23 January 2023

Facilitators and Barriers to Update of the RTS,S/AS01Malaria Vaccine

Summary findings from the Healthcare Utilization Study (HUS) presented at the Workshop on implementation strategies for the introduction of RTS,S/AS01 malaria vaccine in countries with areas of highly seasonal transmission

23-25 January 2023, Dakar, Senegal

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Photo: PATH/Gabe Bienczycki

Healthcare Utilization Study (HUS)

To understand factors and contexts that facilitate or obstruct RTS,S delivery and uptake, adding qualitative evidence to MVIP objective #3 to assess programmatic feasibility.

STUDY SITES

- Communities selected in MVIP implementation clusters (3 clusters/MVIP country)
- 3 communities/cluster, purposively selected to reflect “high,” “medium,” and “low” measles coverage
- 27 communities total (9/country)

Qualitative panel design

Study Groups	R1 Soon after dose 1	R2 Between doses 3 & 4	R3 Soon after dose 4
Primary child caregiver cohort: Individual interviews with 63 PCG/country; 188 total at R1	●	●	●
PCG cross-sectional sample: Individual interviews with 45 PCG/country; 135 total			●
Health workers, facility, district, subnational levels: Small group interviews	●	●	●
National health leaders: Individual interviews	●		●
Community leaders and influencers: Individual and group interviews	●		●

Final Sample: At R3, 162 individuals remained in the cohort

Country	R1 Sample	R3 Sample			
		LTFU	Continued	Replaced	Total
Ghana	62	13	49	0	62
Kenya	63	18	55	10	83
Malawi	63	5	48	0	53
Total	188	37	152	10	198

LTFU = lost to follow-up
Continued = interviewed at R3
Replaced = newly recruited at R2

Average age:	29 years old
Marital status:	84% married or cohabitating
Education:	Most some primary schooling or more
Relation to child:	All but 6 were the child's mother
Child sex:	50% male; 50% female

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At R3, we had complete data on 152 caregivers. 65% of children of these caregivers had received all four RTS,S doses, 22% three doses, 6% one or two doses, and 7% zero doses

Data Completeness	RTS,S Uptake					BCG, Penta, and Measles Immunization Status*	
	Uptake categories and # of doses received		# of children	Percent of:			
				Total enrolled	Complete data cases	Fully immunized	Partially immunized
Complete (n=152)	Completed	4	98	49.5	64.5	87	11
	Continued	3	34	17.2	22.4	20	14
	Adopted	2	8	4	5.3	1	7
		1	1	<1	<1	0	1
	Not adopted	0	11	5.6	7.2	7	4
Incomplete (n=46)	Card not seen		10	5.1			
	LTFU		36	18.2			
Total			***198***	***100***			

* Fully immunized refers to children who received BCG, Penta-1, Penta-2, Penta-3, MR-1 and MR-2 as of the R3 interview. Partially immunized indicate one or more of these vaccinations were missing from the child health card.

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Facilitators to Uptake & Adherence

A trajectory of trust

Across all three countries, the most predominant overall finding of the HUS was a trajectory of growing trust in RTS,S over time

Typical RTS,S Trust Trajectory (K_C18_002)

R1 – ***If the government has approved something, I will go for it.*** *I don't sit back and question it. The government has good reasons for launching any vaccine.*

R2 – *I have not heard about any problems with children due to the vaccine . . .[and] . . .****my understanding [of RTS,S] is, okay, greater since I started taking my child to receive it. This vaccine has helped us*** *. . . It has helped me a lot. I have not been using money, especially for visiting the hospital all the time.*

R3 – *My child has not been sick, and he is now two years old.* ***If he had not been vaccinated, he would have been sick*** *twice or thrice by now.*

Acceptance of RTS,S-1 was driven by **foundational trust** in the health system and in vaccines.

RTS,S-specific trust emerged as caregiver familiarity with it grew and its benefits and safety were perceived.

RTS,S **trust deepened** overtime. By R3 virtually all caregivers believed it reduced malaria frequency and severity in their households and the community.

