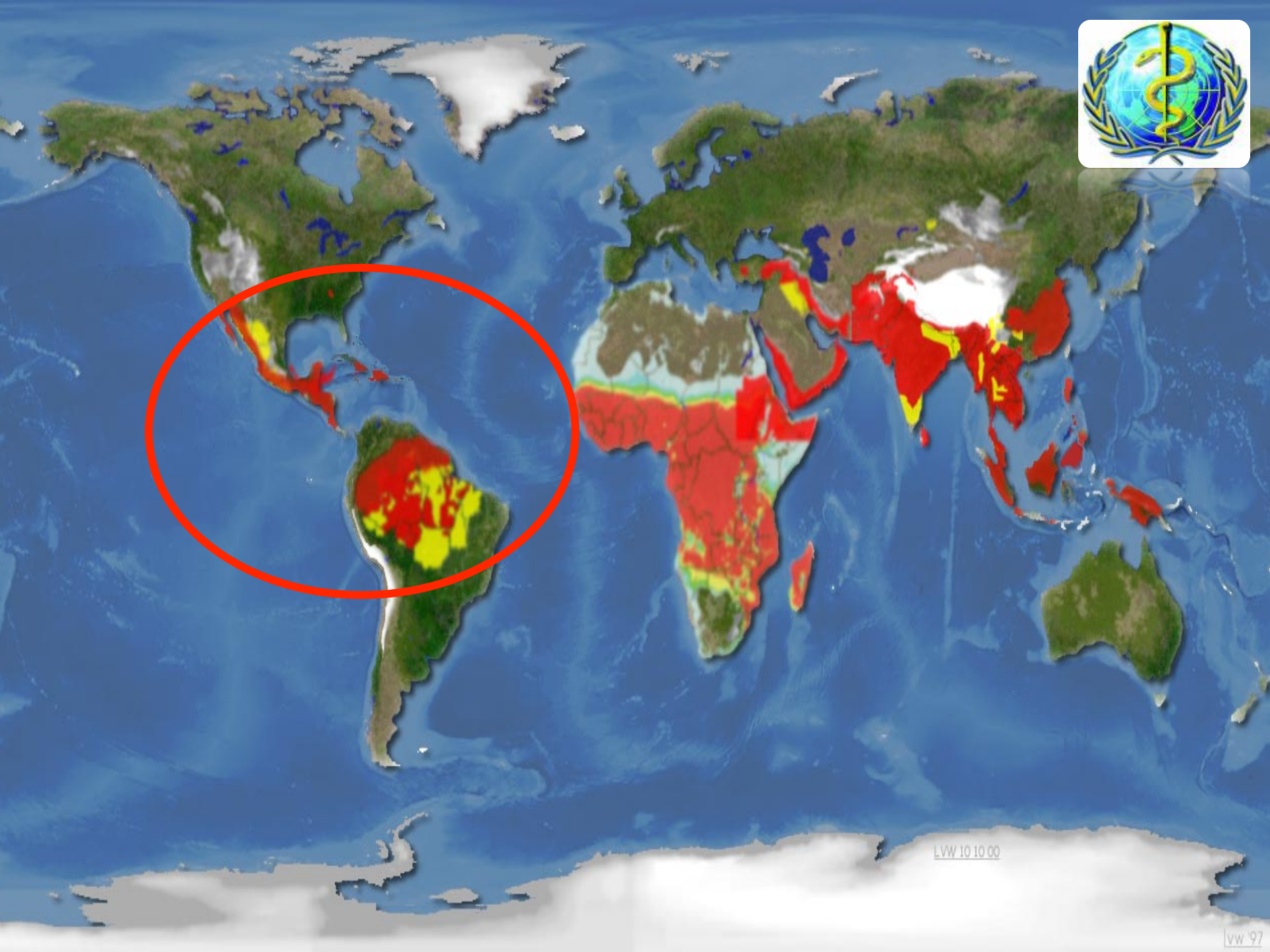
VIII Curso Alma
Cartagena, Colombia
Agosto, 2009

