[MUSIC PLAYING]

DR. ANN LINDSTRAND: Malaria deaths have plunged by 60% since the year 2000, translating into 6.2 million lives saved, the vast majority of them children. But despite this tremendous progress, malaria remains an acute public health problem in many regions. In 2015 alone, there were an estimated 200 million new cases of malaria.

About 3.2 billion people-- almost half of the world population-- are at risk of malaria. Some countries continue to be the most affected. And 15 countries-- mainly in sub-Saharan Africa-- account for 80% of malaria cases globally.

In Africa, a child dies every minute from malaria, especially those living in the poorest and most remote areas. Malaria is transmitted by mosquitoes, about 20 different so-called anopheles species exist around the world. And malaria mosquitoes bite at night.

Anopheles mosquito breed in water. For example, shallow collections of fresh water such as puddles and rice fields. And transmission depends, also, on climatic conditions such as rainfall patterns, temperature, and humidity. And in many places, transmission is seasonal, with the peak during and after the rainy season.

Partial immunity is developed over years of exposure. Therefore, malaria deaths in Africa occur in the youngest children. Whereas in areas with less transmission and low immunity, all age groups are at risk. Now, malaria is an acute febrile illness.

Symptoms appear seven days or more after the infective mosquito bite. And the first symptoms-- fever, headache, chills, and maybe mild vomiting-- may be mild and difficult to recognize as malaria. But if not treated within 24 hours, malaria can rapidly progress to severe illness, often leading to death.

Children with severe malaria frequently develop very severe anemia, respiratory distress, and cerebral malaria. Early diagnosis and treatment is, therefore, very necessary to reduce disease and prevent the deaths. It also contributes to reducing the malaria transmission actually.

The best available treatment-- particularly for plasmodium falciparum malaria-- is artemisinin-

based combined therapy. It's called ACT. But in 2015, only an estimated 13% of children with a fever in sub-Saharan Africa received these drugs.

Then also, fast on-site diagnostic kits-- so-called rapid tests-- are widely used, but still not enough used. Test results can be available in 15 minutes and less to get the diagnosis of malaria and know what to treat. But resistance to anti-malarial medicines is a recurring problem. Resistance to previous generations of medicines became widespread in the '70s and '80s.

But in recent years, parasite resistance to artemisinin have been detected in five countries- Cambodia, Laos, Myanmar, Thailand, and Vietnam. OK, so treatment carries problems reaching the children in time. And then we have the risk of resistance.

Well, better then, to avoid children getting ill in the first place. And mosquito control is the main way to reduce malaria transmission at the community level. Long-lasting insecticide nets are the preferred form of impregnated bed nets for all at-risk persons.

It is most cost effective if it is provided for free. And in recent years, mosquito resistance to the insecticides used in the bed nets has emerged. But unfortunately, bed nets remain very effective in almost all settings.

Indoor residual spraying with insecticides is a powerful way to rapidly reduce malaria transmission. It is at its best when at least 80% of houses in targeted areas are sprayed. Indoor spraying is effective for three to six months. So. It is a really continuous work and requires great, great efforts.

Finally, after decades of research, there is a licensed vaccine against malaria. The vaccine is against this plasmodium falciparum malaria. It has been evaluated in a large clinical trial in seven countries in Africa.

And the vaccine efficacy is not great. But even if it prevents less than half of all the malaria cases, it definitely saves many lives.

Today we have discussed treatment and prevention of the main child killers. As you can see, we know why, and we know what to do about these killer diseases. Evidence-based best practice is there.

But reality of implementing these is so much more difficult. What to do when resources lack to

get to the health care facility, or to buy new bed nets? What to do when antibiotics and ACT stocks are out?

And what to do when help personnel is lacking, underpaid, and therefore, not motivated? So there's still much to do to save children's lives for you, the future public health professionals. Much of the information I've provided in this lecture comes from WHO websites. And you're, of course, very welcome to go to their websites and find out more.