June Broadcast 2014: Work Related Asthma: Recognition and Diagnosis

Rachel Breidster: Hello and welcome to public health live, the third Thursday breakfast broadcast. I’m Rachel Breidster and I’ll be your moderator today. Before we get started I would like to ask that you please fill out your online evaluations at the close of the program. Continuing education credits are available after you complete our short post-test and your feedback is helpful in planning future programs. We encourage you to please let us know what topics are of interest to you and how we can best fit your needs. As per today's program we will be taking your questions throughout the hour by phone. Our toll-free number is 1-800-452-0662 or email us at phlive.ny@gmail.com. Today's program is Work-Related Asthma: Recognition and Diagnosis. Our guest is Doctor John May, the Director of the New York Center for Agricultural Medicine and Health, Director of the Northeast Center for Agricultural and Occupational Health, and the Director for the Bassett Research Institute. Thank you so much for being here today.

Dr. John May: Thanks for inviting me.

Rachel Breidster: We have a lot that we're going to cover today; I know you have a wealth of experience to share with us. So would you start off just by painting a picture and giving us an example of what an occupational asthma or work-related asthma case might look like.

Dr. John May: Sure. I'll tell you about a fellow that I saw about five years ago. The young man who had minor smoking history and he came in to see me because he had had about three years of increasing chest congestion. And in the year preceding his visit with me, it had become worse, he had had several visits to the emergency room where he received inhaled bronco dilators and felt better. He tended to relate some of the symptoms to his workplace to when he was at work. He noted that he got better when he breathed fresh air, when he used his asthma inhaler. And he also noticed that when he was on, on layoff from work, typically in the summers, his job would stop for a week or two. He would get better. His job involved using a respirator, and despite that, he still had exposure to dust that contained enzymes. He had been on the job for about five years.

Rachel Breidster: So you as a physician are seeing this patient. When you're looking at the big picture, what are the things that tell you that this might not be just asthma but this is actually work-related asthma?

Dr. John May: I think there are a couple of clues in the story I just told you. One was that he felt his problems were worse when he was in the workplace. And particularly when he was laid off during the summertime, his symptoms did get substantially better and then final clue was, is the dust that he's working with contains enzymes and we'll see that that's an issue.

Rachel Breidster: So certainly there are symptoms or sometimes that a physician might see that point to occupational asthma. But how large of a population are we talking about? Is it worth it for physicians to get invested in learning about this?

Dr. John May: I think we're learning, Rachel, that it's a bigger population than we thought. And at this point, we recognize that probably about 10-15% of adult-onset asthma is occupational asthma. Occupational asthma means they didn't have asthma; they started on the job, now they've got asthma.
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And another 10-20% or even more is what we call work-exacerbated asthma. Which is asthma that people had, but when they're in the workplace, it seems to consistently get worse. So 25% or more of adult-onset asthma may well relate to something going on in the workplace.

**Rachel Breidster:** Sure. So how do these work-related asthma cases compare to non-work-related asthma?

**Dr. John May:** these guys can have tough asthma. It can be very difficult. They miss time at work. It interferes with their life. They have more symptoms. They have more medical costs. They spend more money on medications. And they, they—we know that if they continue with that exposure in the workplace that there's a good likelihood that the asthma is going to get worse. And on the other hand, we know if they leave the job, many of them will have significant financial difficulties as a result of that. So, so it's a stress on their life. It lowers the quality of their life. And then there's this totally unrelated topic of the fact that if this person sitting here is getting sick from the job, what about the person sitting here or the person sitting there? So there's a public health aspect about the health of their co-workers that we need to worry about as well.

**Rachel Breidster:** Sure. And is there more than one type of work-related asthma? Or does it tend to work the same across the board?

**Dr. John May:** Work-related asthma is kind of a wastebasket term. We’re lumping together a series of different disease entities that have somewhat different mechanisms. And different behaviors. The largest of those would be occupational asthma. New onset asthma that occurs in the workplace and much of that relates to immunologic sensitization to something in the workplace. Some of it relates to just a direct irritant effect in the workplace and some of it relates to asthma that preexisted, but got work in the workplace.

**Rachel Breidster:** So can you give us a sense of the big picture and how the different types or categories of work-related asthma relate to one another?

**Dr. John May:** Yes. And I think that there's a figure that shows a universe of work-related asthma. And shows the relative importance of the—or the relative prevalence of the different entities. So that work-related—asthma consists of occupational asthma. Which is about 80% and, and the work exacerbated asthma, which is about 19%. And of the occupational asthma, you can see that the majority of it relates to this immunologic sensitization and a smaller proportion to the irritant induced asthma.

**Rachel Breidster:** The work-exacerbated asthma how did you diagnose that? Or what kind of symptoms would you looking for as a provider?

**Dr. John May:** The key, the key is really to establish that the person had asthma before they were exposed in the workplace. And, and then if they have a history of consistently getting worse, when they're in the workplace, and if there are conditions in the workplace that might be expected to make their asthma worse, all of those are suggestive that this is work-exacerbated asthma the key thing is to try to be sure that this is not asthma that started due to a workplace exposure.
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Rachel Breidster: And what are some of the factors that can really exacerbate one's asthma in the workplace?

