



UNIVERSITY OF  
**OXFORD**

NUFFIELD DEPARTMENT OF  
**PRIMARY CARE**  
HEALTH SCIENCES

# DIABETES & LONGTERM CONDITIONS RESEARCH GROUP

**NDPCHS**

Department Open Meeting  
*22 April 2021*



Nikki Newhouse



Laura Armitage



Bethany Lawson



Andrew Farmer



Jessica Forsyth

Using interdisciplinary methods to translate  
digital innovation into clinical care

# SuMMiT-D: Support through mobile messaging and digital health technology for diabetes



Nikki Newhouse



- Predictors of behaviour change may be changed using text messages<sup>2</sup>
- Messages show fidelity to BCTs
- Tailored messages can be sent based on information taken from the EHR
- System is acceptable in its current format
- Medication adherence might be a clinical concern but is **not** perceived as a problem (by patients)<sup>3</sup>
- Diet and exercise are priorities<sup>3</sup>
- Messages need to be practical, novel and relevant



<sup>1</sup>Farmer, A.J., McSharry, J., Rowbotham, S., et al., 2016. Effects of interventions promoting monitoring of medication use and brief messaging on medication adherence for people with Type 2 diabetes: a systematic review of randomized trials. *Diabetic Medicine*, 33(5), pp.565-579

<sup>2</sup>Bartlett, Y.K., et al. A text message intervention to support medication adherence in type 2 diabetes: Effects on psychological constructs and correlation between changes to psychological constructs and medication adherence. (*Under review*)

<sup>3</sup>Bartlett, Y.K., Newhouse, N., Long, H.A., et al., 2019. What do people with type 2 diabetes want from a brief messaging system to support medication adherence?. *Patient preference and adherence*, 13, p.1629.

# EDGE2: A multi-component, digital health intervention to improve outcomes for people with COPD



Nikki Newhouse



## EDGE1

- System is acceptable to users<sup>1</sup>
- Data forms part of ongoing care package
- Community recruitment is feasible

## EDGE2 - HOSPITAL RECRUITMENT

- Hospital recruitment is not feasible<sup>2</sup>
- Burden of coping with acute illness following exacerbation and admission



## THE COVID RESPONSE

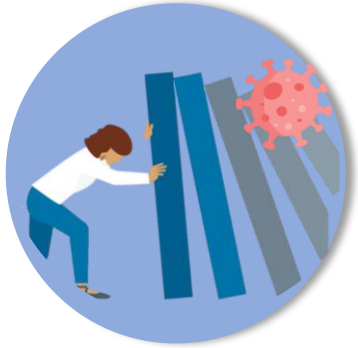
- Reconfiguration of care<sup>3</sup>: exacerbation – admission – discharge into ‘virtual ward’
- Recruitment is feasible
- Renewed buy-in from clinical team



<sup>1</sup>Williams, V., Price, J., Hardinge, M., et al., 2014. Using a mobile health application to support self-management in COPD: a qualitative study. *British Journal of General Practice*, 64(624), pp.e392-e400.

<sup>2</sup>Whelan, M.E., Biggs, C., Areia, C. et al., Recruiting patients to a digital self-management study whilst in hospital for a chronic obstructive pulmonary disease exacerbation: A feasibility analysis (*Under review*)

<sup>3</sup>Newhouse, N., Farmer, A. and Whelan, M.E., 2020. COVID-19: Needs-led implementation and the immediate potential of remote monitoring. *BJGP Open*, 4(2).



# RESPONDING TO THE CHALLENGES OF COVID-19 in research

Remote delivery of Ambulatory Blood  
Pressure Monitoring

Laura Armitage, Beth Lawson,  
Beth Thompson, Chris Biggs,  
Heather Rutter, Martin-Lewis  
Jones, Andrew Farmer, Peter  
Watkinson

Screening for Hypertension  
in the INpatient Environment

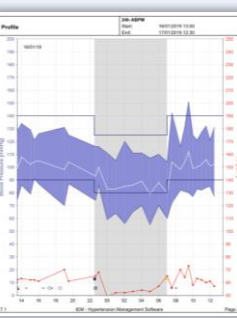
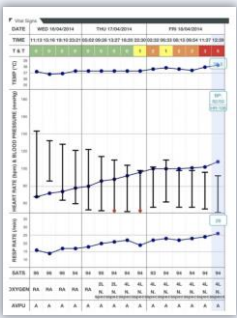




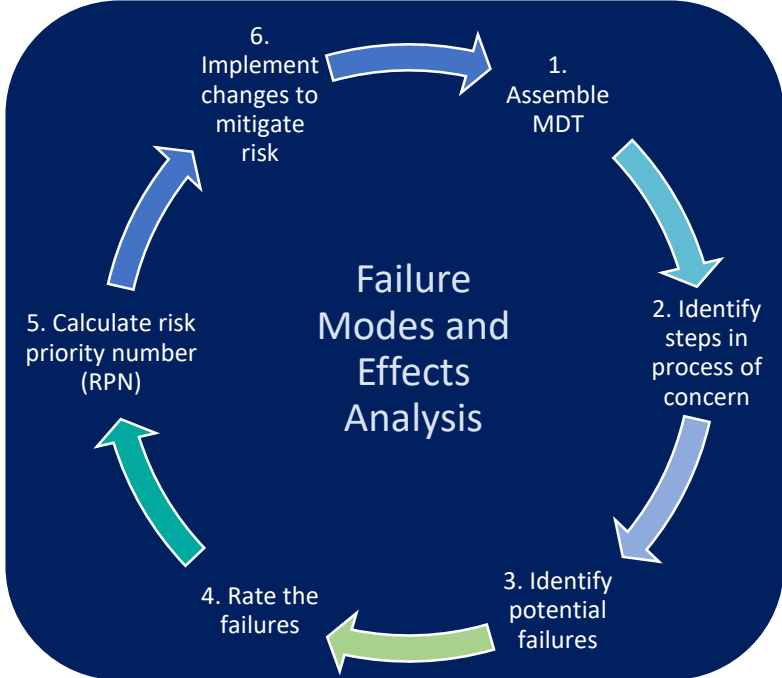
# Screening for Hypertension in the INpatient Environment



Laura Armitage  
April 2021



1. Is the process safe and reliable?
2. Does remote ABPM perform as well as face-to-face ABPM?



Rating	Likelihood of occurrence	Likelihood of detection	Severity of risk
1	Remote – no known recurrence	Certain – error will always be detected	Slight annoyance only – no injury to participant or research staff and no impact on study
2	Rare – yearly	Very high probability of detection	Slight danger – but with no injury to participant or research staff or slight impact on study
3, 4	Occasional – quarterly	High probability of detection	Low to moderate danger – very minor or no injury to the participant or research staff and minimal impact on study
5, 6	Moderately frequent – monthly	Moderate chance of detection	Moderate danger – minor or no injury to participant or research staff, moderate impact on study
7, 8	Very frequent – weekly	Low chance of detection	Dangerous – minor or moderate injury to the participant or research staff and/or marked impact on study.
9	Inevitable	Remote chance of detection	Very dangerous – may result in major injury to participant or research staff and/or major impact on study.
10	Certain – daily	No chance of detection	Extremely dangerous – may cause death to participant.

<sup>1</sup>NHS Digital. *Hospital Admitted Patient Care Activity, 2017-18; 2018.*  
<sup>2</sup>Mahdi A, Armitage L.C., et al, unpublished data  
<sup>3</sup>Armitage L.C., et al. *Journal of clinical hypertension.* 2019;21(9):1415-1425.  
<sup>4</sup>Armitage L.C., et al. *BMJ Open.* 2019;9(12):e033792



## Is remote ABPM safe and reliable?

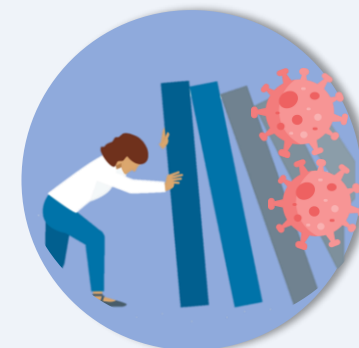


## Does remote ABPM perform comparably?

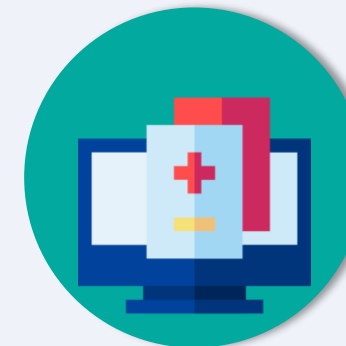


## Implications

Building resilience



Matching the pace of digitisation of care



Agility of policy and frameworks





# Applying the NICE Evidence Standards Framework to Assess Digital Health Technologies for the Self-Management of Type 2 Diabetes Mellitus

Jessica Forsyth, Hannah Chase, Laura Armitage & Andrew Farmer

## NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE EVIDENCE STANDARDS FRAMEWORK FOR DIGITAL HEALTH TECHNOLOGIES<sup>1</sup>

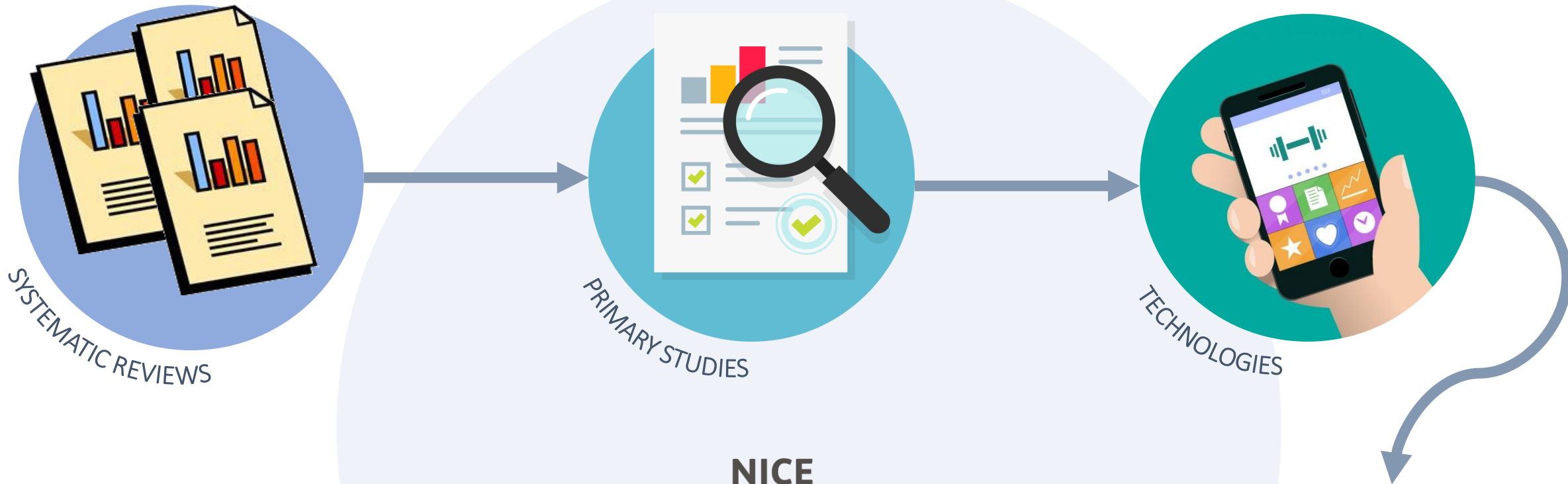
March 2019



NICE



<sup>1</sup>NICE Evidence Standards Framework for Digital Health Technologies. NICE. 2019. URL: <https://www.nice.org.uk/Media/Default/About/what-we-do/our-programmes/evidence-standards-framework/digital-evidence-standards-framework.pdf>



**NICE**  
National Institute for  
Health and Care Excellence

Figure 1 DHTs classified by function and stratified into evidence tiers



**BEST PRACTICE**

**MINIMUM**

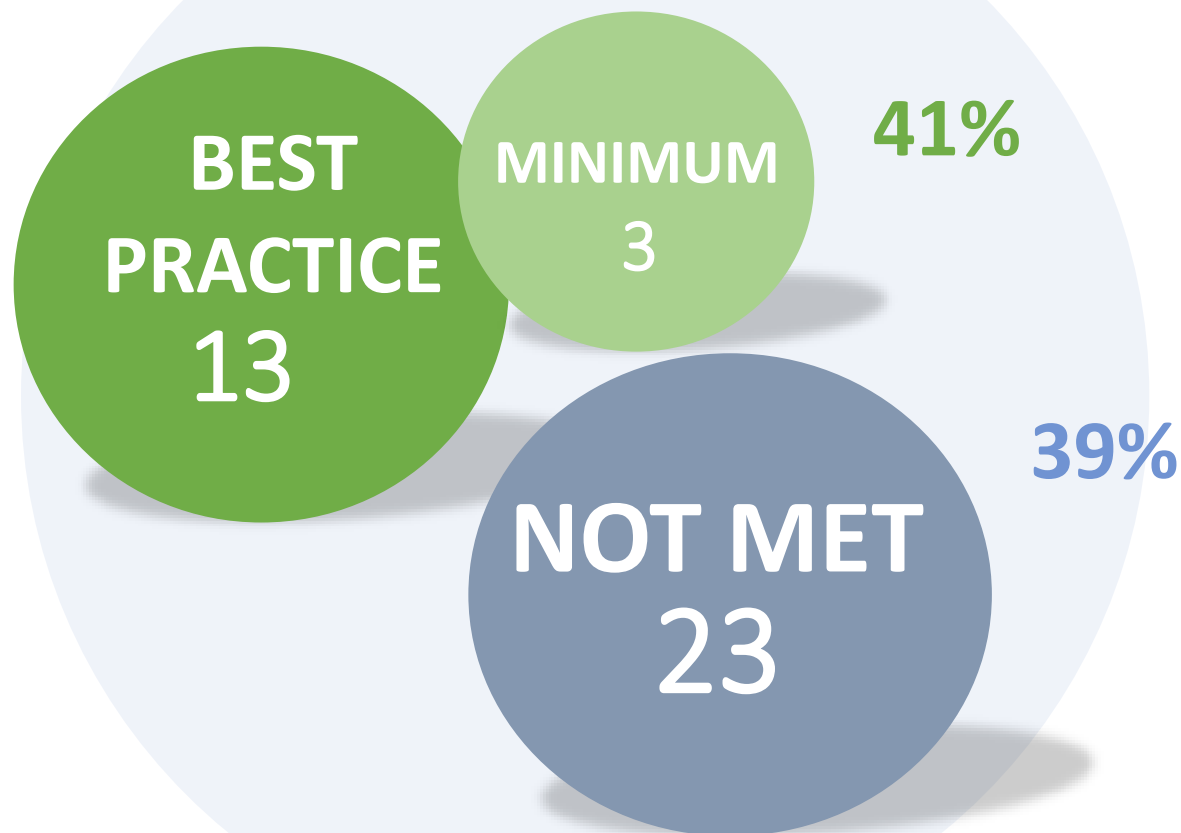
Evidence tier 3a	<b>Preventative behaviour change</b> Address public health issues: smoking, eating, alcohol, sexual health, sleeping and exercise	<b>Self-manage</b> Allows people to self-manage a specified condition. May include behaviour change techniques	Evidence tier 3b	<b>Treat</b> Provides treatment Guides treatment	<b>Active monitoring</b> Tracking patient location, using wearables to measure, record and/or transmit data about a specified condition.	<b>Calculate</b> A calculator that impacts on treatment, diagnosis or care	<b>Diagnose</b> Diagnoses a specified condition Guides diagnoses





## 39 technologies assessed<sup>1</sup>

From 59 primary studies



**RESEARCHERS  
& DEVELOPERS**



**NICE  
FRAMEWORK**



**POLICY &  
PRACTICE**



<sup>1</sup>Forsyth et al. Application of the National Institute for Health and Care Excellence Evidence Standards Framework for Digital Health Technologies in Assessing Mobile-Delivered Technologies for the Self-Management of Type 2 Diabetes Mellitus: Scoping Review. JMIR Diabetes, 2021; 6(1): e23687. doi: 10.2196/23687