**“Asthma Community Network—Conversations for Advancing Action” Podcast Series**

**Episode 13 — Getting Ahead of Asthma: How States are Implementing Primary Prevention to Reduce the Onset of Asthma**

**Full Transcript**

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(Prompts Summarized in Italics)

***What is primary prevention?***

Ted Schettler: Primary prevention is a public health term. The concept of disease prevention is frequently divided into activities that address primary, secondary, or tertiary disease prevention, and primary prevention is really an upstream approach where the goal is to prevent the onset of asthma in people who do not have the disease by reducing risk factors. Eliminating or reducing exposures, or behaviors, that are related to disease onset. That is distinct from secondary prevention which refers to activities that are intended to detect and treat preclinical changes that are already underway that might entail efforts that try to eliminate or lessen progression of the disease process. And then, finally, tertiary prevention refers to measures that reduce the impact of an illness and help with management. We have learned, actually, quite a lot about risk factors associated with asthma onset and proposed that addressing them is likely to reduce asthma onset even in people who may be at higher risk. So, we would like to think about ways to primarily prevent the onset of the disease.

***Why is primary prevention important? What are the health, economic, and social benefits of primary prevention?***

Polly Hoppin: Well, there are many. The health benefits of primary prevention really mean freedom from living with a difficult chronic disease, and living with asthma is challenging, as we all know. Controlling it requires careful control of triggers, which are many, and which vary depending on the individual. Triggers like mold, and dust mites, or irritants, like air fresheners, workplace chemicals, tobacco smoke, outdoor air pollution—and people with asthma need to be aware of their triggers and control their exposure. There is [sic] also pharmaceuticals involved. Usually people with persistent asthma need medications to help keep it under control. But, at best, eliminating exposure to asthma triggers and handling your medication right requires constant vigilance. That is often particularly difficult for vulnerable populations like children, or the elderly, or low-income people who are often juggling two or three jobs or may not have access to resources that would allow them to improve their home environment, for example, there are often a source of a number of triggers for an individual with asthma. Yet, vigilance is often not enough. Even if you can maintain that vigilance, there are triggers in school, there are triggers at work, there are community environments that are often beyond the individual’s control. And then, people with asthma need access to quality asthma care as well, and though clinicians are increasingly knowledgeable about the value of asthma education, the time that they have to provide it in an office visit is quite limited. Many practices don’t provide patients with access to Asthma Educators who can really spend the time that is needed to have them fully understand how to manage their disease and how important the vigilance, that I just talked about, is.

So, there are a number of places, and Boston is one, where integrated clinical and community programs have resulted in really dramatic reductions in rates of hospitalization and emergency room [visits], and really have begun to bring asthma under control, for a number of people. These are really promising programs but they do tend to only be available to people with asthma who are living in a handful of major cities where these kinds of resources have been brought to bear. To sum up, the number of exposures that can trigger asthma, and also the need for individual and also community resources to support people with asthma, make it unrealistic to expect that everyone who has asthma will live active and healthy lives without complications, even though that is a really important aspirational goal. One statistic to back that up is that for the years 2006 to 2010 in Massachusetts, 73.8 percent of adults reported that they did not have well-controlled asthma. Sixty-six percent of children in Massachusetts were classified as not having well- or having very poorly controlled asthma. So those are pretty high numbers even in a state where there has really been a relatively large investment in supporting people with asthma.

When your asthma is not well-controlled it means frequent episodes of wheezing and difficulty breathing, limitations in activity, trips to the hospital or ER, difficulty sleeping, missed school or work days, and even just living with anxiety about a potential asthma attack and having to adjust your daily activities because of that. And families with more than one child with asthma—which is often the case because asthma sometimes runs in families—they suffer that much more of a burden. So, primary prevention spares everyone from all of that. It spares individuals, spares communities, and spares populations from the day-to-day and long-term health impacts of having asthma. That is the health side of things.

And then, on the economic side, asthma is costly and, as you all know, there has been a wide range of estimates of the total number of dollars that asthma costs to society, but for people with asthma and their families there is copays for medication and Urgent Care visits, and hospitalizations, and emergency room visits, and sometimes even those copays require resources that people don’t have. Adults with asthma or parents of kids with asthma may miss work and that will result, obviously, in directly lost wages in certain types of jobs and vulnerability to losing their jobs if they miss too many days or if their job performance suffers. At the more societal level the missed school days for children and the missed work days for families translate into lower productivity. There is the indirect costs [sic] like that as well as the direct costs. Really, quite substantial costs of asthma over the course of a lifetime and then at the population level as well.

There is also economic benefits of asthma, certainly to pharmaceutical companies and medical device manufacturers and health care institutions. That raises really an ethical component of the cost issue, as well as I see it, which is that those who bear the health burden of asthma bear a financial burden as well but they are not the ones who benefit financially from the existence of their chronic disease. If you can succeed in preventing asthma, either in the individual, or at the community level, or at a larger population, asthma, if you can keep it from developing in the first place then you are eliminating those costs. In cases where people might have more than one chronic disease—it’s these people with comorbidities that are the most costly to the health care system—then preventing asthma would have particularly significant economic benefits in that context.

