk Assessment

Delivering travel health services. RCN guidance for nursing staff 2005. Available from: <http://www.rcn.org.uk/> and use keyword site search for "travel health services"

Stringer C, Chiodini J & Zuckerman Jane N. International travel and health assessment. Nursing Standard 2002; vol 16, Issue 39, pgs 49 - 54.

### Malaria

Nikolić N , Poljak I and Trošelj-Vukić B. Malaria, a Travel Health Problem in the Maritime Community  
Journal of Travel Medicine 2006, Vol 7; 6: 309 - 314

Wernsdorfer WH. Protection against malaria among seafarers. International Maritime Health 2002; vol 53, Issue 1 – 4: pgs 7 – 16.

Chiodini P, Hill D, Laloo D, Lea G, Walker E, Whitty C and Bannister B (on behalf of the Advisory Committee on Malaria Prevention for UK Travellers). Guidelines for malaria prevention in travellers from the United Kingdom, 2007. London, Health Protection Agency, January 2007.. ISBN: 0 901144 83 5  
[http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb\\_C/1195733823080?p=1191942128258](http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1195733823080?p=1191942128258)

MCA Merchant Shipping Notice MSN 1768 (M + F)

The Ship Captain's Medical Guide – 22nd Edition. The Maritime and Coastguard Agency of the Department for Transport. London: The Stationery Office (Published 1998)  
<http://www.mcga.gov.uk/> under Working at Sea/Medical Certification and Advice

### **Immunisations**

World Health Organization. International Travel and Health 2008, Vaccination Requirements and Health Advice, ISBN-13 9789241580403, 2008 <http://www.who.int/ith/en/>

World Health Organization **International Health Regulations (2005)**. ISBN-13 9789241580410. <http://www.who.int/csr/ihr/en/index.html>

The National Travel Health Network and Centre (NaTHNaC), The Yellow Book - Health Information for Overseas Travel 2008.[http://www.nathnac.org/yellow\\_book/01.htm](http://www.nathnac.org/yellow_book/01.htm)

Department of Health, Immunisation against infectious disease - 'The Green Book' 2006.  
[http://www.dh.gov.uk/en/Publichealth/Healthprotection/Immunisation/Greenbook/dh\\_4097254](http://www.dh.gov.uk/en/Publichealth/Healthprotection/Immunisation/Greenbook/dh_4097254)

## UK Routine and Job Specific Immunisations and Geographical Requirements

### UK Routine Immunisations

- Poliomyelitis
- Tetanus
- Diphtheria
- Childhood immunisations e.g Diphtheria/Tetanus/Pertussis (in date)

### Additional Immunisations

Recommended for travel outside of NW Europe, N America, Australia & New Zealand:

- Diphtheria (close contact with the indigenous population)
- Hepatitis A
- Hepatitis B
- Typhoid
- Yellow fever (sub-Saharan Africa, parts of Central and Southern America)

### Special Risk by Duties

- Hepatitis A & typhoid (food handlers)
- Hepatitis A (sewage workers)
- Hepatitis B (crew providing medical care)

### Other Special Risks

Additional immunisations may be required when there are unusual local or job related risks. Decisions should be based on an informed clinical risk assessment.

- Influenza (High risk to passengers who contract influenza or where seafarer has a medical problem that would be worsened by infection.)
- Meningococcal meningitis (local endemic or epidemic disease)

### Specific Certificate Required by Port Authorities

- Yellow fever (travel to parts of sub-Saharan Africa, and parts of Central and Southern America)

### IMMUNISATION SCHEDULES

The following table is based upon schedules of immunisation applicable to the United Kingdom.

Key: I.M - intramuscular, S.C - sub-cutaneous, ID - intra-dermal

Vaccine	Route / Dose	Schedule	Booster	Available from GP
Diphtheria/tetanus/ polio (adults)	0.5 ml I.M	3 doses at 4-week intervals	10 years	Yes
Hepatitis A	I.M	2 doses at 0, 6-12 months	at least 25 years	Yes
Hepatitis A /typhoid	I.M	1 dose	Hepatitis A: 6-12 months  Typhoid: 3 years	Yes
Hepatitis B	I.M	3 doses at: 0, 1 month, 6 months <i>Or:</i> 0, 1 month, 2 months <i>Or:</i> 0, 7 days, 21 days	5 years 12 months 12 months	Yes
Hepatitis A /hepatitis B	I.M	3 doses at: 0, 1 month, 6 months  <i>Or:</i> 0, 7, 21 days	Hepatitis A: at least 25 years  Hepatitis B: 5 years	Yes
Influenza	0.5 ml I.M	Adults: Single dose	Annually	Yes
Japanese encephalitis (unlicensed vaccine)	S.C	3 doses at 0, 7-14 days, 28 days  or 2 doses at 0, 7-14 days	1 year and then 3 yearly according to risk  3 months	No
Measles/ mumps/ rubella(MMR)	0.5 ml I.M	Adults: If not previously immunized, two doses at 0 and 1 month		Yes
Meningococcal meningitis ACWY	I.M	Single dose	3-5 years	Yes
Poliomyelitis	I.M	3 doses at 4-week intervals	10 years	Yes
Rabies (pre-exposure)	I.M/I.D	3 doses at 0, 7 days, 21 or 28 days  2 doses at 0, 28 days	2-3 years  6-12 months	No
Typhoid	I.M Oral	Single dose 3 doses on alternate days	3 years Annually	Yes
Varicella	S.C	2 doses at 0, 4-8 weeks	N/A	No
Yellow fever	S.C	Single dose	10 years	No

