INTERDISCIPLINARY RESEARCH IN HEALTH SCIENCES (IRIHS) ANNUAL REPORT 2019

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 2019

1. EXPANSION OF ACADEMIC STAFF. We have continued to expand. We now have one Clinical Professor, one Associate Professor, three Senior Researchers, eight Postdoctoral Researchers, 15 DPhil students, two additional (predoctoral) researchers, four Academic Clinical Fellows, and six academic-related and support staff.
2. RESEARCH. Research income for new research studies in 2019 included £480K as principal investigators (led by SS, TG, CP and JW). We have around £9M in ongoing research grants.
3. PUBLICATION AND DISSEMINATION. We published 42 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.
4. TEACHING. We contributed to various MSc courses at Oxford. We gained full approval for a new MSc and DPhil Programme in Translational Health Sciences, which will take its first students in October 2020.
5. DOCTORAL STUDENTS. Of our 15 DPhil students, one passed with no corrections and another passed with minor corrections; a staff member (JD) also gained a DPhil. One student passed Confirmation of Status and three passed Transfer of Status.
6. FELLOWSHIPS. Four postdocs (Paparini, Papoutsi, Rushforth, Seuren) gained Higher Education Innovation Fund Knowledge Exchange Fellowships. One Senior Researcher (Wherton) gained a Fellowship at Wolfson College.

Staff in post on 31st December 2019 (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%
Nick	Fahy	Senior Researcher	Health policy and systems	80%
Joe	Wherton	Senior Researcher	Psychology / HCI	100%
Geoff	Wong	Clinical Research Fellow	GP	40%
Stuart	Faulkner	Postdoctoral Researcher	Medical innovation and health systems policy	100%
Teresa	Finlay	Postdoctoral Researcher	Nursing / social sciences	80%

Gemma	Hughes	Postdoctoral Researcher	Social sciences/ NHS management	100%
Suzanne	Ii	Postdoctoral Researcher	Social sciences	60%
Sara	Paparini	Postdoctoral Researcher	Social sciences (Anthropology)	100%
Chrysanthi	Papoutsi	Postdoctoral Researcher	Social sciences	100%
Alexander	Rushforth	Postdoctoral Researcher	Social sciences	100%
Lucas	Seuren	Postdoctoral Researcher	Linguistics	100%
Christine	A'Court	GP Researcher	GP	5%
Claire	Duddy	Research Fellow	Realist reviewer/ information specialist	67%
Luke	Allen	Academic Clinical Fellow	GP	50%
Asli	Kalin	Academic Clinical Fellow	GP	20%
Emma	Ladds	Academic Clinical Fellow	GP	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	Clinical Informatics	50%
Polly	Kerr	BRC PPI Manager	Patient and public involvement, communications	90%
Laiba	Husain	Researcher	Social Sciences	60%
Jill	Fardon	Administrator / manager	BRC theme liaison / PA	80%
Caroline	Jordan	Administrator	General support	20%
Charlotte	Thompson-Grant	Administrator	General support / PA	72%

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**
Dominic Hurst	Dentist	Greenhalgh Mickan	Self	Dentists' knowledge-in-practice	2012 (PT)	Passed with no corrections, July 2019
Adrian Rohrbasser	GP / Educator	Wong, Harris, Mickan	Self	Quality circles in primary health care: realist evaluation	2013 (PT)	CoS passed in Jan 2019
Samantha Roberts	Doctor / manager	Greenhalgh Shaw	Self	Policies to prevent type 2 diabetes	2015 (PT)	Passed with minor corrections, May 2019

Caitlin Pilbeam	Anthropology	Greenhalgh Potter	Wellcome Trust	Living well while dying	2016 (FT)	Viva in Jan 2020
Sietse Wieringa	GP	Greenhalgh Engebretsen	Norwegian Research Council	Mindlines (socially shared knowledge) among GPs	2016 (PT)	Viva in Jan 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 in Jan 2020
Julian Treadwell	GP	Greenhalgh Mahtani Crocker	NIHR DRF	Online tools for assessing benefits & harms of treatments	2018	ToS in Jan 2020
Jacobus Koetze	Doctor	Greenhalgh Fahy	Rhodes Scholar	Ethical influences on clinician-managers	2018 (FT)	ToS in Jan 2020
Alex Jager	Social policy	Wong, Papoutsi	NIHR SPCR	Incorporating big data in commissioning: realist approach	2018 (FT)	ToS in Jan 2020
Jackie Walumbe	Physiotherapy	Shaw, Silman, Swinglehurst	NIHR DRF	Self-management in chronic pain	2018 (PT)	ToS passed in Sept 2019
Ellie Barry	GP	Greenhalgh Shaw	NIHR DRF	Lived experience of pre-diabetes	2018 (PT)	
Mona Koshkouei	Pharmacy	Greenhalgh 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 in Jan 2020
Georgette Eaton	Paramedic	Mahtani, Wong, Tierney	Self/HEE	Use of paramedics in primary care	2019 (PT)	

BASED ELSEWHERE

Name	**Based in**	**Background**	**Supervisor**	**Topic**	**From (FT/PT)**	**Progress**
Jaimie Lee Freeman	Oxford Internet Institute	Psychology & Education	Neff **Shaw Papoutsi**	Adolescents' use of digital self-tracking technologies	2019 (FT)	
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
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

Staff member Julie Darbyshire passed her DPhil in December 2019.