That is the cost of having asthma and therefore the cost savings of primary prevention. But what about the cost of actually undertaking primary prevention activities? These really haven’t been systematically calculated but we expect that the cost of preventing asthma may be relatively low and that is because the risk factors and the populations that are affected by those risk factors, many of the interventions that are envisioned in the primary prevention Road Map or plan that we will talk about in a few minutes, may have co-benefits. Therefore, there may be quite an efficient expenditure of funds. For example, the populations that are at the highest risk for developing asthma are those that already have asthma in the family and also who are disproportionately exposed to environmental triggers. Those environmental triggers that need to be reduced to prevent an asthma attack in a family where there is someone who already has asthma, those are the same exposures that are risk factors for developing asthma. Where you’ve got a family with a child, for example, who already has asthma, and they might be receiving a program that reduces the triggers that exacerbate their asthma, having the information that, that trigger reduction may help prevent a second child from getting asthma—and also adding some other information as part of that exchange—that comes at a relatively low, incremental cost. This is the concept of co-benefits from investments.

Just to take that example a little farther, the research literature shows that a combination of nutrition education and education about environmental triggers in the home can reduce new cases of asthma by quite an amazing percentage. Ted may talk a bit more about this but, somewhere between 28 and 52 (I think it is) percent of new cases of asthma can be reduced by that combination of interventions. In a family where a genetic predisposition might put at child at high risk of developing asthma, a program to provide home visits with asthma education that would help them understand how to reduce their triggers, and also information about healthy prenatal and early childhood nutrition, those programs will actually benefit the child in the home who already has asthma.

For another example, a program that is already working with people who are overweight or obese (a risk factor for the development of asthma), with the objective being to help them control that health problem, you could easily incorporate information about asthma triggers or stress air pollution, [or] other risk factors for the development of asthma. This actually may help that person who is at high risk prevent the onset of asthma. Just another example of a fairly cost efficient, at least intuitively, approach. One more obvious example is that a decision to make a public housing project go smoke-free has the potential not only to prevent some cases of asthma from ever developing but also to prevent some cancers and heart disease. Or a decision to retrofit diesel busses so that you can reduce air pollution certainly has cost, but in a cost-benefit analysis, those costs are spread across multiple benefits including prevention of cancer, heart disease, asthma attacks for people who already have asthma, and also maybe asthma onset.

The science, we think now, is strong enough to add the prevention of asthma to the benefit side of the cost-benefit assessment in the cases of these diesel exposures as an example. That is not to say that there won’t be any costs to implementing some of these primary prevention recommendations, but because of the overlap between exposures—vulnerable populations—there really might be a way to do it by largely piggy-backing on existing resources or, even if it is a new program, to have co-benefits that come out in addition to asthma prevention.

***Why is the timing right in 2015 for primary prevention to be a goal? What new evidence demonstrates that primary prevention works?***

Ted Schettler: The literature is starting to develop and describing efforts and both successes and failures at preventing the onset of asthma. Probably the best source of evidence comes from a 2011 Cochran review which took a close look at efforts to primarily prevent the onset of asthma in people who were at high risk. This was looking specifically at children who were at higher risk of developing asthma because at least one parent or sibling had asthma or allergies. [The] Cochran review did a sweep of the literature and then, applying their criteria to selecting the best studies, narrowed it down to three studies in which there were multifaceted interventions and six studies in which there had been single interventions intended to primarily prevent the onset of asthma. So in total nine large studies, which were well-designed and conducted criteria in conclusion and review. The interventions included dietary interventions that began in one case prenatally, but in most cases, at the time of birth with breastfeeding encouraged for at least four months and longer in some of the studies. And then when foods were introduced, the solid foods that were early in onset included those things which are not allergenic—so avoiding cow’s milk, eggs, peanut products, for example—then step-wise introduction of solid foods thereafter. As I mentioned, at least one of the studies addressed maternal diet during latter part of pregnancy as well as in the infant after birth.

And then environmental remediations was the other arm that was studied in this Cochran review. These environmental remediations included control of house dust mites, frequent cleaning, less exposure to carpeting, advice on reducing exposure to pet allergens, avoiding furry pets and toys, and avoiding tobacco smoke. When the results were analyzed, what they reported was that the combination of the dietary intervention and the environmental remediations in the home together reduced the onset of asthma in children who did not previously have the disease by 50% at age 5 or older and a slightly smaller percentage of risk reduction or onset reduction in children who were less than 5 years old. But interestingly enough, they also found that studies in which the interventions were either dietary or environmental remediation, but not both, they did not substantially reduce asthma onset when compared to the control group.

The take-home message here seems to be that the multiple interventions are more likely to prevent asthma onset, but they’re fairly well defined. In this case, they were dietary and environmental remediation and these are really achievable kinds of things. And as Polly previously mentioned, the environmental remediation that was described in these studies would be expected to reduce asthma or asthma attacks in children who already have asthma in these homes. In other words, these are exactly the triggers of asthma in people with the disease, so this is again kind of the co-benefit that would be derived from this kind of environmental remediation. That’s the best examples that we know of well-designed studies that have shown the possibility and success of reducing the risk of asthma onset in children who do not have the disease.

Risk factors for asthma onset have actually been better identified in recent years, and some around which there is quite a bit of consensus include things like exposure to animal allergens including pets in the home. And this is interesting because the timing may be important, that exposure at a particular time in childhood may be more or less risky than other times. Obesity is a risk factor for asthma onset. That includes maternal obesity during pregnancy as well as childhood obesity as a risk factor for asthma. Certain viral infections are clearly a risk factor for the onset of asthma, including respiratory syncytial virus and rhinovirus infection. Psychosocial stress is a risk factor for the onset of asthma. Indoor allergens are a risk factor and asthmagens in the work place. And what I mean by “asthmagens” are chemicals or other agents that can actually trigger the onset of asthma in people who previously did not have the disease through two or three different mechanisms that are slowly being worked out as to how they interact with both the immune system and the respiratory system to cause the onset of asthma. And then air pollution is a risk factor for asthma onset and this is particularly so for traffic-related air pollution. And then finally, tobacco smoke is well established as risk factor for the onset of asthma. So this is a fairly conservative list of risk factors around which there is emerging consensus out there as risk factors for the onset of asthma.

