

Maths plus medicine equals new imaging innovation

May 8 2014



Medical undergraduate Charles Baker has developed a mathematical model to improve liver imaging methods. Inset: An image of a liver with five lesions.

A medical student from The University of Queensland has applied his background in mathematics to the field of nuclear medicine to improve liver imaging methods, which may improve diagnosis time and possibly save patients undergoing unnecessary surgery.

Third year medical undergraduate Charles Baker has developed a mathematical model that can be programmed into existing [scanning equipment](#) to enhance images of patients' livers.

Mr Baker said the model uses variables specifically relating to the structure of the [liver](#) to help nuclear medicine specialists better differentiate between healthy and damaged liver tissue.

"This means we can improve the output of existing scanning equipment to provide better image quality for [nuclear medicine](#) specialists," Mr Baker said.

"The resulting images demonstrate higher contrast between healthy liver tissue and unhealthy [liver tissue](#), such as malignant tumours."

The mathematical model is undergoing clinical appraisal in the Nuclear Medicine Department at the Royal Brisbane and Women's Hospital (RBWH) and Mr Baker said initial feedback had been encouraging.

"We hope that practical testing of the model across a larger number of images will help identify how it will improve clinical decision-making and patient outcomes."

"For example, scans using the [mathematical model](#) may help to more clearly identify areas of dead tumour tissue and active tumour tissue. Clinicians can use this information to better target treatments."

The improved contrast would also help specialists to more easily interpret scans, saving time.

"Most importantly, the higher contrast scans might save people from undergoing unnecessary surgical procedures," Mr Baker said.

He is now working on mathematical models to improve imaging in other parts of the body, such as the brain.

Provided by University of Queensland

Citation: Maths plus medicine equals new imaging innovation (2014, May 8) retrieved 24 January 2023 from <https://medicalxpress.com/news/2014-05-maths-medicine-equals-imaging.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.