Research activity

New research grants secured in 2019 on which we are principal investigators:

1. **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 – Nov 2020, Medical Research Council, £249,547 (SS – PI with SP, CP, TG and JW and others).

2. **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).

3. **Evaluating the Attend Anywhere programme across NHS Scotland**, Scottish Government, 2019-2020, £50,000 (JW and TG).

4. **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).

5. **Patient-centred development of epilepsy technologies.** £9,500, Medical Research Council Proximity to Discovery Fund, 2019-2020 (CP – PI, with TG).

6. **Evidence Into Practice:** developing electronic versions of NASSS-CAT tools. £50,000. 2019-2020. Health Foundation. PI - TG, with CP and JW.

New research grants secured in 2019 on which we are co-investigators:

7. **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).

8. **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).

9. **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).

10. **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. PI - Marit Haldar, with TG, JW, SS. NKr 835,000 of NKr28,536,000 (about £85,000 of £3 million).

11. **Oxford Applied Research Collaboration**. 2019-2024. PI – Hobbs. TG is co-lead of implementation theme with Gary Ford.

Ongoing research studies on which we are principal investigators:

12. **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).

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. **Enhancing technology-mediated communication: qualitative analysis of remote consultations in cancer, diabetes and heart failure (QUARC).** £149,972 NIHR Research for Patient Benefit. Sept 2018 – Nov 2019. (SS with TG, CAC, JW).

16. **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).

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

17. **Care Under Pressure: a realist review of interventions to tackle doctors' mental ill-health and its impacts on the clinical workforce and patient care.** NIHR HS&DR Programme. £22K of total grant £202K. November 2017 – May 2019 (GW, CP, co-investigators to Karen Mattick and Mark Pearson, University of Exeter).

18. **Can group clinics offer a better way to meet the complex health and social care needs of young adults with diabetes in an ethnically diverse, socioeconomically deprived population? (TOGETHER study)** NIHR HS&DR. £148k of total £420k, Dec 2016 – Nov 2019. (TG, Co-I to S Finer at QMUL, CP).

19. **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).

20. **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)**.**

21. **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).

22. **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).

23. **Remediating doctors' performance to restore patient safety: A realist review.** £22,422 of total grant £200,698 *NIHR HS&DR Programme*. April 2018 - Sept 2019 (PI – Brennan, University of Plymouth; GW as co-applicant).

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

Knowledge Exchange Fellowship grants secured in 2019:

1. **Delivering Fast Track Cities**, £24,675. HEIF Policy Engagement Fellowship. (Sara Paparini as PI with Sara Shaw).

2. **Co-designing a digital solution for multidisciplinary team (MDT) meetings for cancer care.** £22,920. HEIF Knowledge Exchange Fellowship. November 2019-July 2020 (Trish Greenhalgh as PI with Alex Rushforth).

3. **Co-designing Virtual Tools for improving efficacy of Video Consultations.** (Nov 19 – Jul 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 – Jun20). 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, 2019-2020 (CP – PI, with TG).

Impact activities in 2019

1. Interdisciplinary conferences and workshops involving academics, policymakers, patients/citizens and industry:
    a. One-day conference at St. Anne's College in April 2019 on **'Social Challenges of Personalised Medicine'**. Funded by (funded by NIHR Biomedical Research Centre (AR organised).
    b. One-day workshop at Jesus College in May 2019 on '**Maximising Value from New Diagnostic Tests'**. Funded jointly by the NIHR, IFCC, BIVDA and Oxford AHSN (TG organised).
    c. **Future of health and care.** A pilot Foresight event in March 2019 at Green Templeton which brought together academics, policymakers and practitioners from across the world to tackle the key challenges to developing sustainable health and care systems (TG, SS and NF).
    d. **Digital Health Oxford (DHOx),** a cross-disciplinary and cross-sector group bringing together researchers, patients, developers, clinicians and others interested in digital health (CP – co-lead).
    e. **Realist review and realist evaluation training** for researchers in health, policy and social care from across British Columbia and a policy orientated dissemination event focussed on the value of realist research approaches was delivered on 9 Oct 2019 at UBC (Geoff Wong).
    f. Addressing the challenges to **scaling up and spreading innovations in health care**. Health 4.0 Forum, British Embassy, Vienna, 5 March 2019 (Joe Wherton).

2. A wide range of impact-oriented activities (policy, industry, public engagement) around telehealth and telecare, summarised in an impact case study for the 2021 Research Excellence Framework (appended).

3. Additional public engagement activity (see also impact case study appended) included a 20-minute play **"Is there a doctor in the house?"** at Bloomsbury Theatre, London, in Oct 2019. The play was based on findings of the early visiting service realist review, undertaken as part of the SPCR Evidence Synthesis Working Group. Play was followed by an hour-long facilitated discussion and workshop with the audience to come up with policy and practice recommendations. GW provided methodological support to the realist review and helped write the script (GW).

Main teaching achievements

1. **New MSc.** We have developed a new MSc in Translational Science and Global Health in collaboration with Continuing Education; it is scheduled to take its first students in October 2020. Modules and module leads are:
    - Module presentation: Introductory module (SS)
    - Module presentation: Behavioural Science and Complex Interventions (AF)
    - Module presentation: Economics and Regulation (SF, SP, YY)
    - Ethics and Justice in Translational Science (run by Philosophy dept)
    - Module presentation: Health Organisations and Policy (NF)
    - Module presentation: Patients, Citizens and the Politics of Evidence (TF, CP)
    - Research Impact and Health Research Systems (AR, PO)
    - Technological Innovation and Digital Health (CP)
    - Translational Science and Global Health (AK, SP)
    - Dissertation (including placements) (JW, TG)

2. **Existing MSc teaching.** TG is co-lead on the Knowledge to Action Module in MSc in EBHC, on which NF, TF and SS also teach. GW leads the MSc module in Realist Evaluation and Review with CP. We have also taught on the following Masters courses run by other groups:
    - MSc in Evidence-Based Health Care (TG, GW, CP, SS, TF)
    - MSc in Evidence-Based Systematic Reviews (GW, CP)
    - MSc in Evidence-Based Social Intervention & Policy Evaluation, Department of Social Policy and Intervention (SS, 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, CP)
    - 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.

4. **College-based support and teaching**. TG, NF, SS and CP 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. NF, SS and TG are part of the Future of Health and Care initiative at Green Templeton.

Academic fellowships

New fellowships commenced in 2019:

See Knowledge Exchange Fellowships awarded to Paparini, Papoutsi, Rushforth and Seuren. Joe Wherton gained a Fellowship at Wolfson College.

Continuing fellowships:

1. **PAPOUTSI.** *Springboard Health of the Public 2040 Award.* Academy of Medical Sciences/Wellcome Trust. Sept 2017 – Sept 2019.
2. **DUDDY.** *Reducing overdiagnosis and overprescribing: realist review.* NIHR Systematic Reviews MSc Fellowship. Oct 2017 – Sept 2020.
3. **WALUMBE**. *Self-management of chronic pain*. NIHR Doctoral Fellowship. Jan 2018-Dec 2023.
4. **BARRY.** *Lived experience of prediabetes*. NIHR Doctoral Fellowship. Jan 2018-Dec 2023.
5. **TREADWELL.** *Online tools for estimating the benefits and harms of treatments***.** NIHR Doctoral Fellowship. Oct 2018- Sept 2023.

Academic publications

Publications considered possible returns to REF2021 are highlighted. Associates' publications not included.

1. Abimbola S, Patel B, Peiris D, Patel A, Harris M, Usherwood T, **Greenhalgh T**. The NASSS framework for ex post theorisation of technology-supported change in healthcare: worked example of the TORPEDO programme. BMC Medicine 2019, 17(1), 1-17.
2. Adhikari B, Vincent R, **Wong G**, **Duddy C**, Richardson E, Lavery J, Molyneux S. A realist review of community engagement with health research. Wellcome Open Research 2019; 4:87
3. **Allen LN**, Hateft A, Feigl A. Corporate profits versus spending on non-communicable disease prevention: an unhealthy balance. The Lancet Global Health. 2019 Nov 1;7(11):e1482-3.
4. **Allen LN**. Fiscal policies and global public health. The Lancet 2019; 394 (10197), 470.
5. **Allen LN**. Action on salt in China. *The Lancet* 2019; *393* 1202.
6. **Allen LN, Barry E,** Gilbert C, Honney R, Turner-Moss E. How to move from managing sick individuals to creating healthy communities. *BJGP* 2019; 69 (678): 8-9.
7. **Barry E, Greenhalgh T.** General practice in UK newspapers: an empirical analysis of over 400 articles. *BJGP* 2019; 69: e146-e153. (In Top Ten Downloaded Papers for RCGP 2019).
8. Crosbie B, Ferguson M, **Wong G**, Walker D-M, Vanhegan S, Dening T. Giving permission to care for people with dementia in residential homes: learning from a realist synthesis of hearing-related communication. *BMC Medicine* 2019; 17:54.
9. **Darbyshire JL**, Noise in the intensive care unit: where does it come from and what can you do about it? *ICU Management & Practice* 2019, 19 (2): 118-120
10. **Darbyshire JL**, Mueller-Trapet M, Cheer J, Fazi FM, Young JD, Mapping source of noise in an intensive care unit. *Anaesthesia* 2019, (74): 1018-1025; doi: 10.1111/anae.14690
11. Edmunds, L.D [...] **Rushforth, A.** et al., New indicators and indexes for benchmarking university–industry–government innovation in medical and life science clusters: results from the European FP7 Regions of Knowledge HealthTIES project. *Health Research Policy and Systems*. 2019 17, (1), 10
12. **Fahy, N**., Hervey, T., Greer, S., Jarman, H., Stuckler, D., Galsworthy, M., & McKee, M. How will Brexit affect health services in the UK? An updated evaluation. *The Lancet* 2019; 393(10174), 949-958. https://doi.org/10.1016/S0140-6736(19)30425-8. In the Altmetric global top 100 papers of 2019.
13. Ford J, Jones A, **Wong G**, Barton G, Clark A, Sims E, Swart A, Steel N. Improving primary care Access in Context and Theory (I-ACT trial): a theory-informed randomised cluster feasibility trial using a realist perspective. *Trials* 2019; 20: 193.