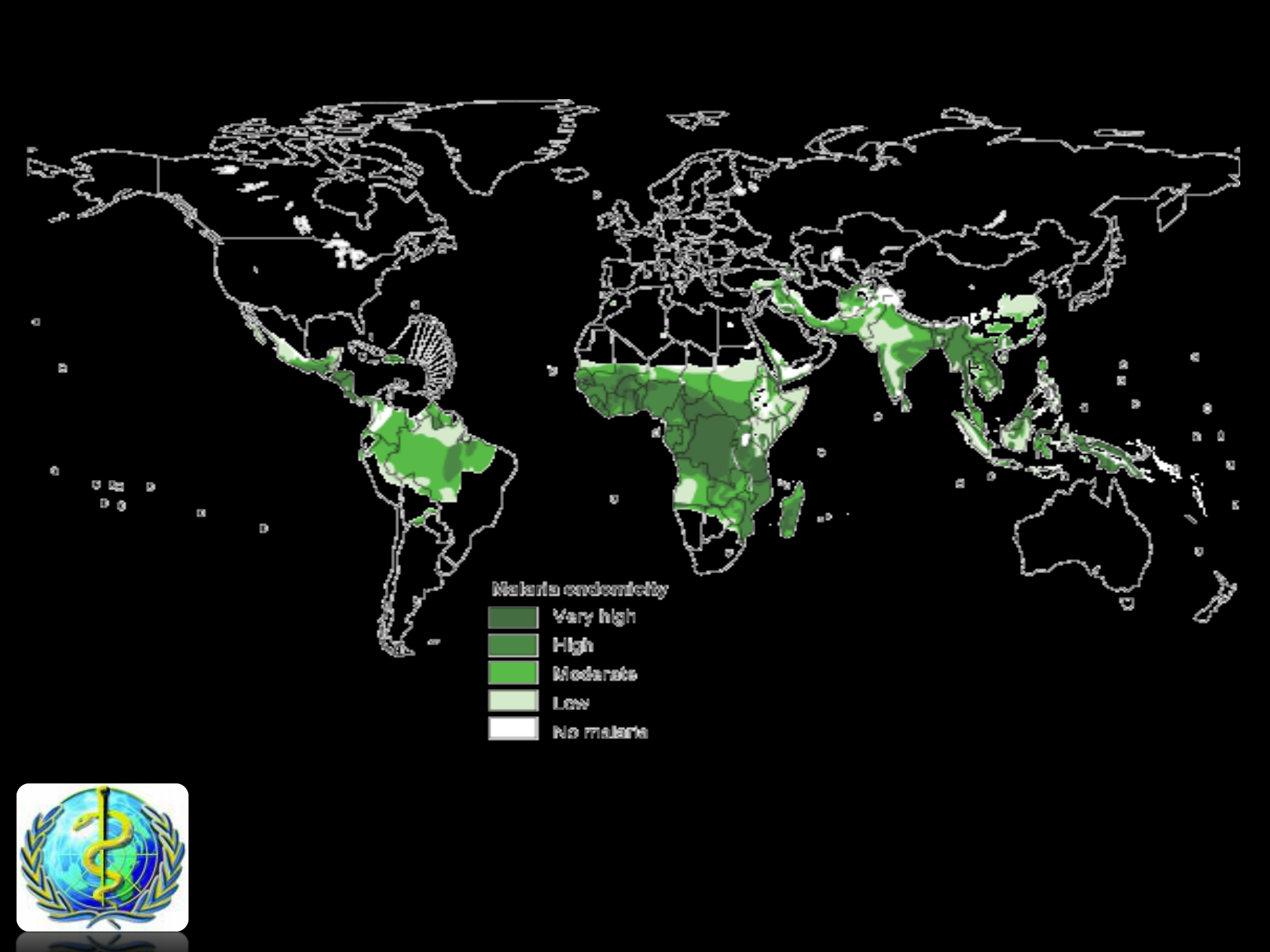


CAMBIOS CLIMÁTICOS E INFECCIONES

PALUDISMO

Ulises Perez - Mexico
Virgílio Garcia Moreira - Brasil

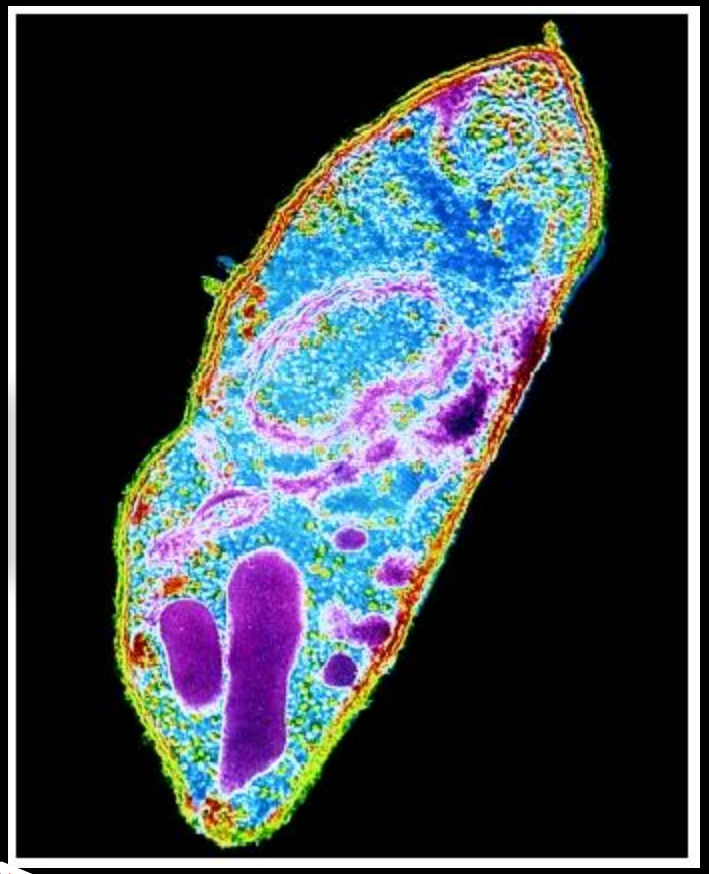

LVW 10 10 00
VW '97


Malaria endemicity
Very high
High
Moderate
Low
No malaria

Malaria: Bedlam in the Blood



Malária



Mais comuns do planeta

300 Milhões

2 a 3 milhões de óbitos



M A L A R I A

KILLS 3000 CHILDREN EVERYDAY

IN AFRICA. PLEASE HELP.

HTTP://MALARIANOMORE.ORG

Malária

Definição

- Lise Sincrônica de Hemácias parasitadas

Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJ. Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. Lancet **2006**;367:1747–57.

Malária



Age as a Risk Factor for Severe Manifestations and Fatal Outcome of Falciparum Malaria in European Patients: Observations from TropNetEurop and SIMPID Surveillance Data

N. Mühlberger, T. Jelinek, R. H. Behrens, I. Gjørup, J. P. Coulaud, J. Clerinx, S. Puente, G. Burchard, J. Gascon, M. P. Grobusch, T. Weitzel, T. Zoller, H. Kollaritsch, J. Beran, J. Iversen, C. Hatz, M. L. Schmid, A. Björkman, K. Fleischer, Z. Bisoffi, W. Guggemos, J. Knobloch, A. Matteelli, M. H. Schulze, H. Laferl, A. Kapaun, P. McWhinney, R. Lopez-Velez, G. Fätkenheuer, P. Kern, B. W. Zieger, A. Kotlowski, G. Fry, J. Cuadros, and B. Myrvang, for the TropNetEurop and Surveillance importierter Infektionen in Deutschland (SIMPID) Surveillance Networks[a]

Clinical Infeccious Disease. 2003;36:990-5

Table 2. Age-specific frequency of outcomes of severe falciparum malaria.

Age group, years	No. of patients	Percentage of patients with			
		Fatal cases	Cerebral complications	Overall complications	Hospital admission[a]
10–19	50	0.0	0.0	4.0	70.0
20–29	290	0.7	1.0	6.2	79.0
30–39	369	0.5	1.9	7.3	79.7
40–49	225	2.2	6.2	13.8	81.8
50–59	169	2.4	4.7	14.2	85.2
60–69	56	3.6	5.4	8.9	73.2
70–79	20	10.0	10.0	30.0	95.0
80–89	2	0.0	0.0	0.0	100.0
Total	1181	1.4	3.1	9.6	80.3