I described psychosocial stress as being a risk factor for the onset of asthma and the literature is fairly clear that this is a risk factor independent of other risk factors that are all often associated with increased psychosocial stress. For example, in populations of people who are living near roadways or in low-income housing where they might be a collection of risk factors like increased exposure to air pollution and increased psychosocial stress as well as exposure to other environmental agents that may trigger the onset of asthma or asthma attacks, stress is independently a risk factor for the onset of asthma. But what’s interesting is that it’s combined: with increased levels of psychosocial stress with exposure to traffic-related air pollution, what you find is that a given level of air pollution is actually a bigger risk factor when it’s associated with increased levels of psychosocial stress. In other words, it’s an effect modifier. It makes that traffic-related air pollution even more potent in people who are exposed to increased levels of psychosocial stress. So these interactions, some cases showing synergy suggest that […] the efforts that will reduce these risk factors may actually have a bigger bang for the buck if we do address them collectively rather than one at a time.

***What specific activities have been identified to ensure Massachusetts addresses this goal?***

Polly Hoppin: Let me give you a little bit of background here and you can decide whether to use it or not, but just so people know the broader relationship between the broader Strategic Plan for Asthma in the state of Massachusetts alone and this primary prevention focus. So a Strategic Plan for Asthma in the state of Massachusetts along with other states, in our case, has been developed by a coalition of asthma researchers and clinicians, asthma coalitions made up of groups from around the state, community based organizations, labor groups, [and] policy leaders. We have the Massachusetts Department of Public Health being the main convener, and that Strategic Plan has be issued every five years for the last decade or so, and there’s over 100 organizations that participate in the development of that plan, and then they play roles in implementing its recommendations. The recommended actions to implement the plan are included only if more than one organization has committed to playing a role in implementing them.

This is a big, statewide process that happens and the sort of holder of it is the Massachusetts Asthma Advocacy Project – a large statewide coalition that has a contract with the Department of Public Health to develop this plan and work with people to implement it over time. The last Strategic Plan for Asthma in Massachusetts, which ran from 2009-2014, included a goal to develop a Road Map which was to accelerate the understanding of the opportunities for primary prevention in the state. So, during that five-year period, a lot of the stakeholders that I mentioned, and also including really some of the world leaders in asthma research that just happened to be based in Massachusetts, along with a number of policy program people, developed that Road Map for primary prevention in a process that featured a two-day Symposium. And that was held in April of 2013 to understand what research can tell us about how asthma develops and the role of risk factors in asthma development, some of what Ted just described, as well as what we know about effective interventions.

The Symposium also covered what an existing capacity of a range of government agencies and nonprofit organizations and others was to address some of the risk factors - identified by the Symposium - and where that collection of people saw the need for additional research and for changes in policy and practice to move primary prevention forward. Out of that Symposium, work groups spent one year refining the recommendations that came out of the Symposium and generated the Road Map. So the goal of the Road Map is to progress the primary prevention of asthma in Massachusetts. It includes six overarching strategies (which I can talk about in a minute) and then under those there are 11 different objectives and 73 actions, so it’s a pretty large, comprehensive document, and there are 50 organizations that have committed to participated or leading the implementations of the actions.

So the Road Map was developed, and then a decision was made by that large coalition with full support by the Department of Public Health to include the Road Map as a stand-alone goal in the most recent state Strategic Plan for Asthma, which is about to be release on June 1, and that covers the time period of 2015 to 2020. As far as we know, this is the only state Strategic Plan that has made a major commitment not only to supporting people who already have asthma, and that’s the focus of some of the other goals in the plan, but also to preventing new cases of asthma—and that’s the goal that the Road Map plays in the Strategic Plan. The Road Map is based on a consensus that came out of the Symposium and other conversations that asthma is a complex and multifactorial disease. A large range of risk factors play a role, and they unfold within a broader context of health and economics inequities, and so that reducing the incidents of asthma will require multiple interventions at multiple levels with the individual level, at the institutional level, and at the factorial level.

It also reflects agreement by a wide range of scientists and a number of asthma leaders both in and outside the government that although there are some gaps in understanding effective interventions to actually prevent asthma and that we need more research to fill those gaps, that despite the gaps, some changes in policy and practice that are aimed at reducing those risk factors should proceed because of their potential to prevent new asthma cases and also because some of the co-benefits that I was talking about before, so that’s all by way of background. And to answer your question as to what the specific activities are, and those are just starting at the level of the six broad strategies that I mentioned will probably give you the best sense of what the Road Map is about.

The six strategies were strategies that the group came up with as having the potential to achieve a substantial shift in the prevalence of asthma over the next 10 to 12 years, so their reach goes beyond the five-year time frame of the Strategic Plan. The first is to prioritize primary prevention research and interventions that focus on early childhood development, so they’re called the first 1,000 days, from right at conception through age 2. And that stems from the assumption that a high percentage of asthma cases develop in early childhood, and so focusing on early exposures—which likely play an important role, along with genetic predisposition and perhaps some other factors that we don’t fully understand yet—that’s a really important time frame to focus on. So that’s the first large scale strategy.

The second one is to replace chemicals that we know are capable of causing asthma—and Ted defined those as being called “asthmagens”—with safer alternatives, especially in a work environment, which is where know the most about the ability of this quite long list of chemicals to actually cause asthma in people who previously hadn’t shown any symptoms. But there’s also an expectation of this strategy that because those chemicals are also present in other environments – an example would be formaldehyde is present in particle board and other materials and uses in the home – that although we don’t have the epidemiology showing that asthma is caused by exposure to those chemicals in non-workplace environments, that those are probably going to end up having some importance so that we should start looking for some alternatives to these asthmagens. Pay attention to the opportunity to promote safer alternatives to those in work environments as well as indoor spaces where people may be exposed beyond work.

The third strategy is to increase the utilization of public transportation and also active transit, but at the same time, to reduce exposures to vehicular traffic and emissions. This is an example of a suite of interventions that would have co-benefits given the other benefits of increasing physical activity and decreasing exposure to air pollution. The important point here is that both of these objectives have to happen simultaneously because if you increase physical activity without also addressing air pollution—for example, putting bike lanes that happen to run right near busy highways—then you may put some people at higher risk of asthma onset and exacerbations.

And then the fourth priority over that 10 to 12 year time frame is to increase understanding among public health and medical professionals, really people across the whole healthcare team, about modifiable risk factors that are associated with the onset of asthma – that fleet that Ted described – and the potential benefits of reducing them and studying the outcomes so that primary prevention becomes part of common parlance, common conversation about action on asthma. This one reflects that the conversation and investment on asthma by health professionals focuses almost exclusively on managing asthma in people who already have the disease, but that as trusted messengers, people who are part of a healthcare team are really important voices for increasing public understanding and for changing behavior, both in a doctor’s office, in a clinical visit, but also by policy makers and others who are thinking about how you might convey some of this information at population level. So just having primary prevention introduced to that conversation, so that we’re talking both about how to prevent new cases as well as how to manage asthma.

The final two strategies in the Road Map are to target people and populations that are at high risk of developing asthma and make sure that they receive home visits that include information on environmental triggers and other risk factors. And this could be via existing asthma home visit programs, but it could potentially also be other home visit programs that are already supporting people facing other problems and those problems may also be risk factors for asthma, and we’ve mentioned overweight and stress as being two good examples. And for exposures that can’t be addressed via education and behavior change with an individual, this strategy also envisions developing community-based resources that would improve outdoor and indoor air quality along with other risk factors for asthma, so both at the individual and more community level.

So those are the strategies, and under that there are 11 objectives that we have put a time frame around of the next five years, which is the time frame of the large state Strategic Plan. Those objectives include taking steps to prevent asthma in a variety of realms that we are already working in around asthma management such as housing and schools, and along with schools, early childcare, and out-of-school/afterschool kind of programs. The realm of healthcare where health services are delivered. Outdoor air in the context of urban development and urban planning like the development of, as I was mentioning before, walkable, bike-rideable areas near transportation hubs and paying attention the physical activity and air pollution issues. That’s an example of urban planning. And then in workplaces. So those objectives are taking place in certain spheres where programs and policies tend to be organized.

And then there are several objectives that are cross cutting and one of those is the strategy I mentioned earlier focusing on the first 1,000 days of child development. Another crosscutting objective is around the development of a model for neighborhood level interventions, so doing everything you could imagine in a neighborhood to reduce exposure to the risk factors for asthma onset. And then another crosscutting one is to maximize opportunities for preventions in the Affordable Care Act. And then there’s one of primary prevention tracking and surveillance. And then the last objective is a series of actions that would prepare the field for effective interventions.

So, in general, participants recommended leveraging current programs and policies, which is one of the points I made at the very beginning about why we think the cost of this set of initiatives may not be that large because we want to leverage existing capacity – those that are already reducing exposure to some of these same risk factors so that we can pilot and evaluate interventions to prevent new asthma cases. So as Ted mentioned, the research that has actually tested interventions and whether they might be able to prevent asthma, that’s not as deep or extensive and evidence-based as the evidence on risk factors. So one of the things that this Road Map envisions is that there’s a lot of programs out there that are indeed reducing exposure to risk factors, but nobody’s looking at them for their impact on reduced asthma onset, reduced new cases of asthma. So for a number of situations, it may be a matter of just slightly tweaking what’s already going on, but then evaluating the impact of those programs on asthma onset. So those are the 11 objectives and just because of how large the map is, I’m not going to give you examples of all the activities that come in under those objectives, but I think it gives you a good sense of sort of the categories of action that there are, and we can talk more about specific actions if you want.

***How did Massachusetts facilitate collaboration between partners when drafting the Strategic Plan? And in what ways will this influence the plan’s implementation?***

Polly Hoppin: So I mentioned earlier the Massachusetts Asthma Advocacy Partnership, called M.A.A.P., that’s how I’ll refer to it, that’s made up of a range of organizations that are working on asthma really across the board. Government and non-government, asthma coalitions, health centers and hospitals, groups that focus on housing, community-based groups, workers, and MAAP staff help coordinate standing committees that are responsible for drafting different areas of the state Strategic Plan working with staff at the Department of Public Health.

And until recently, there was not a MAAP committee that was focused on how to prevent new cases of asthma. My colleagues and I at the local center, which is an interdisciplinary center at UMass, put a committee together and we called that our Road Map planning committee (and Ted was a member of that committee) and the committee included MAAP members as well as some people who had not before been involved in asthma, but their work was focused on risk factors for asthma. And then we also had several asthma researchers on the committee that were based in Massachusetts, and we also had several representatives from federal agencies, the regional offices of the federal agencies, to think about how this state plan would intersect with what was going on nationally. And the committee worked over eight months to plan the Symposium that I described earlier that was held in 2013, where 80 people gathered over those two days, and it really was a working meeting to explore what’s known and not known about how asthma develops and then generate recommendations for research and policy and practice.

