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Pediatric Lipid Screening Rates In The US Are Low: What Can Labs Do To Help?

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Guest:
Dr. Shannon Haymond is Director of Clinical Chemistry & Mass Spectrometry Laboratories at the Ann & Robert H. Lurie Children's Hospital of Chicago, and Assistant Professor of Pathology at Northwestern University Feinberg School of Medicine.

Bob Barrett: This is a podcast from *Clinical Chemistry*, sponsored by the Department of Laboratory Medicine at Boston Children's Hospital. I am Bob Barrett.

Several studies have suggested that prevention of atherosclerosis should begin in childhood as dyslipidemia in children is associated with severity of atherosclerotic lesions later in life. Pediatric lipid screening aims to identify children and adolescents with dyslipidemia, including both those with more severe genetic cases and those cases with mild to moderate lipid elevation due to secondary causes.

A Perspective article in the August 2015 issue of *Clinical Chemistry* examines the issues of lipid screening in children. The lead author of that article is Dr. Shannon Haymond. She is the Director of Clinical Chemistry & Mass Spectrometry Laboratories at the Ann & Robert H. Lurie Children's Hospital in Chicago. She is also an Assistant Professor of Pathology at Northwestern University Feinberg School of Medicine and she joins us in this podcast.

Dr. Haymond, the title of your Perspective article states that pediatric lipid screening rates in the US are low. Now, what exactly does 'low' mean in this context and what data were used to support that view?

Dr. Shannon Haymond: Well, we were summarizing the results of several recent reports that were evaluating lipid screening in children and they had done this through retrospective review of large datasets that were based on pediatric healthcare visits and then looked at lipid test utilization during those times.

And as you may know, recommendations for lipid screening in children include both targeted and universal approaches, and this is important because

abnormal lipid profiles in kids are associated with severity of atherosclerosis later in life.

So, we know that prevention in children is a key part of improving adult cardiovascular disease risk. These two approaches are needed, because lipid screening in kids aims to identify those with abnormal lipid tests, both because of primary, which are typically genetic and more severe causes, or those that are more secondary, probably a milder dyslipidemia and are commonly associated with lifestyle or environment issues.

And so we performed targeted screening in children that have known risk factors or family history of cardiovascular disease, where universal screening is recommended for any child between the ages of 9 and 11 years old and then again once they are 17-21.

And so in this prospective we highlighted two recent reports. The approaches were a little different in each, but in both it indicated that there was a large discrepancy between what we would expect the rate of lipid screening to be in children and what has actually been observed based on these retrospective data mining techniques.

And although the authors found that the rates were better in those that had risk factors, such as being overweight or obese, they were still below that which was expected.

And this is not surprising, because one, the targeted screening has been recommended for much longer and seems to be less controversial than that of the universal screening. But all of these articles are pointing that despite the approach, lipid screening rates are lower that what we would expect.

Bob Barrett: Why do you think that pediatric lipid screening rates are below than which was expected?

Dr. Shannon Haymond: Well, I think there are a number of reasons for this trend. So on one hand as I just mentioned, the recommendations for the universal lipid screening have been met with a lot of controversy, and among healthcare providers as well as in the history of guidelines on lipid screening in children, there have been differences in opinion on who should be screened. And primarily, there are several concerns over the justification and implications of increased or universal screening.

But the problem is that even for those who intend to follow the latest universal screening recommendations, there are challenges. And so another article that we highlighted in the prospective refers to a study from Dixon and colleagues, which detail the recent survey of primary care physicians in Minnesota.

And the survey responses indicated that there's knowledge gaps related to education about the latest guidelines, so this includes who to screen and how to screen. So do you need a fasting versus a non-fasting test?

And then that follows with how to interpret abnormal results and then manage patients that may have dyslipidemia. We can't discount the importance of considering costs to implement screening and the impact on these workflows in a busy primary care practice as well.

Bob Barrett: Even though screening was endorsed by the American Academy of Pediatrics, recommendations for universal screening have been met with some controversy. Can you talk a little about that please?

Dr. Shannon Haymond: I think the issues for universal screening that have been raised are related to universal screening for a variety of topics and really are focused on the evidence that was used for the recommendations, how it was interpreted, the strength of it, and then also what is known about the implications of increased screening from a cost-effectiveness point of view and also on improvement of outcomes.

And particularly, when you talk about screening in children for something like cardiovascular disease that they won't experience for a very long time, or for thinking about what are the implications in screening of having children require more maybe pharmaceutical interventions, and there is not a tremendous amount of data in those areas, I think that's where a lot of the controversy is stemming from.

Bob Barrett: Finally, Dr. Haymond, your Perspective article outlined several potential ways that clinical laboratories can help improve screening. Can you briefly tell us about your recommendations?

Dr. Shannon Haymond: Sure! So when I started doing research for this and began to discuss it with our pediatrician colleagues

here, including my co-author Dr. Nivedita Mohanty, it struck me that there were opportunities for laboratories to be able to better support efforts for pediatric lipid screening.

There certainly are challenges as we discussed that are going to be outside of the purview of the laboratory, but we did find several things that I think laboratories can change that may facilitate their efforts in lipid screening.

And so first we suggested that laboratories establish a dialogue with providers and evaluate the utilization patterns to better understand opinions and perceived barriers. And I think this is important, because routine lipid profiles are relatively high volume tests and the results are used in management algorithms. So it's really key that laboratories should have a good feel for how these tests are being ordered and used by providers.

So one example of that was the NHLBI Expert Panel recommendations that discussed universal screening call for measurement of non-fasting, non-HDL cholesterol as the first line test in universal screening.

And we suspect that non-HDL cholesterol is underutilized, and we think that because providers may have a difficult time following the recommendation, which is important because it should facilitate screening, but if labs don't have non-fasting lipid profile available for order, and if they are not reporting non-HDL cholesterol, this could make it challenging for providers to follow that recommendation.

So we suggested that labs make these non-fasting profiles orderable, and then to routinely report non-HDL cholesterol when a lipid profile is performed. This is a straightforward calculation.

Another area of improvement that we felt should be examined by labs and resolved as soon as possible is related to the definition of normal and abnormal. We found that some labs are reporting lipids using adult based targets for all ages, and this may lead to incorrect interpretation or underestimation of those requiring intervention, as adult cutoffs are higher than those that are recommended for youth and children, adolescents and young adults. This is with the exception of HDL cholesterol, which has the same target across all ages.

And this was notable, because in that survey study that Dixon et al reported, two-thirds of providers that were surveyed were not familiar with pediatric normal/abnormal ranges. So it's important that laboratories are reporting lipid tests in children using these age-appropriate ranges.

We also included some suggestions about incorporating guideline-based recommendations for management with lipid results in a hope that that may aid provider decision making.

Lastly, we know that many practices are implementing point-of-care tests to facilitate lipid screening, and we thought this was another area where laboratorians could provide their expertise and be a resource to their partners that are in primary care.

Bob Barrett: Dr. Shannon Haymond is the Director of Clinical Chemistry & Mass Spectrometry Laboratories at the Ann & Robert H. Lurie Children's Hospital of Chicago, and an Assistant Professor of Pathology at Northwestern University Feinberg School of Medicine. She has been our guest in this podcast from *Clinical Chemistry* on lipid screening in children.

I am Bob Barrett. Thanks for listening!