Dr. John May: You know, any of us who deal with asthmatics know that once the airway starts to get inflamed, there's a world full of things that will stimulate the airway. And the list really includes cleaning products and bleaches, the chlorine that people are exposed to can trigger their airways. There's a variety of smokes from cigarette smoke to welding smoke, fumes that can do it. A number of chemicals we'll see as the discussion goes on that can provoke this. Dust, so inorganic dust or organic dusts can provoke it, a number of indoor air pollutants. So what we see is, office workers or teachers have problems that have, have problems with molds or materials that are in the air conditioning systems.

Rachel Breidster: So certainly there are a number of different stimuli that exacerbate the condition. Does that mean there are certain occupations or professions that are at greater risk of developing this work-exacerbated asthma?

Dr. John May: There are. Some that really kind of triggers you right away. If for example somebody is a laboratory technician, working with rodents, we know that there's a high risk for those folks. Certainly people who are exposed to smoke, firefighters, welders, are at risk. I mentioned the risk associated with cleaning materials and bleaches. People exposed to wood dust can have reactivity. Organic dust, people working in waste handling and people working in agriculture have lots of exposure to organic dusts. And then there's a variety of other things. And indoor air can affect office workers and teachers and be a problem as well.

Rachel Breidster: Now so far we've been talking about so far most by about the work-exacerbated asthma. But you mentioned the large percentage of occupational asthma. Can you talk a little bit about that?

Dr. John May: Sure. Occupational asthma is really an interesting problem for those of us in the field. Again, it is the majority of it relates to immunologic sensitivity and some of it relates to irritation.

Rachel Breidster: There are different kinds of material in the workplace that can cause a different kind of response in terms of occupational asthma?

Dr. John May: There are. And we tend to lump these into high molecular weight substances which are complex proteins, polypeptides, of either animal or plant or bacterial origin. Things like proteins from laboratory animals. Proteins from crabs and other seafood. Bacterial enzymes are used in a lot of production. So these are complex high molecular weight materials and the individual can become sensitized to these over a period of a couple of years. So initially the person is in the workplace, and then at some point they become sensitized and begin to develop anti bodies to this, usually immunoglobulin e, an immediate-reacting anti body. And after that begins to appear in the person's system. They notice when they go into work, they're having runny nose and drippy eyes. Within a year of the onset of the nasal symptoms, people will begin to develop some airway symptoms. They'll begin to have asthma. Less common is reactivity to low molecular weight compounds, these are often chemicals, too small to really result in immunologic sensitization on their own but they bind with
proteins in the blood and the person becomes sensitized. Oftentimes not with immunoglobulin e. Examples of these would be a chemical that's used for plasticizing and for paint-hardening. So people in auto body shops can have problems with that. Certain metals like nickel and platinum can cause problems. Drugs like penicillin and at the time tetracycline are examples of low molecular weight. The latency period for those low molecular weight agents is a little bit longer; and the other phenomena of asthma that comes on with no latency at all.

Rachel Breidster: Talk to me about reactive airway deficiency syndrome. Is that something that you’ve seen? And what does that look like?

Dr. John May: It's called RADS, because most of us can't get that mouthful out. And I'll just tell but a patient that I saw 20 years ago. And at the time, he was a remarkably fit, marathon runner with no history of asthma at all. He worked in an aluminum smelting plant. One day on the job he had a big rubber mallet in his hand that he inadvertently dropped into a pool of molten aluminum. As he sort of reached to try to grab it, a big bubble came up in this pool and popped open and he inhaled whatever smoke or fumes came out of it. And immediately felt his airways tightening up. And that night, rather than go home, he drove to the emergency room, they gave him inhaled bronco dilators and he felt better. This was 20 years ago, every day since then he has had some degree or another of reactive airways disease.

Rachel Breidster: That is a very startling kind of picture you painted. It certainly sounds like a very serious situation. So can you talk to us about what exactly is RADS? Meaning what happens in the body.

Dr. John May: Well, I would say that we don't understand exactly. But something, it's typically a big dose of a very irritating inhaled material. That injures the airways. And people develop symptoms of asthma almost immediately. And oftentimes we can see that if we bring them into the pulmonary function lab and do a forced ex-halation test. We can see that they have problems. But sometimes with spirometry, the test can be normal. And in that situation we can challenge people and demonstrate that they have this nonspecific airway reactivity.

Rachel Breidster: So in that situation it was an immediate reaction, he breathes it in and feels his lungs constricting. Are all incidents of RADS, do they all have an immediate onset of symptoms?

Dr. John May: That's what we have thought for years. And I think in recent years, we've begun to realize that there are certain job classifications where there are significantly high rates of asthma. So people who work in custodial work. People who you know, work as maids in hotels, and it turns out that these people are exposed to cleaning products, to ammonia, to chlorine, oftentimes in concentrations that are higher than are permitted in industry. And they may be exposed to those multiple times a day for you know, years on end. And as time goes on, the airways get progressively more irritated. And so it turns out that there's sort of a chronic component to this irritant-induced asthma as well.