Clinical Infeccious Disease. 2003;36:990-5



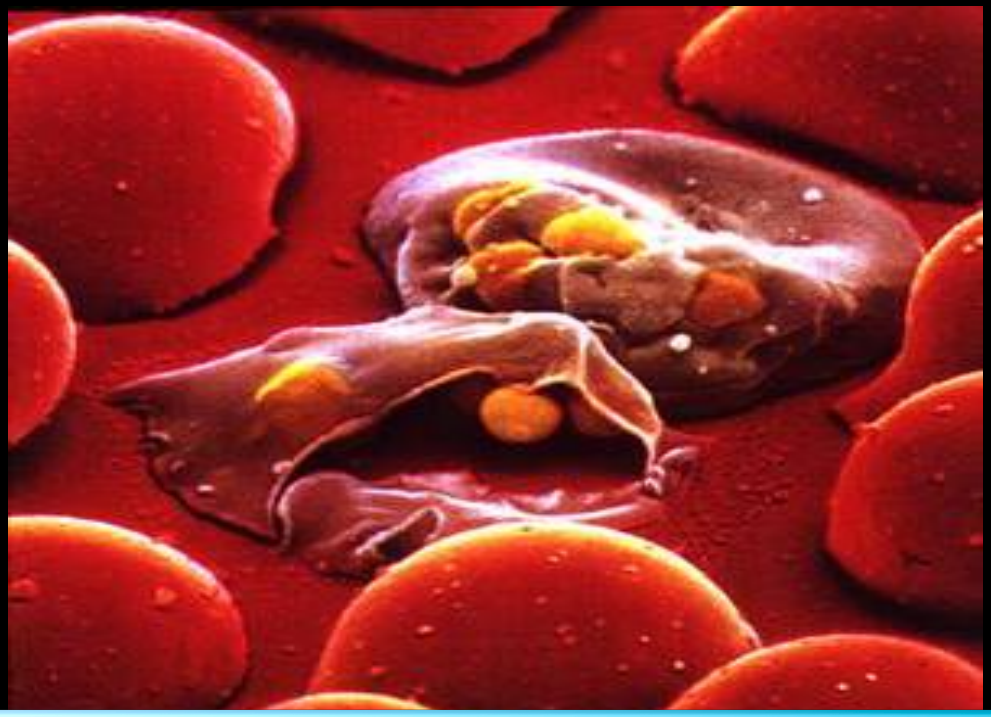
⇨ Estômago e glândulas salivares

Anopheles sp.



Malária

Gravidade da Doença





-Espécie Infectante
-Magnitude da Parasitemia
-Efeitos Metabólicos do Parasita no organismo

Reyburn H, Mbatia R, Drakeley C, et al. Association of transmission intensity and age with clinical manifestations and case fatality of severe *Plasmodium falciparum* malaria. JAMA **2005**; 293:1461–70.

The Relationship between Age and the Manifestations of and Mortality Associated with Severe Malaria

Arjen M. Dondorp,[1,3] Sue J. Lee,[3] M. A. Faiz,[4] Saroj Mishra,[6] Ric Price,[3,7] Emiliana Tjitra,[8] Marlar Than,[9] Ye Htut,[10] Sanjib Mohanty,[6] Emran Bin Yunus,[5] Ridwanur Rahman,[5] Francois Nosten,[1,2,3] Nicholas M. Anstey,[7] Nicholas P. J. Day,[1,3] and Nicholas J. White[1,3]

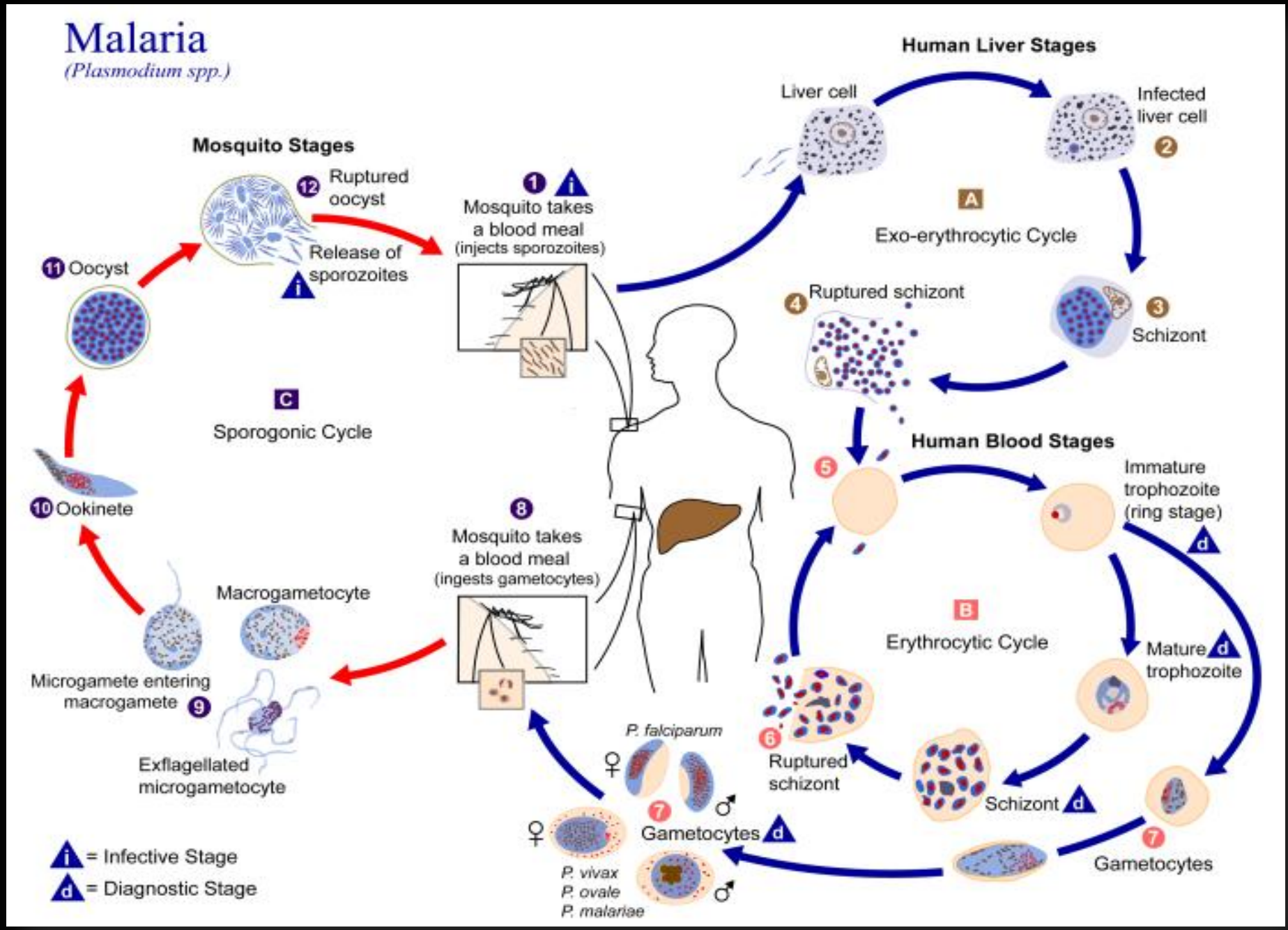
[1]Faculty of Tropical Medicine, Mahidol University, Bangkok, and [2]Shoklo Malaria Research Unit, Mae Sot, Thailand; [3]Centre for Tropical Medicine, Nuffield Department of Clinical Medicine, John Radcliffe Hospital, University of Oxford, Oxford, United Kingdom; [4]Department of Medicine, Dhaka Medical College, Dhaka, and [5]Chittagong Medical College, Chittagong, Bangladesh; [6]Department of Medicine, Ispat Hospital, Rourkela (Orissa), India; [7]International Health Division, Menzies School of Health Research and Charles Darwin University, Darwin, Northern Territory, Australia; [8]National Institute of Health Research and Development, Jakarta, Indonesia; and [9]Clinical Research Unit (Malaria), Defence Services General Hospital, Mingaladon, and [10]Department of Medical Research, Yangon, Myanmar

