

AIDING KENYA: ADDRESSING POST- ACUTE MORTALITY FOR CHILDREN UNDER 5

Team F3

January 21, 2017

Global Health Competition



AGENDA

Analysis of Kenya's current situation

Analysis of proposed solutions

Our Recommendation



PRIMARY OBSTACLES IN PREVENTING POST-ACUTE MORTALITY

1. Low wages (often below the cost of care)
2. Overworked hospitals and healthcare facilities
3. Limited access to health care facilities for people living in rural areas (two-thirds of the population)
4. Lack of follow-through on prescribed treatments
5. Lack of hygiene, clean water



THE MISSION OF THE ORGANIZATION

REPUBLIC OF KENYA



MINISTRY OF HEALTH

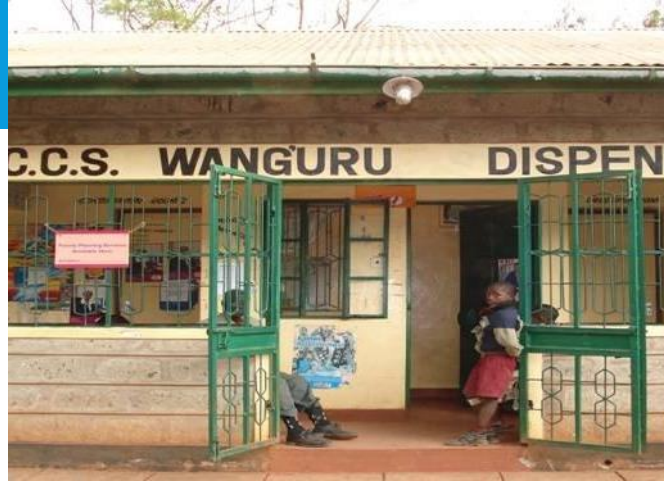
“To build a progressive, responsive and sustainable health care system for accelerated attainment of the highest standard of health to all Kenyans.”