Rachel Breidster: So you’ve provided a lot of information about what sorts of things are the stimuli and who might be at greater risk. Can you talk to us about how does a provider know when to take the next
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step. If you're working with a patient, what's the trigger to you that you need to look into this a little bit further?

**Dr. John May:** Well you know, I think anybody who has adult-onset asthma that is proving to be difficult. If you've got an asthmatic who is a trouble-maker and you're just not really getting control of the situation, then usually what we try to do is think about what's going on in the environment. That could be, could be a problem. And typically, we think of the home environment, when we try to count the number of cats and is there mold in the basement and is there a wood-burning stove and we don't often think about the fact that people spend a third of their life in the workplace and don't inquire about what could be going on in the workplace.

**Rachel Breidster:** And so for providers who maybe are not as familiar as you are with work-related asthma or occupational asthma, what sort of insight would you give them to help them with diagnosis and treatment?

**Dr. John May:** I think probably the key hint is this phenomenon of having more symptoms during the work week. Having less symptoms on weekends and having improvement on vacation times. I think that's a really strong hint that something's going on. I think if, as you learn more about what the patient's job is, and if it's a job in which there are substances that are being either aerosolized or smoke or fumes in the workplace, you have to be suspicious.

**Rachel Breidster:** Sure. What are some of the more commonly reported causes that you see?

**Dr. John May:** There’s a huge long list of things. But some of the ones that are commonly seen are diisocyanates, which are a low molecularweight chemical, that are used oftentimes in spray paints to harden the paint. And people can be exposed to those. A number of aldehydes, formaldehyde, and people are often times exposed to those and a wide variety of processes. One of the highest rates of sensitization is people who work with snow crabs. So people who work with seafood proteins are at risk. Wood dusts can certainly trigger it. And we all know that people can be sensitized to latex. Various enzymes are used in a lot of products, now they are usually encapsulated so people don't react. But if the enzymes are not adequately encapsulated, they can react to that. And various other chemicals and hydrides are used as accelerates in a number of processes and those can cause problems as well.

**Rachel Breidster:** What if a person starts to see relief in the symptoms, but the symptoms start coming back when they're re-exposed to the irritant. Is that something to be aware of as well?

**Dr. John May:** That should really perk your ears up. I think if somebody is away from the workplace for one reason or another, they do better and then they go back in the workplace and things get worse—very suggestive. I think that one thing that sometimes as clinicians, we don't always think about and certainly patients don't, is that the reaction to these materials can, can be what we call biphasic or two phases of it. And typically people will get the high molecular weight agents will get an immediate reaction in the workplace. And later in the day or in the evening, they may suddenly tighten up again, and they're trying to figure out what is it that did it. Well it was the exposure earlier in the day and in
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some cases with low molecular weight agents they don't even get the immediate response, it’s just eight hours later they're responding to something. It’s hard to put it together sometimes.

**Rachel Breidster:** It seems like it could be very challenging. Now what factors might increase the risk for sensitization and occupational asthma?

**Dr. John May:** Several factors have been identified, some of these relate to the workplace. We know that certain agents are more likely to sensitize people than others. And obviously in some workplaces, there's either consistently greater exposure or there are peaks of exposure. And so that could influence the rate at which people become sensitized. And then there's some personal phenomena as well so that people who have atopy or people who tend to get allergies and eczema are more likely to get sensitized. People who have certain genetic predispositions can be more likely to become sensitized. And cigarette smoking is a factor, both in terms of heightening the risk of sensitization and heightening the likelihood that the sensitized person will go on to develop asthma.

**Rachel Breidster:** So let's talk about diagnosis. What steps should a health care provider take toward making a diagnosis of occupational or work-related asthma?

**Dr. John May:** This is an important diagnosis to get right. Because it has legal and financial and social implications that are quite substantial for patients. So I think we try to do it in a step-wise fashion. The first step is to try to be sure that this person actually has asthma. There are other disease processes that can sometimes mimic asthma. We want to be sure that they've got asthma. We want to try to look at the workplace and see, are there substances in the workplace that we know can give people asthma that have been established as asthma-gens. And if we know that somebody has got asthma and we know that there's something in the workplace, can we actually show there's really a relationship. So there's kind of three phases of this that we have to go through.

**Rachel Breidster:** Let’s start by taking a closer look at the first phase, you said the first question is sort of establish, is this really asthma.

**Dr. John May:** Uh-huh.

**Rachel Breidster:** What do you need to look at to make that diagnosis accurately?

**Dr. John May:** We rely on history a lot. There are pros and cons to the history. But we rely on it a lot for asthma. We oftentimes can be helped with pulmonary function testing. If we bring the person into the laboratory, have a forced ex-halation we can have some evidence that the airway is constricted and the air comes out more slowly than we would expect. But one of the characteristics of asthma is sometimes they'll go into the pulmonary lab and have perfectly normal pulmonary function. And in those situations we oftentimes rely on other testing that I’ll get into in a few moments here.

**Rachel Breidster:** When you talk you rely fairly heavily on the patient history, what parts of the patient history are important to take note of?
Dr. John May: There have been studies looking at the various questions we ask people about asthma. To try to identify which ones are most helpful in terms of work-related asthma. And it turns out that this business of getting better when you’re away of work and getting worse when you are in work is probably the most sensitive test. The thing that’s a little bit tricky about that is that as the disease goes on, and the airways get more and more inflamed, they may not actually get very much better in one or two days on a weekend. So early in the disease, weekends can help. Later in the disease we need to see what happens when they’re out of work for a number of days. So that’s a good, a good question to ask. It is very sensitive, not terribly specific. Wheezing at work is more specific and so the combination of those two is pretty helpful. For people who have high molecular weight sensitization. The phenomena of getting drippy eyes and runny nose when you enter the workplace is very suggestive.

Rachel Breidster: Now you mentioned using spirometry, as a means of testing for asthma. What other kinds of tests can be done to assess whether or not a person is suffering from asthma?

Dr. John May: The key phenomena of asthma is that the airways are just a lot more sensitive, a lot more inclined to constrict in the asthmatic than in the normal person. So if somebody spirometry is normal, what we will do is try to stimulate the airways, we can do this with a substance like methacholine or histamine. Or cold air, a variety of substances can be used. What we try to do is bring them in and measure how much air comes out in the first one second. We call that the FEV1. And whatever amount comes out, that becomes the baseline. Then what we're looking for is what dose of methacholine do we administer before there is a 20% fall in FEV1. For people who don't have asthma, it's a pretty high dose. And for people who have bronchial hyper reactivity, it's a pretty low dose, and usually it's helpful in terms of separating the two.

Rachel Breidster: Great, thank you. So we establish that somebody has asthma. The next question you said in your step-wise approach is identifying are there asthma-gens in the work place, can you talk about what goes into that step?

Dr. John May: That's when you have to listen to the patient. Something we don't do very well. But it's an opportunity to learn what, what job the person does and have them describe to you the workplace. Is it a workplace where when they walk in every morning there's dust all over the place. Are there fumes or dust being generated immediately next to them? What's the ventilation system like. Have they been given a respirator to use on the job? Do they ever use the respirator? All of these I think are considerations, the employee can bring in a safety data sheet that lists all of the different materials that are used in the workplace and you can go online and look those up. And see if any of them have been linked with asthma in the past. I think the gold standard here is to call in the pros and I think if you have access to industrial hygiene expertise, those folks can come in and look at the workplace in a systemic fashion and be very helpful.

Rachel Breidster: Having access to an industrial hygienist can certainly help and we met with Nick Pavelchak, an industrial hygienist at the New York State Department of Health to get a better idea of what their office does and their role if identifying occupational asthma.
Nick Pavelchak: I am the Chief of Outreach and Prevention for the Bureau of Occupational Health Prevention and we provide industrial hygiene services to employers, workers and also technical assistance to physicians. Industrial hygiene is a science that’s devoted to the anticipation, the identification, the measurement, evaluation and control of hazards in the workplace, including occupational asthmagens. We know of over 300 substances that can cause or aggravate asthma. Many of these are used in the workplace. Anything from diisocyanates to cleaning products. Some examples of workers at risk for occupational asthma are custodian who handle a wide variety of chemicals. Often they handle them in concentrated forms and have to dilute them in order to use them properly. They often use them in poorly ventilated enclosed spaces as well. Another example are hairdressers, who can have exposure to skin contact, as well as inhalation, such as to formaldehyde, a key ingredient in hair products. These activations are not considered to be hazardous by the general public. But in these occupations they do handle a wide variety of chemicals and there are many workers within these industries. The way we control hazards in the workplace is that regardless of the occupation, there are basic principles that we follow. These are commonly referred to as the hierarchy of controls. These controls include products substitution, engineering controls, administrative controls, work practice controls and at the bottom of the list is personal protective equipment. And these controls are listed in descending order of effectiveness. Because as you go down the list, they require more direct human intervention in order to be effective. The first thing we look at is can we substitute the product that the worker is using for something that is less hazardous. What people often rely on is the one on the bottom of the list, which is personal protective equipment. Including respirator masks. These are really a last-resort measure. They are the least effective way to protect a worker. And so they should only be considered when other control measures are either inadequate, or just not feasible. Here at the New York State Department of Health we provide a wide variety of technical services and assistance to employers, workers, as well as physicians in all aspects of occupational health and safety, including on work-related asthma. Some of this work is done by telephone call. So you can simply just give us a call and we can provide assistance to you. In situations where it’s warranted, we will go on site, using scientific equipment to quantitatively measure exposures in the workplace to evaluate the work practices, and to develop control measures for the employer. The goal of our industrial hygiene work here at the department of health is two-fold. The first is we want to reduce or eliminate exposure to the worker who was diagnosed with occupational asthma. So that that person can continue to have a productive career. The second aspect is once we know that there is an occupational asthma-gen in the workplace, we want to protect the other workers from having exposure and developing occupational disease.

Rachel Breidster: So Nick mentioned that there are quite a few different agents that can exacerbate asthma. And we’re still talking about the second question of identifying are there asthmagens in the workplace. How many different agents would you say we’re talking about and how can people find out what the different agents are.

Dr. John May: There’s with a system that’s been devised that looks at agents very specifically. And very specific criteria that have to be met before something is categorized as an asthma-gen. At this point they’re approaching 300 of these that have been identified. And I’m, and I’m showing basically the same
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website that Nick cited, and it's very handy. You go in; type in the agent and it will tell you either give you the thumbs up or a thumb's down.

**Rachel Breidster:** All right. So finally looking at the third question, in the steps to diagnosis, how do we demonstrate a relationship?

**Dr. John May:** Well that can be kind of tricky sometimes. And the best way is if, once you've identified the suspect agent, if you take the patient and the agent and put them together in a, in an exposure booth and just gradually increase the amount of exposure that the person gets and follow what's happening with their lung function tests, you can do a specific challenge and that's a really very helpful test that can be done in maybe five places in north America. So it's a great test, but we never do it.

**Rachel Breidster:** Sure.

**Dr. John May:** But we do know that people who do have those positive tests also have increased numbers of eosinophils, a certain type of inflammatory cell in their sputum. That may be a helpful test as well. The tests we use I think most at this point are symptom diaries, combined with peak flow measurements. Another approach that can be used is we talked about the methacholine challenge. When the fact that people's airways are irritated, people respond to a relatively low dose. Well if you pull somebody out of a job for a month or two and repeat the test, you might find it takes a much higher dose of that agent to get them to respond. That can sometimes be helpful as well.

**Rachel Breidster:** One of the things you mentioned with the peak flow metering. What is a peak flow and how do you measure it?

**Dr. John May:** So a peak flow meter generally costs $15 or $20 and people can be taught pretty easily how to use it. There's a mouthpiece on it just take, fill their lungs up completely. Put it in their mouth and blow out as hard and fast as they can. When they do, there's a little thing that pops up. And they can record that number. And put it on a little chart that we give them so they plot out, and if they, if they do this four times a day and faithfully plot out the pattern, we know that about 70% of people will actually be able to do this. And they'll actually bring in data that's useful at the end of a couple of weeks. You have a pretty sensitive and specific test. And really, what we look for are the patterns of peak flow. Nobody blows the same flow all the time. There's always kind of a saw tooth pattern. But if the pattern on weekends shifts up and the peak flows are higher. And then when they go back to work it goes down again, certainly if they take a week off for vacation, it's really helpful if they're consistently higher and they go back to work and they are lower, it's very helpful information. There are computer programs available to analyze these. And sometimes people will look at the actual extent of the deviation. There's number of different ways. But oftentimes you can just sort of eyeball this and correlate it with symptom diaries, and when they were at work and when they weren't and it's pretty useful.

**Rachel Breidster:** Are there any other allergens that would recommend testing for?

**Dr. John May:** There are some commercial allergy tests what we're trying to do is this guy's got asthma, here's the substance, is there a relationship? And in a small number of cases, relative to the 300 agency
that can do this, a small number of them, we can do skin testing or we can draw blood and see if they have antbodies to these particular agents. So those tests are really helpful when they're available. But most of the time they're not available.

Rachel Breidster: So we've talked an awful lot about the work-related asthma and the risk factors, can you summarize for us what we need to remember in terms of coming to a diagnosis?

Dr. John May: Certainly, and again, it's important to get this right. Have to be sure that it's really asthma. Have to be sure that there's something that has been documented as an asthma-gen that's in the workplace and we have to go through these various efforts to try to relate the two.

Rachel Breidster: Now, being sure that it's really asthma, and being sure that it's related, work-related to the asthma diagnosis, talk to us about differential diagnosis.

Dr. John May: Well, probably the leading thing for occupational asthma in the differential diagnosis is just asthma that's not occupational. But when we think about asthma in general, we need to think about a variety of other things that can cause similar symptoms. So that various types of bronchitis, people can get bronchitis from smoking or from industrial exposures. Can mimic the symptoms, people can get a problem called hypersensitivity pneumonitis in the workplace that can mimic the symptoms. In certain exposures, cutting certain types of metals, people can get sick and have asthma-like symptoms. There's another phenomenon called vocal cord dysfunction. When people have asthma, the obstruction to air flow is in the chest. When people have vocal cord dysfunction, the obstruction is in the voice box. It would seem that you could sort those out pretty easily. But you can't. And so that has to be kept in mind. It can be tricky to sort that out.

Rachel Breidster: So certainly not necessarily an easy thing to diagnose. But let's assume that we take the steps, we're able to make the diagnosis. Let's bring this full circle and talk about how you treat this. And better than that, how do we prevent this from happening?

