

# FAMILY-ASSISTED SEVERE FEBRILE ILLNESS THERAPY (FASTER) FOR CRITICALLY-ILL KENYAN CHILDREN: A PILOT STUDY

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## Background

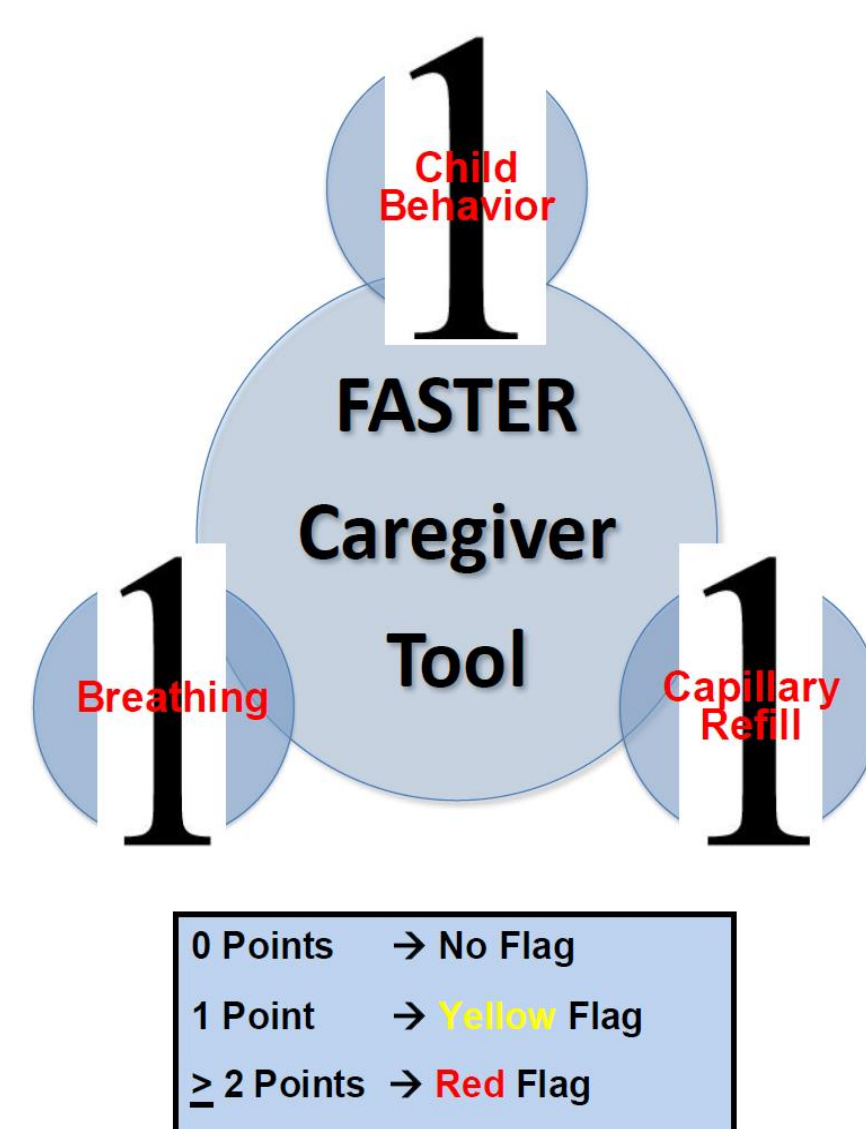
- In sub-Saharan Africa, pediatric mortality remains unacceptably high, with many hospital deaths occurring within the first 24 hours of admission.
- Low healthcare provider-to-patient ratios may limit patient monitoring.
- Caregivers may recognize clinical deterioration in their hospitalized children and alert clinicians to allow earlier evaluation and management.
- We developed and implemented a simple tool for caregivers to quickly assess clinical deterioration and notify clinicians in pediatric wards at Kenyatta National Hospital (KNH), Nairobi.

## Hypothesis

- Caregivers of critically-ill hospitalized children at Kenyatta National Hospital can be taught to accurately assess severity of illness levels in their children.