Proposed Strategies



1

Treat with
Antibiotics



2

Check-ups over
3-6 months



3

Address
Malnutrition

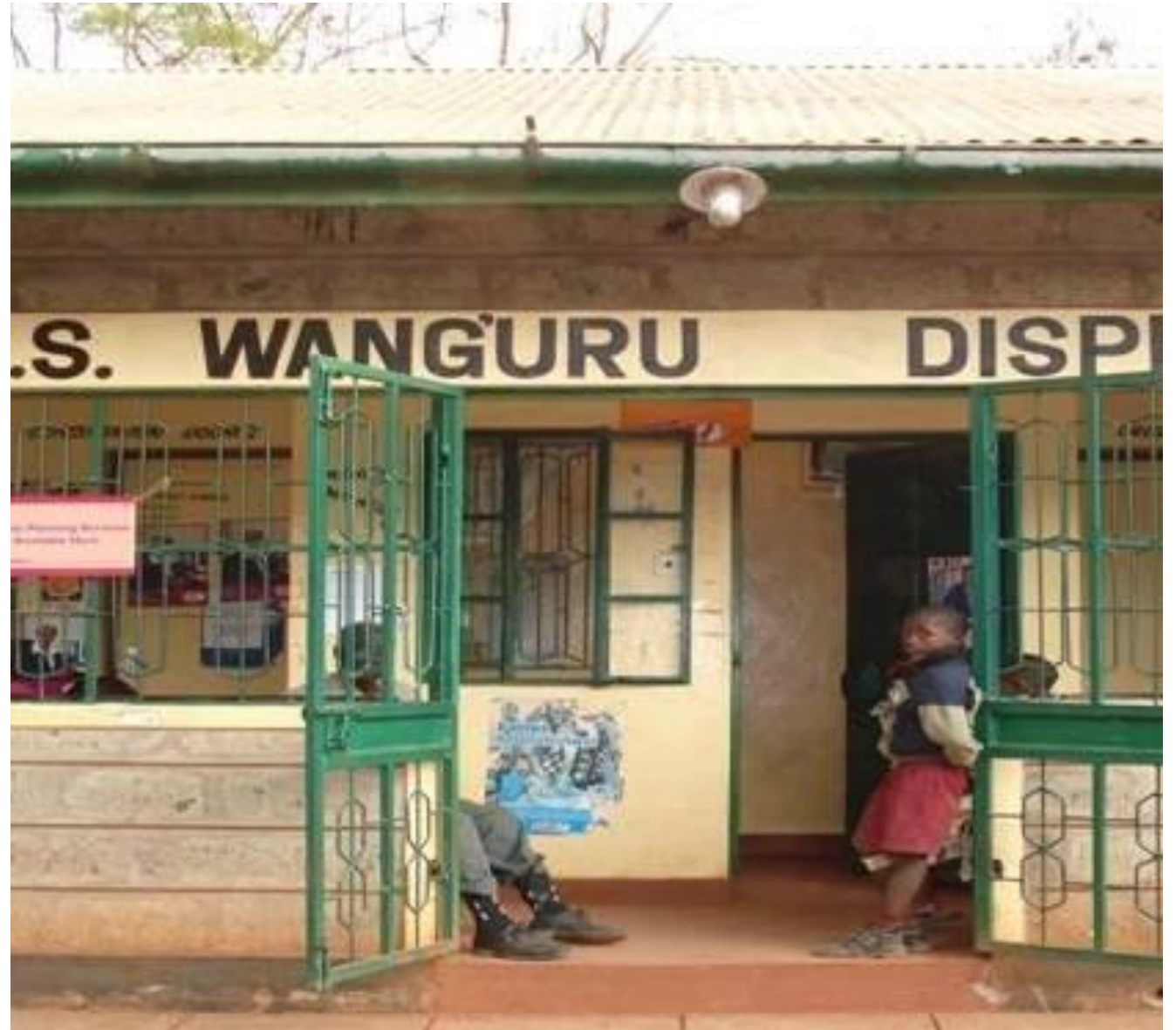


#1: TREAT WITH ANTIBIOTICS

COST PER CHILD:
\$5 - \$70

#2: FOLLOW
UP FOR 3-6
MONTHS

COST PER CHILD:
\$8-\$15





#3: ADDRESS MALNUTRITION

COST PER CHILD:
\$109-\$235

COMPARING THE SOLUTIONS

	1: Antibiotics	2: Follow-up Care	3. Addressing Malnutrition
Cost per child	\$5- \$70 (depending on drug)	\$8- \$14.30 (assumes 6 visit avg)	SAM* Food: \$235 Micronutrient packets: \$109
Strengths	<ul style="list-style-type: none"> • Quick solution easily delivered • Easily cures 22% of cases • May treat other health issues (pneumonia, stunting) 	<ul style="list-style-type: none"> • Treats children experiencing problems early on • More managed care 	<ul style="list-style-type: none"> • Addresses additional health concerns • Simple distribution strategy • Partner with NGOs, companies
Weaknesses	<ul style="list-style-type: none"> • Risk of antibiotic resistance • Drugs may not be available everywhere • Only treats a small % of children with diarrhea • Potential issues with compliance 	<ul style="list-style-type: none"> • Requires families to travel, out-of-pocket expenses • May miss severe cases • Low number of health care professionals 	<ul style="list-style-type: none"> • Follow-up to assure that child is properly receiving the food/ micronutrients • Long-term approach • Studies suggest this is not a “one-size fits all” approach
Impact	Treats the children suffering from bacterial-related diarrhea; will not help children suffering from other causes (est. 78%)	Can identify children at high risk of post-acute mortality; personalized approach to care	Addresses malnutrition and nutrient deficiency for longer-term; may result in economic benefits on national level

* SAM: Severe Acute Malnutrition

OUR PROPOSED SOLUTION: FOLLOW-UP CARE

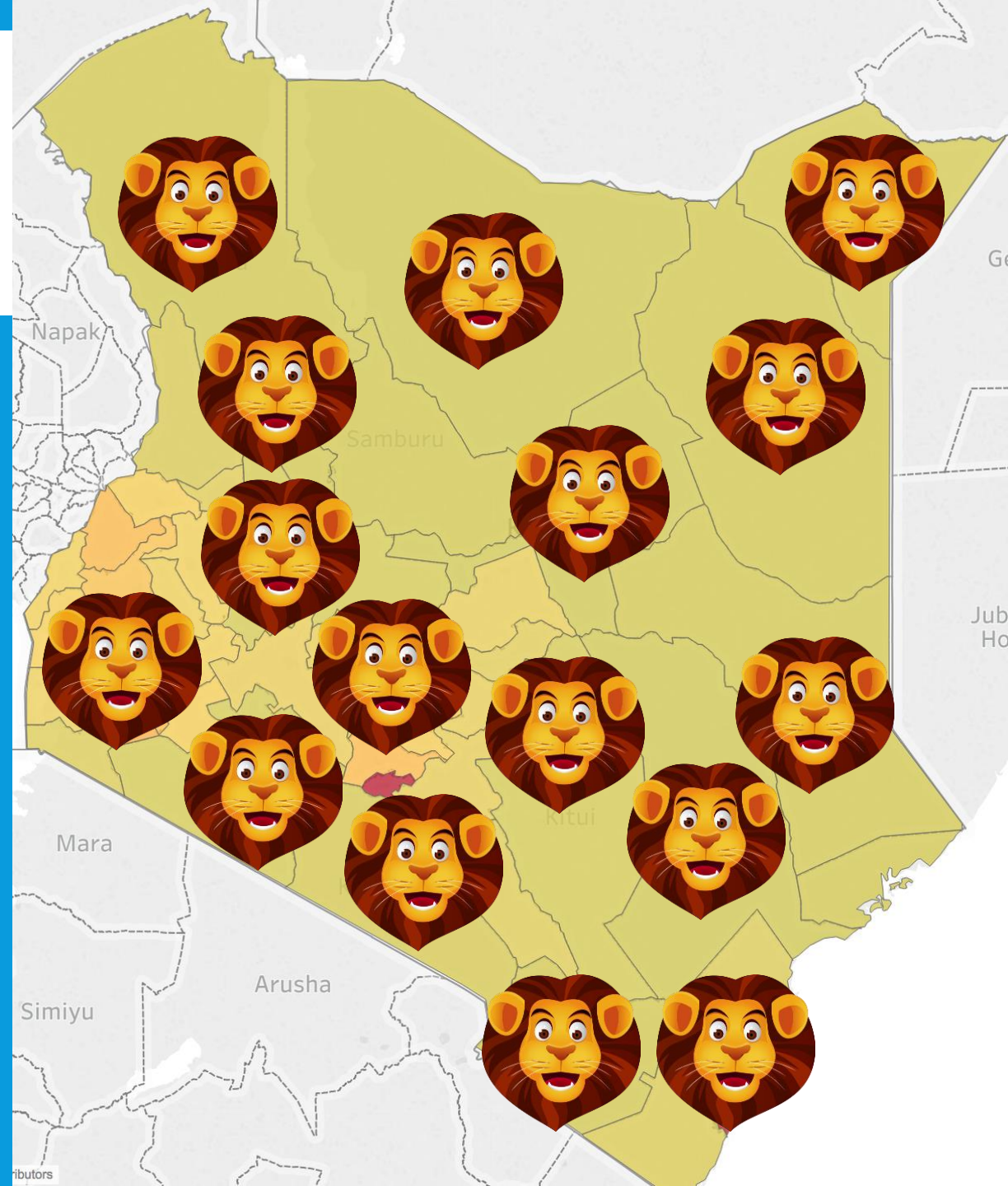
Addresses the problems with post-acute mortality

Can be implemented sustainably and in a way that better supports children's health

To address the problems of long-distance travel and limited healthcare workers/ facilities, we propose initiating a community-focused health program...

