Screening and brief interventions for adolescent alcohol use disorders presenting through emergency departments: a research programme including two RCTs

Paolo Deluca,1* Simon Coulton,2 Mohammed Fasihul Alam,3 Sadie Boniface,1 Kim Donoghue,1 Eilish Gilvarry,4,5 Eileen Kaner,5 Ellen Lynch,5 Ian Maconochie,6 Paul McArdle,4 Ruth McGovern,5 Dorothy Newbury-Birch,7 Robert Patton,8 Tracy Pellatt-Higgins,2 Ceri Phillips,9 Thomas Phillips,1,10 Rhys Pockett,9 Ian T Russell,11 John Strang1,12 and Colin Drummond1,12†

1Addictions Department, National Addiction Centre, Institute of Psychiatry, Psychology and Neuroscience, King’s College London, London, UK
2Centre for Health Services Studies, University of Kent, Canterbury, UK
3Department of Public Health, College of Health Sciences, Qatar University, Qatar
4Northumberland Tyne and Wear NHS Foundation Trust, Newcastle upon Tyne, UK
5Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK
6Paediatric Emergency Medicine, Imperial College London, London, UK
7School of Health and Social Care, Teesside University, Middlesbrough, UK
8School of Psychology, University of Surrey, Guildford, UK
9Swansea Centre for Health Economics, College of Human and Health Sciences, Swansea University, Swansea, UK
10Institute for Clinical and Applied Health Research, University of Hull, Hull, UK
11Medical School, Swansea University, Swansea, UK
12South London and Maudsley NHS Foundation Trust, London, UK

*Corresponding author paolo.deluca@kcl.ac.uk
†Chief investigator and senior author