Nearly one-third of caregivers whose children received all four doses described initial hesitations about RTS,S. These were overcome as RTS,S-specific trust grew, sometimes coupled with other facilitators

*When they told us about the vaccine **we didn't understand**. This made my mother-in-law forbid us from taking the child, fearing [RTS,S] might kill her. **Then the child's father told me to take her since it's the nurses who brought the vaccine**. So, I did.*

(G_C1_002_R1 – child received all four RTS,S doses)

- Encouragement from partners, family, and other personal network members
- Routine use of the child health book to remember vaccination visit dates
- Vaccination visit reminders from:
  - Community announcements
  - Health workers, facilities
  - Partners, peers, other mothers

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Regardless of the number of doses the child received, by R3 virtually all caregivers believed RTS,S reduced malaria frequency and/or severity in their households, the community, or both

*When I go to the hospital, **I only see adults now**, not children.*

M_C25_047_R3, child received 0 doses
caregiver remained under-informed about dose schedule

*It's really rainy and there are lots of mosquitoes. Now you just hear people saying, "My child has fever," but **once they give them Panadol, the fever subsides** and they are fine. This makes me believe malaria has reduced.*

K_C14_004_R3, child received 0 doses
RTS,S missed due to health worker strikes and stockouts

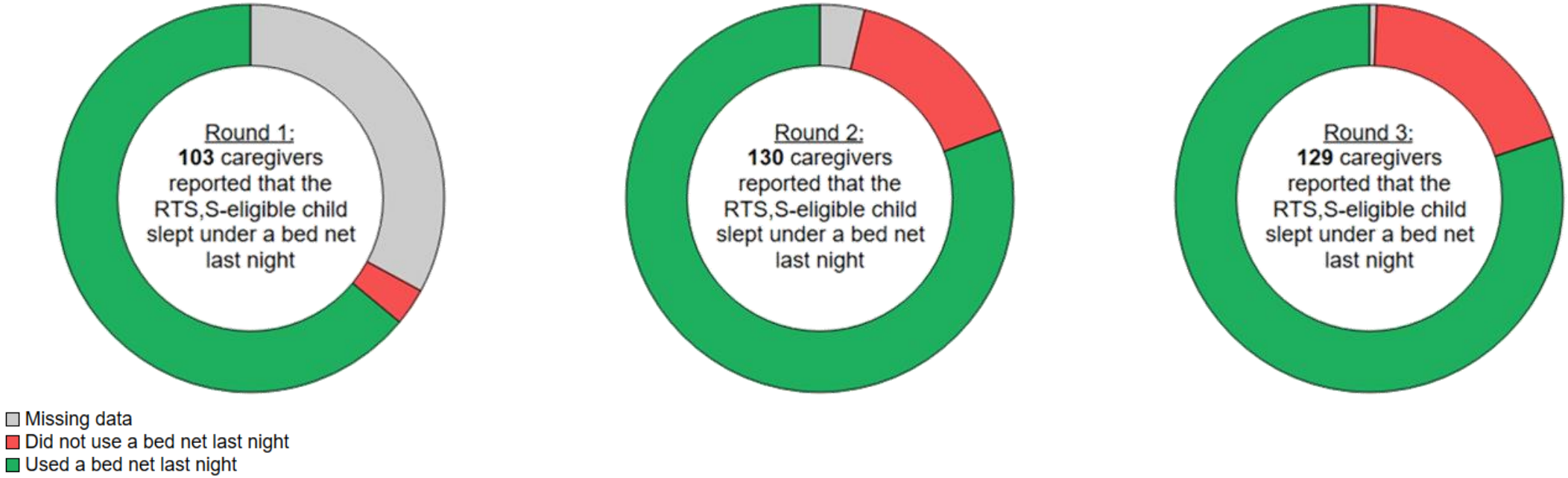
*I know how the malaria cases used to be compared to now. . . Because of the way cases are reducing, I thought I had made a mistake, but **to be sincere malaria has reduced**.*

G_C2_007_R3, child received 0 doses
caregiver, a health worker who compiles malaria reports, delayed RTS,S-1 uptake due to rumors

