Seasonal malaria chemoprevention in practice

Brian Greenwood
London School of Hygiene & Tropical Medicine

Transforming the malaria landscape in the Sahel: Seasonal malaria chemoprevention

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Global
Malaria Programme

World Health Organization

The recommendation for SMC [c]

WHO recommends

- Seasonal Malaria Chemoprevention (SMC) is recommended in areas of highly seasonal malaria transmission across the Sahel sub-region[1]. A complete treatment course of amodiaquine plus sulfadoxine-pyrimethamine (AQ+SP) should be given to children aged between 3 and 59 months at monthly intervals, beginning at the start of the transmission season, to a maximum of four doses during the malaria transmission season (provided both drugs retain sufficient antimalarial efficacy).
- The age-based recommended dosing schedule is:

  Infants < 12 months old: AQ – half (½) of a 153mg tablet given once daily for three days and a single dose of SP - half of a 500/25mg tablet.

  Children 12 – 59 months: AQ – a full tablet of 153 mg given once daily for three days and a single dose of SP - a full tablet of 500/25mg.

  The single dose of SP is given only on the first day together with the 1st dose of AQ.
- Target areas[2] for implementation are areas where:
  - Malaria transmission and the majority of clinical malaria cases occur during a short period of about four months[3].
  - the clinical attack rate of malaria is greater than 0.1 attack per transmission season in the target age group, and
  - AQ+SP remains efficacious (>90% efficacy)[4].
- SMC Contraindications:

SMC should not be given to -

- A child with severe acute illness or unable to take oral medication
- An HIV-positive child receiving co-trimoxazole.
- A child who has received a dose of either AQ or SP drug during the past month.
- A child who is allergic to either drug (AQ or SP).

WHO recommendation on SMC
March 2012

SMC in practice
Some important scientific and practical questions

- Can financial support be sustained?
- Can a high level of coverage be achieved?
- Can the efficacy seen in the initial trials be sustained?
- Is SP+AQ safe when given on a mass scale?
- Will resistance to SP and AQ develop?
- Can SMC be combined successfully with other interventions?
- Will 'rebound' malaria occur when SMC is stopped?
- When should SMC be stopped?

Coverage

	Average Administrative Coverage	Coverage as per household surveys		
		At least 1 cycle	3 cycles	4 cycles
Burkina Faso	104.7%	95.8%	83.9%	69.2%
Chad	96.5%	96.0%	60.5%	22.7%
Mali	85.0%	87.2%	56.2%	37.7%
Nigeria	99.4%	77.3%	61.4%	42.4%
The Gambia	84.9%	93.7%	84.3%	55.5%

