The Slippery Slope of Life - A Guide to Improving Population Health

Gray Ellrodt:

About 10 years ago, my colleague and friend, Rick Glazer, and I were celebrating what appeared to be a significant decrease in cardiovascular mortality in Berkshire County in Western Massachusetts. We attributed that to a number of programs with which we had engaged through the American Heart Association including Get With The Guidelines. But as we celebrated, Rick brought forward a paper called County Health Rankings from the Robert Wood Johnson Foundation from the University of Wisconsin.

Gray Ellrodt:

And as he brought forward that website and that paper, we realized that although we felt we were really doing well in terms of caring for our community in Western Massachusetts, there was a different message from County Health Rankings, that indeed we had a long way to go, and that our focus on hospital care and acute care was necessary but really not sufficient to improve the health of our community.

Gray Ellrodt:

What we learned from County Health Rankings, and have subsequently tried to apply to our community in a broad based way, was that we needed to think far more broadly than healthcare itself in terms of improving health. And what we needed to do is begin to think about things like social and economic factors, the social determinants of health.

Gray Ellrodt:

What we learned from that paper was that outcomes, both in terms of quality of life and duration of life, were driven in large part by socioeconomic factors and the behaviors associated with those. The 70% of the outcomes could be predicted by the social determinants of health and the behaviors associated with that.

Gray Ellrodt:

To our chagrin, clinical care appeared to be associated with only about a 20% change in the outcomes for a community. And the final determinant, if you will, was the physical environment, and the focus within that environmental assessment on safe walking paths and things like that in addition to air pollution. This was sobering to say the least.

Gray Ellrodt:

As we determined how we were going to mobilize our community and our resources, we came upon a paper by Pain and colleagues which described the acute care set in the acute care setting, something called the slippery slope. We felt, as we looked at that paper, that we could apply this far more broadly across the entire population, across all ages, and we could incorporate the teachings of the slippery slope in terms of a framework that included primordial prevention, primary prevention, secondary prevention, and end of life care.

Gray Ellrodt:

What we also knew was that we needed to develop a significant infrastructure if we were going to take on the challenge of really improving the health of our entire community, not the health within the four walls of our infrastructure, that is our clinical infrastructure. So what we did was we began to explore

what do we need? We felt that we needed an integrated electronic medical record. We were a community with one health provider, that became easier over time. We did believe that predictive analytics might hold some promise when appropriately applied to our community.

Gray Ellrodt:

We also determined that ACE, adverse childhood events, may be a very powerful predictor of events, and that began to turn our attention towards the children of our community and being sure that we acted early on in the development of our children and tried to prevent, if you will, adverse childhood events and tried to give our kids a step up, if you will, in terms of education and other disadvantages that our community they were facing.

Gray Ellrodt:

We also needed to develop a robust primary care network. And everybody I think in the United States is challenged by this particular piece. We invested heavily in primary care. We invested heavily in collaboration with other primary care providers. We also invested heavily in virtual health. We are a rural community after all, and reaching out to some of our community members was pretty much impossible in terms of determining that they needed to come to us rather than we needed to come to them. So, this was the infrastructure we developed over time.

Gray Ellrodt:

What we also realized was that the slippery slope of life, which is here in the red line, began actually before birth. We really realized through our experience with substance use disorder and mothers, that kids, early on before even birth, were being adversely impacted in terms of the quality of life and perhaps the duration of life that they could expect.

Gray Ellrodt:

The curve that you see before you is the average, if you will, in terms of life in the United States. It's a red line that decreases over time, with quality on the vertical axis and quantity of life on the horizontal axis, and again, that disadvantage at birth. We felt that with primordial prevention, with wellness and a robust program in that way focused on young people, but available to all, focused upon exercise, diet, resiliency, et cetera, we felt that we could optimize the health of our community.

Gray Ellrodt:

We had some very interesting work from Stanford that suggested, in this green line, that you could idealize, if you will, wellness and health and the compression of morbidity by practicing wellness throughout your life. So, the green dotted line represents the ideal. And if you talk to people and say, "How would you like to live your life?" Many would say, "I'd like to go along with high quality for as long as I possibly can, and then just end it."

Gray Ellrodt:

I personally had an experience with this, not an ending my life fortunately, where I was running the New York marathon, well, I was staggering the New York marathon, let's be clear, and ahead of me, I heard this grunting sound and I saw this older gentleman staggering along. So, finally, I was going to get to pass one person in the New York marathon.

Gray Ellrodt:

As I went by him, I saw that he was probably in his eighties, that he was indeed struggling, but I had passed one person. About 20 minutes later, I heard the same sounds ahead of me and came up alongside the same person. How could this possibly be? This happened one more time. Finally, I realized that what was happening was I was stopping for water. He was stopping for nothing. So, I asked him, "Sir, how do you do this?" And he said to me, grumbled to me, "Keep running or you die, sunny." That was it.

