Deliverable D1.6

Final version of the MULTI-ACT Patient Engagement in Health R&I guidelines

"Final report on criteria, recommendations and rules to perform truly effective patient engagement in Health R&I".

PROJECT ACRONYM:	A Collective Research Impact Framework and multi-variate models to foster the true engagement of actors and stakeholders in Health Research and Innovation
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EXECUTIVE SUMMARY

MULTI-ACT is developing a strategic Collective Research Impact Framework (CRIF) in the area of brain diseases by using Multiple Sclerosis as the first case study. The project foresees patients as a key stakeholder in the Health Research & Innovation (R&I) process. The MULTI-ACT framework aims to allow for effective cooperation of all relevant stakeholders in multi-stakeholder health research initiatives and includes tools and guidelines for the governance, the stakeholder engagement, and the impact assessment of such initiatives.

This document presents the MULTI-ACT Patient[1] Engagement Guidelines, deliverable D1.6 of the Work Package n.1 "Enabling Science with/of Patient Input".

The guidelines propose a roadmap to capture 'experiential knowledge' of patients (i.e. knowledge gained through lived experience that researchers may not have), to better understand how to draw on their experience and use the experience constructively for co-creation purposes (science with patient input) and to evaluate impact of research on outcomes that matter to patients. MULTI-ACT aims at leveraging patients together with the other stakeholders' experience and at raising their ability to co-create and participate to decision-making processes.

SCOPE - WHAT IS IT?

The MULTI-ACT Patient Engagement guidelines aim to provide multi-stakeholder research initiatives applying the MULTI-ACT framework **with a tool to enable Patient Engagement actions into the R&I path at both program and project levels. The tool is also thought to manage Patient Engagement in all research initiatives that want to start conduct their R&I following the multi-stakeholder MULTI-ACT approach.** They are a 'How to' document on how to apply the MULTI-ACT Patient Engagement strategy within the activities of multi-stakeholder research initiatives.

The guidelines propose a roadmap to capture 'experiential knowledge' of patients, family and caregivers (i.e. knowledge gained through lived experience that researchers may not have), to better understand how to draw on their experience and use the experience constructively for co-creation purposes. MULTI-ACT aims at leveraging both patients and other stakeholders' experience and at raising their ability to co-create and participate in decision making processes.

WHO ARE THE INTENDED USERS OF THE GUIDELINES?

The users of the present guidelines are the appliers of the MULTI-ACT framework in all its components: the governance model, the patient engagement strategy, and the co-accountability impact assessment. In fact, the use of the present guidelines requires to be consistent with the criteria of the

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[1] In order to clarify terminology for potential roles of patients' interaction presented in this and other MULTI-ACT documents, we use the term "patient" which covers the following definitions:
• "People with the disease" are persons with lived experience of the disease;
• "People affected by the disease" are persons or groups that are affected by the disease, including family members and caregivers.

MULTI-ACT Governance Model[2]. The MULTI-ACT framework is intended for multi-stakeholder research initiatives, promoted by Health Research Funding & Performing organizations (RFPOs), that may already have been grouped in a multi-stakeholder initiative (e.g. Alliance) or that are willing to start conducting their R&I with a multi-stakeholder and co-accountable approach to reach a transformational mission.

WHY TO USE THE GUIDELINES?

The guidelines intend to provide guidance on how to maximize the impact of R&I by engaging patients in the R&I process (science *with* patient input) and on how to evaluate impact of R&I on the outcomes that matter to patients (science *of* patient input) while and by keeping the cost of achieving the outcomes lower.

WHAT DO THE GUIDELINES CONTAIN?

The guidelines contain terminology and definitions, background information and rationale behind the guidelines, information regarding the applicability and use of the guidelines, a roadmap to capture 'experiential knowledge' of patients, recommendations on how to develop Patient Engagement strategies and operational tools (e.g. the Patient Engagement Plan).

WHEN SHOULD THE GUIDELINES BE USED?

RFPOs may use the MULTI-ACT framework and guidelines i) to start conducting their R&I with a multi-stakeholder and co-accountable approach (ex-ante), ii) to adapt their Patient Engagement strategies to the MULTI-ACT model (on-going), iii) to benchmark their Patient Engagement strategies and/or evaluate the value of their Patient Engagement actions based on the MULTI-ACT model (ex-post).

HOW TO USE THE GUIDELINES & HOW TO RECOGNIZE WHETHER YOU'RE USING THE GUIDELINES THE RIGHT WAY?

The guidelines contain a section with practical instruction on how to apply the MULTI-ACT Patient Engagement Strategy. In addition, the final version of the MULTI-ACT Digital Toolbox will provide tools to support the process (e.g. a digital interface to develop the Patient Engagement Plan and monitor its implementation). The Digital Toolbox and the MULTI-ACT manual[3] will direct the users on the process on how to apply the overall MULTI-ACT framework, including its Patient Engagement strategy.

HOW HAVE THE GUIDELINES BEEN DEVELOPED?

The guidelines have been produced following a co-creation and evidence-based process which entails several steps. The guidelines include translation of the lessons learnt from the landscape analysis of existing patient engagement procedures (literature review, web-search, interviews, surveys,

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[2] It has to be considered that this document represents a component of the MULTI-ACT Framework and that the manual on how to apply the overall framework will be finalized in WP6 "Collective Research Politics: governance and guidelines".

[3] The Manual is the deliverable D6.1 of the WP6 "Collective Research Politics: governance and guidelines"

connections)[4], resulting into guidance, recommendations, methods and suggestions. In line with existing good practice on guidelines production[5], the guidelines were validated with a series of actions including a Public Consultation, discussions and reviews by key stakeholders.

WHERE WILL THE USERS FIND THE GUIDELINES?

The Patient Engagement guidelines will be integrated into the MULTI-ACT Collective Research Impact Framework (CRIF) and finally downloadable via the MULTI-ACT digital toolbox. In addition, a white paper will follow after their release including general insights and recommendations. In fact, policy makers have an important role in fostering the uptake of MULTI-ACT results and the adoption of the MULTI-ACT framework and Patient Engagement guidelines. Scientific papers gathering the findings of the landscape analysis and the recommendations provided in the guidelines will also be submitted to relevant peer-reviewed journals.

Supporting the slogan "Nothing about us, without us" (Smith et al. 2019), the MULTI-ACT Patient Engagement guidelines intend to provide operative suggestions on how to allow, use and value patients' experiential knowledge in research.

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[4] D1.4 Consolidated mapping of existing patient engagement initiatives and analysis of gaps and barriers to patient engagement in current health R&I processes (https://www.multiact.eu/wp-content/uploads/2020/02/D1.4.pdf).

[5] World Health Organization (WHO), Handbook for guidelines production, 2nd ed., 2014 (https://apps.who.int/medicinedocs/documents/s22083en/s22083en.pdf).

ABBREVIATIONS

Acronyms	
CRIF	Collective Research Impact Framework
EAB	External Advisory Board
EC	European Commission
ECT	Engagement Coordination Team
GA	Grant Agreement
MS	Multiple Sclerosis
PE	Patient Engagement
PEG	Patient Engagement Group (see D1.2 for PEG rationale and composition)
PF	Patient Forum
PPin	Patient-Provided Information
PROMs	Patient Reported Outcome Measures
PROs	Patient Reported Outcomes
R&I	Research and Innovation
RFPOs	Research Funding & Performing Organisations
ROE	Return on Engagement (in WP1 it refers to the value of Patient Engagement[6])
ROI	Return on Investment
RRI	Responsible Research & Innovation
WP	Work Package
Work Packages	
WP1	Enabling the science with and of patient inputs
WP2	Development of the information sharing application (MULTI-ACT Toolbox 2.0)
WP3	Integrated Accountability Model (IAM) development & assessment to the case of research initiatives
WP4	Implementation of the MULTI-ACT framework
WP5	Health collaborative initiatives structures and policies
WP6	Collective Research Politics: governance and guidelines
WP7	Transferability and test of the methodology beyond MS
WP8	Dissemination and exploitation
WP9	Project Coordination, Management and Quality Assurance
WP1 Deliverables[7]	
D1.1	Scoping methodology of existing procedures and initiatives for patient engagement across R&I
D1.2	Patient engagement focus group (PEG) establishment

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[6] https://imi-paradigm.eu/determining-the-value-of-patient-engagement/
[7] After EC approval, the MULTI-ACT public deliverables are published at https://www.multiact.eu/project-deliverables/

D1.3	Preliminary landscape analysis of patient engagement initiatives and gaps identification
D1.4	Consolidated mapping of existing patient engagement initiatives and analysis of gaps and barriers to patient engagement in current health R&I processes
D1.5	Preliminary version of the MULTI-ACT Patient Engagement in Health R&I guidelines
D1.6	Final version of the MULTI-ACT Patient Engagement in Health R&I guidelines
D1.7	White paper for innovative routes for patient engagement
D1.8	Report on the integration of Patient reported outcomes and perspective into the CRIF

GLOSSARY

Please refer to D9.1 for classification and glossary.

