

REPUBLIC OF KENYA



MINISTRY OF HEALTH

**KEMRI** | Wellcome Trust

# Service evaluation to track the adoption of policy on treatment of severe malaria

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On behalf of Clinical Information Network

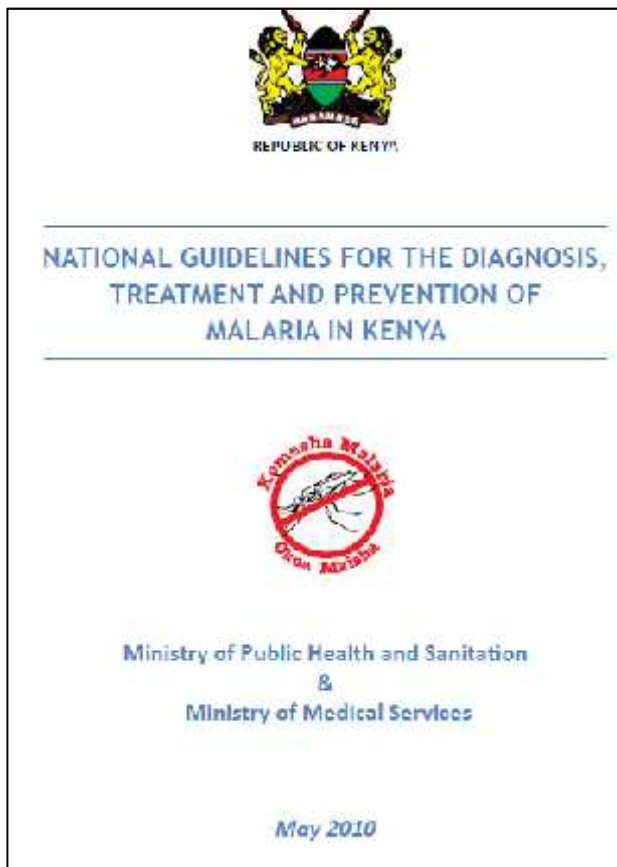


**KENYA  
PAEDIATRIC  
ASSOCIATION**



**University of Nairobi**

# Malaria treatment policy (2010)



- Clinical features & classification of severe malaria
- Management of severe malaria
- *Diagnosis*
- *Clinical manifestation*
- *Treatment*
- *Supportive treatment*

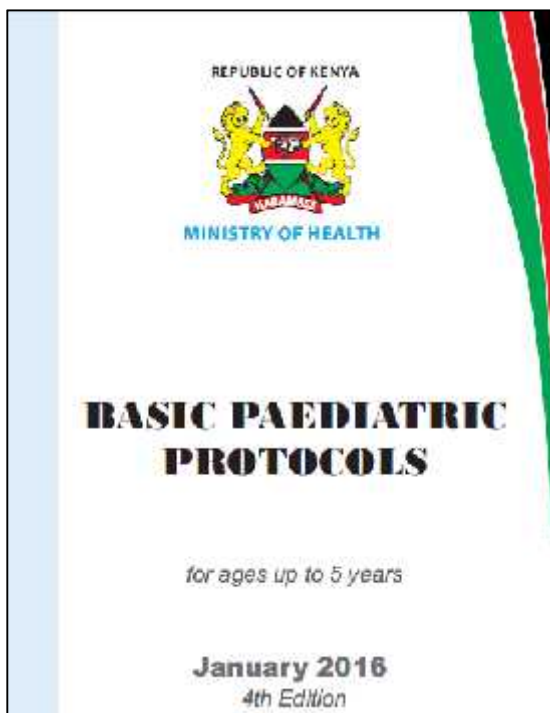
# Severe malaria in childhood

2006

2010

2013

2016



- **Management of severe malaria**
- *Diagnosis* – Repeat testing (BS or RDT)
- *Clinical manifestation*
- *Treatment* – iv Artesunate (iv quinine second line)
- *Supportive treatment* - lab investigations, transfusion, oral iron, oxygen

# Study design

- Cross sectional descriptive study
- Aim - to describe inpatient childhood malaria case management practices in five Kenyan hospitals
- Setting: hospitals (n = 5) in western Kenya (malaria endemic region)
- All hospitals are participating in a paediatric clinical information network (CIN)

# Malaria diagnosis in CIN hospitals

- Period: March 2014 to February 2016
- Data were available for 19,419 acute medical admissions (2-59 months) to five CIN hospitals in western Kenya
- Of these, 13,014 (67%) children (median age 24 months) had a clinical diagnosis of malaria

# Clinical features of malaria

## **SEVERE MALARIA**

Fever **plus** any of:

- AVPU = 'V', 'P', 'U' or
- Unable to drink or,
- Respiratory distress with severe anaemia or,
- Hypoglycemia (glucose  $\leq$  2.5 mmols/L) or,
- $>$  2 convulsions

Severe anaemia, Hb  $<$  5g/dL,  
Alert (AVPU = 'A', able to drink  
and breathing comfortably)

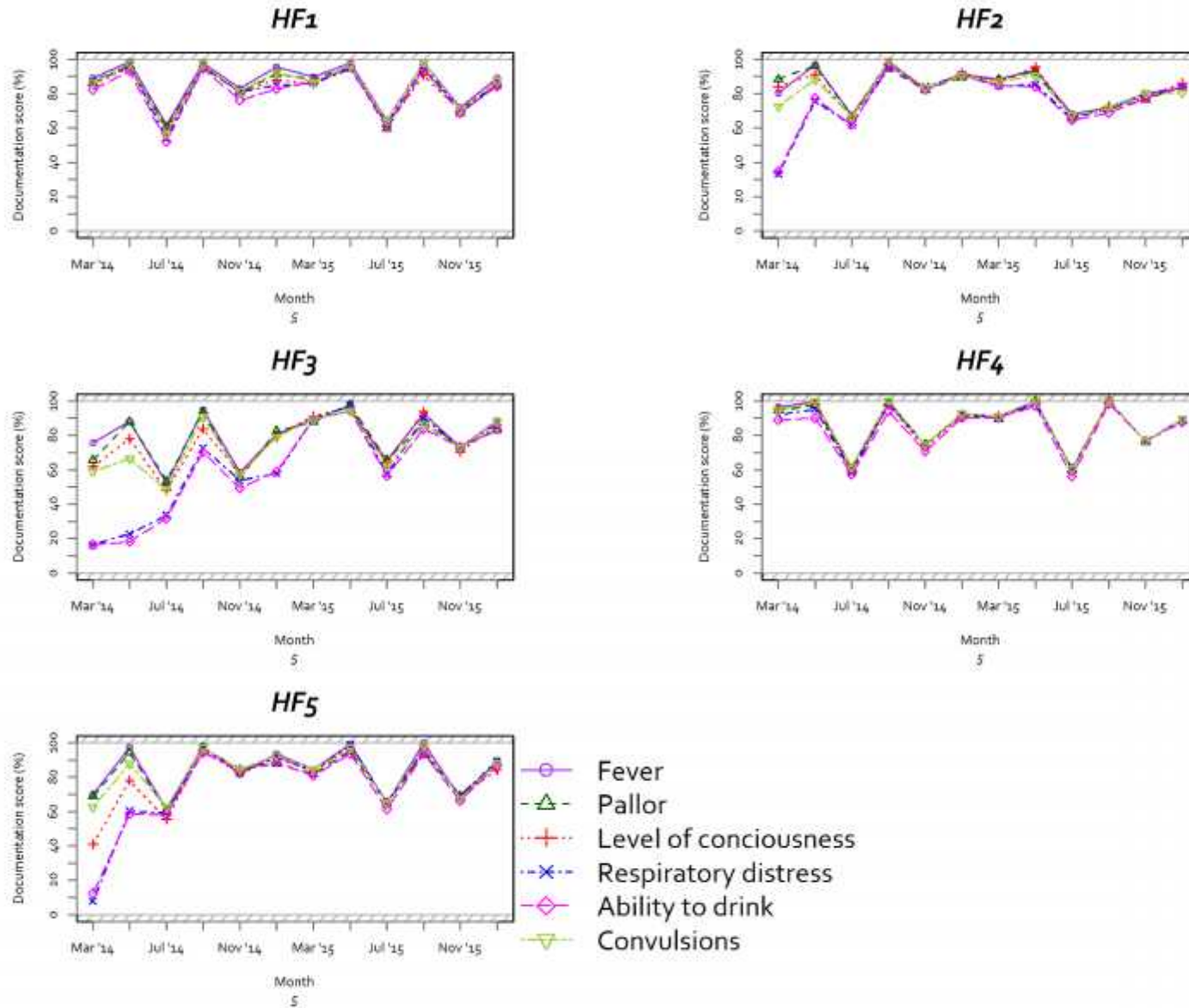
Do clinicians document clinical features used in classification of malaria during admission?

Is there evidence of change in documentation of clinical features over time and place?

# Clinical features of malaria

	<b>HF1</b>	<b>HF2</b>	<b>HF3</b>	<b>HF4</b>	<b>HF5</b>
<b>Malaria admissions with fever (%)</b>	2132 (94.5)	3527 (91.5)	1260 (95.7)	1890 (84.8)	1254 (94.6)
<b>Malaria admissions with at least one danger sign (%)</b>	1412 (54.6)	2204 (48.2)	675 (39.8)	1185 (46.2)	951 (59.5)
<b>Altered level of consciousness (%)</b>	195 (9)	288 (7.5)	74 (6)	145 (6.6)	161 (13.6)
<b>Inability to drink (%)</b>	369 (17.5)	244 (7.2)	137 (16)	272 (12.8)	242 (22.9)
<b>Respiratory distress (%)</b>	266 (12.3)	405 (12)	61 (6.8)	539 (24.7)	164 (15.2)
<b>Severe pallor (%)</b>	383 (17.6)	795 (20.7)	171 (13.3)	103 (4.7)	131 (10.1)
<b>Convulsions (%)</b>	775 (35.1)	1227 (33)	427 (35.7)	555 (25)	715 (55.9)

# Documentation of malaria features





# Malaria investigations

- Of all the 13,014 admissions with clinical malaria, 11,981 (92%) had a malaria test ordered (range 83 to 99%).
- Among children with a malaria test request 10,388 (87%) had malaria test results documented in the clinical notes (range 67-99%)
- Most, 8,050/10,388 (78%) documented malaria test results were positive

# Malaria investigations

	<b>HF1</b>	<b>HF2</b>	<b>HF3</b>	<b>HF4</b>	<b>HF5</b>
<b>Proportion with malaria slide requested (%)</b>	2533 (97.9)	3770 (82.5)	1596 (94.2)	2505 (97.7)	1577 (98.7)
<b>Slide results available (%)</b>	2516 (99.3)	2510 (66.6)	1481 (92.8)	2327 (92.9)	1554 (98.5)
<b>Positive malaria slide in those with results documented (%)</b>	1902 (75.6)	2046 (81.5)	1162 (78.5)	1609 (69.1)	1331 (85.6)
<b>Positive malaria slide in all diagnosed with clinical malaria (%)</b>	1902 (73.5)	2046 (44.8)	1162 (68.6)	1609 (62.8)	1331 (83.3)
<b>Diagnosis of severe malaria/severe pallor with positive test (%)</b>	1174 (61.7)	1701 (83.1)	699 (60.2)	793 (49.3)	876 (65.8)
<b>Proportion with positive test given anti-malarial drug (%)</b>	1663 (87.4)	1763 (86.2)	910 (78.3)	1345 (83.6)	1093 (82.1)
<b>Proportion with negative test treated presumptively (%)</b>	491 (80)	374 (80.6)	167 (52.4)	443 (61.7)	147 (65.9)

# Repeat testing and investigation for other causes of illness

- 1622 children with negative malaria tests treated presumptively
- Three percent (range 0-18%) of 1622 children had repeat testing done
- *Other investigations (all admissions):*
- haemoglobin level (36%), blood chemistry (1%), blood glucose 333 (3%)
- HIV status ascertained (40%), microbiology (blood culture or lumbar puncture, 9%), urine tests (2%) and x-rays (3%)

# Severe malaria treatment

- Prescription patterns of anti-malarial drugs varied by hospital and over time
- Among the children with malaria 79% prescribed either quinine or artesunate (n=10,249/ 13014)
- 26.3% of quinine/ artesunate prescriptions were in admissions with signs suggestive of severe or complicated malaria

