



Improving Access to Pre-emergency Care with Telemedicine and Medication Delivery in Low-Resource Settings

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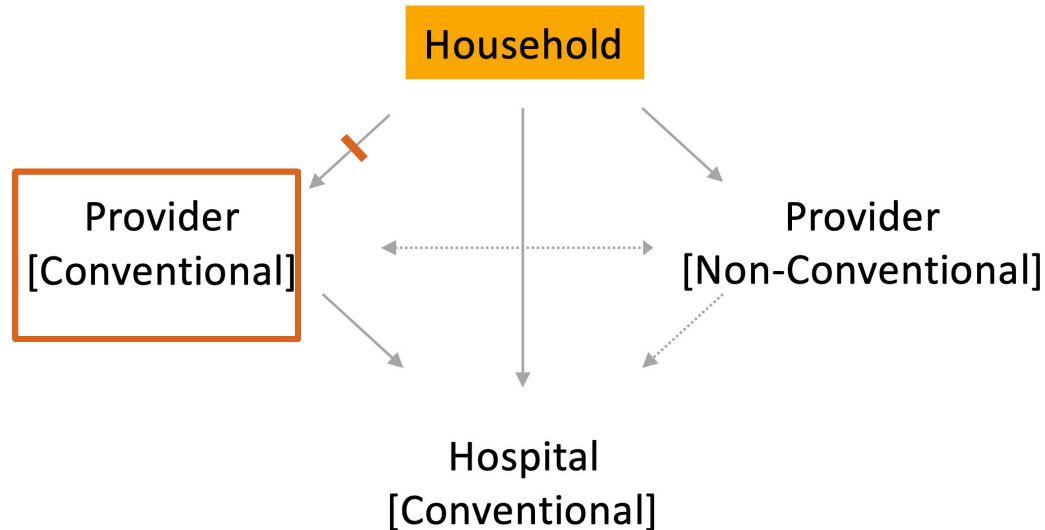
Disclosures: None



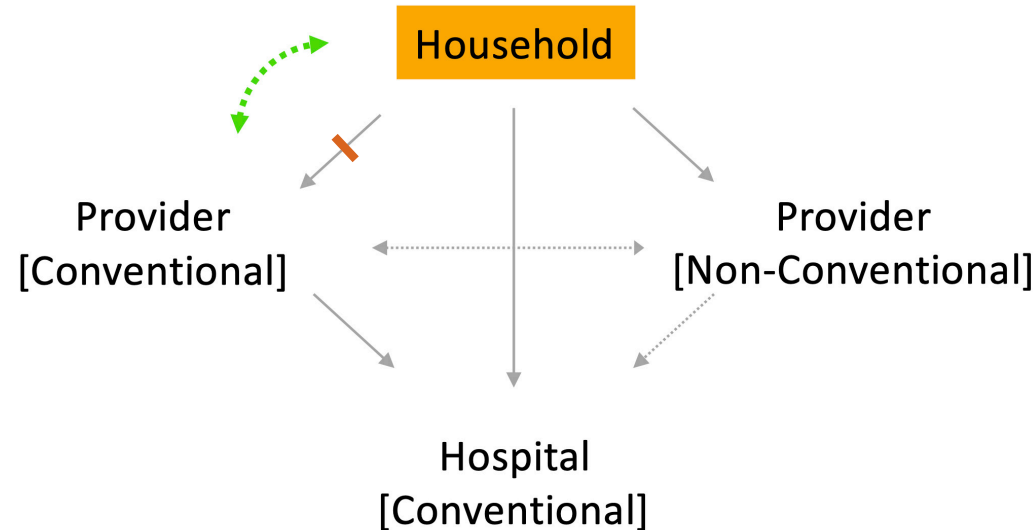


Challenge: How do we provide a child like this early access to high quality pre-emergency care to avert an emergency?

