## **Prognostic models of survival in patients** with advanced incurable cancer: the PiPS2 observational study

Patrick Stone,<sup>1\*</sup> Anastasia Kalpakidou,<sup>1</sup> Chris Todd,<sup>2</sup> Jane Griffiths,<sup>2</sup> Vaughan Keeley,<sup>3</sup> Karen Spencer,<sup>2</sup> Peter Buckle,<sup>1</sup> Dori-Anne Finlay,<sup>1</sup> Victoria Vickerstaff<sup>1</sup> and Rumana Z Omar<sup>4</sup>

 <sup>1</sup>Marie Curie Palliative Care Research Department, Division of Psychiatry, University College London, London, UK
<sup>2</sup>School of Health Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK

<sup>3</sup>Palliative Medicine Department, Derby Teaching Hospitals NHS Foundation Trust, Derby, UK

<sup>4</sup>Department of Statistical Science, University College London, London, UK

\*Corresponding author p.stone@ucl.ac.uk

**Declared competing interests of authors:** Patrick Stone reports membership of the National Institute for Health Research Health Technology Assessment (HTA) End of Life Care and Add on Studies Board (2015–16). Rumana Omar is a member of the HTA General Committee (2018 to present).

**Disclaimer:** This report contains transcripts of interviews conducted in the course of the research and contains language that may offend some readers.

Published May 2021 DOI: 10.3310/hta25280

## **Plain English summary**

The PiPS2 observational study Health Technology Assessment 2021; Vol. 25: No. 28 DOI: 10.3310/hta25280

NIHR Journals Library www.journalslibrary.nihr.ac.uk

# **Plain English summary**

A prognosis is a prediction about how long someone will live after a diagnosis of illness. The Prognosis in Palliative care Study (PiPS) tools [PiPS-A (Prognosis in Palliative care Study – All) and PiPS-B (Prognosis in Palliative care Study – Blood), respectively] were designed to predict survival in patients with incurable cancer. Previously, they were found to be as accurate as health-care professionals. The purpose of this study was to find out whether PiPS was more accurate at prognosticating than health-care professionals, to evaluate other prognostic tools and to ask patients, their carers and health-care professionals what they thought about using them.

We studied 1833 patients with advanced cancer and calculated their PiPS score and other prognostic scores. We asked health-care professionals to estimate how long the patients would live. We then followed up the patients to find out how long they actually lived and if the predictions made by health-care professionals were as accurate as the predictions made by the prognostic tools. We interviewed patients, their carers and health-care professionals to ask them what they thought about using these prognostic tools.

We found that PiPS-B was as accurate as the combined wisdom of a doctor and a nurse at predicting whether patients would live for 'days', 'weeks' or 'months+'. We found that PiPS-A predictions were not as accurate as predictions made by health-care professionals. We found that (where direct comparisons could be made) PiPS-B was better than other prognostic tools. Finally, we found that patients, carers and health-care professionals thought that PiPS tools could be helpful in clinical practice because they would be less subjective than clinicians' intuition.

This means that PiPS-B could be considered as a tool to support clinician predictions of survival and may lead to patients and families being able to take more control at the end of their lives. Further research will be required to investigate whether or not this approach actually leads to improvements in care.

### **Health Technology Assessment**

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.

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

Editorial contact: journals.library@nihr.ac.uk

The full HTA archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hta. Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: www.journalslibrary.nihr.ac.uk

#### Criteria for inclusion in the Health Technology Assessment journal

Reports are published in *Health Technology Assessment* (HTA) if (1) they have resulted from work for the HTA programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

#### **HTA programme**

Health Technology Assessment (HTA) research is undertaken where some evidence already exists to show that a technology can be effective and this needs to be compared to the current standard intervention to see which works best. Research can evaluate any intervention used in the treatment, prevention or diagnosis of disease, provided the study outcomes lead to findings that have the potential to be of direct benefit to NHS patients. Technologies in this context mean any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease.

The journal is indexed in NHS Evidence via its abstracts included in MEDLINE and its Technology Assessment Reports inform National Institute for Health and Care Excellence (NICE) guidance. HTA research is also an important source of evidence for National Screening Committee (NSC) policy decisions.

#### **This report**

The research reported in this issue of the journal was funded by the HTA programme as project number 13/20/01. The contractual start date was in May 2016. The draft report began editorial review in August 2019 and was accepted for publication in March 2020. 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.

© Queen's Printer and Controller of HMSO 2021. This work was produced by Stone *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. This issue may be freely reproduced for the purposes of private research and study and extracts (or indeed, the full report) may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Prepress Projects Ltd, Perth, Scotland (www.prepress-projects.co.uk).

### NIHR Journals Library Editor-in-Chief

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

### NIHR Journals Library Editors

**Professor John Powell** Chair of HTA and EME Editorial Board and Editor-in-Chief of HTA and EME journals. Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK, and Professor of Digital Health Care, Nuffield Department of Primary Care Health Sciences, University of Oxford, UK

**Professor Andrée Le May** Chair of NIHR Journals Library Editorial Group (HS&DR, PGfAR, PHR journals) and Editor-in-Chief of HS&DR, PGfAR, PHR journals

**Professor Matthias Beck** Professor of Management, Cork University Business School, Department of Management and Marketing, University College Cork, Ireland

Dr Tessa Crilly Director, Crystal Blue Consulting Ltd, UK

Dr Eugenia Cronin Senior Scientific Advisor, Wessex Institute, UK

Dr Peter Davidson Consultant Advisor, Wessex Institute, University of Southampton, UK

Ms Tara Lamont Senior Scientific Adviser (Evidence Use), Wessex Institute, University of Southampton, UK

Dr Catriona McDaid Senior Research Fellow, York Trials Unit, Department of Health Sciences, University of York, UK

Professor William McGuire Professor of Child Health, Hull York Medical School, University of York, UK

Professor Geoffrey Meads Emeritus Professor of Wellbeing Research, University of Winchester, UK

**Professor James Raftery** Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

Dr Rob Riemsma Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

Professor Helen Roberts Professor of Child Health Research, UCL Great Ormond Street Institute of Child Health, UK

Professor Jonathan Ross Professor of Sexual Health and HIV, University Hospital Birmingham, UK

**Professor Helen Snooks** Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

**Professor Jim Thornton** Professor of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University of Nottingham, UK

Please visit the website for a list of editors: www.journalslibrary.nihr.ac.uk/about/editors

Editorial contact: journals.library@nihr.ac.uk