Collective Research Impact Framework (CRIF): conceptual framework that MULTI-ACT is developing to enable a new collective accountability approach to multi-stakeholder R&I initiatives in the field of brain diseases.

Engagement Coordination Team (referred to as "ECT")**:** the board that is in charge of coordinating the engagement of stakeholders, including patients, relatives and caregivers, in all the operations of an initiative (see deliverable D5.4 MULTI-ACT Governance Model);

Experiential knowledge: "Experiential knowledge arise when [these] experiences are converted, consciously or unconsciously, into a personal insight that enables a patient to cope with individual illness and disability. When patients share experiential knowledge, the communal body of knowledge exceeds the boundaries of individual experiences." (Caron-Flinterman et al. 2005) Thus, experiential knowledge is knowledge gained through experience, as opposed to a priori (before experience) knowledge.

Patient Engagement in Responsible Research and Innovation (RRI): actions to engage patients in R&I processes to make them co-responsible (as sub-group of stakeholders). In line with RRI definition, patient engagement implies that patients work together with other stakeholders (researchers, citizens, policy makers, business, third sector organisations, etc.) in order to align both the process and its outcomes with their values, needs and expectations. The role of patient in research ranges from a passive one (patient is a data point), to an active one (patient is a researcher) and finally to a strategic one (patient has an active role in the governance and decision making of research process) – see: levels of engagement.

For the purpose of MULTI-ACT, Patient Engagement is the action to engage patients and their communities in R&I as key stakeholders with a decision-making role, "occurring when people with and affected by the disease meaningfully and actively collaborate in the governance, priority setting, and conduct of research, as well as in summarizing, distributing, sharing, and applying its resulting knowledge"[8]. While various contexts use different terminology to describe the engagement process, such as patient and public involvement (PPI) in the UK[9], MULTI-ACT uses the term **patient engagement** and defines patient engagement as the action to engage patients in R&I processes to make them co-responsible for research (as sub-group of stakeholders: Science with patient input). Terms other than patient engagement (e.g. patient involvement) reported in this document refer to literature references or answers received during the Public Consultation.

Patient(s): In order to clarify terminology for potential roles of patients' interaction presented in this and other MULTI-ACT documents, we use the term "patients" which covers the following definitions:

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[8] de Wit M, Abma T, Koelewijn-van Loon M, et al.: Involving patient research partners has a significant impact on outcomes research: a responsive evaluation of the international OMERACT conferences. BMJ Open. 2013; 3(5): pii: e002241.
[9] The term patient and public engagement has largely predominated in North America (https://researchinvolvement.biomedcentral.com/articles/10.1186/s40900-019-0162-2).

- **"People with the disease":** persons with lived experience of the disease;
- **"People affected by the disease":** persons or groups that are affected by the disease, including family members and caregivers.

Patient-Provided Information: a range of input or data that is collected from the patients[10].

Patients' organizations: consumer advocacy organizations involved with the population of interest. "Patients' organisations are defined as not-for profit organisations which are patient focused, and whereby patients and/or carers (the latter when patients are unable to represent themselves) represent a majority of members in governing bodies"[11]. Within the context of MULTI-ACT Patients' organizations play an important role in patient engagement as boundary body between priorities/outcomes that are individual patients' perspective (a, b) to priorities/outcomes that work at population level. Patient Organization's Representatives are persons who are mandated to represent and express the collective views of a patient organization on a specific issue or disease area.

Promoter(s): promoters are the actors that decide to implement MULTI-ACT Governance Model within their existing or new organizations. After the implementation of the Model, they will be part of the governance bodies (i.e. Leadership Board) (see D5.4).

Research & Innovation Path (R&I Path): sequence of processes and activities in R&I where patients can be engaged in order to maximize the impact of R&I. Governance Program Level and Project Development Levels are distinguished (also see: Governance Initiative):

- **Program Level:** Governance Program stages in Multi-stakeholder initiative (including RFPOs) process concerned with the governance and management of research funding & performing programs:
    - **Breaking down the boundaries** conditions that should be set in RFPOs in order to facilitate patient engagement as standard practice.
    - **Setting research priorities** actions to establish justified interest in a specific research domain to a certain higher degree, importance, precedence, or rank over others.
    - **Steering institutions** actions performed to establish steering and advisory committees and bodies.
    - **Design and planning** the design and planning of all the activities that lead to the realization of a concept or idea and which helps achieve the item's designated objective(s).
    - **Executing research** activities to actualize the research program or a specific research project for the purpose of achieving the item's designated objectives. Project Development Level takes places at this stage.
    - **Evaluating research** activities to determine the value created by a research program or project, establishing their outputs and outcomes, the degree to which their pre-established goals were achieved, and their impact.
    - **Translation to community** activities to foster and facilitate the uptake of results of research programs or projects.

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[10] https://www.nationalhealthcouncil.org/wp-content/uploads/2019/12/NHC_Patient_Engagement_Rubric.pdf
[11] https://www.eu-patient.eu/About-EPF/what-is-a-patient-organisation/

- **Project Level:** Project Development stages in Multi-stakeholder initiative (including RFPOs) process concerned with performing single research projects (e.g. single project for the development of an ICT Health monitoring device or clinical trials). In this case, patient is a scientist and co-researcher. Project Development pertains to Research Execution stage of the Governance Program Level.
    - o **Design & plan** the design and planning of all the activities that lead to the realization of a concept or idea and which helps achieve the item's designated objective(s).
    - o **Conduct & operate** project conduct & monitoring (e.g. ICT device development).
    - o **Evaluation** activities to determine the value created by a research project, establishing their outputs and outcomes, the degree to which their pre-established goals were achieved, and their impact.
    - o **Translation to community** activities to foster and facilitate the uptake of results of research projects.

Return on Engagement (RoE): the benefit and impact resulting from performing patient engagement in R&I. Evaluating whether engagement adds value for different stakeholder groups can be an effective tool to further support patient engagement and requires the development metrics to measure the "return on engagement". It should always be evaluated by both the engaging and engaged parties in line with the co-accountability approach of MULTI-ACT.

Return on Investment (ROI): a measure of the efficiency of an investment as a percentage of return relative to the investment's cost.

Science with patient input. intellectual and practical activity that occurs when patients meaningfully and actively collaborate in the governance, priority setting, and conduction of research, as well as in summarizing, distributing, sharing, and applying the results. In the context of MULTI-ACT, the **Science with patient input** aims to **maximize** the impact of R&I toward a transformational mission by engaging patients. The Science *with* patient input will then be executed in the MULTI-ACT Governance model by applying the MULTI-ACT Patient Engagement Strategy included in the present guidelines.

Science of patient input: intellectual and practical activity that occurs when data of people with a disease are collected and used (active and passive contribution) to evaluate impact of R&I. In the context of MULTI-ACT, data about patients' experiences[12] outside the clinic (Science of patient input) are critical to **evaluate** the impact of mission-oriented health research on outcomes that matter most to patients[13]. A great deal of momentum surrounds the application of new technologies, such as mobile devices and other digital platforms, to both deliver care and generate real-world data on patients' experiences.

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[12] https://milkeninstitute.org/reports/advancing-models-patient-engagement-patient-organizations-research-and-data-partners

[13] The Master Scorecard provides a selection of (qualitative and quantitative) indicators of research impact enable the translation of MULTI-ACT mission and agenda into action, integrating a set of top indicators on efficacy, efficiency, excellence, social impact and patient reported impact, co-selected within a multi-stakeholder perspective.

Social media: forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos). In this document, for "Science of Social Media" we intend the use of social media and social networks to ensure representativeness of the different communities for science and research purposes. This use is subject to a scientific validation.

Stakeholder "any individual or group that is affected by, who can influence or may have an interest in the outcomes of an organization's actions". (Freeman, 1984)

- o **Patients: people with the disease** (persons with lived experience of the disease); and **people affected by the disease** (persons or groups that are affected by the disease, including family members and caregivers).
- o **Patient organizations:** patient associations, advocacy organizations, etc.
- o **Society** individual citizens, civil society organizations and networks.
- o **Payers and purchasers:** public or private entities responsible for underwriting the costs of health care.
- o **Care providers:** health and social care organizations and professionals (doctors, nurses, etc.).
- o **Policy makers:** EU institutions; national, regional and local policy makers.
- o **Regulators:** regulatory agencies (e.g. agencies for the scientific evaluation and safety monitoring of medicines, i.e. the European Medicine Agency EMA); Health Technology Assessment (HTA) bodies.
- o **Industry:** companies developing and selling health products (drugs, devices, applications, etc.) and services.
- o **Research and education organizations:** Research Organizations; Universities; Education Providers; Foundations; Other research projects.