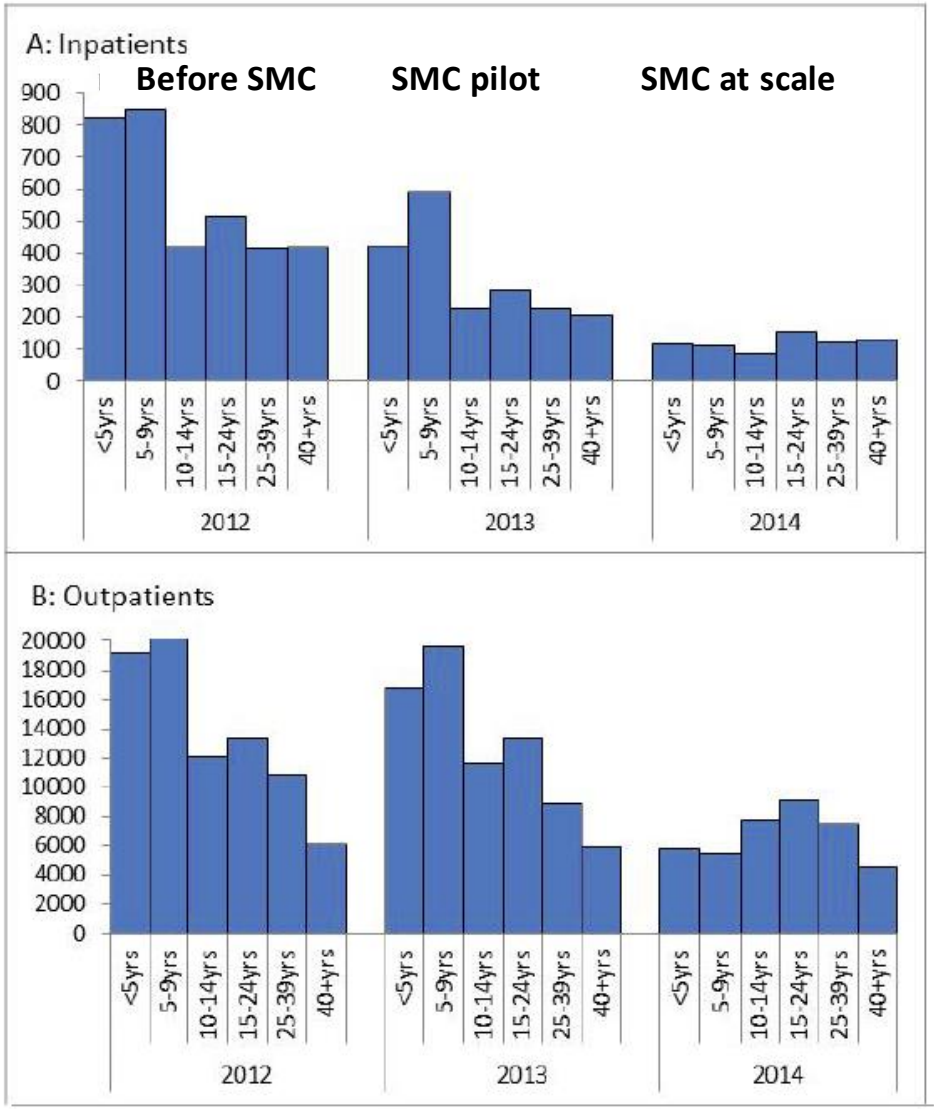
A high level of reported coverage but

- Issues with population data (underestimated)
- Some children are not reached all of the times (mobility, migration)
- Potential “cycle fatigue” – perception of achieved protection
- Methodological issues (recall bias)

Efficacy

In-patients

Outpatients



Efficacy in Senegal

A 'herd effect'?

Safety

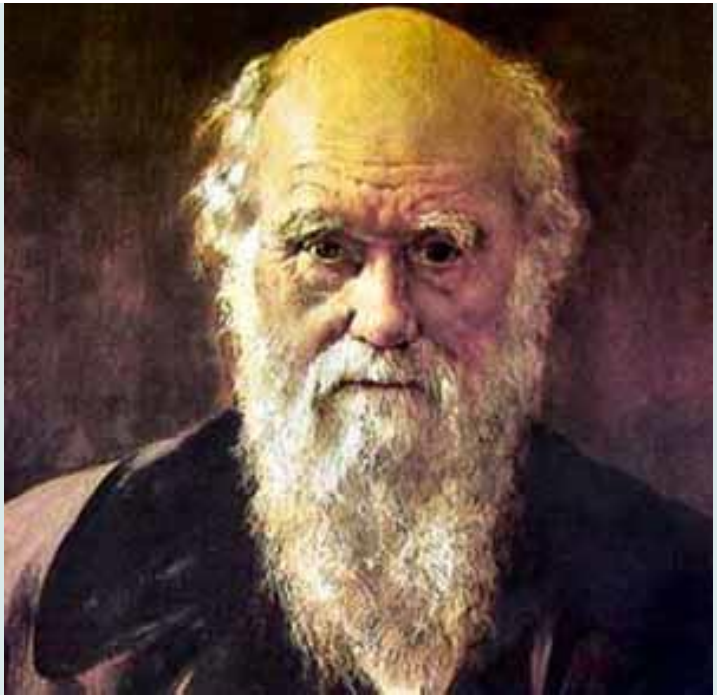
Country	Children reached	Reported SAE
Burkina Faso	702,379	1
Chad	272,381	1
Gambia	76,922	1
Guinea	210,448	3
Mali	660,440	1
Niger	477,495	2
Nigeria	827,790	0
Totals	3,227,855	9

No drug related SAE in

780,000 treatments in Senegal

(Ndiaye et al. submitted)

The emergence of drug resistance



Charles Darwin

The emergence of drug resistance
What has happened?

