Nourishing the Future: Phase 1
Baby Nutrition in Rural China
**Background**

Studies increasingly point to the importance of meeting the nutritional needs of children in their first 1,000 days of life, from conception to 2 years of age. The effects of inadequate nutrition in this brief window are long-term and irreversible, resulting in lower educational attainment and lower lifetime earnings. The treatment and prevention of micronutrient deficiencies during this critical time period is therefore an investment not only in the present, but in the future.

Despite the importance of early childhood nutrition, there is little information about the scope of the problem in China, where baby growth and development are largely overlooked by policymakers. We know from previous REAP surveys that around 30 percent of school aged children in rural China are undernourished, and there is reason to believe that rates may be even higher among preschool aged babies and children. If this is true, then an important opportunity for intervention is being systematically ignored.

**What’s the Plan?**

In the spring of 2013, REAP launched the “Nourishing the Future” program, a new project designed to illuminate the scope of the malnutrition problem among babies in rural China, and identify cost-effective, scalable ways to reverse the harmful effects of malnutrition among this vulnerable population. In Phase 1 of the project, we aim to:

- Determine how much rural caregivers know about malnutrition and healthy baby feeding
- Measure the prevalence of malnutrition among rural babies aged 6-12 months
- Measure babies’ overall development relative to well-nourished babies around the world

In Phase 2, we will work on measuring the impact over time of two different interventions designed to improve the nutritional status of program babies.
Nourishing the Future: Phase 1 begins
In April, 2013, a team of 100 REAP nurses and enumerators took to the field to administer baseline tests to nearly 1,000 babies in over 350 villages in rural Shaanxi Province. Every day during the survey, each enumerator visited two households to conduct in-depth family interviews, collecting detailed information on baby’s feeding habits, caregiver knowledge of baby nutrition, and basic demographic information. They also spent around two hours per household administering each baby an internationally-scaled developmental test (the Bayley Scales of Infant Development) to test his or her cognitive and motor development.

A team of nurses also visited each household and measured babies’ height, weight, and hemoglobin levels (an indicator for iron deficiency and anemia). The mothers’ hemoglobin levels were tested as well.

No Easy Task
REAP enumerators for the Nourishing the Future project had to journey into some of the most remote rural villages in all of China to track down the families participating in the project. Bumping along for hours in old rusty vans on poorly constructed dirt roads is the easy part. Hiking over hilly terrain on foot for two hours up a steep mountain is the real test. Fortunately, our team is up to the challenge and even poisonous snakes and mudslides cannot stand in our way!
**Initial Findings**

Most of the babies that we surveyed *looked* healthy, but that is one of the dangers of malnutrition: it is largely invisible. There are often no symptoms that anything is wrong at all.

When the results of our April survey came back, the rates of malnutrition were higher than even our seasoned project team could have imagined: over half (55%) of the babies in our sample were anemic. Even more frightening, nearly 80% of babies were iron deficient (anemic or borderline anemic). In the simplest terms, this means that China is raising an entire cohort of babies who are sick because they are not getting enough nutritious food.

How can this be? China’s economy is booming. Is it possible that babies in rural areas are really not eating enough?

When we took a closer look at our results, we found that only 20% of babies were stunted, a sign of macronutrient deficiency. This figure is certainly not negligible, but in comparison to countries in South Asia and Africa, this rate of stunting is quite low.

In fact, it is this relatively low figure that is leading us to believe that the malnutrition problem in rural China today is mostly a *micronutrient* problem, not a macronutrient one. In short: babies appear to be getting enough calories, but they are not getting enough vitamins and nutrients.

So why isn’t the quality of the foods that babies are eating better?

*Are families too poor to afford nutritious food for their children?*

Perhaps financial constraints are preventing them from providing their babies with the micronutrient rich diet they need to thrive.

Looking at the data, however, we found that only 10% of the babies’ mothers were anemic. To us, this relatively low figure indicates that the household is not destitute. In fact, unlike the babies themselves, their mothers *are* eating a healthy, balanced diet. This in turn appears to indicate that most rural households *do* have the financial resources to provide a balanced diet for their children. Unfortunately, for some reason other than poverty, they are not doing so. Why are parents choosing not to give their child the nutrients he or she needs to grow?