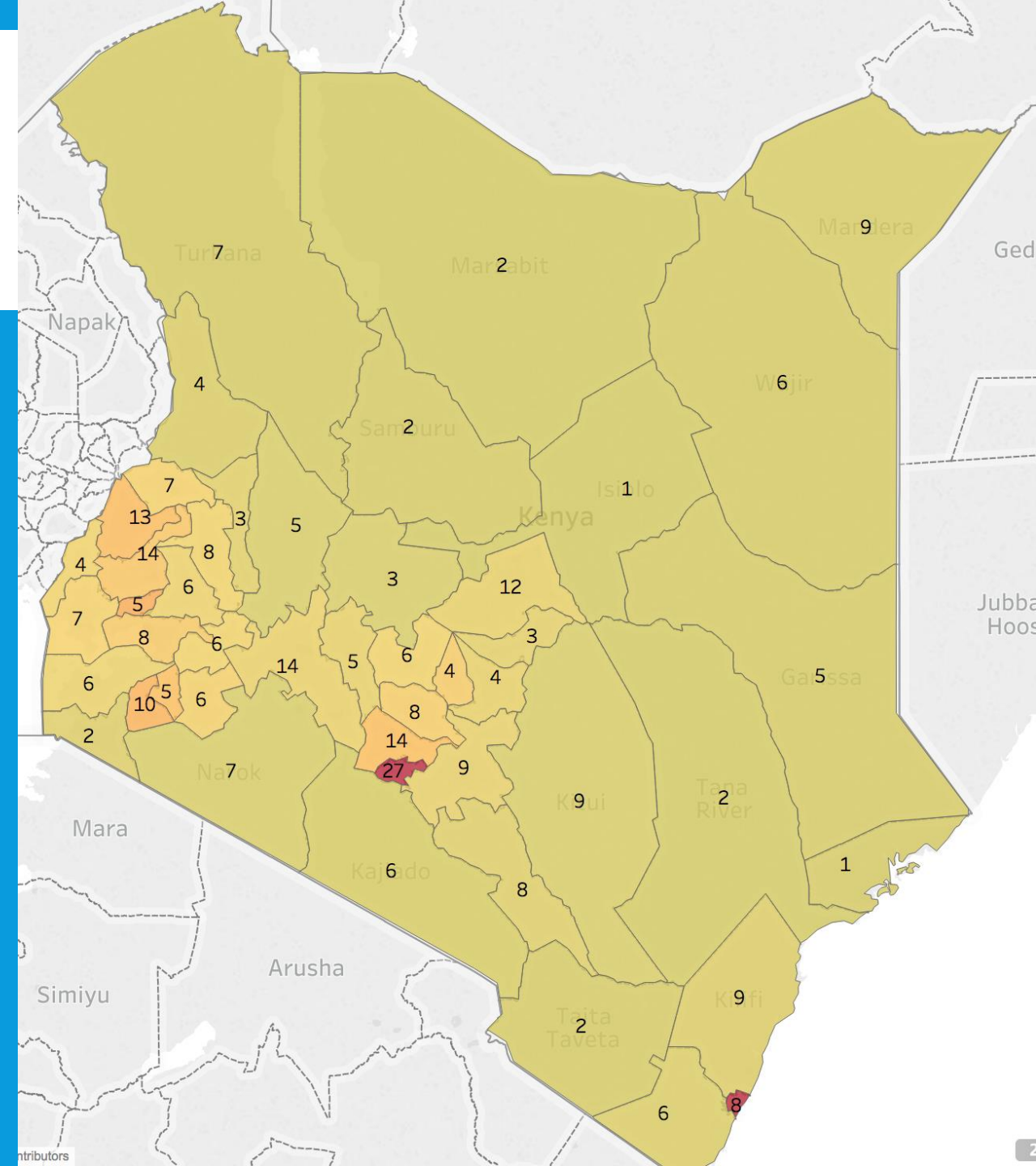
THE SIMBA PROJECT

A Strategy for
Community-Centered
Health



THE SIMBA PROJECT: PUTTING LIONS IN THE FIELD

- Recruit and train 328 “Simbas” focused on addressing childhood diarrheal disease
- 50 Urban “Simbas”
 - Cost/ Simba: 297,000 KSH (or \$2,850) / year
- 278 Rural “Simbas”
 - Cost/ Simba: 117,700 KSH (or \$1,130) / year
- Total cost of program/ year:
\$456,800