↑ In resistance markers at the end of the drug administration

+

↓ Parasite prevalence

=

↓ Number of resistant parasites in the community

Meeting the challenge of drug resistance

- Sustaining surveillance for the emergence of resistance to SP or amodiaquine after the ACCESS-SMC programme

- Development of new anti-malarials for prevention rather than treatment
  - Do not need to be rapid acting (cf. treatment)
  - Preferably single dose
  - Long acting (preferable providing at least a month's protection)

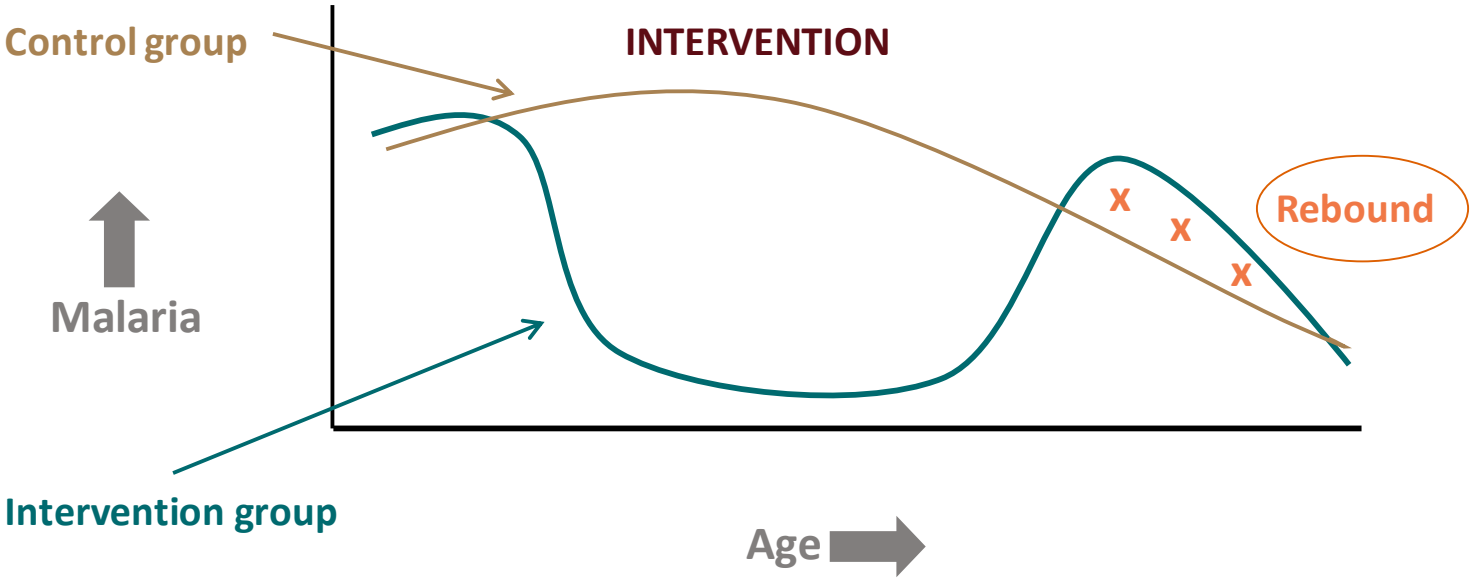
MMV
Medicines for Malaria Venture

Combination of SMC with other interventions Potential candidates

- Nutritional surveillance and/or supplementation
- Vitamin A supplementation
- Mass drug administration for other infections – trachoma, NTDs (azithromycin trial)
- Vaccine catch-up campaigns
- Malaria vaccines

‘Rebound’ malaria definition

An increase in the incidence of malaria after a period of effective malaria control has been achieved (by any means) above what would have occurred if the intervention had not taken place

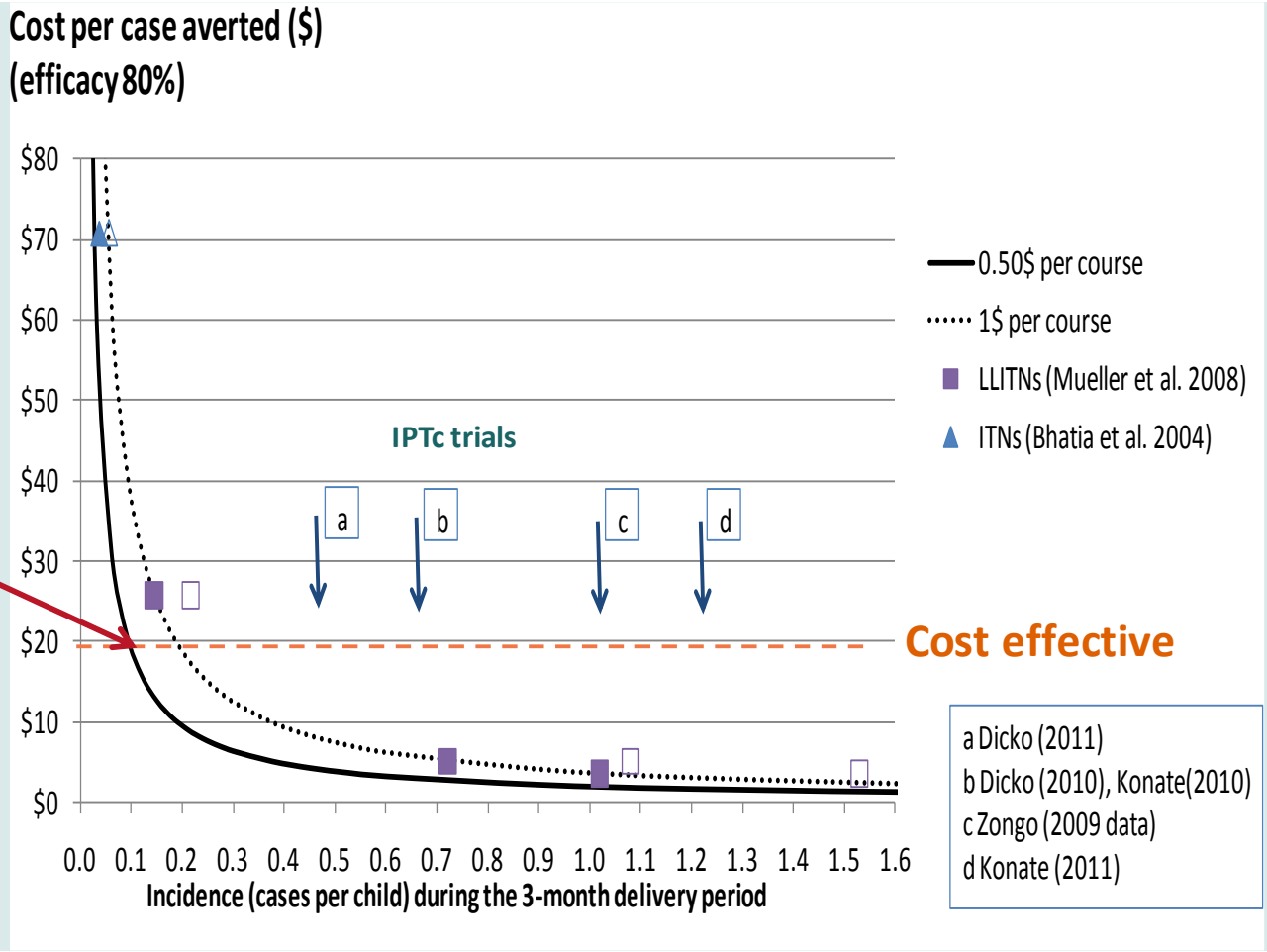


Meeting the challenge of ‘rebound’

- Recognizing that this is likely to happen

- Enhancing malaria control in school-age children
  - e.g. enhancing ITN usage or improving treatment of malaria in schools

When to stop?
Cost effectiveness of SMC



(Cairns et al. Nature Communications 2012;3:881)

Questions for SMC when put into practice

- Can a high level of coverage be achieved? **YES**
- Can the efficacy seen in the initial trials be sustained? **YES**
- Is SP+AQ safe when given on a mass scale? **YES**
- Will resistance to SP and AQ develop? **PROBABLY**
- Can SMC be combined with other interventions? **YES**
- Will 'rebound' malaria occur when SMC is stopped? **PROBABLY**
- When should SMC be stopped? **UNCERTAIN**

Acknowledgements

UNITAID

ACCESS SMC
Achieving catalytic expansion of seasonal malaria chemoprevention in the Sahel

malaria consortium
disease control, better health

CRS
CATHOLIC RELIEF SERVICES

Thank you

www.access-smc.org

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

SpeakUpAfrica.