 The meeting was groundbreaking in a couple of ways. First, it convened people and organizations who were participating in the planning, who were speaking, who were participating, who typically don’t work together. And secondly, to help the participants work with an edit space that has some uncertainty in it, we developed tools that would enable the speakers, particularly the scientists who were conveying the state of the literature and the research, to enable those speakers to use consistent approaches to characterizing what they thought the weight of the evidence was on these different risk factors, and to guide participants in conversations to identify the risk factors that were ready for action. So the whole approach, the process of it, encouraged a systems approach to planning the interventions and recommendations that the group would ultimately come up with. And the result was a process that really built working relationships among people who operate in very different realms of the system. So for example, scientists who do the research really working closely with people in government and NGOs who interpret it and apply it in their decisions around policy and programs, working closely with people who are representing those who are affected by asthma.

By facilitating a process of these participants, really diverse participants, making joint recommendations, they needed to come together to figure out how they were going to synthesize the information and synthesize their perspectives. And I really think that the common ground that was identified and the relationships that were started at the Symposium and then were built on afterwards played a major role in facilitating the development of the recommendations, but also will also help facilitate the implementation of those recommendations.

So, another point there is just what we’ve mentioned before is: because of the many risk factors for new onset asthma are the same as risk factors for asthma attacks, there’s lots of opportunities to integrate strategies, policies, programs, and other activities to change behavior and improve environments. And so organizations that are already working on asthma within MAAP, within that large coalition, have strong relationships with one another so those existing relationships that go way back that have worked on asthma, that also will really facilitate the implementation of the recommendations for the primary prevention Road Map.

There are already synergies between groups working on asthma management, supporting people with asthma and the topic of trying to prevent asthma. It’s also true that the people that are at risk for developing asthma for the first time are obviously not the same as the people who have already been presenting with asthma, although some of them may live in the same household. So, since the interventions to advance primary prevention are going to target populations that don’t already have asthma, they might involve organizations that haven’t previously identified as asthma organizations, so these would be new relationships and new partners.

An example here in Massachusetts is The Children’s Investment Fund and three years ago, this organization successfully lobbied the Massachusetts legislator for a major infusion of funds to improve aging and unhealthy buildings that are used for after-school care. They’d done a report that just documented atrocious deterioration and exposures to things like mold and the report got the attention of the legislator who passed, I believe, it was $40 million of capital funds to improve building quality. And the Children’s Investment Fund joined the planning committee, the primary prevention planning committee, and they’ve committed to several activities to reduce exposure to substances that we know cause asthma. And in addition, they’ve built into the criteria that they’re going to use to review proposals by contractors doing the work to improve the aging buildings. They’re including asthma prevention into that criteria, so it’s a really great example of how a new awareness on the part of a partner that was working on a related topic, but not really considering themselves an asthma organization, was able to take the experience of being part of the Symposium, and now the issue of preventing asthma is embedded in these criteria for actual contracts that contractors are going to bid on for doing that work.

So to implement the Road Map and build on those partnerships, we’ve now established a primary prevention committee within MAAP and that will include, in addition to some of the groups that have been in MAAP for a long time, some of those groups like the Children’s Investment Fund [that] haven’t focused on asthma in the past. Then the other thing we’ve done is identify people within the other standing committees within MAAP housing, schools, and health and those people have volunteered to pay attention, but with a primary prevention lens as they continue to do their work on asthma management. So, it’s sort of a way of formalizing liaisons between the existing committees that do focus primarily on asthma management, but also may in the course of their work come up against opportunities to prevent asthma as well.

 So there were some new partnerships as I mentioned that emerged from the experience of developing the primary prevention Road Map. And in addition the Children’s Investment Fund which I mentioned, another one that I might mention is the Toxic Fumes Reduction Institute, and they’re also based at UMass Lowell and we had worked with them to examine trends in the use of chemicals in the state of Massachusetts that are known to contribute to the initial onset of asthma. We have a state law that requires the reporting of chemicals of concern by businesses once they reach a certain threshold, and as a result of that report that showed the trends of asthmagens in the state, the potential for a chemical to cause asthma has now been added to the criteria for listing a chemical as a high hazard chemical under the State Toxic Fume Reduction Act. So there’s a shorter list of high hazard chemicals which triggers requirements for reporting at lower thresholds, and the ability of the chemical to cause asthma to begin with is now one of the criteria for listing those chemicals. And now, in addition to having to report them, the businesses also work with Toxic Fumes Reduction Institute to identify alternatives to those chemicals. So, this partnership of TRI becoming involved in this primary prevention effort will probably lead to the development of alternatives to chemicals that are contributing to the burden of asthma. So those are two examples of great new partnerships. I think.

***How far along is Massachusetts compared to other states in terms of primary prevention programs for asthma?***

Polly Hoppin: Right, yeah. Well, I think we’re out in front. I think that there’s starting to be some conversations in certain places that have particularly strong asthma programs in general. So for example, out in California, the RAMP program or initiative has begun talking about the importance of primary prevention, but as far as I know there has not been the kind of systematic assessment and process and building of partnerships and commitment to a plan, you know, nothing parallel to that, that I’m aware of in any other state.

***What challenges were raised to including primary prevention as a goal? Was there concern that including primary prevention could divert attention from the efforts already underway to improve asthma control?***

Polly Hoppin: So I’ll answer this by saying that this really wasn’t an issue of concern among people who were working on asthma in Massachusetts and one of the reasons for that I think, as we noted earlier, so many of the things that you might do to help with reducing the onset of asthma will also help with asthma control. But a decade ago or thereabouts, we actually began having this conversation and at that time there had been a sense among scientists as well as asthma leaders that the evidence based wasn’t sufficient to advance attention to the primary prevention to asthma, but also that there was just so much to do on asthma management that they didn’t have the bandwidth to think about upstream prevention.