Transformational mission: a mission as transformational or transformative means 'changing forms'. Transformational health research is a term that became increasingly common within the science and health policy community in the 2000s for research that shifts or breaks existing scientific paradigms.

1 INTRODUCTION

MULTI-ACT "A Collective Research Impact Framework and multi-variate models to foster the true engagement of actors and stakeholders in Health Research and Innovation", is a three-year project funded within the H2020 Science with and for Society (May 2018 – April 2021). The aim is to increase the impact of health research on people with brain disorders by providing a framework and tools for multi-stakeholder health research initiatives, allowing an effective cooperation of all the relevant stakeholders and the alignment of the results to the mission and agenda.

MULTI-ACT is developing a strategic *Collective Research Governance and Sustainability Model* in the area of brain diseases by using Multiple Sclerosis (MS) as the first case study. From the 'triple helix' of science, industry and government, MULTI-ACT is expanding to a model of 'quadruple helix' with patients and their community as a fourth strand. This will enable a transition from a single performance assessment system (top down accountability approach) to a new prospective model to be used in managing multi-stakeholder health research initiatives, engaging stakeholders and in defining metrics via a bottom-up approach (toward a co-accountability approach). The co-selected multidimensional metrics should enable a better evaluation/measurement of Return On Investment (ROI) by each involved stakeholder with the common goal of developing effective treatments and care for patients. The mission-related dimension is the explicit driver for the co-accountability approach proposed by MULTI-ACT.

MULTI-ACT foresees patients as a key stakeholder in the Health Research & Innovation process. Hence, the project aims to contribute to the development of the "science with/of patient inputs" by providing guidelines for patient engagement in Research & Innovation (R&I) (*with*) and by applying the patient-reported dimension throughout the four dimensions[14] of our proposed model (*of*).

As presented in Figure 1 The value of Patient Engagement, the value and effectiveness of Patient Engagement relies on impacting outcomes that matter to patients while being sustainable in achieving this goal. Patient Engagement strategies directed to engage patients through the 7-steps R&I path, both in the governance of R&I (*with*) and in its impact assessment (*of*), are instrumental to meet transformational mission's health R&I.

In this document, we refer to patients as both the individuals with lived experience of the disease and the people affected by the disease (persons or groups that are affected by the disease, including family members, caregivers).

The purpose of the guidelines presented in this document is to provide a tool for a meaningful patient engagement within the MULTI-ACT framework.

Much of the current guidelines for Patient Engagement focus on addressing the gaps that patients show in their knowledge of how research works and how Patient Engagement can add value to research. MULTI-ACT builds upon this approach by proposing a complementary strategy: a roadmap to capture 'experiential knowledge' of patients (i.e. knowledge gained through lived experience that researchers may not have). We believe that this strategy could help to build people's confidence and to allow them to better understand how to draw on their experience and use the experience constructively for co-creation purposes. MULTI-ACT aims at leveraging both patients and other

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[14] MULTI-ACT dimensions: Mission/Efficacy, Excellence, Efficiency, Social, Patient-Reported.

stakeholders' experience and at raising their ability to co-create and participate to decision making processes.

Figure 1 The value of Patient Engagement
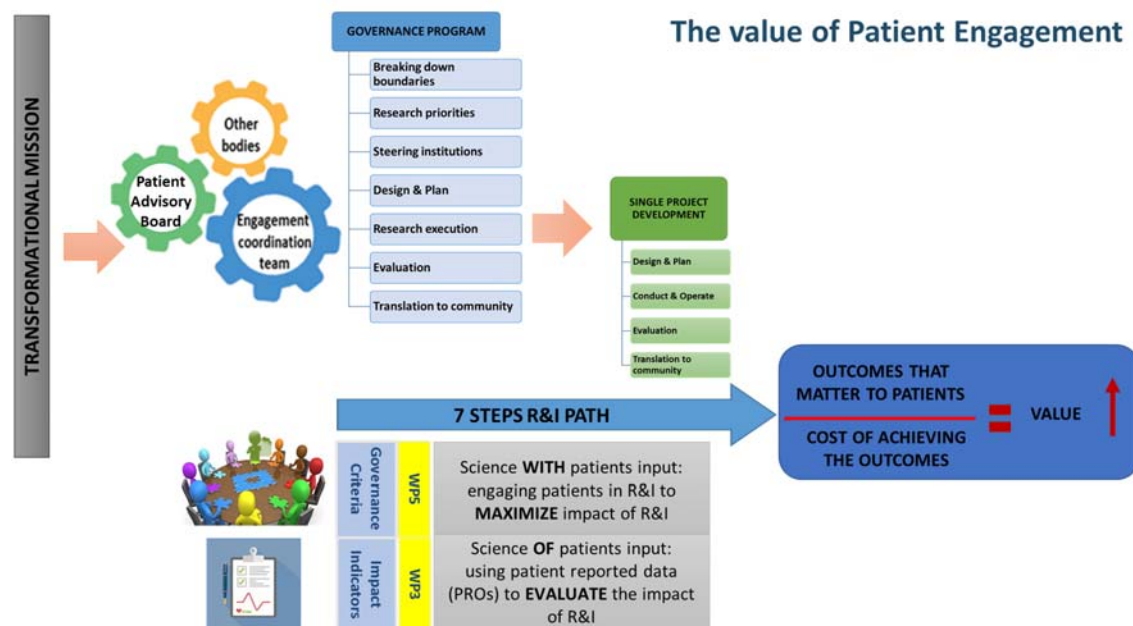
Specifically, the innovation of the MULTI-ACT Patient Engagement strategy relies mainly on three key assets: i) the innovative MULTI-ACT Governance Model for collaborative initiatives and the Engagement Coordination Team; ii) training focused on how to empower patients and stakeholder to cooperate and to bring their experiential knowledge into the R&I continuum, complementing existing training to make patients "experts"; and iii) the importance of understanding and measuring the impact of R&I on outcomes that matter to patients.[15]

This document presents the MULTI-ACT Patient Engagement Guidelines and this first section provides an overview of the main gaps and needs of existing Patient Engagement experiences identified in the landscape analysis (D1.4), the rationale, the purpose and the methodology used to develop the guidelines.

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[15] It has to be considered that this document represents a single component of the MULTI-ACT Framework and that the manual on how to apply the overall framework will be finalized in WP6 "Collective Research Politics: governance and guidelines".

1.1 Patient Engagement: gaps and needs

The review of existing Patient Engagement procedures, experiences and best practices in R&I (D1.4) has provided insights on the main perceived gaps and needs for effective Patient Engagement in R&I.

The main gaps and needs identified[16] are presented in the Table 1 Gaps and needs for Patient Engagement:

Table 1 Gaps and needs for Patient Engagement

GAPS
Experiences of patient engagement mainly concern **adherence to medical treatments** or participation in **clinical trials,** but very rarely the governance of R&I according to the dictates of Responsible Research and Innovation (RRI).
In medicine development, Patient Engagement experiences focus on the **early stages of research** (agenda setting and protocol development) and seldom during its execution and translation to the community. Patients are recruited for testing purposes rather than as co-researchers.
There is no or very **limited evidence of the "return on engagement"[17]**.
NEEDS
There is a need for **clear and evidence-based methods** for guidance on when and how to engage patients and public at all stages of R&I.
It is necessary to develop minimum **quality criteria** for the **development, content, and governance of Patient Engagement.**
There is a need for clear **methodologies and metrics to assess the impact** and **(cost-) effectiveness** of Patient Engagement in R&I.
There is need for clear and **constructive communication and professional management** of stakeholders.

The take home messages of the review performed in D1.4 are:

- The **patients' experiential knowledge** should not be confused with scientific/clinical knowledge, as it provides relevant and different insights on R&I[18];

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[16] D1.4 Consolidated mapping of existing patient engagement initiatives and analysis of gaps and barriers to patient engagement in current health R&I processes.

[17] See GLOSSARY - Return on Engagement: the benefit and impact resulting to performing patient engagement in R&I. Evaluating whether engagement adds value for different stakeholder groups can be an effective tool to further support patient engagement and requires the development of metrics to measure the "return on engagement".

[18] The engagement of people with and affected by the disease as partners with the "experience" of the disease across the continuum of research, development, and care is needed. Therefore MULTI-ACT is attempting to strengthen the engagement of patients and public that may not have technical knowledge in R&D or regulatory processes ("expert patients" https://www.frontiersin.org/articles/10.3389/fmed.2018.00270/full), but that have the main role to contribute with their experiential knowledge of the disease across the continuum of health research and care.