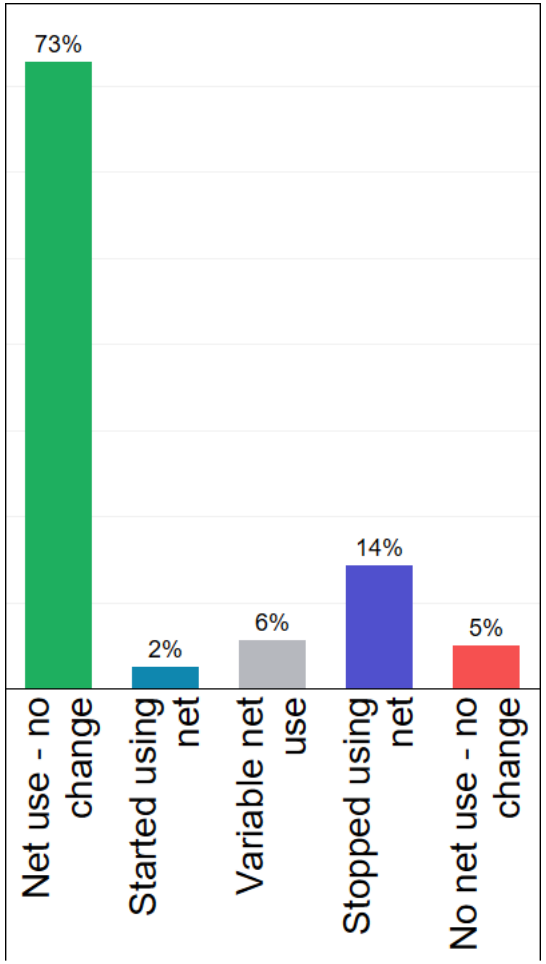
Caregivers understood that RTS,S was partially protective and continued to practice other prevention measures and to seek professional care in the event of fever

Rates of bed net usage were consistent across all interview rounds

80% of caregivers (n=162 who were not LTFU) reported that the RTS,S-eligible child slept under a bed net last night at R2 and R3 interviews. Inconsistent data collection at R1 resulted in substantial missing data.



78% (n=126/162) of caregivers maintained the same bed net use behavior throughout the introduction of RTS,S



Among the 23 caregivers whose reported bed net use declined over the study period, all attributed the decline at R3 to either seasonal or access factors, due to:

<u>Seasonal changes (heat):</u>

Nothing has changed about [bed net use]; it is just the weather that is hot that is why we are not sleeping inside the net these days.

(G_C6_002_R3)

<u>Lack of nets in household:</u>

I received that net after I had given birth, now it got worn out.

(M_C27_063_R3)