And now, as Ted was describing, the evidence base is much more solid and also on the one hand, there’s confidence on the part of asthma leaders in Massachusetts that programs and policies are in place for managing asthma. And Massachusetts, and New England more broadly, have done a lot in that regard in terms of incorporating community health workers into intergraded health care teams and getting insurance companies to pay for those visits. Just a lot of things that took heavy lifting by asthma leaders but really now are in place at least as models, and the state is really playing a major role in helping to disseminate some of those models statewide. So, I think people are, sort of feel like that’s often rolling. Not that there’s a ton of work to do. But on the other hand, the same asthma leaders recognize how challenging managing asthma is for some individuals and, as I was saying earlier, that well-controlled asthma in an entire population is important, but really an aspirational goal. I think that people have come through a decade of a lot [of] work trying to manage asthma, particularly in high risk populations, and realize that it can’t be our ultimate goal to just have lots and lots of people get asthma and try and help them control it. We need to move upstream and to figure out how to prevent this disease to begin with. I think that took some time. That was an evolution.

The State Department of Public Health, which has been, as I said, such a strong and groundbreaking leader on asthma in Massachusetts, has also been a really strong supporter of the work on primary prevention from the beginning. It’s interesting that the DPH programs that are funded by the CDC is called the Asthma Prevention and Control Program and they’ve had that name for a really long time and they advocated for the inclusion of the primary prevention Road Map in the state’s Strategic Plan and they encouraged it to be a standalone goal to call attention to its importance so that people can really look at it as a cohesive set of actions. But they also encouraged the integration of a lot of actions that are in the Road Map into the other goals of the plan and into the work plan of the other committees that are set up to implement the plan more broadly.

 For example, in addition to the primary prevention goal in the State Plan, another goal is to reduce exposure to environmental factors that cause and/or exacerbate asthma in the commonwealth, and so elsewhere in the Strategic Plan, it also envisions taking action on the causes of asthma as well as the exposures that exacerbate asthma. So, all that is to say that within Massachusetts, I think there hasn’t been concern about trade-off between an emphasis on primary prevention versus an emphasis on helping people who already have asthma. But there was some resistance in supporting the primary prevention work when it came to funding.

 The CDC program that oversees the state asthma programs participated in our Symposium and then we met several times with CDC colleagues over the next year, and they were really interested in hearing more about the ongoing work to finalize the Road Map, and they expressed a really strong appreciation for Massachusetts leadership on this. They offered to help disseminate the Road Map when it was published. They’ve offered to help set up briefings in Washington to let other states know about the work. But that said, in the context of really increasingly constrained funding, which I’m sure you know has included the termination of funding for asthma programs in some states and the reduction in budgets that are made available to other states, including Massachusetts. The CDC was quite explicit that it did not want the next round of CDC funding for the state DPH to be spent on the primary prevention goal. So, that reflects some sense that there is a tradeoff. There is real urgency to people who have asthma and when you don’t have enough resources to take care of them, then it’s hard to justify putting resources into something that feels less urgent even though everyone knows that we need to get there.

 The same issues sort of played out in a couple other funding requests that we made prior to the actual publication of the Road Map. And one was the regional EPA who has also been incredibly supportive of this effort, and they’ve offered formally to invest a lot of staff time in helping us implement, but an actual proposal for funding didn’t go forward. Similarly, the Attorney General’s office in the state had funds for asthma programs out of legal settlements with Glaxo Smith Kline and then also a small family foundation. The messages from all of them were the same: This is really important work, but the urgency of helping people currently suffering from the disease needs to be our top priority. So, there’s no question that it’s a challenge on the funding side and I think that segues into your next question.

***What funding opportunities currently exist or show promise for supporting primary prevention?***

We’re really excited to be at this point anticipating the publication of the Road Map and the Plan on June 1 because I think that publication will really allow us to go forward with raising funds to support the implementation of the Road Map, and I think it’s been hard to do that without being able to show something that is embedded in a state’s Strategic Plan and really ready to go. That’ll be very helpful to have it out there. And funding something that is this ambitious and this new is challenging, but on the other hand it is also a great opportunity, I think, for funders who want to invest what’s really quite groundbreaking work. So, there are four different areas of funding that I want to touch on and then in terms of what particular prospects are for different funders, you know, I don’t think we’re quite at that point, but I’ll say something about the kind of funders that might be interested in these areas.

 So the first area is really the coordination of all of this, of the primary prevention committee within MAAP, to provide core functions that are going to ensure the wide array of organizations that are involved are able to stay coordinated and able to learn from one another because a lot of this, the materials and recommendations and the Road Map, is about trying new things and learning from it. So, a really key function of this core, it’s almost like a hub of a network in a way, is evaluation. Because a lot of the activities in the Road Map involve assessing the impact of existing programs, but assessing their impact not just on asthma management and control, but also on new asthma cases, then the evaluation function is particularly important. There are going to be some real efficiencies in designing evaluations in a coordinated fashion so that the evaluations and the questions that are asked and the evaluations that are done of those questions be are strategic, that we’re intentional about the questions we’re asking across the whole Road Map, and that there are common outputs and outcomes that are measured [that] will allow us to roll up our learning beyond the evaluations of the individual activities.

So, another function of the core hub would be to disseminate the experience in Massachusetts in other states and we have gotten a number of requests for information. I’ve given talks, I don’t know, maybe six or seven major conferences across the country. One was a keynote at an Asthma Summit last May in Pittsburgh where they have a very significant air pollution problem as well as asthma effort so there’s a lot of interest from other states in this experience and I think sources for this sort of core set of activities. And there’s a number of others, those primarily would likely to be foundations or agencies that are interested in investing in something that does take a bit of a risk. It’s a groundbreaking effort, but you know, it’s exciting.