- Patients, placed at the same level and with similar decision-making roles as researchers and other stakeholders, have the potential to maximise the impact of R&I and to assess it according to the results that matter most to them;

- **Patients organizations play a pivotal role** in enabling the transition from individual to collective patients' experiential knowledge;

- **Professional management** of all stakeholders is effective in empowering patients' experiential knowledge in R&I, to better prioritize the needs of patients and society.

> *Life experience* of patients leads to knowledge that **escapes and complements the expertise of researchers.**
>
> *Meaningful patient involvement requires that the **difference between scientific and clinical expertise and patients' experiential knowledge**, is acknowledged and made productive, instead of erased.*
>
> *(Van de Bovenkamp et al. 2009)*

MULTI-ACT aims to innovate by providing tools and guidelines on how to empower the research team to integrate Patient experiential knowledge in research and make patients a key stakeholder with decision making roles, bringing to R&I expertise and knowledge complementary to the ones of the other stakeholders.

1.2 The potential of patients' experiential knowledge

Over the last decade, Patient Engagement has become more important in line with a democratization of health sciences. Patients started to be engaged not only in a passive role but as co-researchers. Patient engagement should not be limited to interviews or conversations, but rather should entail a series of cooperative endeavors (Smith, et al. 2019). MULTI-ACT aims to recognize patients' authority, credibility, influence, prestige, and power in the production of experiential knowledge, thus integrating the monopoly on the development of knowledge reserved to the "scientific elite" in virtue of their advanced education, specialized skills, and knowledge.

Among some potential impacts, the patients' experiential knowledge has the potential to: a) being able to prioritise research efforts from other viewpoints than researchers', b) steering R&I to not stray away towards the "interesting", but to focus on the "important", c) having creation of useful results in focus, in addition to the interest of researchers (e.g. scientific career).

Patients' experiential knowledge is recognized as knowledge that conventionally eludes researchers as such, and that provides relevant and different insights from those provided through scientific and academic education (Smith et al. 2019, Crocker et al. 2016; Litva et al. 2002; Moorhead et al. 2013). For this reason, it is important to consider patients as "equal partners" with researchers. This transdisciplinary perspective needs to be integrated in co-production of knowledge.

The lack of recognition of the role of patients in research may lead to undervaluation. Experiential knowledge is mostly used when it is convenient and it is given no (or insignificant) recognition, suggesting a degree of tokenism and undervaluation (Smith et al. 2019). According to Hamilton et al. (2018), "feeling valued" is essential for positive team interaction and inclusive research environment.

There are several types of recognition mechanisms that may be foreseen for partnering with patients beyond financial incentives or reimbursement. Patients may prefer other types of recognition such as further training and continuous access to health information (Smith et al. 2019). For instance, Smith et al. suggest operative rewarding mechanisms such as financial, personal, knowledge, academic, and altruistic.

In the last decades, the development of Information and Communications Technology (ICT) and virtual communication has allowed stakeholders to gather patient's perspectives on a global scale. However, to date, mechanisms to ensure that the voice of the underrepresented is heard needs to be further developed and monitored.

Benefit of integrating patients' experiential knowledge in research has been recognized in different ways (Domenecq et al. 2014). Some reported benefits are: augmented patient enrolment and reduced attrition, better mechanisms to inform and disseminate results, reporting of more meaningful and understandable results.

As argued by Smith et al. (2019), "Experiential knowledge may create a significant epistemological shift by tapping into worlds of knowledge that are still underdeveloped in health-based research. Proximity to individuals who may openly share experiential knowledge may create **empathy and compassion**, which in turn may **motivate researchers to better prioritize the needs of patients** in their work. Moreover, experiential knowledge may provide insight into patient populations typically excluded – intentionally or unintentionally – from research. The study of vulnerable populations is often challenging because of methodological difficulties such as recruiting and retaining participants and ill-suited measurement or instrumentation that may bias data collection (Flaskerud and Winslow 1998). Representation from such populations may help to adapt research methods, tailor context-specific interventions, and develop ways to fairly and effectively disseminate and translate research results (Fagan et al. 2016)."

Caron Flinterman et al., 2005 introduced the concept of 'utility in context' and applied it as follows: if experiential knowledge seems to be useful in a certain context, it can be considered valid within that specific context. These authors raised the idea of sharing experiential knowledge to exceed the boundaries of individual experiences. Borkman (1976) refers to it as 'collective experiential knowledge' which is, in addition to 'individual experiential knowledge', a dimension of experiential expertise.

In line with MULTI-ACT Governance Model (see D5.4), the mission is the explicit driver of the Patient Engagement Strategy (i.e. 'utility in context').

Indeed, the proposed MULTI-ACT Engagement Coordination Team (ECT) (see WP5 D5.4) is intended to be a neutral team dedicated to enable the R&I paradigm shift by enabling the transition from the individual to the collective patients' experiential knowledge. Patient organizations will play a pivotal role in enabling the empowering of 'collective patients' experiential knowledge'. This role is derived from the patient organization's role as a trusted stakeholder in the R&I ecosystem. Patient organizations can readily create linkages between patients and individual components of the R&I pathway and conversely can serve as an important translator of the interests/needs of the R&I stakeholders to patients. Indeed, by proactive engagement, patient groups can enable a robust collaboration between the stakeholders. However, there remains considerable variability in patient organizations' engagement of patients in the R&I continuum. As such, the MULTI-ACT will have a vital role in filling knowledge gaps and enhancing the ability of patient organizations to realize the full potential of patient engagement in the R&I continuum.

The diversity of patient organizations in the European panorama in terms of structure, capabilities, objectives, and resources may result in fragmentation, implying a difficulty in defining clear roles and expectations for engagement of patient organizations in R&I and leverage of their contribution. International umbrella organizations are pivotal in mitigating this fragmentation for example by developing common research agendas to align the work of national patient organizations. In the case of Multiple Sclerosis this role is represented by the Multiple Sclerosis International Federation (www.msif.org).

The ECT should be in charge of mitigating challenges including increasing community representativeness, ethical conflicts in clinical protocol design, participation in program and/or project agenda setting, governance model tokenism, power struggles. A strong partnership has more potential to produce results that reflect patients' expected outcomes and, thus, to have a positive impact on society.

Moreover, the ECT should ensure that patient engagement will have a measurable impact for all the stakeholders involved (e.g. impacting outcomes that matter most to patients and demonstrating the return on engagement for all the other stakeholders). Experiential knowledge includes a great variability, which reflects the "real world" that research results should be applicable to. It may not be as verifiable, replicable, or generalizable as the traditional scientific knowledge and therefore, the aim and ability of the ETC is to find a balance and a good match between the two knowledges; making possible the interchange of peculiarities between both mentioned knowledges' and avoiding a constant re-shifting and disruption of research that would challenge the respect of deadlines and resources, the so-called "scope creep" (Domecq et al. 2014). For example, this may be addressed by enabling Post Normal Science (Funtowicz and Ravetz 1991, 1994).

In MULTI-ACT, Post Normal Science is one of the main theoretical foundations of the Collective Research Impact Framework (CRIF). Post Normal Science was introduced as an alternative form of generating knowledge, shifting from the traditional individual agency, top-down approach of science to more participatory forms of research governance (Funtowicz and Ravetz, 1991). Post Normal Science argues that science is not just an exercise of researchers, but it rather needs to engage in a participatory and democratic process considering social needs and concerns. Post Normal Science approach is based on three core elements: (i) the plurality of perspectives and commitments existing in society; (ii) the scientific management of uncertainty and research quality; and (iii) the intellectual and social structures reflecting problem-solving activities (Funtowicz and Ravetz, 1994).

Social media might have a determinant role in empowering patient engagement and integrating their experiential knowledge in R&I. The literature indicates a promising future for the use of social media for improving patient engagement, empowerment and community building; however, there are several challenges to overcome before the technology can achieve its potential (Househ M et al. 2014). There is a clear need to measure the effectiveness of any use of social media for more patient-centered healthcare and research (Koumpouros Y et Al.). Investigating the "Science of Social Media"[19], as a method to capture patients' voice, not only listening but co-creating, should be envisaged.

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[19] In this document, for "Science of Social Media" we intend the use of social media and social networks for science and research purposes. This use is subject to a scientific validation.

