Department of State Bureau of Medical Services—Malaria Prevention Strategies

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March 27, 2019

Malaria in DoS HUs 2018

Confirmed cases

Dx in HU, MED DC or accredited lab with verification

Exposure site	*# Cases*
Abidjan	4
Abuja	1
Bangui	1
Dar es Salaam (1 acquired at post and other dx in Kigali from western Tanzania)	2
Ethiopia (acquired outside Addis Ababa)	1
Khartoum	1
Kinshasa	3
Lilongwe	1
Lome	1
Marowa, Cameroon	1
Monrovia	1
N'Djamena	1
Togo	1
Western Tanzania	1
India (outside of New Delhi)	1
Grand Total	**21**

Characteristics		
Avg age	33 yo	
Children (<18yo)	4/21	19%
Female	7/21	33%
Male	14/21	67%

Prophylaxis adherence	*# Cases*	
Never took	7	33%
Missed >50%	6	29%
Missed <50%	3	14%
Stopped prematurely	1	5%
Not answered	4	19%

Treatment Site	Nº	%
Treated at Health Unit or outpatient clinic	18	86%
Admitted to local hospital	3	14%

Estimated 2018 Malaria rate for USG Personnel in High Threat Malaria Posts

African Posts [DoS Risk Category]

- **Abidjan[5] 4/170 = 2.35 %**
- Abuja [5] 1/317 = 0.32%
- Bamako [5] 1/138 = 0.72%
- **Bangui [5] 1/55 = 1.81%**
- Dar es Salaam [5] 2/291 = 0.69%
- **Khartoum [5] 1/69 = 1.49%**
- **Kinshasa[5] 3/198 = 1.51%**
- Lilongwe [5] 1/138 = 0.72%
- **Lome[5] 2/58 = 3.4%**
- Yaounde [5] 1/154 = 0.65%

Indian Sub-Continent

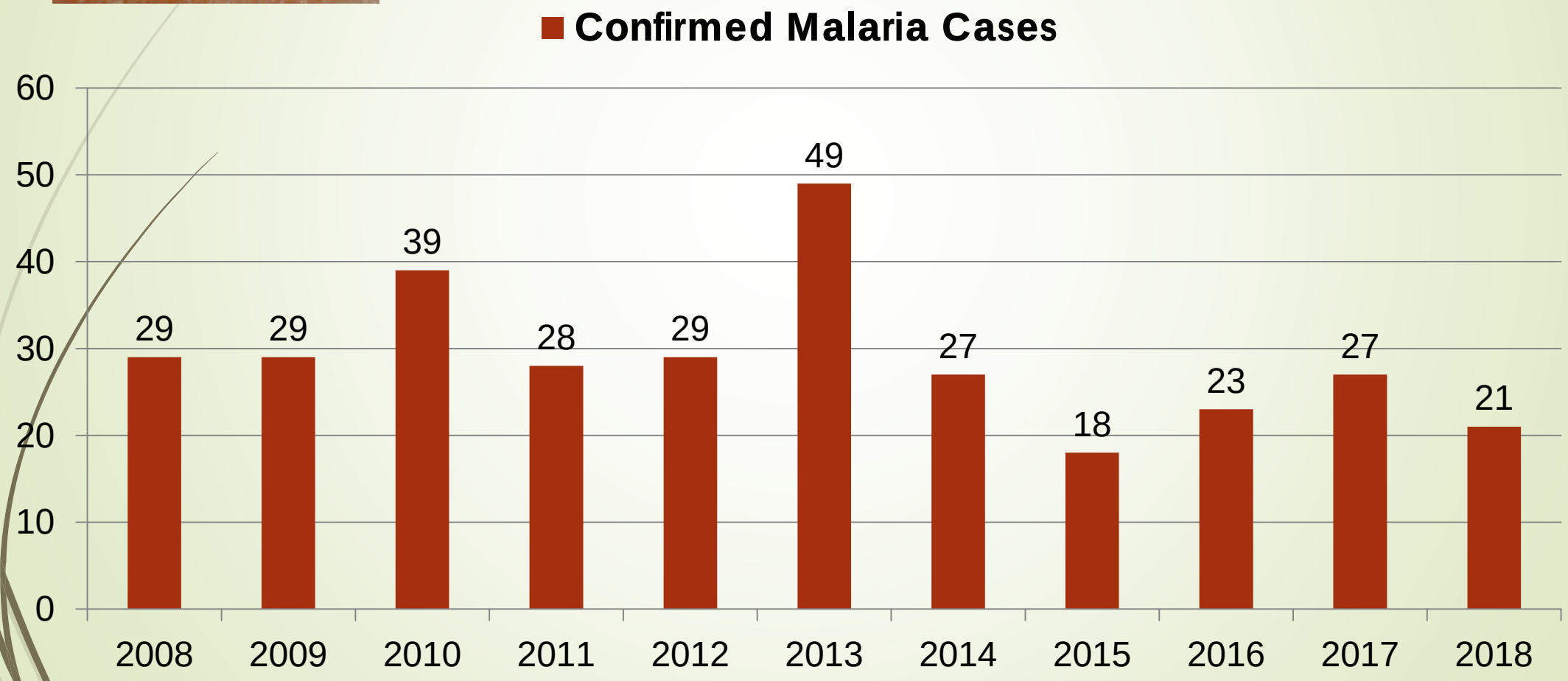
- New Delhi [2] 1/655 = 0.15%

DoS Malaria Rates for 2018
21/2,859 = 0.73 % in the 14 sites who reported cases

DoS Malaria Rates for 2018 in all Class 4 and 5 Posts
21/4664 = 0.45%

Malaria in DoS Health Units

2018 was a better year!



5

5

4

3

2

1

0

Malaria Risk Categories and Chemoprophylaxis (Malaria Medication) Recommendations for DoS Posts

MED recommends that employees/families who are unwilling or unable to take malaria meds not bid on posts in Malaria Risk Category 4 or 5

Malaria chemoprophylaxis critical: The *potential* malaria attack rate for those not taking preventive measures is as high as **11-50% per month**. Travelers to this post **must take malaria chemoprophylaxis** and utilize personal protective measure due to **critically high malaria risk**. Personal protective measures alone are inadequate for malaria protection. The threat of complicated malaria is highest in children and pregnant women. Pregnant women should be cautious (or defer) traveling in this highly malarious region. The *Acknowledgment of Malaria Risk* letter must be reviewed and signed by those assigned to this post.

Malaria chemoprophylaxis highly recommended: The *potential* malaria attack rate for those not taking preventive measures is as high as **1-10% per month**. Travelers to this post **should take malaria chemoprophylaxis** due to **high malaria risk**. Personal protective measures alone are inadequate for malaria protection at this post. The threat of complicated malaria is highest in children and pregnant women. Pregnant women should be cautious (or defer) traveling in this region. The *Acknowledgment of Malaria Risk* letter must be reviewed and signed by those assigned to this post.

Malaria chemoprophylaxis highly recommended seasonally: During periods of mosquito activity (as defined by the Health Unit) use of personal protective measures and chemoprophylaxis is highly recommended, (the Health Unit may modify dates due to local weather conditions). In seasons with less mosquito activity chemoprophylaxis may not be needed. Since the risk of acquiring malaria is not zero during off season months, those with complicating medical conditions may be recommended (or choose) to take prophylaxis during any time of the year they visit this post.

Malaria risk is present in close proximity to post but not at the post itself: Staff and families who do not leave the city are at negligible to slight risk of malaria and may choose not to take continual chemoprophylaxis and utilize personal protective measures alone. Travel away from post may be associated with significantly higher malaria risk and recommendation to take chemoprophylaxis. Staff and families should check with the Health Unit before traveling, even for short periods, to determine if chemoprophylaxis is indicated. If frequent travel away from post occurs then staff and families may require nearly continual chemoprophylaxis.

Malaria risk is present in the country but not at post: Malaria is present in some areas of the country. Staff and families should check with the Health Unit before traveling, even for short periods, to determine if malaria chemoprophylaxis is indicated. If frequent travel to the malarious areas occurs then staff and families may require near continual chemoprophylaxis.

