

INTERDISCIPLINARY RESEARCH IN HEALTH SCIENCES (IRIHS) ANNUAL REPORT 2020

IRIHS is a research unit within the Nuffield Department of Primary Care Health Sciences at the University of Oxford. It is led by Professors Trisha Greenhalgh and Sara Shaw. IRIHS aims to undertake high-quality interdisciplinary research, teaching and applied scholarship in fields relating to clinical practice, organisation and delivery of health services, health policy, translational science (covering the social and behavioural science of innovation and adoption), digital health and the patient experience.

Main achievements in 2020

1. **EXPANSION OF ACADEMIC STAFF.** We have continued to expand. We now have one Clinical Professor, two Associate Professors, four Senior Researchers, one Senior Research Manager, eight Postdoctoral Researchers, 17 DPhil students (three of which passed in 2020 with no corrections), two additional (Predoctoral) Researchers, five Academic Clinical Fellows, and six Academic-related and Support staff.
2. **RESEARCH:** Research income for new research studies in 2020 included £1.33M as principal investigators. We have just under £1M in ongoing research grants.
3. **AWARDS AND FELLOWSHIPS.** Trish Greenhalgh gained a Highly Cited Researcher Award and an Honorary Doctorate from University of Oslo. Gemma Hughes gained a Postdoctoral research fellowship (50% WTE) at the University of Oslo. Sara Paparini gained a Wellcome Trust Secondment Fellowship. Caitlin Pilbeam won a Mildred Blaxter Postdoctoral Fellowship in Social Sciences. Luke Allen won a Clinical Doctoral Fellowship at LSHTM.
4. **PUBLICATION AND DISSEMINATION:** We published 85 peer-reviewed academic articles. We attracted £112K in impact-related funding for industry attachments and policy engagement. We gave a number of high-profile keynote lectures, conference presentations and policy briefings. IRIHS senior staff sit on various policy groups e.g. Fahy is Special Adviser to the House of Commons Select Committee on Brexit; Greenhalgh advises World Health Organisation and NHS England. We played a prominent role in public understanding of science in the pandemic.
5. **TEACHING:** We commenced our new MSc Programme in Translational Health Sciences in October 2020 and we will soon be accepting students for the THS DPhil programme, which commences in October 2021. We contributed to various MSc courses at Oxford.
6. **DOCTORAL STUDENTS.** Of our 18 DPhil students, three passed with no corrections. Five students passed their Transfer of Status.

Staff in post on 31 December 2020 (see also DPhil students below)

ACADEMIC STAFF				
Name		Role	Academic field	FTE
Trisha	Greenhalgh	Clinical Professor and Co-Director of IRIHS	GP, social sciences	100%
Sara	Shaw	Associate Professor and Co-Director of IRIHS	Health policy, sociology	90%
Geoff	Wong	Associate Professor	GP and Realist Research	40%
Nick	Fahy	Senior Researcher	Health policy and systems/ Psychology	50%
Anne	Ferrey	Senior Researcher and Departmental Lecturer. Course Director, MSc in THS	Cognitive Psychology	100%

Chrysanthi	Papoutsi	Senior Researcher	Social sciences	100%
Joe	Wherton	Senior Researcher	Psychology / HCI	100%
Stuart	Faulkner	Senior Research Manager	Medical innovation and health systems policy	100%
Joanna	Crocker	Postdoctoral Researcher	Biomedical Sciences/ Mixed Methods	60%
Teresa	Finlay	Postdoctoral Researcher	Nursing / Social sciences	80%
Gemma	Hughes	Postdoctoral Researcher	Social sciences/ NHS management	50%
Lucy	Moore	Postdoctoral Researcher	Nursing/ Primary Care research	80%
Sara	Paparini	Postdoctoral Researcher	Social sciences (Anthropology)	100%
Claire	Reidy	Postdoctoral Researcher	Psychology	100%
Alexander	Rushforth	Postdoctoral Researcher	Sociology	100%
Lucas	Seuren	Postdoctoral Researcher	Linguistics	100%
Christine	A'Court	GP Researcher	GP with extended role in cardiology	5%
Claire	Duddy	Research Fellow	Realist reviewer/ information specialist	80%
Luke	Allen	Academic Clinical Fellow	GP	50%
Asli	Kalin	Academic Clinical Fellow	GP	20%
Emma	Ladds	Academic Clinical Fellow	GP	20%
Neda	Taghinejadi	Academic Clinical Fellow	Sexual and Women's Health	20%
Michael	Walker	Academic Clinical Fellow	GP	20%
Eleanor	Barry	Doctoral Fellow	GP	50%
Julian	Treadwell	Doctoral Fellow	GP	75%

ACADEMIC-RELATED AND SUPPORT STAFF				
Name		Role	Main focus	FTE
Julie	Darbyshire	Research Manager (BRC)	Clinical Informatics	50%
Polly	Kerr	BRC PPI Manager	Patient and public involvement, communications	90%
Jill	Fardon	BRC Theme Liaison /Administrator	BRC administration	80%
Laiba	Husain	Research Assistant	Social Sciences	60%
Caroline	Jordan	Administrator	General support/ PA	20%
Charlotte	Thompson-Grant	Administrator / PA	IRIHS administration / PA	80%

ASSOCIATES				
Name		Role	Academic field	
Aileen	Clarke	Honorary Clinical Professor	Health services research	
Alexander	Finlayson	Past Academic Clinical Fellow (GP)	Primary health care	

Higher degree students (including those on staff payroll)

BASED IN OUR DEPARTMENT (INCLUDING DPHILS in EBHC REGISTERED WITH CONT ED)

