

Comprehensive management of severe malaria

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Description of condition and intervention

Severe malaria is commonly caused by infection with plasmodium falciparum, p. vivax and p. knowlesi^{2,3} this can also lead for severe disease infection. The common symptom of this infection is fever, headache, aches, diarrhea, body, and abdominal pain. Management of severe malaria, including early detection and provision of rectal artesunate in community settings followed by parenteral artesunate and full course of ACT. The risk of severe falciparum malaria infection among young children is high in high transmission areas than nonendemic location. The risk of this infection is high among pregnant women in second and third trimesters, in patients with HIV/AIDS and in individuals who have undergone splenectomy. In this evidence brief, we present the effect and cost of the following intervention being analysed in FairChoices:DCP Analytical tool:

Comprehensive management of severe malaria

International guidelines

Organization	Indications/recommendations	Applicability in LIC & Lower MIC settings
World Health Organization 2021	WHO guidelines for malaria	Yes

Intervention attributes

Type of interventions

Curative

Delivery platform

This intervention may be delivered through the first-level hospital.

Equity

In addition to considerations like cost-effectiveness and health systems factors, dimensions of equity can be relevant for priority setting. The opportunity for a long and healthy life varies according to the severity of a health condition that individuals might have, so there are inequities in individuals' opportunities for long and healthy lives based on the health conditions they face. Metrics used to estimate the severity of illness at an individual level can be used to help prioritize those with less opportunity for lifetime health. FairChoices: DCP Analytics Tool uses Health adjusted age of death (HAAD), which is a metric that estimates the number of years lived from birth to death, discounting years lived with disability. A high HAAD thus represents a disease less severe in terms of lifetime health loss, while a low HAAD represents a disease that is severe on average, causing early death or a long period of severe disability. It is also possible to estimate the distribution of HAAD across individuals with a health condition. FairChoices shows for each intervention an average HAAD value of the conditions that are affected by respective interventions that have health effects. Additionally, a plot shows HAAD values for around 290 conditions (Johansson KA et al 2020).

Time dependence

High level of urgency. Treatment outcomes may be highly affected by some days of delay in high malaria settings.

Population in need of interventions

Treated population: All prevalent cases of malaria in children (0 to 4 years) and higher age group 5 to 99 years, both genders. The treated fraction is assumed to be 0.05, taking 5% of cases that are severe (GBD 2016).

Affected population: The affected population is same as the above-mentioned treated population. The affected fraction is assumed to be 0.02, considering oral ACT addresses one-third of malaria deaths.

Disease states addressed

This intervention targets for comprehensive management of severe malaria in the population under consideration residing in malaria endemic settings.

Intervention effect and safety

Table 1: Effect and safety of comprehensive management of severe malaria

Effect of intervention		Certainty of evidence
Mortality (due to condition)	Assumed 97.5%, considering CFR as 80% and death rate with artesunate as 2% & calculated as $(80\% - 2\%) / 80\% = 97.5\%$	See appendix

Model assumptions

Table 2: Summary of model parameters and values used in FairChoices – DCP Analytical Tool

Category	Model parameter		Notes
Intervention	Comprehensive management of severe malaria		
Treated population	Children	Children > 5 years & adults	Based on prevalent cases of Malaria from GBD study 2019

Gender	Both	Both	
Age	0 to 4 years	5 to 99 years	
Treated fraction	0.05	0.05	Considering 5% cases as severe (GBD 2016)
Affected Population	Children	adults	
Affected gender	Both	Both	
Affected fraction age	0 to 4 years	5 to 99 years	
Affected fraction	0.02	0.02	Considering oral ACT addresses 1/3 rd of malaria deaths
Comparison	No treatment		
Mortality Reduction (RRR)	0.98		

Intervention Cost

Unit cost of comprehensive management of severe malaria at first-level hospital is estimated to be USD 66.05 (Year: 2009) (Source Watkins D et al 2020).

References

Johansson KA et al 2020: Johansson KA, Coates MM, Økland JM, Tsuchiya A, Bukhman G, Norheim OF, Haaland Ø. Health by disease categories. Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs. 2020 Sep 30:105.

Watkins D et al 2020: Watkins DA, Qi J, Kawakatsu Y, Pickersgill SJ, Horton SE, Jamison DT. Resource requirements for essential universal health coverage: a modelling study based on findings from Disease Control Priorities, 3rd edition. Lancet Glob Health. 2020 Jun;8(6):e829-e839. doi: 10.1016/S2214-109X(20)30121-2. PMID: 32446348; PMCID: PMC7248571.

Appendix

Literature Review for effectiveness & safety

This literature search is an example of a structured, focused review of literature and guidelines. You can choose to do one of the following literature reviews for your Evidence Brief:

Level 1: intervention inputs taken from DCP3 or generated in an ad hoc manner (e.g., quick google search found one study of cervical cancer screening cost-effectiveness that was used to create an effectiveness parameter for that intervention).

Level of evidence of efficacy studies:

1. low (expert opinions, case series, reports, low-quality case control studies)
2. moderate (high quality case control studies, low quality cohort studies)
3. high (high quality cohort studies, individual RCTs)
4. very high (multiple RCTs, meta-analysis, systematic review, clinical practice guidelines).