Lastly but not least, while seeking for experiential knowledge, geographical settings and ethnic diversity (especially underserved populations) has to be duly considered. In fact, cultural context, belief and tradition impact on patients' lived experience and provide additional insights to inform knowledge. Scientific information alone, however, cannot guide the choices we make about health research and care and relevant technology at an individual, community, or societal level. Ethics, cultural values, and impacts on future generations are among the factors that influence our understanding and applications of research. Patients from underserved groups are still excluded from scientific research. We agree that ensuring diversity - so that the interests of well educated, white, middle class people do not dominate - is challenging. As highlighted in a recent analysis on a *"Global Landscape of Neuroscience Public Engagement Efforts and the Potential Nexus of Neuroethics"* [20]. In this analysis, MULTI-ACT has been mentioned as model for "Shaping research priorities: Providing a strong voice for patients in research governance and trajectory". MULTI-ACT governance model is at the root of mitigating the above challenges[21]. Within this frame, the Engagement Coordination Team[22] aims to build a multidisciplinary research team including cultural insiders, and carefully considering the needs of the target population also in line with previously published EERC (evaluate, engage, reflect, and carefully match) guidelines[23].

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[20]   https://www.multiact.eu/wp-content/uploads/2019/10/public-engagement-and-neuroethics-landscape-report.pdf

[21] See D5.4 MULTI-ACT Governance Model, and D1.6 Appendix 5 Criteria for Patient Engagement

[22] The board in charge of coordinating the involvement of stakeholders, including patients in all the operations of an initiative (see GLOSSARY and deliverable D5.4 MULTI-ACT Governance Model)

[23] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5215593/

1.3 Starting points for developing the MULTI-ACT Patient Engagement guidelines

What questions do the guidelines want to answer?

The guidelines provide a process and recommendations for effective Patient Engagement in the activities of the multi-stakeholders' initiatives, aiming to provide answers to the following questions:

1. What **skills/abilities** are able to empower patients to provide Patient-Provided Information[24] (PPIn) and translate them together with the other stakeholders into experiential knowledge helpful for R&I (utility in the context)? And thus, what **skills/abilities** do the Engagement Coordination Team's members need most to enable patients make their experience valuable for research?
2. What are **training features** able to empower the Engagement Coordination Team to capture and integrate patient experiential knowledge in research?
   a. What **training features** are able to empower patients to provide their PPIn and translate them together with the other stakeholders into experiential knowledge helpful for R&I (utility in the context)?
   b. What **training features** are able to empower ECT to help patients and the other stakeholders to translate PPIn into experiential knowledge helpful for R&I (utility in the context)?
3. What **indicators** are able to assess the cost-effectiveness of patient engagement on the outcomes that matter most to patients?
4. What **structured methods** are able to increase the participation of patients in R&I and the effective collection of PPIn and to facilitate patients in providing their experiences of the disease and make them usable for research purposes?

A detailed assessment of the questions is presented in the APPENDIX 1 – Methodology Development of PICO questions.

Guidelines development process

The guidelines have been produced following a co-creation and evidence-based process which entails the following steps:

➢ The design of a sound methodology to carry out a landscape analysis of current experiences of patient engagement in brain research (see D1.4);

➢ A landscape analysis of existing Patient Engagement experiences (see D1.4);

➢ A literature review, web search and international consultation with relevant stakeholders across Europe and beyond, such as the Research Staff Network of the Multiple Sclerosis International Federation (MSIF); the European Multiple Sclerosis Platform (EMSP), the Patient-Centered Outcomes Research Institute (PCORI), the MULTI-ACT Patient Engagement

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[24] The National Health Council Rubric to Capture the Patient Voice: A Guide to Incorporating the Patient Voice into the Health Ecosystem. June 2019. Washington, DC. Available from: https://www.nationalhealthcouncil.org/Patient-Engagement-Rubric
See also D1.6 Appendix 1 - Methodology

Group (PEG)[25], External Advisory Board (EAB)[26] and a Patients Forum (PF)[27] (which is attached to the present document – Deliverable D1.4[28]);

➢ Based upon such analysis, the identification of a number of gaps in the existing patient engagement experiences and barriers which prevent research initiatives to carry out a truly effective patient engagement strategy;

➢ The design of a preliminary version of the MULTI-ACT Patient Engagement guidelines (D1.5);

➢ The validation of the preliminary version through a public consultation, focus groups and a series of engagement actions aimed at foster uptake of the guidelines by potential adopters;

➢ The assessment of the compliance of the guidelines to standard methodologies and best practices (i.e. the WHO Handbook for guidelines production, based on GRADE principles), including development of questions that the guidelines wants to answers in the "PICO" format: Population, Intervention, Comparator, Outcomes and specific literature review on the topic of the questions.

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[25] **Patient Engagement Group** (PEG) includes representative from the MULTI-ACT consortium (Italian MS Foundation, French Multiple Sclerosis Research Association, European Brain Council, European Health Management Association) and external experts from the US National MS Society, the European Patients' Academy, the Mario Negri Institute - Laboratory of Medical Research and Consumer Involvement and the Danish Board of Technology Foundation (Coordinator of theEngage2020 project).

[26] **External Advisory Board** (EAB) includes representatives from the International Economic Policy and Sustainability Management, Polytechnic University of Milan, the European Federation of Pharmaceutical Industries and Associations (EFPIA), The Italian Ministry of Health, The Neurology Sapienza University, the European Charcot Foundation, the European Connected Health Alliance (ECHAlliance), the European Research Area Network (ERANET) NEURON and the European Patient Forum EPF.

[27] **Patient Forum** (PF) includes representatives from the European Patient Forum (EPF), the European Patient Academy (EUPATI), FasterCures, the European Federation of Neurological Associations (EFNA), the Accelerated Cure for MS and iConquerMS initiatives, the European Alliance Restless legs syndrome, the EuroAtaxia, and the Global Alliance of Mental Health Illness Advocacy Networks (GAMIAN).

[28] Deliverable D1.4 *"Consolidated mapping of existing patient engagement initiatives and analysis of gaps and barriers to patient engagement in current health R&I processes"* approved by the European Commission and published on www.multiact.eu.

Figure 2 summarizes the main actions that have led to the consolidated version of guidelines: the MULTI-ACT Governance Model (D5.4), the landscape analysis of existing patient engagement procedures (D1.4), the comparison with existing good practice on guidelines production (APPENDIX 1 – Methodology) and the public consultation (APPENDIX 3 – Public Consultation).

Figure 2 Path toward validation and co-creation of the MULTI-ACT Patient Engagement Guidelines
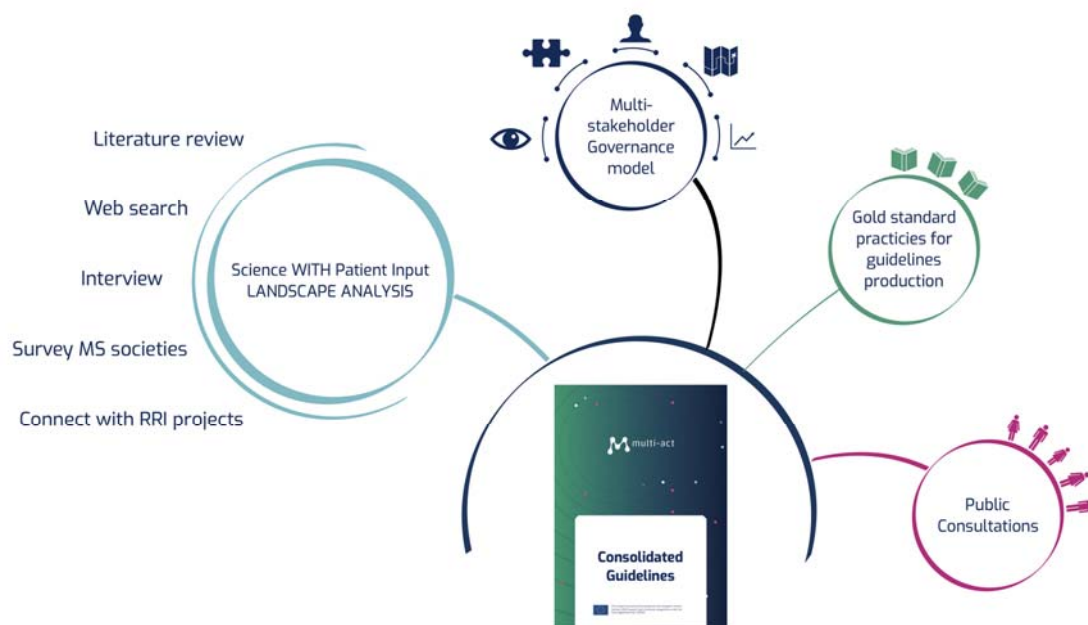
2 APPLICABILITY OF THE GUIDELINES

2.1 Compliance with the governance framework

Whenever a multi-stakeholder research initiative[29] wants to achieve a transformational mission it can apply the MULTI-ACT framework in all its components: the governance model, the patient engagement strategy, and the impact assessment Master Scorecard (see Figure 3 The MULTI-ACT framework).

