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Access to Water, Access to Health

### FOCUS OF THE EMORY CENTER FOR GLOBAL SAFE WATER

Changes and challenges in the wind as 2008 comes to an end. The same is true when examining this month's ReachMD XM160 special series Focus On Global Medicine. We take a look at both the changes and the challenges impacting global medicine.

The ancient mariner was prophetic when he said water, water everywhere but not a drop to drink. You are listening to ReachMD, The Channel for Medical Professionals, and today we have a special segment on global health. I am your host, Dr. Morris Pickard and our guest is Dr. James M. Hughes. Dr. Hughes is Professor of Medicine and Public Health at the Rollins School of Public Health, Emory University. He is also the Director of the Emory Program of Global Infectious Disease and the Director of the Emory Center for Global Safe Water.

#### DR. MORRIS PICKARD:

Thank you very much Dr. Hughes for joining us.

#### Dr. JAMES M. HUGHES:

Thank you very much.

#### DR. MORRIS PICKARD:

Could you tell me to begin with what is the focus of the Emory Center for Global Safe Water?

#### Dr. JAMES M. HUGHES:

The Emory Center for Global Safe Water was established about 5 years ago with the generous support of Dr. Eugene Gangarosa. It is based in the Rollins School of Public Health. It has a focus on research and training and service. The primary opportunities that the center provides is for students in the School of Public Health who have the opportunity to work overseas in developing country environment helping to assess, monitor and evaluate programs that are designed to improve access to water, to improve sanitation, and to improve personal hygiene.

**DR. MORRIS PICKARD:**

What are the global implications of not having portable water on the health in underdeveloped countries?

**Dr. JAMES M. HUGHES:**

Well, the global implications are quite severe. Water is essential to life as we know and 70% of the human body weight approximately is water, so it is very clear to all of us how essential water is; and it is not just the available water, it is pure safe drinking water as well. We think of the issue involving the global safe water is really having 3 parts; access to a safe water supply, access to adequate sanitation facilities to ensure safe ways disposal and then good personal hygiene, which requires water and soap.

**DR. MORRIS PICKARD:**

Do you feel at the present time that we are headed towards a water crisis?

**Dr. JAMES M. HUGHES:**

Well now that is a complicated question. Certainly in the southeastern part of the United States today we have a water crisis. We are in the midst of a very prolonged drought that is impacting people in Georgia, in Alabama, and in Florida in particular, and it is interesting in that it has led to controversy across borders about access to water. Further away, the real problem now is in the developing world where it impacts on the poorest of the poor, and the nature of the problem varies from setting to setting, but it involves in some cases lack of access to safe drinking water and in another cases lack of access to any water as well as typically lack of access to adequate sewage disposal and often lack of access to soap for hand hygiene.

**DR. MORRIS PICKARD:**

You put it in its perspective, you hear numbers like one billion people do not have adequate water to drink and 2.5 billion people do not have adequate sanitation. What is this translates into as far as disease and numbers of death and especially among people who are under the age of 5?

**Dr. JAMES M. HUGHES:**

Well, you are right, the highlight is the children under the age of 5 because they are the ones that are primarily impacted by inadequate and unsafe water and inadequate sanitation and inadequate hygiene. They suffer from a range of water-related diseases, which may include diarrhea, skin infection, eye infection, trachoma being a good example of that, acute respiratory tract infections, and then some of the water-based and vector-borne diseases such as schistosomiasis and guinea worm, on the one hand; malaria, dengue, and African trypanosomiasis on the other hand. So, there is a broad range of water-related diseases. On the sanitation side, the problem is even more complicated because of the challenges posed by intestinal parasitic disease, ascariasis and hookworm and Trichuris come to mind as examples.

**DR. MORRIS PICKARD:**

In your article of August 21, 2008, talking dirty the politics of clean water and sanitation that you wrote with Dr. Barry, kind of really puts this issue in its perspective and breaks down the various types of illnesses that water is involved in, and then you know you touched on trachoma, which is a disease that supposedly 6 million people are blind and all it takes is simple hand washing. Do you think the United States is doing enough as far as third world countries are concerned in this particular area?

**Dr. JAMES M. HUGHES:**

No I think these problems that we are talking about are greatly under appreciated. Partly what we are trying to do was to sensitize the medical and the public health community in this country to the nature and the scope and the severity of these problems. We are interestingly right now right in the middle of the second international decade for water and sanitation. It is called water for life. There was a previous decade throughout the 1980s, during which there was a focus around the world on improving water, sanitation, and hygiene and limited progress was made. We are currently in the midst of the second water decade, one of the millennium development goals, # 7, the goal that focusses on environmental sustainability, has targets for improving access around the world for people to safe water and adequate sanitation. Those targets are in place. Progress towards them is being monitored. There is some progress, but it is not going to at the current rate to achieve the targets established for the year 2015; and the problem is most severe in Sub-Saharan Africa where there is at the current rate no chance of even approaching the targets.

**DR. MORRIS PICKARD:**

I would like to ask you, do you think that having water is actually a human right?

**Dr. JAMES M. HUGHES:**

Absolutely. It is not only is that a human right; it is essential to life as we know it. It is a global public good and it is critical that the international community understand that and provide the support that is needed both in terms of leadership and finances to help address this global problem, which impacts predominantly the poorest of the poor around the world.

**DR. MORRIS PICKARD:**

United States has had a clean water act in 1972 and a safe drinking water act in 1974. This is certainly something in our country we have been aware of. Again, why has not this information translated into a more aggressive pattern, especially are doctors doing enough?

**Dr. JAMES M. HUGHES:**

Well, doctors I am sure in the developing world, where this problem is most severe, wish they could do more about this because they see the ravages of these water-related diseases, particularly in children under 5, but they are constrained in that they confront a broad range of illnesses in the populations that they care for. They have limited access to medications and other supplies that are needed. They have very limited access to diagnostic facility, and so they have many, many things to worry about. Another interesting feature to this problem is that when you go into a developing country setting, and you visit a Ministry of Health, they will be aware of the disease impact of some of these water-related pathogens; but when you talk to them about water and sanitation issues, typically those are not the responsibility of Ministry of Health, they fall under the Ministry of Water, Ministry of Environment; and so to really confront this problem, it requires a broad-range of partnerships across disciplines and across organizational structures and the impetus for that is often not present.

**DR. MORRIS PICKARD:**

Earlier you mentioned guinea worm, there were 3.5 million cases a year of guinea worm just a decade ago and were now down to 9000. Is this the success story that we can build on? You mentioned what it takes. What was so successful about the guinea worm success story and how can it be transmitted into the other water-borne and water-vector diseases?

**Dr. JAMES M. HUGHES:**

Well, that is an excellent question. The one thing for the audience to appreciate is that guinea worm is the only infectious disease that is exclusively transmitted by drinking water. There are many other enteric pathogens that are transmitted in some cases by contaminated water, but in another cases by contaminated food and in other cases by transmission from person to person. It happens so that the guinea worm is the one that is only transmitted by contaminated drinking water and it falls into the category of water-related diseases that people will often refer to as water breeding insect vector related diseases. In fact with guinea worm, the life cycle involves introduction of larvae into a surface water supply or a shallow well and then propagation of the larvae to the infectious form in a microscopic organism that is present in the drinking water; and then a subsequent consumption by susceptible people. So there are interventions that can be applied, but in terms of the major global focus now in the effort to make a guinea worm either the second or possibly the third infectious disease eradicated, small pox being the first and polio being the other disease that is requiring a major focus now in terms of disease eradication. I think guinea worm is in well position to be number 2 or number 3 in large part because of the political will that has been generated and President Carter at the Carter Center here in Atlanta deserves tremendous credit for his leadership role in this in terms of galvanizing Ministers of Health and national leaders in guinea worm-affected countries to get them to appreciate this problem and to take it seriously. The leadership and the political will are fundamental to progress and you can see as your figures indicate the dramatic progress that has been made, but there are still foci of transmission in Northern Ghana and Southern Sudan in particular that are requiring enhanced efforts.

**DR. MORRIS PICKARD:**

Answers in public health seem to be obvious and you have to get people to buy into them. What can we do about this?

**Dr. JAMES M. HUGHES:**

Well, many answers are obvious, and some are less so, but behavioral change is critically important in this water-related disease area, and in fact the health education programs to target behavioral change are one of the components of the Guinea Worm Control Program. Those need to be culturally appropriate and target the impacted population in the way that motivates them to change behaviors. One particular behavior that needs to be changed is to keep people who have active guinea worm disease with the worm emerging from the skin typically in the lower extremities, away from surface water sources because if they go into the water sources, they would like to do because of the burning pain that the lesion results in, the larvae then are released by the worm and that kicks off the life cycle in the environment.

**DR. MORRIS PICKARD:**

I want to thank our guest Dr. James M. Hughes, Professor of Medicine and Public Health at the Rollins School of Public Health, Emory University.

I am Dr. Morris Pickard your host and you have been listening to a special segment on Global Health from ReachMD, The Channel for Medical Professionals. Please visit our website at [www.reachmd.com](http://www.reachmd.com), which features our entire library through on-demand pod cast. Thank you again for listening.

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