MMV
Medicines for Malaria Venture

msh
Management Sciences for Health

BACK-UP SLIDES

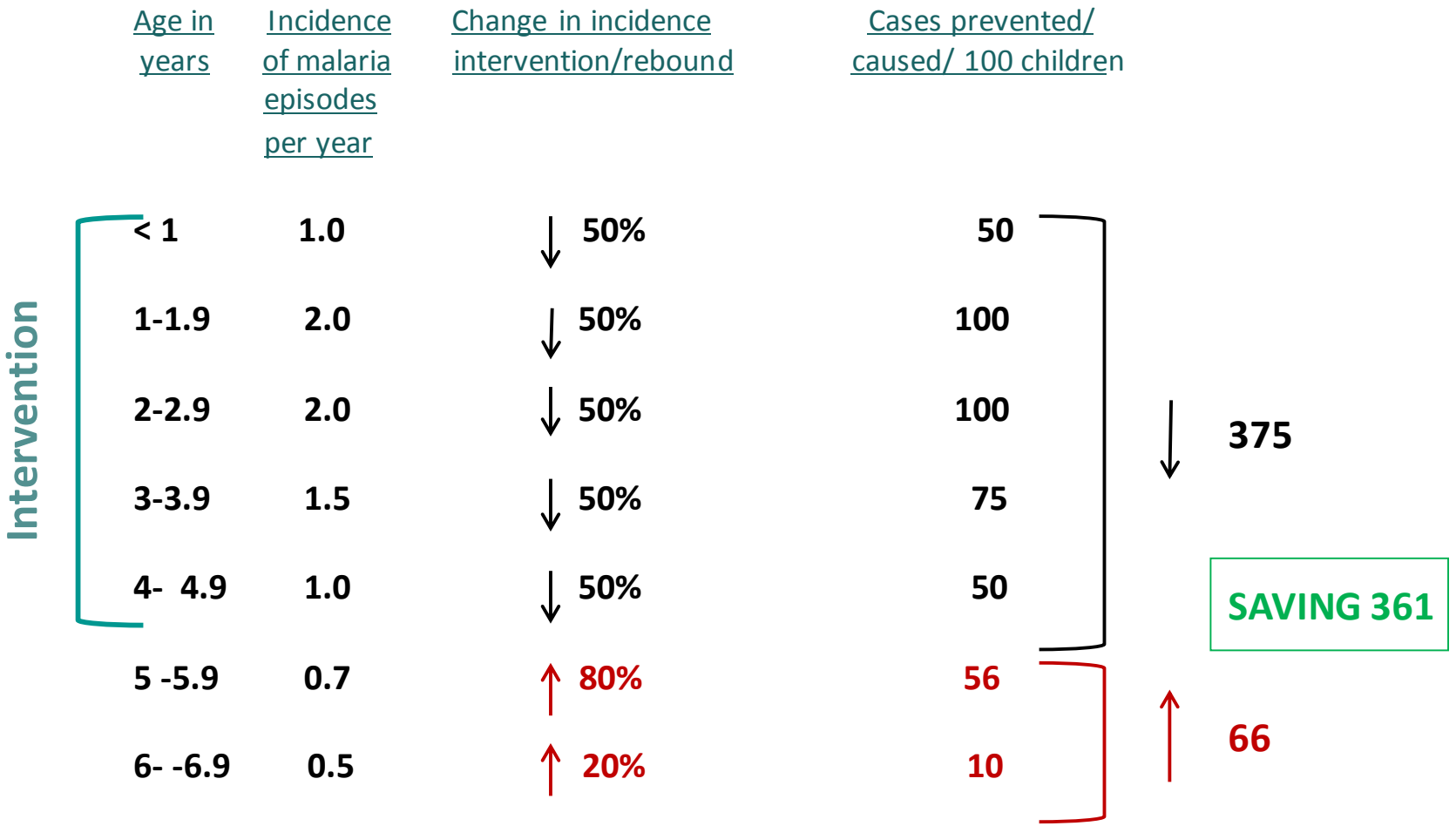
Efficacy in The Gambia

Estimated effectiveness of SMC: reduction in inpatient cases during the months August-November