Clinical Infeccious Disease. 2008. 47:151-7

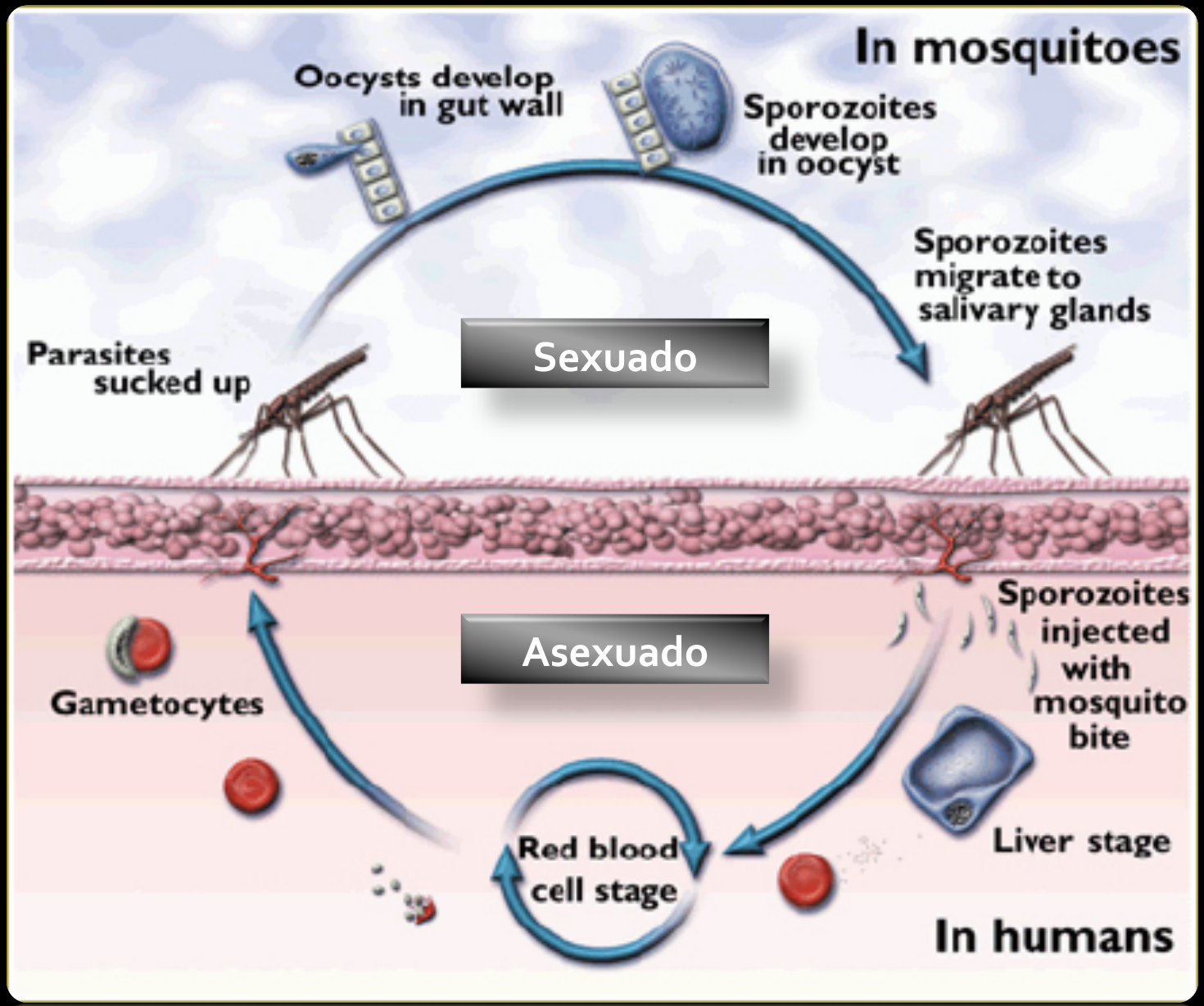
Table 2. Univariate analysis of risk of death among patients with and without severity syndromes (SS) at hospital admission.

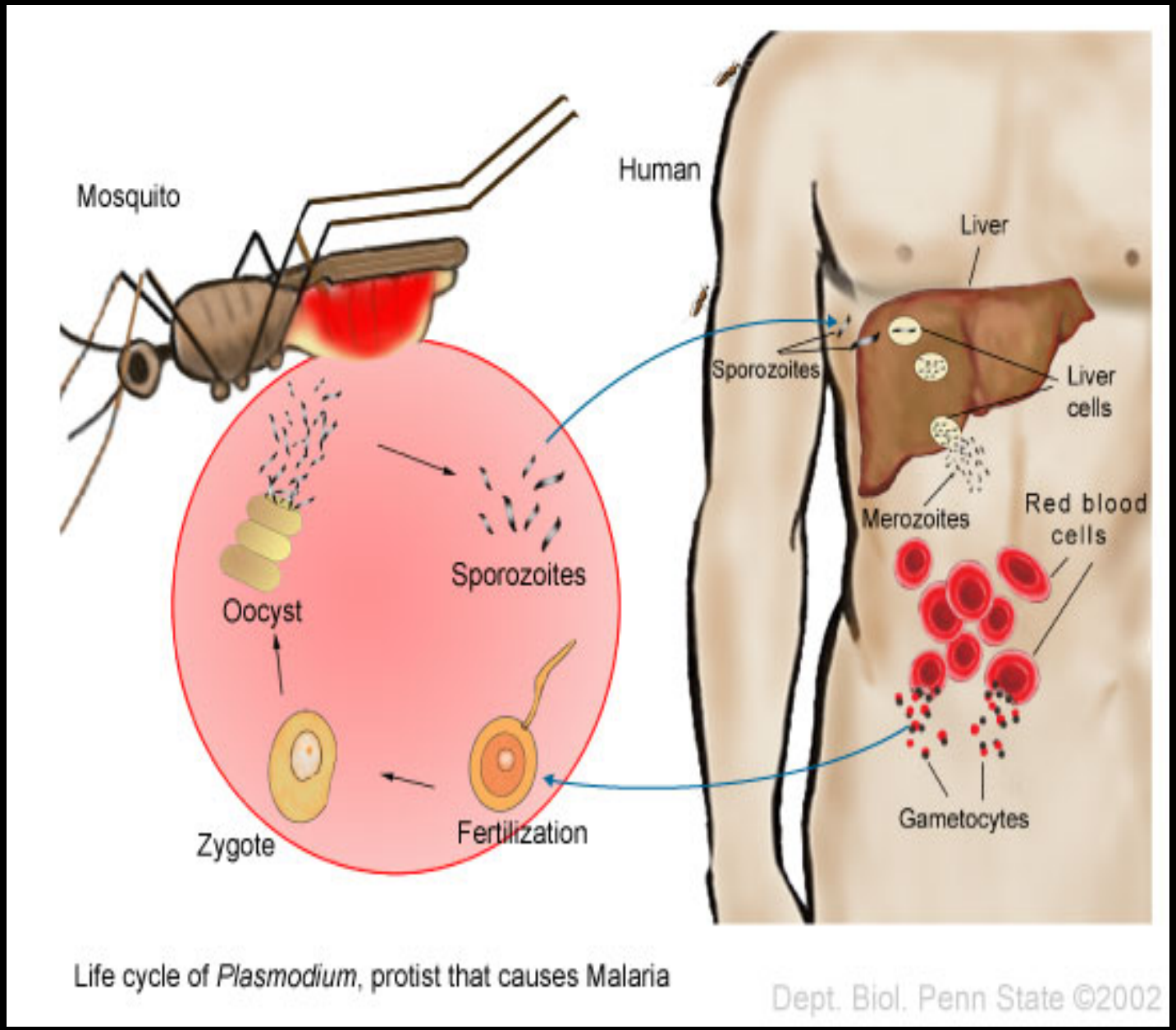
	Coma				Convulsions				Severe anemia			
	Patients who died, %				Patients who died, %				Patients who died, %			
Age group, years	With SS	Without SS	OR (95% CI)	*P*	With SS	Without SS	OR (95% CI)	*P*	With SS	Without SS	OR (95% CI)	*P*
0–10	11.7	0	NA	.01	7.1	5.6	1.31 (0.28–6.19)	.73	2.3	4.8	0.47 (0.05–4.70)	.51
11–20	32.6	10.5	3.29 (1.73–6.25)	<.001	23.7	21.6	1.13 (0.50–2.53)	.77	21.6	21.8	0.99 (0.47–2.09)	.97
21–50	35.5	15.8	3.11 (2.03–4.76)	<.001	32.1	26.1	1.34 (0.74–2.44)	.33	25.6	25.6	1.00 (0.58–1.74)	.99
>50	48.3	16.7	4.25 (1.5–11.48)	.002	66.7	33.3	4.0 (0.90–17.82)	.05	28.6	37.4	0.67 (0.12–3.71)	.65
All	33.6	12.6	3.44[a] (2.46–4.79)	<.001	24.8	24.0	1.41[a] (0.92–2.18)	.11	18.9	24.2	0.94[a] (0.62–1.44)	.79

Clinical Infeccious Disease. 2008; 15 jul



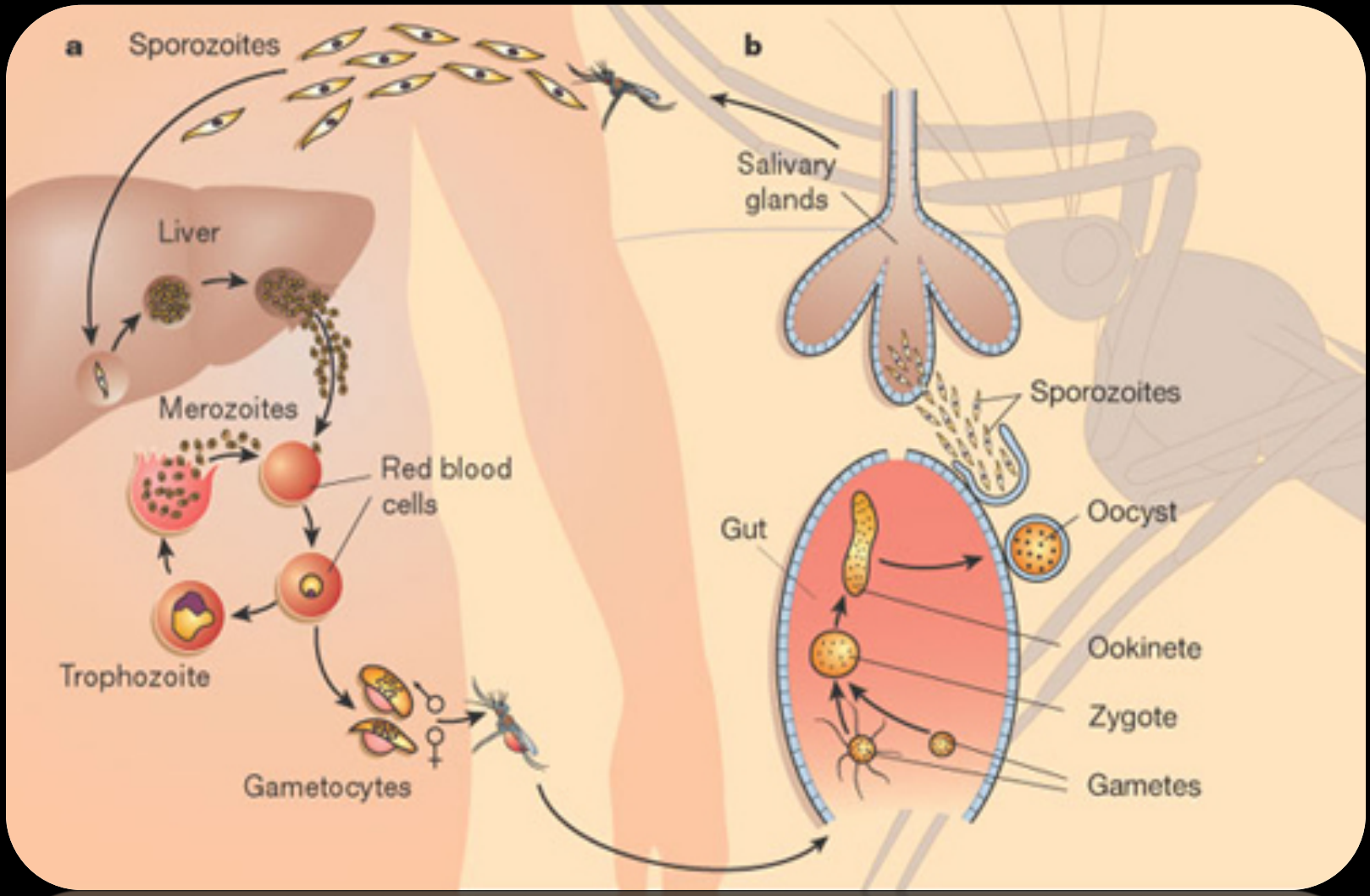
http://www.cdc.gov/**malaria**. Acessado em Jul. 2009

