

Notes from Call between GiveWell and Michael Zimmermann, 05/09/2012

GiveWell was represented by Elie Hassenfeld (Co-Executive Director) and Alexander Berger (Research Analyst).

Michael Zimmermann is Professor, Head of the Human Nutrition Laboratory, Institute of Food, Nutrition and Health, Department of Health Sciences and Technology, ETH Zurich, Switzerland, and Executive Directory of ICCIDD.

**GW: Our impression is that the best evidence in favor of the importance of iodine for cognitive performance comes from the old studies in Papua New Guinea and the recent RCTs in Albania and New Zealand. Do you think that's right? Is there anything more recent?**

MZ: Those are the three best RCTs. The treatment varied across the studies: the one in Papua New Guinea was intra-muscular injections for pregnant women, while the others were oral supplements for school-age children. The recent studies both had good sizes and good control groups.

There was an older batch of RCTs, between the time of the one in Papua New Guinea and the ones in Albania and New Zealand, and they found much more limited effects. However, they either saw improvement in both the control and the treatment groups or only limited improvement in the treatment group (i.e. indicating that the treatment group's iodine status was not fully adequate at the end of treatment).

There's also evidence from 2 observational meta-analyses: one older one from the 1990s and then a more recent one, based on studies in China.

**GW: We've looked at those meta-analyses, and we weren't sure how credible they were. What do you think?**

MZ: Well, they're not the strongest meta-analyses I've ever seen. It's difficult to interpret the Chinese one because the studies are all in Chinese, and the older one included many unpublished, un-peer-reviewed studies. Because they're observational studies, they could be confounded if anything else was correlated with the level of iodine intake in the population, which seems plausible. I would rate the evidence from these meta-analyses as poor.

**GW: We noticed that a couple of the studies seemed to show effects on neonatal mortality. How robust do you think those are?**

MZ: Those are there, but the studies are small. The problem in the field, historically, is that the programs got way ahead of the evidence. You had very effective program implementation before you had a lot of evidence of the cognitive benefits. No one would argue that it's not beneficial, but the evidence base was sort of left behind because the intervention was clearly so effective and cheap.

**GW: What do you mean by saying that the intervention was effective but not as proven?**

MZ: Well, it was clear that iodizing salt would increase iodine intakes. If you know the typical intake requirement for people is 95 micrograms a day, and the population has an average intake of 25

micrograms, then improving intakes is sort of no brainer. It's pretty easy to improve deficient intakes up to the normal range, and deficiency was associated with a number of other problems, so we just did it. There wasn't a big evidence base, especially from RCTs, showing that this would work to improve cognitive performance, but the associations with other problems seemed strong enough to justify the minimal cost of programs.

**GW: Do you know of any places where salt iodization is not happening because of money? Is it mostly politics or money that's holding things back?**

MZ: It's a combination of both of those things. In Ethiopia there's no iodized salt coverage, for political and geographical reasons. That's a national program that could be easily implemented, and it just hasn't happened. In some other places, reaching every small producer is a problem, even if the government has the will. So it's a combination of politics and money.

Each country also has its own situation, and there's always different factors that influence that. Often there is no local champion for iodization, so I wouldn't say it's necessarily a lack of money. Usually there's an initial investment and then the program becomes self-sustaining as the salt production companies pass on the trivial costs of iodization to consumers.

There is a large partnership between UNICEF and GAIN, with money from the Gates Foundation, and that influx of cash has made a big impact in 13 key countries. A lack of political will can be a problem, but resources for hiring consultants to go champion the cause in these countries and getting the political will aroused can also be a constraint. Usually if the political will is there, someone finds the resources.

**GW: How have these overtures made a difference in the past?**

MZ: It varies. In the Philippines, the salt industry got onboard quickly and tried to iodize their salt, but producers were adding insufficient amounts of iodine. GAIN and UNICEF hired a team from the industry and ministry and supported their efforts to install equipment to do quality assurance for some of the producers.

The costs of these programs go towards materials, sometimes iodine, and then staff costs.

I think it's a combination of people willing to give their time, some of which comes from aid agencies, and some of which is voluntary, but you need to have the resources to put a social marketing or education program together.

I work for ICCIDD, basically a voluntary organization, and we just received a large grant from the Canadian International Development Agency to focus on five countries. We'll be spending that money on building a national coalition in those countries.

The problem now is that the global effort to control iodine deficiency is 20 years old. I think we've made enormous progress, but there's a certain donor fatigue. At some point the donors decide to move onto another problem. People are starting to feel like the job's done. Iodine intakes are good in most places, but there are pockets of real severe deficiency in some places. Infusions of cash targeted at real key places could be crucial.