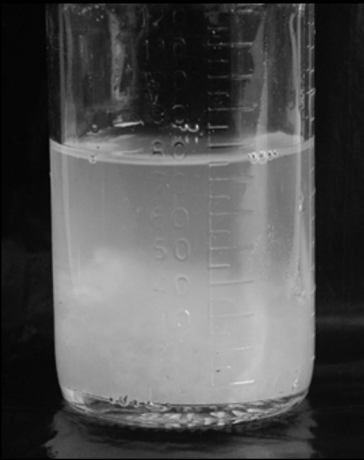
Needs Assessment: Families face barriers accessing their **intended provider**



Opportunity: **Bypass** barriers with innovative solution



Solution must address barriers during acute crisis



M. Yanke, Written consent, Bangladesh (2006)



E.Nelson, Verbal consent, Zimbabwe (L, 2008) Haiti (R, 2010)



Solution must address barriers during chronic crisis

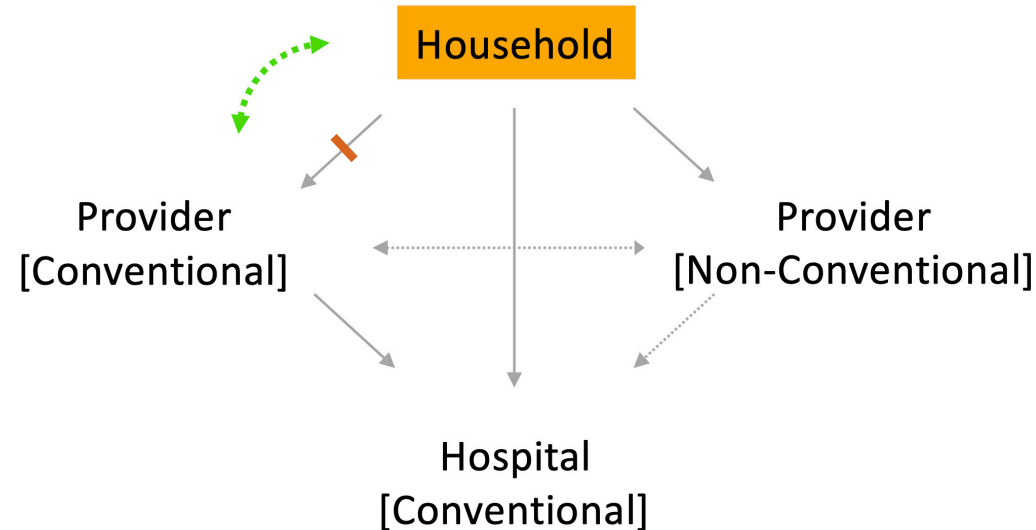


Aha #1



MotoMeds
HEALTHLINE
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Possible solution: Telemedicine & Medication Delivery





Today we will introduce MotoMeds



An aerial photograph of a mountainous landscape. The hills are covered in dense green vegetation, with some areas showing signs of deforestation or erosion, revealing brown soil. A dirt road winds through the lower left portion of the image. The text "strategic Plan" is overlaid in white on a semi-transparent dark green rectangular background in the lower right quadrant.

strategic Plan



Guiding hypothesis:
When resources are limited,
morbidity and mortality can be effectively
reduced at lower cost by
facilitating **early access** to
pre-emergency care compared to
late access to
emergency care alone, especially at night.



