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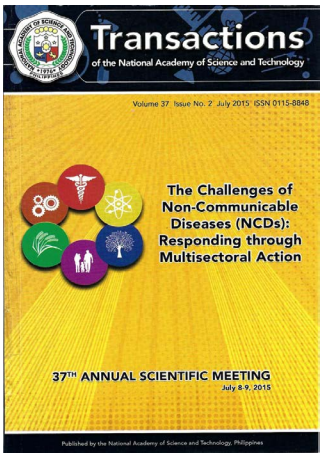

Burden and Prevention of Non-Communicable Diseases

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Good Morning friends in science.

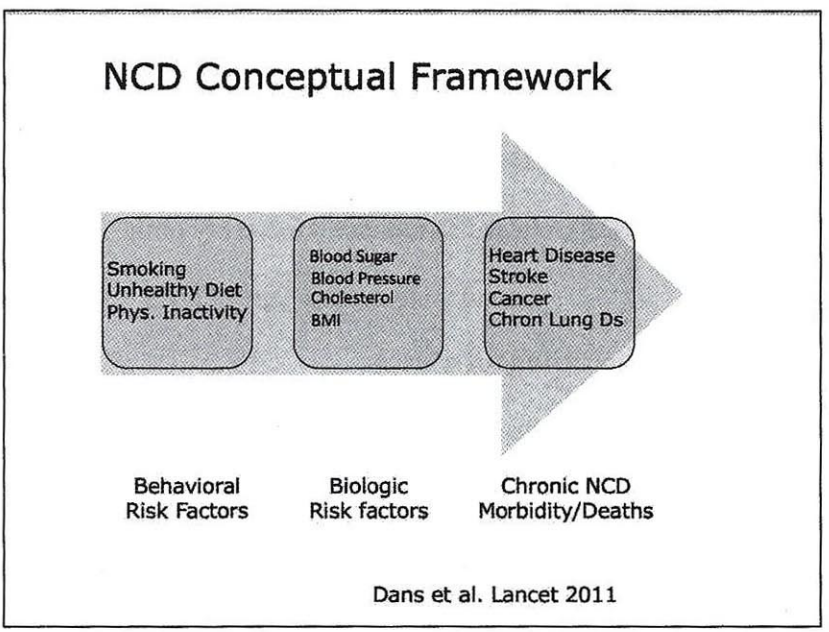
I'd like to start by thanking the organizing committee for inviting me to talk today. Because I co-chair that committee, I am actually thanking myself. (audience laughs). I plan to be controversial this morning, because I believe that is how science progresses - through controversies that are discussed and debated in public. So please, do not get upset prematurely. Everything I say will be up for debate, so let's just bring the issues forward.

I am going to start with a quick survey - 4 questions. How many of you never smoked a stick of tobacco in your life? Marami, around 74.25%. We're from the NAST so we are very precise. A more difficult question now - how many of you exercise at least 30 minutes a day at least 5 days a week? (audience laughs). Biglang nawala. Okay, maybe 8.3%. And then a third question - how many of you eat at least a cup of fruits and vegetables every meal? Ayan, kaunti pa rin. Mga 41.2%. And then my last question - how many of you know that we should be doing these things? Wow. All of you!

That's interesting because my topic this morning is - why we know what to do but don't. The outline of my talk, is first to define Non-Communicable Diseases as a silent disaster taking place right before us. Then I will discuss three common misconceptions, propose a new conceptual framework on how NCD develops, and finally, discuss a new approach to prevention beyond the healthcare sector.