Declared competing interests of authors: Paolo Deluca acknowledges past and current research funding from the National Institute for Health Research (NIHR), the Medical Research Council (MRC) and the European Commission. Paolo Deluca is also supported by South London and Maudsley NHS Foundation Trust (SlaM) and by the NIHR Biomedical Research Centre (BRC) for Mental Health at King’s College London and SlaM. Simon Coulton acknowledges past and current research funding as chief investigator and co-investigator from NIHR, Alcohol Research UK, Dunhill Medical Trust, MRC, Lundbeck Ltd (St Albans, UK) and Kent County Council. Mohammed Fasihul Alam acknowledges past and current research funding from
Qatar University Internal Grant, NIHR and Community Pharmacy Wales. Kim Donoghue acknowledges past and current research funding from NIHR. Eilish Gilvarry acknowledges grants from NIHR during the conduct of the study. Eileen Kaner is a senior scientist in the NIHR School of Primary Care Research and NIHR School of Public Health Research as part of Fuse, a UK Clinical Research Collaboration (UKCRC) Centre of Excellence in Translation Public Health Research. Eileen Kaner also acknowledges past and current research funding as chief investigator and co-investigator from NIHR, the MRC Public Health Intervention Development Scheme (PHIND), the Department of Health and Social Care, The British Academy, Public Health England, European Research Area Network on Illicit Drugs (ERANID), Policing Research Partnership, North Yorkshire County Council, the Institute of Local Governance, Alcohol Research UK, MRC, the European Commission, Sunderland Clinical Commissioning Group (CCG), the Health Foundation, Research Capability Funding, Diabetes UK and Newcastle upon Tyne Hospitals NHS Foundation Trust. Ian Maconochie acknowledges grants from NIHR during the conduct of the study. Paul McArdle reports grants from NIHR during the conduct of the study. Ruth McGovern acknowledges past and current research from NIHR, Public Health England, North East and North Cumbria, North Yorkshire County Council, ERANID, the Department of Health and Social Care, the Institute of Local Governance, N8 Policing Research Partnership, Alcohol Research UK, The Children’s Society, Mental Health Research Network – North East Hub and Sunderland CCG. Dorothy Newbury-Birch acknowledges past and current research funding from Public Health England, North Yorkshire County Council, Heaulm, Alcohol Research UK, County Durham and Darlington NHS Foundation Trust, The Children’s Foundation, NIHR, MRC PHIND, Forces in Mind Trust, the Joseph Rowntree Foundation, The Children’s Society, the European Commission, British Skin Foundation Small Grant and Newcastle upon Tyne Hospitals NHS Foundation Trust. Robert Patton acknowledges past and current research funding from NIHR, Surrey County Council, the Software Sustainability Institute, Alcohol Research UK and the Higher Education Academy. Ceri Phillips acknowledges past and current research funding from the National Institute for Social Care and Health Research, NIHR, United European Gastroenterology and Asthma UK. Thomas Phillips was funded by a NIHR Clinical Doctoral Research Fellowship. Ian T Russell acknowledges grants from NIHR during the conduct of the study and personal fees from Swansea University outside the submitted work. John Strang reports grants and other funding from Martindale Pharma (Ashton Gate, UK), grants and other funding from Mundipharma (Cambridge, UK), and grants and other funding from Braeburn (Plymouth Meeting, PA, USA) outside the submitted work. In addition, John Strang has a patent Euro-Celtique issued and a patent King’s College London pending, is supported by the NIHR Biomedical Research Centre for Mental Health at South London and Maudsley NHS Foundation Trust and King’s College London, and is in receipt of a NIHR Senior Investigator Award. He has also worked with a range of governmental and non-governmental organisations and with pharmaceutical companies to seek to identify new or improved treatments from which he and his employer (King’s College London) have received honoraria, travel costs and/or consultancy payments. This includes work with, during the past 3 years, Martindale, Reckitt Benckiser/Indivior (Slough, UK), Mundipharma and Braeburn/Medpace (Cincinnati, OH, USA) and trial medication supply from iGen Networks Corp. (Las Vegas, NV, USA) (iGen/Atral-Cipan, Castanheira do Ribatejo, Portugal). His employer, King’s College London, has registered intellectual property on a novel buccal naloxone formulation, and he has also been named in a patent registration by a pharmaceutical company as inventor of a concentrated nasal naloxone spray. John Strang also acknowledges past and current research funding as chief investigator and co-investigator from NIHR, Mundipharma, MRC, The Pilgrim Trust, Martindale Pharma, the Alcohol and Education Research Council, the Institute of Social Psychiatry and the University of London Central Research Fund. Colin Drummond is partly funded by the NIHR Biomedical Research Centre for Mental Health at SLaM and King’s College London, and partly funded by the NIHR Collaborations for Leadership in Applied Health Research and Care South London at King’s College Hospital NHS Foundation Trust. In addition, Colin Drummond is in receipt of a NIHR Senior Investigator Award. Colin Drummond acknowledges past and current research funding as chief investigator and co-investigator from NIHR, MRC, Guy’s and St Thomas’ Charity, Nuffield Foundation, European Union Directorate-General for Justice and Consumers (JUST), Alcohol Research UK, NHS England, the Department of Health Policy Research Programme, World Health Organization, the European Commission and the Alcohol Education and Research Council.
Scientific summary

SBIs for adolescent alcohol use disorders
Programme Grants for Applied Research 2020; Vol. 8: No. 2
DOI: 10.3310/pgfar08020

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

Background

Alcohol consumption is a major public health concern. Although the main burden of chronic alcohol-related disease is in adults, its foundations often lie in adolescence. Alcohol consumption and related harm increase steeply from the age of 12 years, and although the proportion of young people in England aged between 11 and 15 years who reported that they had drunk alcohol had decreased in the last 30 years, the mean amount consumed by those who drank doubled. About 10% of 11- to 15-year-olds and 33% of 15- to 16-year-olds in England had reported alcohol intoxication in the past month.

Alcohol use and alcohol use disorders (AUDs) are relatively uncommon in early adolescence. Nevertheless, alcohol has a disproportionate effect on younger adolescents, for example by predisposing them to alcohol dependence in later life and damage to the developing brain. In middle adolescence (ages 15–17 years), binge drinking emerges. Although binge drinking does not necessarily meet the criteria for an AUD, it is associated with an increased risk of unprotected or regretted sexual activity, criminal and disorderly behaviour, suicidality and self-harm, injury, drink driving, alcohol poisoning and accidental death.

In 2009, the Chief Medical Officer for England provided recommendations on alcohol consumption in young people based on an evidence review (Donaldson L. Guidance on the Consumption of Alcohol by Children and Young People. London: Department of Health and Social Care; 2009). These recommendations stated that children should abstain from alcohol before the age of 15 years and that 15- to 17-year-olds should not drink, but, if they do drink, then they should consume no more than the recommended limits for adults (currently 14 units per week).

Alcohol screening and brief interventions in health settings

Opportunistic alcohol screening and brief interventions (SBIs) in emergency departments (EDs) capitalise on the ‘teachable moment’ when a connection can be made between alcohol consumption and ED attendance. SBIs in EDs have shown efficacy in adults and adolescents, and evidence of cost-effectiveness in adults. However, although there has been an increase in SBIs for adults, adolescents remain a comparatively neglected group.

Several alcohol screening methods have been developed in the USA but not evaluated in the UK. Questionnaires were found to perform better than blood markers or breath alcohol concentration in all age groups. However, most of these had low sensitivity and specificity and are therefore suboptimal for effective screening.

The validity of alcohol screening methods in younger adolescents is also unclear. Existing approaches do not sufficiently take account of the age and developmental stage of adolescents.

Moreover, a systematic review of brief alcohol interventions in young people attending health settings identified nine randomised controlled trials (RCTs) between 1999 and 2008. Eight were based in the USA and one was based in Australia. Six trials tested brief interventions based on one or two sessions of motivational interviewing (MI) that lasted between 20 and 45 minutes. One trial tested a more intensive programme of four MI sessions over 1 month. Two studies used information technology to deliver brief interventions, one using an audio programme in primary care and the other using an interactive computer program in a minor injury unit.
Five trials reported significant positive effects of brief interventions on a range of alcohol consumption measures, whereas three trials reported null effects after brief interventions. One trial reported an increase in alcohol use and binge drinking among brief intervention subjects, which is a possible adverse effect.

Therefore, there is a need to develop more effective alcohol screening tools and interventions for adolescents in the ED that are age appropriate and cover a wider range of alcohol consumption and alcohol-related problems than do existing methods. Although evidence suggests that brief interventions may be beneficial for adolescents, particularly in EDs, there is a clear need for a UK trial to examine this further.

This research programme was designed to address these key gaps in the evidence base for the most clinically effective and cost-effective SBIs for at-risk adolescent heavy drinkers, and prevent alcohol uptake or increased alcohol consumption in low-risk adolescents attending EDs.

**Work package 1: prevalence study of alcohol consumption and alcohol use disorders in adolescents aged 10–17 years attending emergency departments**

This work package investigated the prevalence of alcohol consumption in adolescents presenting to EDs and the association between that consumption, age at onset, and health and social behaviours. In addition, we assessed the diagnostic performance of brief screening tools.

**Methods**

We included 5376 consecutive attenders, aged 10–17 years, at 10 EDs. We collected information on alcohol use, alcohol-related health and social consequences, general health and social functioning, and quality of life.

**Results**

Nearly 40% of adolescents reported that their consumption of alcohol was more than a sip in their lifetime. First alcohol consumption before the age of 15 years was associated with tobacco use [odds ratio (OR) 2.8, 95% confidence interval (CI) 1.8 to 4.2; \( p < 0.001 \)], lower quality of life (OR 1.5, 95% CI 0.5 to 2.6; \( p = 0.003 \)) and diagnosis of AUD (OR 2.4, 95% CI 1.3 to 4.4; \( p = 0.002 \)). It was also associated with impaired general social functioning [presence of conduct disorder (OR 4.5, 95% CI 1.8 to 11.4; \( p < 0.001 \)) and hyperactivity (OR 2.6, 95% CI 1.4 to 4.8; \( p < 0.001 \)), alcohol-related health and social consequences [accidents (OR 1.8, 95% CI 1.0 to 3.2; \( p = 0.046 \)), and problems with parents (OR 4.4, 95% CI 1.3 to 15.4; \( p = 0.017 \)), school (OR 3.7, 95% CI 1.2 to 11.3; \( p = 0.0117 \)) or police (OR 13.5, 95% CI 1.7 to 102.4; \( p = 0.012 \)].

We tested the screening properties of the questionnaire against the standard (Timeline Followback) criteria for at-risk drinking, heavy episodic alcohol consumption and the *International Classification of Diseases, Tenth Edition* (ICD-10), for hazardous alcohol use and dependence. We identified appropriate cut-off points for each instrument. An Alcohol Use Disorders Identification Test, Consumption (3 items) (AUDIT-C) score of \( \geq 3 \) was the optimal cut-off point for at-risk drinking (sensitivity 0.89, 95% CI 0.89 to 0.91; specificity 0.97, 95% CI 0.96 to 0.97), monthly episodic alcohol use (sensitivity 0.76, 95% CI 0.73 to 0.80; specificity 0.98, 95% CI 0.97 to 0.98) and alcohol abuse (sensitivity 0.91, 95% CI 0.85 to 0.95; specificity 0.90, 95% CI 0.88 to 0.91). A score of 7 for the full Alcohol Use Disorders Identification Test was considered the optimal cut-off point for identifying alcohol dependence (sensitivity 0.96, 95% CI 0.89 to 0.99; specificity 0.90, 95% CI 0.88 to 0.91).
Conclusions
We found associations of alcohol consumption and earlier onset of drinking with poorer health and social functioning. EDs offer opportunities to identify at-risk alcohol use in adolescents. A simple, short, self-completed screening instrument, the AUDIT-C, is an effective tool for identifying adolescents who are at risk of alcohol-related problems, or engage in monthly heavy episodic alcohol use or in harmful alcohol use, according to the ICD-10 criteria. A score of 7 on the AUDIT-C is effective in identifying adolescents who are alcohol dependent.

Work package 2: exploratory modelling of the interventions
This work package developed age-appropriate alcohol interventions in collaboration with the target audience through a series of focus groups and evaluations.

Personalised feedback and brief advice
The personalised feedback and brief advice (PFBA) intervention is structured brief advice that takes approximately 5 minutes to deliver. It is based on an advice leaflet from Screening and Intervention to Promote Sensible drinking (SIPS), Brief Advice About Alcohol Risk, and was adapted for the target age group in this study. The advice covers recommended levels of alcohol consumption for young people; summarises the screening test results and their meaning; provides normative comparative information on prevalence rates of high- and low-risk drinking in young people; summarises the risks of drinking and highlights the benefits of stopping or reducing alcohol consumption; outlines strategies that the young person might employ to help stop or reduce alcohol consumption; and indicates where to obtain further help if they are unsuccessful or need more support.

Electronic brief intervention based on smartphone or web
The electronic brief intervention (eBI) smartphone intervention is an offline-capable mobile web application that works on a variety of platforms, but it was optimised for recent iPhone (Apple Inc., Cupertino, CA, USA) and Android (Google Inc., Mountain View, CA, USA) phones. It has been developed using the concept of gamification so that users can navigate, explore, learn facts and figures about alcohol, receive personalised feedback and set goals in an engaging format. The content adapts to provide the most pertinent information and advice for high- or low-risk drinkers. Game components of the web application supported high-risk drinkers to reduce or stop their alcohol consumption and low-risk users to maintain abstinence or low-risk drinking.

Work package 3: linked randomised controlled trials of face-to-face and electronic brief intervention methods to prevent alcohol-related harm in young people aged 14–17 years presenting to emergency departments
In work package 3, we conducted two linked RCTs to evaluate the clinical effectiveness and cost-effectiveness of PFBA and eBI (the two alcohol interventions described above), compared with screening alone, in 14- to 17-year-olds attending 10 EDs in England. One trial focused on at-risk adolescent drinkers (AUDIT-C score of ≥ 3) and the other focused on abstinent or low-risk drinkers (AUDIT-C score of < 3). Our primary (null) hypothesis was similar for both trials: PFBA and personalised feedback plus eBI are as effective as screening alone in reducing or preventing alcohol consumption, in standard UK units (1 unit = 8 g of ethanol), over the past 3 months, at 12 months after randomisation, as measured with the AUDIT-C. Our secondary (null) hypothesis for related health economics states that PFBA and eBI are as cost-effective as screening alone.
**Methods**
We undertook participant recruitment, baseline data collection, randomisation, intervention delivery and follow-up electronically via an ad hoc, secure computer tablet application developed as part of this programme. We recruited 1639 participants into the trials from 10 EDs: 756 high-risk drinkers and 883 low-risk drinkers or abstainers. Follow-up at 6 and 12 months was 82.9% and 73.0%, respectively.

**Results**
The mean age of participants was 16.1 [standard deviation (SD) 0.9] years in the high-risk study and 15.2 (SD 1.0) years in the low-risk study. There was a similar proportion of male and female participants, with 50.7% female overall. Primary analysis employed an intention-to-treat approach, in which participants were allocated as members of their allocated group irrespective of the treatment received. Analysis of the primary outcome, namely average weekly alcohol consumption in standard UK units (1 unit = 8 g of ethanol) at month 12, was conducted using analysis of covariance, adjusting for baseline values, age and gender. There were no significant differences between the three groups in either trial: in the high-risk trial, the mean difference compared with control was 0.57 (95% CI –0.36 to 1.70) for PFBA and 0.19 (95% CI –0.71 to 1.30) for eBI; in the low risk trial, the mean difference compared with control was 0.03 (95% CI –0.07 to 0.13) for PFBA and 0.01 (95% CI –0.10 to 0.11) for eBI. No significant interactions were observed between baseline alcohol consumption and allocated intervention. Alcohol consumption at 12 months was predicted at baseline by higher alcohol consumption, younger age at first drink, older age, being female, greater positive alcohol expectancy and greater alcohol-related problems. Health economic analysis supported the null hypothesis that neither PFBA nor eBI is more cost-effective than screening alone in both trials.

**Conclusions**
Findings from this research indicate that both face-to-face and electronic interventions were neither more effective nor more cost-effective than screening alone in reducing or preventing alcohol consumption in 14- to 17-year-olds attending EDs.

**Qualitative study**
Once follow-up was completed for all trials, we interviewed a sample of participating adolescents to explore their understanding of the study, as well as their views about the information and advice they received.

**Methods**
We interviewed 27 adolescents aged 14–17 years. Audio-recorded interviews were transcribed verbatim and thematically analysed, guided by four ethical principles (autonomy, beneficence, non-maleficence and justice).

**Results**
Participants were broadly positive about their experience of being approached and involved in the research process, and the emergency care context was felt to be acceptable. Participants reported a ‘need to know’ about risks from alcohol consumption, as this behaviour was seen to be common among young people. However, the presence of a primary caregiver during screening procedures could influence a young person’s disclosure about alcohol use. The majority of participants demonstrated a high degree of moral agency, that is, an awareness and capacity to be responsible for actions related to their own health and well-being, and this extended to providing consent, on their own behalf, to participate in the relevant clinical trial.
Conclusions
There is limited evidence regarding effective behaviour change interventions for young people attending health services owing to concerns about involving vulnerable adolescents in research. However, even relatively young adolescents reported the capacity to provide informed consent and showed a clear interest in research that was relevant to them and had potential to benefit young people like them.

Discussion
The results of both the low- and the high-risk trials showed that we were able to recruit a sufficient number of participants to each trial to meet our target. We were also able to exceed the minimum follow-up targets in both trials. However, in both trials no significant differences in outcome were found between groups on either primary or secondary outcome measures. This supported the null hypothesis that PFBA and eBI are no more effective in preventing or reducing alcohol consumption in either low- or high-risk drinkers than screening alone.

In both trials, we found that engagement with the eBI was low among participants randomised to eBI. Only one-third of participants engaged with the eBI platform after leaving the ED. This may have limited the impact of the eBI compared with the control intervention. However, as these were pragmatic trials, this is likely to be the level of engagement expected in the typical patient recruited from an ED.

Low application program (app) usage or engagement is a common issue. The vast majority of apps, and other online interventions, are not used 1 month after they are downloaded. We also know that patients are less likely to engage in extended interventions when the onus to engage is on them.

A large proportion of the literature based on eBI has focused on the provision of websites, as opposed to smartphone apps. Arguably, the most important problem with developing an effective eBI app is engaging participants enough for them to find it useful.

Further research should explore strategies to improve engagement with the intervention.

Patient and public involvement
We worked closely with the British Youth Council and the Family and Parenting Institute, which facilitated focus group workshops in London and Newcastle. About 150 members of our target age group contributed to both methodology and materials. This activity changed our screening and intervention, notably the use of tablet computers for consent and data collection, and the design of specific materials, notably our PFBA brief advice leaflet and SIPS City app (version 2.1, King’s College London, London, UK). We now maintain a database of young people interested in taking this work forward, whom we intend to engage in disseminating study findings.

Overall conclusions
This research programme was designed to address key gaps in the evidence base for the most clinically effective and cost-effective SBIs for adolescents attending EDs. The research has advanced our understanding of the nature and prevalence of AUDs in adolescents, and provided a firm foundation for future research to improve care for this population. We established the prevalence of AUDs and consequences of drinking in young people attending EDs using validated research tools. We developed age-appropriate and acceptable interventions for this population, in partnerships with national and local organisations, and tested them in two linked randomised trials.
**Trial registration**

This trial is registered as ISRCTN45300218.

**Funding**

This project was funded by the National Institute for Health Research (NIHR) Programme Grants for Applied Research programme and will be published in full in *Programme Grants for Applied Research*; Vol. 8, No. 2. See the NIHR Journals Library website for further project information.
Critera for inclusion in the Programme Grants for Applied Research journal

Reports are published in Programme Grants for Applied Research (PGfAR) if (1) they have resulted from work for the PGfAR programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Programme Grants for Applied Research programme

The Programme Grants for Applied Research (PGfAR) programme, part of the National Institute for Health Research (NIHR), was set up in 2006 to produce independent research findings that will have practical application for the benefit of patients and the NHS in the relatively near future. The Programme is managed by the NIHR Central Commissioning Facility (CCF) with strategic input from the Programme Director.

The programme is a national response mode funding scheme that aims to provide evidence to improve health outcomes in England through promotion of health, prevention of ill health, and optimal disease management (including safety and quality), with particular emphasis on conditions causing significant disease burden.

For more information about the PGfAR programme please visit the website: http://www.nihr.ac.uk/funding/programme-grants-for-applied-research.htm

This report

The research reported in this issue of the journal was funded by PGfAR as project number RP-PG-0609-10162. The contractual start date was in June 2011. The final report began editorial review in June 2017 and was accepted for publication in February 2019. As the funder, the PGfAR programme agreed the research questions and study designs in advance with the investigators. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The PGfAR editors and production house have tried to ensure the accuracy of the authors’ report and would like to thank the reviewers for their constructive comments on the final report 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, CCF, NETSCC, PGfAR 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 PGfAR programme or the Department of Health and Social Care.

© Queen’s Printer and Controller of HMSO 2020. This work was produced by Deluca 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 Senior Clinical Researcher, 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  Director, NIHR Dissemination Centre, 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  Professor of Wellbeing Research, University of Winchester, UK

Professor John Norrie  Chair in Medical Statistics, University of Edinburgh, 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

Professor Martin Underwood  Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, UK

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

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