No significant risk of malaria at post or elsewhere in the country: Staff and families traveling to neighboring countries should check with the Health Unit before traveling to determine if they will be in a malaria threat area. THESE POSTS ARE NOT SHOWN BEL

Country	Post	Rating	Malaria risk at post	Cases at post 2010-17	Comments
Afghanistan	Herat	3	Seasonal at post	X	Primarily *P. vivax* cases. Seasonal (Apr-Dec) below 8000 ft, esp river valleys. Those staying solely on the compound may NOT require prophylaxis. 2 DoS cases in 2013.
	Kabul			X	
Angola	Luanda	5	Critical at post	X	4 cases at the HU in 2013
Bangladesh	Dhaka	1	In country, not at post		
Belize	Belmopan	2	In country, not at post but in close proximity		Marked decrease in last 5 years. No cases around Belmopan in 2 years
Benin	Cotonou	5	Critical at post	X	
Bolivia	La Paz	1	In country, not at post		
Botswana	Gaborone	1	In country, not at post		
Brazil	Brasilia	1	In country, not at post		Brazil has primarily vivax malaria now. Most malaria is in the Amazon basin in the Northwestern areas of Brazil. Some of these regions have high transmission rates. Iguacu Falls has rare cases and topical repellants are sufficient for most visitors.
	Recife				
	Rio de Janeiro				
	Sao Paulo				
Burkina Faso	Ouagadougou	5	Critical at post	X	High rates even in those at post. 3 cases at post in 2013, 3 cases in 2015
Burma	Rangoon	1	In country, not at post		
Burundi	Bujumbura	5	Critical at post	X	Multiple cases at post, none in 2015

Malaria Prevention at Post

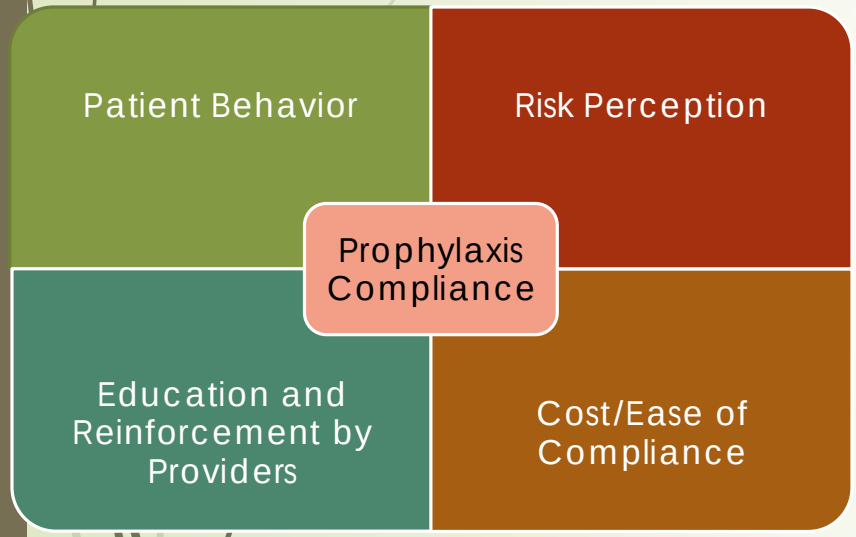
2013 DoS MED Survey of Malaria Risk Category 4 and 5 Posts

- Medication compliance:
  - high among staff (78%)
  - lower among children (70%)
  - least among spouses (66%)

- Mefloquine is the most common chemoprophylaxis
  - 40% Mefloquine 40% Atovaquone/Proguanil 20% Doxycycline
- Top reasons people take a med:
  - provider recommended
  - have known colleagues who have had malaria