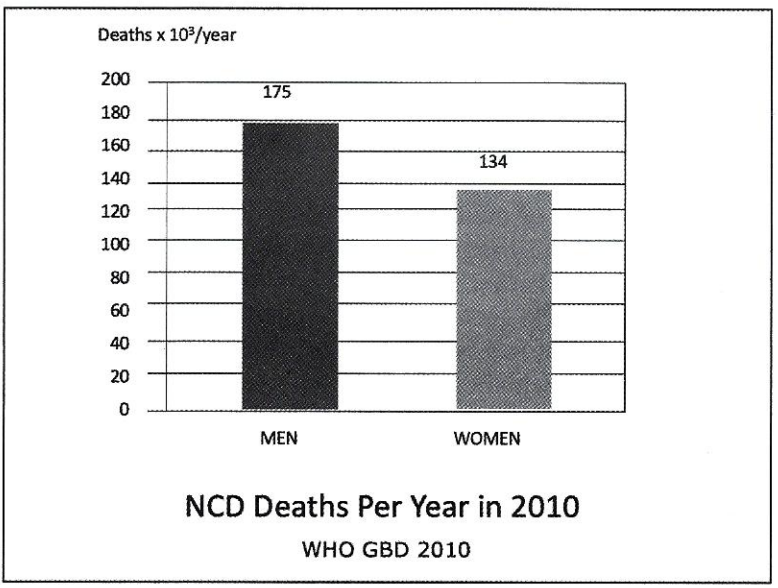
Citation: *Dans AML. 2015. Burden and prevention of non-communicable diseases. Transactions NAST PHL 37 (2): 193-208. doi.org/10.57043/transnastphl.20152827*

So let me start with the definition. Non-communicable diseases are diseases that are not communicable. They are not contagious and usually, they are diseases that develop with aging. The top 4 are heart disease, stroke, cancer and chronic obstructive lung disease.



Biologically, the most common predisposing factors for NCD are high blood sugar, high blood pressure, high cholesterol and obesity. These biological factors, in turn are related to certain behaviors, our lifestyles. The top ones include smoking, excessive alcohol intake, unhealthy diet and physical inactivity. So this is the existing conceptual framework for the evolution of non-communicable diseases. As we understand it, at the present time, this is why we are facing an epidemic of NCD.

From 2010 figures, there are about 300,000 deaths a year from these conditions, slightly more in men than in women. 300,000 deaths are difficult to envision. It is the equivalent of two Boeing 747 planes crashing every day. This is a disaster of unprecedented extent. We know of no other disaster that affects this many people. There is no tsunami, typhoon, flood, earthquake or contagious epidemic that parallels the extent of this epidemic of lifestyle related diseases.



Now, consider the health-related millennium developmental goals for 2015. Number 4- reduce child mortality, number 5-improve maternal health and number 6-combat HIV/AIDS, malaria and other diseases. If you notice, there's no mention of non-communicable diseases and this has raised an uproar from many sectors. This is from the chief executive of the World Health Federation. She said,

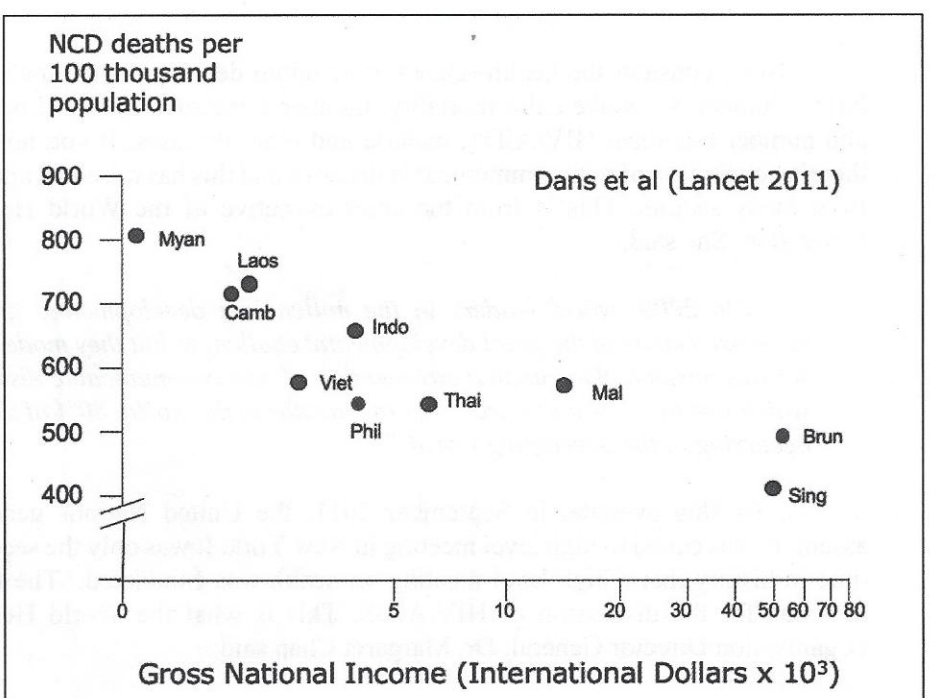
> *"In 2000, world leaders in the millennium developmental goals addressed many of the great developmental challenges but they made one serious mistake, they omitted any mention of non-communicable disease which together caused nearly 2 out of 3 deaths in the world, 80% of those occurring in the developing world."*