So that’s the first area, and the second area of funding is needed to support pilot projects that are part of the recommendations of the Road Map and other activities in the Road Map that are designed to focus on primary prevention. An example is a project that I mentioned earlier that mimics the research that Ted described that would target low-income mothers with asthma and connect them to two kinds of home visits: the maternal and child health visit and the environmental trigger reduction home visit, and then to track the impact of those combined programs on new onset asthma in those families. Another specific example of an activity that is recommended in the Road Map that could be supported by activities-specific funds would be engaging physicians and nurses, midwives, and other clinicians who work with women from conception to age 2 about the risk factors for asthma development and also to develop links with other initiatives that are focused on the first 1,000 days. And there are a couple of those, and identifying opportunities for how you would incorporate asthma messages into those programs. Another example might be encouraging worksite wellness programs, employee health initiatives that are often mainstays of employer/employee programs to include information about risk factors for asthma onset and screening for exposures.

So for that kind of activity, funders that are interested in community based work and also in policy and also in applied research may in fact be interested, but we really having begun pursuing those potential sources other than the efforts I mentioned earlier before the Road Map was published where, again, the work was really applauded but they decided to devote their resources to caring for people who already have asthma.

A third area for funding is research targeted explicitly for primary prevention and interventions and to fill some of those gaps that were mentioned in the Symposium. We did an assessment several years ago, Ted and I were involved in a small group that did an assessment that looked at the rough percentage of federal research dollars that were being devoted to primary prevention kind of activities and found that it was well under 10 percent. This is the back of the envelope and these things are hard to categorize, but it was really clear that there’s very minimal funding proportionally being devoted at the federal level with regard to research on asthma.

Though the Road Map itself doesn’t focus on research because it’s the state Road Map and many funds for research are federal, there were research priorities that emerged from the work and it’s clear that federal funding is needed. And that is one of the areas that the national Asthma Disparities Initiative has committed to, which is to enhancing intervention research aimed at reducing new onset asthma. And NIH, a couple of institutes at NIH, are working on that and we’re sure looking forward to seeing that support strengthen the evidence base on interventions. I think we also want to think about some of the activities that the Road Map is going to be moving forward on really as research. I mean, it’s about taking existing programs and looking at what the impact of those programs are on asthma so they’re not randomized. And there are other issues around research design because they’re natural experiments and yet, there’s an offer lot to learn, and it could be learned in a very accelerated and efficient way because these programs are already in place. So, we’re definitely going to be thinking about that as research, as applied research, as research pilot programming and evaluation and I think those research sources may have some interest in that. We hope they will anyway!

And then the last area under this general topic of funding is to think about financial incentives for advancing primary prevention, and so the question there is how might the cost saving[s] from preventing asthma cases become incentives for supporting activities that will lead to asthma prevention. So, for example, primary prevention would save money for health insurers and I mentioned earlier that in Massachusetts, some insurers are funding secondary prevention interventions, in particular the home visits by community health workers because there’s a solid base of evidence that shows that they reduce emergency room visits and hospitalizations. And so insurers here become convinced that a well-delivered program integrated with clinical care can save money and they’re documenting, the literature research has documented that. And now it’s been documented in a lot of pilot programs, this precedent here in Massachusetts paying for interventions that don’t take place in a clinical setting, interventions that wouldn’t normally be considered, you know, medical interventions, but are clearly having an impact on health.

So, the challenge for a primary prevention effort is documenting that a case of asthma that never developed was a result of particular interventions, and that’s harder to do than showing someone that has asthma whose symptoms start to be well-controlled where they weren’t well controlled before. But we’re really hoping that pilot projects with people that are a high risk of developing asthma could demonstrate that. Population level interventions as opposed to interventions that an individual receives for example, reducing neighborhood level outdoor air pollution, that becomes even more challenging in terms of documenting the impact on new onset asthma in terms of actually tying cost savings and therefore encouraging someone to pay for it.

But here’s a little vision that I have, that I could imagine someday in the future having a hospital community benefits program where hospitals make available funds which demonstrate that they’re giving back to the community and that’s part of maintaining their not-for-profit status with the IRS. Imagine if a community benefit program and a local hospital might pay for you know, the expansion of a park and walking paths in the vicinity of the hospital which encouraged physical activity away from sources of air pollution, or even if they might pay for renovations of buildings where low-income children live to reduce the exposure to near roadway pollution that we now know is likely associated with asthma onset. The start for this kind of funding is a community needs assessment which is required now as part of the Affordable Care Act, and one of the activities that is recommended in the primary prevention Road Map is a community needs assessment including community exposures for risk factors for asthma. So there’s a lot of work to be done in that arena to try to help document the linkage between funds invested in preventing asthma and actual cost savings, but it really should be possible, we just have some methodological challenges and I think it’s going to take a leap of faith by certain individuals that are part of these kinds of programs that are willing to jump in and say, “You know, this really does make sense.”

***How can other states build on Massachusetts work to include primary prevention in their states’ strategic plans?***

Polly Hoppin: Well, we really do hope that the Massachusetts experience will be helpful to other states both in its process and also in its content, and we’re really happy to share this and very much appreciate EPA’s doing of this podcast so that this may be one way people can learn from what we’ve undertaken in Massachusetts. But I think I’d say that the process of convening people from across the system to look at the state of the relevant science and consider what risk factors are ready for action and then to examine the capacity, in terms of programs and policies that are in place, in the state that can help reduce some of these risk factors, but going through that whole process really helped people own the recommendations they ultimately made.