Improving Nighttime Access to Care and Treatment (INACT)

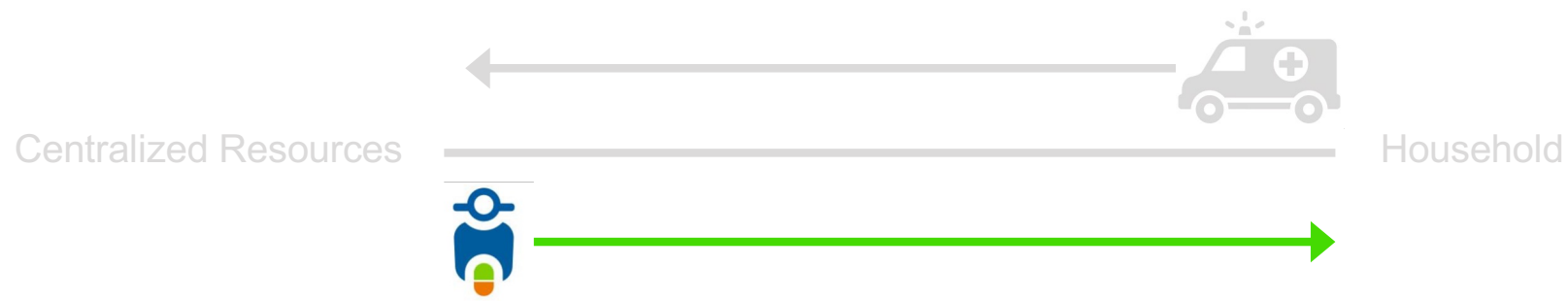
- INACT 1: Needs assessment. 2018-2019.
- INACT 2: Pre-pilot of a MotoMeds prototype for safety, feasibility, desirability. 2019-21.
- INACT 3: Pilot of the scaled MotoMeds model for safety, feasibility, desirability. 2021-22.
- INACT 4: Scaled MotoMeds deployment with digital clinical decision support. 2022-24.