To fix this oversite, in September 2011, the United Nations general assembly was called to high level meeting in New York. It was only the second time in history that a high level meeting on health was conducted. The first one was for the discussion of HIV/AIDS. This is what the World Health Organization Director General, Dr. Margaret Chan said:

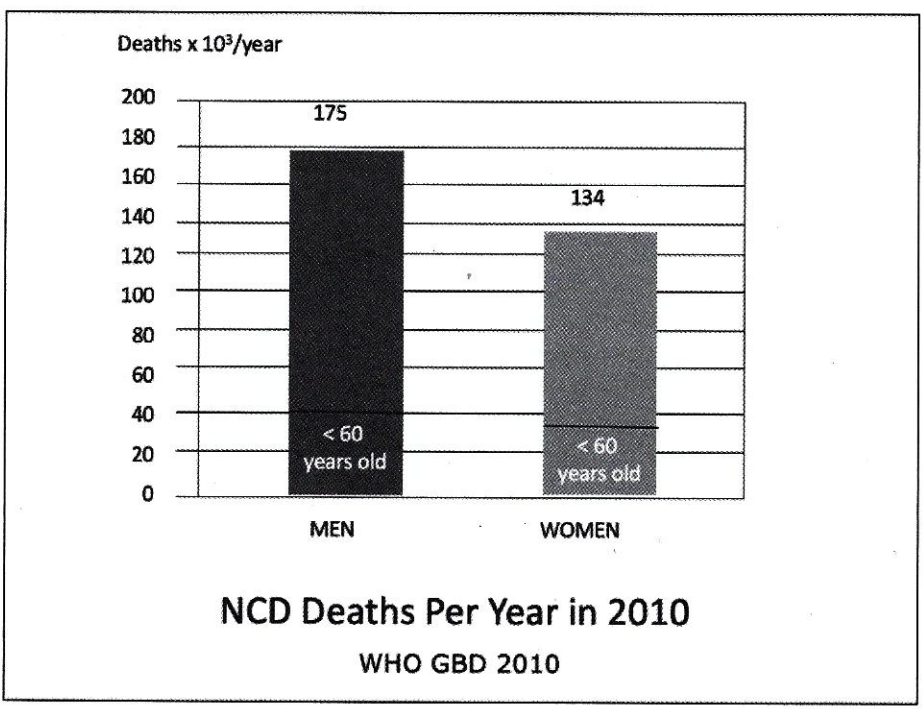
"The meeting must be a wake-up call for governments at the highest level, a watershed event that replaced ignorance and inertia with awareness and right actions."

So now the world has been alerted. The MDGs have been corrected and NCD is now addresses in the Sustainable Developmental Goals for 2030.

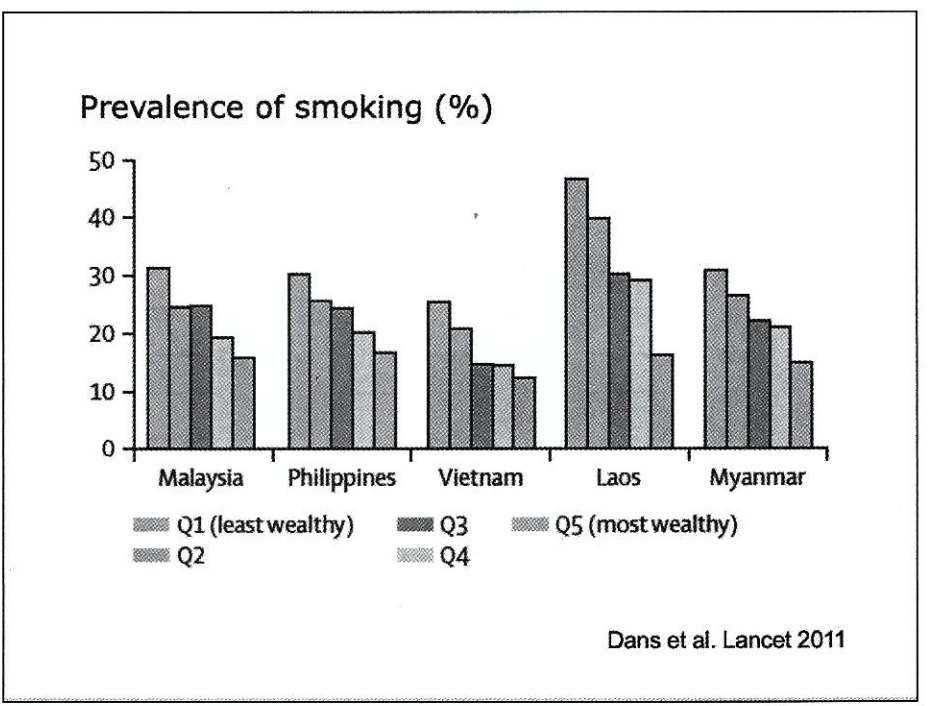
In the next part of my talk, I will be talking about three misconceptions on non-communicable disease that maybe led to the oversite and inaction. **The first misconception is that non-communicable diseases are diseases of the elderly.** We all have to get old and we all have to get sick, so there is not much we can do but accept it. I would like to belie this concept. This is the same graph I showed you with 300,000 deaths a year. About a third of these deaths occur in men and women in their productive years – at ages less than 60. This is a huge part of our active work force so this affectation leads to huge economic costs, many of which were summarized by Senator Cayetano several minutes ago.



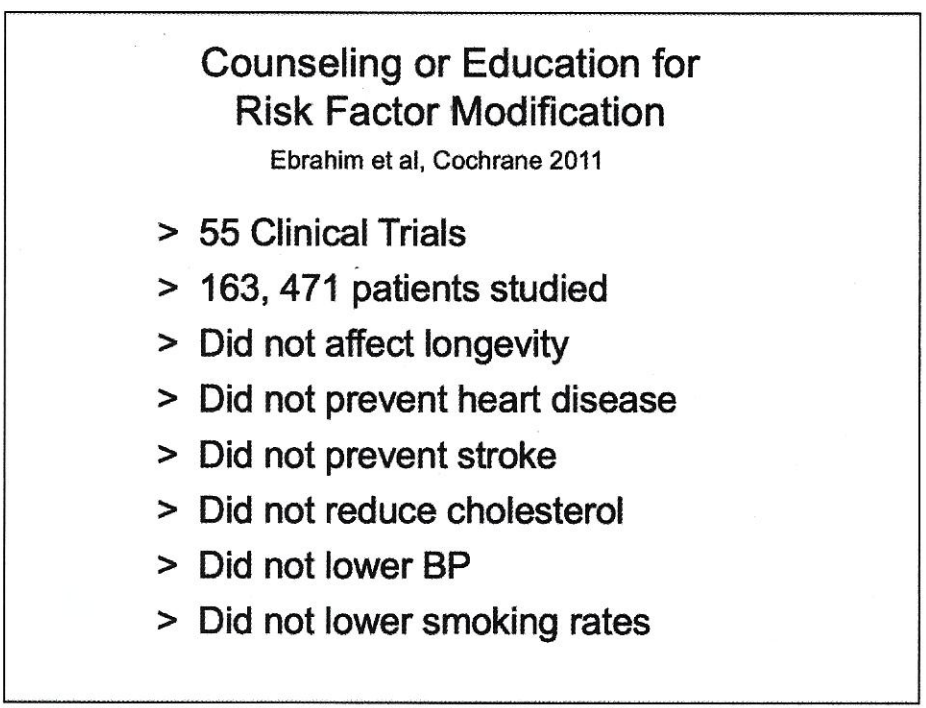
The second misconception is that NCDs are disease of affluence. Again, there is a lot of data showing that this is probably not true. We did a study in 2011 in Southeast Asia. In this graph, the x-axis shows you the gross national income of the 10 countries in the region. So you have the richest country on the right and the poorest on the left. The y-axis shows death for non-communicable disease per 100,000 population. The graph shows that the poorer the country, the greater the risk of death from non-communicable disease. In fact, the death rates in Myanmar and Laos are about twice the death rates in our richer neighbors Brunei and Singapore.



Within countries, we witnessed the same phenomena. This graph shows smoking rates. A friend of mine in Malaysia showed us an interesting graph illustrating that the richer you are, the less likely it is that you smoke. The smoking rate in the richest quintile in Malaysia was about half of the smoking rate in the poorest quintile. So we all decided to do the same thing for other countries of Southeast Asia, and we found this - the same phenomenon everywhere. The poorer you are, the more likely it is that you smoke, and the greater your risk of coronary disease, stroke and cancer. So NCD is **not** a disease affluence. It's a disease that mostly affects the poor and I will show you later why I think this might be happening.



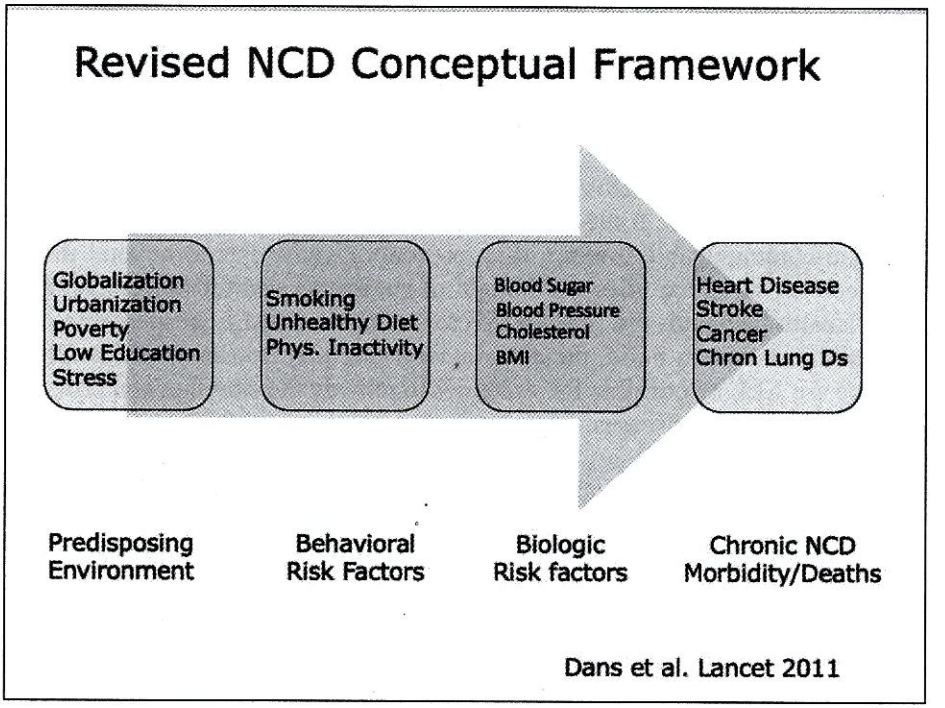
The third misconception is that lifestyle is a choice. Have you seen this famous picture of an Indonesian child who started smoking at a very young age? I'm not sure that at that age, you can call it a choice. Here's a landmark study, by a friend and colleague, Shah Ibrahim, from the UK. He did an analysis of 55 clinical trials on counseling for risk factor modification. If lifestyle were mainly a choice, then educating people should help them make the right choice. So he studied all these trials on counseling. These were not just ordinary counseling strategies. These were sessions with trained educators in a special facility, done regularly - yearly, monthly, or even weekly in some of the studies - with prepared educational materials such as brochures and videos. A total of 163,471 patients were studied and these were the findings. Counseling did not reduce their serum cholesterol levels and did not lower their blood pressure. Counseled patients did not smoke less. In terms of outcomes, counseling did not prevent heart disease, did not prevent stroke and did not affect longevity.



This study shows that there may be a problem with our theory that lifestyle is mainly a choice. Even our survey at the start of this talk shows that many of us know what we need to do but we just can't do it. I think one of the stronger proofs that education does not work is this – physicians. After studying medicine for 10 years, we still eat unhealthy. We do not exercise and many of us still smoke. It's sad but true. Even if we educate everyone for 10 years to a level of a medical education, we would still be encountering these lifestyle related problems. And so we need a new conceptual framework, based on a deeper understanding of lifestyle. Why don't we exercise? Maybe it's because there is no access to non-motorized transport. Can you think of biking or jogging in a street like this? Once of the few open spaces in Manila is in U.P. Diliman. If you try going there on a Sunday morning, you can hardly walk or jog because it is just packed with people who are seeking scarce open space. Of course another reason we do not exercise is because technology is changing and making us stay at home. The thinner our televisions get the fatter we become.

Now, what about unhealthy food? Well, it is hard to eat healthy food because healthy foods like salads, cost twice as much as the cheapest meal in burger machine. Also, our children are exposed early to advertisements on unhealthy food. Believe me, the mascots were not developed to entice you. These characters and the promotions for food were developed for your kids. And why do we smoke? Because smoking is a really cheap "hobby". In fact, we are one of the few countries in the world where one can buy cigarettes "tingi-tingi" (stick by stick). That is why even if we increase taxes, some continue to smoke because the price change per stick is very small compared to price change per pack of cigarettes. We also smoke because, despite the ban on cigarette advertisements, you can still see cigarette company logos in different stores. Have you seen the Marlboro line of clothes? I mean really, why would you buy clothes designed by Marlboro? These are tobacco advertisements in disguise. And then of course we are faced with a lot of role models in the public who smoke. That is one of the reasons why a lot of the youth smoke.

Even the beverages we drink throughout our life, they are affected by commercial forces. At birth, we have the milk companies lobbying for greater consumption. During childhood, it is the sugared beverages and during the adult life, alcohol. Later in adult life, it is still fluids – IV fluids. Someone has to make money out of everything we put in our bodies.


Revised NCD Conceptual Framework
Globalization
Urbanization
Poverty
Low Education
Stress
Smoking
Unhealthy Diet
Phys. Inactivity
Blood Sugar
Blood Pressure
Cholesterol
BMI
Heart Disease
Stroke
Cancer
Chron Lung Ds
Predisposing Environment
Behavioral Risk Factors
Biologic Risk factors
Chronic NCD Morbidity/Deaths
Dans et al. Lancet 2011

So under the new conceptual framework we propose that the cascade of lifestyle, biology and disease are preceded by a poorly recognized factor - the predisposing environment. These environmental influencers of lifestyle include globalization, urbanization, poverty, low education, stress, pre-existing legislation, infrastructure and many more. As I showed a while ago, the poor usually smoke more than the rich. There are also studies to show that in some sectors, the poor actually exercise less and eat unhealthier food. This leads to a higher incidence of non-communicable disease, for which they have no access to treatment. Mortality is therefore higher. For example, fatality from a heart attack is actually higher if you are poor. Wala ka ngang kita, dumami pa ang gastos mo. This pushes them deeper into poverty. We call this conceptual framework the NCD poverty loop. NCD affects all of us, no doubt, but as you can see, it especially affects the poor.

So this is an exciting concept because it changes our perspective on how to promote health. If the environment is the root culprit in the development of non-communicable disease, then prevention must extend beyond the health sector. One of the titles we thought of but abandoned for this convention was "Health Beyond the Health Sector". We are ALL responsible for the environment we build, the environment that predisposes to NCD. Therefore we are ALL responsible for strategies to remedy the situation and prevent non-communicable diseases.

May isa kaming suggestion, palitan na lang ang pangalan ng Department of Health at gawin na siyang Department of Disease. (We have a suggestion, let's just change the name of the Department of health to the Department of Disease). We are not trying to insult the DOH. We are just pointing out the fact that health really belongs to the Department of Science and Technology, Department of Public Works and Highways, Department of Education, all the other Departments, the House of Representatives, and the Senate - because these institutions build society and shape how people behave.

Now this table shows the new approach to prevention that emanates from this new conceptual framework. These are the main battles; tobacco control, alcohol, diet, exercise and environmental protection. These battles can be fought in three fronts; in school, in the workplace and in the community.

	SCHOOL	WORKPLACE	COMMUNITY
TOBACCO CONTROL	~~Education~~ Tobacco ban Ad bans Pic warnings	~~Education~~ Tobacco ban Ad bans Pic warnings	~~Education~~ Tobacco ban Ad bans Pic warnings Sin Tax*
HEALTHY DIET	~~Education~~ Food Options Food Bans	~~Education~~ Food Options Food Bans	~~Education~~ Labelling Price reduction Ad bans
REGULAR EXERCISE	~~Education~~ More P.E.	~~Education~~ Gym Facilities Stand Desks* Daily Exercise Competitions	~~Education~~ ~~Fun Run~~ Parks Sidewalks Bike Lanes

To address the problem of smoking, we could try teaching people about how this leads to non-communicable disease. As I showed earlier however, there's a lot of evidence showing that this will have very little impact. Therefore, we need to go through environment strategies such as a smoking ban in the community, add bans on mass media, or even picture warnings on cigarette packs. Maybe a further increase in sin taxes? We could do most of these things in the community, in the work place and in schools as well.

To promote a healthy diet, we can also try teaching - but people are not going to eat well just because you tell them it's good for them. One strategy might be to provide healthy options in cafeterias, but this won't work in schools. Kids will not spend their precious allowance on salads. A better option would be to ban unhealthy food, or restrict the size of sweetened beverages. In the work place it is a little different. A ban on unhealthy food won't work because employees can always go out for lunch. Healthy options in the cafeteria will probably work better. In the community, we should label food products clearly and properly. Government needs to think of ways to lower the price of healthy food relative to unhealthy food. Also an advertisement ban should be considered, as is done in other countries. Advertisements on food addressed to children should be prohibited because what the children eat should depend on what the parents think, not what media thinks.

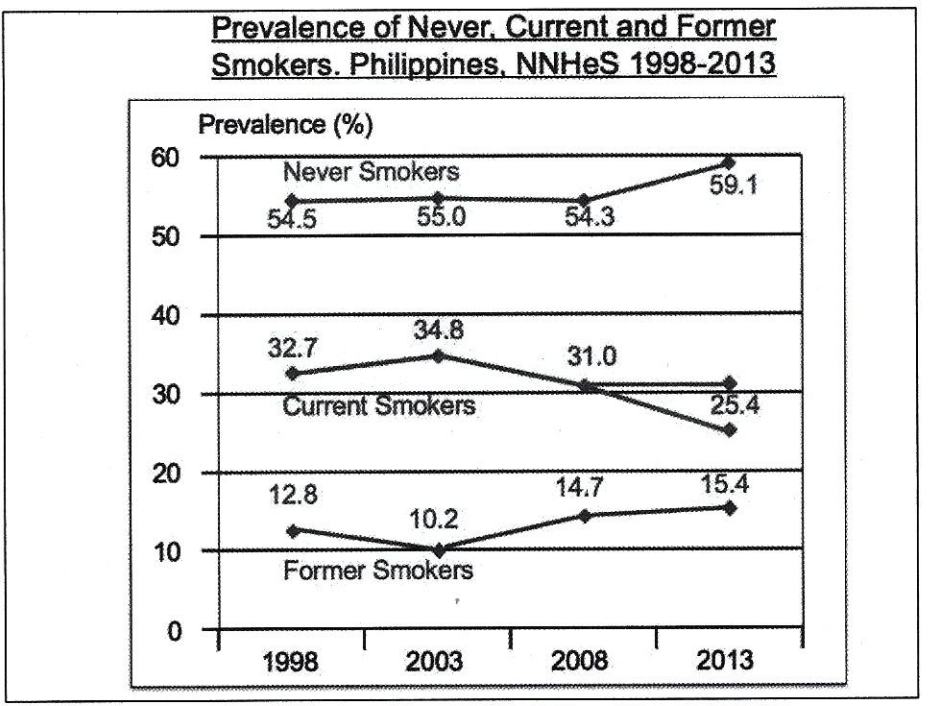
To address physical inactivity, schools should require more P.E. and provide more gym facilities. In the work place, businesses should consider the use of stand-up desks, plan daily exercise activities and even intramural sports activities. In the community, fun runs won't work. It only provides a venue to run for that day. People will have nowhere to run the rest of the year. What might work is the provision of adequate open space, parks, and access to non-motorized transport like sidewalks and bike lanes.