- Half of respondents never miss a dose,
  - 45% miss 1 in 4 doses

2013 Survey Summary

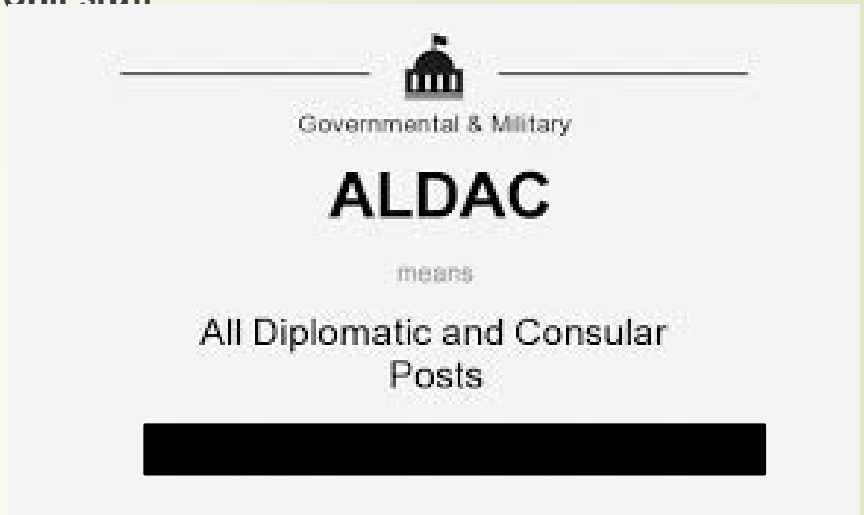


- **Top reason people stopped taking a medication:**
  - **fear of long term side effects**
- **Most staff who stopped taking their med:**
  - **stopped within first 3 months at post**
- **Inadequate use of personal protective measures:**
  - **Limited use of bednets (17%)**
  - **protective clothing (12%)**
  - **insecticide (5%)**
- **Staff do not give the prophylaxis to their children:**
  - **worried about side effects**
  - **feel their children are not at risk**

Improving Malaria Prevention at Post

Malaria ALDAC August 2013

- Increase emphasis and understanding of malaria risk
  - Improve malaria understanding for employees as well as Health Unit staff
  - Improve reporting forms and require submission
  - Quarterly reporting of stats by post to Management



- Malaria risk categories for posts
  - Attempt to inform families BEFORE they bid on posts
  - Acknowledgement of malaria risk statement
- Improve use of Personal Protective Measures
  - Best impregnated bednets available in supply system and installed over every bed
  - Permethrin, DEET, picaridin available in correct formulations in supply system and in commissaries
- Decrease barriers to access for chemoprophylaxis
  - Encourage posts to make all appropriate antimalarials available at post without need for mail order pharmacy

Acknowledgment of Malaria Risk

_____ is a post that has been determined by MED to be:

☐ **Malaria Risk Category 5 - critically high malaria risk.** Infection rate in those not taking malaria preventive measures is estimated as high as 11-50% per month.

☐ **Malaria Risk Category 4 - very high malaria risk.** Infection rate in those not taking malaria preventive measures is estimated as high as 1-10% per month.

The malaria threat at this post requires that those assigned, and their families, understand the risk of not utilizing maximal measures to prevent malaria. Specifically, a crucial component of remaining healthy at this post is taking the recommended malaria chemoprophylaxis.

I understand that my family and I will be expected to adhere with the Health Unit's recommendations for personal protective measures to prevent mosquito biting and the use of malaria chemoprophylaxis.

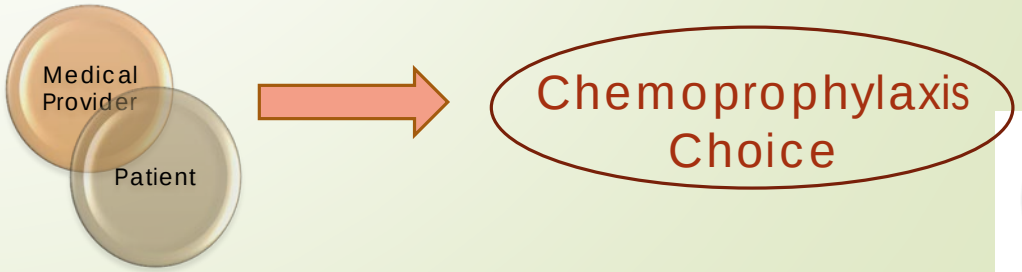
If I (or any of my family members) choose NOT to adhere to recommendations to use chemoprophylaxis I acknowledge that I have been advised about **the potential for serious illness or death** from malaria infection.

