

Systematic Development and Evaluation of Complex Interventions to Improve Health: A Route to Success?



Prof Sally WYKE, BSc, PhD, FRCGP (Hon), FRSE

Interdisciplinary Professor of Health and Wellbeing
Deputy Director (Social Sciences), Institute of Health and Wellbeing
The University of Glasgow, United Kingdom

Professor Sally Wyke has 33 years of experience in health research. She has particular expertise in applying interdisciplinary social science theory and evidence to developing and evaluating complex interventions for health. As Deputy Director of the University of Glasgow's Institute of Health and Wellbeing she leads social science aspects of the Institute's work, focusing in particular on interdisciplinary, solutions-focused, research. She is an experienced research leader; she was Foundation Director of the Scottish School of Primary Care and Director of the Alliance for Self-Care Research. She has held over 55 research awards, amounting to over \$13.5 million.

Few interventions in health systems are truly simple. The apparently simple act of prescribing a medicine can depend on how patients, prescribers and dispensers interact with each other within a health system and the outcome (whether a prescription is filled) can be very different depending on any of these.

Complex interventions in healthcare and public health are usually described as interventions that contain several interacting components although other features also make them complex, including: the number and difficulty of behaviours required by those delivering or receiving the intervention; the number of groups or organisational levels targeted; the number and variability of outcomes; and the degree of flexibility or tailoring of the intervention permitted.¹

With so many complex interventions in healthcare it is surprising that so little attention is paid to their development, or to the feasibility of implementing them. Health research is replete with guidance on how to evaluate interventions, including complex ones, but there is little to guide researchers or practitioners on how best to develop such interventions in practical, logical, evidence based ways to maximise likely effectiveness.

This presentation will outline a pragmatic guide to developing complex interventions developed at the University of Glasgow, UK². Once a problem has been identified as needing intervention, the process of designing it can be broken down into six crucial steps: (1) defining and understanding the problem and its causes; (2) identifying which causal or contextual factors are modifiable: which have the greatest scope for change and who would benefit most; (3) deciding on the mechanisms of change; (4) clarifying how these will be delivered; (5) testing and adapting the intervention; and (6) collecting sufficient evidence of effectiveness to proceed to a rigorous evaluation.

This approach is will be illustrated with reference to our CARE Plus study which tackled the problem of poor outcomes in people with multimorbidity (2 or more chronic conditions) living in areas of high socioeconomic deprivation in Scotland, UK. This mixed methods, 5-year, multidisciplinary research programme demonstrated that multimorbidity is experienced on average 10 years earlier in deprived compared to affluent areas of Scotland³, and that multimorbidity is experienced as 'an endless struggle' by clinicians⁴. Based on detailed understanding of the problem the intervention was co-designed with primary care clinicians and patients.⁵ It was a 'whole-system' intervention which intervened simultaneously at system, practitioner and patient level and aimed to improve quality of life in patients. The research demonstrated, in an exploratory cluster pilot randomised controlled trial, that it is possible to limit the decline in quality of life amongst people with multimorbidity living in very deprived areas.⁶

¹ Craig Peter, Dieppe Paul, Macintyre Sally, Michie Susan, Nazareth Irwin, Petticrew Mark et al. Developing and evaluating complex interventions: the new Medical Research Council guidance BMJ 2008; 337 :a1655.

² Wight D, Wimbush E, Jepson R, et al Six steps in quality intervention development (6SQulD) J Epidemiol Community Health 2016;70:520-525.

³ Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B: Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *The Lancet* 2012, 380:37-43.

⁴ O'Brien R, Wyke S, Guthrie B, Watt G, Mercer S: An 'endless struggle': a qualitative study of general practitioners' and practice nurses' experiences of managing multimorbidity in socio-economically deprived areas of Scotland. *Chronic Illness* 2011, 7:45-59.

⁵ Mercer SW, O'Brien R, Fitzpatrick B, Higgins M, Guthrie B, Watt G, Wyke S: The development and optimisation of a primary care-based whole system complex intervention (CARE Plus) for patients with multimorbidity living in areas of high socioeconomic deprivation. *Chronic Illness* 2016, 12:165-181.

⁶ Mercer SW, Fitzpatrick B, Guthrie B, Fenwick E, Grieve E, Lawson K, Boyer N, McConnachie A, Lloyd SM, O'Brien R, et al: The CARE Plus study – a whole-system intervention to improve quality of life of primary care patients with multimorbidity in areas of high socioeconomic deprivation: exploratory cluster randomised controlled trial and cost-utility analysis. *BMC Medicine* 2016, 14:88.