

From Space science to space age medicine



Science & Technology
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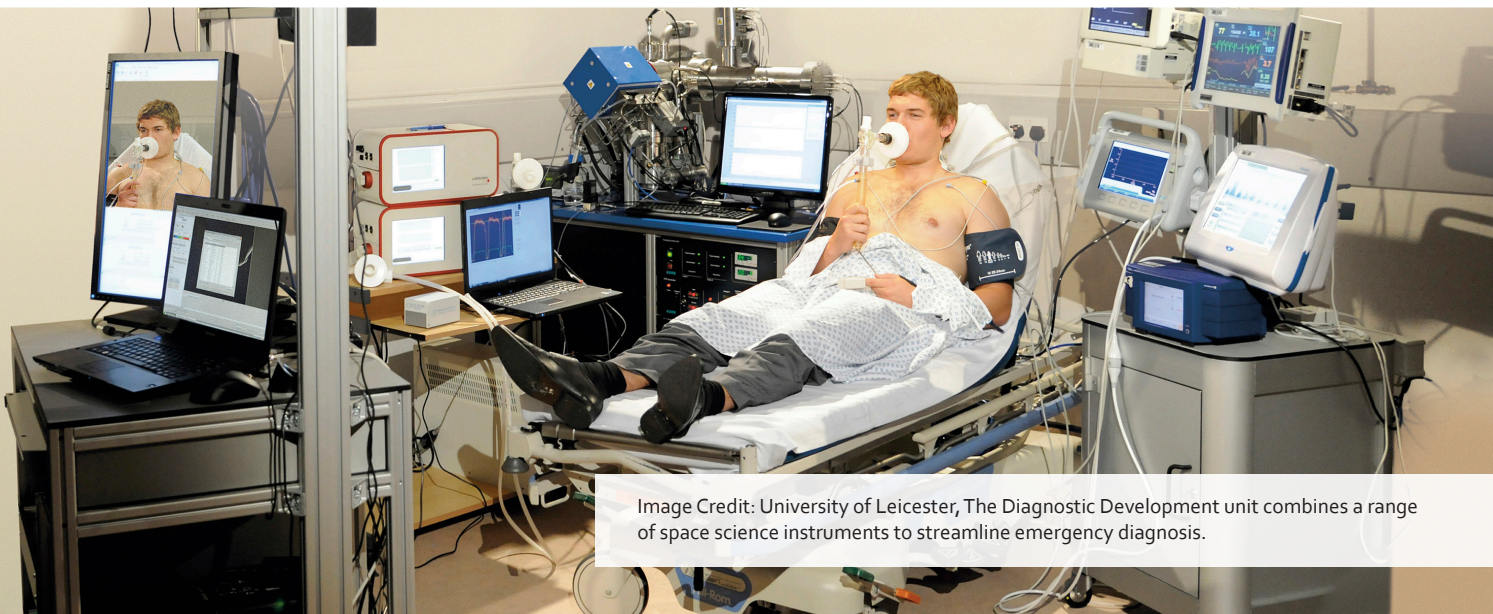


Image Credit: University of Leicester, The Diagnostic Development unit combines a range of space science instruments to streamline emergency diagnosis.

Technology used for studying other planets is being repurposed to improve emergency care on earth.

In emergency care, time is short. Therefore traditional diagnostic tests can be of limited use, delaying the detection of life-threatening complications such as kidney failure.

Scientists at the University of Leicester's diagnostic development unit (DDU) have adapted hyper-spectral imaging technology normally used to study the surfaces of other planets to analyse a patient's skin.

When combined with other non-invasive data, this potentially allows severe conditions such as sepsis (shock), or kidney failure to be rapidly detected without interfering with the patient's treatment.

The DDU has secured £420,000 in funding from the Higher Education Funding Council for England and follows on from an STFC Innovations Partnership Scheme to detect forensic evidence at crime scenes. This funding has allowed the DDU to continue to test the technique in a clinical setting.

The DDU aims to combine a whole array of instruments from multiple areas of science to produce a science fiction like system that can rapidly and painlessly diagnose the patient. Additional instruments include thermal (infra-red) imaging, point spectroscopy

of skin, breath analysis using mass spectrometers, and measurement of skin, breath analysis using mass spectrometers, and measurement of Better diagnostics could also allow conditions such as acute kidney injury (a common problem among hospitalised patients) to be detected earlier and so more effectively treated. Given that acute kidney injury costs the NHS £434 million, more than skin, breast and lung cancer combined this could have significant impact on health services. Sepsis is a major problem for the NHS with c36,800 deaths per year in the UK. The NHS Critical Care Unit costs of 90,000 cases of severe sepsis being over £1.5 billion/year.

As NHS accident and emergency care (A&E) keeps hitting the headlines, technologies like this could save lives and reduce the burden on hospitals.

“ It is has been an very interesting and rewarding experience transferring STFC technology and techniques to medical diagnostics. Hopefully within the near future Diagnostics Development Unit work will be helping to reduce costs and save lives.

Professor Mark Sims, University of Leicester. ”