Portable laser devices to improve disease diagnosis

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Portable devices that use a laser beam to probe bones, teeth, and other parts of the body for early signs of diseases like osteoporosis and tooth decay may seem like something out of science fiction. But those devices are moving closer to reality, according to an article in the current issue of Chemical & Engineering News (C&EN), ACS' weekly newsmagazine.

C&EN Senior Editor Celia Henry Arnaud notes that these new diagnostic tools will have the ability to see beneath the skin and detect disease, without exposing patients to X-rays. They embrace a technology that involves focusing a laser beam painlessly through the skin onto a bone or onto the surface of a tooth. After hitting its target, the beam returns to an electronic detector with imprinted information that can reveal whether disease is present. Called Raman spectroscopy, the technology is a mainstay tool in chemistry laboratories that is finding a new life in medicine.

The article describes growing medical interest in Raman-based devices, especially for diagnosing osteoporosis and other bone diseases, and for tracking the effectiveness of treatment. Another application may be in very early detection of tooth decay, so that dentists can treat soft spots on tooth enamel before "drill-and-fill" becomes the only option. The technique could also mean blood tests done without taking blood samples, the article indicates.

More information: "Raman Heads For The Clinic" at

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