Name	Background	Supervisor	Funding	Topic	From (FT/PT)	Progress
Adrian Rohrbasser	GP / Educator	Wong, Harris, Mickan	Self	Quality circles in primary health care: realist evaluation	2013 (PT)	Passed with no corrections in November 2020
Paul Dijkstra	Sports Medicine	Greenhalgh Glyn-Jones	Self	Primary care morphology in adolescent athletes	2015 (PT)	ToS passed in 2018
Caitlin Pilbeam	Anthropology	Greenhalgh Potter	Wellcome Trust	Living well while dying	2016 (FT)	Passed with no corrections in January 2020
Sietse Wieringa	GP	Greenhalgh Engebretsen	Norwegian Research Council	Mindlines (socially shared knowledge) among GPs	2016 (PT)	Passed with no corrections in January 2020
Richard Gleave	Policymaker	Shaw, Fahy, Greenhalgh	Public Health England	How national public health bodies use evidence	2017 (PT)	ToS passed in Feb 2019
Katrin Micklitz	Mindfulness Practitioner	Wong, Howick	Self	Workplace-based mindfulness programmes	2017 (PT)	ToS passed in Jan 2020
Helene-Mari van der Westhuizen	Clinical medicine	Greenhalgh Butler Tonkin-Crine Ehrlich	Rhodes Scholar	Reducing the spread of Tuberculosis transmission in rural areas in South Africa	2018 (FT)	ToS passed in December 2019
Jacobus Koetze	Doctor	Greenhalgh Fahy	Rhodes Scholar	Ethical influences on clinician-managers	2018 (FT)	ToS passed in Jan 2020
Alex Jager	Social policy	Wong, Papoutsis	NIHR SPCR	The usage of data within primary care commissioning: a realist synthesis and evaluation	2018 (FT)	ToS passed in Jan 2020
Jackie Walumbe	Physiotherapy	Shaw, Silman, Swinglehurst	NIHR DRF	Self-management in chronic pain	2018 (PT)	ToS passed in Sept 2019
Julian Treadwell	GP	Greenhalgh Mahtani Crocker	NIHR DRF	Online tools for assessing benefits & harms of treatments	2018 (PT)	ToS passed Jan 2020
Ellie Barry	GP	Greenhalgh Shaw	NIHR DRF	Lived experience of pre-diabetes	2018 (PT)	ToS passed in March 2020
Mona Koshkouei	Pharmacy	Greenhalgh Papoutsis Dopson	Self	Falsified Medicines Directive	2018 (PT)	ToS passed Nov 2019
Maryam Ahmadyar	Dental public health	Wong	Clarendon scholar	Improving access of young homeless people to dental services	2018 (FT)	ToS passed in Jan 2020
Georgette Eaton	Paramedic	Mahtani, Wong, Tierney	NIHR CDRF	Use of paramedics in primary care	2019 (PT)	ToS coming up in 2021

Jeremy Leslie-Spinks	Professional Dance	Greenhalgh	Rosamund Snow Scholar in Patient-Led Research	Narratives of elite ballet dancers with degenerative spinal disease.	2020	
Katherine Kalaris	International Development	Wong, English	Self	A realist evaluation of implementing better care practices and bundled technologies in Kenyan Hospitals	2020 (PT)	ToS due in 2022

BASED ELSEWHERE

Name	Based in	Background	Supervisor	Topic	From (FT/PT)	Progress
Tim Stephens	Queen Mary U of London	Intensive care nursing	Pearse, Shaw	Sustainability of quality improvement in acute settings	2015 (PT)	9m review passed Feb 2016
Sarah Kilcoyne	Law	SALT/Law	Herring, Teare, Finlay	Children's decision-making in Craniosynostosis care	2017 (PT)	ToS passed 2019
Oscar Lyons	Nuffield Dept of Surgical Science	Medical doctor	Fahy, Canter, MucCulloch	Does leadership training for clinical staff lead to clinical outcome benefits?	2017 (FT)	CoS passed Sept 2019
Jaimie Lee Freeman	Oxford Internet Institute	Psychology & Education	Neff Shaw Papoutsi	Adolescents' use of digital self-tracking technologies	2019 (FT)	ToS passed in May 2020

Research activity

New research grants secured in 2020 on which we are principal investigators:

- Remote by Default Care in the COVID-19 Pandemic: addressing the micro-, meso-, and macro-level challenges of a radical new service model.** UKRI Covid-19 Research Fund (via ESRC) 2020-21. PI – TG with SS, LS, TF, JW, AR, CP, SF, SWi, LH (and others). £753,325.
- NHS Health Check programme: a realist review,** Oct 2020 - Dec 2021. NIHR HS&DR Programme, £247,701 (GW – PI, CD)
- Can phenotypes developed from enhanced remote primary care assessment of COVID-19 be used to identify a cohort of community cases, and enable comparison of recovered and long COVID?** Health Data Research UK and Office of National Statistics Jan – June 2021. PI – TG with Simon de Lusignan and colleagues from Imperial. £197,314.
- Supporting Consultations in Remote Physiotherapy (SCiP): a mixed-methods study of physical examinations by video in NHS physiotherapy services,** Feb 2021 – Jan 2022 (expected), National Institute for Health Research, £98,728.92 (LS and SS co-PI; with Jackie Walumbe and others)

5. **Video consulting during and beyond the COVID-19 pandemic**, Health Foundation, £91,278, Jun-20 – Jan-21 (PI SS, with TG, JW, CP)
6. **Evidence Into Practice**: developing electronic versions of NASSS-CAT tools. £50,000. 2020-2021. Health Foundation. PI - TG, with CP and JW.

New research grants secured in 2020 on which we are co-investigators:

7. **Evaluating the national rollout of the NHS App in England**. (£500,000). NIHR HS&DR programme. Oct 2020 to Sept 2022 (PIs Felix Greaves at Imperial College London and John Powell at University of Oxford; CP as Co-Investigator and lead for qualitative work package).
8. **VIRTUAL PRESENCE: A cultural analysis of the emergence of ‘telepresence technologies’ as a solution to loneliness**. Research Council of Norway. International collaboration with Oslo Met and University of Oslo. 2020-2024. PI - Marit Haldar, with TG, JW, SS. Nkr 835,000 of Nkr28,536,000 (about £85,000 of £3 million).
9. **A rapid realist review of community pharmacy support for the public health agenda during the COVID-19 pandemic and future health emergencies**. £3,339 of £85,441. MRC funded study, July 2020 to Dec 2020 (PI Maidment, Aston University; GW as Co-Applicant).
10. **Optimising cultural provision to improve older people’s wellbeing through social prescribing in the context of COVID-19: Realist review and evaluation**. £19,609 of £270, 289. UKRI funded study, July 2020 to June 2021 (PI Tierney and Mahtani, NDPCHS; GW as Co-Applicant).
11. **Evidence base to inform health service configuration for abortion provision**. £5,366 of £1,033,956. NIHR HS&DR Programme, Sept 2020 to Aug 2022 (PI Wellings and French, LSHTM; GW as Co-Applicant).
12. **Learning to Harness Innovation in Global Health for Quality Care (HIGH-Q)**. NIHR Global Health Policy & Systems call. PI - M English with TG. Role: Adviser on technological innovation in LMICs

Ongoing research studies on which we are principal investigators:

13. **Partnerships for Health, Wealth and Innovation** (Biomedical Research Centre theme). NIHR, £6.5M (of which £1.393M is formally allocated to IRIHS). April 2017 – March 2022. (TG, with NF).
14. **Studies in Co-creating Assisted Living Solutions (SCALS)**. £1.053M Wellcome Trust Senior Investigator Award plus £27K Public Engagement Award. July 2015 – June 2020. (TG, with JW, SS, SH).
15. **PARADIGM** (Patients Active in Research and Dialogues for an Improved Generation of Medicines), £457,653 of €9M total grant, funded by the EU’s Innovative Medicines Initiative, 2.5 years March 2018 – Aug 2020 (NF is UK-based PI with SF, SI, TF).
16. **Case study, Context and Complex interventions (TRIPLE C) – development of guidance and publication standards to support case study-based research into the influences of context on complex system-level interventions**, May 2019 – March 2021, Medical Research Council, £249,547 (SS – PI with SP, CP and TG and others).
17. **Scaling up virtual consultations across the NHS – implementing, evaluating and sustaining improvements**. Health Foundation Scaling Up Improvement Award, £222K of total grant £472K, Dec 17 – May 21 (TG as academic PI, with SS, CP, JW, partners to NHS-led study by S Vijayaraghavan et al).

18. **Connecting communities in the development of the health IoT ecosystem in Oxfordshire: co-production with patients and application of the NASSS framework.** £103,559 through the Pitch-In programme funded by Research England, Dec 2019 - Mar 2021 (PI - CP, with TG, SS, PK, JW, GH, and others).
19. **Evaluating the Attend Anywhere programme across NHS Scotland,** Scottish Government, 2019-2020, £50,000 (JW and TG).
20. **Implementation and evaluation framework for decision support;** £16,000 Scottish Government in collaboration with Digital Health and Care Institute. Developing a framework to support and evaluate the national rollout of clinical decision-making tools in Scotland using the NASSS framework (JW and CP).
21. **Patient-centred development of epilepsy technologies.** £9,500, Medical Research Council Proximity to Discovery Fund, 2019-2020 (CP – PI, with TG).

Ongoing research studies on which we are named co-investigators:

22. **Optimising Shared decision-making for high-Risk major Surgery (OSIRIS).** £221,763 of total grant £2,342,660 NIHR Programme Grant for Applied Research. Feb 2019 – Dec 2025. (Led by Rupert Pearse from QMUL; SS and JW as co-applicants).
23. **Improving the evidence-base for primary care:** NIHR Evidence Synthesis working group. NIHR SPCR. £23k of total £1.91M. Oct 2017 to Sept 2020 (GW, co-investigator to Carl Heneghan).
24. **ESMI-II: The Effectiveness and cost effectiveness of community perinatal Mental health services.** £18,377 of £1,189,980. NIHR HS&DR Programme. June 2019 to May 2022. (PI - O'Mahen, University of Exeter, Exeter; GW as Co-Applicant).
25. **A realist review of community engagement with health research.** £18,217 of total grant £260,250 Wellcome Trust. Jan 2019 - November 2020 (PI – Molyneux, Department of Tropical Medicine and Global Health, Oxford; GW as co-applicant, CD as librarian).
26. **Optimising a whole-person-centred approach to stopping medicines in older people with multi-morbidity and polypharmacy: the TAILOR Medication Syntheses.** £8,282 of a total grant £322,858 NIHR HTA Programme funded review. Sept 2018 - Aug 2020. (Jointly led by Joanne Reeves and Kamal Mahtani from Hull York Medical School and NDPCHS respectively; GW as co-applicant).
27. **Safety-netting in Primary Care: A realist review of the contexts and mechanisms of its effectiveness.** £7,320 of £149,976. NIHR RfPB Programme. Oct 2019 to Dec 2020 (PI - Friedmann-Smith, Nuffield Department of Primary Care Health Sciences, Oxford; GW as Co-Applicant).
28. **Using Health Information Systems to address patient concerns in GP consultations: a feasibility study.** £4,902 of £240,387. NIHR RfPB Programme. Sept 2019 to Aug 2021. (PI - Murphy, University of Bristol, Bristol; GW as Co-Applicant).

Awards and Fellowships

Awards and prizes

1. **GREENHALGH.** Web of Science / Clarivate Highly Cited Researcher (top 0.03% in field).
2. **GREENHALGH.** Honorary doctorate, University of Oslo.

New fellowships awarded in 2020:

3. **ALLEN.** Doctoral fellowship at London School of Hygiene (to commence in 2021).
4. **HUGHES.** Postdoctoral research fellowship (50% WTE), University of Oslo.
5. **PAPARINI.** Ending HIV in London by 2030. Wellcome Trust Secondment Fellowship. November 2020-May-2021.
6. **PILBEAM.** Mildred Blaxter Postdoctoral Award from Foundation for Sociology of Health and Illness (to commence in 2021).

Continuing fellowships:

7. **DUDDY.** *Reducing overdiagnosis and overprescribing: realist review.* NIHR Systematic Reviews MSc Fellowship. Oct 2017 – Sept 2020.
8. **WALUMBE.** *Self-management of chronic pain.* NIHR Doctoral Fellowship. Jan 2018-Dec 2023.
9. **BARRY.** *Lived experience of prediabetes.* NIHR Doctoral Fellowship. Jan 2018-Dec 2023.
10. **TREADWELL.** *Online tools for estimating the benefits and harms of treatments.* NIHR Doctoral Fellowship. Oct 2018- Sept 2023.

Research impact/knowledge translation activity (see also 'External appointments')

Knowledge Exchange Fellowship grants secured in 2020:

N/a

Continuing Knowledge Exchange Fellowship grants:

1. **Delivering Fast Track Cities**, £24,675. HEIF Policy Engagement Fellowship. (Sara Paparini as PI with Sara Shaw). Activities linked to this have included: ongoing feedback working with Public Health England, NHS England, Mayor of London and London Councils on HIV elimination programs; Fast Track City-supported fellowship application; secured guest lecture from co-Lead of Fast Track City initiative Prof. Kevin Fenton for our MSc THS students.
2. **Co-designing a digital solution for multidisciplinary team (MDT) meetings for cancer care.** £22,920. HEIF Knowledge Exchange Fellowship. November 2019- Oct 2020 (Trish Greenhalgh as PI with Alex Rushforth).
3. **Co-designing Virtual Tools for improving efficacy of Video Consultations.** (Nov 19 – Dec 20). University of Oxford, Social Sciences Division, Higher Education and Innovation Fund. Knowledge Exchange Fellowship. £24,989 (Sara Shaw as PI with Lucas Seuren).
4. **Multi-device configurations for physical examinations in video consultations** (Oct 19 – Jun 20). University of Oxford Higher Education Innovation Fund. £24,912 (SS and LS)

- 5. Strengthening international and regional collaboration with industry on patient-centred development of epilepsy technologies.** £14,505, Higher Education Innovation Fund, Oct 2019 - Jan 21 (CP – PI, with TG).