## Methods

- The FASTER tool instructs caregivers to document three important signs of clinical deterioration including chest retractions, capillary refill time and mental status, thereafter producing color-coded severity of illness flags.



**Figure 1:** FASTER tool for caregivers of hospitalized children

- Caregivers of patients aged 2 months-12 years admitted with febrile illness were taught the FASTER tool by research nurses, aided by video and picture-based material.
- Patient-caregiver pairs were enrolled in 2 stages, with refinement of caregiver training between stages 1 and 2.
- Sensitivity and specificity of caregiver evaluations in replicating research team evaluations were estimated, with an overall accuracy goal for severely-ill, “red flag” patients of 80%.
- Ethical approval was obtained at University of Nairobi/KNH and Seattle Children's.

## Results

**Table 1:** Demographics of Patients and Caregivers

Characteristics	Stage 1	Stage 2
<b>Sample size, n (%)</b>		
Patients and caregivers respectively	32 (100)	74 (100)
<b>Gender, n (%)</b>		
Female patients	17 (53)	38 (51)
<b>Patient Age (years), median (range)</b>		
	1.7 (0.3---9.2)	0.9 (0.2---10.0)
<b>Admission Diagnosis, n (%) *</b>		
Pneumonia	19 (59)	45 (61)
Meningitis	10 (31)	28 (38)
Malaria	7 (22)	14 (19)
Gastroenteritis	7 (22)	10 (14)
Sepsis	3 (9)	5 (6)
Encephalitis	1 (3)	3 (4)
<b>Language, n (%)</b>		
Swahili	26 (81)	48 (65)
English	6 (19)	26 (35)
<b>Caregiver, n (%)</b>		
Mother	28 (88)	72 (97)
Father	2 (6)	0 (0)
Grandparent	2 (6)	1 (1)
Aunt/uncle	0 (0)	1 (1)
<b>Caregiver Level of Education, n (%)</b>		
Primary	13 (41)	21 (28)
Secondary	11 (34)	42 (57)
Post-secondary	8 (25)	12 (16)

\* more than one admission diagnosis possible

**Table 2:** Association of caregiver and research team FASTER assessments.

<b>Stage 1 Caregiver versus Study Team Flags</b>					
FASTER flags		Caregivers			
		Green	Yellow	Red	Total
Study Team	Green	<b>46 (88%)</b>	6 (12%)	0 (0%)	52 (100%)
	Yellow	2 (4%)	<b>43 (90%)</b>	3 (6%)	48 (100%)
	Red	3 (16%)	2 (11%)	<b>14 (74%)</b>	19 (100%)
	Total	51 (43%)	51 (43%)	17 (14%)	119 (100%)
<b>Stage 2 Caregiver versus Study Team Flags</b>					
FASTER flags		Caregivers			
		Green	Yellow	Red	Total
Study Team	Green	<b>83 (91%)</b>	7 (8%)	1 (1%)	91 (100%)
	Yellow	6 (4%)	<b>135 (95%)</b>	1 (1%)	142 (100%)
	Red	0 (0%)	1 (2%)	<b>41 (98%)</b>	42 (100%)
	Total	89 (32%)	143 (52%)	43 (16%)	275 (100%)

- Caregiver identification of the sickest “red flag” cases was 74% sensitive and 97% specific vs. professional assessments for stage 1; and 98% sensitive and 99% specific for stage 2 (highlighted fields in Table 1).
- Red flag positive predictive values were for 82% and 95% for stage 1 and 2 respectively.
- Across all severity levels, caregiver assessments were 87% and 94% accurate for stage 1 and 2 respectively, compared to professional assessments.

## Conclusions

- Caregiver assessment of illness severity is feasible in low-resource settings, despite limited education levels of the majority of participants.
- FASTER may be a novel, practical tool to improve timely recognition of clinical deterioration among hospitalized children in low-resource settings.
- Study limitations include the small sample size and the inclusion of only one tertiary care level facility in Kenya.
- Healthcare provider response and change in clinical outcomes secondary to this intervention deserve further evaluation.