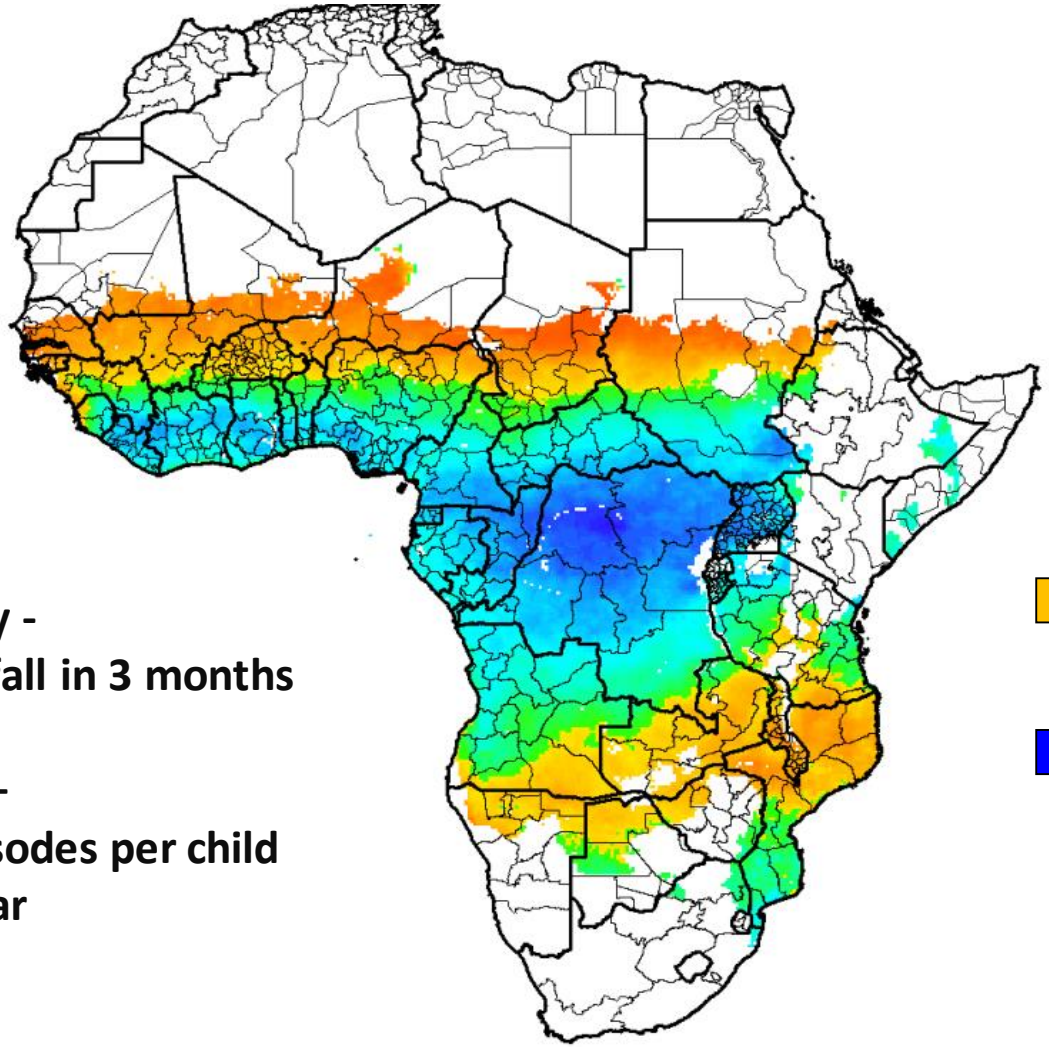
		CRR	URR	Total
2014*	Expected cases <5yrs	339	315	654
	Observed cases <5yrs	221	211	432
	% reduction	35%	33%	34%
2015*	Expected cases <5yrs	521	495	1086
	Observed cases <5yrs	229	141	370
	% reduction	56%	72%	66%

**SMC was delivered over 3 months in 2014 and 4 months in 2015.*

Theoretical impact of SMC



Where should SMC be given?



Seasonality -
60% rainfall in 3 months

Incidence –
> 0.2 episodes per child per year

Highly suitable

Not-suitable

(Cairns et al. Nat Commun 2012;3:881)