Impact activities in 2020

1. Interdisciplinary conferences and workshops involving academics, policymakers, patients/citizens and industry:
 - a. One half-day virtual workshop involving academics, clinicians and industry (Microsoft Research Cambridge) on 'Video Consultations' in September 2020 (LS)
 - b. Podcast interview with Naked Scientists on Video Calling Your Doctor (LS) (<https://www.thenakedscientists.com/podcasts/naked-scientists-podcast/life-new-normal>)
 - c. Webinar presentation to British Society for Heart Failure's Webinar on Thursday 24th September 2020. The Webinar subjects was 'Evidence vs Efficiency Based Care: informing heart failure recovery plans'. Chris A'Court's talk was entitled 'Behind the screen – data and attitudes to telemedicine and remote consultations' (CA'C)
 - d. Webinar presentation to Swedish GPs, entitled 'Long Covid – a guide for GPs' (CA'C)
 - e. Realist review and realist evaluation training for charity InterAction (largest alliance of international NGOs and partners in the United States) was delivered on 23 Jan 2020 as a webinar (Geoff Wong).
 - f. Realist review and realist evaluation training for UBC Library and Health Libraries Association of BC (Canada) delivered on 10 March 2020 at UBC (Geoff Wong)
 - g. Brexit Health Impact Tracker: feasibility study led by the Nuffield Trust and funded by the Health Foundation to develop a mechanism for monitoring the impact of Brexit on health and care in the UK, reporting by December 2020 (Fahy)
2. A wide range of impact-oriented activities (policy, industry, public engagement) around remote consultations and telehealth/care monitoring re: the COVID response and beyond in UK and internationally. This is summarised in an impact case study for the 2021 Research Excellence Framework (appended).
3. Additional public engagement activity included over 50 TV and radio appearances, and articles for (e.g.) Guardian, Conversation, Spectator by TG in relation to the pandemic – especially the campaign for facemasks in public places.

Main teaching achievements

1. **MSc in THS.** Our new MSc in Translational Health Sciences in collaboration with Continuing Education (Course Director: AF) commenced in October 2020 with 15 students. Modules running for the 20/21 academic year are:
 - Introduction to Research Methods for Translational Health Sciences (SS & TG)
 - Behavioural Science and Complex Interventions (AF & NF)
 - Health Organisations and Policy (NF & GH)
 - Technological Innovation and Digital Health (CP & JW)
 - Translational Science and Global Health (AK, SP)

2. **Existing MSc teaching.** TG is co-lead on the Knowledge to Action Module in MSc in EBHC, on which NF, TF, SS, GH and JC also teach. GW leads the MSc module in Realist Evaluation and Review with CD. We have also taught on the following Masters courses run by other groups:
 - MSc in Comparative Social Policy (NF)
 - MSc in Evidence-Based Health Care (GW, CD)
 - MSc in Evidence-Based Systematic Reviews (GW, CD)
 - MSc in Evidence-Based Social Intervention & Policy Evaluation, Department of Social Policy and Intervention (NF)
 - MSc in International Health & Tropical Medicine, Nuffield Department of Medicine (TG)
 - MSc in Policy Evaluation, Blavatnik (SS, TG, NF)
 - MSc in Surgical Sciences, Nuffield Department of Surgery (TG)
 - MSc in Healthcare Management and Leadership (NF)
 - MBA dissertation projects, Saïd (NF)
3. **Undergraduate teaching.** TG gives lectures and undertakes coaching and marking on the undergraduate medicine course. CP is supervising a medical student for his Final Honours Programme with CA'Court.
4. **College-based support and teaching.** TG, NF, SS, CP and JC are College Advisors at Green Templeton and GW is a College Advisor at Kellogg. NF is on the steering committee of the Management in Medicine programme at Green Templeton.
5. **Internships.** Over the summer 2020, CP supervised two interns, a Masters student (Isabella Blumm) as part of her summer project placement at the Blavatnik School of Government (with AR), and a postdoctoral researcher (Gilly Mroz) who carried out research on media reporting of remote consulting during Covid-19.

Peer-reviewed publications

1. Abrams R, **Wong G**, Mahtani K, Tierney S, Boylan A-M, Roberts N, Park S. Delegating home visits in general practice: a realist review on the impact on GP workload and patient care. *BJGP* 2020; bjgp20X710153
2. **Allen LN**. Commercial Determinants of Global Health. In: Haring R, Kickbusch I, Ganten D, Moeti M, (Eds). *Handbook of Global Health*. Springer Nature. August 2020.
3. **Allen LN**, Smith RW, Simmons-Jones F, Roberts N, Honney R, Currie J. Addressing social determinants of noncommunicable diseases in primary care: a systematic review. *Bull World Health Organ*. 2020 Nov 1;98(11):754-765B. doi: 10.2471/BLT.19.248278. Epub 2020 May 1.
4. **Allen LN**, Dambha-Miller H. COVID-19 and international primary care systems: Rebuilding a stronger primary care. *BJGP Open*. 2020 Oct 27;4(4):bjgpopen20X101130. doi: 10.3399/bjgpopen20X101130. Print 2020 Oct.
5. **Allen LN**, Goiana-da-Silva F, Nicholson BD. Democracy and implementation of non-communicable disease policies - Authors' reply. *Lancet Glob Health*. 2020 Apr;8(4):e484. doi: 10.1016/S2214-109X(20)30033-4.
6. **Allen LN**, Nicholson BD, Yeung BYT, Goiana-da-Silva F. Implementation of non-communicable disease policies: a geopolitical analysis of 151 countries. *Lancet Glob Health*. 2020 Jan;8(1):e50-e58. doi: 10.1016/S2214-109X(19)30446-2. Epub 2019 Dec 5.