According to this framework, a multi-stakeholder initiative applying the MULTI-ACT Governance Model should be consistent with the five Governance criteria (Figure 4 The five criteria of the MULTI-ACT Governance Model) and in particular:

1. Define vision, scope and a shared agenda, considering MULTI-ACT principles;
2. Guarantee an inclusive and equitable governance model, which allows the involvement of all interested parties under a co-creation approach;
3. Guarantee a comprehensive, balanced and efficient stakeholder engagement process, ensuring the participation of patients, their families and caregivers;
4. Guarantee an effective, cooperative and efficient coordination and alignment of the objectives and actions required to pursue the vision and the agenda;
5. Establish a shared and effective assessment system, including a set of indicators, that allows coaccountability/co-responsibility of all the stakeholders.

Figure 3 The MULTI-ACT framework

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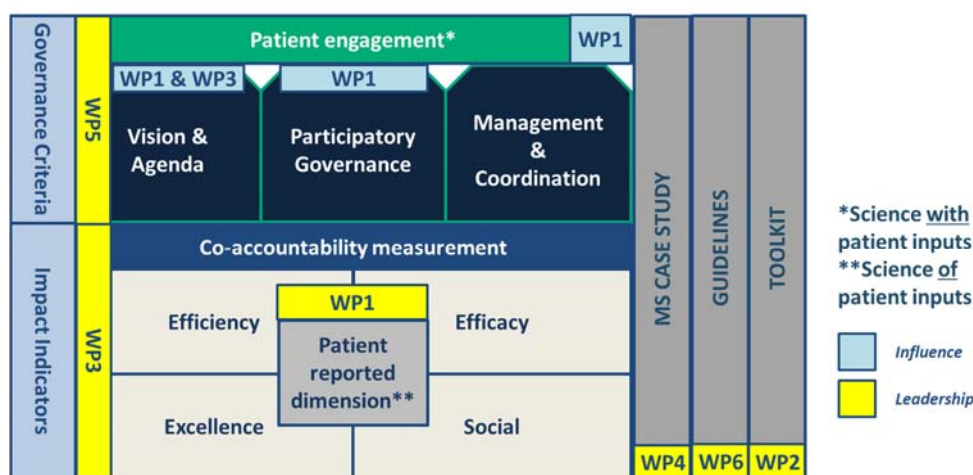
[29] Categories of users of the MULTI-ACT model are indicated in the DoA (KPI n.1): "Innovative framework used by various R&I stakeholders for their strategic planning; Beneficiaries: RFPO, Academia, Industries (Pharma, Biotech, ICT, consultancy), Policy makers (EC, Ministries, Regions, Local Agencies, Insurers), Regulatory agencies (EMA, Medicine National Agencies), Patients organizations, Foundations".
In H2020 strategic orientation, RFPOs should be understood broadly as organisations developing or funding activities in the field of R&I as one of their objectives.

Figure 4 The five criteria of the MULTI-ACT Governance Model

2.2 How to use the guidelines?

This paragraph provides instruction for applying the MULTI-ACT Patient Engagement strategy and related guidelines. According to Governance guidelines,[30] preliminary actions will be:

- ✓ the baselines assessment: assessing whether the governance model of the initiative includes a patient engagement strategy compliant with the MULTI-ACT model
- ✓ the Governance Implementation Plan: based on the baseline assessment's results, developing an implementation plan to align the governance with the MULTI-ACT model

The above mentioned actions are performed by the promoter of the initiative. Instructions related to this process will be included in the MULTI-ACT manual (D6.1) on how to apply the MULTI-ACT framework and all its components included in WP6 "Collective Research Politics: governance and guidelines".

The **first step** is to establish an Engagement Coordination Team (ECT) in charge of management of stakeholder engagement, including the design and actualization of the Patient Engagement strategy within the initiative and to organize the training modules for the ECT to learn how to apply the MULTI-ACT Patient Engagement Strategy and how to empower the integration of patients' experiential knowledge in the activities of the initiative.

The **second step** (managed by ECT) is to define which are the different phases of the R&I path in which Patient Engagement is instrumental in achieving the mission and agenda of the initiative (i.e. the 7-steps R&I path – see GLOSSARY and Figure 5 below).

Figure 5 The 7-steps R&I path

The **third step** is to develop specific Patient Engagement Plans for the 7 R&I steps that have been identified relevant to meet the mission/agenda.

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[30] Deliverable D5.4 "MULTI-ACT Model for collaborative initiatives".

Finally, the **last step** is to identify indicators able to assess the return on Patient Engagement, to be monitored and used at the end of the engagement to evaluate if it has reached the expected impact on the initiatives.[31]

Figure 6 MULTI-ACT Patient Engagement Roadmap
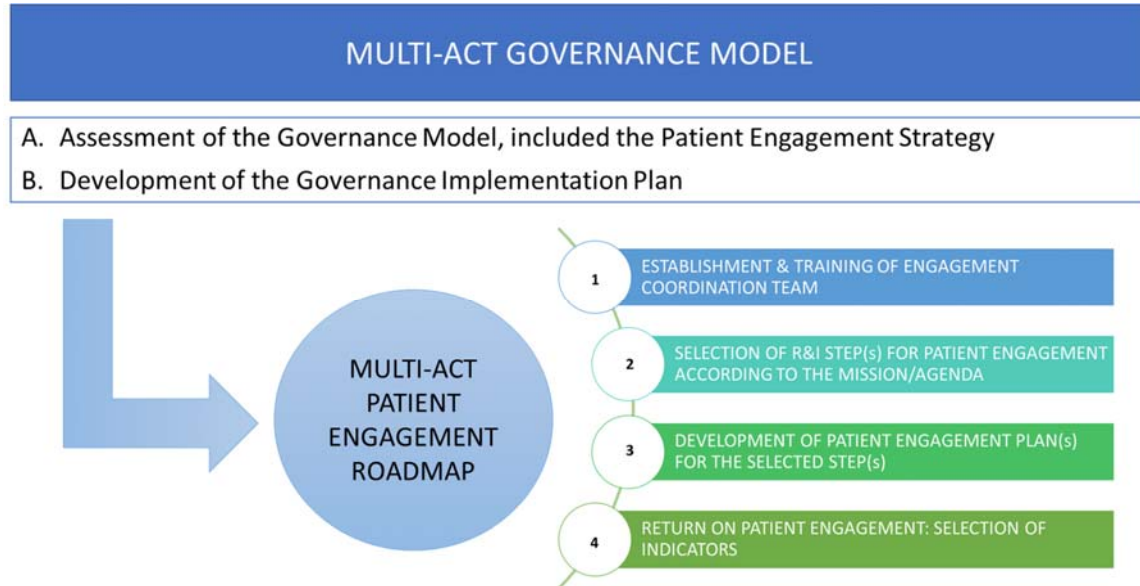
The process presented above (see Figure 6 *MULTI-ACT Patient Engagement Roadmap*) can be applied both at the level of a program or a single project development, where the research phases are different (see Figure 7).

Figure 7 Program and Project Levels

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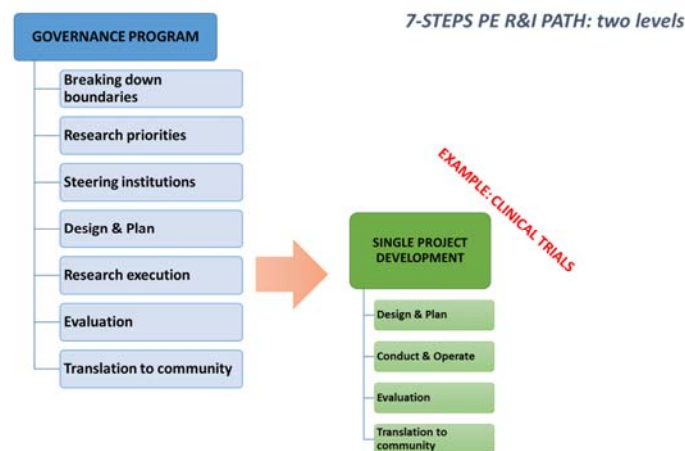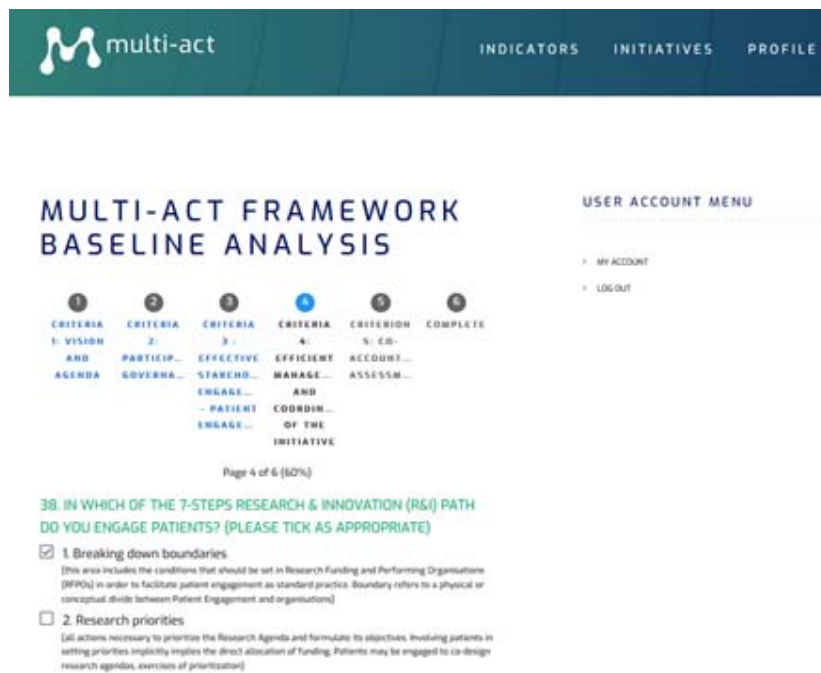
[31] This step is linked to the overall assessment detailed in WP3 D3.6 "Master Scorecard" and will be further detailed in D1.8 "Patient Reported Dimension Report on the integration of Patient reported outcomes and perspective into the CRIF".