Gray Ellrodt:

He became my idol. It turns out I followed him because he was a famous marathoner. He continued to marathon until he was in his nineties, and actually died training in his 94th year. I decided he was my role model. I think a lot of people would agree that that idealized curve, if you will, that compression morbidity, is something we could all aspire to.

Gray Ellrodt:

Well, let's talk about what's a reality for many people in the United States. What we do have is the ability to prevent disease, we know that we can be aggressive about it. Primary prevention works, but as the yellow line shows you, primary prevention probably never gets us back to that idealized line. Also in this graph that you see, the width of each arrow represents how much we need to invest to reach ideal.

Gray Ellrodt:

In this case, it's a little bit more expensive to invest in primary prevention to get you close to the ideal, and less expensive to use primordial prevention. As we move forward in life, and unfortunately have too many acute events, the orange arrow shows that you can again return people towards that normalized or idealized setting, but you can never quite get there anymore.

Gray Ellrodt:

And then finally, with these people with secondary prevention, with disease management et cetera, after a stroke, after a heart attack, with heart failure, with other diseases, you can certainly ameliorate the morbidities and you could probably prolong life depending upon the condition. But you're never going to get back again to the idealized form.

Gray Ellrodt:

Finally, as we talk about the slippery slope of life, we really need to think about end of life and palliative care. And we know, at least from the cancer literature, that for stage four lung cancer patients, palliative care, when applied at the time of diagnosis of stage four lung cancer in addition to usual care, results in longer life, higher quality of life. So, we have here an intervention that even at the end of life can improve both quality and duration.

Gray Ellrodt:

If you think about what all this means in terms of the integration of both quality and duration of life, we really can express that by quality adjusted life years. And that is something that's a state-of-the-art in terms of epidemiologic research, but has not necessarily reached the mainstream of healthcare. I think it's something we should be thinking about more. I think we have done a pretty good job of measuring mortality, et cetera, but we have not necessarily done a great job in the routine world of measuring quality of life. I think we could do a better job of that because, after all, that's what our patients, that's what our community really want.

Gray Ellrodt:

Now, there's another piece to all this. I said the red line was average, but there's another part which is those patients who have the most adverse socioeconomic status. And these people's curve, if you will, is far to the left and far below the average or the red curve. And this group, represented by health inequities, is a major driver at this point in terms of what's going on in the United States.

Gray Ellrodt:

We know, over the past several years, that the duration of life longevity in the United States has actually plateaued and decreased. We know that's true in cardiovascular disease, but that's true for a far broader spectrum of disease. Some of the hypotheses on that include a profound impact of diseases of despair. Diseases of despair, as many of you know, are basically opioid use disorder, alcohol use disorder and suicide.

Gray Ellrodt:

And what's happened in the past three to five years is that the number of people committing suicide, the number of people adversely impacted by substance use disorder has dramatically increased in the white population and other populations. And the result has been actually a diminution in longevity of life throughout the United States.

Gray Ellrodt:

So, in summary, I think the slippery slope of life is a way to express for a community what we need to do to improve that community's health. It's not enough, but is clearly necessary to have a state-of-the-art health system. But unless that health system is engaged in the community and working on the social determinants of health, it is not going to optimize that community's wellbeing.

Gray Ellrodt:

Among the things that need to happen and among the things we're working on right now, and many communities are, is obviously food security, obviously housing and, perhaps most importantly, meaningful jobs because when you look at the disease of despair and you look at what's driving that, in part, it's a loss of hope. And that loss of hope is linked significantly to the thought that I can't possibly have a job, I can't be productive, I can't support a family. And that results in, for all too many people, a turn, if you will, to opioids and other substances.

Gray Ellrodt:

So, we need, in my mind, to organize a community, no healthcare system can do it themselves. They need to mobilize that community around the slippery slope. The reason we developed this is we felt people could understand the slippery slope, you didn't have to be a healthcare provider to do so. You'd go out in the community to community groups of various types and you could present this, and it was understandable to them. And we think this is a call to action.

Gray Ellrodt:

As we ask all of you to engage around this particular approach, we want to remind you of the empty boxes at the top of the slide. Those boxes are meant to be filled in by all of you with resources that are available in your community, both within your healthcare system and outside your healthcare system.

You'll find incredibly rich resources from the American Heart Association, American Cancer Society, and other large organizations.

Gray Ellrodt:

What you'll also find, however, is grassroots efforts within communities that are highly effective and that can be leveraged as partners with you in terms of an organized approach to all the issues, or many of the issues, within your community, issues around substance use disorder, cardiovascular disease, homelessness, food insecurity and other challenges every community faces. We ask you to fill that in, use it all as you wish. This is in the public domain.