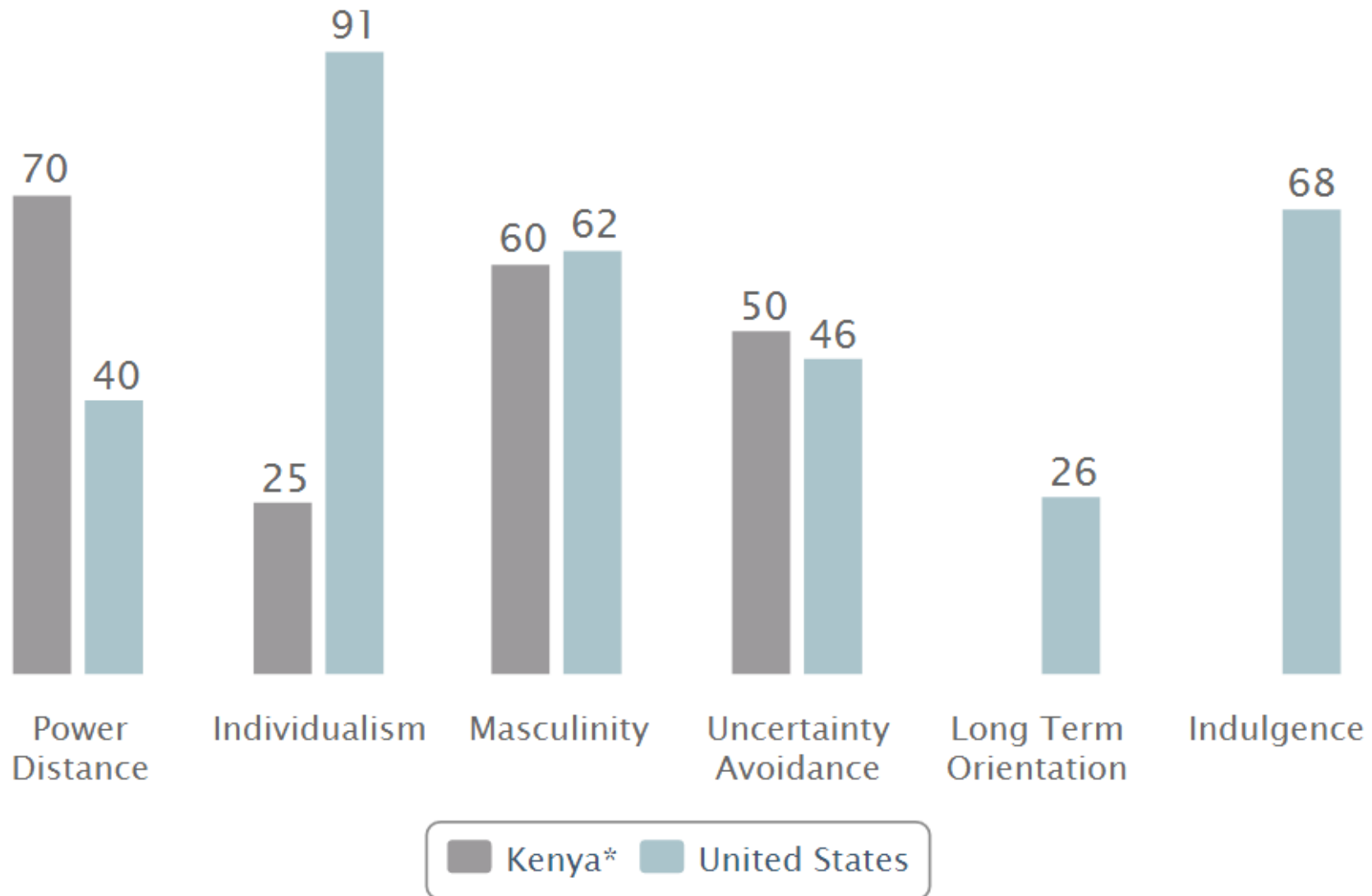
THE IDEAL "SIMBA"

- Committed to the success of the community
- Passionate about children's health
- Empowered to create change
- Respected member of society
- Driven to improve herself and her family
- Female-oriented to better relate to mothers and families



Kenya*

in comparison with United States



TRAINING



- Initial in-person training located in central hubs
- Videoconferences
- Cell phone tracking and support network
- Prints and copies on reference data and information
- Continuous education

THANK YOU



APPENDIX

- 6.83M Kids Under the age of 5
http://www.indexmundi.com/kenya/demographics_profile.html

KENYA'S CURRENT SITUATION FOR CHILDHOOD DIARRHEA

- Diarrheal disease causes almost **9,000 deaths** of children under the age of 5 every year
- **Healthcare access** is often too **limited**, too **far away** or prohibitively **expensive** for Kenyan families
- Many children treated for diarrhea succumb to **“post-acute mortality”** (8.5x increased risk of dying during the follow up period)

NUMBERS, SOLUTION #1

	Severe Acute Malnutrition		Micronutrient Powders	
	KSH	USD	KSH	USD
			National Nut. Plan (ann)	11,500,000,000 \$ 110,400,000
			Micro. Provision (ann)	3,943,000,000 \$ 37,852,800
			Per packet	\$0.04
			# of packets	946,320,000
			# of children who receive 3/ day	864,219
			Cost per packet (avg)	4 \$0.04
			# of packets a child needs in 1 year	113,880 1095
			Cost per child per year	4,555 \$43.80
Per child (avg)	24,440	\$235	Per child (avg)	22,776 \$219
			For 2.5 years (avg)	11,388 \$109.50

