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

Kumar R.[1], von Saint Andre-von Arnim A[2], Oron A.P.[3], Gove N.E.[4], Nguyen Q.U.P.[5], Mutonga D.M.[1], Mbogo L.M.[6]; Zimmerman J.J.[2], Walson J.L.[7]

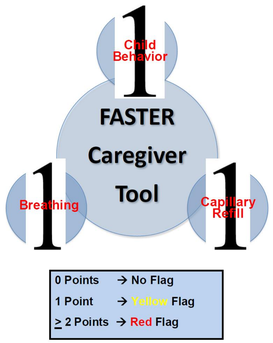
[1]University of Nairobi; [2]Seattle Children's and University of Washington; [3]Institute for Disease Modeling; [4]Seattle Children's; [5]Stanford University; [6]University of Washington-GAP Kenya; [7]University of Washington

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.
- Parent identification of clinical deterioration for their hospitalized child may facilitate faster intervention.
- We developed a simple parental tool to quantify clinical deterioration, and implemented it in pediatric wards at Kenyatta National Hospital (KNH), Nairobi.

Methods

- The FASTER tool instructs parents to document chest retractions, capillary refill color-coded severity flags.



- Caregivers were recruited to an intervention or control arm on a biweekly schedule. Intervention group caregivers were taught the FASTER tool by research nurses via paper and video training materials.
- Frequency of nurse/physician patient assessments within the 24 hour monitoring period was recorded by all participating caregivers and compared between intervention and control groups.
- Pediatric Early Warning Scores (PEWS) quantified illness severity.
- Ethical approval was obtained at University of Nairobi/KNH and Seattle Children's.

Results

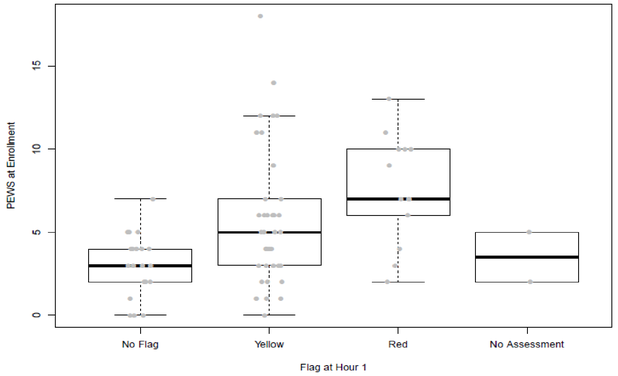
Table 1: Demographics, patient and caregiver characteristics.

Characteristics	Control	Intervention
SAMPLE SIZE (total 146)		
	73 (50%)	73 (50%)
AGE (Years), median (range)		
	1.2 (0.2---12.2)	1.0 (0.2---10.8)
PEWS AT ENROLLMENT, median (range)		
	5.0 (0.0---16.0)	4.0 (0.0---18.0)
GENDER		
Female, n (%)	25 (34)	38 (52)
***PRIMARY DIAGNOSIS, n (%)**		
Pneumonia	39 (53)	45 (62)
Meningitis	29 (40)	28 (38)
Malaria	21 (29)	13 (18)
Gastroenteritis	7 (10)	9 (12)
Sepsis	2 (3)	4 (5)
Septic Shock	2 (3)	1 (1)
Encephalitis	0 (0)	3 (4)
PARENT LEVEL OF EDUCATION, n (%)		
University	1 (1)	0 (0)
College Diploma	11 (15)	4 (5)
College certificate	5 (7)	7 (10)
Secondary school	28 (38)	42 (58)
Primary school	28 (38)	20 (27)
COMORBIDITIES, n (%)		
None	56 (77)	58 (79)
Sickle cell disease	7 (10)	1 (1)
Behavioral disorder/ developmental delay	3 (4)	3 (4)
Malnutrition (acute and chronic)	2 (3)	3 (4)
Seizure disorder	0 (0)	3 (4)
Retroviral disease	2 (3)	0 (0)
Other	1 (1)	4 (5)
Missing	1 (1)	1 (1)

*more than one primary diagnosis was possible

- The effects of FASTER upon provider reassessment rate is still in analysis, but preliminary data suggests no difference between control versus intervention group.
- The incidence of highest severity, red flag patients was 5 x lower than forecast.
- Higher severity of illness FASTER assessments by parents correlated with higher PEWS (Figure 1).

Figure 1: Association of caregiver FASTER assessments with PEWS scores



- Proportional odds regression with 271 entries resulted in 94% accuracy, 97% sensitivity and 100% specificity between caregiver severity of illness assessments via FASTER tool and PEWS
- Each one point increase in PEWS score related with 0.54 more visits/24 hours (p=0.005) for patients in intervention and control group

Conclusions

- Caregiver assessment of illness severity may be a novel, practical tool to improve timely recognition of clinical deterioration among hospitalized children in low-resource settings.
- Although numbers of group reassessments did not differ, further exploration of specific patient subsets is warranted.
- Study limitations included changing doctors and nurses during healthcare strikes unfamiliar with the study, incomplete reassessment rate reporting by caregivers, study team patient assessments only available during daytime hours.