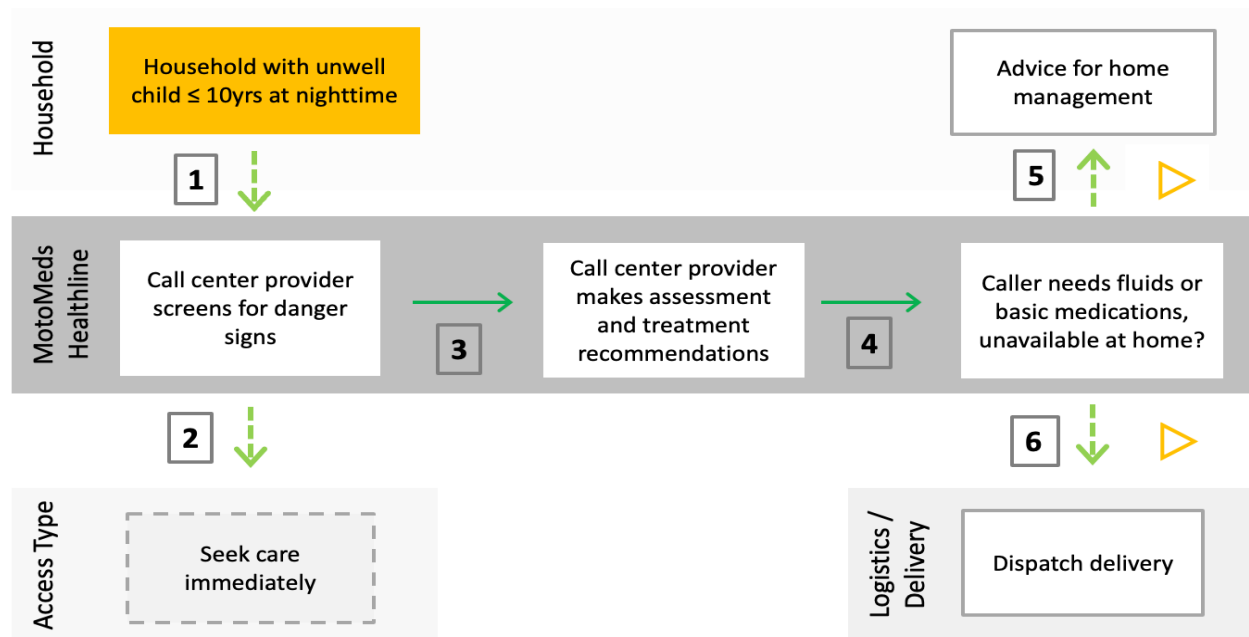
Pre-Pilot INACT2

INACT2: Objectives

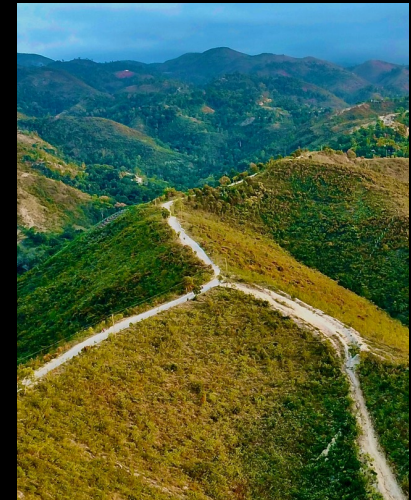


- (1) Feasibility & Desirability: Can we deliver medications in less than **2 hours** for pre-emergency cases?
- (2) Safety: Are the call-center assessments accurate compared to in-person assessments as the **gold standard**?

INACT2: MotoMeds Design



INACT2: Dispatch



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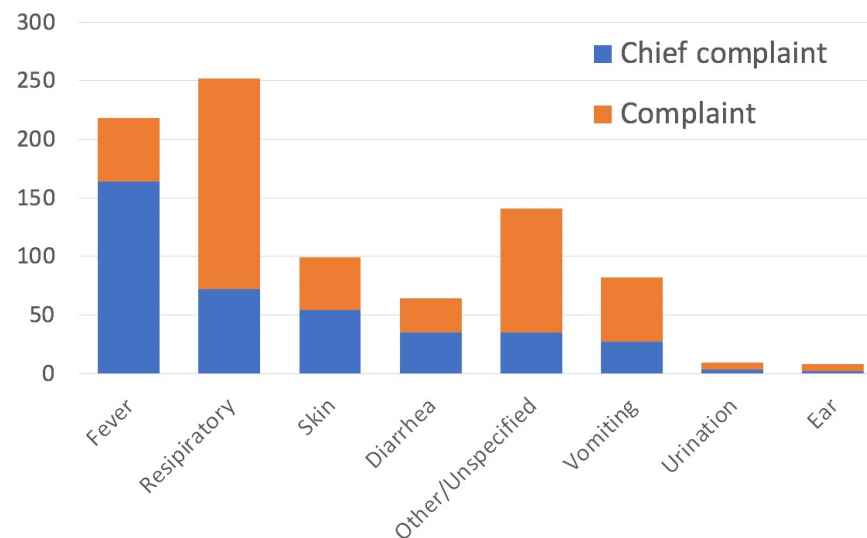
INACT2: Sept 2019 to Jan 2021

347 of 391 enrolled had household visits

OPERATIONAL METRICS

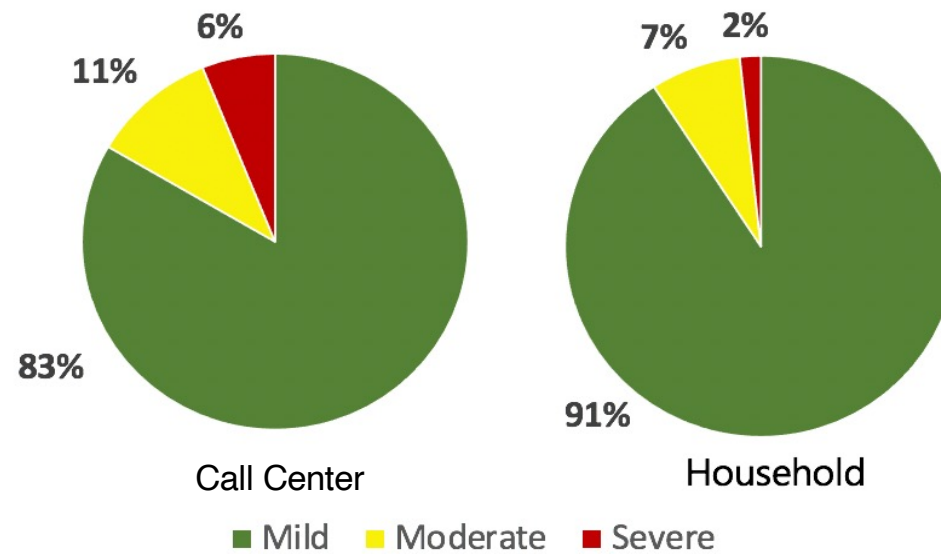
	Total
Call length (median, IQR)	20 min. (15-25)
Time to delivery (median, IQR)	80 min. (58-126)
Intended deliveries completed (n, % of attempted)	347 (98%)
10-day Follow-Up Completed (n, % of attempted)	357 (92%)

INACT2: Distribution of complaints

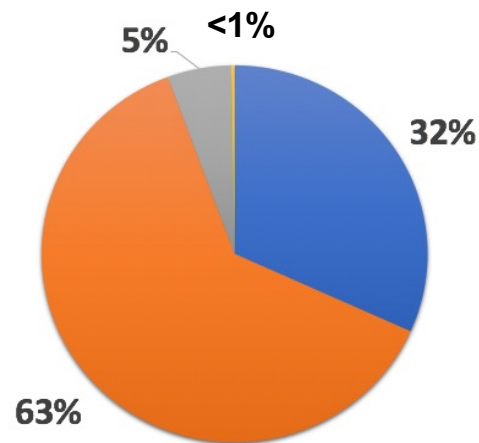


Analysis example: Sensitivity and specificity for 'fever' at the call center compared to the gold standard measurement at the household were **92%** and **70%**, respectively.

INACT2: Severity



INACT2: Clinical Status at 10 days

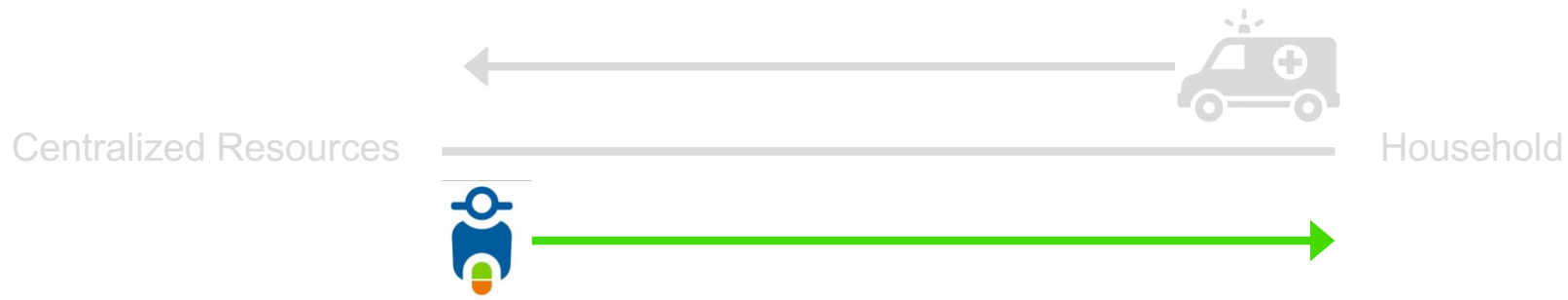


■ Fully recovered ■ Improved
■ Same ■ Worse

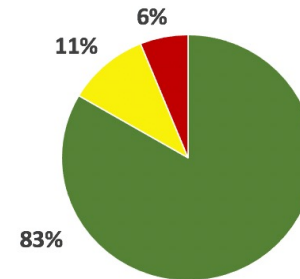
An aerial photograph of a mountainous landscape. The hills are covered in dense green vegetation, with some areas showing signs of erosion or deforestation. A dirt road is visible in the lower left corner. The text "Pilot Scaled Model INACT3" is overlaid in white on a semi-transparent dark band across the middle of the image.