Christopher B. Granger:

Great. That was amazing. And it's really a call to action for all of us who are healthcare providers or people involved in public health to engage with our communities and think about the opportunities outside seeing a patient in our clinic or in the hospital. And I think you make a compelling case that our biggest opportunities are outside of those settings. And Eldrin kick us off.

Eldrin Foster Lewis:

Yes, well, first of all, I was very impressed, not only by your understanding of all of these issues, but how to apply it to actually improve overall health. I specialize in quality of life research. I was very excited that you looked at quality of life on the y-axis and longevity on the X axis. In reality, we want perfect health and we have to start with primordial prevention.

Eldrin Foster Lewis:

I think one of the tricky parts is this concept of preservation of quality. And so, if you have a person who is now born, they're healthy, they're at risk, how do we encourage them to basically do everything they can, life simple sevens, to prevent the primary diseases and then to prevent secondary diseases so they can maximize their quality of life.

Eldrin Foster Lewis:

I think of it as very similar to investing. No one ever thinks you for saving money if they want you to increase their, their retirement. So, no one never ever thanks you for preventing their quality of life from deteriorating. But we know that diseases can actually lead to that. Have you thought about those things?

Gray Ellrodt:

I've struggled with those thoughts, as a matter of fact. I think the challenge is exactly what you've laid out, which is how do you move your primordial prevention and your interventions way, way upstream. We talked in the slides about even with good prenatal care, and then beginning with early childhood.

Gray Ellrodt:

We've developed some programs like many communities have. We have something called Operation Better Start, which starts with teenagers and even earlier who may be at risk for being overweight or are already overweight. But I think it starts in the home and starts in the schools. And this is where I fear that the social determinants really have their most profound impact, which is scary when you say you're starting off with such a huge disadvantage by the time you're five years old or eight years old.

Gray Ellrodt:

So, I think the challenge for all of us is how do you move this forward? I would say that a universal pre-K, moving into the schools early on, having programs that are in the schools, deeply integrated the schools. A simple thing like you should be exercising five times a week in the schools. And we find that some battle sometimes, which is like, "Really?"

Gray Ellrodt:

Some people get totally hung up on what we've got to prepare for tests. And I'm saying, "Well you need to fair for the ultimate test, which is how healthy are you going to live?" So, this is something I think all communities are struggling with and I think it's a particularly profound impact when we talk about the underprivileged kids and the families who don't really have the resources to help these kids.

Christopher B. Granger:

And Eldrin, thanks for bringing up life's simple seven. I do think it's a good construct, Emelia. What's your perspective on how do we get the messaging out in a...

Emelia J. Benjamin:

One of the things I love about life's simple seven is it's not fancy, I mean you just have to remember basic risk factors and it's something that people can relate to. There's an online tool, and pretty much every endpoint that you look at, if you take on life simple seven and you have a healthy lifestyle, eat well, physical activity, don't smoke, control your blood pressure, et cetera, all the end points are better, whether you're interested in sudden death, atrial fibrillation, quality of life, longevity, et cetera. It's a pretty remarkably powerful tool.

Deepak L. Bhatt:

It is. It turns out that the simple stuff's not always so simple, to implement though is the challenge. Even when we're successful, or at least we convinced ourselves as a medical community or a public health community we've been successful, other stuff crops up like the vaping. It's just amazing to me how we're celebrating tobacco smoking rates going down. That's true in most regions of the country, but then, boom, all of a sudden, this vaping epidemic, and it's particularly problematic among the young.

Emelia J. Benjamin:

Yeah, we finally got down to 5% of kids smoking and there's 24% are using e-cigarettes. Probably, I'd be interested in hearing from you. Is that something you're observing in your community?

Norma M. Keller:

Yeah, we're seeing it as well and I think these are all great ideas but you have to get it to the kids and their parents. And so, utilizing as many community engagement opportunities as possible is really important to do that, particularly going to schools, engaging moms because they'll take their kids to the pediatrician or the GYN. So, partnering with other health professionals to try to get that message across.

Norma M. Keller:

And when you look also at the communities, there's often a lot of stuff going on that you don't know about in terms of trying to do something for health literacy, et cetera. And Gray, I was wondering, is there any resource out there where we could really take the most out of all of these organizations that

are out there and operationalize and maybe join forces so that we can even make the message even more powerful and more actionable?

Gray Ellrodt:

Well, I think you've hit upon a key issue, which is just knowing what resources are available in our communities. What we found, taking one step back, is we had some very, very accomplished social workers who we were assigning, if you will, and community health workers, to try to mobilize the community. And what they had was, in one pocket, they had a whole list of food pantries, in another pocket, they had a whole list of homeless shelters. And in their brain, if they were very, very experienced, they had about 30 other things that no one else knew by the way.