7. Alwan NA, Bhopal R, Burgess RA, et al. Evidence informing the UK's COVID-19 public health response must be transparent. *Lancet* 2020;395(10229):1036-37. doi: 10.1016/s0140-6736(20)30667-x.
8. Alwan NA, Burgess RA, Ashworth S, Beale R, Bhadelia N, Bogaert D, et al. Scientific consensus on the COVID-19 pandemic: we need to act now. *The Lancet*. 2020;396(10260):e71-e2.
9. Andersson M, Low N, French N, **Greenhalgh T**, Jeffery K, Brent A, et al. Rapid roll out of SARS-CoV-2 antibody testing—a concern. *BMJ*. 2020;369:m2420.
10. Bernays S, Lanyon C, **Paparini S**. Adolescents Living With HIV: Checking Unhelpful Terminology. *Journal of Adolescent Health*. 2020 Oct 1;67(4):477-8.
11. Burgess RA, Osborne RH, Yongabi KA, **Greenhalgh T** et al. The COVID-19 vaccines rush: participatory community engagement matters more than ever. *The Lancet* 2020; S0140-6736(20)32642-8.
12. Carrieri D, Mattick K, Pearson M, **Papoutsis C**, Briscoe S, **Wong G**, Jackson M. Optimising strategies to address mental ill-health in doctors and medical students: 'Care Under Pressure' realist review and implementation guidance. *BMC Medicine* 2020; 18(1): 76.
13. Carrieri D, Pearson M, Mattick K, **Papoutsis C**, Briscoe S, **Wong G**, Jackson M. Interventions to minimise doctors' mental ill-health and its impacts on the workforce and patient care: the Care Under Pressure realist review. *Health Serv Deliv Res* 2020; 8(19).
14. Cook J, Baldwin M, Cooper C, Nagra N, **Crocker J**, Glaze M, et al. Patch Augmented Rotator Cuff Surgery (PARCS) feasibility study. *Health Technol Assess*. 2020.
15. **Crocker JC**, Farrar N, Cook JA, Treweek S, Woolfall K, Chant A, et al. Recruitment and retention of participants in UK surgical trials: survey of key issues reported by trial staff. *British Journal of Surgery Open* 2020. DOI: 10.1002/bjs5.50345
16. Czepionka T, **Greenhalgh T** (equal first author), Bessler D, Bryant M. Masks and face coverings for the lay public: a narrative update. *Ann Int Med* 2020; doi:10.7326/M20-6625.
17. Dahella SS, Briggs JS, Coombes P, Farajidavar N, Meredith P, Bonnici T, **Darbyshire JL**, Watkinson PJ: Implementing a system for the real-time risk assessment of patients considered for intensive care. *BMC Medical Informatics and Decision Making* 2020; 161. DOI: 10.1186/s12911-020-01176-0
18. de Lusignan S, Liyanage H, McGagh D, Jani BD, Bauwens J, Byford R, et al. In-pandemic development of an application ontology for COVID-19 surveillance in a primary care sentinel network. *JMIR Public Health and Surveillance*. 2020 doi: 10.2196/21434
19. Duddy, C and Wong, G. Efficiency over thoroughness in laboratory testing decision-making in primary care: findings from a realist review. *BJGP Open* 8 December 2020; <https://doi.org/10.3399/bjgpopen20X101146>
20. Dunlop C, Howe A, Li D, **Allen LN**. The coronavirus outbreak: the central role of primary care in emergency preparedness and response. *BJGP Open*. 2020 May 1;4(1):bjgpopen20X101041. doi: 10.3399/bjgpopen20X101041. Print 2020.
21. Eaton G, Wong G, Williams V, Roberts N, Mahtani K. Contribution of paramedics in primary and urgent care: a systematic review. *BJGP* 2020; bjgp20X709877.
22. Erikainen S, Friesen P, Rand L, Jongsma K, Dunn M, Sorbie A, McCoy M, Bell J, Burgess M, Chen H, Chico V, Cunningham-Burley S, **Darbyshire J**, Dawson R, Evans A, **Fahy N**, **Finlay T**, Frith L, Godlenberg A, Hinton L, Hoppe N, Highes N, Koenig B, Lignou S, McGowan M, Parker M, Prainsack M, Shabani M, Staunton C, Thompson R, Varnai K, Vayena E, Williams O. Williamson M, Chan S, Sheehan M (2020) Public involvement in the governance of population-level biomedical research: Unresolved questions and future directions. *Journal of Medical Ethics* DOI: 10.1136/medethics-2020-106530 <https://jme.bmj.com/content/early/2020/10/06/medethics-2020-106530>

23. **Fahy, N.**, Hervey, T., Dayan, M., Flear, M., Galsworthy, M., Greer, S., Jarman, H., & McKee, M. (2020). Assessing the potential impact on health of the UK's future relationship agreement with the EU: Analysis of the negotiating positions. *Health Economics, Policy and Law*, 1–18. <https://doi.org/10.1017/S1744133120000171>
24. **Finlay T**, Barbareschi G, Duterte M, Cigan B, Vat L (2020) The added value of a long-term, multi-stakeholder engagement initiative. IMI-PARADIGM Blog <https://imi-paradigm.eu/the-added-value-of-a-long-term-multi-stakeholder-engagement-initiative/> accessed 23/11/202
25. Goiana-da-Silva F, Severo M, Cruz E Silva D, Gregório MJ, **Allen LN**, Muc M, Morais Nunes A, Torres D, Miraldo M, Ashrafian H, Rito A, Wickramasinghe K, Breda J, Darzi A, Araújo F, Lopes C. Projected impact of the Portuguese sugar-sweetened beverage tax on obesity incidence across different age groups: A modelling study. *PLoS Med*. 2020 Mar 12;17(3):e1003036. doi: 10.1371/journal.pmed.1003036. eCollection 2020 Mar.
26. **Greenhalgh T**, Alwan N, Bogaert D, Burns SH, Cheng K, Colbourn T, et al. Covid-19: an open letter to the UK's chief medical officers. *BMJ Opinion*. 2020.
27. **Greenhalgh T**, Dijkstra P, Jones N, et al. Exercising and face masks: an important hypothesis buried in a selective review. *Medical Hypotheses* 2020; 144: 110255.
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Major keynote lectures, workshops and conference presentations

DARBYSHIRE

- European Society for Intensive Care Medicine (online) December 2020
Measuring Sleep: Be Quiet!

GREENHALGH gave around 20 national and international keynote lectures including:

- Campaign for Social Science Annual Lecture Dec 2020
Give me back my fact: how social science can help us survive the post-truth pandemic
- NAPCRG 2020 Keynote Lecture Nov 2020
Management of post-acute Covid-19 in primary care
- Alma Ata 40th Anniversary Conference, Almaty, Kazakhstan, September 2020
Primary Health Care and the Covid-19 response
- Nature Research Awards, October 2020
Scientists in the Public Eye – Speaking out on Science
- UK Parliamentary Briefing, July 2020
Building future resilience to Covid-19
- Health Innovation Network and NIHR, May 2020
Evidence for digital health – opportunities and challenges
What have we really learned about how to generate the evidence we need for digital health?
- Green Templeton College Management in Medicine series Oct 2020
How to improve the success of technology projects in health and social care
- Cambridge Implementation Science Lecture Series Oct 2020
Covid-19 and the unhinging of research implementation: all change, please

PAPOUTSI

- NICE Medicines and Prescribing Associates Conference, London UK, February 2020
Spreading and scaling up complex innovations and improvements in health and care,

SHAW

- QSR NVivo conference (online), September 2020
Remote Consultations in Health Care: what can qualitative analysis tell us about development and use before, during and after COVID-19?

External appointments

A'Court:

- Steering Committee for ATEMPT Study. (Antihypertensive Treatment in Elderly Multimorbid Patients Trial)

Allen:

- Editorial board member, BJGP
- WHO consultant on primary care and public health

Fahy:

- Expert adviser on innovation and implementation, European Observatory on Health Systems and Policies
- Director, Green Templeton College Health and Care Initiative
- Visiting lecturer (since 2011) and member of Academic Advisory Council (since 2018), Management Centre Innsbruck (MCI), Austria
- Board member of the European Health Forum Gastein
- Specialist advisor to the House of Commons Health Committee.

Faulkner:

- Deputy Director of Policy; Corporate strategy, accountability and Partnerships, MHRA (should start this end of November 2020). Short term post.