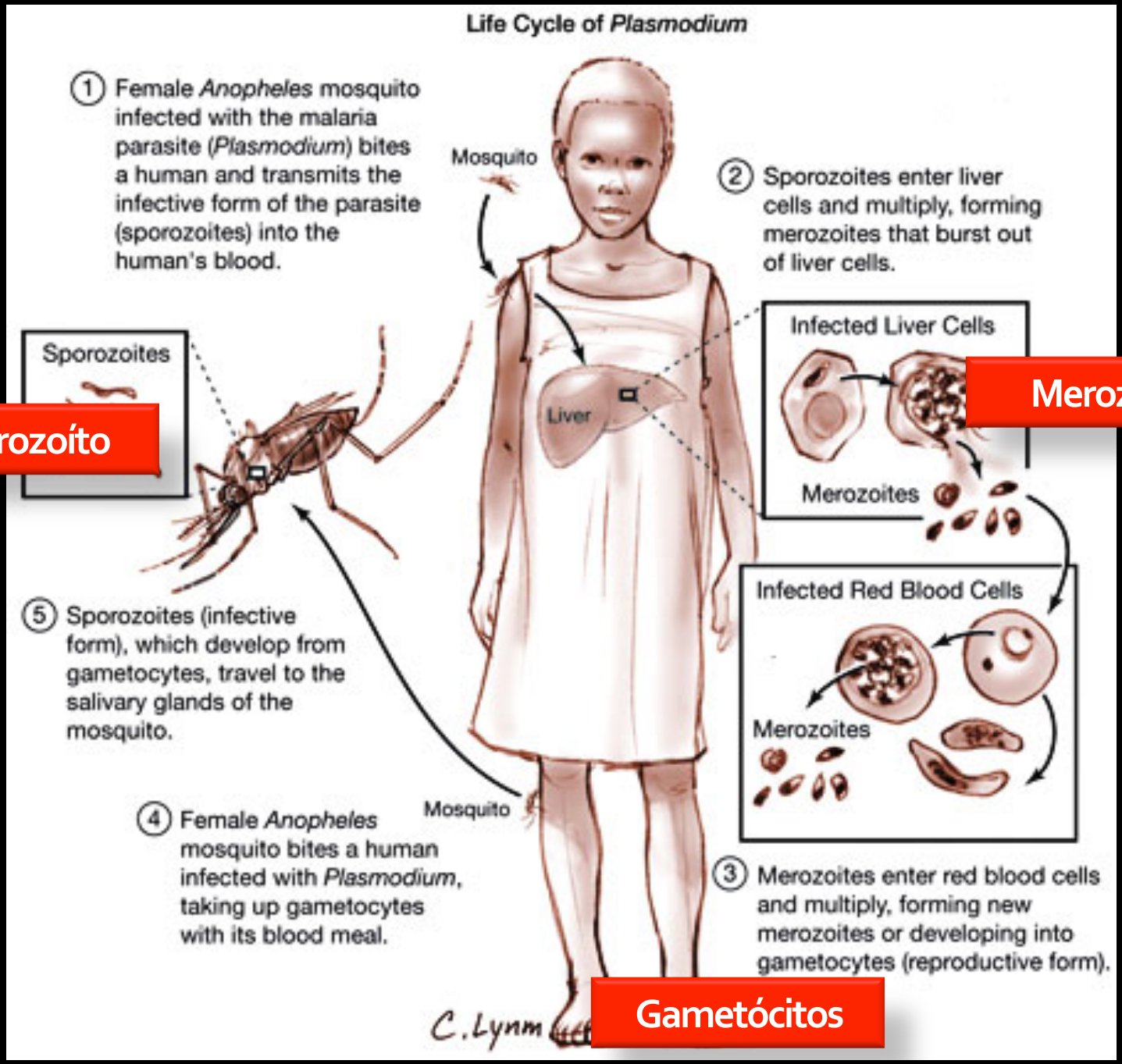

In mosquitoes
Oocysts develop in gut wall
Sporozoites develop in oocyst
Sporozoites migrate to salivary glands
Parasites sucked up
Sexuado
Asexuado
Sporozoites injected with mosquito bite
Gametocytes
Liver stage
Red blood cell stage
In humans

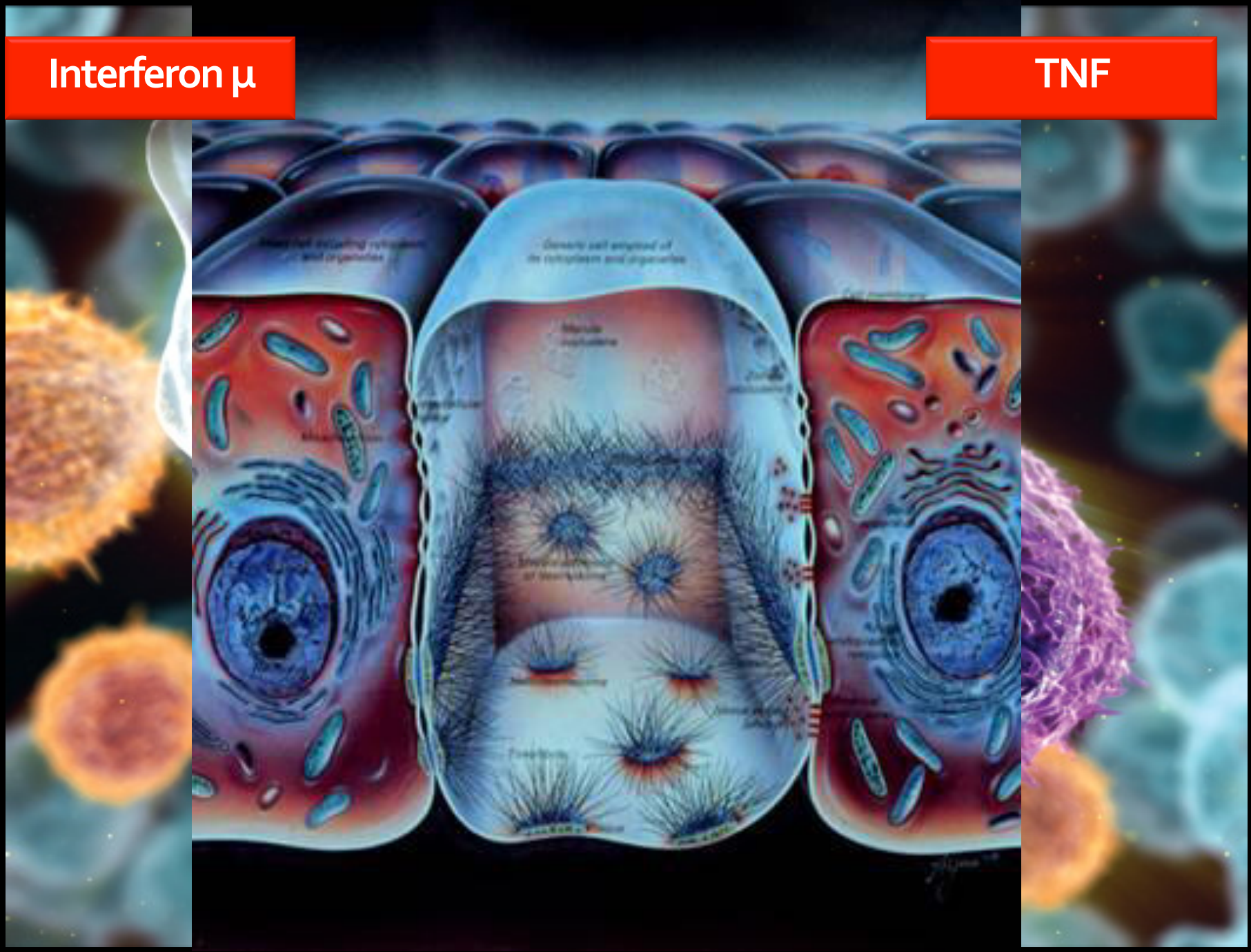


Life cycle of *Plasmodium*, protist that causes Malaria

Dept. Biol. Penn State ©2002


a
Sporozoites
Liver
Merozoites
Red blood cells
Trophozoite
Gametocytes
b
Salivary glands
Sporozoites
Oocyst
Gut
Ookinete
Zygote
Gametes