Pilot Scaled Model INACT3

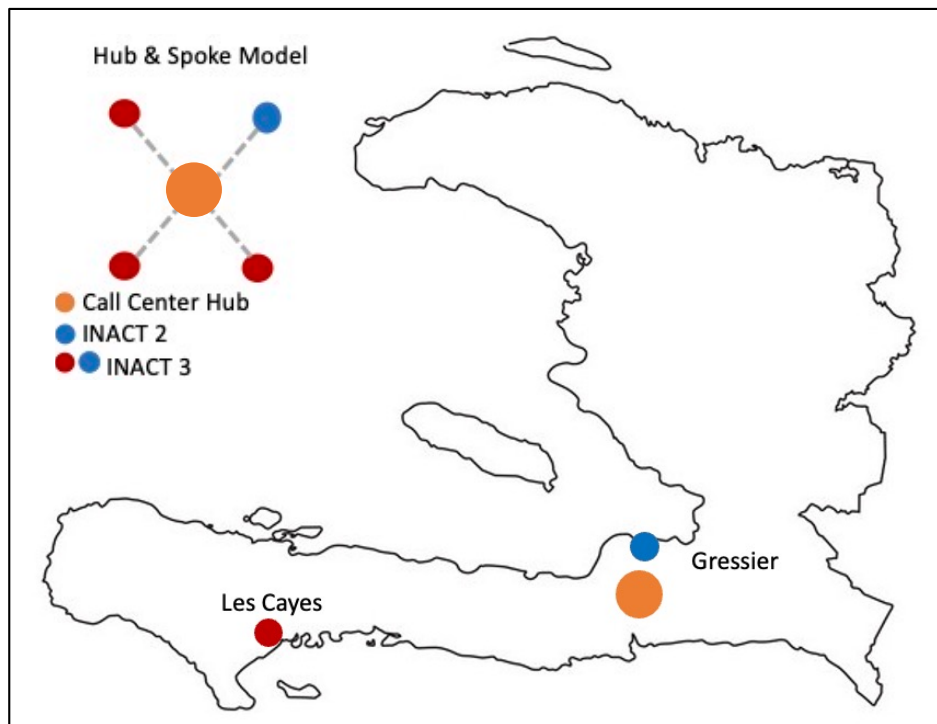
INACT3: Objectives



Test if safety is maintained when **mild** cases receive medication and consult alone **without a nurse visit** and **moderate cases** receive medication and consult with a nurse visit.



INACT3: Configured design to pilot scaling



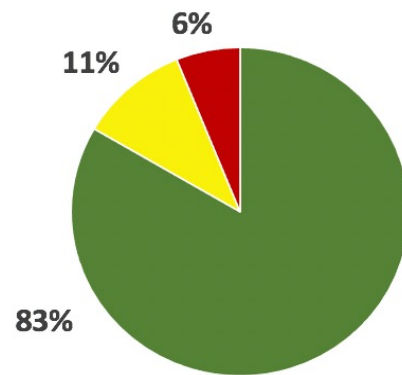
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Study period: Jan 2021 to Sept 2022

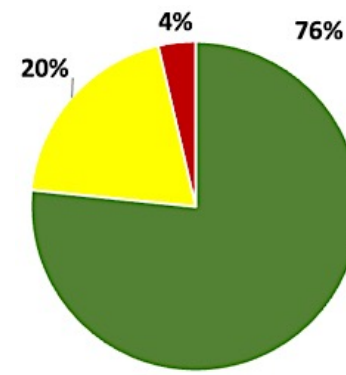
Enrollment (n=1,043)