Dr. John May: So treatment is not substantially different than we would do with any other type of asthma. These people generally have more difficult asthma. And so typically, they are on a long-acting inhaled bronco dilators and usually in combination with some inhaled steroids; inhaled corticosteroids are an important part of this no matter what. I think one of the things that's important is that if the, if the patient chooses to remain on the job, and has ongoing exposure to whatever it is that's making the asthma more problematic, we have to realize that in some cases the asthma will just sort of smolder along. In other cases, the asthma will get progressively worse and worse. And so it's important we be monitoring these people on a periodic basis. So that if somebody is getting into progressively more and more trouble with the asthma, we can talk about that and the patient can make an informed decision about what it is they want to do. I think the other part of this is some of the things that Nick touched on in his discussion and that is, that there are a number of things that can be done in the workplace. And the best of these is just to take the incriminated substance out and substitute it with something that might work just as well. But there are issues in terms of how to ventilate the workplace, how to isolate some processes from where the workers are. There's people always receive respiratory protection and
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it's not one of the things that works very well. Other approaches, that can be taken, if, if the workplace is big enough and depending on the skills of the individual workers, can be that they can be reassigned to some task that's unrelated to the exposure that's causing problems for them. The issue of leaving work always has to be considered at some point and it's a tricky one in that we know that if somebody is diagnosed early, and leaves the workplace, in many cases, in about 30% of cases, the asthma can go away completely. In the remaining 70% of cases, the asthma can be much more readily controlled than if they stay in the workplace. We also know that there are some financial disincentives to leaving the workplace. There are considerations in terms of disability. Workers comp, vocational rehab that has to be considered in all of this. And again, as was mentioned, we need to keep in mind the threat to other co-workers as well.

Rachel Breidster: Sure. So with treatment, what can you expect in terms of outcomes?

Dr. John May: If people leave the workplace, some of them will do quite well. But we know that when people leave the workplace, probably 60% or more of them will have financial hardship related to that. So it's kind of a two-edged sword. And the decision is usually one that the patient and the family need to make. And it's a difficult one. I think in general this problem has a lot of impact on patients. And you know, people get angry and depressed and anxious about this. And all with good reason. They're facing the loss of employment. Sometimes it's not so easy to go back and get another job. And they have a whole new set of health concerns they never had before.

Rachel Breidster: Certainly that ties into a whole other section of public health concerns to be aware of.

Rachel Breidster: Going back to the original chart we started off with. This is a pretty large-scale problem, then that we're talking about, would you agree with that?

Dr. John May: It is. And I think 25% of workers and the number certainly could be larger than that, and most of them with new onset asthma that's occurred in the workplace either because of immunologic or irritation issues in the airways, and then a smaller proportion of people who have asthma, but it gets consistently worse when they're exposed in the workplace.

Rachel Breidster: So in looking then at the role of physicians in diagnosing and treating and prevention, how many physicians would you say are skilled enough or aware enough to be asking the right questions to identify this 25% that we're talking about?

Dr. John May: As clinicians, we don't do a great job with this. And just at the end here, I'll show you a paper that was published a few years ago, from a VA hospital in California. And they had roughly 200 patients who had been discharged with newly-diagnosed asthma. They simply pulled the charts out and looked at how, how well at least how well documented the investigation of their asthma was. And what they found was that in about 3/4 of cases people had actually identified the job classification. So 58-year-old mechanic, 32-year-old homemaker. That was documented. In about one in five, there was any evidence of even further consideration of the workplace. In only about 4% of these, was there really very much detail. So the sort of detail that I talked about in the very beginning, only about 4% of these, was there enough to think gently about the workplace. 2% of these people so out of 200 people, 4 were
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diagnosed with occupational asthma or work-related asthma. We would expect as we have seen, we would expect that 40 or 50 of those people would have been diagnosed with work-related asthma. So as clinicians we’re not doing such a great job. I think that if the clinician simply asks a couple of key questions, and has a suspicion, and then turns around and refers that patient to somebody with appropriate pulmonary or occupational expertise, that clinician is functioning at a level higher than 90% of their peers.

**Rachel Breidster:** So in recognizing then that we need more information, clinicians need to be doing a little bit more to make this diagnosis, where can they go do find out more information? What’s the resource for our viewers?

**Dr. John May:** Here in New York we’re fortunate in that the Department of Health has a great resource. There is a system of occupational health clinics that are staffed by physicians and nurse who is have occupational expertise. They have industrial hygienists, they have social workers who can provide support and help steer families and patients through this tricky situation. And people can read more about this on the department of health website. If they look for environment and workplace. These clinics are located across New York, really from Long Island to Buffalo. So I would suggest that if people have a patient and they’re wondering if this could be occupational, the easiest way to get it answered is to figure out where’s your nearest occupational health clinic. And send the patient off for an evaluation.

**Rachel Breidster:** There are certainly resources out there.

**Dr. John May:** There are.

**Rachel Breidster:** Great, so now it is great to know that in New York State we have so many resources available. We know that the New York State Department of Health, the Center for Environmental Health is very involved in trying to identify and address the problem as well. Let’s go to Dr. Nathan Graber, the Director of the Center for Environmental Health to hear from him about the importance of the issue and the work being done to address it.

**Rachel Breidster:** So Nathan, we’re talking today about the recognition and diagnosis of work-related asthma. Can you tell me about the role the Department of Health in that program?

