

Supplementary material 2

Table 1 Glossary of key terms, categories (interventions, outcomes) and filters included in the Evidence and Gap Map. The table contains all categories in the map; a definition or example(s) is provided except where terms are in common use.

Term	Definition
Evidence and gap map (EGM)	An Evidence and Gap Map (EGM) is an interactive tool, designed to provide visual presentations of the availability of rigorous evidence for a particular topic, theme, or policy area. EGMs commonly include systematic reviews and evaluations of impact on ‘what works’ in relation to a specified topic. Derived from a systematic and pre-defined search of available evidence, EGMs consist of a matrix of intervention categories (rows) and outcome domains (columns) placed into an intuitive graphical display. Navigating the map reveals areas for which there is strong, weak, or non-existent evidence available on the effect of interventions. In addition, filters may be available, for example for the type of study, or population characteristics. It is important to note that while EGMs show what evidence is available, they do not comment on what the evidence says. 1,2
Remote monitoring	An intervention, involving the monitoring of a patient (using medical devices, applications, clinical investigation results, or assessment tools), including self-monitoring, and which allows care professionals from a healthcare provider to assess and manage a patient’s condition remotely - without the need for the patient to be seen face-to-face. This includes monitoring: <ul style="list-style-type: none">- of objective or self-reported health status;- occurring in the place where a person lives, either their home or a residential setting such as a care home;- using a device or written output, as long as data is transferred to a care professional.
Systematic review	A study which systematically collects and synthesises all of the research available on a topic in order to answer a specific question. 3,4 Systematic reviews seek to minimise bias by setting out their methods in advance, defining the types of study that will be included and methods that will be used to search for evidence, select studies for inclusion, and manage and analyse the data.

Randomised controlled trial	An experimental study in which people are randomly allocated into different groups and each group receives a different intervention. 5
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INTERVENTIONS (type of remote monitoring)

Category	Sub-category	Explanatory notes/examples
What is monitored	Blood glucose	Levels of sugar in the bloodstream
	Blood pressure	The pressure of blood in the circulatory system, used to measure the force with which the heart is pumping blood around the body 6
	Heart rate, arrhythmia, atrial fibrillation	Heart-related health indicators (other than blood pressure)
	Physical activity	As defined in the study
	Medication/treatment adherence	The extent to which patients follow the treatment regime prescribed by their physicians
	Oxygen related	E.g. blood oxygen levels
	Symptoms	Disease-specific symptoms e.g. breathlessness
	Other	E.g. weight

How is it monitored	Implantable	Devices that are either partially or totally inserted into the body and remain there in order to measure health status e.g. a pacemaker
	Wearable device	A device that needs to be worn in order to measure health status e.g. an activity tracker
	Other device	Devices used to measure health status which were not specified as wearable/implantable in the review; these might include blood pressure monitors or oximeters
	Symptom tracking	Where patients were asked to track symptoms related to their health condition e.g. using a standardised set of questions
Method of passing on data	Automatic	Data on health status is automatically passed from the measurement device to a healthcare provider
	App/website/email/patient portal	Any electronic means used by the patient to pass on data, such as apps, websites, emails or patient portals
	SMS	Text messages from a mobile telephone
	Telephone	Telephone calls from a mobile telephone or landline
	Videochat/conferencing	
	Face-to-face	
Who is healthcare contact	Doctor	Including general practitioners and doctors with specialisms e.g. a cardiologist

	Nurse	As defined in the study
	Other healthcare professional	As defined in the study e.g. physiotherapists, diabetes educators
Method of feedback	App/website/email/patient portal	As defined under 'Method of passing on the data'
	SMS	As defined under 'Method of passing on the data'
	Telephone call	As defined under 'Method of passing on the data'
	Videochat/conferencing	
	Face-to-face	
	Alert triggered	When the monitored health indicator reaches a critical value, the healthcare provider is alerted to take an action, e.g. contact the patient
Content of feedback	Referral	Patients might be referred for an appointment with a doctor or specialist, or to an emergency department
	Change to treatment/medication	Healthcare professionals may adjust treatment or medication as a result of a patient's health status, or in consultation with a patient
	Motivation/education	Based on transmitted data, healthcare providers may contact the patient to encourage specific behaviour and/or provide information on the patient's condition e.g. advice about diet and physical activity in response to consistently high blood pressure

OUTCOMES

Category	Sub-category	Explanatory notes/examples
Physical health	Mortality	All-cause and disease-specific
	Blood glucose/glycaemic control	E.g. blood glucose level, HbA1c, hypoglycaemic events
	Blood pressure	E.g. systolic and diastolic blood pressure, mean arterial pressure
	Other cardiovascular metrics	Cardiovascular metrics other than blood pressure e.g. oxygen consumption
	Detection rate	Detection of disease-specific symptoms. These might indicate an exacerbation of a patient's conditions e.g. in patients with chronic pulmonary obstructive disease
	Risk of adverse events	The effectiveness of remote monitoring in reducing the risk of adverse events, such as stroke or myocardial infarction
	Weight/BMI/waist circumference	As defined in the studies
	General health	Any measures of general/physical health and performance e.g. 6 Minute Walk Test

	Other	Any physical outcome not included in the above categories e.g. kidney related measures such as serum creatinine
Mental health/ wellbeing	Anxiety/depression	As measured in the included studies e.g. Hospital Anxiety and Depression Scale (HADS)
	Quality of life	Quality of life as measured by instruments such as EQ-5D, or the subjective perception of wellbeing, as ascertained through qualitative interviews
Health behaviours/ self-regulation	Self-management or self-care	Learning and practicing skills to enable management of health and social needs on a day-to-day basis
	Knowledge, understanding	Knowledge, understanding, information held about own health condition, how to meet own social needs etc.
	Risk factors	Changing behaviour to address risk factors associated with poor health e.g. increasing physical activity or adhering to a healthy diet
	Self-efficacy	Self-efficacy, empowerment. Self-advocacy. Self-esteem. Measures that quantify mental state and attitudes that are likely to translate into health behaviours
Healthcare/ service use	Hospitalisation	Utilisation of healthcare resources, including hospitalisation, length of stay and readmissions e.g. readmission after discharge' or rate of readmissions over a period of time

	Emergency room visits	As defined in the studies
Acceptability/ implementation	Acceptability and satisfaction	Acceptability and user satisfaction with remote monitoring, as established by surveys or interviews with patients/carers/healthcare professionals who have direct experience with remote monitoring
	Usability	Patient/carer/healthcare professional perceptions of the degree to which the remote monitoring technology is fit for use
	Implementation-related	Patient/carer/healthcare professional views on factors <u>(other than acceptability and usability)</u> that affect <u>the implementation of whether</u> remote monitoring interventions are effective and acceptable
Adherence/ compliance	With treatment	Any measure of the patient's adherence to the prescribed treatment regime e.g. patients take their medications as prescribed
	With intervention	Any measure of the patient's adherence to the remote monitoring intervention e.g. patients measure and record their blood pressure as instructed

FILTERS

Category	Sub-category	Explanatory notes
Study year		Year of publication of study

Type of synthesis	Meta-analysis	The review used established statistical methods to combine results from individual studies
	Narrative	The review summarised the results of quantitative studies narratively (using tables and diagrams) without conducting meta-analysis
	Qualitative	The review reported a narrative synthesis of qualitative studies only
	Other	The review synthesised the results from both qualitative and quantitative studies e.g. using realist or integrative review methods
Included study designs	RCT	As defined above
	RCT + other study design	
	Other quantitative	Non-randomised comparative studies and non-comparative designs e.g. cohort studies
	Qualitative	Qualitative studies involving patients, carers or healthcare providers who have direct experience with remote monitoring
Population	Patients	Adults (≥ 18 years old) with chronic conditions receiving remote monitoring at home or in residential care

	Carers	Carers of adults with chronic conditions (as defined above) receiving remote monitoring
	Healthcare professionals	Healthcare professionals providing remote monitoring to adults with chronic conditions (as defined above)
Patients	Cardiovascular disease	Patients with diagnosis of cardiovascular disease e.g. heart failure, hypertension, atrial fibrillation and stroke
	Neurological	Patients with conditions including dementia, Alzheimer's and Parkinson's disease
	Diabetes	Patients with Type 1 or 2 diabetes
	Respiratory conditions	Patients with conditions including COPD and asthma
	Cancer survivors	
	Kidney disease	
	Other	Patients with conditions such as inflammatory bowel disease
Study location(s) <i>These categories were developed to indicate</i>	United Kingdom (UK)	The review included at least one study conducted in the UK or in multiple countries one of which was the UK. The number of UK-based studies is also reported in the map.

<i>organisation of health systems of studies included in the reviews</i>		
	Europe (other than UK)	The review included at least one study conducted in a European country (other than the UK)
	North America	The review included at least one study conducted in North America
	Australia or New Zealand	The review included at least one study conducted in Australia or New Zealand
	Other	The review included at least one study conducted in a location not specified above (e.g. Asia)
Duration of interventions	Mean or median duration of interventions was 12 or more months	The mean or median duration of the intervention, as reported in the review, was 12 or more months
	Included at least one study with duration of intervention 12 or more months	The review included at least one study in which the intervention continued for 12 or more months. If the mean/median duration was reported and was 12 or more months, the review was also included above

<p>Quality assessment overall confidence in quality of results (AMSTAR-2)</p>		<p><i>The following AMSTAR-2 categories were considered critical:</i></p> <ol style="list-style-type: none"> <i>1. Objectives and methods pre-specified in a protocol and any deviations justified</i> <i>2. Comprehensive and reproducible search strategy was used</i> <i>3. The included studies were described in sufficient detail</i> <i>4. Established method was used to assess the risk of bias/methodological quality of the included studies</i> <i>5. Between-study heterogeneity was assessed using established methods and satisfactory explanation was provided</i>
	<p>High</p>	<p>No or one non-critical weakness: The systematic review provides an accurate and comprehensive summary of the results of the available studies that address the question of interest^Z</p>
	<p>Moderate</p>	<p>More than one non-critical weakness: The systematic review has more than one weakness, but no critical flaws. It may provide an accurate summary of the results of the available studies that were included in the review. Upon discretion of the reviewers, some reviews with multiple non-critical weaknesses may have been downgraded to low quality to reflect diminished confidence in the review^Z</p>
	<p>Low</p>	<p>One critical flaw with or without non-critical weaknesses: The review has a critical flaw and may not provide an accurate and comprehensive summary of the available studies that address the question of interest^Z</p>

	Critically low	More than one critical flaw with or without non-critical weaknesses: The review has more than one critical flaw and should not be relied on to provide an accurate and comprehensive summary of the available studies ⁷
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References

1. Campbell Collaboration. Evidence and gap maps (EGMs). Campbell Collaboration; no date. URL: <https://www.campbellcollaboration.org/evidence-gap-maps.html> (accessed 13 January 2023).
2. Unicef. Evidence gap maps. Unicef; no date. URL: [https://www.unicef-irc.org/evidence-gap-maps#:~:text=An%20Evidence%20Gap%20Map%20\(EGM,topic%2C%20theme%2C%20or%20domain.&text=UNICEF%20uses%20EGMs%20to%20inform,accessible%20format%20for%20decision%20makers](https://www.unicef-irc.org/evidence-gap-maps#:~:text=An%20Evidence%20Gap%20Map%20(EGM,topic%2C%20theme%2C%20or%20domain.&text=UNICEF%20uses%20EGMs%20to%20inform,accessible%20format%20for%20decision%20makers) (accessed 13 January 2023).
3. Chandler J, Cumpston M, Thomas J, Higgins J, Deeks J, Clarke M. Chapter I: Introduction. In: Higgins J, Thomas J, Chandler J, Cumpston M, Li T, Page M, et al., editors. Cochrane Handbook for Systematic Reviews of Interventions version 6.3 (updated February 2022): Cochrane; 2022. URL: <https://training.cochrane.org/handbook/current/chapter-i> (accessed 13 January 2023).
4. Moher, D., Shamseer, L., Clarke, M. et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015; **4**: 1. <https://doi.org/10.1186/2046-4053-4-1>
5. Cochrane Effective Practice and Organisation of Care (EPOC). What study designs can be considered for inclusion in an EPOC review and what should they be called? EPOC; 2021. URL: <https://zenodo.org/record/5106085#.Y8EjnXbP02x> (accessed 13 January 2023).
6. NHS. What is blood pressure? NHS; 2022. URL: <https://www.nhs.uk/common-health-questions/lifestyle/what-is-blood-pressure/> (accessed 13 January 2023).
7. AMSTAR 2 – The new and improved AMSTAR. No date. URL: <https://amstar.ca/Amstar-2.php> (accessed 13 January 2023).