Nearly 80% of the babies in our study were anemic, but only 20% were stunted. In other words, they had enough to eat, just not the right foods. If a lack of financial resources is not the obstacle to providing babies with the right nutrients, then what is?
Unaware and Uninformed

An alternative reason for poor child nutrition may be that households—mothers, fathers, grandmothers or other caregivers—simply do not know what good child nutrition looks like. They may be unaware and/or uninformed about the need to give their babies well-rounded, nutritional meals.

Our household survey forms included a basic nutritional knowledge test, which asked caregivers a number of questions about baby nutrition and best feeding practices. It also asked caregivers the same nutritional knowledge questions about pigs, instead of babies.

We were amazed to learn that rural caregivers know much more about pig nutrition than they do about baby nutrition. When asked the question, “Do baby pigs need micronutrients to grow and be healthy?” more than 70 percent of the respondents said, “Yes, of course.” However, when asked the alternative question, “Does your baby need micronutrients to grow and be healthy?” more than 70 percent of the same respondents said “No”. Somehow, reliable information on how to raise pigs is more widely available than reliable information on how to raise a healthy baby! Unfortunately, millions of China’s babies are being denied nutritious diets because of this dearth of information.
Taking the Time to Listen

A REAP volunteer interviews a grandmother during a home visit to assess caregivers’ understanding of malnutrition and baby feeding practices.

REAP is a research organization, and as such, many of our efforts are focused on assembling large data sets that help us understand the problems that rural households are facing and what can be done about those problems. However, we also believe that it is important to spend time listening to the voices of those we hope to help.

With this in mind, we have sent teams of observers to the field to talk with rural households. Results from these interviews support the notion that caregivers are sorely lacking in information about healthy baby feeding practices. Many had never even heard of anemia:

“Anemia? Never heard of it!”

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“Anemia? Isn’t that when your body’s blood supply is low?” asked one mother.

“Does my baby need a blood transfusion?”

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“All I care about is that my baby does not cry. Once he gets older and can talk I will start worrying about his nutrition.”
Even parents who had heard of anemia or malnutrition did not seem to think insufficient nutrition for was even a problem for babies. Rural mothers and grandmothers were much more concerned with indigestion or minor ailments like the common cold.

“I am afraid that my baby will get digestive troubles, so I feed him less.”

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“Babies can’t eat solids until they can walk because they can’t digest their food until they walk.”

Others didn’t think that what their baby ate mattered at all:

“I don’t think there’s a big impact of nutrition on health. Milk powder and porridge are good enough for my baby.”

Interviews like these show that caregivers lack a basic understanding of malnutrition and its impact on health. Through the Nourishing the Future project, we now are beginning to believe that that ignorance, rather than lack of resources, is the real source of the malnutrition problem in rural China.
Poor Nutrition = Delayed Child Development

REAP’s work is able to look at more than just the nutrition status of babies. In fact, one of the main motives of our project is to measure the impact of good nutrition on cognitive development and motor skills (baby’s strength and coordination, which are highly correlated with long-run cognitive and physical development). Because of this goal, we made a large effort at the beginning of the project to measure the starting (baseline) levels of babies’ cognitive and motor development. These baseline measures give us a snapshot of the larger problem that we are facing, and will allow us to follow the progress of baby’s development over the course of our project.

Using data from our April survey, then, we were also able to see how the babies in our sample measure up to healthy babies from around the world.

Comparing the initial baby development surveys with the end results will allow us to measure the impact of providing proper nutrients over the course of the study.

Working with Babies

In Phase 1 of REAP’s Nourishing the Future project, over 1,000 babies were administered the gold standard test of baby development: the Bayley Scales of Infant Development (BSID). Since targets of the BSID are babies, the test is a hands-on experiential instrument that has to be administered one-on-one by a trained enumerator.

To prepare for the test, all Nourishing the Future project enumerators must attend a rigorous, week-long training course. During the training, they are provided with a set of interactive toys: blocks, wooden pegs, mirrors, colorful picture books, and more. The enumerators are trained to use these toys to play with the child according to a set of BSID guidelines, and to rate each child’s development according to the level at which s/he is able to play.
Learning how to play with each toy according to the guidelines is difficult, but can be mastered in the classroom. Outside of the classroom, the biggest challenge is to hold the baby’s attention for the duration of the two-hour test. A typical testing session looks something like this:

- Arrive to household, greet family.
  - Smile at baby, ask to hold baby, dance around the room with baby [builds trust with family, and with baby].
  - When baby is happy and comfortable, sit down with baby and begin test.
  - Baby suddenly poops all over himself and whoever is holding him [rural Chinese babies don’t wear diapers].

- Entire family swoops in to clean up after baby and the test is temporarily suspended.
  - Mess is cleaned up, and testing resumes.
  - Baby gets bored, starts to fidget. Won’t pay attention to the testing toys.
  - Feeding break for baby.
  - Baby falls asleep at mother’s breast.
  - Wait patiently until baby wakes up.
  - Baby wakes up and test resumes.

- Baby discovers suitcase filled with testing toys. Baby paradise!
  - Enumerator hides suitcase and attempts to resume test.
  - Baby begins to cry.
  - Everyone begins cooing at baby to calm him down.
  - Calm but newly distrustful baby resumes test.
  - Finish test, thank household.
  - Move on to next household, and begin again!

Despite the challenges, REAP’s Nourishing the Future team members all agree that participating in this project is one of the most rewarding experiences they have ever had. “Everything is exciting to a baby,” says Kenny Chu, a veteran REAP volunteer. “You just have to get down to their level and learn their language.” He chuckles. “And now I’m an expert at playing with babies!”

From that perspective, Nourishing the Future is not just helping the next generation of Chinese babies—it is also training the next generation of Chinese parents!
Phase 1 Results

So what did we find? What is the nature of the development of babies in rural China? Again, our research team was astounded by the severity of the problem we had uncovered. Overall, more than 70% of the babies we tested were developmentally delayed relative to the healthy international standard. Around 35% of babies were significantly delayed in their cognitive development. More than 55% were significantly delayed in their motor development.

In the long run, these results could have serious implications for China’s economy. Our findings show that the average rural Chinese baby is developmentally delayed. If these babies’ nutrition and environment do not improve, they will likely be facing a lifetime of permanent underperformance: they will drop out of school earlier, get worse jobs, and have lower lifetime incomes. At a time when China’s growth is already beginning to slow, this artificially imposed subtraction from the skilled labor force could be devastating.

The scope and implications of China’s malnutrition problem are staggering. However, the real story is that many of these developmental handicaps can be easily prevented with just a few dietary changes. The high rates of malnutrition in these rural areas are almost certainly playing a large role in delaying children’s development. In fact, our data show that anemic babies are more likely to be experiencing these developmental delays than healthy babies.

How can we draw parents’—and policymakers’—attention to this important problem?

Over 70% of babies in rural China are developmentally delayed. How can we address this important problem?
Exploring Scalable Solutions
Phase 2 of the Nourishing the Future has already launched: in May, 2013, with cooperation and support from the national Ministry of Health, we began passing out nutritional supplement packets (NurtureMate packets) to families participating in the project. Each family received a one-on-one nutritional training session, and a six month supply of NurtureMate, which can be mixed in with baby’s porridge or formula each day.

In October, 2013, we will conduct another round of surveying to measure the impact of this daily micronutrient supplementation program on babies’ health and development. We plan to follow these babies for a total of 18 months, to gain a better understanding of the short-run impacts of regular supplementation.

It is our hope that the work we are doing through this project will eventually be used to inform national policy decisions in China. Together we are trying to make China’s rural population nourished, strong, healthy and smart! This is the future of China. So together we are nourishing China’s future.

Stay tuned! Even more exciting things are coming!
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