_____ _____

Signed Date

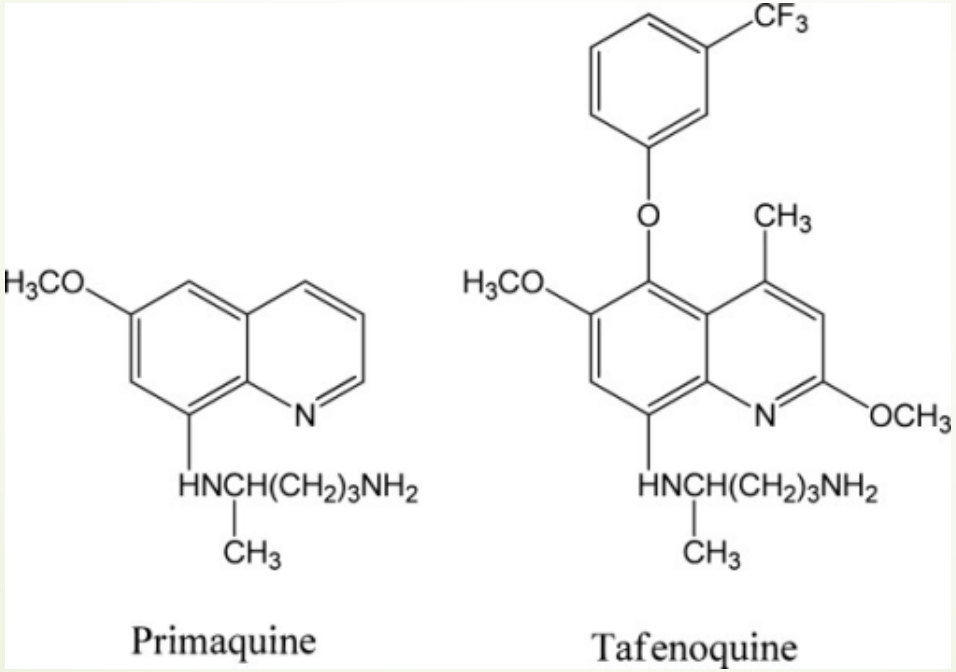
DoS Bureau of Medical Service Guidance for Anti-Malarial Prophylaxis

- Increase emphasis and understanding of malaria risks---EDUCATION!
  - Medical Providers
  - Communities
  - Individuals and Families
- Improved use of Personal Protective Measures
  - Impregnated bed nets
  - Permethrin, DEET, Picaridin
- **Collaborative (Medical Provider & Patient/Parent) choice of chemoprophylactics offered without barriers**



Tafenoquine

Approved in 2018 available in the US March 2019



So will tafenoquine replace mefloquine?
Not as much as we would like it to

Advantages tafenoquine

- 3 day rapid loading for prophylaxis
- No “tail” after leaving malarious area
- Fewer psychiatric side effects
- Cardiac issues not significant
- Treats all stages of malaria:
  - hepatic
  - bloodstream
  - gametocytes

Disadvantages tafenoquine

- Only 18 yo and above
- Absolutely not in pregnancy
- Even mild G6PD deficiency can cause hemolysis
- In breastfeeding only after baby G6PD tested
- Potential ocular effects with long term use?
- Minimal long term safety data

Major Side Effects with Anti-Malarials Resulting in Local Hospitalizations or Medical Evacuations

Review of Mental Health Evacuations and Hospitalizations

- Review of medical evacuation data and local hospitalization data and no diagnosis directly attributed to anti-malarial therapy
- Review with DoS Deputy Medical Director for Mental Health Services and no anecdotal reports of major mental health concerns with anti-malarial therapy from the field

Review of General Medevacs and Hospitalizations

- Review of medical evacuation data and local hospitalization data and no diagnosis directly attributed to anti-malarial therapy
- Review with DoS Foreign Programs Director and no anecdotal reports of major medical concerns with anti-malarial therapy resulting in the need for medical evacuation or local hospitalizations

Anecdotal Reports of Minor Side Effects Effectively Managed by Health Care Providers

- Mild depression, vivid dreams
- PSVT in a child with underlying WPW syndrome
- Sun sensitivity
- Pill esophagitis
- Colitis

Presentation prepared in cooperation with Dr. Gregory Martin, Chief of Tropical Medicine and Infectious Diseases Department of State Bureau of Medical Services