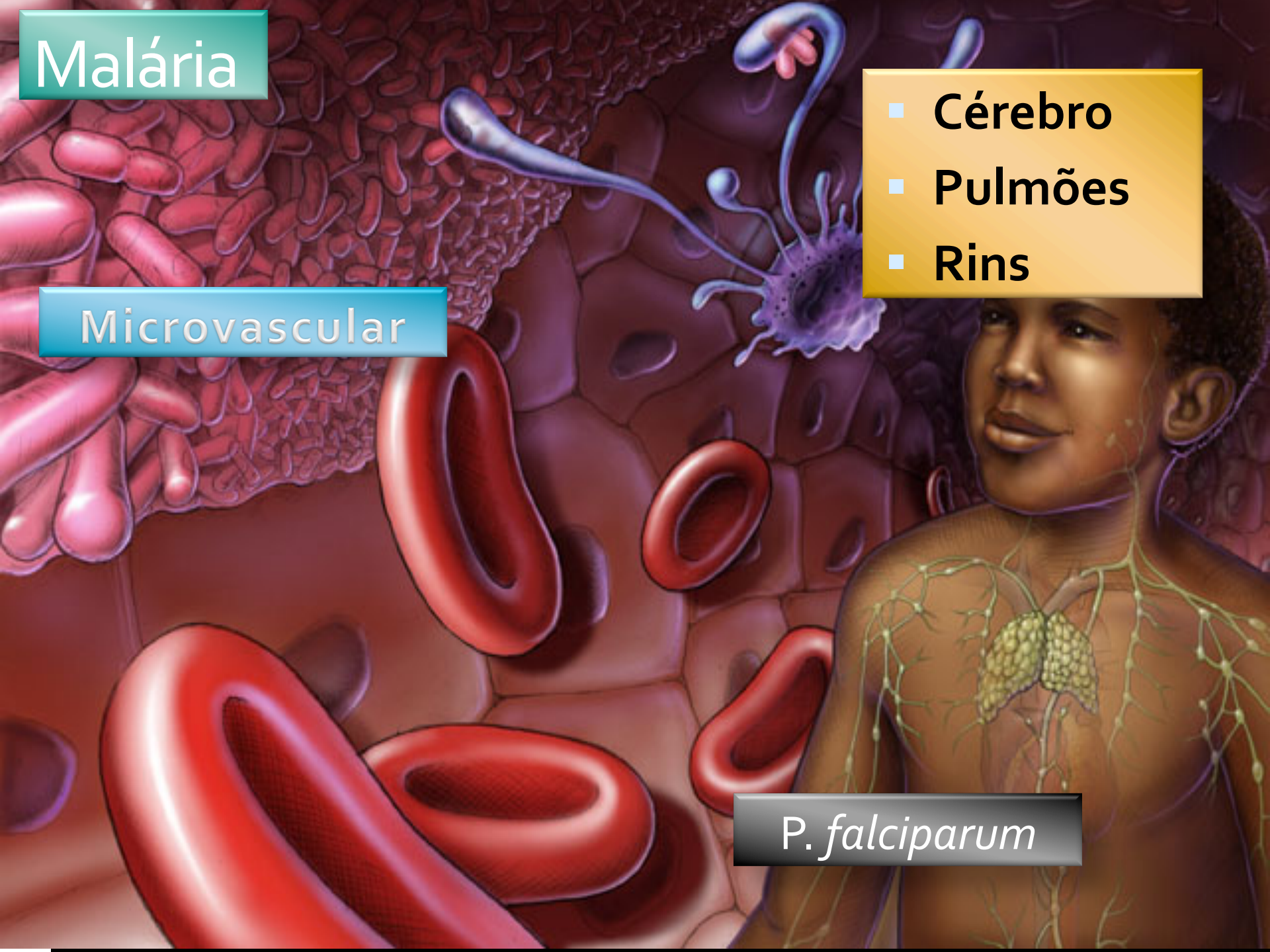

Life Cycle of *Plasmodium*
1 Female *Anopheles* mosquito infected with the malaria parasite (*Plasmodium*) bites a human and transmits the infective form of the parasite (sporozoites) into the human's blood.
Mosquito
2 Sporozoites enter liver cells and multiply, forming merozoites that burst out of liver cells.
Infected Liver Cells
Liver
Merozoites
Sporozoites
Infected Red Blood Cells
Merozoites
5 Sporozoites (infective form), which develop from gametocytes, travel to the salivary glands of the mosquito.
Mosquito
4 Female *Anopheles* mosquito bites a human infected with *Plasmodium*, taking up gametocytes with its blood meal.
3 Merozoites enter red blood cells and multiply, forming new merozoites or developing into gametocytes (reproductive form).
C. Lynn
Esporozoíto
Merozoíto
Gametócitos


Interferon μ
TNF

Niveles séricos elevados de interleuquina-10 en pacientes con malaria aguda

Acta méd. colomb;24(1):15-8, ene.-feb. 1999. graf.

La malaria continúa siendo un problema grave de salud en nuestro país y en el mundo. La respuesta inmune que se genera frente al Plasmodium es bastante compleja y aún no es completamente clara. El objetivo de nuestro trabajo fue investigar los niveles séricos de factor de necrosis tumoral alfa (TNF-Ó) y de interleuquina 10 (IL-10) en personas con malaria y sin ella, y correlacionarlos con el número de parásitos y la temperatura corporal. La población de estudio provenía de El Bagre, municipio de Antioquia, y comprendía 49 niños sin malaria y 51 con malaria infectados por Plasmodium virax (67 por ciento), por plasmodium falciparum (29 por ciento) o por ambos (4 por ciento). El número promedio de parásitos circulantes de P. vivax fue 5.495/mm(3). Para la cuantificación de citoquinas se emplearon estuches comerciales basados en una prueba de ELISA en ®sandwich». Los resultados mostraron un aumento significativo de IL- 10 en los maláricos (266.18ñ47.9 pg/ml) comparado a los no maláricos (8.52ñ1.17pg/ml) (p<0.0001). Hubo una correlación directa entre los niveles de IL -10 con el número de paracitos (p<0.0001) y el aumento en la temperatura corporal (p<0.0001). En la mayoría de la población estudiada con malaria (88.2 por ciento) y sin ella (87.8 por ciento) no se detectó TNF-Ó y en el resto, laconcentración fue mínima. La no detección de TNF-Ó puede tener dos explicaciones fundamentales: la baja parasitemia, el aumento de IL-10, o ambos. Es difícil explicar la relación de la IL-10 con la parasistemia y la fiebre dado que no se le ha atribuido acción pirogénica a esta citoquina. (AU)