**Dr. Nathan Graber:** One of the core functions of the Health Department is something surveillance, the systemic collection of data, and analyzing the data and using it to provide information for preventing those conditions in the first place. And for work-related asthma, we actually have two kinds of surveillance that we conduct here at the Health Department. One is population-based surveillance, which we have actually a couple of questions in what’s called the behavioral risk factor surveillance survey. Which is a statewide survey that collects data on the population as a whole. And asks questions specifically about asthma. Then we had an opportunity to actually go back and ask some of those people about whether or not their workplace helped contribute to the asthma. So it turns out 45% of working adults actually have something in their work environment that makes their asthma worse.
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Rachel Breidster: 45 is a really large percentage. That’s actually very surprising to me. Does the survey collect any data about what kinds of things might be contributing to that asthma?

Dr. Nathan Graber: Until last year we were only able to find out basic information about whether or not it was workplace, the workplace that was contributing to their asthma. And last year, we were able to have a couple of questions about sort of the industry. Or type of work that they do. But it’s not very detailed information and that's why we have a second kind of surveillance. And that's case-based surveillance. Case-based surveillance is where we actually go back and speak to patients who have been diagnosed with asthma, that's related to their work. To find out more about the places that they work, the type of work they do and the potential exposures that can be worsening their asthma. Unfortunately, our case-based surveillance, we don't get a lot of reports so we don't get enough information about work-related asthma across the state.

Rachel Breidster: And so why is it that only a small portion is being identified that you're not getting these reports?

Dr. Nathan Graber: There are a lot of different reasons. Let’s start with just the patients themselves. So they're in the workplace. And they have some trouble breathing. Not everybody is going to actually go to the doctor for that because it maybe gets better when they go home. So they say, I'm okay, I don't, it's just happens at work, I'll be okay. I don't need to go to the doctor. And for those patients who actually make it to the doctor, it's not always the case that they're diagnosed with asthma. it may be that they're diagnosed with some kind of reactive airway disease or some kind of chronic cough, but not necessarily get the diagnosis of asthma once they have the diagnosis of asthma, it's up to the health care provider to actually ask the question is there some place where the asthma gets worse and other places where it's better? If they ask that question, they might find out that it's actually the workplace that it's taking place. Once they find out that it's the workplace, that is contributing to their asthma, then they have to note it in a report.

Rachel Breidster: What are some of the perceived barriers to reporting?

Dr. Nathan Graber: Well one of the problems, and I just was about to lead into this, is that actually, a lot of providers don't know that they need to report. There’s a very long list of reportable conditions that the New York State Department of Health has. As well as some Local Health Departments, which is even more comprehensive than ours. So physicians need to know that this is one of the reportable conditions on that list. And once they know that they're supposed to report, they have to feel comfortable doing it. And sometimes they're not. Specifically when it comes to work-related issues. Because they might be concerned about the patient themselves and whether or not they might get in trouble at work or might be some kind of retribution for having reported their workplace as being a problem. And then there’s also just the classic problem that all physicians have, which is just time. You know, the amount of time it takes out of their schedule, the resources for themselves or their office staff to actually do that reporting.
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Rachel Breidster: What about concerns regarding HIPAA. If physicians are mandated to report this information, might they have concerns about violation of client confidentiality and how it might interact with HIPAA regulations?

Dr. Nathan Graber: Actually HIPAA, expressly states for the purposes of public health surveillance, physicians can report to local health authorities or state health authorities, without actually getting specific permission from the patient themselves.

Rachel Breidster: So how do, once we've achieved these barriers to doctors reporting or not reporting, how do we go about making report?

Dr. Nathan Graber: Before we consider how to do it it's important that the physician understand what is we're going to be asking about. The information we need from the health care provider, includes the patient demographics, some information about the clinical evaluation. And the results of any diagnostic tests that were done. Once they have it all together, you can either go to the website, and download one of our reporting forms, fill that out and fax it to the State Health Department. Or they can just pick up the phone and call and somebody will take that information over the phone.

Rachel Breidster: So I would imagine another potential concern would be what you guys are doing with this information after you've received the report. So can you talk about what it is that you do?

Dr. Nathan Graber: Right. And that's really important because it's important that physicians understand how to use the information and maybe it will encourage more reporting because we really can't learn enough about occupational asthma without speaking to the patients who experience the workplace exposures and the symptoms of asthma. So once we get that information, we may have to call back the doctor once in a while to confirm some of the information but most of the time there's enough information in the report and we call the cases and we discuss with them their asthma, what are some of the triggers that they experience whether or not they're taking place in the workplace and if they are taking place in the workplace, then what are some of the conditions what kind of work do they do? What are some of the protective measures that are in place? And then we take that opportunity to educate them on what they can do to reduce their own exposures and we'll ask them if it's okay for them, if it's okay for them to contact their employer and talk about additional ways that we can address the exposures that are triggering the patient's asthma.

Rachel Breidster: Great. And are there resources available that might help health care providers when talking about patients or working with patients who have work-related asthma?