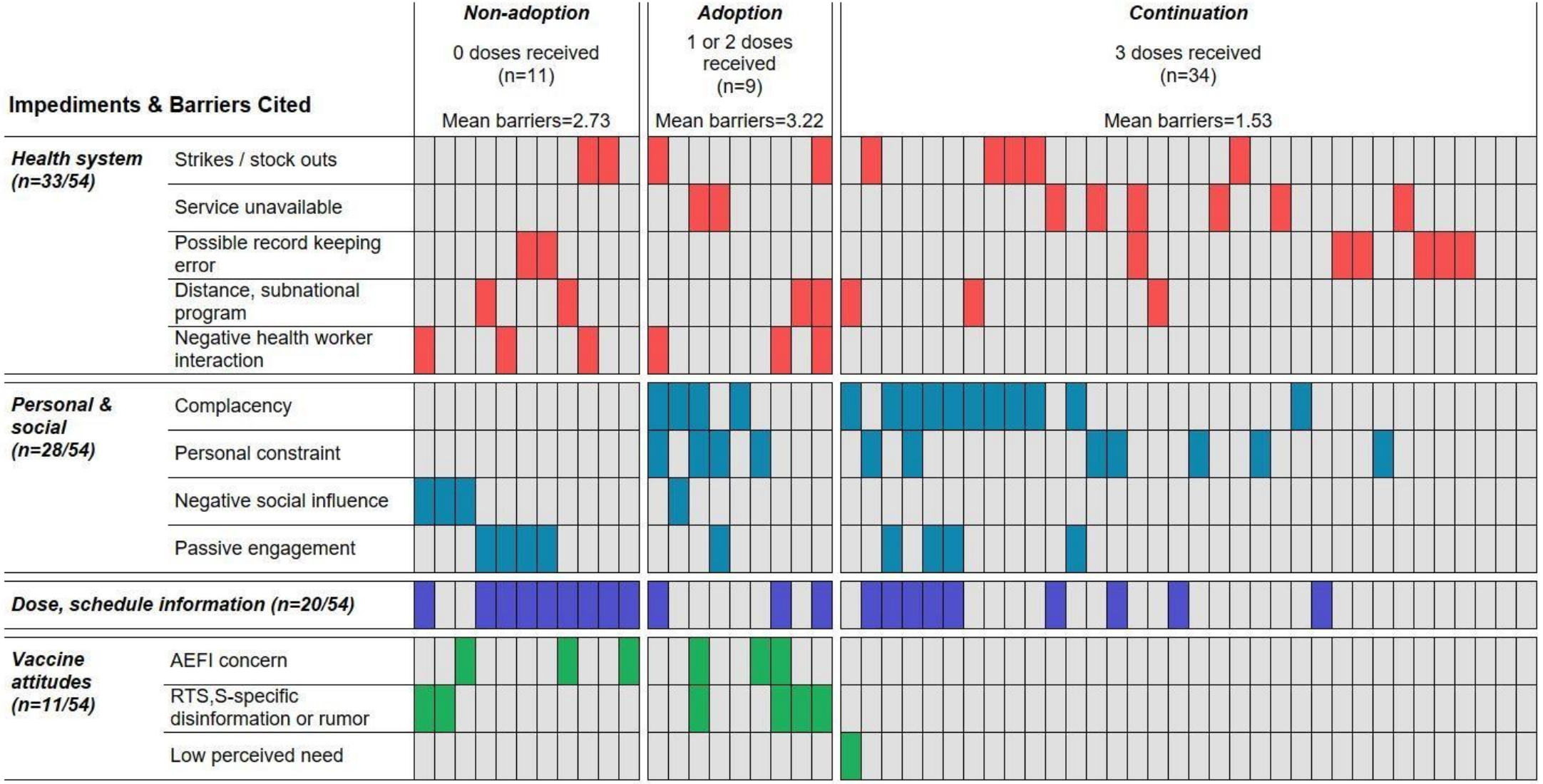
Prompt treatment seeking for fever or suspected malaria in the RTS,S-eligible child was observed at all three interview rounds.

- 104/162 caregivers described ≥1 malaria episode(s) in the RTS,S eligible child over the course of the study, with 143 unique malaria episodes described.
- At R3, 34/162 RTS,S-eligible children had a presumed or diagnosed malaria episode since the R2 interview (“the last time we met”). Of these:
    - 29/34 caregivers took the child to a health facility shortly after symptom onset, all of whom were lab tested for malaria
    - 5/34 caregivers gave the child medications procured from a pharmacy, two in combination with traditional herbs
    - 33/34 resolved promptly with treatment and 1/34 was under treatment at time of the interview

Barriers to Uptake & Adherence

With notable country- and dose-specific differences

Uptake barriers were similar across three under-dose categories with a few notable differences