2.3 Access to the Digital Toolbox

The initiatives should at first perform a self-assessment check using the MULTI-ACT Digital Toolbox (see Figure 8 Screenshot of the Digital Toolbox) to verify how the initiative is compliant with the MULTI-ACT Governance model and in particular with the Patient Engagement Strategy.

Figure 8 Screenshot of the Digital Toolbox

The system provides a score based on the selected options as well as recommendations and suggestions for missing options, in line with criteria identified in the guidelines.

The final version of the MULTI-ACT Digital Toolbox will provide tools to support the process (e.g. digital interface to develop the Patient Engagement Plan and monitor its implementation). The Digital Toolbox and the MULTI-ACT manual, as well as the metrics to evaluate the effectiveness of Patient Engagement will direct the users on the process. In addition, in the Digital Toolbox it is possible to download relevant documents such as the MULTI-ACT Patient Engagement Guidelines (D1.6), the Report on the integration of Patient reported outcomes and perspective into the CRIF (D1.8) and the White paper for innovative routes for patient engagement (D1.7).

3 THE GUIDELINES

The guidelines are a 'How to' document and operational manual (i.e. how to apply the MULTI-ACT Patient Engagement strategy within the activities of a multi-stakeholder initiative) connected to the MULTI-ACT framework. The MULTI-ACT framework aims to allow for effective cooperation of all relevant stakeholders in multi-stakeholder health research initiatives. The framework includes tools and guidelines for the governance, the stakeholder engagement, and the impact assessment of such initiatives. Every time that a multi-stakeholder research initiative, including Health RFPOs that may already have been grouped in a multi-stakeholder initiative (e.g. Alliance) or that are willing to start conducting their R&I with a multi-stakeholder and co-accountable approach, wants to reach a transformational mission they may apply the MULTI-ACT framework in all its components: the Governance Model, the Patient Engagement Strategy, and the impact assessment Master Scorecard.

The MULTI-ACT Patient Engagement guidelines aim to address the Criterion n.3 "Clear, effective and inclusive methodology of stakeholder engagement" of the MULTI-ACT Governance Model[32], by providing a strategy to empower the stakeholder "patients" to be engaged in R&I at the same level of the other stakeholders and to empower all the stakeholders to collaborate and co-create with the "patients". In fact, this category is still poor represented in R&I and there is a need for clear and evidence-based methods for guidance on when and how to engage patients and public at all stages of R&I (see D1.4 and section 1.1 Patient Engagement: gaps and needs).

The MULTI-ACT Patient Engagement strategy relies mainly on three key aspects: i) the innovative Engagement Coordination Team and governance model ("MULTI-ACT Model for collaborative initiatives"); ii) training focused on how to empower patients to bring their experiential knowledge into the R&I continuum, complementing existing training to make patients "experts"[33]; and iii) the importance of understanding and measuring the impact of R&I on outcomes that matter to patients.

This section presents specific recommendations for each aspect of the MULTI-ACT Patient Engagement strategy.

3.1 The Engagement Coordination Team

As mentioned before, the establishment of a board such as the **Engagement Coordination Team** is a pre-requisite for an effective use of the present guidelines. In particular, the promoters of the initiative/project should:

➢ Ensure that the Governance structure, boards and process of the initiative/project are able to enable an effective Patient Engagement. *Does the governance structure and process in charge of the Patient Engagement meet the MULTI-ACT Governance criteria?*

➢ Define the requirements for establishment/appointment of the board in charge of Patient Engagement (i.e. ECT). Appointment of board for Patient Engagement needs to be an open

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[32] More information on the meaning of MULTI-ACT Governance criteria are reported in deliverable D5.4.
[33] EUPATI European Patients' Academy (www.eupati.eu)

and inclusive process whereby expertise needed for the purpose play an important role.[34]
What is the role and expertise required for ECT? What training does the ECT needs?

The ECT is a neutral body responsible for designing and actuating the Patient Engagement Plan. In particular, the ECT may be in charge of the following actions:

- Creating commitment among the members and their community
- Moderating the dialogue between interdisciplinary and different (and sometimes competing) voices and experiences and setting up a dispute resolution system;
- Mitigating challenges such as ethical conflicts in protocol design, tokenism, power struggles, difficulties in recruiting different patients, additional time, cost;
- Assuring that patients "feel valued" by facilitating team interaction and setting up an inclusive research environment.

Composition and skills of Engagement Coordination Team

The Engagement Coordination Team's main feature should be the ability to empower the experiential knowledge of patients; the professional profiles of the ECT's members need to reflect this ability. Patients are key stakeholders of the ECT, in charge of ensuring representativeness of their community. The ECT is expected to be a unique board of experts with innovative functions, knowledge and expertise. In fact, the ECT is an experimental new team that requires innovative training and educational programs that may provide new job opportunities and careers. Some aspects to be considered, without being exhaustive, may be motivational and coaching abilities, abilities in moderating and facilitating the management of diverse engagement methods (online and offline).

The promoters of the multi-stakeholder initiative are in charge of establishing the ECT and appointing or recruiting members. The appointment/recruitment should be compliant with the Governance criteria (D5.4) and Patient Engagement criteria (D1.6 - Appendix 5), assuring that the selection bias is mitigated and the mechanism is democratic. Patients and stakeholders' selection can be achieved by a dedicated open "call for expression of interest". A MULTI-ACT Patient Recruitment Plan relevant to the target mission will be developed, as for the other stakeholders, as part of the Patient Engagement Roadmap. The MULTI-ACT Patient Recruitment Plan and process will build on the Governance and Patient Engagement Criteria (see D5.4[35] and D1.6 APPENDIX 5 – Criteria for Patient Engagement)[36]. On the other hand, MULTI-ACT will exploit a training module for all the stakeholders involved to support the use of the MULTI-ACT Governance model in the management of multi-stakeholder research initiative, including Patient Engagement (i.e. **The MULTI-ACT Training Academy®**) and this training will form relevant candidates. The essential abilities and skills required to enable effective Patient Engagement are listed below:

- **Empathy and active listening compassion**
- **Communication skills**
- **Expertise in engagement strategies & methods (online and offline)**

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[34] See Governance criteria in deliverable D5.4.

[35] The MULTI-ACT Governance criteria are reported in deliverable D5.4.

[36] An ad hoc template to be customized for each mission and related Patient Engagement Plan(s) will be developed as practical tool to facilitate the application the MULTI-ACT Patient Engagement Roadmap (e.g. the "MULTI-ACT Patient Engagement call for interest template").

Other preferred abilities are the following:

- Scientific knowledge of the disease
- Personal experience of the disease as a patient, as family member or a caregiver
- Team working abilities
- Motivating and coaching abilities
- Socio-psychological knowledge/background
- Ethical management knowledge/background
- Understanding of group dynamics
- Project management knowledge/background

> The composition of this team depends on the specificity of individual programs and projects. However, it is considered that the essential figures of this team are:
>
> - Co-Chair, patient (1)
> - Co-Chair, MULTI-ACT trained representative[37] (1)
> - Initiative's board(s) representative (1)
> - Initiative's staff representative (1)
> - Patients (with consideration to balance of gender, geography, disease progression, age, socioeconomic background) (3-6)
> - Expert(s) on the mission/priorities topic(s): e.g. Working Group chair/representative (e.g. Industry forum representative)

The **terms of reference** for the ECT with respect to Patient Engagement are:

- Designing and putting in place actions to engage patients in the steps of the initiative/project and constantly monitoring and reviewing the Patient Engagement performance and return on engagement;
- Directing and moderating the patient's experiential knowledge so that it is transformed into outcomes that matter to patients and are "scientifically" validated[38];
- Translating technical information into a lay language that patients need in order to provide their feedback;
- Motivating patients to stay engaged along the initiative/project by applying indicators to measure their return on engagement;
- Assuring the sustainability of the Patient Engagement Plan, monitoring risks and proposing mitigation actions.