That said, it’s a very resource intensive process, especially resources in terms of peoples’ organizing time, states could also just work with our completed Road Map without going through that process, and they could consider which recommendations make sense for them. They might even convene a range of stakeholders to sit with our Road Map and to discuss and prioritize the recommendations that might make sense in their particular state context and out of that there might be new ideas that come that are well suited to their particular state and that would enable the people participating to consider their roles in implementation. I think it will be helpful and again, we’re very happy to be available to people both in terms of giving presentations on it, but also just talking with people individually about how we organize it and made this happen, and we’d also really like to hear from others if there’s any other kind of efforts and thinking going on across the country. That would be a real pleasure for us to learn from others as well.

***How does the Massachusetts Strategic Plan for Asthma address tracking onset of asthma through primary prevention programs?***

Polly Hoppin: A little bit more at the macro level which is just that the state strategic plan overall, again of which the Road Map is one goal, has a series of baselines measures that were used in the previous plan, the 2009-2014 plan, and that now are going to be used again in the 2015 to 2020 plan. The problem is data that is used to track improvements in asthma health outcomes or reductions in environmental exposures are often delayed several years and so really tracking the progress of the plan, or in our case the Road Map, is inherently difficult. But there is a commitment to have these baseline measures and to retain them from the previous plan so that we can track progress going forward. Some of those are relevant to primary prevention.

Then there are a couple of specific elements of the Road Map that focus on the issue of tracking surveillance. So, for example, the Department of Public Health is developing an approach to tracking new onset asthma cases because we do a good job of having surveillance for asthma prevalence and the amount of asthma that’s in the population at any given time, but we don’t track asthma incidents—meaning new onset asthma that occurs within a certain time period—so DPH is working on that, and that would be really helpful for the primary prevention measurement and tracking of the impact we’re having on new onset asthma over time. One particular example of data sets that they’re using is called PRAMS, which is the Massachusetts Pregnancy Risk Assessment Monitoring System and then that would be one example. They’re looking at other data sources as well that would help them understand what’s going on with regard to new onset asthma. Then there are various activities that have come before that are going to continue to be tracked that are related to primary prevention of asthma. For example, there’s a mass clean diesel program, clean air for kids, diesel school bus retrofit program, and basically the tracking to count things. They install pollution controls on 2,114 diesel powered school buses that served nearly 310,000 students in 300 local communities so there’s that kind of just numbers counting and tracking and crunching in terms of the implementation of the Road Map and the myriad activities that are a part of it.

So, really my point is I guess, this Road Map is embedded in a process that goes way back that spends a lot of time thinking about not only what they want to do, but what they want to learn from it and we certainly believe that the tracking of all of this is really important. It is hard, as I mentioned earlier, to quantify the diseases that are averted and certainly the gold standard of all of this would be to see less asthma, but that may be difficult to measure and interim measures like seeing the reduction in exposures that we know are associated with asthma onset are something that we’re going to need to track as well.

***How does the Massachusetts Strategic Plan for Asthma approach tracking of asthma data? How is this data interpreted for policymaking?***

Polly Hoppin: often times I think public health policy decisions or decisions about programs going forward, that kind of thing, is made on the basis weight of the evidence as should be the case. The science is scrutinized and determined where there is enough in the evidence base to justify going forward with the implementation of a program or policy and typically it’s a fairly long trajectory between the time that initial work, looking at links between risk factors or exposures and the onset of a disease, then moves into a phase of intervention research rigorously designed gold standard and intervention research and then moves on to a stage of pilot programs and evaluation and then eventually makes its way into policy. We have great respect for that trajectory. In the course of designing the Symposium, the committee was really helpful in saying, you know, there’s a bridge between what the research literature shows and what a state might be willing to go forward in terms of action on what deserves some really systematic thinking.

 And so that’s where in the Symposium, we had the researchers categorize what they thought the weight of the evidence was and give their own opinions about whether the evidence was strong enough to declare that there was a causal relationship or more of a probable association. They sort of did the standard outline of weight of the evidence. Then we walked people through a really systematic conversation of, “Okay, given what the researchers say the weight of the evidence on this, let’s talk about this risk factor and what might be some of the other reasons you either would or wouldn’t go forward with acting on that risk factor now?” And that conversation was participated in by a variety of different perspectives and made really quite systematic, and helped create a bridge between the weight of the evidence usually done by scientists and sort of left within scientific boundaries, and then policies makers deciding what they were going to go forward with, often times with a lot political considerations as a part of it. I think that was a really unique contribution of the Symposium that I wanted to highlight and Ted, I don’t know if you have any comments on that.

Ted Schettler: I would just add that when efforts at primary prevention first start for any disease, there is to some extent a leap of faith and then we can look back historically to see what the impact was. And we have for example, a long history now of having addressed risk factors for coronary artery disease as an example where when the first population-wide, community-wide interventions were undertaken, there was a fair amount of criticism of them. One example that comes to mind that there was an editorial published in a leading epidemiologic journal back in the 1970s which called the multifactorial attempt to reduce coronary artery disease mortality in an area of Finland was labeled as shotgun epidemiology, meaning that you just throw in the kitchen sink at it and see what works, but in fact, the multiple interventions did work and it had a profound impact on heart disease mortality. And I think we’re at a similar place with primary prevention of asthma. We’ve identified risk factors associated with asthma onset and we’ve noted that they tend to overlap with risk factors associated with asthma exacerbations, so as Polly has described, it gives us an opportunity to address them efficiently and with co-benefits, but now I think we’ll see what the impacts are when they’re applied more systematically, led by the weight of the evidence, to see actually whether or now we can have an impact at the community and population level.