Malária
Microvascular
Cérebro
Pulmões
Rins
P. falciparum

Anemia

Edema Agudo Pulmonar

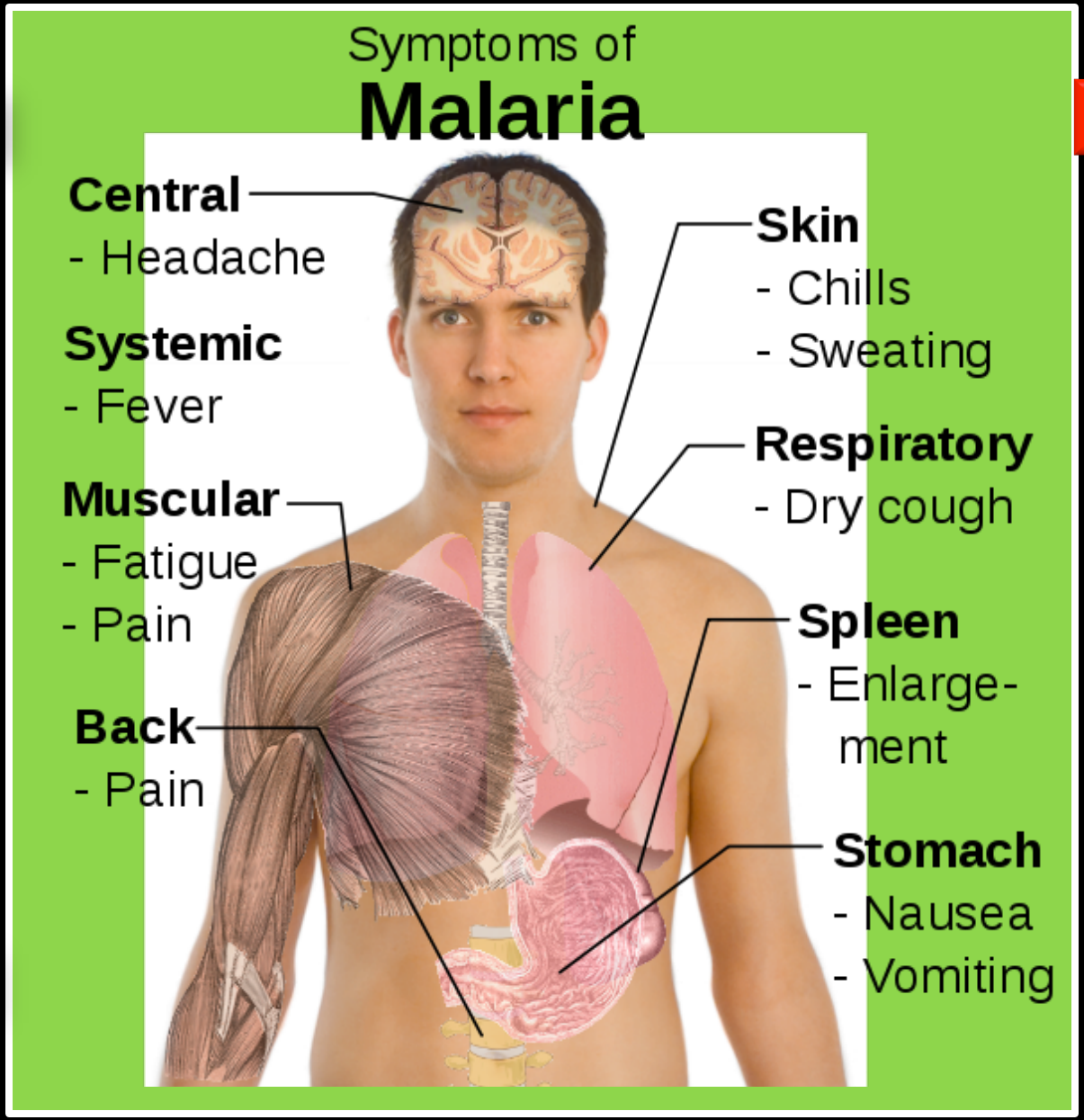
Diarréia

Coma

Renal

Hepático

Hipoglicemia



MALÁRIA



- DIAGNÓSTICO

  * CLÍNICO

  * Laboratorial

    ⇨ Pesquisa do Plasmódio

    →Esfregaço sanguíneo e em gota espessa(Giemsa)

    ⇨ Sorológico:

    → RIFI, ELISA, HAI, FIXAÇÃO DO COMPLEMENTO, PCR.

In: Veronesi, Ricardo.Doenças infecciosas e parasitárias. s.l, Guanabara Koogan, 2008.

MALÁRIA

- TRATAMENTO

* Quinina ⇨ Age sobre os trofozoítos, esquizontes e merozoítos
* Amino-4-quinolonas (Cloroquina, Aralen, Amodiaquina ou camoquim) ⇨ Age sobre todas as formas sanguíneas exceto gametócitos de *P. falciparum*
* Amino-8-quinolinas (Plasmoquina, Primaquina) ⇨ Age sobre os esquizontes hepáticos e sobre os gametócitos.
* Pirimidina (pirimetamina) ⇨ Age sobre formas hepáticas e sanguíneas
* Sulfonamida (Fanasulf) ⇨ *P. falciparum* cloroquino resistente

In: Veronesi, Ricardo.Doenças infecciosas e parasitárias. s.l, Guanabara Koogan, 2008.

MALÁRIA

- PROFILAXIA

  * INDIVIDUAL

    ⇨Evitar a aproximação às áreas de risco após o entardecer e logo ao amanhecer do dia

    ⇨ Uso de repelentes, dormir com mosquiteiros, telar janelas e portas

    ⇨Uso de quimioprofiláticos →Iniciar 01 semana antes (Mefloquina) → Terminar 30 dias após

In: Veronesi, Ricardo.Doenças infecciosas e parasitárias. s.l, Guanabara Koogan, 2008.

MALÁRIA

*COLETIVA

CONTROLE⇨Reduzir a incidência da doença em determinadas áreas.

Medidas de combate ao vetor
Medidas de combate às larvas
Medidas de saneamento básico

Medidas para melhorar as condições de vida

Tratamento dos doentes

In: Veronesi, Ricardo.Doenças infecciosas e parasitárias. s.l, Guanabara Koogan, 2008.

Malária – Propostas de Tratamento

