Reviewer's report

Title: Burden of micronutrient deficiencies by socio-economic strata in children aged 6 months to 5 years in the Philippines

Version: 2 Date: 28 May 2013

Reviewer: Susan Horton

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Essential revisions

1. “Costs of MNDs differ considerably between SES as costs in the poorest third of the households are 5 times higher than in the wealthiest third.” Abstract: results - these are only the case because the assumption made is that earnings of all deciles are the same. Note: are the 10 “socioeconomic strata” deciles, and if not, what are they? State this assumption.

2. Para 1, section “Study Population”. By omitting children below 6 months, the study arguably omits a considerable amount of MND. For vitamin A, likely the largest mortality occurs prior to this age; and for iron although it is hard to measure cognitive losses below 6 months, arguably these are very serious. The Study assumes that babies are born with “full” stores at birth, which is not empirically correct. The mother’s stores prior to pregnancy and during pregnancy affect newborns. The forthcoming Lancet series (June 2013) will point to the importance of maternal MND status for child health. Even if the end-goal of the present study is fortification, micronutrients in the food supply can potentially reach the baby via the mother and her micronutrient status. Modify the statement about full stores at birth.

3. Para 2, section “Micronutrient deficiencies”: in focusing on iron-deficiency anemia, the study ignores the iron-deficient but not anemic group. The assumption is being made that there are no functional losses for this group, and this assumption at minimum needs to be stated.

4. First sentence, section “Attribution of health consequences”

“Whenever possible, the attribution of health consequences to MNDs is based on systematic reviews”: while this may be true for health consequences, it is not for the economic consequences, where some of the more key results are based on a single study (for rural Philippines) – see below. Needs a more systematic review.

5. Table 2: doesn’t do sensitivity analysis on the productivity parameters – this is an important omission, especially as the values chosen rely on very thin evidence. Either explicitly state this, or preferably include in the sensitivity analysis.

6. Table 7 (and associated text): assumption of effect of stunting losses on
productivity is based on a single article more than 20 years old, for rural Philippines only. This definitely needs updating and better justification. There is quite a large literature on the effects of height on earnings. The model is likely highly sensitive to this parameter, where the coefficient lacks justification, and where no effort at sensitivity analysis is undertaken.

7. Strengths and limitations, para 2: it is correct that the effects of iron on cognition and hence wages is supported by thin evidence. However it is worse that the effect of stunting on wages is supported by only one (old, rural) study, whereas there is a much bigger literature on this that the authors fail to consider. Needs more work on this parameter.

8. Section “Strengths and limitations” – the last sentence (implying complete socioeconomic mobility in emerging economies” cannot possibly be true. The authors themselves are asserting the MND in the poorer SES groups have permanent consequences on wages (and they have not fully considered effects on schooling). Hence it is unlikely that adult wages have no correlation with SES of birth family.

9. Policy implications: the assumption that adult wages are unrelated to birth SES is in part responsible for the considerably larger costs of deficiency in this cohort. Also, even if the outcome costs are worse for this group, it isn’t sufficient to prove that cost-effectiveness of intervention is better for poorer households – it may be that the costs of intervention are also disproportionately higher (these households may be more rural, less likely to consume market-fortified foods, etc). Preferably improve on evidence: at worst soften the overly strong statement re cost-effectiveness and relative cost by cohort.

Discretionary revisions

10. Para immediately above table 1: provide a reference justifying the assumption that MND stays constant in the 6 months-2 years range, and in the 2-5 years range.

11. Para starting “production losses”: assuming that all SES groups have the same change of lifetime income is a major assumption, on which it is certainly worth doing sensitivity analysis.


13. Magnitude of costs (section): the data on magnitude of the DALY burden isn’t very intuitive. Can you not give this as a proportion of overall DALY losses in the Philippines somehow?

14. Para immediately above “Strengths and limitations” – the cost is compared to household out-of-pocket expenditures. Note however that households only incur a proportion of these costs.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests