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My testimony has two main components:

I. **The text (below) that accompanies the attached Powerpoint presentation.**
And
II. ***Broadening the focus*, a paper published in the American Journal of Preventive Medicine 2011**

Is poverty a death sentence? What does science tell us? (numbers below refer to the slides in the accompanying Powerpoint file)

1. I'm going to discuss what current scientific knowledge tells us about poverty & health. A large body of knowledge has accumulated in the past 15 to 20 years that makes it very different to consider this issue today than previously.

2. I'm going to show you a series of slides using national data illustrating how poverty and health are related. In each slide, as you look from left to right, income increases. On the far left are the poor –those under the Federal Poverty Line (FPL). On the far right are those with incomes at least 4 times the FPL, who make up around 40% of the US population. This slide shows how the number of additional years of life one can expect to live at age 25 increases as income increases. The poor live around 7 years less than the group with incomes at least 4 times the FPL .

3. This slide shows how ill health among children varies by income. Ill health among children goes down stepwise as income increases. We looked at scores of indicators and all age groups and found this pattern with most health conditions among whites and blacks. In biological science, this pattern –suggesting a "dose-response" relationship -- adds to a wealth of other evidence indicating that income –or factors tightly associated with it— actually causes the ill health and shortened life.

4. Poor adults are more than 4 times as likely to have ill health as affluent adults.

5. Here is the same health measure, but looking separately at different racial/ethnic groups. The stepwise pattern, with dramatically worse health among the poor, is at least as striking WITHIN each racial/ethnic group as when you look overall. This illustrates that the differences in health by income cannot be explained by race or ethnic group. At a given income level, the racial/ethnic differences are modest. And other research has shown that most racial/ethnic differences in health disappear or are greatly reduced after considering income.

6. What could explain these patterns? Here are some examples of how poverty affects health, for which there is plentiful evidence. Income can influence who gets timely medical care, but that is probably not the largest piece of the puzzle. Your income determines the kind of housing you can buy or rent, which can determine whether your kids are exposed to lead, asbestos, dust, mites and mold, all of which have serious harmful health effects. A healthy diet costs more than an unhealthy diet. Regular physical activity is a lot easier if you can afford to belong to a gym or live in a neighborhood where it's safe to exercise. Many poor neighborhoods are food deserts, without any stores selling fresh, healthy food. And low income is stressful -- the challenge of trying to cope with daily challenges without adequate resources. [I'll return to this point]

   Parents' income can shape the next generation's education & income, by determining who can afford to buy or rent in neighborhoods with good schools, or pay for private schools. School quality affects children's ultimate educational attainment. And education determines the kind of job people can get, which in turn drives income. [And you see the vicious cycle]

7. I mentioned that our income shapes our options for where to live. Studies show how neighborhood conditions can shape health – this slide lists some of those ways, including stress.

8. I've mentioned stress. How does stress get into our bodies? Recent advances in science show multiple ways in which chronic stress can affect health. This illustrates just one – by causing one part of the brain to send a signal to another part of the brain which then signals our adrenal glands to pump out a hormone called cortisol. Acute stress is not necessarily harmful. But chronic stress is linked with damage to multiple organs and systems in the body, resulting in chronic disease, premature aging, and premature death. Chronic stress in childhood appears to be an important factor in who develops heart disease & other chronic disease in adulthood.

9. Who has the most stress? Some stress is inescapable regardless of income. But higher income means more resources to cope with challenges. This slide shows you what % of pregnant women in California experienced divorce or separation, according to income. We found a similar pattern looking at 10 other major stressors. Other studies have found the same patterns.

10. In summary:
    a. Compelling scientific evidence shows that poverty –particularly chronic poverty in childhood--is a major cause of disease and premature death, and of racial disparities in health.
    b. Recent advances in science help explain how poverty damages health, through, e.g.:
        i. Exposure to harzardous environments
        ii. Parent's income limiting their children's educational attainment which then limits the latter's job options & hence income in adulthood
        iii. Chronic stress

And finally, I would like to add, that although there is much we still do not know, we know enough about what works to act now. All we need is the political will. I'm hoping you will create that.