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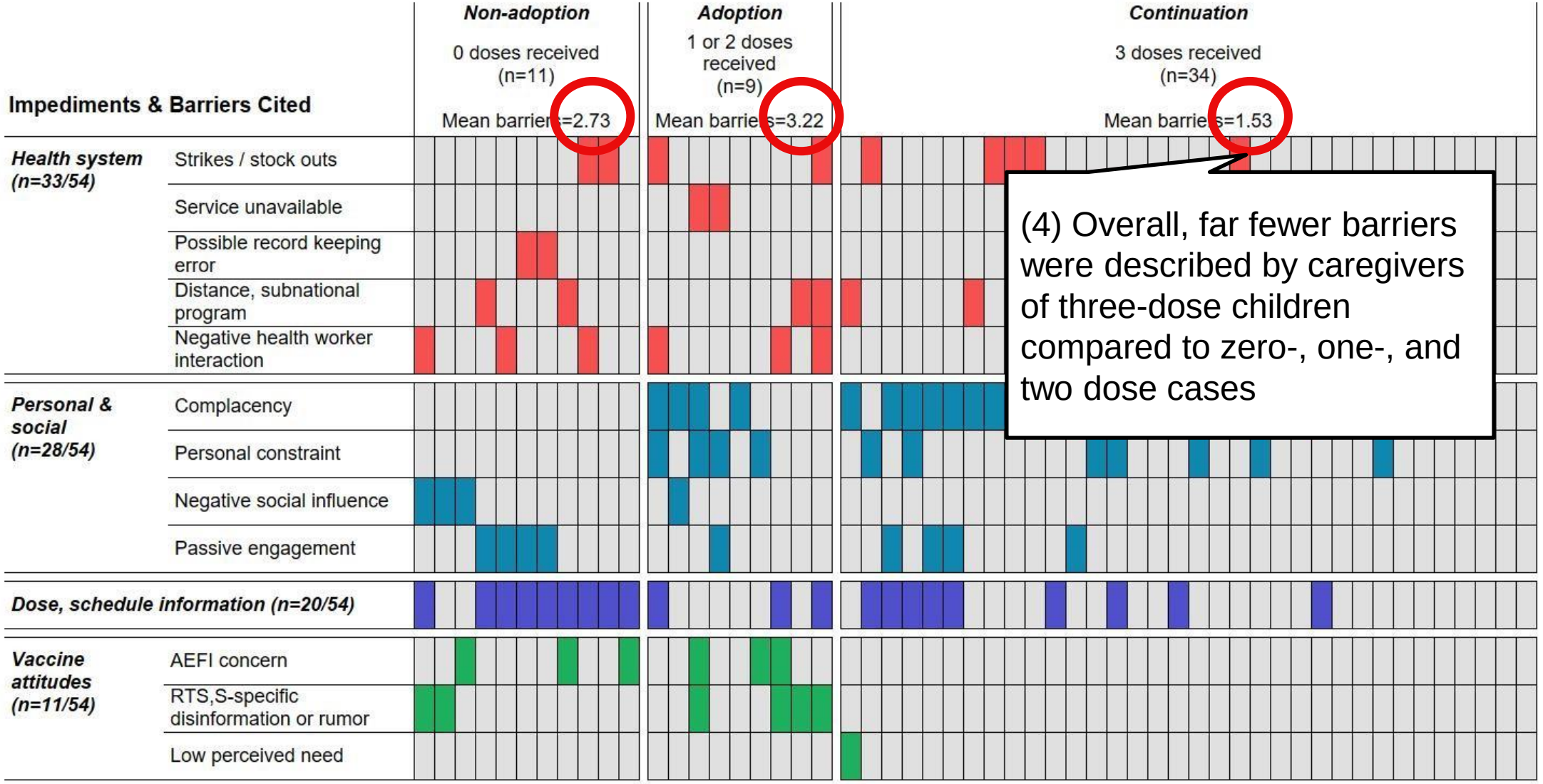