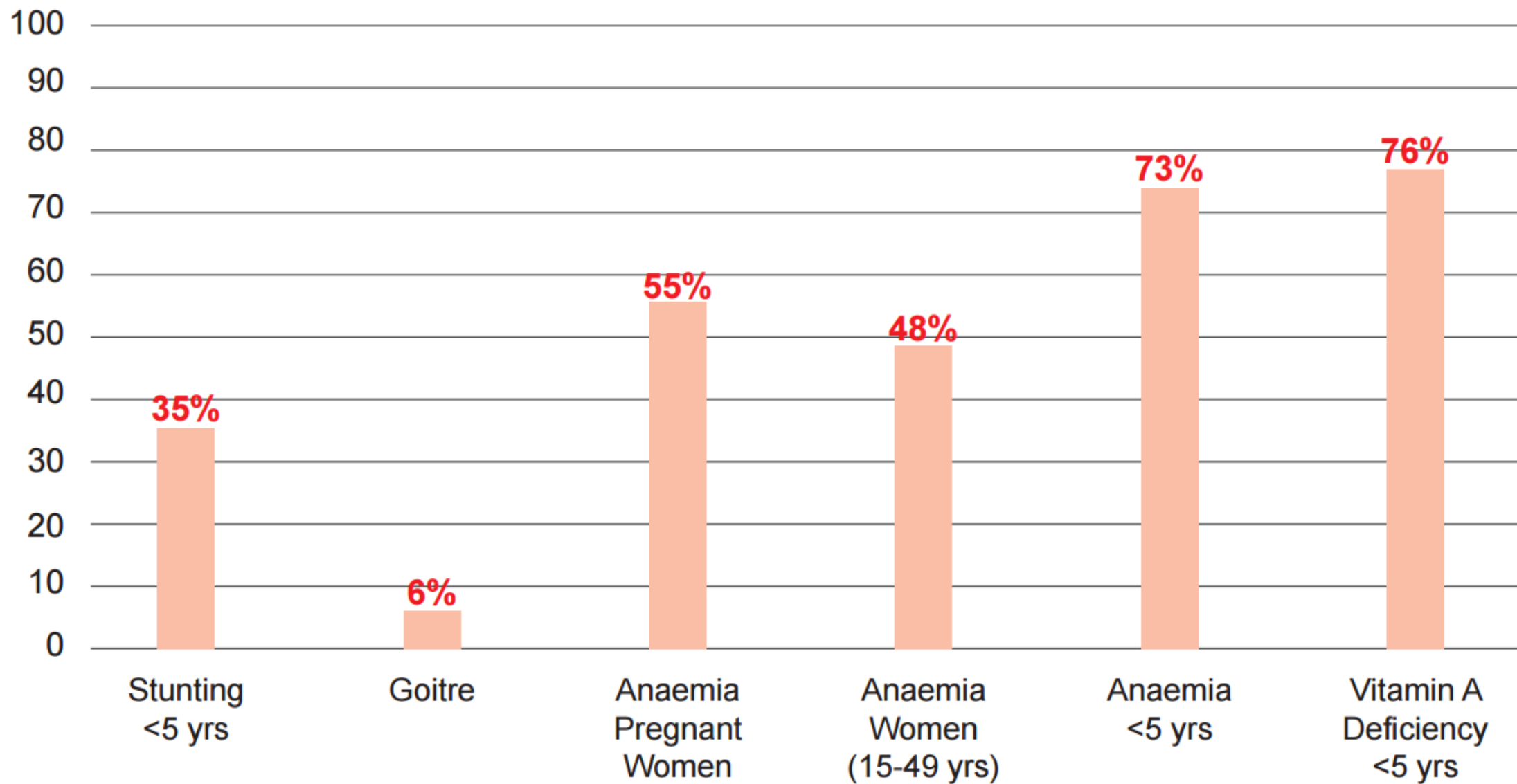
NUMBERS AND ASSUMPTIONS, SOLUTION #2

Category	Totals	Assumptions	Source of Assumption
General Population	48000000		
Children < 5 years old	6830000	14.23% of the population	
Afflicted with diarrhea	2185600	Affliction rates in line with region average of 32%	
Afflicted with severe diarrhea	437122	2% of afflicted children	
Urban %	144251	1/3 of children	Case
Rural %	288502	2/3 of children	Case
Cost per visit (Rural)	138.72	Cost of medical centre visit at 50% pop density	Case
Cost per visit (Urban)	248.02	Cost of medical centre visit at 95% pop density	Case
Avg. visits per child over 3-6 months		Approximately 1 visit per month per child with 6 months of visits	WHO Recommendation
Cost per Child (Rural) - KSH	832		
Cost per Child (Urban) - KSH	1488		
Average Cost Per Child - KSH	1051		
Average Cost per Child - USD	10.09	Conversion to USD at .0096 exchange rate	Case
Total Cost - KSH	45937769		
Total Cost - USD	441002.58		

HEALTHCARE COSTS PER DAY

			pop (M)	KSH (day)	USD (day)	KSH (m)	USD (m)	KSH	USD
Population			48						
GDP/capita								117,832	\$ 1,133
GDP Total (M)								5,655,936	\$ 54,384
< poverty	\$1.90	33%	15.84	198	\$1.90	5,928	57	72,124	694
pov<\$3.10	2.5	17%	8.16	260	\$2.50	7,800	75	94,900	913
>\$3.10		50%	24	-	\$0.00	-	-	-	-
Rural HH expenditures		2/3	32	2,270					
Urban HH expenditures		1/3	16	6,010					

Figure 2: Micronutrient Deficiencies in Kenya (National Micronutrient survey 1999)



PRIORITY AREAS FOR KENYA'S PLAN (2012-2017)

Priority Areas

- Promote exclusive breastfeeding for the first six months of baby's life
- Promote optimal complementary feeding with continued breastfeeding for at least two years
- Provide appropriate micronutrient supplements to children under five years
- Strengthen growth monitoring and promotion for children under five years of age
- Strengthen referral mechanism and linkage between the community and health facility.