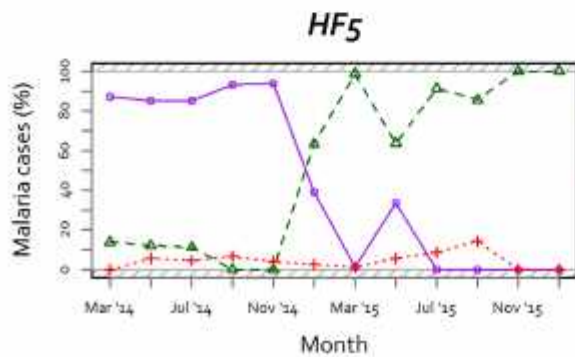
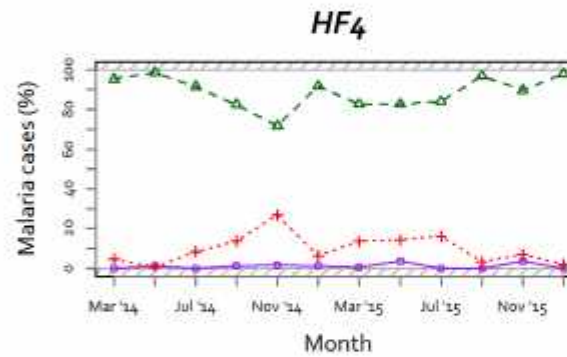
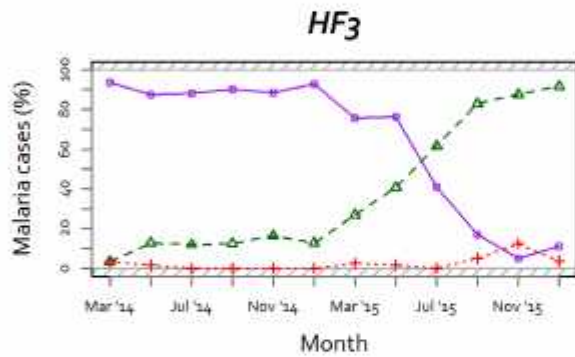
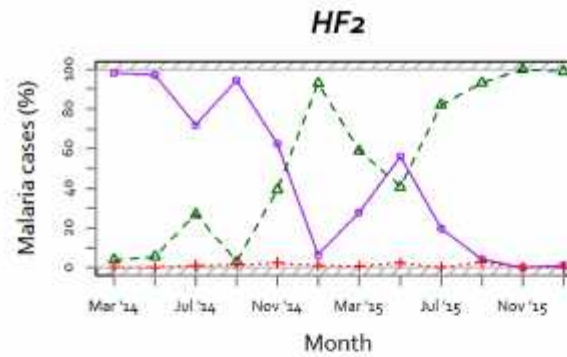
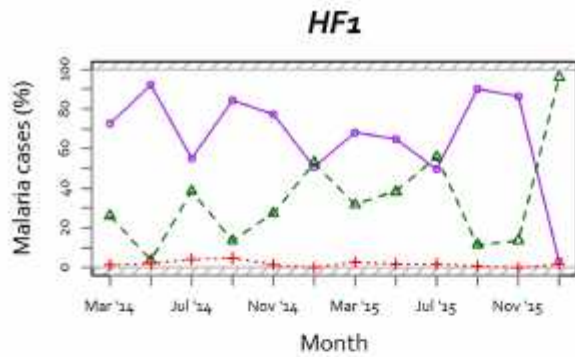
# Severe malaria treatment

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	<b>HF1</b>	<b>HF2</b>	<b>HF3</b>	<b>HF4</b>	<b>HF5</b>
<b>Quinine</b>	1131 (68)	973 (55)	632 (70)	15 (1.1)	583 (53)
<b>Artesunate</b>	534 (32)	769 (44)	296 (33)	1201 (90)	468 (43)
<b>Coartem (Artemether-Lumefantrine)</b>	33 (2)	18 (1)	20 (2.2)	123 (9)	56 (5.1)
<b>Other anti-malarials</b>	21 (1.3)	28 (1.6)	5 (0.5)	8 (0.6)	6 (0.5)

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# Antimalarial prescriptions



—○— Quinine  
-△- Artesunate  
-+·- Artemether\_lumefantrine

# Summary

- Documentation of clinical features of malaria was good across hospitals
- Malaria diagnostic testing rate are high in hospitals in malaria endemic regions but retesting is rarely done
- There are high rates of presumptive treatment for test negative children
- Overuse of injectable antimalarial drugs and low uptake of artesunate at baseline
- Monitoring malaria treatment fostered change in uptake within key policy areas

# Acknowledgements



**KEMRI** | Wellcome Trust



- **Clinical Information Network contributors include:** Morris Ogero; Thomas Julius; Boniface Makone; Mercy Chepkirui; Wycliffe Nyachiro & James Wafula (KEMRI-Wellcome Trust Research Programme); Samuel N'gar N'gar (Vihiga County Hospital), Nick Aduro (Kakamega County Hospital), Loice Mutai & David Kimutai (Mbagathi County Hospital), Caren Emadau, Cecilia Mutiso & Celia Muturi (Mama Lucy Kibaki County Hospital), Charles Nzioki (Machakos County Hospital), Francis Kanyingi & Agnes Mithamo (Nyeri County Hospital), Margaret Kuria (Kisumu East County Hospital), Sam Otido & Anne Kamunya (Embu County Hospital), Alice Kariuki (Karatina County Hospital), Peris Njiiri (Kerugoya County Hospital), Rachel Inginia & Melab Musabi (Kitale County Hospital), Barnabas Kigen (Busia County Hospital), Grace Ochieng & Lydia Thurairira (Kiambu County Hospital). Rachel Nyamai (Ministry of Health). David Githanga & Fred Were (Kenya Paediatric Association).