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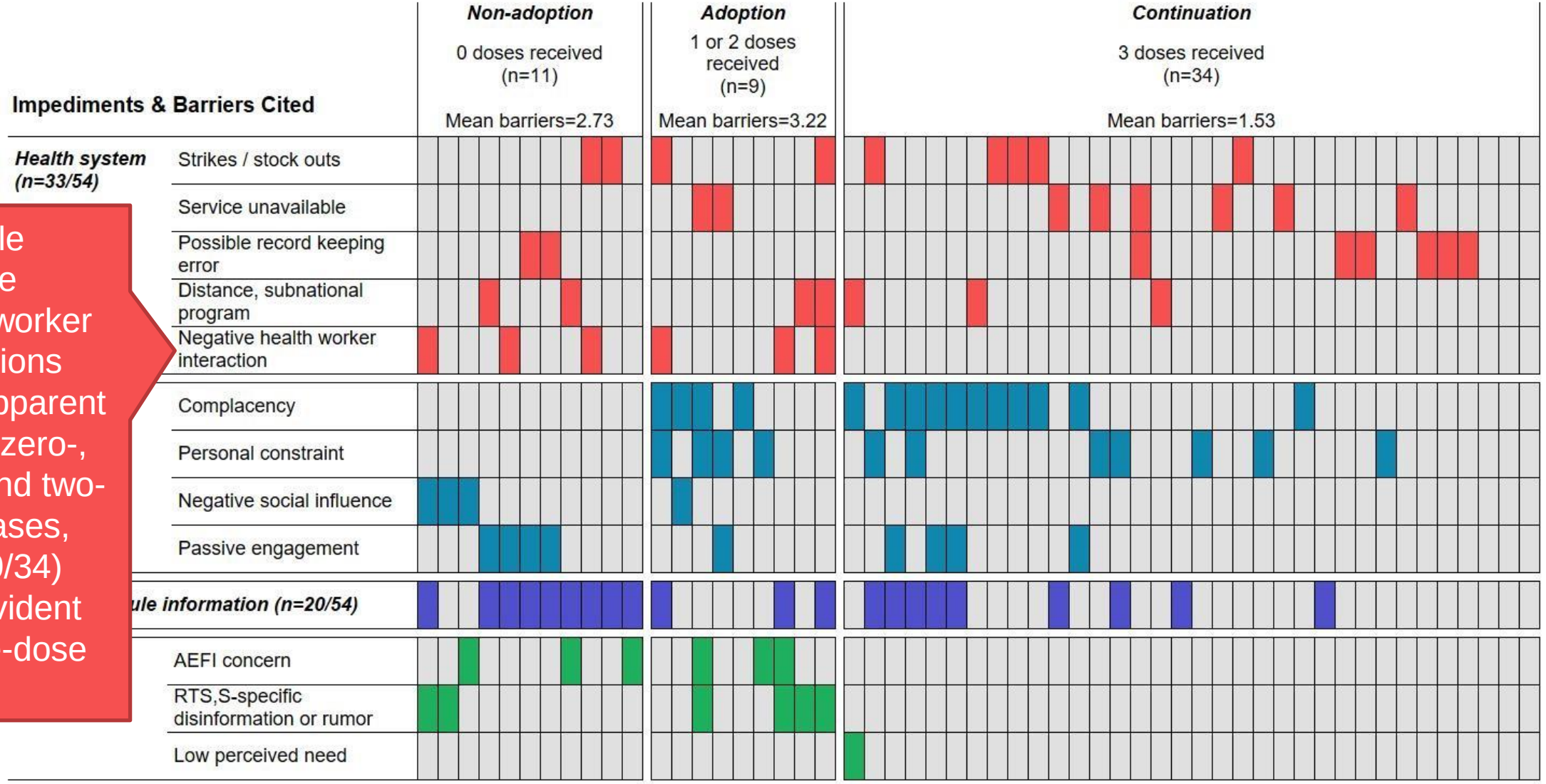

(1) While negative health worker interactions were apparent in 6/20 zero-, one-, and two-dose cases, none (0/34) were evident in three-dose cases

