Mike, do you ever feel like your research is insignificant or pointless?

All the time. But then I'm reminded of the "butterfly effect."

You mean, though it may appear insignificant, my research might eventually have important repercussions?

I mean nobody remembers who came up with it, so it doesn't really matter anyway.
RESEARCH QUESTIONS
UNDERSTANDING CONTEXT / OPPORTUNITIES
DATA

PROGRAMME

EVIDENCE FOR ENHANCED
SHN POLICY-MAKING

RESEARCH

PCD
The Partnership for Child Development
FRESH IN ACTION

ACCESSIBILITY

MESSENGES

POLICIES

SAFE WATER & SANITATION

SCHOOL HEALTH & NUTRITION SERVICE

COMMUNITY PARTNERSHIPS

PUPIL AWARENESS & PARTICIPATION

EDUCATION & HEALTH PARTNERSHIPS

HEALTH EDUCATION

REFERRALS

COMMUNITY CONTRIBUTION

HEALTH CENTRE
“Healthy Children Learn Better”

Complementary Strengths of Ministries

**MoH**
- Learning for health
- Drug management & procurement
- Treatment supervision
- Technical resources
- Programme monitoring
- Strong community links

**MoE**
- Demand for improved health for better learning
- Large & stable platform
- Significant human resources
- Strong community links
- Financing

[PCD: The Partnership for Child Development]
Expansion of SHN in sub-Saharan Africa

- A national SHN policy
- School meals
- A national policy for safe water in schools
- Reproductive health services

<table>
<thead>
<tr>
<th>Year</th>
<th>% of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
</tbody>
</table>
What schools do?

3 examples:

- School feeding
- Vision screening
- Deworming
Every country in the world does it to some extent.

368 million children fed every school day.

US$ 75 billion global business
Home Grown School Feeding

• Promoting agricultural development by improving access to the school feeding market

• A potential win-win
  – for children and communities… improving their education, health, and nutrition
  – Smallholder farmers… providing regular orders and a reliable income
The School Meals Planner Package: Evidence into Action

A strategic approach to:

Cost effective and nutritious menu planning

Behaviour change and nutrition education

Improve market access for smallholder farmers

www.hgsf-global.org
Impact evaluation in Ghana

• RCT to evaluate multiple impacts of HGSF and meals planner package

• Emerging research questions:
  – Impact of nutrition interventions on adolescent health
  – Changing food systems/environments and children/adolescent nutrition
  – Cost-effectiveness/impact different delivery modalities
Refractive Error in Children

- 13 m SACs affected (Resnikoff et al 2008 *WHO Bull*)
  - 8% in Malawi
  - 15% China
  - 31% high-poverty districts of the US
- Refractive error is responsible for 97% of vision problems in SACs
- Reduced learning
- Global costs of $200b per year (Fricke et al 2008 *WHO Bull*)
Why schools for vision screening?

This is an optometrist in the UK. And the 10,000 people they serve.

This is an optometrist in sub-Saharan Africa. And the 1 million people they serve.

Source: Centre for Vision in the Developing World 2016
Cambodia Vision Screening & Scale-up: 2012-14

- School-based screening by trained teachers (n=12,500)
- Provision of eye glasses on the same day
- 6 month follow up
- 100% agreement between teacher screening and professional screening
- Government of Cambodia scaling up nationally in 2015

-Cost most entails provision of glasses
MDA through schools

*Trichuris trichiura* (whipworm)

*Ancylostoma duodenale*

*Necator americanus* (hookworm)

*Ascaris lumbricoides*

(S. haematobium)

*S. Mansoni*

*S. japonicum*
• Evidence shows that simple, school-based health and nutrition interventions can have significant impact on health, nutrition, education and long-term development.

• In terms of access to education, such interventions have been shown to increase attendance by 25%.

• In terms of quality such interventions improve the ability of the child to absorb the education on offer.
## Quality of the Evidence

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Enrolment</th>
<th>Attendance</th>
<th>Educational achievement</th>
<th>Cognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>School meals</td>
<td>+++ (♀ effect)</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Take-home rations</td>
<td>+++ (♀ effect)</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>Fortified biscuits</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Dietary iron</td>
<td>+</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Deworming</td>
<td>NA</td>
<td>+++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Eyeglasses</td>
<td>+</td>
<td></td>
<td>+++</td>
<td></td>
</tr>
</tbody>
</table>

+ = evidence from quasi-experimental evaluation  
++ = evidence from at least one RCT  
+++ = evidence from more than one RCT  
NA = not assessed

Scaling Up

HISTORICAL PROFILES AND PERSPECTIVES

Bihar’s Pioneering School-Based Deworming Programme: Lessons Learned in Deworming over 17 Million Indian School-Age Children in One Sustainable Campaign

Lesley J. Drake¹,²,³, Sarman Singh⁴, C. K. Mishra⁵, Amarjeet Sinha⁵, Sanjay Kumar⁶, Rajesh Bhushan⁷, T. Deirdre Hollingsworth³,⁸,⁹,¹⁰, Laura J. Appleby¹,³, Rakesh Kumar², Kriti Sharma², Yogita Kumar², Sri Raman²¹, Stalin Chakrabarty², Jimmy H. Kihara¹¹, N. K. Gunawardena¹², Grace Hollister²,¹³,¹⁴, Vandana Kumar², Anish Ankur², Babul Prasad², Sushma Ramachandran², Alissa Fishbane²,¹³, Prerna Makkar¹,²
Mainstreaming SHN into ESPs

<table>
<thead>
<tr>
<th>Subject</th>
<th>Costs $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum</td>
<td>$</td>
</tr>
<tr>
<td>Textbooks</td>
<td>$</td>
</tr>
<tr>
<td>Teacher Training</td>
<td>$</td>
</tr>
<tr>
<td>Classrooms</td>
<td>$</td>
</tr>
<tr>
<td>Examinations</td>
<td>$</td>
</tr>
<tr>
<td>SHN</td>
<td>???</td>
</tr>
</tbody>
</table>
The benefits of Integrating SHN (Deworming, HGSF & WASH in Ethiopia)

**Overall SF:**
$28.01/child/yr
Including a $4.16 CC & $0.57 Local Government cost

**Deworming:**
$0.40 per child (drugs were donated)
Made up of transport and salary costs

**Overall WASH and deworming:**
$6.68/child/yr
$1.05 in CC and $0.06 in government contribution

Overall: $35.15 per child per year.
Find out more @

www.schoolsandhealth.org  www.hgsf-global.org

www.child-development.org

Downloadable

• Documents & resources
• News & Events
• SHN topic information
• Country specific data

Follow:

SHN @schoolhealth
HGSF @HGSFglobal

www.facebook.com/PartnershipforChildDevelopment
SHN services over time in SSA

- Health screening/services
- Deworming
- Drug provision
- School feeding

Cost and effectiveness of education interventions

- School feeding: $8.03/day gained
- Basic school health services: $0.14/day gained
- CCT (PROGRESA): $7.21/day gained
- Extra textbooks: $0.27/day gained

Bundy et al 2008
Improved school attendance following deworming

Busia, Kenya

Source: Miguel and Kremer 2000
Impact of deworming and school health on cognitive test scores

**Left Diagram:**
- **Y-axis:** Fluency score
- **X-axis:** Before deworming vs. Three months after deworming
- Lines for:
  - Uninfected
  - Treated
  - Placebo

**Right Diagram:**
- **Y-axis:** Ability score
- Lines for:
  - Intervention not started
  - 1 year of intervention
  - 2 years of intervention
  - 3 years of intervention

*Source: Nokes et al. 1992*

*Source: Grigorenko et al. 2007*