- Develop a national monitoring plan for nutrition commodities
- Ensure food safety of nutrition commodities.



#1: TREAT WITH ANTIBIOTICS

	KSH	USD
Amoxicilin	7371	\$70.76
Ceftriaxone	3213	\$30.84
Cirpoflaxacin	1000	\$9.60
Cotrimoxazole	520	\$4.99

- WHO guidelines state not to treat with antibiotics in children under the age of 5 (reference from 1990)
- Empirical antibiotic treatment may have an impact on other bacterial infections, malnutrition, and stunting
- 22% cases of diarrhea in children under 5 years old are caused by bacterial infection (EPEC or ETEC)
 - Treatment availability
 - 13.5% - 18%

#2: FOLLOW UP FOR 3-6 MONTHS

	KSH	USD
Cost per visit (Rural)	138.72	\$ 1.33
Cost per visit (Urban)	248.02	\$ 2.38
Avg. visits per child over 3-6 months	6	\$ 0.06
Cost per Child (Rural)	832	\$ 7.99
Cost per Child (Urban)	1488	\$ 14.29
Average Cost Per Child	1051	\$ 10.09
* 2/3 pop is rural, 1/3 pop is urban		

Based on out-patient costs at healthcare facilities
Assumes average of 6 follow-up appointments per child
Cost distinguished between rural and urban areas
Doesn't consider cost of travel, opportunity cost to family income





#3: ADDRESS MALNUTRITION

Ready-to-use therapeutic foods:

IRC Program has average cost of \$235
May not be sustainable long-term
Addresses additional healthcare issues

Micronutrient powders:

Includes zinc, Vitamin A, etc.
Some studies suggest micronutrient powder may not address underlying issues with diarrheal disease, may even exacerbate the problem

SAM Food	KSH	USD	Micronutrient Packets	KSH	USD
Cost per child (Avg)	24,440	\$235.00	Cost per packet (avg)	4	\$ 0.04
			# of packets/ child/year	1,095	1,095
			Cost per child per year	4,555	\$ 43.80
			For 2.5 years (avg)	11,388	\$ 109.50

WORKING TOWARDS ZERO

1. Improved access to safe drinking water
2. Increase hygiene education regarding hand-washing and human waste
3. Increase the number of doctors, nurses, health care workers, health care facilities