Dr. Nathan Graber: Absolutely. One of the greatest resources we have in New York State are the occupational health clinics, they're a network of clinics across the state, staffed by physicians who are board-certified in occupational medicine and other professional staff including industrial hygienists, they're a group of professionals who focus on workplace exposures and safety hazards. And the ways to evaluate them and to address them to protect workers. And so in addition, we at the state health department, we also have those kind of, we have industrial hygienist who is can also help to provide
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that information. A lot of, we have outreach in educational material that is available on our website for anybody who can download.

**Rachel Breidster:** Great. So it sounds like health care providers have a very important role in the recognition and diagnosis of work-related asthma, would you agree with that statement?

**Dr. Nathan Graber:** Absolutely. I would agree with that physicians and health care providers are really at the front lines. They see the patients who are experiencing asthma and worsening asthma because of conditions in their workplace. Public Health is a partnership. In order for us to really understand and be able to design effective prevention programs, for work-related asthma, we have to, we have to get that information from physicians and the patients.

**Rachel Breidster:** Great. Well thank you so much for your time today. It’s been great meeting with you.

**Dr. Nathan Graber:** Very nice meeting with you as well. Thank you for coming.

**Rachel Breidster:** So we've certainly covered quite a bit of information in the hour today and we've gotten some questions in from our audience and hopefully we can get to some of those. First is, is it necessary for workers to leave their job if they have work-related asthma?

**Dr. John May:** You know, as a physician, I would say absolutely. But the reality is, that life is a lot more complicated for people and I certainly have patients who I have suggested to them that if they stay in the workplace, there's a good likelihood that their asthma is going to get progressively more problematic and they'll get to a point where we're not able to treat it as well as we can now. They have made the decision to stay in the workplace. Usually for financial reasons. And sometimes it works out and sometimes at some point later on they're forced to leave after all.

**Rachel Breidster:** Now the next question is should I refer my patients who I suspect have work-related asthma to an occupational medicine specialist?

**Dr. John May:** I think either occupational medicine specialist or a pulmonary specialist would be the people to consider. I think since we have this wonderful resource of the occupational clinics in New York, it's an easy way to go. I think one of the benefits of using the occupational clinic is that the clinics have resources that can, not only address issues with the patient, but can hopefully address issues in the workplace.

**Rachel Breidster:** Great. Now just as an aside, our primary audience is New York State. Do you know if there are occupational health clinics throughout the country as well? Or is that outside of your...

**Dr. John May:** New York is really unique in having this. There are a couple of other states that have this capability to a very limited degree. But to have an entire network across the state, to my knowledge New York is unique.

**Rachel Breidster:** Okay. How about if patient does not show improvement on the weekends, does it mean their asthma is not work related?
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**Dr. John May:** It does not. And I think first of all, at least a lot of people that I meet, don't always work on weeks and weekends, so sometimes they'll have Thursday off and then they'll have you know, Tuesday off the next week. So it can, it can be more complicated than that. And I think also, if the airways are pretty inflamed, they may not, they may actually get better over the weekend. But they may not really perceive a big change in things. Early in the disease, I think people can kind of point out that weekends are better. But as the asthma becomes more problematic, it's not always so easy.

**Rachel Breidster:** So as the disease progresses, it's going to become more difficult to make that diagnosis, because you're not getting as much relief.

**Dr. John May:** Right. So you need longer periods of time away from the workplace. And...

**Rachel Breidster:** That's tough to get.

**Dr. John May:** That's a little dicey. You know I work with farmers, and so you know, “when is the last time you had a day off?” “Well I took an afternoon off in 2006”, you know. So for some people, you don't have the luxury of having that, even.

**Rachel Breidster:** Okay. And we have one more question. This is many people who are working in the service industry may represent different ethnic minorities with no health insurance. How do they identify these cases and make sure we provide them with treatment?

**Dr. John May:** So that's a tough question.

**Rachel Breidster:** Sure.

**Dr. John May:** But I do, I think in terms of identifying the cases, you know, we know that people who work in custodial jobs. People, who work around bleaches, cleaning materials, are at particular risk. And so I think that if you have a patient with that, who works that kind of a job, you need to be particularly suspicious. So in terms of identifying them, I think you just have to be suspicious. In terms of the finances of their care, we all know that's a much more dicey situation. But again, this clinic network, does receive state support and I think in most cases, the clinics have some flexibility in terms of the charges and in terms of reimbursement.

**Rachel Breidster:** Great. Well thank you so much for all the information you've shared and for taking the time to answer our viewers' questions.

**Dr. John May:** It's a pleasure.

**Rachel Breidster:** And thank you very much for joining us today. Please remember to fill out your evaluations online. Your feedback is always helpful to the development of our programs and continuing education credits are available. To obtain your Nurse continuing education hours, CME credits, and CHES credits visit www.phlive.org and complete the evaluation and the post test for today's offering. Additional information on upcoming webcasts and relevant topics can be found on our Facebook page. Don't forget to like us on Facebook to stay up to date. This webcast will be available on demand on our
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website within two weeks of today's show. Please join us for our next webcast on July 17th. Mental Health and Substance Abuse: Connecting the Dots. I’m Rachel Breidster, thanks for joining us on public health live.