## Summary of Needs for Malaria Medication

### Areas of chloroquine resistance

#### RECOMMENDED TREATMENT

##### **Atovaquone + proguanil (Malarone™)**

- one tablet (250 mg atovaquone + 100 mg proguanil) daily starting one day before travel to endemic area and continuing for seven days after leaving malarious area

#### ALTERNATIVES – EFFECTIVE BUT MORE COMPLEX TO USE, LOWER IN COST

##### **Doxycycline**

- one capsule (100 mg) daily starting one day before travel to endemic area and continuing for four weeks after leaving malarious area
- If doxycycline or a tetracycline have not been prescribed previously, a trial dose of one capsule a day for 4 days may be advisable

##### **Mefloquine**

- one tablet (250 mg) weekly starting trial dose for three weeks prior to departure if appropriate and continuing for four weeks after leaving malarious area
- consideration should be given to a detailed review of any medical contraindications to the use of mefloquine including any adverse effects reported with previous administration of mefloquine.

### Areas with no chloroquine resistance

**Chloroquine + proguanil** (may be considered for travel to Asian Subcontinent –check validity at time of travel)

- two tablets (150 mg) of chloroquine taken weekly starting a week before travel to endemic area and continuing for four weeks after leaving malarious area together with two tablets (100 mg) of proguanil daily starting a week before travel to endemic area and continuing for four weeks after leaving malarious area

**Chloroquine** (may be considered for travel to Central America – check validity at time of travel)

- two tablets (150mg) weekly starting a week before travel to endemic area and continuing for four weeks after leaving malarious area

or

**Proguanil** (may be considered for travel to Central America – check validity at time of travel)

- two tablets (100mg) daily starting a week before travel to endemic area and continuing for four weeks after leaving malarious area

## Malaria Emergency Standby Medication

The use of emergency medication is indicated whenever infection is suspected (see Chapter 6 of the Ship Captain's Medical Guide). This may form part of a planned approach (see para 7.3 of this Notice). Use will also be required where either a crew member has failed to take the recommended anti-malarials or where symptoms are present despite the use of anti-malarials.

The agent used for emergency standby treatment should be different from the drugs used for chemoprophylaxis, both to minimise drug toxicity and due to concerns over drug resistance (ACMP 2008)

Drug	Situation for use	Dose
PREFERRED OPTION IF 'MALARONE' NOT USED FOR PREVENTION		
Atovaquone & proguanil (Malarone™)	Chloroquine or multi-drug resistant falciparum malaria	4 tablets as a single dose on each of 3 consecutive days
PREFERRED OPTION IF 'MALARONE' USED FOR PREVENTION		
Co-artemether (Riamet)	Chloroquine or multi-drug resistant falciparum malaria	6 doses of 4 tablets over a period of 60 hours
ALTERNATIVE IF DOXYCYCLINE NOT USED FOR PREVENTION		
Quinine & doxycycline	Chloroquine or multi-drug resistant falciparum malaria	2 tablets of 300mg quinine 3 times a day for 3 days + 1 tablet of 100mg doxycycline twice daily for 7 days
ALTERNATIVE IF MALARIA NOT CHLOROQUINE RESISTANT		
Chloroquine	Recommended where no chloroquine resistance present (this applies to very few geographical areas and advice should be sought)	4 tablets on days 1 and 2, 2 tablets on (only in chloroquine sensitive areas) day 3

'Emergency standby medication' should be seen as for emergencies only and is aimed at saving the patient's life and not as 'routine self-medication'. It should only be advised if the traveller will be remote from medical facilities, has been advised about the symptoms of malaria and how to use the medication.

Once the seafarer has completed their emergency standby medication they should restart their malaria prophylactic drug(s) one week after taking the first treatment dose of emergency standby medication. If their preventive medication consists of mefloquine and their standby treatment included quinine, the seafarer should wait a week after completing the course of quinine before restarting mefloquine.