14. Goiana-da-Silva F, Cruz-e-Silva D, **Allen L**, Nunes AM, Calhau C, Rito A, Bento A, Miraldo M, Darzi A. Portugal's voluntary food reformulation agreement and the WHO reformulation targets. *Journal of Global Health*. 2019 Dec; 9 (2).

15. Goiana-da-Silva F, Cruz-e-Silva D, **Allen LN**, Gregório MJ, Severo M, Nogueira PJ, Nunes AM, Graça P, Lopes C, Miraldo M, Breda J. Modelling impacts of food industry co-regulation on noncommunicable disease mortality, Portugal. *WHO Bulletin* 2019; 97 (7): 50.

16. **Greenhalgh T, Wherton J (equal 1st author), Shaw S, Papoutsi C**, Vijayaraghavan S, Stones R. Infrastructure revisited: ethnographic case study and (re)theorisation of the 'installed base' of healthcare IT. *J Medical Internet Research* (20th anniversary issue) 2019; 21(12), e16093..

17. **Greenhalgh T**. Twitter Women's Tips on Academic Writing: A Female Response to Gioia's Rules of the Game*. J Management Inquiry* 2019; 28 (4): 484-487.

18. **Greenhalgh T, Papoutsi C**. Spreading and scaling up innovation and improvement. *BMJ* 2019; 365: 12068.

19. **Greenhalgh T**, Hinton L, **Finlay T**, Macfarlane A, **Fahy N**, Clyde B, Chant A: Frameworks for supporting patient and public involvement in research: Systematic review and co-design pilot. *Health Expectations* 2019; 1-17. DOI: 10.1111/hex.12888

20. **Greenhalgh T,** Ozbilgin M, Prainsack B, **Shaw S**. Moral entrepreneurship, the power-knowledge nexus and the Cochrane collaboration "crisis". *J Eval Clin Pract* 2019; 1-9.

21. Greig PR, **Darbyshire JL**, Medical education theory in practice. *BJA Education* 2019, 19(2): 40-46; doi: 10.1016/j.bjae.2018.10.003

22. **Hughes G.** Experiences of integrated care: reflections on tensions of size, scale, and perspective between ethnography and evaluation. *Anthropology & Medicine* (2019) doi 10.1080/13648470.

23. Iedema R, **Greenhalgh T**, Russell J, Alexander J, Amer-Sharif K, Gardner P… McGuire P. Spoken communication and patient safety: a new direction for healthcare communication policy, research, education and practice? *BMJ Open Quality* 2019; 8(3), e000742.

24. Kastner M, Hayden L, **Wong G,** Lai Y, Makarski J, Treister V, Chan J, Lee J, Ivers N, Holroyd-Leduc J, Straus S. Underlying mechanisms of complex interventions addressing the care of older adults with multimorbidity: a realist review. *BMJ Open* 2019;9:e025009

25. Kenten C, Nqwenya N, Gibson F, Flatley M, Jones L, Pearce S, **Wong G,** Black K, Haig S, Hough R, Hurlow A, Stirling C, Taylor R, Tookam A, Whelan J. Understanding care when cure is not likely for young adults who face cancer: a realist analysis of data from patients, families and healthcare professionals. *BMJ Open* 2019; 9:e024397.

26. Luetsch K, Twigg M, Rowett D, **Wong G.** In search for gold – The relevance of realist review and evaluations to pharmacy research and policy development. *Research in Social & Administrative Pharmacy* 2019; https://doi.org/10.1016/j.sapharm.2019.07.002

27. Mattick K, Brennan N, Briscoe S, **Papoutsi C,** Pearson M. Optimising feedback for early career professionals: a scoping review and new framework. *Medical Education* 2019; 53: 355-368.

28. Morton T, Atkinson T, Brooker D, **Wong G,** Evans S, Kennard C. Sustainability of community-based interventions for people affected by dementia: a protocol for the SCI-Dem realist review. *BMJ Open* 2019; 9:e032109.

29. **Papoutsi C,** Colligan G, Hagell A, Hargreaves D, Marshall M, Vijayaraghavan S, **Greenhalgh T**, Finer S: Promises and Perils of Group Clinics for Young People Living With Diabetes: A Realist Review. *Diabetes Care* 2019, 42(5):705-712.

30. Park S, Abrams R, **Wong G**, Feder G, Mahtani K, Barber J. Reorganisation of general practice: be careful what you wish for. *BJGP* 2019; 69(687):517-518

31. Ponsford R, Thompson C, **Paparini S**. We need a renewed focus on primary prevention to tackle youth knife violence. *BMJ* 2019 Apr 16;365:l1769.

32. **Rushforth, A.,** Franssen, T., De Rijcke, S. Portfolios of Worth: Capitalizing on Basic and Clinical Problems in Biomedical Research Groups. *Science, Technology and Human Values 2019.* 44, (2), 209-236

33. Roberts S, Pilard L, Chen J, Hirst J, Rutter H, **Greenhalgh T**. Efficacy of population-wide diabetes and obesity prevention programs: An overview of systematic reviews on proximal, intermediate, and distal outcomes and a meta-analysis of impact on BMI. *Obesity Reviews*. 2019; DOI: 10.1111/obr.12821.

34. **Seuren, LM**., Stommel, W., Asselt, D. van, Sir, O., Stommel, M., & Schoon, Y. Multidisciplinary Meetings at the Emergency Department: A conversation-analytic study of decision-making. *Social Science & Medicine* 2019; 242. doi: 10.1016/j.socscimed.2019.112589.

35. **Seuren, LM**. Oh (/o/) als ontvanger van informatie in sociale interactie [Oh (/o/) as information receipt in Dutch talk-in-interaction]. *Tijdschrift voor Taalbeheersing* 2019; 41(2): 363-390. doi: 10.5117/TVT2019.2.002.SEUR.

36. **Seuren, L.M**. Questioning in Court: The construction of direct examinations. *Discourse Studies* 2019; 21(3): 340–357. doi: 10.1177/1461445618770483.

37. Tierney S, **Wong G,** Mahtani K. Current understanding and implementation of 'care navigation' across England: a cross-sectional study of NHS clinical commissioning groups. *BJGP* 2019;67(687):492.

38. **Treadwell J.** Has the polypill finally proven its worth? *Drugs and Therapeutics Bulletin* 2019; 57:178

39. Vat, L. E., **Finlay, T.,** Schuitmaker-Warnaar, T. J., **Fahy, N.,** Robinson, P., Boudes, M., … Broerse, J. E. W. (2019). Evaluating the "return on patient engagement initiatives" in medicines research and development: A literature review. *Health Expectations*, 1–14. https://doi.org/10.1111/hex.12951

40. Weetman K, **Wong G,** Scott E, MacKenzie E, Schnurr S, Dale J. Improving best practice for patients receiving hospital discharge letters: a realist review. *BMJ Open* 2019; 9:e027588

41. Williams GA, & **Fahy N**. Building and maintaining public trust to support the secondary use of personal health data. *Eurohealth* 2019; 25(2), 7–10.

42. **Wherton J, Greenhalgh T, Shaw SE**, Procter R. Wandering as a socio-technical practice: extending the theorisation of GPS tracking in cognitive impairment. *Qual Health Research* 2019; e-pub DOI://1d0o.i.1o1rg7/71/01.10147977/13024391738273918375983.

Major keynote lectures, workshops and conference presentations

DARBYSHIRE presented her DPhil findings on noise in the intensive care unit to the Intensive Care Society conference December 2019 in a session: *Building Better ICUs*.

GREENHALGH gave several international keynote lectures including

- Choosing Wisely International Conference, Melbourne, Australia, April 2019
- European Health Policy Group, Bologna, Italy, April 2019
- Health Services Research UK Conference, Manchester, May 2019
- Joint Meeting of Health and Pharmaceutical Sector Chief Officers of the European Union, Helsinki, Finland, July 2019
- Annual Patient Safety Conference, Manchester, July 2019

- 17th Scandinavian Conference on Health Informatics, Oslo, September 2019
- Royal College of Physicians MindTech Conference, November 2019

HUGHES presented *Integrated care, social practices and complexity: what can we learn from an ethnographic case study?* As the opening presentation at Nuffield Trust and Health Foundation seminar on Integrated Care, May 2019.

External appointments

Allen:

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

Fahy:

- Oxford: co-director of the GTC Initiative on the Future of Health and Care
- UK: Specialist advisor to House of Commons Health Select Committee; with Blavatnik School of Government, advising Department of Health and Social Care on strategic policy challenges
- Management Center Innsbruck: appointed member of the Academic Advisory Council of the new Center for Social and Health Innovation
- European: Policy adviser within an EU-funded research project 'Transfer of Organisational innovations for Resilient, Effective, equitable, Accessible, sustainable and Comprehensive Health Services and Systems', a 29-partner consortium bringing together ministries, research institutes and universities and aiming to set a Europe-wide agenda for research into health services and systems; advising European Observatory on health systems and policies on implementation research; appointed to the board of the European Health Forum Gastein and leading work on capacity building for policymakers at the Forum
- World Health Organisation: rapporteur for the WHO/EURO Foresight project for the future of European health systems; chair of the WHO Expert Group to enhance Health 2020 monitoring and reporting; adviser to WHO initiative on digitalisation of European health systems
- Executive Committee, Future of Health & Care Initiative, Green Templeton College

Greenhalgh:

- 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, Radboud University, Nijmegen, Netherlands
- 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
- Executive Committee, Future of Health & Care Initiative, Green Templeton College
- 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
- International Adviser to Centre for Research Excellence, Macquarie University, Australia

Paparini

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

Shaw

- Oxford: co-director of the GTC Initiative on the Future of Health and Care
- Delivering Primary Health Care to Homeless People, NIHR Advisory Committee
- Executive Committee, Future of Health & Care Initiative, Green Templeton College
- Honorary Reader, Queen Mary, University of London

Treadwell

- National Institute for Health and Care Excellence: co-moderator, GP Reference Panel; Chair, Diabetes Pathway Committee and Member, Guidelines Manual Virtual Reference Group

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

- 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 2020

1. RESEARCH: Continue our current funded programmes of work – especially BRC, SCALS, Triple-C, PARADIGM and QUARC. Set up new funded collaborations e.g. with Norwegian colleagues for VIRTUAL PRESENCE. Secure a new programme grant. Horizon-scan for additional longer-term opportunities.
2. PUBLICATION AND DISSEMINATION: All independent research staff (i.e. those who are or have been PIs) to publish one REF-returnable empirical paper or systematic review. Continue and extend public engagement work in technology-related research.
3. TEACHING: Main priority in 2020 is setting up and delivering the MSc in Translational Health Sciences. Keep doctoral students on track. Ensure postdocs gain supervision experience.
4. STAFF AND STUDENT DEVELOPMENT. Support new DPhil applications related to our existing research programmes; ensure that all early career researchers have clear career plans and opportunities for progression. Where appropriate, submit applications for pre-doctoral, doctoral, post-doctoral and senior research fellowships.

Trisha Greenhalgh and Sara Shaw
January 2020

Impact case study:

Remote digital services (telehealth and telecare): a programme of research to improve uptake, scale-up, spread and the patient experience

1. Summary of the impact

A series of qualitative, mixed-method and action research studies generated in-depth insights and evidence-based principles and standards for remote digital services including remote monitoring devices and video links for clinical consultations and care support. Technology co-design work brought target users (patients and carers) together with industry partners and provider organisations to generate improved technology designs and service models. A major interactive public exhibition was held in collaboration with Oxford's Pitt Rivers Museum, reaching 66,000 people. Our standard operating procedures (SOPs) for video consultations were adopted by NHS England and also informed the Care Quality Commission regulatory framework for digital services in primary care. We worked with national policymakers to address technical and operational bottlenecks to video consulting and supported roll-out of this innovative service model across multiple NHS providers. Impact awards included University of Oxford Vice Chancellor's Public Engagement Award in 2016 and 2019, and the NIHR School of Primary Care Research Impactful Contribution in Patient and Public Involvement and Engagement prize 2019.

2. Underpinning research

Policymakers place high hopes on the potential of digital technologies to support radically new models of care, reduce demand on overstretched services and improve the patient experience. Telehealth is remote healthcare to the patient in their home; it includes remote monitoring (e.g. of biomarkers or symptoms) and remote communication (e.g. video consultations via Skype™ or FaceTime™). Telecare is provision of technology-supported services to improve safety and support independence (e.g. pendant alarms). Whilst randomised trials of telehealth/care have often (though not always) demonstrated feasibility, efficacy and safety, uptake of such services in the real world is typically disappointing. Despite much hype, few patients can currently contact their doctor or nurse through remote technology. This 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 the widespread roll-out and scale-up of telehealth and telecare in NHS and social care settings. It consisted of:

2a: Ethnographic studies of lived experience and co-design with older people (ATHENE study and follow-on studies). 40 participants varying in age (60-98), ethnicity, socioeconomic status, family networks and health conditions were followed longitudinally over time to observe how their use of assistive technologies changed with progression in their underlying conditions. Supplemented by extracts from medical records, this work generated rich case narratives which were shared with industry and care provider partners using co-design methodology in a series of facilitated workshops (including patients). A key finding was that 'off the shelf' technologies rarely met people's needs. Rather, successful technological arrangements tended to be achieved through pragmatic, individualised, needs-focused adaptations (often of 'old', familiar technologies that were already lying around the home) by someone who knew the individual well. The study won the American Health Informatics Association Diana Forsyth Award for Research Linking Social Sciences and Health Informatics [1, 2]. Funding: Technology Strategy Board to TG 2012-2015 (£512K); NIHR Programme Development Grant to TG 2015-16 (£80K).

2b: Action research with organisations introducing telehealth or telecare (SCALS – Studies in Co-creating Assisted Living Solutions). Co-design and change facilitation with 7 organisations across UK (NHS, social care or 3rd sector), each seeking to introduce or improve a service via telehealth or telecare technologies. Included micro-level ethnographic work with patients/clients, meso-level organisational analysis and theorisation of the change process, and macro-level studies of the technological, economic and policy context [3-5]. 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 (see below). This work was funded by a Wellcome Trust Senior Investigator Award to TG 2015-2020 (£1.052M).

2c: Action research to introduce and embed video consultations in NHS organisations. This large study across several departments of an NHS Trust explored and facilitated the introduction of video-based outpatient consultations in diabetes, cancer and antenatal clinics (Virtual Online Consultations – Advantages and Limitations, VOCAL) [6]; additionally, a component of the SCALS study (2b above) looked at video consultations in community-

based heart failure care [5]. Methodology included innovative video-recording of both ends of the remote consultation and micro-analysis of the clinician-patient interaction as well as meso- and macro-level studies of organisational and system change. In both studies, a key finding was the numerous uncertainties and interdependencies that repeatedly stalled or slowed the adoption, spread and scale-up of the video-based service (which was a major policy concern, since it had been flagged as a 'modernisation' priority). We used action research to work through various barriers to developing the service. Funding: NIHR HS&DR to TG 2015-17 (£535K) and Scottish Government to TG and JW 2019-20 (£50K). See also further funding for impact work on this topic below.

3. References to the research: Six references selected of > 20 papers from this research:

1. **Greenhalgh T**, Procter R, **Wherton J** et al. What is quality in assisted living technology? The ARCHIE framework for effective telehealth and telecare services. *BMC Medicine* 2015; 13, 91.
2. **Wherton J,** Sugarhood P, Procter R, Hinder S**, Greenhalgh T.** Co-production in practice: How people with assisted living needs can help design and evolve technologies and services. *Implementation Science* 2015; 10: 75.
3. **Greenhalgh T, Wherton J, Papoutsi C,** Lynch J, **Hughes G**, A'Court C, Hinder S, **Fahy N**, Procter R, **Shaw S**: 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 Res* 2017, 19 (11): e367.
4. **Wherton J, Greenhalgh T**, Procter R, **Shaw S**, Shaw J. Wandering as a socio-material practice –extending theorisation of GPS tracking in cognitive impairment. *Qual Health Res* 2019; 29 (3): 328-344.
5. **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.
6. **Greenhalgh T, Shaw S, Wherton J**, Vijayaraghavan S, Morris J, Bhattacharya S, Hanson P, Campbell-Richards D, Ramoutar S, Collard A: Real-world implementation of video outpatient consultations at macro, meso, and micro levels: mixed-method study. *Journal of Medical Internet Research* 2018, **20**(4).

4. Details of the impact

4a: Co-design of assisted living technologies and services with patients and care staff

A critical element of the research described in sections 2a and 2b is *co-design* or *co-creation* – in which patients/clients work democratically with partners from industry and the service sector to generate here-and-now solutions (both new or adapted technologies and new or adapted service models) as well as generalizable contributions to the knowledge base. This means that the research and its impact occur not sequentially but in parallel. The 'research' component of the co-design work is described above. The impact component consisted of insights that fed into industry redesigning technologies and also to health and social care staff redesigning care models and pathways. An example of the former was clients' difficulties with short battery life and their distress with an intrusive 'low battery alarm' (gadgets that flashed and beeped repeatedly were put in cupboards, buried under cushions or deliberately disabled). Industry's raised awareness of the level of client distress from 'low battery' alarms and the difficulties and delays clients had with requests to change batteries led directly to an initiative by industry (ongoing) to extend battery life, develop reserve battery function and find less intrusive ways of indicating low battery. An example of service redesign was when clients and carers in our co-design workshops expressed dissatisfaction with GPS tracking technologies designed to enable people with memory difficulties to 'wander' safely outside the home. This led to an intersectoral impact effort led by our team to co-evolve improvements in GPS technologies (in collaboration with two industry partners) and improvements in support services for responding to GPS alarms (in collaboration with the local council); this was part-funded with an **ESRC Impact Acceleration Award** (1702-KEA-281). It won the **University of Oxford Vice-Chancellor's Award for Public Engagement 2016**.

4b: Public engagement with the 'messy reality' of technology-supported care of older people

We gained two Wellcome Trust Public Engagement Awards totalling £42K (104830/Z/14A and B). We convened a **public debate at the National Battle of Ideas** (London) in October 2015: 'Can Technology Solve the Ageing Time-Bomb?' with speakers from academia, industry, design, policy and the third sector. The debate was well-attended by people with complex care needs, health and social care staff, technology designers and lay people; it was audio recorded and is available as a webcast. Working with the Pitt Rivers Museum in Oxford along with students from a local design college, we held a **series of hands-on public workshops** to consider how 'bricolage' (pragmatic, needs-based customisation by technology users and their carers) can help make assistive technologies acceptable and usable in the home. These workshops culminated in an **interactive museum exhibition 'Messy realities'** at the Pitt Rivers, featuring selected examples of technologies from the museum's collections alongside contemporary assisted living technologies. Around 66,000 members of the public visited the exhibit, and there

was a major web feature. This work was Highly Commended by the **University of Oxford Vice-Chancellor's Award for Public Engagement 2019**. and won the **NIHR School of Primary Care Research Impactful Contribution in Patient and Public Involvement and Engagement prize** 2019. A further exhibition was launched in 2020 with In Control by Design: a group developing technology solutions for neurological conditions. We also worked with museum staff and lay people to co-produce a series of podcasts on the 'messy realities' of health and care technologies in the home, again emphasising the importance of needs-focused, pragmatic customisation for making technologies 'work' in a home setting and in appreciating the symbolic and cultural meaning of technologies.

4c: Organisational and policy change to establish video outpatient consultation services locally and nationally in England

The VOCAL study described in section 2c also had a co-design component in which research and research impact evolved in parallel. Local impact to date has included:

a. Establishing video consultations as a 'business as usual' option for selected outpatient appointments in two clinical services (diabetes and hepatobiliary cancer) at Barts Health, and then working with ten additional clinical services also at Barts, including haematology, neurology and oncology to mainstream this option for patients in whom it is clinically appropriate;
b. Demonstrating clinical impact. In the diabetes service at Barts, to give one example, the 'DNA' (did not attend) rate fell from 50% to 11% in patients taking up the video consultation option, and there was a statistically significant reduction in HbA1c from 70 to 65 mmol/mol;
c. Specific commendation for video consultation as a marked area of recent improvement in the Care Quality Commission report on Barts Health;
d. Establishing local standard operating procedures for video consultations to take account of professional, logistical and information governance issues;
e. Co-designed (with patients and clinicians) written guidance on 'Getting the Most out of Your Video Consultation' (undertaken with Barts Health but website is open access for all.
f. A short animation co-produced with patients and clinicians 'Why Do a Video Consultation?', aimed at patients who are reticent about consulting with a clinician via video.

At national level, two members of Simon Stevens' technology team (NHS England) were on the VOCAL steering group and have been actively engaged with the emerging findings. This meant that as soon as our standard operating procedures for video consultations were ready and piloted locally, NHS England asked if we would share them. These SOPs been adopted by NHS England in their official guidance for remote consulting. As a further element of our pathway to impact, we undertook work at both local and national level to help policymakers overcome the 'impasse' of the lack of a specific tariff for video consultations which was holding back the operationalisation of this service model. We also informed development of the CQC regulatory framework for digital services in primary care.

With a £25K ESRC Impact Acceleration Award 2017-2018 and a £450K Health Foundation 'Scaling Up' award shared with our NHS partner (with TG and SS as co-investigators) [commenced March 2018], 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 setting up and delivering video consultations);
b. **Resources** that could 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** which enabled visiting teams to observe 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.

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

Our evaluation of video consultation services to rural and remote areas of in Scotland using the NASSS framework (see above): a) confirmed the technical robustness and fitness-for-purpose of the digital technology used for the video link (Attend Anywhere); b) highlighted the value of a system-wide, quality improvement implementation logic

with close attention to the co-embedding of technologies and work processes (in other words, the initiative succeeded because the staff saw it as "improving services" and not simply "implementing Attend Anywhere"); c) identified unmet need for IT support and training in some key NHS organisations; and d) revealed the need for considerable investment in staff and resources to install and support video technology in people's homes (to further reduce travel burden on patients and to overcome the problem of 'double handling' when patients had their video consultation from a remote hospital or GP surgery). On the basis of this report, the Scottish Government will approve (or not) the continuation and expansion of the national Attend Anywhere video consultation services.

4f: Work with industry to inform technical refinement of video-consulting software

The VOCAL study (4c above) used Skype™ and piloted Skype for Business™. We worked closely with Microsoft, who were very keen to use our video data to inform refinement of their technologies to make it more fit for purpose 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 'ends' with industry designers (via HEIF-funded **postdoc placements for JW at Microsoft international research headquarters** in Seattle, USA). Adaptations were made to make the software more fit for purpose. Two further HEIF awards are funding another postdoc (Seuren) to work with Microsoft in UK on the **design of peripheral devices** (e.g. special cameras) to support remote physical examinations.

4f: Work with UK policymakers, service and industry to produce and apply the NASSS-CAT tools

The NASSS framework was developed to help with academic analysis. On its publication, we were immediately approached by national and local policymakers as well as industry and tech designers, who were interested in it for a variety of applied uses. We describe how we took some of these forward:

a. *Department of Health, NHS Digital and Health Education England* sought to use the NASSS framework as part of a wider initiative to build capacity among front-line NHS staff for selecting, adopting and using technologies to improve services. For example, we held a **one-day training programme in May 2018 for senior Department of Health staff** including Chris Whitty, Sir Chris Wormauld, Lord O'Shaughnessy and others, and a high-level **one-day workshop** with NHS Digital in January 2020 with policymakers to apply NASSS to learning health systems.

b. We joined forces with Prof Harvey Maylor, a professor of project management, and a small design consultancy, *mHabitat*, to combine the NASSS framework with an evidence-based complexity assessment tool (CAT) for assessing and managing complexity in technology projects. This was done in a series of 7 co-design workshops involving NHS, social care, policy, industry and patients. The resulting NASSS-CAT tools are available in four downloadable versions: a short and long form designed for project planning; a project monitoring tool; and an interview topic guide; they are already in use by groups seeking to implement or evaluate technology projects. In 2020, we were successful in an application for a Health Foundation grant of £50K to TG to produce electronic versions of the NASSS-CAT tools. We are also working with the University of Oxford Public Affairs Directorate to produce an animation to support dissemination and take-up of these tools.

c. *NHS England* and IPSOS Mori used the NASSS framework for the official evaluation of the **Local Health Care Records Exemplars**.

4h: International visits and collaborations

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, 13-14th June 2018: *'How can we make innovation programmes in health and social care work?'*
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 22nd – 24th, 2019.
c. Collaboration with *psychiatric team in Gothenberg Hospital, Sweden* to use NASSS-CAT to implement a patient-facing digital dashboard to access resources and advice remotely.

4i: Educational resource for medical students

We worked with the undergraduate medicine teaching team at U of Oxford to develop a curriculum and syllabus for remote consulting. We adapted anonymised video clips of video consultations and added learning objectives and teaching notes, and we trained clinical teaching staff to work with these.