Let me show you that study on stand desks. This is a study on an potential strategy to promote health by reducing the amount of time we spend sitting down. The x-axis shows a timeline of 15 years of follow-up. The y-axis shows survival from 0 to 100%. Each line show the decline in survival through time, for each level of sitting time. If you hardly sit in a working day, that's zero percent, this is your survival curve. You have about a 93% chance that you'll still be alive in the next 15 years. If you sit 25% of the time, it's a bit lower, 90%. If you sit 50% of the time, it's about 87% and if you sit 75-100%, your survival goes down even lower. The more you sit, the shorter your lifespan,

which is why I'm standing and you're sitting. (Audience laughs). So furniture is now being redesigned so people can work standing up. These are called stand desks. These are measures to control NCD that emanate from non-medical professionals.

Just to summarize, I would like to say non-communicable disease control in very difficult compared to infectious disease control. Why do I say that? Because in non-communicable disease, any of the interventions we plan will be opposed by existing establishments, the food industry, tobacco industry, beverage industry, and the alcohol industry. Eh yoong mga insects, wala naman silang samahan para sa karapatan ng lamok sa Pilipinas. (Insects don't have a coalition to protect the rights of mosquitos). Sa tuberculosis, wala naman samahan ang mga *Tubercle bacilli* to defend their rights. (In tuberculosis, there is no coalition to protect the rights of tubercle bacilli). So when we talk of non-communicable disease control, it is difficult because we have institutions opposing it. No one will ever oppose effective dengue control or tuberculosis control.

To end, I'll show you one great example of an environmental strategy that worked - the sin tax bill which was passed in 2012. This is a study on the prevalence of smoking. Current smokers have comprised 30% of the adult population and this has hardly changed in the past 20 years. Former smokers comprise 15% and never smokers have always been 55%. If you add any of these in any year, it is always 100% because one is either a current smoker, a never smoker or a former smoker.



The Sin Tax law was not passed by the health sector, it was not passed by doctors, it was passed by the senate and congress. This is what happened after that. Current smokers, went down by 6% - a drop representing 3 million less Filipino smokers in that year. This is something we could never do with simple educational strategies. In that year, in our estimate, 32,000 deaths from non-communicable disease were prevented. No doctor, nurse or midwife can render education that can make that many smokers stop or save that many lives. Note that there was no increase in former smokers. What happened was, the never smokers increased. This means that higher tax prevents you from starting smoking, but if you are already smoking, you're still going to smoke anyway.

We also saw that the major drops in smoking, were in the very young and very old. The decline was also highest in the poorest quintiles, and rural communities, so price sensitive populations benefited the most.

In summary, I've talked about NCD-a silent disaster that kills 300,000 Filipinos a year. I talked about three common misconceptions - that NCD only affects the young, that it is a disease of affluence, and that lifestyle is a choice. I then showed a new conceptual framework which brings to light the role of society at large rather, with a new approach to prevention that goes beyond education. I'm going to end with a quotation from a famous philosopher.

> *"Choice is an illusion. It's created between those with power and those without. This is the nature of the universe; we struggle against it, we fight to deny it, but it is of course pretend. It is a lie. Beneath our poised appearance, the truth is we are completely out of control. Causality. There is no escaping it. We are forever slaves to it."*

This may be an extreme view but it explains our findings in the failure of education. The philosopher who said this, I wonder if you recognized, this was Merovingian to Neo in The Matrix Reloaded of 2003. Albert Einstein said the same thing.

> *"I do not at all believe in human freedom in the philosophical sense. Everybody acts not only under external compulsion but also in accordance with inner necessity."*

With all these in mind, I am going to end with the fourth misconception - that non-communicable diseases are diseases of individuals. As we have shown, they are NOT. The way we build our environment has an effect on us from the time we are born. Therefore NCD is not a disease of individuals, it's a disease of society, and only societal reform can successfully prevent it. What kind of societal reform are we talking about? A society with a healthy environment, conducive to a healthy lifestyle. A society where we do not have to struggle because a healthy lifestyle becomes the default behavior.