Gray Ellrodt:

And what you realize was this was really a fundamental challenge, that the families, and sometimes the patients, didn't know what resources were available to them right around the corner. So, we have begun to partner with a not-for-profit called Aunt Bertha. It's just one of many possible organizations. It's a website that anybody can use. If you put in your zip code, just our zip code and our small community, we have over 1100 resources just pop right up. They're organized very, very succinctly.

Gray Ellrodt:

So, it's food, it's transportation, it's shelter, it just goes on. And all you do is click and you'll see a list. So, if you're looking for food, you're food insecure, you want to know where can I get some food tonight near me so I can get to it, you'll just click and say, ah, within one mile, because there's all GPS oriented, within one mile, is the Methodist Church down on South Street.

Gray Ellrodt:

"Perfect. I'm going to go there. Well, let me just make sure." And you click and up pops, "We're open from five to eight tonight. We have this, this and this available to you. And by the way, we have snap services, we have all the services available to you," because often what you find is that these community resources then partner with others. And when you go there you can get help with all kinds of things that you'd never even thought of. So that's just one resource.

Gray Ellrodt:

I know Boston University has another approach, I think, I'm not sure it's Aunt Bertha, but they've put together, in a very organized fashion, these resources. And I would say the number one piece is, not just having these resources available to social workers and community health workers, but having it so easy that anyone, the families can use it.

Gray Ellrodt:

We're partnering with one of our local colleges, Williams College and saying, "Okay, what we want you to do is two things. Number one, we want you to go out and canvas the community, and find all of these different community resources. That's job number one, and you have time to do that. Job number two is we want you to help people in the churches and things like that know how to navigate to Aunt Bertha.Now, it's really easy to get there. And almost everybody has smartphones, but not everybody knows how to navigate. You can teach them, that's right up their alley."

Gray Ellrodt:

So, that's the kind of thing that I think is essential for communities because you just have no idea what great resources are already available in every community around the country. And without knowing that, you're really not serving your community the way it might be.

Norma M. Keller:

It could maybe also help optimize those resources, like food delivery systems and soup kitchens, and make sure that they're serving healthy food, heart-healthy food.

Christopher B. Granger:

Gray, it strikes me how well aligned this is with the AHA 2019 Presidential Advisory. Now, that focused on cardiovascular risk factors and prevention of cardiovascular disease and outcomes. But it was very much aligned with what you're suggesting, looking at a lifetime of prevention and applying most effective therapies at the levels of communities in a complex healthcare system that doesn't necessarily incentivize a modification of risk factors and prevention.

Gray Ellrodt:

Right. And I think that was the whole purpose of the slippery slope, is to begin to say, "Where are all the points along here where we might optimize care?" And care is very, very broadly defined.

Christopher B. Granger:

Emelia, you get the last word.

Emelia J. Benjamin:

Well, I actually wanted to ask you a question, which is we're talking to a lot of clinicians and now reading about clinician burnout, how do you engage clinicians to understand that we all have a piece of this? This is something that all of us should care about.

Gray Ellrodt:

Nice, easy question, but so fundamental. I'll speak for some of our clinicians that I think part of their sense of burnout is that they feel they're doing a large number of things that are not of benefit to their patients, whether it's an EMR that is sub-optimized, whether it's trying to deal with a family with very, very complex needs where they're immediately overwhelmed with a 15 minute visit they know they can't possibly even begin.

Gray Ellrodt:

So, I think one of the things is to get clinicians back to their roots. I know this sounds simplistic, but what we've tried to do, what others have tried to do is, for example, in primary care practices, to embed behavioral health, to embed community health workers. So, the physician is the old classic captain of the ship and says, "I know that's a problem. I can deal with this URI that you have, and for all these other things, I would like you to go right down the hall now and see this very, very sophisticated social worker. And by the way, we're going to link you with the community health worker who's going to come to you and help you out in your home."

Gray Ellrodt:

But I think the idea of the physician is the team and is responsible for fixing everything while spending half or two thirds of the visit trying to enter data, I think that's bound to fail and bound to burnout our providers. That's providers broadly defined, by the way, our APPs, everyone in the office. I think if you don't have an effective team which understands the social determinants and all these complexities, I think burnout is going to become even more epidemic than it is, and it's obviously a national problem right now.

Christopher B. Granger:

Well, thanks again, Gray, and to our panel for a great discussion on an incredibly important topic of how can we engage in some of these maybe most important determinants of our health course in a more comprehensive way in our communities? And thanks for our audience.