

# Is the stethoscope dying? High-tech rivals pose a threat

October 23 2019, by Lindsey Tanner

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In this 1915-1923 photo made available by the Library of Congress, a doctor examines a child with a stethoscope, accompanied by a nurse, in the United States. Two centuries after its invention, the stethoscope—the very symbol of the medical profession—is facing an uncertain prognosis. It is threatened by hand-held devices that are also pressed against the chest but rely on ultrasound technology, artificial intelligence and smartphone apps instead of doctors' ears to help detect leaks, murmurs, abnormal rhythms and other problems in the heart,

lungs and elsewhere. (Harris & Ewing/Library of Congress via AP)

Two centuries after its invention, the stethoscope—the very symbol of the medical profession—is facing an uncertain prognosis.

It is threatened by hand-held devices that are also pressed against the chest but rely on ultrasound technology, artificial intelligence and smartphone apps instead of doctors' ears to help detect leaks, murmurs, abnormal rhythms and other problems in the heart, lungs and elsewhere. Some of these instruments can yield images of the beating heart or create electrocardiogram graphs.

Dr. Eric Topol, a world-renowned cardiologist, considers the stethoscope obsolete, nothing more than a pair of "rubber tubes."

It "was OK for 200 years," Topol said. But "we need to go beyond that. We can do better."

In a longstanding tradition, nearly every U.S. medical school presents incoming students with a white coat and stethoscope to launch their careers. It's more than symbolic—stethoscope skills are still taught, and proficiency is required for doctors to get their licenses.

Over the last decade, though, the tech industry has downsized ultrasound scanners into devices resembling TV remotes. It has also created digital stethoscopes that can be paired with smartphones to create moving pictures and readouts.



In this Monday, July 8, 2019 photo, James Thomas, a cardiologist at Northwestern Hospital in Chicago examines Dennis Calling, a retired Chicago inspector. With medical advances and competing devices over the past few decades, "the old stethoscope is kind of falling on hard times in terms of rigorous training," says Thomas. "Some recent studies have shown that graduates in internal medicine and emergency medicine may miss as many as half of (heart) murmurs using a stethoscope."(AP Photo/Amr Alfiky)

Proponents say these devices are nearly as easy to use as stethoscopes and allow doctors to watch the body in motion and actually see things such as leaky valves. "There's no reason you would listen to sounds when you can see everything," Topol said.

At many medical schools, it's the newer devices that really get students'

hearts pumping.

"Wow!" "Whoa!" "This is awesome," Indiana University medical students exclaimed in a recent class as they learned how to use a hand-held ultrasound device on a classmate, watching images of his lub-dubbing heart on a tablet screen.

The Butterfly iQ device, made by Guilford, Connecticut-based Butterfly Network Inc., went on the market last year. An update will include artificial intelligence to help users position the probe and interpret the images.

Students at the Indianapolis-based medical school, one of the nation's largest, learn stethoscope skills but also get training in hand-held ultrasound in a program launched there last year by Dr. Paul Wallach, an executive associate dean. He created a similar program five years ago at the Medical College of Georgia and predicts that within the next decade, hand-held ultrasound devices will become part of the routine physical exam, just like the reflex hammer.



In this Monday, July 8, 2019 photo, James Thomas, a cardiologist at Northwestern Hospital in Chicago examines Dennis Calling, a retired Chicago inspector using Eko Duo, a new device for cardiovascular screening. Northwestern is involved in a study testing the new artificial intelligence technology which combines a stethoscope with an electrocardiogram. To improve detection of heart murmurs the system uses an algorithm based on recordings of thousands of heartbeats. (AP Photo/Amr Alfiky)

The devices advance "our ability to take peek under the skin into the body," he said. But Wallach added that, unlike some of his colleagues, he isn't ready to declare the stethoscope dead. He envisions the next generation of physicians wearing "a stethoscope around the neck and an ultrasound in the pocket."

Modern-day stethoscopes bear little resemblance to the first stethoscope, invented in the early 1800s by Frenchman Rene Laennec, but they work essentially the same way.

Laennec's creation was a hollow tube of wood, almost a foot long, that made it easier to hear heart and lung sounds than pressing an ear against the chest. Rubber tubes, earpieces and the often cold metal attachment that is placed against the chest came later, helping to amplify the sounds.

When the stethoscope is pressed against the body, sound waves make the diaphragm—the flat metal disc part of the device—and the bell-shaped underside vibrate. That channels the sound waves up through the tubes to the ears. Conventional stethoscopes typically cost under \$200, compared with at least a few thousand dollars for some of the high-tech devices.

STETHOSCOPES.



Stokes'.



Burrows'.



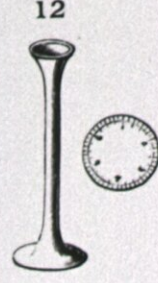
Williams'.



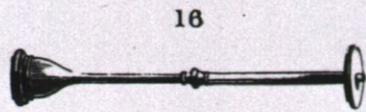
Fergusson's.



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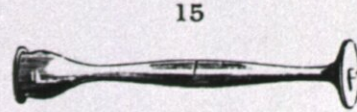
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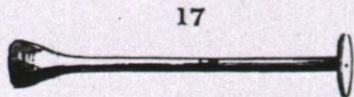
Davis'.



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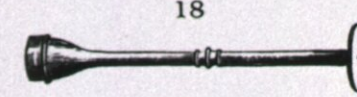


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Maw's.



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Maw's.



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21



22

Cedar Stethoscopes.



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Laennec's.



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7

Laennec's.



3

Elliottson's.



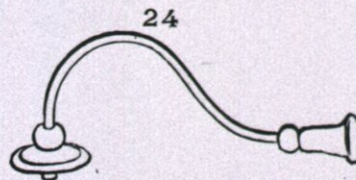
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Walsh's.



10

Hughes'.



24

Golding Bird's.



13

Barron's.



14

Billing's.

This image made available by the U.S. National Library of Medicine shows a page from a 1869 catalog of instruments and medical supplies with diagrams of various models of stethoscopes. Two centuries after its invention, the stethoscope—the very symbol of the medical profession—is facing an uncertain prognosis. It is threatened by hand-held devices that are also pressed against the chest but rely on ultrasound technology, artificial intelligence and smartphone apps instead of doctors' ears to help detect leaks, murmurs, abnormal rhythms and other problems in the heart, lungs and elsewhere. (National Library of Medicine via AP)

But picking up and interpreting body sounds is subjective and requires a sensitive ear—and a trained one.

With medical advances and competing devices over the past few decades, "the old stethoscope is kind of falling on hard times in terms of rigorous training," said Dr. James Thomas, a cardiologist at Northwestern Medicine in Chicago. "Some recent studies have shown that graduates in internal medicine and emergency medicine may miss as many as half of murmurs using a stethoscope."

Northwestern is involved in testing new technology created by Eko, a Berkeley, California-based maker of smart stethoscopes. To improve detection of heart murmurs, Eko is developing artificial intelligence algorithms for its devices, using recordings of thousands of heartbeats. The devices produce a screen message telling the doctor whether the heart sounds are normal or if murmurs are present.

Dennis Callinan, a retired Chicago city employee with heart disease, is among the study participants. At age 70, he has had plenty of stethoscope exams but said he feels no nostalgia for the devices.





LAENNEC AND THE STETHOSCOPE

At Necker Hospital, Paris, France, in 1816, Dr. Theophile Laennec devised hollow wooden cylinders for listening to sounds in patients' chests. These early stethoscopes helped physicians to better understand diseases of the lungs.

One of a series: *A History of Medicine In Pictures*, presented by Parke, Davis & Company  
Designed by George A. Bender © 1960 Painted by Robert A. Thom

PRINTED IN U.S.A.

This image made available by the University of Michigan shows the 1960 painting "Laennec and the Stethoscope" by Robert Thom, depicting Dr. Theophile Laennec examining a young patient at Necker Hospital in Paris, France, in 1816. Laennec's invention made it easier to hear heart and lung sounds than pressing an ear against the chest. Rubber tubes, earpieces and the often cold metal attachment that is placed against the chest came later, helping to amplify the sounds. (From the collection of Michigan Medicine, University of Michigan, Gift of Pfizer Inc. via AP)



This Aug. 2, 2019 photo shows a Butterfly iQ handheld ultrasound device attached to a tablet on a bed at the Indiana University medical school in Indianapolis. The device shows instant images of the heart and other organs, helping doctors diagnose a range of ailments. (AP Photo/Lindsey Tanner)



In this Aug. 2, 2019 photo, students practice with each other using a Butterfly iQ handheld ultrasound device attached to a tablet during a class at Indiana University medical school in Indianapolis. The device shows instant images of the heart and other organs, helping doctors diagnose a range of ailments. (AP Photo/Lindsey Tanner)



In this Tuesday, Oct. 30, 2012 photo, a doctor who started practicing medicine in 1955 wears a stethoscope around his neck as he tends to patients in his office in Illinois. Two centuries after its invention, the stethoscope—the very symbol of the medical profession—is facing an uncertain prognosis. It is threatened by hand-held devices that are also pressed against the chest but rely on ultrasound technology, artificial intelligence and smartphone apps instead of doctors' ears to help detect leaks, murmurs, abnormal rhythms and other problems in the heart, lungs and elsewhere. (AP Photo/Jeff Roberson)

"If they can get a better reading using the new technology, great," Callinan said.

Chicago pediatrician Dr. Dave Drelicharz has been in practice for just over a decade and knows the allure of newer devices. But until the price

comes down, the old stalwart "is still your best tool," Drelicharz said. Once you learn to use the stethoscope, he said, it "becomes second nature."

"During my work hours in my office, if I don't have it around my shoulders," he said, "it's as though I was feeling almost naked."

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