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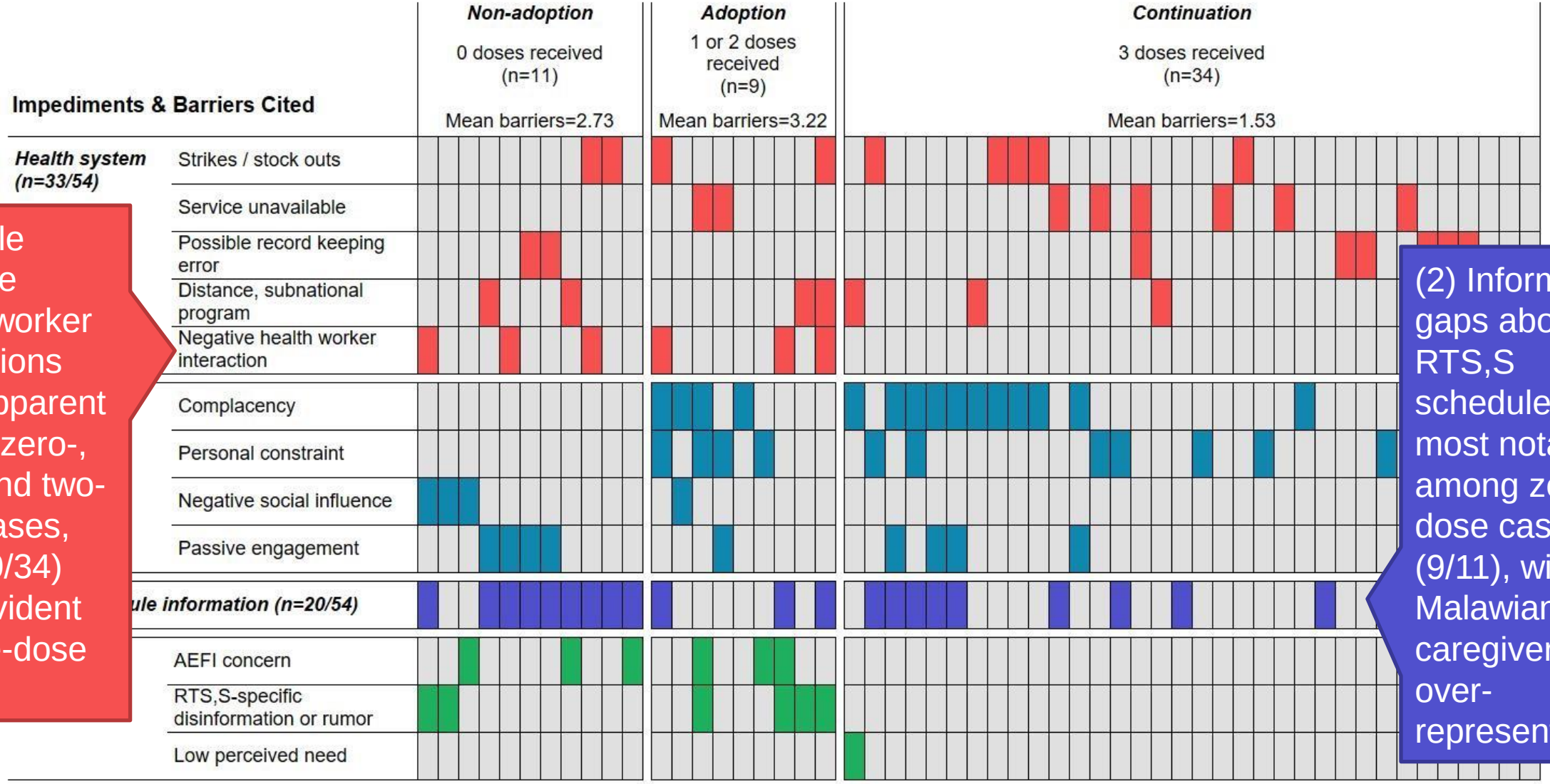

(1) While negative health worker interactions were apparent in 6/17 zero-, one-, and two-dose cases, none (0/34) were evident in three-dose cases

(2) Information gaps about the RTS,S schedule was most notable among zero-dose cases (9/11), with Malawian caregivers over-represented.