Greenhalgh:

- National REF panel Public Health, Primary Care and Health Services Research
- NICE Guideline Oversight Group for Long Covid
- Lord Bethel's Long Covid Task Force
- Chair, NHS Improvement Committee on Spoken Communication in Patient Safety
- Member, Scientific and Technical Advisory Committee, WHO Alliance for Health Policy and Systems Research
- Visiting Professor, University of Oslo
- Visiting Professor, Macquarie University, Sydney, Australia
- Distinguished Fellow, George Institute, Sydney, Australia
- European Public Health Association, International Advisory Group on Public Health Research Impact
- NHS England, Primary Care Digital Transformation Team
- NHS England Primary Care Digital Transformation Advisory Group
- WHO Alliance for Health Policy and Systems Research Scientific and Technical Advisory Committee
- Prime Minister's Industrial Strategy Challenge Fund Healthy Ageing Working Group
- International Adviser, Research Council of Norway

Paparini:

- Honorary Research Fellow, London School of Hygiene & Tropical Medicine

Shaw:

- Director, GTC Health and Care Initiative
- Delivering Primary Health Care to Homeless People, NIHR Advisory Committee
- Visiting lecturer (since 2017), Management Centre Innsbruck (MCI), Austria
- Honorary Reader, Queen Mary, University of London

Treadwell:

- National Institute for Health and Care Excellence: co-moderator, GP Reference Panel;
- RCGP: Clinical Advisor
- Drugs and Therapeutics Bulletin: Associate Editor

Wherton:

- Member, Oxford Academic Health Science Network (AHSN) Informatics Oversight Group
- Industry secondment with Microsoft Healthcare, Seattle, USA, through Oxford ESRC Knowledge Exchange Fellowship
- Wolfson College, Research Member of Common Room

Wong:

- Deputy Chair, HTA Prioritisation Committee: Integrated Community Health and Social Care (A)
- Peter Wall Institute of Advance Studies International Visiting Fellowship (Oct 2019 to Sept 2020)
- Member, National Institute for Health and Care Excellence, Guidelines Manual Virtual Reference Group
- Joint Deputy Chair, NIHR, Health Technology Assessment Programme – Primary Care Panel

Strategy for 2021

1. RESEARCH:

- a. Ensure that current grants remain on track despite staff sickness and furlough.
- b. Work towards securing longer-term funding (e.g. programme grant or large project grants).
- c. Continue to diversify income streams (e.g. keep collaborating with the Norwegians; explore European funding when opportunities and constraints are clear)

2. PUBLICATION AND DISSEMINATION:

- a. Each senior researcher and postdoc to lead on one REFable paper.

3. TEACHING:

- a. Consolidate the new MSc and DPhil programme in Translational Health Sciences.

4. STAFF AND STUDENT DEVELOPMENT:

- a. Ensure all staff who teach on MSc are confident and supported to deliver a world-leading postgraduate experience for their students.
- b. Extend the internal IRIHS seminar programme to give our social science staff and students experience and support.

Trisha Greenhalgh and Sara Shaw
January 2021

Institution: University of Oxford		
Unit of Assessment: A2 (Public Health, Primary Care and Health Services Research)		
Title of case study: Remote consultations and telehealth/care monitoring: how our research contributed to the COVID response and beyond in UK and internationally		
Period when the underpinning research was undertaken: 2015 to 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Trish Greenhalgh	Professor of Primary Care Health Sciences	1 st January 2015 to present
Sara Shaw	Associate Professor	1 st December 2015 to present
Joseph Wherton	Senior researcher	1 st January 2016 to present
Nick Fahy	Senior researcher	1 st September 2016 to present
Chrysanthi Papoutsis	Researcher	1 st June 2016 to present
Gemma Hughes	Researcher	1 st Jan 2019 to present
Lucas Seuren	Researcher	1 st Sept 2018 to present
Christine A'Court	Academic GP	1 st August 2016 to present
Period when the claimed impact occurred: 2016-2020 (mainly 2020)		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact		
<p>Qualitative, mixed-method and action research generated in-depth insights and evidence-based principles and standards for remote digital services including video consultations and remote monitoring (telehealth/care). We contributed significantly to the evidence base that led to major scale-up of remote consultations in England in the first wave of the Covid-19 pandemic (from 3.5 to 9.9 million per month March-June 2020), by addressing technological and operational bottlenecks and writing standard operating procedures and guidance for patients and clinicians. We worked with policymakers in England to inform the total triage model for general practice (ensuring that it was a service change not just a technology plug-in), and with Scottish government to roll out video consulting to 9000 GP practices and to secondary care (increase from 300 to 16000 video consultations per week March-June 2020). We worked with Royal Colleges to get a change in the law to allow termination of pregnancy consultations to be done by video. We made leaflets, websites and videos with and for patients on 'Your Video Consultation'. We ran dozens of webinars, learning sets and other training activities across 10 countries. Our BMJ paper on how to assess COVID remotely had >250,000 hits, >220 citations in 6 months, influenced a NICE guideline, and was translated into 15 languages in 5 continents.</p>		
2. Underpinning research		
<p>Even before Matt Hancock's "remote by default" announcement in 2020, policymakers placed high hopes on digital care models (remote patient monitoring and video consultations). Our real-world implementation research built on previous RCTs by others and addressed (using mainly qualitative and participatory methods) the personal, organisational and societal barriers to roll-out and scale-up of digital care models in NHS and social care settings. It included:</p>		
<p>2a: Action research with organisations introducing telehealth or telecare (SCALS – Studies in Co-creating Assisted Living Solutions). We did co-design and change facilitation with 7 UK</p>		

organisations (NHS, social care or 3rd sector), each seeking to introduce or improve a service via telehealth or telecare technologies. This included ethnography with patients/clients, organisational analysis and theorisation of the change process, and studies of the wider technological, economic and policy context [1,2]. Findings included rich depictions of the uncertainties and interdependencies (technical, organisational, clinical, commercial) involved in efforts to 'mainstream' an assistive technology within a health and/or social care service. To help surface and explore such uncertainties (and hence explain the many occasions where implementation efforts failed or achieved only partial success), we developed the NASSS (non-adoption, abandonment, scale-up, spread, sustainability) framework which went on to be widely used by other researchers, policymakers and implementation teams internationally (see section 4 below).

2b: Deployment and embedding of video consultations into NHS organisations. An in-depth case study across 4 departments of a large NHS Trust explored and facilitated the introduction of video consultations in diabetes, cancer and antenatal clinics (Virtual Online Consultations – Advantages and Limitations, VOCAL) [1]. The SCALS study (2a above) included a case study of video consultations in community-based heart failure care [2,3]. We did a mixed-method case study of the introduction of video consultations across Scotland, with data collection from 9 of 14 regions. Methods included innovative video-recording of both ends of the remote consultation and micro-analysis of the clinician-patient interaction as well as studies of organisational and system change. A key finding was numerous uncertainties and interdependencies that repeatedly stalled or slowed the adoption, spread and scale-up of video consultations (a major policy concern). We used action research, guided by our NASSS framework [1,2], to work through various local and national barriers to adoption and scale-up. We also developed novel theorisations of the co-design process, drawing on the work described in 2a [4].

2c: Detailed micro-analysis of the interactional dynamics of video consultations. Collaborating with linguistics experts, we analysed clinical interactions using a specialist qualitative technique called conversation analysis (CA), and linked this with another qualitative technique, linguistic ethnography, to study physical movements and actions in the video stream. In a sample of 37 recordings, and including a comparator sample of face to face consultations, we demonstrated that minor technical glitches such as temporary freezing or small time lags rarely affect the quality of conversation by video and that clinician and patient were usually adept at repairing the conversation when this happened [4,5]. We also undertook the first ever conversation analysis / linguistic ethnography study of physical examinations by video, and showed that complex interactional work is needed from both clinician and patient to make such examinations succeed (for example, the patient needs to work out how to position the camera so the clinician can see the affected body part); older patients unfamiliar with video technology struggled to conceptualise what the clinician could see [4,5]. This work inspired many of the guidance materials we describe in the impact section below: clinicians need not merely to be able to see the patient but also to imagine and help address the challenges the patient is trying to overcome.

2d: Applying insights about video consulting to the Covid-19 pandemic. In early March 2020, we combined a rapid systematic review of what was then known about the infectivity of SARS-CoV-2 and the presenting clinical features of Covid-19 with a narrative review of findings on remote consulting from our own research and that of others. The paper was fast-tracked in BMJ and became one of its most accessed papers ever [6].

3. References to the research

1. **Greenhalgh T, Wherton J, Papoutsi C, Lynch J, Hughes G, A'Court C, Hinder S et al:** Beyond Adoption: A new framework for theorizing and evaluating nonadoption, abandonment, and challenges to the scale-up, spread, and sustainability of health and care technologies. *J Med Internet Research* 2017, 19 (11): e367. Cited by 358 publications.
2. **Greenhalgh T, Wherton J, Papoutsi C, Lynch J, Hughes G, Hinder S, Procter R, Shaw S:** Analysing the role of complexity in explaining the fortunes of technology programmes: empirical application of the NASSS framework. *BMC Medicine* 2018, 16(1):66. Cited by 49.
3. **Greenhalgh T, Shaw S, Wherton J et al:** Real-world implementation of video outpatient consultations at macro, meso, and micro levels: mixed-method study. *J Med Internet Research* 2018, 20(4). Cited by 83.

4. **Papoutsi C, Wherton J, Shaw S, Morrison C, Greenhalgh T.** Putting the social back into socio-technical: case studies of co-design in digital health. *Journal of the American Medical Informatics Association* 2020 doi: 10.1093/jamia/ocaa197.
5. **Seuren LM, Wherton J, Greenhalgh T, Cameron D, A'Court C, Shaw S.** Physical Examinations via Video for Patients With Heart Failure: Qualitative Study Using Conversation Analysis. *J Med Internet Research* 2020;22(2):e16694. doi: 10.2196/16694. Cited by 22.
6. **Greenhalgh T, Koh GCH, Car J.** Covid-19: a remote assessment in primary care. *BMJ* 2020;368:m1182. doi: 10.1136/bmj.m1182. Cited by 225.

Funding: Wellcome Trust Senior Investigator Award to TG 2015-2021 (£1.1M), NIHR HS&DR to TG 2015-17 (£535K); Scottish Government to TG & JW 2019-20 and 20-21 (£80K total), Health Foundation to SS 2020-21 (£99K), NIHR Biomedical Research Centre to TG 2017-22 (£6M)

4. Details of the impact

4a: Helping NHS England implement total triage & remote consulting at pace and scale

When COVID-19 hit, we worked urgently with the Primary Care Digital Transformation Team at NHS England to prepare and disseminate guidance and provide support for a service transformation, within 3 weeks, from predominantly face to face provision to an arrangement where all patients contacted the practice remotely first and were then offered phone, video or face to face as appropriate. Our main input was to emphasise the human and organisational aspects of the change because our research had shown that a narrow focus on the technology is associated with poor success. We wrote guidance for policymakers, clinicians and patients, and worked with the medical press e.g. fast-track BMJ editorial and clinical guidance on remote assessment of COVID-19 [6]; the latter was cited in the NICE rapid guideline on management of acute COVID [A]. We made professional-quality leaflets and video animations for patients 'Getting the Most out of Your NHS Video Consultation', co-branded with NHS England/Improvement [B]. The pandemic precipitated the wholesale shift to remote, but the evidence-based support and guidance provided by our team helped ensure that this effort (one of the most rapid and radical service changes the NHS has ever known) did not result in technical or operational disaster. In total 6.8 million, 7.7 million, 7.9 million and 9.9 million general practice consultations were undertaken remotely (phone, video or online) in March, April, May and June 2020 respectively, compared to 3.5 million per month in February 2020 [C].

4b: Rapid roll-out and scale-up of video consultations in Scotland's COVID response

As the team who led the national evaluation of video consultations in Scotland, we were asked to provide support to policymakers in the urgent Covid-19 response to roll out video consultations to over 9000 GP practices and over 50 hospitals. Our insights about why clinicians sometimes resist this model, and how to identify and overcome the multiple interacting factors (technical, logistical, professional and 'political') that slow or prevent uptake of this complex change, were key to achieving ultra-rapid scale-up of video consultations across an entire country at a critical time. Notably, the Scottish service was able to implement change very rapidly when remote became a requirement; this contrasted with England, where the COVID-related growth in remote consulting was accounted for mostly by an increase in telephone consultations). In the 12 weeks from 1st March 2020, the number of video consultations across Scotland (primary and secondary care combined) rose from approximately 300 per week to over 16000 per week (figure) [D]. The pandemic was the trigger for this shift but successful delivery of the service drew heavily on our research findings and the facilitation work we did in partnership with the Scottish government.

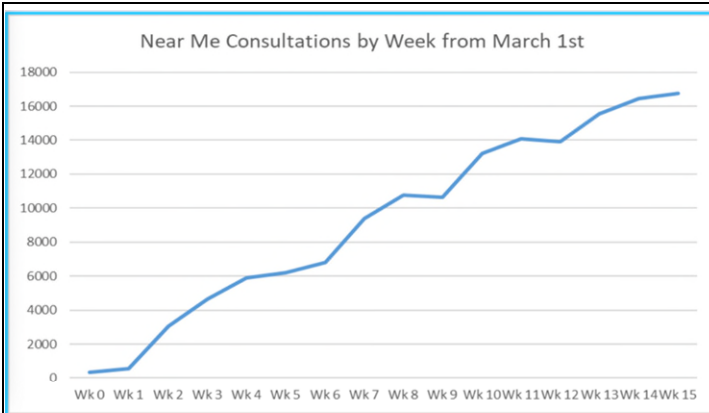


Figure: Increase in video consultations across Scotland in the 12-week scale-up period from 1st March 2020 [D]
(NB the video consultation service in Scotland is called ‘NHS Near Me’)

4c: Influencing a change in the law for video termination of pregnancy

consultations

At the height of the first wave of the pandemic, we worked with Faculty of Public Health and Royal College of Obstetrics and Gynaecology to lobby successfully for a change in the law so patients did not need to attend face to face before a termination of pregnancy [E]. This change has continuing benefits for all women seeking termination in second and subsequent waves.

4d: Organisational and policy change for video consultation services in England

VOCAL (2b above) had a co-design component in which research and impact evolved in parallel. Local impact in the pre-COVID period included establishing video consultations as business as usual in 13 services including diabetes, cancer, haematology, neurology and oncology; demonstrating clinical impact (example: the did-not-attend rate in diabetes clinics fell from 50% to 11% in patients opting for video consultations, with statistically significant reduction in HbA1c [F]); establishing standard operating procedures (SOPs) to address professional, logistical and information governance issues and resources for patients [B] (later adapted for national use – see 4a). When COVID-19 broke, we had networks in place for our SOPs to be rapidly adopted by NHS England’s official guidance for remote consulting [B]. In 2015-19, we worked locally and nationally to help policymakers overcome the ‘impasse’ of the lack of a specific tariff for video consultations. Findings informed development of the CQC regulatory framework for primary care digital services.

With a £25K ESRC Impact Acceleration Award 2017-18 and a £450K Health Foundation ‘Scaling Up’ award shared with our NHS partner, we have worked with Barts Health to deliver the following:

- a. Establish a **Virtual Consultation Unit** (clinical, technical, management and administrative staff with expertise in embedding video consultation services) to advise other NHS trusts;
- b. **Resources** to be adapted and shared across other NHS settings and beyond e.g. policies, service agreements, technical support and information governance, standard operating principles, clinical pathways, business case templates, suggested outcome metrics;
- c. Quarterly **demonstration clinics** where visiting teams observed virtual consultations in “real-time” and shadow staff delivering the service (including meeting service users);
- d. Regular **workshops for knowledge exchange**, formative evaluation and co-design.

The Barts video work, along with the NASSS framework, was included as an **example of good practice in the Topol Review of NHS informatics** in February 2018 [G].

4e: Policy decision to continue and extend video consultation services in Scotland

Our evaluation of video consultation services to rural and remote Scotland using the NASSS framework (2a above): a) confirmed the technical robustness and fitness-for-purpose of the digital technology; b) highlighted the value of a system-wide, quality improvement implementation logic; c) identified unmet need for IT support and training; and d) revealed the need for investment in staff and resources to install and support video technology in people’s homes. On the basis of our findings, in March 2020 the Scottish Government approved continuation and expansion of national video consultation service (though this was later overtaken by events described in 4a) [H].

4f: Technical refinement and optimisation of video-consulting software

VOCAL (2b above) used Skype™ and Skype for Business™. We worked closely with Microsoft to refine these technologies for use in the clinical environment. With written patient consent, we shared a sub-sample of real video consultations, including synchronised footage of both clinician and patient, with industry designers leading to adaptations to the software which inspired adaptation and testing (ongoing) of Microsoft Teams for group clinics.

4g: Production and application of the NASSS-CAT tools 2018-20

When we published the NASSS framework, we were immediately approached by national and local policymakers as well as industry and tech designers, who were interested for a variety of applied uses. We took some of these forward e.g.:

- a. *Department of Health, NHS Digital and Health Education England* used the NASSS framework to help build capacity among NHS staff for selecting, adopting and using technologies to improve services. This included policymaker training at the highest level.
- b. With a small design consultancy, *mHabitat*, we combined the NASSS framework with a complexity assessment tool (CAT) for assessing and managing complexity in technology projects. The resulting NASSS-CAT tools are available in four versions: a short and long form designed for project planning; a project monitoring tool; and an interview topic guide [I]; they are widely used by groups seeking to implement or evaluate technology projects. In 2020, Health Foundation awarded a grant of £50K to TG to produce electronic versions.

4h: International visits, collaborations and other influence

The NASSS framework and NASSS-CAT tools have generated considerable interest from policymakers and implementation teams internationally. These include:

- a. Invited keynote lecture to WHO High-Level Regional Meeting on Health Systems, June 2018: *'How can we make innovation programmes in health and social care work?'* [J]
- b. *Invited keynote lecture* to Joint meeting of Chief Medical, Nursing, Dental and Pharmaceutical Officers across the EU, Helsinki, Finland, conference entitled *Health Systems for the Wellbeing of People in the 2020s* on the occasion of Finland taking up the chairmanship of the EU Council, September, 2019.

Our BMJ paper and infographic (reference 6 in section 3 above) was translated into 15 languages across 5 continents and widely disseminated around the world.

4i: Educational resource for medical students

We worked with the undergraduate teaching team (University of Oxford) to develop a curriculum and syllabus for remote consulting. To date, 330 students have completed the module.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- A. NICE rapid guideline 163: Managing COVID in the community. See section 1.3: <https://www.nice.org.uk/guidance/ng163/chapter/1-Communicating-with-patients-and-minimising-risk>
- B. Resource page for professionals and patients with leaflets, guides, video animations (co-branded with NHSE): <https://www.phc.ox.ac.uk/research/resources/video-consulting-in-the-nhs>; also on NHS England website <https://www.england.nhs.uk/coronavirus/publication/video-consultations-for-secondary-care/>
- C. Website with links to monthly figures for all general practice consultations (including remote) in England <https://digital.nhs.uk/data-and-information/publications/statistical/appointments-in-general-practice>
- D. Website with figures for video consultations in Scotland in the 12-week scale-up period March-June 2020: <https://tec.scot/wp-content/uploads/2020/07/Near-Me-review-of-12-week-scale-up.pdf>
- E. Letter to Secretary of State asking for change in law, co-written with RCOG and FPH <https://drive.google.com/file/d/1TujbubXHjaN7H6FD2U5CvZvtFTmqjCXD/view>, and actual change in law

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/876740/30032020_The_Abortion_Act_1967_-_Approval_of_a_Class_of_Places.pdf.

- F. Improved HbA1c in diabetes clinic: <https://www.practicaldiabetes.com/article/webcam-consultations-diabetes-findings-four-years-experience-newham/>.
- G. Topol review, which references our VOCAL work: <https://topol.hee.nhs.uk/wp-content/uploads/HEE-Topol-Review-2019.pdf>. see p 69-70.
- H. Scottish Government policy commitment to continue video consultations, which references our work <https://tec.scot/wp-content/uploads/2020/07/Near-Me-Forward-Look-Work-Plan-1-July-2020.pdf>.
- I. Greenhalgh T et al. Development and empirical testing of the NASSS-CAT tools for supporting technology projects in health and social care: co-design and action research study. JMIR Research Protocols. <https://www.researchprotocols.org/2020/5/e16861/>
- J. WHO High-Level Regional Meeting on Health Systems June 2018: Prof Greenhalgh presentation on 'How can we make innovation programmes in health and social care work?' <http://www.euro.who.int/en/media-centre/events/events/2018/06/health-systems-for-prosperity-and-solidarity-leaving-no-one-behind/documents/meeting-documents/presentations>