It's frustrating because you can sort of see the light at the end of the tunnel. If another source of funding entered the picture, it could matter a lot, because we have effective and tested solutions to the problem..

**GW: Where could we find out more about these processes?**

MZ: I don't think there's much online about this stuff. You might talk to Arnold Timmer at UNICEF, or Greg Garrett at GAIN.

**GW: We looked at ICCIDD before, but had a hard time connecting inputs to outcomes. We'd like to understand what would happen if ICCIDD got a million dollars. How would that affect iodine deficiency? How would that be different from giving that money to UNICEF and GAIN?**

MZ: It's difficult to quantify the direct impact of money spent on iodine, because it gets spent at a pretty high level, e.g. on technical assistance or advocacy. We can say “we spent this much on an advocacy campaign,” but that's not as helpful for donors as the number of Vitamin A supplements given out. We can try to quantify increase in iodine intakes, but that's pretty far down the line.

**GW: What about a narrative understanding? Case studies or something like that would be helpful for us.**

MZ: I could show you a summary of the year-end reports of our funding from AusAid.. That would show you where a portion of our money was spent in the last year.

The crucial thing now is sustainability. We've started the programs, but they need a certain amount of support and nurturing. We need a champion in the country monitoring that. The priority is not only extending coverage in key countries, but also maintaining things in countries that have existing programs.

**GW: How should we distinguish between ICCIDD, UNICEF, and GAIN?**

MZ: UNICEF and GAIN are much bigger implementers than we are. There's already some integration of our efforts with UNICEF and GAIN, but it looks like in the second half of this year, we're going to be integrating work a lot more. The global situation—in terms of who's doing what, how it is coordinated, and how we maintain program quality—is going to become clearer, because it looks like ICCIDD is going to take a more central role in integrating programs. We're trying to figure out the right organizational structure for this.

Things are going to improve in terms of integration and coordination. UNICEF and GAIN would like ICCIDD to contribute to the sustainability portion and move forward. ICCIDD is a small, technical advisory group, advising UNICEF and GAIN. We also have regional coordinators and national focal points that are our real strength, who will be key for sustaining the implementation. Iodine is a mature program, and more and more the other micronutrient efforts are looking at the iodine model.

Additional resources would help us consolidate and finalize this global effort. The tried and true methods are known, so it's just a matter of bringing it home.

**GW: This is a bit off topic, but could you talk a bit about the evidence that general malnutrition causes stunting, that stunting causes lower adult height, and that malnutrition in early childhood (as measured by stunting/wasting) harms cognitive development? We've found the evidence here to be extremely limited.**

MZ: I agree that the real hard evidence is lacking. There are so many factors it's difficult to pinpoint causes in the overall mix. I think that there are many populations that are mildly stunted and there's no real adverse health effects, though women may face some relatively rare problems with delivering babies. And I agree that in many of the longitudinal studies trying to find benefits of nutrition early in the life cycle, there's not that much hard evidence yet.

**GW: Is there even evidence that it's food, not other factors?**

MZ: I don't know of much. In a poor country where many things are substandard—food, water, health—there's so many factors that could be contributing.

**GW: Isn't there a consensus that nutrition is really crucial? Where did it come from?**

MZ: I think that a lot of it grew out of the Copenhagen Consensus. That brought to a much wider audience the benefits of micronutrients. And the Lancet series on nutritional impacts on the global health burden also made a big difference.

Really, it's difficult to say. A lot of these things move forward for economic or political reasons, as well. But I'm not as knowledgeable on general malnutrition as on iodine in particular.

**GW: Are there names that come to mind for particular people we should talk to about that stuff?**

MZ: A leader is Professor Robert Black, at Johns Hopkins, and the people in his group.

**GW: How much, if anything, is known about the shape of the relationship between the level of iodine deficiency (remediation) and the cognitive effects? Is it linear? Are there key discontinuities?**

MZ: It would be nice to have a few more RCTs in mild-moderate areas, to help us estimate this better; I hear there may be a new one forthcoming from Ethiopia. I'm working on the Global Burden of Disease estimate for iodine deficiency. We have a model that shows how shifts in IQ occur due to small changes in iodine intake. What's been shown for lead is that the severity of exposure is related to the severity of IQ point loss; we use a similar model for iodine. Unfortunately, for the extreme degrees of iodine deficiency, we're forced to mostly rely on the older meta-analyses.

**GW: Is your work for the GBD something you could share the draft form of? We'd be interested in that.**

MZ: I don't think that should be a problem.