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Paying for performance and cost effectiveness of strategies to combat anemia in China

Submission date
11/10/2011

Recruitment status
No longer recruiting

Registration date
19/10/2011

Overall study status
Completed

Last Edited
30/03/2017

Condition category
Nutritional, Metabolic, Endocrine

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Anemia is a condition that develops when the blood lacks enough healthy red blood cells or haemoglobin (the part of the red blood cell that binds oxygen), causing the cells in the body to not get enough oxygen. It can be caused by a lack of iron in the diet (iron-deficiency anemia). Anemia affects millions of children in poor areas of China and severely constrains their ability to learn and progress through school. The aim of this study is to find out whether strengthened incentives in primary schools in rural China affect student nutrition, especially anemia. There is very little information available on anemia rates among Chinese children, so this study aims to provide new estimates of anemia prevalence among primary school age children in rural China. Early estimates suggest that prevalence rates are higher than previously believed, ranging between 20% and more than 50% in many rural counties. This study assesses the responses of educators (principals) in poor rural primary schools in China to pay-for-performance rewards for reducing anemia compared with pay-for- performance rewards for increasing test scores, and the health consequences of each. This study is thought to be the first to reward health improvement directly. For the purposes of comparison, the study also measures the responses to information campaigns and unconditional subsidy schemes to assess the health improvement benefits of each. The cost-effectiveness of the various incentive-based approaches for anemia reduction is also calculated. New research suggests that the size of the incentive is less important than the mere existence of the incentive. This study therefore compares the effectiveness of large and smaller incentives for anemia reduction.

Who can participate?
All fourth and fifth grade students (mostly aged 8-12) in the participating schools

What does the study involve?
Participating schools are randomly allocated into five groups. Principals of all of the participating schools receive information about the share of enrolled students who are anemic and learn effective methods for reducing anemia, including vitamin supplements and other diet changes. In addition, they receive information about the close link between anemia, school attendance and educational performance. Principals also receive a fixed per student subsidy to do with as they choose. They are be given a menu of options, including items/services that may help reduce anemia and/or raise student test scores. Group 1 schools receive only the

information and subsidy described above. Group 2 schools receive on top of the information and subsidy a monetary reward to reduce anemia rates. Group 3 schools receive on top of the information and subsidy a monetary reward to raise student test scores. Group 4 schools receive on top of the information and subsidy a monetary reward to reduce anemia rates and a monetary reward to raise student test scores. Group 5 schools receive receive on top of the information and subsidy a small monetary reward to reduce anemia rates. Blood haemoglobin levels measured by finger prick testing and math and Chinese test scores are compared between the five groups.

What are the possible benefits and risks of participating?
Student participants may experience better health and educational outcomes. Principals who participate in the study receive nutritional training and an unconditional cash subsidy. Some principals are also offered the chance to earn more money through the financial incentive program.

Where is the study run from?
The study takes place in Northwest China in randomly selected schools scattered across Gansu, Shaanxi and Qinghai provinces.

When is the study starting and how long is it expected to run for?
October 2011 to June 2012

Who is funding the study?
1. National Institutes for Health (NIH) (USA)
2. Stanford University (USA)

Who is the main contact?
Prof. Grant Miller

Contact information

Type(s)
Scientific

Contact name
Prof Grant Miller

Contact details
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94305

Additional identifiers

Protocol serial number
NIH Award No.: 1 R01 HL106023-01

Study information

Scientific Title
Paying for performance and cost effectiveness of strategies to combat anemia in China: a randomised controlled trial

Study objectives
There is low haemoglobin count among fourth and fifth grade students in poor areas of Northwest China, and that part of the problem is that principals lack information about the problem, they lack the funds necessary to address the problem, and lack incentive to take action.

Ethics approval required
Old ethics approval format

Ethics approval(s)
1. Stanford University, Institutional Review Board, 11/11/2010, IRB Number 348, Protocol ID: 19748
2. Xi'an Jiaotong University, Institutional Review Board, 28/11/2010, IRB Number 00003556, Protocol ID: 19748

Primary study design
Interventional

Study design
Interventional cluster-randomised single-blind multicentre controlled trial

Study type(s)
Quality of life

Health condition(s) or problem(s) studied
Iron-deficiency anemia

Interventions
1. Information + Subsidy (65 schools)
All principals of the sample schools will receive both information about anemia and an earmarked operating budget subsidy. They will receive information about the share of enrolled students who are anemic and learn efficacious methods for reducing anemia (including vitamin supplementation and other dietary changes). In addition, they will receive information about the close link between anemia, school attendance and educational performance according to findings published in the academic literature. Principals will also receive a fixed per student subsidy to do with as they choose. They will be given a menu of options, including items/services that may help reduce anemia and/or raise student test scores.

2. Information + Subsidy + Anemia Reduction Incentive (65 schools)
Principals in this subset of schools will receive - on top of the information and subsidy treatments - a monetary reward to reduce anemia rates.

3. Information + Subsidy + Test Score Incentive (65 schools)
Principals in this subset of schools will receive - on top of the information and subsidy treatments - a monetary reward to raise student test scores.

4. Information + Subsidy + Dual Incentive (65 schools)
Principals in this subset of schools will receive - on top of the information and subsidy

treatments - a monetary reward to reduce anemia rates AND a monetary reward to raise student test scores.

5. Information + Subsidy + Small Anemia Reduction Incentive (40 schools)
Principals in this subset of schools will receive - on top of the information and subsidy treatments - a small monetary reward to reduce anemia rates.

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
Haemoglobin concentrations, obtained by finger prick testing using HemoCue 201+ point of-care diagnostics

Key secondary outcome(s)
1. Scores on standardized subject tests of math and Chinese. Both subject tests will be administered by a team of enumerators.
1.1. The math test is based on questions drawn from a pool of questions that were originally created for The Trends in International Mathematics and Science Study (TIMSS).
1.2. The Chinese test is based on questions originally created for inclusion in the local, curriculum-based examinations.

Completion date
10/06/2012

Eligibility

Key inclusion criteria
Male and female fourth and fifth grade elementary school students attending randomly selected public elementary schools in poor rural areas of Northwestern China

Participant type(s)
Other

Healthy volunteers allowed
No

Age group
Child

Sex
All

Key exclusion criteria

1. Wealthy, urban areas as they are not known to have large nutrition problems
2. Students found to be extremely anaemic - these will be excluded and sent directly to a doctor for treatment
3. Students identified as having thalassaemia

Date of first enrolment
24/10/2011

Date of final enrolment
10/06/2012

Locations

Countries of recruitment
China

United States of America

Study participating centre
117 Encina Commons
Stanford
United States of America
94305

Sponsor information

Organisation
Stanford University (USA)

ROR
https://ror.org/00f54p054

Funder(s)

Funder type
Government

Funder Name
National Institutes of Health (ref: 1 R01 HL106023-0)

Alternative Name(s)

US National Institutes of Health, Institutos Nacionales de la Salud, NIH, USNIH

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United States of America

Funder Name
Stanford University

Alternative Name(s)
Stanford, Leland Stanford Junior University, SU

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
United States of America

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary