ImpleMentAll

"Towards evidence-based tailored implementation strategies for eHealth" GA no. 733025

Deliverable D1.1

Repository of determinants of practice and implementation interventions

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Short description of the Deliverable (as in the DoA):

This document provides a repository of implementation strategies mapped on a list of determinants of practices to implementing eMental health interventions (eMH) in routine practice.

REVISION HISTORY			
REVISION	DATE	COMMENTS	AUTHOR (NAME AND ORGANISATION)
V0.1	26/03/2018	First draft circulated for comments	Christiaan Vis (VUA) Leah Bührmann (VUA) Margot Fleuren (VUA)
V0.2	28/04/2018	Integration of feedback and release for quality check	Christiaan Vis (VUA) Leah Bührmann (VUA) Margot Fleuren (VUA) Tracy Finch (NCL) Tim Rapley (NCL) Sebastiaan Potthoff (NCL) Carl May (NCL Southampton) Catherine Pope (NCL Southampton) Heleen Riper (VUA) ImpleMentAll consortium
V0.3	30/04/2018	Comments on pre-final version	Mette A. Craggs (RSD)
V0.4	01/05/2018	Minor corrections	Chrisiaan Vis (VUA)
V1	15/05/2018 27/03/2020	Version for issue To avoid contamination of the trial, the submission of this deliverable is postponed until March 2020, when all trial sites have crossed over to implementation using the ItFits-toolkit.	Carmen Ceinos (RSD)

Filename: D1.1 v1 Repository of determinants of practice and implementation interventions

Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Confidentiality

This document (D1.1) feeds into deliverables D2.1 and D2.2 which describe the materials and methods that implementation sites will be randomly allocated to use during specific time periods within the Stepped-wedge Trial. To avoid contamination, D1.1, D2.1, and D2.2 should only be distributed at the end of the trial to IMA partners who work directly with implementation sites.

Executive Summary

The ImpleMentAll (IMA) project aims to examine the effectiveness of tailored implementation compared to usual implementation of Internet-based Cognitive Behavioural Therapy (iCBT) in routine practice. An Integrated Theory-based Framework for Intervention Tailoring Strategies (the ItFits-toolkit) will be introduced in twelve implementation sites in nine countries and evaluated for its effectiveness in obtaining implementation success. The generic study protocol is reported in D1.2 Mixed-methods evaluation framework.

This document reports on deliverable D1.1 providing a repository of implementation strategies mapped on a list of determinants of practices to implementing eMental health interventions (eMH) in routine practice. These repositories provide the input for modules 1 and 2 of the ItFits-toolkit which is reported in deliverables D2.1 and D2.2, they then describe the blueprint and further materials of the ItFits-toolkit.

The repositories reported in this deliverable consist of 37 determinants of practices for implementing eMH in routine care resulting from an extensive systematic review of the literature. This list is refined with eHealth generic information about determinants of practices as well as the specificities of iCBT services implemented in the context of the ImpleMentAll study.

In addition, a taxonomy of 73 implementation strategies reported in literature are mapped on these 37 determinants and combined into one repository providing a basis for the ItFits-toolkit.

As the repositories are open-ended, more determinants and strategies can, and most likely will, be added to and refined as a result of in-depth analysis of the MasterMind materials and the piloting of the ItFits-toolkit.

Further work in integrating the repository into the online version of the ItFits-toolkit focus on

a. piloting the paper-based version of ItFits-toolkit ao. to test the integration of the repositories in the toolkit process flow,

b. transferring the paper-based repositories to the online utilisation framework developed in WP4, and c) piloting the online version of the ItFits-toolkit to test its usability and stability.

Table of Contents

1. INTRODUCTION

1.1 Purpose and contextualization of this document

This deliverable reports on the development of a combined repository of implementation strategies mapped on determinants of practice (DoP) relevant to implementing eMental health interventions (eMH) in routine practice, including Internet delivered Cognitive Behaviour Therapy (iCBT).

The work for this deliverable is a combined effort of the teams activities in Work Packages 1 and 2 which focus on the development of an Integrated Theory-based Framework for Intervention Tailoring Strategies: the ItFits-toolkit. The ItFits-toolkit is a digitally accessible toolkit with evidence-informed materials offering a step-by-step process for tailoring an implementation intervention to help support the implementation of iCBT into routine practice.

The effectiveness of the toolkit in achieving favourable implementation outcomes compared to usual implementation activities will be tested in a stepped-wedge trial. The toolkit will be introduced in twelve sites in nine countries and evaluated for its effectiveness in implementing iCBT for common mental health disorders in routine care. An in-depth process evaluation will provide information about the particularities of tailored implementation and the application of the ItFits-toolkit in real implementation work. The generic study protocol is reported in deliverable D1.2: Mixed-methods evaluation framework.

The design and methods included in the ItFits-toolkit are reported in deliverables D2.1 and D2.2. The current deliverable (D1.1) provides two aspects of content for the ItFits-toolkit:

- the repository of determinants of practice (i.e. barriers) and
- the implementation strategies.

The ItFits-toolkit will be made available and sustainable by means of the utilisation platform developed in WP4.

This report covers the work and output of Task 1.1 of ImpleMentAll's (IMA) Description of Action (DoA). This task of building the repositories included the following distinct activities:

1. For DoP: factors identified in the MasterMind project were extracted from the reports and a systematic literature review was conducted. The resulted lists of DoPs were formulated in terms of barriers hindering successful implementation and were adapted to fit the purpose of the ItFits-toolkit where necessary.

2. For Implementation strategies: a literature review was conducted and the resulting list of implementation strategies were mapped on the list of implementation barriers identified in step 1.

3. Synthesise and transfer determinants and strategies to ItFits-toolkit (paper-based and online version).

Note that this work and deliverable is highly interrelated with work in WP2 and subsequent deliverables D2.1 and D2.2, and together represent the full specification of the ItFits-toolkit.

The specific work is described in table 1 and the output is detailed in the following sections.

Table 1: Timelines and activities of WP1 for developing the deliverable D1.1

Month	WP1 Task 1.1 Repository	Related to WP2	Related to WP4
Jan - 17	IMA first consortium meeting 17th January, Amsterdam, NL		
Feb - 17	Systematic literature review of DoPs for implementing eMH in routine practice: data extraction and qualitative analysis of DoPs mapped on RE-AIM framework and interaction level (i.e. patient, staff, organisation, system)*	Conceptual review of tailoring literature; analysis of reviews of reviews: DoPs in e-health	Collecting system requirements and initial draft technical specifications of online platform; process and data-flow
Mar - 17			
Apr - 17	First version of Repository of DoPs delivered to WP2. Continuation of narrative synthesis and analysis of extracted data on determinants of practices	Refinement of first findings of systematic review into working model of ItFits-toolkit. Refinement of models of tailoring for ItFits-toolkit	
May - 17			
Jun - 17		ItFits-toolkit module steps development & proof of concept testing with examples. Scoping and mapping of implementation strategies to determinants of practices	Initial mock-ups of the ItFits-toolkit on the basis of specifications and set of requirements
Jul - 17	IMA second consortium meeting 5-6 of July, Newcastle, UK		
Aug - 17	Mapping of DoPs to working model of Normalisation Process Theory (NPT)	ItFits-toolkit user manual contents & drafting of instructions	
Sep - 17			
Oct - 17	WPs 1, 2 & 3 Workshop (Newcastle) – synthesis of ItFits-toolkit with IMA study protocol (WP1) and trial coordination (WP3), including design (bbue print) of process flow of ItFits-toolkit and integration of repository of barriers and strategies.		Initial ItFits-toolkit data model and integration of repository of barriers and strategies.
	Contextualisation of DoPs for use in ItFits-toolkit: Repository of implementation barriers		
Nov -17			
Dec - 17	IMA second consortium meeting 11-12 of December, Berlin, DE		
Jan - 18	Workshop (Badalona) - Integration of ItFits with digital platform including position and access to repository of implementation barriers and strategies.		
Feb - 18	Drafting, finalising & submitting deliverables D1.1 (and D1.2)	Drafting, finalising & submitting deliverables D2.1 and D2.2	Finalisation ItFits-toolkit data model
Mar - 18	Piloting (process and technical) of ItFits		

* please note that the work for the systematic literature review of DoPs commenced prior to the IMA project and was continued here.

1.2　　Structure of document

Section 2 explains how determinants of practice have been identified and selected

Section 3 provides details on how implementation barriers and strategies have been developed

Section 4 sumarises the conclusions and next steps to develop the ItFits-toolkit

Annexes 1 and 2 provide the repositories of determinants of practice and implementation strategies.

1.3　　Glossary

Terms	Definition
Determinants of practice (implementation barriers)	Any factors that may facilitate or impede implementation of innovations. For the purpose of the ItFits-toolkit, determinants of practice are to be understood as barriers that need to be overcome to achieving certain implementation goals. Here, the terms implementation barriers and determinants of practice are interchangeable.
Implementation	A deliberate and planned process whereby an innovation is normalised within an organisation.
Implementation as usual (IAU)	Any existing approaches and efforts to introducing and normalising an innovation within an organisation. IAU activities are not necessarily planned or guided by scientific evidence, but often emerged from practice experiences and other sources of information. Another loosely defined term might be current 'ways-of-working'.
Implementation objective	The object or goal of the implementation plan.
Implementation sites	The organizations engaged in the implementation processes as well as in iCBT service delivery.
Implementation strategy	The method(s) or technique(s) used to enhance the normalisation of an innovation. Strategies are matched to relevant (set of) determinants of practices.
Internet-based Cognitive Behaviour Therapy (iCBT)	Clinical services, based on four core principles of CBT, that target depression or anxiety disorders by making use of Internet technologies.
ItFits-toolkit	A design-driven online platform which provides concrete guidance on tailoring implementation strategies to local determinants of practices, apply them and evaluate their impact.
Normalisation	The actions people do to embed and integrate an innovation in routine practice.
Tailored implementation	A systematic process whereby implementation strategies are developed and adapted to address contextual factors, i.e. determinants of practice, that facilitate or impede innovations to become normalised.

2. DETERMINANTS OF PRACTICE

To normalize any complex intervention in healthcare practices, a first logical step is to identify specific factors that might promote or inhibit the implementation (Wensing et al., 2011). Many determinants of different care practices have been identified for a variety of clinical interventions (Krause et al., 2014). Examples of these determinants - i.e. barriers, obstacles, problems, hindering factors, facilitators, enablers, success factors, etc. - include the status and quality of evidence and clinical recommendations, characteristics of the innovation, delivery modalities, reimbursement modalities, implementation leadership, and organizational readiness.

Similarly, examples of implementation barriers for eMental Health (eMH) include the perceived importance of computer literacy skills, knowledge and awareness of existing eMH services, as well as credibility of these services.

To enhance our understandingg of relevant barriers in specific contexts, more than 60 frameworks have emerged in the past 15 years (Nilsen, 2015; Tabak, Khoong, Chambers, & Brownson, 2012). However, these taxonomies lack specificity to any category of intervention and therefore, provide little practical detail to prioritize determinants and guidance for action to improve the specific implementation of eMH. For that reason, a systematic literature review was carried out to identify barriers and facilitating factors for implementing eMH in routine care. Work for the review commenced before the start of the IMA project against the background of the MasterMind project[1] and continued for the purposes described in this report. In addition, we took into account the outcomes of the summative evaluation performed by the MasterMind consortium in implementing iCBT and videoconferencing technologies for mood disorders (Vis et al., 2015).

Systematic review

We systematically reviewed the literature to develop a taxonomy relevant to the implementation of eMH. The review is published in a peer reviewed journal (Vis et al., 2018). The review sought to answer the following question: "What determinants of practice are identified as relevant to implementing eMH for mood disorders in routine practice?" A broad view on eMH and care practice settings was applied to provide a comprehensive taxonomy of determinants of mental health practice relevant to implementing eMH.

A broad search strategy using benchmark definitions for four key terms was applied. The four terms were: "implementation," "mental health care practice," "mood disorder," and "eMental-health." No time frame was applied. The search was conducted in three main bibliographical databases: PubMed, PsycINFO, and EMBASE. All identified papers were examined for eligibility by two researchers and disagreements were solved by discussion to reach consensus.

The inclusion criteria were:

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[1] See Vis et al., 2015 and http://www.mastermind-project-eu for more information

- Reporting of empirical research such as observational studies using ethnographic methods or experimental studies following a pre-post or randomized controlled trial design
- The psychotherapeutic intervention under study had an information and communication technology (ICT) component (e.g. using videoconferencing, Web, or mobile technologies to deliver mental health care)
- The psychotherapeutic intervention targeted a mood disorder.
- The study targeted (1) an adult population, (2) mental health care professionals (HCPs) or, (3) other persons or organizations involved in implementation of eMH.
- The study took place in routine mental health care settings.

Studies were excluded from the analysis when they reported clinical effectiveness data only, when the full-text article was not available through Open Access or library loaning services, or when the full-text article was not available in the English language. A field guide was developed to extract relevant data from the retained articles and a systematic qualitative narrative approach was used for the analysis of the data (Arai et al., 2007; Mays, Pope, & Popay, 2005; Popay et al., 2006).

A total of 13,147 articles were screened of which 48 studies were included in the review. The thematic analysis revealed 37 determinants, clustered into 6 main themes:

- acceptance,
- appropriateness,
- engagement,
- resources,
- work processes,
- and leadership.

Table 2 provides an over view of the clusters, their definitions, and the specific determinants.

The determinants of practices are expressed at different levels including patients, mental health staff, organisations, and health care system level. The majority of the determinants we found addressed mostly patient and staff perspectives. Organisation and especially setting-level determinants were underrepresented in our review. The evidence supporting the determinants identified in this study is mainly of a descriptive nature obtained from observational studies using qualitative methods (interviews, focus groups) in combination with quantitative (self-reported survey) data.

In addition, broader literature on determinants of practices for implementing eHealth was examined to enrich and substantiate the findings of the systematic review. In particular a qualitative synthesis of review of reviews was of interest (Mair et al., 2012; Ross, Stevenson, Lau, & Murray, 2016).

From the recommendations of this work, three issues are considered in both the design of the ItFits-toolkit and the repository of determinants of practices:

1. early involvement of key stakeholders;
2. planning implementation is crucial for success;
3. and ongoing monitoring, evaluation and adaptation of systems.

These and other relevant information was included in the repository of determinants which is included in Annex 1 and more information is provided in deliverable D2.1.

Table 1: Overview of determinants of practice found in the systematic review and translated in terms of implementation barriers.

Cluster	Definition	Determinants
Acceptance	Patients and staff are not satisfied with the iCBT services or do not find them agreeable.	Access to treatment; Expectations and preferences; Observability and experience; Evidence base; Convenience; Technology; Awareness; Skills and competences; Privacy; Clinical cultures; Education; Costs; Policy; Healthcare system structures
Appropriateness	Patients and staff find that iCBT is not relevant for addressing the mental disorder.	Professional-client interaction; Effectiveness; Personal need; Flexibility; Negative effects; Safety; Patient characteristics
Engagement	Patients and staff do not implement, deliver and receive iCBT due to a lack of concrete structures and treatment plans.	Organisational structures and procedures; Leadership; Staffing and roles; Access and reliability of ICT; Time; Collaboration
Resources	There is a lack of appropriate resources required in implementing and delivering iCBT, including HR, equipment, funding, and other infrastructural aspects.	Personnel; Funds; Infrastructure
Work processes	The organisation is missing the necessary courses of action for delivering iCBT	Primary process; Facilitating processes
Leadership	There is a lack of clear direction and control of the working processes necessary of organising the activities necessary for implementing iCBT	Culture; Communication; Management; Strategies and priorities; External relations
Healthcare system	There is a lack of necessary organisation of people, institutions and resources that deliver mental health care services to meet the health needs of target populations.	Policies; Resources; Community acceptance; Collaboration; Support structures

MasterMind

MasterMind was a 3-year large-scale European implementation project co-funded by the European Union under the CIP-PSP-ICT program (GA no. 621000). It ran from March 2014 until March 2017.

In fifteen regions in Europe iCBT and videoconferencing technologies for treating depressive disorder were implemented in a variety of settings. A summative evaluation was undertaken using pre-test-post-test study design with the aim to describe the factors that promote or hinder the implementation of iCBT and videoconferencing technologies for treating depression (Vis et al., 2015). The evaluation was structured according to the Model for ASessment of Telemedicine (MAST, Kidholm et al., 2012) in which seven highly interrelated domains were assessed: (1) client and care profiles, (2) safety of patients, (3) clinical change in depressive symptoms, (4) implementation related costs, (5) patient and professional perspectives towards iCBT and videoconferencing in delivering and receiving mental health care, (6) organisational aspects, and (7) social, legal and ethical issues related to employing iCBT and videoconferencing in routine practice.

The evaluation assessed the viewpoints of three levels of stakeholders involved in the implementation projects: 1) patients; 2) healthcare professionals; and 3) mental healthcare organisations. Mixed-methods were used to provide a good understanding of what the implementation projects had achieved (quantitative results), and how or why these outcomes had occurred (qualitative results).

At the end of the project, 11,573 patients were offered an iCBT and/or psychotherapy through videoconferencing. 3,518 healthcare professionals were involved in delivery of the services. The summative evaluation of the data has been conducted and reported to the EU Commission.

As indicated in the DoA, the IMA project builds on this evaluation by integrating its findings in the repository of implementation barriers reported in current deliverable. In addition, and based on the systematic review described above, further in-depth analysis of the MasterMind data is currently being undertaken to confirm and enrich the repository where possible.

Contextualization of determinants of practices

The framework for the repository of implementation barriers was further developed around a focus on implementation barriers; i.e. problems people feel they encounter when trying to implement a service.

Academic work has, in recent years, shifted from using the terms barriers and/or facilitators, to the broader encompassing term of 'determinants'. Determinants is a more inclusive, neutralistic term, due to its lack of distinction between positive or negative factors. Centrally, this shift stems from the idea that a specific issue, like 'referral pathway', can either be a barrier if it does not exist or a facilitator if it does exist. However, as the ItFits-toolkit is designed for implementation practice and practitioners who are often familiar with the language of barriers and facilitators.

Therefore, the list of DoPs were translated in terms of implementation barriers or problems people face, to increase ease of use and comprehension of the repository when used in the context of the ItFits-toolkit. Please refer to deliverable D2.1 for more information on the integration and general philosophy of the ItFits-toolkit.

The resulting list of implementation barriers is included in Annex 1.

3. IMPLEMENTATION STRATEGIES

On the basis of recent literature, a comprehensive list of discrete (i.e. singular) implementation strategies was compiled and adapted to fit the purpose of the ItFits-toolkit. This repository of implementation strategies is an adapted version of a recent update of a systematic review of discrete implementation strategies (Powell et al., 2012; 2015) and includes 73 distinct implementation strategies. The implementation strategies were enriched with descriptions and examples of strategies for application to the context of iCBT implementation. For pragmatic reasons, these materials are reported in deliverable D2.2.

As a next step, the strategies were mapped to the factors included in the repository of implementation barriers (see section 1 and Annex 1). This initial mapping was conducted by three coders independently matching the implementation strategies to the barriers, subsequently discussing discrepancies, and agreeing on allocations. An inclusive approach to this was taken where appropriate, in that a given strategy was included as relevant to addressing a specific barrier if adequately supported by the team. This prospective matching process resulted in a range of minimal 3 and maximal 19 discrete implementation strategies per listed barrier. Additional work is planned to validate and further improve this initial pre-selection of strategies in relation to implementation barriers.

The combined list of implementation barriers and strategies is included in Annex 2 of this report.

Within the context of the development of the ItFits-tookit, the repository of strategies is being supplemented with further supporting information, examples of application, links to associated tools, and guidance on use where available from the literature. Please refer to deliverable D2.2 for more information.

4. CONCLUSIONS AND NEXT STEPS

A comprehensive and specific repository of determinants of practices for implementing eMH in routine care is completed and provided in Annex 1. This list is refined with both more eHealth generic information about determinants of practices as well as the specificities of iCBT services implemented in the context of the IMA project.

In addition, a combined taxonomy of 73 implementation strategies mapped to the implementation barriers is provided in Annex 2. Both repositories are designed to be integrated in the ItFits-toolkit. Please refer to deliverables D2.1 and D2.2 for more information and the general philosophy of the toolkit.

The repositories are open-ended enabling adding determinants and strategies as a result of in-depth analysis of the MasterMind materials and advancing insights during and after the trial testing the effectiveness and process evaluation of the ItFits-toolkit. More information on the study design and evaluation framework is provided in deliverable D1.2.

- Further work in integrating the repository into the online version of the ItFits-toolkit will focus on the following aspects:
- Piloting the paper-based version of ItFits-toolkit (scheduled for April-June 2018)
- Transferring the paper-based repositories to the online utilisation framework developed in WP4 (scheduled for February-May 2018)
- Piloting the online version of the ItFits-toolkit (scheduled for May-December 2018)

More information on the ItFits-toolkit including integrating repositories in the online utilisation platform is included in deliverables D2.1 and D2.2.

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Annex 1: Repository of determinants of practices

This repository includes a comprehensive list of determinants practices that may interfere with effective implementation of iCBT. Determinants of practices are any factors that may facilitate or impede implementation of innovations. For the purpose of the ItFits-toolkit, determinants of practice are to be understood as barriers that need to be overcome to achieving certain implementation goals. Here, the terms implementation barriers and determinants of practice are interchangeable

All barriers listed were generated from a systematic literature review (Vis, et al., 2018). The list includes barriers that operate on different levels, including staff level (e.g. lack of education), patient level (e.g. lack of privacy), organisational level (e.g. lack of funds), and setting level (e.g. lack of collaboration). Some barriers may even operate on multiple levels, for example both patients and staff may prefer using traditional forms of CBT.

As part of the ItFits-toolkit, the repository will facilitate implementers to generate a list of barriers that are relevant to the implementation of iCBT at a specific site. Please refer to deliverable D2.1 for more information on the integration of this repository and the design of the ItFits-toolkit.

Cluster	Barrier and definition	Level
Acceptance: patients and staff are not satisfied with existing iCBT services or do not find them agreeable	Difficulties accessing iCBT: Patients may not have access to the necessary computing technology (e.g., computer, tablet or smart phone) to run the available iCBT service.	Patient
	Preference for traditional forms of CBT: Patients may prefer receiving CBT that is delivered face-to-face by a therapist or within a group setting. Equally, staff members may prefer delivering CBT in a more traditional format. Such preferences could be due to negative attitudes and expectations towards computing technology. Other reasons for such preferences could be a lack of technological skills.	Patient/staff
	Limited exposure to and experience with iCBT: Staff members may not have had the possibility to observe iCBT in use (seeing or hearing about iCBT). Due to the limited exposure and experience staff may not have had the opportunity to accept iCBT as a valid treatment option.	Staff
	Perceived lack of evidence-base: Staff members may think that iCBT is not feasible and/or effective.	Staff
	Perceived inconvenience: Patients may find it inconvenient to receive iCBT, for example because they have to travel to other locations to get access to iCBT, they do not have time to use iCBT, or they do not have access to the necessary computing technology.	Patient
	Problems relating to the technical aspects of iCBT: Both patients and staff members may find iCBT too complex, not user friendly enough, or may not like the working procedures of iCBT.	Patient/staff

	Lack of awareness of iCBT: Patients and staff members may not have heard about iCBT, or be aware of any available iCBT solutions.	Patient/staff
	Lack of necessary skills/competences: Patients and members of staff may not have the required skills or abilities for receiving iCBT (patients), or providing iCBT (staff).	Patient/staff
	Perceived lack of privacy: Patients and members of staff may be concerned about personal information and information about therapy on the iCBT platform not being kept private.	Patient/staff
	Conflict with existing clinical habits: Members of staff may already have established ways of providing CBT. This could include ways of delivering CBT (e.g. using specific paper materials) or working processes relating to the delivery of CBT (e.g. ways of billing CBT). Such established ways of working (i.e. habits) may not be compatible with iCBT.	Staff
	Conflict with existing norms: Staff may have shared ideas or expectations about how CBT should be delivered within their institution. These existing ideas may not fit with iCBT, for example when there are members of staff who do not approve (explicitly or implicitly) of electronic ways of delivering CBT.	Staff
	Conflict with existing roles: Aspects of staff members' pre-existing roles, such as behaviours and responsibilities that are seen as 'part of their job', may conflict with the iCBT. For example, a conflict may arise when members of staff perceive the delivery of iCBT to add to their predefined workload, or if they feel that iCBT makes their job redundant, or if it makes it hard for them to do other parts of their role.	Staff
	Lack of education: This may include a lack of training for staff in providing iCBT in routine care, technical and therapeutic training, formal education, credentialing, peer group learning, and supervision.	Staff
	iCBT is too costly: if there is a financial cost involved for the patient, some patients may not be able to afford receiving iCBT.	Patient
Appropriateness: patients and staff find that iCBT is not relevant for addressing the mental disorder	Disruption of professional–client relationship: Patients and care providers may find that iCBT disrupts their therapeutic interaction. This may be because iCBT would require that some of their interactions take place electronically.	Patient/staff
	Mismatch between iCBT and patients' mental health care needs: Patients may feel that there are certain aspects of traditional CBT that are missing in iCBT (e.g. face-to-face contact). They may think that iCBT is missing certain types of information that they are only able to receive via a face-to-face consultation (e.g. therapist's reactions to the patient). But it may also mean that providers or patients feel that iCBT is suitable for some kinds of needs but not others, or not the needs that they have as a patient.	Patient
	Lack of flexibility: Members of staff may find that they are not able to adapt existing iCBT solutions to the needs of	Staff

	their patient. For example, an iCBT platform may lack certain therapeutic techniques or existing techniques may be too inflexible.	
	Perceived negative effects on patient outcomes: Patients may have the expectation that iCBT could have negative consequences for their mental health. Such expectations could be due to previous experience or reports from others.	Patient
	Perceived lack of safety: Patients and members of staff may think that iCBT is not safe. They may think that iCBT can cause harm to both physical and mental health.	Patient/staff
	Patient characteristics: Patients or members of staff may think that iCBT is not suitable given certain characteristics of the patient including patient age, gender, clinical history, social economic status, and symptoms	Patient/staff
Engagement: patients and staff do not implement, deliver and receive iCBT due to a lack of concrete structures and treatment plans.	Lack of organisational structures and procedures: For example, an organisation may lack standards and clinical guidelines, administrative support, technical support, and other facilitating services that are needed to provide iCBT effectively.	Staff
	Lack of leadership to support iCBT: Leaders of the organisation may not have a clear strategy in place on how to implement iCBT. This may include a lack of goal setting and supportive measures.	Staff
	Lack of staff and roles to deliver iCBT: There may not be enough members of staff who are qualified to deliver or support the delivery of iCBT. Similarly, the organisation may not have created the necessary roles for the routine delivery of iCBT, or they may have the roles but without suitable staff to fill them.	Staff
	Lack of reliable iCBT services: Members of staff may not have a reliable iCBT service to offer patients. Or available iCBT solutions may not be stable and reliable on existing technology.	Staff
	Lack of time to deliver iCBT: Members of staff may feel that they do not have enough time to provide mental healthcare in general, or to provide CBT generally, or they may feel that iCBT takes more time than providing CBT in the way it has been previously provided.	Staff
	Lack of collaboration: Those people who are involved in the delivery of iCBT may not be willing to share their experiences of providing the iCBT, and/or their expertise in using iCBT, with others who could benefit from it. It may be that staff are unwilling to work together, or cannot do so for a range of reasons (some may be practical).	Staff
Resources: there is a lack of appropriate resources required in implementing and delivering iCBT, including HR, equipment, funding, and other infrastructural aspects	Lack of qualified personnel to deliver iCBT: Within the organisation there may be a lack of qualified personnel to deliver iCBT. This includes availability, capacity, and capabilities of persons necessary in the delivery of iCBT.	Organisation
	Lack of funds: Within the organisation there may be a lack of financial resources necessary for delivering iCBT as a service.	Organisation

	Lack of infrastructure: Within the organisation there may be a lack of the required infrastructure to routinely deliver iCBT. This includes the availability, quality and stability of facilitating structures required for delivering iCBT, including offices and equipment.	Organisation
Processes: the organisation is missing the necessary courses of action for delivering iCBT	Lack of referral pathways: There may be a lack of clear guidelines for who should be referred to an iCBT service. This includes the types of diagnosis that should lead to a referral to an iCBT service.	Organisation
	Lack of facilitating processes	Organisation
Leadership: there is a lack of clear direction and control of the working processes necessary of organising the activities necessary for implementing iCBT	Lack of culture: Within the organisation there may be a lack of a culture of delivering iCBT. Culture includes sets of explicitly or implicitly defined behaviours that need to be carried out to deliver iCBT, including norms, habits, and roles relevant to iCBT	Organisation
	Lack of communication between parties involved in delivering iCBT: In the organisation, there may be many people, and different groups of staff, who are involved in providing the iCBT. It may be that the amount or quality of communication of information needed for iCBT delivery between the people involved is poor, or that effective ways of communication information important of iCBT delivery has not been established yet.	Organisation
	Lack of managerial capacity: Managers within the organisation who have an important role in delivery of iCBT, may not be available or they may not have the necessary time, skills or knowledge for leading the effective delivery of iCBT. This may result in a lack of leadership, goal setting, strategies, and supportive measures.	Organisation
	Lack of strategies and priorities: Within the organisation there may be not be clear working plans for iCBT including vision, mission, priorities, and work plans that are needed for staff to deliver iCBT effectively.	Organisation
	Lack of external relations: There may be a lack of collaboration with external parties involved in iCBT delivery, or the ways of working with external stakeholders may be unclear or not yet established. External parties may involve insurance companies or secondary iCBT service providers.	Organisation
Healthcare system: there is a lack of necessary organisation of people, institutions and resources that deliver mental health care services to meet the health needs of target populations.	Lack of relevant policies: There may be no clear plans or courses of actions that need to be taken to deliver iCBT effectively. For example, there may be no policies that define when to deliver iCBT to whom, and which staff are responsible for different parts of iCBT provision.	Setting
	Lack of resources: Beyond the organisation itself there may be a lack of necessary resources for the delivery of iCBT, including healthcare professionals, ICT and standardisation, funding, and other infrastructure aspects.	Setting
	Lack of community acceptance: Within the wider community there may be the perception that iCBT is not an acceptable way of treating mental health needs.	Setting

	Lack of collaboration: Parties involved in the delivery of iCBT may not be collaborating. This may include an unwillingness to share knowledge and expertise relating to iCBT delivery.	Setting
	Lack of relevant structures to support iCBT: On a setting level there may be no organised plan of how iCBT relevant health services are supposed to be delivered in a specific (geographical) area.	Setting

Annex 2: Combined repository barriers and strategies

This repository includes a comprehensive list of implementation strategies mapped on determinants practices listed in Annex 1.

Implementation strategies are to be understood as the method(s) or technique(s) used to enhance the normalisation of an innovation. This repository of implementation strategies is an adapted version of a recent update of an systematic review of discrete implementation strategies (Powell et al., 2012; 2015) and includes 73 distinct implementation strategies. For each (group of) implementation strategy, detailed working materials including examples are provided in deliverable D2.2.

Determinants of practices are any factors that may facilitate or impede implementation of innovations. For the purpose of the ItFits-toolkit, determinants of practice are to be understood as barriers that need to be overcome to achieving certain implementation goals. Here, the terms implementation barriers and determinants of practice are interchangeable.

As part of the ItFits-toolkit, the repository will facilitate implementers to generate a list of implementation strategies matched to implementation barriers that are relevant to the implementation of iCBT at a specific site. Please refer to deliverable D2.1 for more information on the integration of this repository and the design of the ItFits-toolkit.

Barrier and definition	Level	Potential strategies
Difficulties accessing iCBT: Patients may not have access to the necessary computing technology (e.g., computer, tablet or smart phone) to run the available iCBT service.	Patient	Alter patient/consumer fees; Change physical structure and equipment; Change service sites; Involve patients/consumers and Family members; Obtain and use patients/consumers and family feedback; Promote adaptability; Provide technical assistance; Use mass media
Preference for traditional forms of CBT: Patients may prefer receiving CBT that is delivered face-to-face by a therapist or within a group setting. Equally, staff members may prefer delivering CBT in a more traditional format. Such preferences could be due to negative attitudes and expectations towards computing technology. Other reasons for such preferences could be a lack of technological skills.	Patient / staff	Conduct educational outreach visit; Facilitation; Fund and contract for the clinical innovation; Identify and prepare champions Identify early adopters; Inform local opinion leaders; Intervene with patients/consumers to enhance uptake and adherence; Involve executive boards; Mandate change; Promote adaptability; Revise professional roles
Limited exposure to and experience with iCBT: Staff members may not have had the possibility to observe iCBT in use (seeing or hearing about iCBT). Due to the limited exposure and experience staff may not have had the opportunity to accept iCBT as a valid treatment option.	Staff	Built a coalition; Capture and share local knowledge; Change physical structure and equipment; Conduct educational meetings; Conduct educational outreach visits; Create a learning collaborative; Develop educational materials; Distribute educational materials; Identify early adapters; Inform local opinion leaders; Organise clinician implementation team meetings; Recruit, designate, and train for leadership; Remind clinicians; Shadow other experts

		Use mass media; Visit other sites
Perceived lack of evidence-base: Staff members may think that iCBT is not feasible and/or effective.	Staff	Conduct educational meeting; Conduct educational outreach visit; Conduct ongoing training; Create learning collaborative; Develop academic partnerships; Develop educational materials; Distribute educational materials; Facilitate relay of clinical data to providers; Inform local opinion leaders; Use mass media; Use train-the-trainer strategies; Work with educational institutions
Perceived inconvenience: Patients may find it inconvenient to receive iCBT, for example because they have to travel to other locations to get access to iCBT, they do not have time to use iCBT, or they do not have access to the necessary computing technology.	Patient	Centralise technical assistance; Change physical structure and equipment; Intervene with patients/consumers to enhance uptake and adherence; Involve patients/consumers and family feedback; Use mass media
Problems relating to the technical aspects of iCBT: Both patients and staff members may find iCBT too complex, not user friendly enough, or may not like the working procedures of iCBT.	Patient / staff	Capture and share local knowledge; Centralize technical assistance; Change physical structure and equipment; Make billing easier; Promote adaptability; Provide local technical assistance
Lack of awareness of iCBT: Patients and staff members may not have heard about iCBT, or be aware of any available iCBT solutions.	Patient / staff	Built a coalition; Capture and share local knowledge; Change physical structure and equipment; Conduct educational meetings; Conduct educational outreach visits; Create a learning collaborative; Develop educational materials; Distribute educational materials; Identify early adapters; Inform local opinion leaders; Organise clinician implementation team meetings; Recruit, designate, and train for leadership; Remind clinicians; Shadow other experts Use mass media; Visit other sites
Lack of necessary skills/competences: Patients and members of staff may not have the required skills or abilities for receiving iCBT (patients), or providing iCBT (staff).	Patient / staff	Capture and share knowledge; Conduct educational meetings; Conduct educational outreach visits; Conduct ongoing training; Create a learning collaborative; Develop academic partnerships; Develop educational materials; Distribute educational materials; Make training dynamic; Provide clinical supervision; Shadow experts; Use train-the-trainer strategies; Work with educational institutions
Perceived lack of privacy: Patients and members of staff may be concerned about personal information and information about therapy on the iCBT platform not being kept private.	Patient / staff	Facilitation; Involve patients/consumers and family members; Obtain and use patients/consumers and family feedback; Provide ongoing consultation
Conflict with existing clinical habits: Members of staff may already have established ways of providing CBT. This could include ways of delivering CBT (e.g. using specific paper materials) or working processes relating to the delivery of CBT (e.g. ways of	Staff	Alter incentive/allowance structures; Alter patient/consumer fees; Audit and provide feedback; Capture and share local knowledge; Change physical structure and equipment; Conduct educational meeting; Conduct educational outreach visits; Create learning collaborative; Create new clinical teams;

billing CBT). Such established ways of working (i.e. habits) may not be compatible with iCBT.		Create or change credentialing and/or licensure standards; Develop disincentives; Develop educational materials; Distribute educational materials; Facilitate relay of clinical data to providers; Remind clinicians; Revise professional roles; Use other payment schemes
Conflict with existing norms: Staff may have shared ideas or expectations about how CBT should be delivered within their institution. These existing ideas may not fit with iCBT, for example when there are members of staff who do not approve (explicitly or implicitly) of electronic ways of delivering CBT.	Staff	Facilitation; Involve executive boards; Visit other sites
Conflict with existing roles: Aspects of staff members' pre-existing roles, such as behaviours and responsibilities that are seen as 'part of their job', may conflict with the iCBT. For example, a conflict may arise when members of staff perceive the delivery of iCBT to add to their predefined workload, or if they feel that iCBT makes their job redundant, or if it makes it hard for them to do other parts of their role.	Staff	Create new clinical teams; Revise professional roles; Shadow other experts; Visit other sites
Lack of education: This may include a lack of training for staff in providing iCBT in routine care, technical and therapeutic training, formal education, credentialing, peer group learning, and supervision.	Staff	Capture and share knowledge; Conduct educational meetings; Conduct educational outreach visits; Conduct ongoing training; Create a learning collaborative; Develop academic partnerships; Develop educational materials; Distribute educational materials; Make training dynamic; Provide clinical supervision; Shadow experts; Use train-the-trainer strategies; Work with educational institutions
iCBT is too costly: if there is a financial cost involved for the patient, some patients may not be able to afford receiving iCBT.	Patient	Access new funding; Develop resource sharing agreement; Involve executive boards
Disruption of professional –client relationship: Patients and care providers may find that iCBT disrupts their therapeutic interaction. This may be because iCBT would require that some of their interactions take place electronically.	Patient / staff	Capture and share local knowledge; Create a learning collaborative; Facilitation; Identify and prepare champions; Identify early adopters; Inform local opinion leaders; Involve patients/consumers and family feedback; Make training dynamic; Prepare patients/consumers to be active participants; Promote adaptability; Provide clinical supervision; Provide ongoing consultation; Revise professional roles; Shadow other experts;
Mismatch between iCBT and patients' mental health care needs: Patients may feel that there are certain aspects of traditional CBT that are missing in iCBT (e.g. face-to-face contact). They may think that iCBT is missing certain types of information that they are only able to receive via a face-to-face consultation	Patient	Intervene with patients/consumers to enhance uptake and adherence; Involve patients/consumers and family feedback; Promote adaptability

(e.g. therapist's reactions to the patient). But it may also mean that providers or patients feel that iCBT is suitable for some kinds of needs but not others, or not the needs that they have as a patient.		
Lack of flexibility: Members of staff may find that they are not able to adapt existing iCBT solutions to the needs of their patient. For example, an iCBT platform may lack certain therapeutic techniques or existing techniques may be too inflexible.	Staff	Intervene with patients/consumers to enhance uptake and adherence; Involve patients/consumers and family feedback; Promote adaptability
Perceived negative effects on patient outcomes: Patients may have the expectation that iCBT could have negative consequences for their mental health. Such expectations could be due to previous experience or reports from others.	Patient	Intervene with patients/consumers to enhance uptake and adherence; Involve patients/consumers and family feedback; Promote adaptability
Perceived lack of safety: Patients and members of staff may think that iCBT is not safe. They may think that iCBT can cause harm to both physical and mental health.	Patient / staff	Intervene with patients/consumers to enhance uptake and adherence; Involve patients/consumers and family feedback; Promote adaptability
Patient characteristics: Patients or members of staff may think that iCBT is not suitable given certain characteristics of the patient including patient age, gender, clinical history, social economic status, and symptoms	Patient / staff	Involve patients/consumers and family members; Obtain and use patients/consumers and family feedback; Prepare patients/consumers to be active participants
Lack of organisational structures and procedures: For example, an organisation may lack standards and clinical guidelines, administrative support, technical support, and other facilitating services that are needed to provide iCBT effectively.	Staff	Centralize technical assistance; Change accreditation or membership requirements; Change record systems; Create or change credentialing and/or licensure standards; Make billing easier; Promote network weaving; Provide local technical assistance
Lack of leadership to support iCBT: Leaders of the organisation may not have a clear strategy in place on how to implement iCBT. This may include a lack of goal setting and supportive measures.	Staff	Identify and prepare champions; Inform local opinion leaders; Involve executive boards; Provide clinical supervision; Recruit, designate, and train for leadership; Shadow other experts
Lack of staff and roles to deliver iCBT: There may not be enough members of staff who are qualified to deliver or support the delivery of iCBT. Similarly, the organisation may not have created the necessary roles for the routine delivery of iCBT, or they may have the roles but without suitable staff to fill them.	Staff	Change accreditation or membership requirements; Create new clinical teams; Create or change credentialing and/or licensure standards; Revise professional roles
Lack of reliable iCBT services: Members of staff may not have a reliable iCBT service to offer patients. Or available iCBT solutions may not be stable and reliable on existing technology.	Staff	Centralize technical assistance; Provide technical assistance
Lack of time to deliver iCBT: Members of staff may feel that they do not have enough time to provide mental healthcare in general, or to provide CBT generally, or they may feel that iCBT takes more time than providing CBT in the way it has been previously provided.	Staff	Facilitation; Organize clinical implementation team meetings; Promote adaptability; Provide clinical supervision; Provide ongoing consultation; Purposely re-examine the implementation; Revise professional roles

Lack of collaboration: Those people who are involved in the delivery of iCBT may not be willing to share their experiences of providing the iCBT, and/or their expertise in using iCBT, with others who could benefit from it. It may be that staff are unwilling to work together, or cannot do so for a range of reasons (some may be practical).	Staff	Built a coalition; Capture and share local knowledge; Create a learning collaborative; Develop academic partnership; Develop resource sharing agreements; Involve patients/consumers and family members; Promote network weaving; Visit other sites; Work with educational institutions
Lack of qualified personnel to deliver iCBT: Within the organisation there may be a lack of qualified personnel to deliver iCBT. This includes availability, capacity, and capabilities of persons necessary in the delivery of iCBT.	Organisation	Change accreditation or membership requirements; Conduct educational meetings; Conduct educational outreach visits; Conduct ongoing training; Create new clinical teams; Create or change credentialing and/or licensure standards; Develop educational materials; Distribute educational materials; Provide clinical supervision; Provide local technical assistance; Recruit, designate, and train for leadership; Shadow other experts; Use train-the-trainer schemes
Lack of funds: Within the organisation there may be a lack of financial resources necessary for delivering iCBT as a service.	Organisation	Accessing new funding; Develop resource sharing agreement; Involve executive boards
Lack of infrastructure: Within the organisation there may be a lack of the required infrastructure to routinely deliver iCBT. This includes the availability, quality and stability of facilitating structures required for delivering iCBT, including offices and equipment.	Organisation	Access new funding; Build a coalition; Change service sites; Conduct local consensus meetings; Develop academic partnership; Develop resource sharing agreement; Provide local technical assistance; Provide ongoing consultation; Visit other sites
Lack of referral pathways: There may be a lack of clear guidelines for who should be referred to an iCBT service. This includes the types of diagnosis that should lead to a referral to an iCBT service.	Organisation	Capture and share local knowledge; Conduct local consensus discussion; Create learning collaborative; Facilitation; Organize clinician implementation team meetings; Provide local technical assistance
Lack of facilitating processes	Organisation	Access new funding; Build a coalition; Capture and share local knowledge; Centralize technical assistance; Change service sites; Create new clinical teams; Create or change credentialing and/or licensure standards; Develop academic partnerships; Develop and implement tools for quality monitoring; Develop and organize quality monitoring systems; Develop resource sharing agreements; Facilitation; Involve execute boards; Make billing easier; Organize clinician implementation team meetings; Provide clinical supervision; Provide local technical assistance; Provide ongoing consultation
Lack of culture: Within the organisation there may be a lack of a culture of delivering iCBT. Culture includes sets of explicitly or implicitly defined behaviours that need to be carried out to deliver iCBT, including norms, habits, and roles relevant to iCBT	Organisation	

Lack of communication between parties involved in delivering iCBT: In the organisation, there may be many people, and different groups of staff, who are involved in providing the iCBT. It may be that the amount or quality of communication of information needed for iCBT delivery between the people involved is poor, or that effective ways of communication information important of iCBT delivery has not been established yet.	Organisation	Build a coalition; Capture and share local knowledge; Conduct local consensus discussion; Create a learning collaborative; Develop academic partnerships; Organize clinician implementation team meetings; Promote network weaving; Visit other sites; Work with educational institutions
Lack of managerial capacity: Managers within the organisation who have an important role in delivery of iCBT, may not be available or they may not have the necessary time, skills or knowledge for leading the effective delivery of iCBT. This may result in a lack of leadership, goal setting, strategies, and supportive measures.	Organisation	Identify and prepare champions; Inform local opinion leaders; Organize clinician implementation team meetings; Recruit, designate, and train for leadership; Shadow other experts
Lack of strategies and priorities: Within the organisation there may be not be clear working plans for iCBT including vision, mission, priorities, and work plans that are needed for staff to deliver iCBT effectively.	Organisation	Conduct local consensus discussions; Identify and prepare champions; Inform local opinion leaders; Recruit, designate, and train for leadership; Shadow other experts
Lack of external relations: There may be a lack of collaboration with external parties involved in iCBT delivery, or the ways of working with external stakeholders may be unclear or not yet established. External parties may involve insurance companies or secondary iCBT service providers.	Organisation	Build a coalition; Capture and share local knowledge; Conduct local consensus discussion; Create a learning collaborative; Develop academic partnerships; Organize clinician implementation team meetings; Promote network weaving; Visit other sites; Work with educational institutions
Lack of relevant policies: There may be no clear plans or courses of actions that need to be taken to deliver iCBT effectively. For example, there may be no policies that define when to deliver iCBT to whom, and which staff are responsible for different parts of iCBT provision.	Setting	Conduct local consensus discussion; Inform local opinion leaders; Involve executive boards; Provide ongoing consultation
Lack of resources: Beyond the organisation itself there may be a lack of necessary resources for the delivery of iCBT, including healthcare professionals, ICT and standardisation, funding, and other infrastructure aspects.	Setting	Accessing new funding; Develop resource sharing agreement; Involve executive boards; Provide local technical assistance; Work with educational institutions
Lack of community acceptance: Within the wider community there may be the perception that iCBT is not an acceptable way of treating mental health needs.	Setting	Conduct educational outreach visits; Develop educational materials; Distribute educational materials; Involve patients/consumers and family members; Obtain and use patients/consumers and gamily feedback; Prepare patients/consumers to be active participants; Use mass media
Lack of collaboration: Parties involved in the delivery of iCBT may not be collaborating. This may include an unwillingness to share knowledge and expertise relating to iCBT delivery.	Setting	Build a coalition; Capture and share local knowledge Conduct local consensus discussion; Create a learning collaborative; Develop academic partnerships; Organize clinician

		implementation team meetings; Promote network weaving; Visit other sites; Work with educational institutions
Lack of relevant structures to support iCBT: On a setting level there may be no organised plan of how iCBT relevant health services are supposed to be delivered in a specific (geographical) area.	Setting	Access new funding; Build a coalition; Change service sites; Conduct local consensus meetings; Develop academic partnership; Develop resource sharing agreement; Provide local technical assistance; Provide ongoing consultation; Visit other sites