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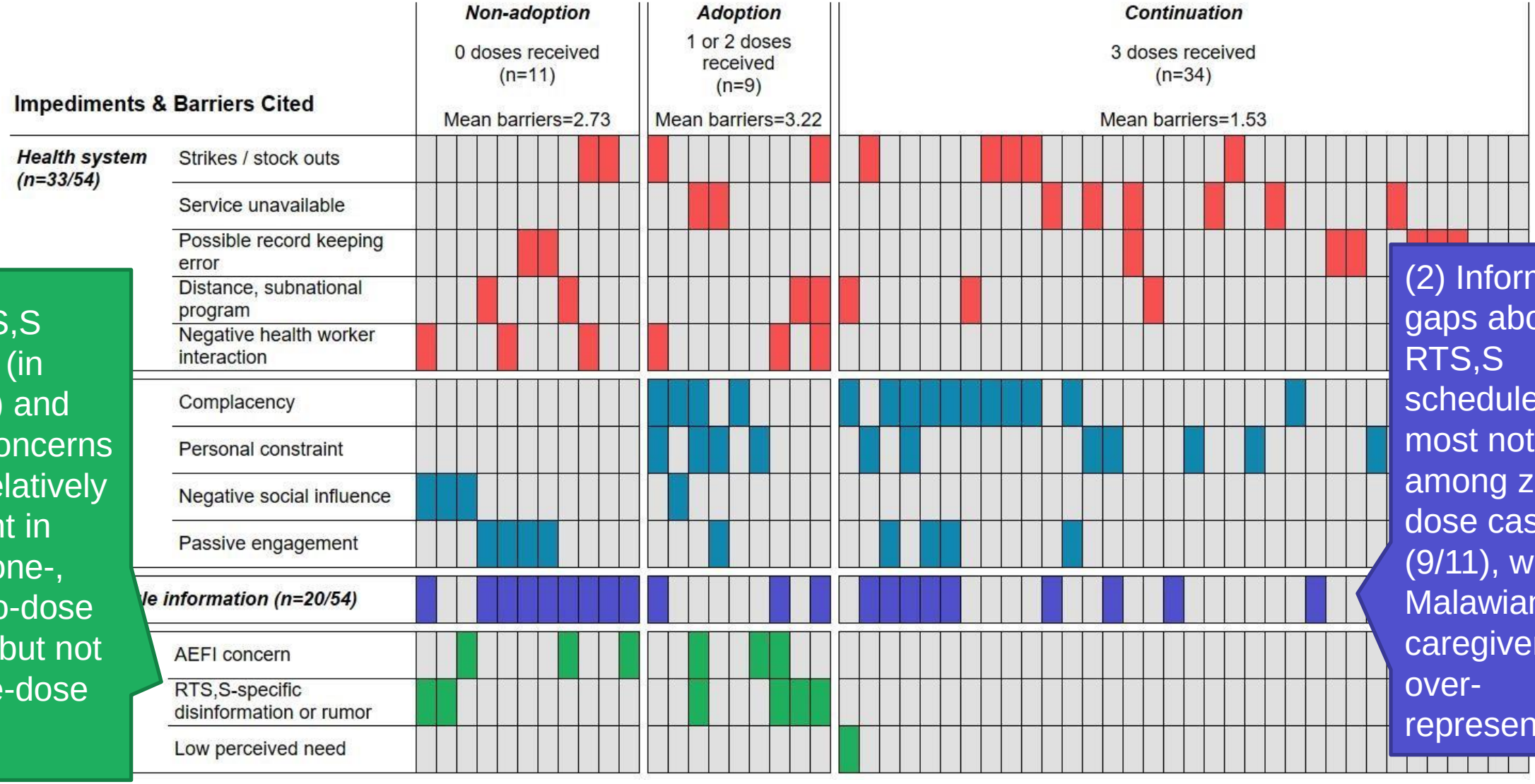

(3) RTS,S rumors (in Ghana) and AEFI concerns were relatively frequent in zero-, one-, and two-dose cases, but not in three-dose cases

(2) Information gaps about the RTS,S schedule was most notable among zero-dose cases (9/11), with Malawian caregivers over-represented.

Key themes and finding on RTS,S Non-adoption

- Uptake of D1 is based on broad trust in the health system (trust in HWs, vaccines, and government intentions).
- Non-uptake of D1 is due to refusals, stemming from low vaccine confidence, compounded by country-specific issues.
- Awareness of eligibility to receive D1 after scheduled age appears to be low and may be linked to missed uptake opportunities.
- Routine RTS,S promotion and IEC strategies are insufficient to reach or persuade those most-at-risk of missing D1.

Key themes and findings on RTS,S Continuation

- Partial protection from vaccine was not an impediment for uptake or use of other interventions.
- Specific trust in RTS,S increases over time and is closely tied to perceptions of its safety and benefits.
- The reasons that caregivers default at D2 and D3 are similar to those for non-uptake of D1.

Key themes and findings on RTS,S Completion

- Reinforced by reminders of vaccine visits and encouragement from HWs, specific trust in RTS,S was the major driver for uptake of D4.
- Service interruptions (closures, schedule changes, service denials) directly and indirectly lead to D4 defaulting. Caregivers either don't know what to do and/or become less motivated (complacent) to complete the schedule.
- An abundance, rather than a lack, of *Confidence* in RTS,S leads to D4 defaulting
- Interacting with an abundance of *Confidence*, *Complacency* and the *in-Convenience* leads to D4 defaulting ("just decided to stay home," "too busy," "I forget," etc.).
- Personal life barriers exist but only rarely are so extreme to seem to interfere with D4 uptake.

Thank you!

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