- 18% received a nurse visit and delivery
- 73% delivery alone
- 5% other (e.g., out of delivery zone)
- 4% referred to the hospital

Comparison



INACT2
Nurses to all households



INACT3
Nurses to mainly 'yellow' cases

Status: 97% Improved/recovered at 10 days in INACT3

Unanticipated Benefits

Intangibles

- Hope: Their call for help is answered

Capacity building:

- 10 call center providers
- 8 'on call' providers
- 15 MotoMeds drivers
- 1 Research Coordinator

Broad impact:

- Extends beyond cholera
- Extends beyond the acute crisis

Clinical Guideline. Klarman et al. medRxiv. 2023

Cost effectiveness. Flaherty and Klarman. ASTMH 2022



An aerial photograph of a mountainous landscape. The hills are covered in dense green vegetation, with some areas showing signs of deforestation or erosion, revealing brown soil. A dirt road winds through the lower left portion of the image. The text "Scaled Deployment INACT4" is overlaid in white on a semi-transparent dark green rectangular background in the lower right quadrant.

Scaled Deployment INACT4



INACT4 Challenge #1: How do we scale safely?



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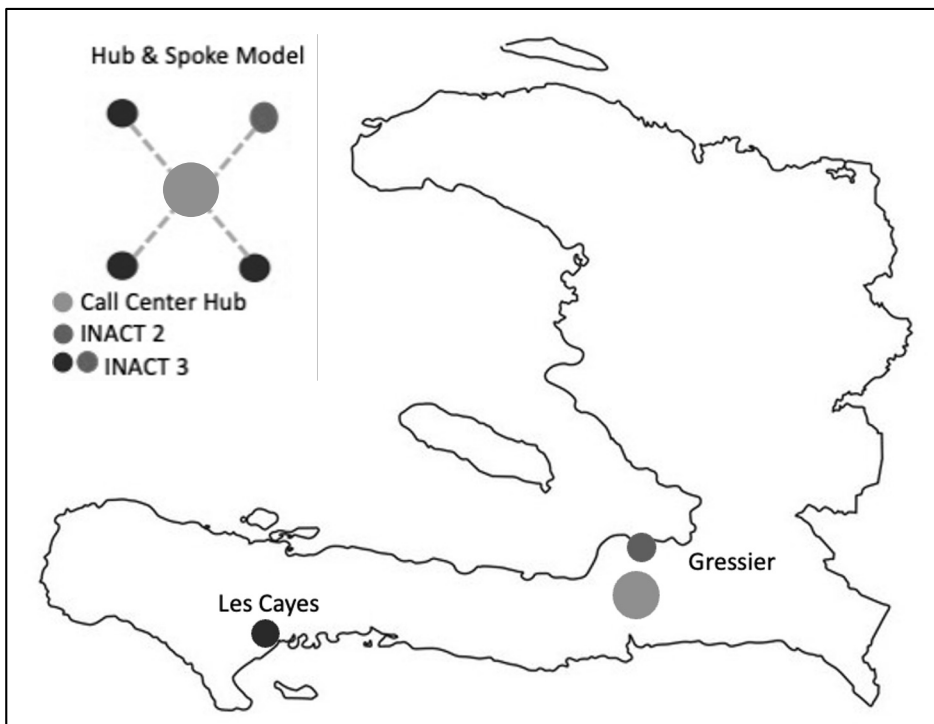


INACT4 Challenge #2: How do we scale efficiently?



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INACT4 Objectives



Can technology increase
guideline adherence?

Can we decrease training time
with technology?

Can technology decrease call time and
decrease time to delivery?

Does cost per patient decrease
with scale?

What are the
unintended consequences of scaling?



Today we shared the MotoMeds story, it has expanded to Ghana...



.... and we ask if there are opportunities to pilot the approach with WHO GTFCC affiliates. Contact: eric.nelson@ufl.edu



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