Point-of-care creatinine tests to assess kidney function for outpatients requiring contrast-enhanced CT imaging: systematic reviews and economic evaluation

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Declared competing interests of authors: Martine Harris has received point-of-care creatinine devices and consumables for use in research studies from Nova Biomedical (Runcorn, UK), Abbott Laboratories (Chicago, IL, USA) and Radiometer Ltd (Crawley, UK). She has co-authored academic papers in this area from 2016 to present and contributed (from August 2017 to January 2018) as an expert commentator for the National Institute for Health and Care Excellence's Medtech innovation briefing number 136 (MIB136) entitled 'Point-of-care creatinine tests before contrast-enhanced imaging'. James Altunkaya is funded via a National Institute for Health Research Research Methods Fellowship. Sofia Dias has received Medical Research Council funding.

Published August 2020
DOI: 10.3310/hta24390

Plain English summary

Point-of-care creatinine tests for kidney function
Health Technology Assessment 2020; Vol. 24: No. 39
DOI: 10.3310/hta24390

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Before computed tomography scans are done, a contrast agent is usually needed to improve the visibility of internal body structures. After receiving a contrast agent (through a vein), some patients' kidneys may be affected, especially if their kidneys already do not work well. A blood test can identify these patients before a computed tomography scan, to reduce the risk of kidney harm. The blood test measures creatinine, which is a marker of how well the kidneys work.

Before a contrast-enhanced computed tomography scan, some patients have a recent creatinine result from an earlier blood test. Blood tests are normally done in a central laboratory, and usually take at least 1 hour. Other patients do not have a recent creatinine result, so their computed tomography scan may be delayed or rearranged. Sometimes, to avoid risking kidney harm, patients may have scans without contrast. 'Point-of-care' (handheld, tabletop or portable) devices can quickly measure creatinine (usually in patients with risk factors), often from a finger-prick blood sample. Many point-of-care devices are available but they may not be as exact as laboratory tests, so their benefit is unclear.

This study reviewed all available evidence on the benefits and harms of point-of-care creatinine tests before computed tomography scans and assessed whether or not they are a cost-effective use of NHS resources. The study found that some devices [i.e. i-STAT (Abbott Point of Care, Inc., Princeton, NJ, USA) and ABL (Radiometer Ltd, Crawley, UK)] were more accurate than others [i.e. StatSensor® (Nova Biomedical, Runcorn, UK)]. There was insufficient evidence for other devices. The study found that, for outpatients, doing a point-of-care test in patients who are at a higher risk of kidney harm (according to a questionnaire) and then confirming this with a laboratory test appeared to be a cost-effective use of NHS resources. The study found that the risk of kidney harm as a result of contrast agents appears very low. The main benefit of point-of-care testing may be to reduce needless delays or rearranged computed tomography scan appointments.

Health Technology Assessment

NICE TAR and DAR

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 3.370

Health Technology Assessment is indexed in MEDLINE, CINAHL, EMBASE, the Cochrane Library and Clarivate Analytics Science Citation Index.

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This report

The research reported in this issue of the journal was commissioned and funded by the HTA programme on behalf of NICE as project number NIHR127519. The protocol was agreed in November 2018. The assessment report began editorial review in May 2019 and was accepted for publication in November 2019. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care.

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