Training of Engagement Coordination Team members

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[37] The MULTI-ACT trained representative will be an individual that has successfully completed the **MULTI-ACT Training Academy®**.

[38] The Patient Reported Outcomes (PROs) are examples of "scientifically" validated measures to evaluate the impact of research on outcomes that matter to patients.

In order to allow the ECT to integrate patient experiential knowledge in research of a multi-stakeholder initiative, the promoter should design and provide to the ECT an ad hoc training module.

MULTI-ACT will exploit a training module to support the use of the MULTI-ACT Governance model in the management of multi-stakeholder research initiatives, including Patient Engagement: the MULTI-ACT Academy on Multi-Stakeholder Research Initiatives and Patient Engagement management (MULTI-ACT Training module®). Among other aspects, the MULTI-ACT Training module® will train participants on how to gather patients' story and information and translate them into Experiential Knowledge useful in the context of R&I.

The training should focus on the ability to elicit and capture patients' stories and information and translate them into experiential knowledge. Information on methods for patients' engagement should be integrated with examples of application in real cases for each method.

ECT members should receive adequate information about the project's mission and strategy. An explanation of what is expected from patients and other stakeholders, of what are the expected outcomes of the multi-stakeholder initiative and how do those outcomes relate to the patients' needs in the given disease area should also be included in the training modules. The training should provide basic knowledge about innovative communication, learning and co-working techniques, and provide evidence of the value of patient and stakeholder engagement.

In addition, **plain language** should be used and the content should be kept simple and respect for the human rights and the dignity of the patient should always be considered.

3.2 Patient engagement in the 7 steps of the research & innovation path

MULTI-ACT suggests to verify, given a mission/agenda, in which step(s) of the 7 steps of R&I path (see Figure 5 The 7-steps R&I path) patients should be engaged in order to maximize the impact of research.

Although patient engagement is considered crucial at every stage of the research, the public consultation carried out by MULTI-ACT has prioritized these stages according to the relevance of the patients' role. This prioritization reflects the views given by the stakeholders consulted, which are partly based on the current state of patient engagement, and may not adequately valorize stages of research where patients and other stakeholders are currently underrepresented. The MULTI-ACT Governance Model aims to help mitigate this aspect.

The prioritization is presented below:

1. Translation to community
2. Setting research priorities
3. Breaking down boundaries between patients and stakeholders
4. Research design and plan
5. Research evaluation
6. Steering institutions
7. Research execution

The list of actions associated with the R&I steps, classified by relevance according to the public consultation, is given in the Table 2 Menu of Patient Engagement activities along the 7-steps R&I path[39].

Table 2 Menu of Patient Engagement activities along the 7-steps R&I path

7-steps R&I path	Menu of Patient Engagement Activities
BREAKING DOWN BOUNDARIES	▪ Patients help to define what are the boundary condition for patient engagement in multi-stakeholders (multi-SHs) initiatives ▪ Patients help to provide an overview on the facilities and infrastructures they need to be engaged in R&I ▪ Patients help to assess the legal/policy obstacles and review the policies and guidelines on how to engage patients in R&I activities
RESEARCH PRIORITIES	▪ Patients are engaged to co-design research agenda ▪ Patients are engaged in advancing their interests in a specific research domain ▪ Patients are engaged to exercise prioritization
STEERING INSTITUTIONS	▪ Patients are invited to be a member of committees and boards to provide guidance on key issues such as a company's policy and objectives, budgetary control, marketing strategy, resource allocation, and decisions involving large expenditures ▪ Patients are invited to advise steering and advisory committees ▪ Patients are engaged in defining ethical issues, anticipating risks and barriers for patient engagement in committee
DESIGN & PLAN	▪ Patients are engaged to suggest endpoints and outcomes of research ▪ Patients are engaged to propose specific objectives of research ▪ Patients are engaged to define the relevance and acceptability of proposed research to patient community
RESEARCH EXECUTION	▪ Patients are engaged in the development and monitoring of research at **Program Level**[40] (e.g. release of call for proposals, selection of projects to be funded, monitoring of funded projects) ▪ Patients are engaged in the development and monitoring of research at **Project Level** (e.g. collaborating for ICT device development, for the enrolment to increase participation and decrease drop-down, to increase compliance with protocols and facilitate data collection, for writing and review of papers)
EVALUATION	▪ Patients are engaged in discussing in the multi-stakeholder team about new methods to measure the impact of research and align results to the mission/agenda ▪ Patients are engaged in the assessment of new approaches and products arising from research ▪ Patients are engaged in working with other stakeholders on research reports
TRANSLATION TO COMMUNITY	▪ Patients are engaged in in shaping the 'translation strategy' of research results to easy-to-use and easy-to-understand (lay) material and in communication activities to disseminate the research results ▪ Patients are engaged in the development of guidelines and advocacy activities ▪ Patients are engaged in advocacy to leverage uptake of research results

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[39] In developing the activities, MULTI-ACT will build on relevant existing initiatives such as the one used by the PCORI-funded iConquerMS project (https://www.pcori.org/research-results/2015/iconquerms-participant-powered-research-network) to define research priorities: https://www.pcori.org/research-results/2019/multi-stakeholder-engagement-enabling-patient-driven-research.

[40] See GLOSSARY: Research & Innovation Path: Program Level and Project Level

3.3 The Patient Engagement Plan

The MULTI-ACT model offers a practical template to support the design of the Patient Engagement Plan.[41] The indication included in the template does not imply that the indication must become the norm or common practice but rather offers a first attempt to provide practical guidance to research and funding organisations on how to plan, actuate and monitor their Patient Engagement actions. As far as common good practices can be outlined, each mission is unique and requires *ad-hoc* interventions. The assessment of the implementation of the Patient Engagement Plan is aligned to the key phase **Plan** of the third Governance criterion: clear, effective and inclusive methodology of stakeholder engagement, Sub-criterion 3.1: Define and approve a methodology to engage stakeholders (D5.4). A description on how to develop the Plan is presented below.

The purpose of the Patient Engagement Plan is to provide a tool to integrate patients' experiential knowledge in research, bringing to R&I expertise and knowledge complementary to the ones of the other stakeholders. Patients, as members of the ECT and key stakeholders, develop the Patient Engagement Plan with the other stakeholders, with the role to ensure the representativeness of their community.

Minimum requirements of Patient Engagement Plan

The Patient Engagement Plan aims to be a managerial tool to support operationalization of Patient Engagement in research. The commitment of the ECT's members, together with their ability to engage and create commitment in their community, is essential for an effective implementation of the plan.

The plan should comply with the Patient Engagement criteria[42] and contain the **minimum** following **requirements**:

> ➢ Select actions of patient engagement that needs to be implemented in order to achieve the vision of the project;
> ➢ Define roles and responsibilities of the team that should manage and carry out the implementation of such Patient Engagement actions;
> ➢ Design methods to value and acknowledge the experiential knowledge of patients, including the establishment of appropriate recognition of patient contribution, and avoid tokenism;
> ➢ Choose clear and measurable targets (measuring the performance and Return on Engagement);
> ➢ Present a clear timeline of activities and sustainable budget;
> ➢ Define a clear review process (e.g. report on the performance and Return on Patient Engagement);

Process to design the Patient Engagement Plan

The design of the Patient Engagement Plan relies on the following steps:

1) Define "PURPOSE" of Patient Engagement toward a given MISSION.
   - *Considering the given mission, how can patients help to meet the challenges ('utility in context')?*
   - *Which priorities of the mission/agenda would benefit more from patient engagement activities?*

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[41] See APPENDIX 4 – Patient Engagement Plan

[42] see APPENDIX 5 – Criteria for Patient

2) Define expectations and objectives in relation to Patient Engagement in the 7-steps R&I path: Level of engagement, Type of patients, Requirements, Discussion questions.
- *In which of the 7-steps R&I path do we need to engage patients?*
- *What do we expect from patients?*
- *What are the specific Patient Engagement Action plans for each of the step identified as relevant?*
- *What type of patients do we need to engage? Identification of the profile of patients that should be engaged. A patients' recruitment plan will be developed and will be relevant to the target mission.*
- *What discussion questions can be used to capture patients' experiential knowledge?*

3) Define potential risks and mitigation plans.

4) Define measurements to assess the performance and return on engagement.

5) Define clear and effective training of patients and researchers, to prepare patients for their engagement and in particular for taking part in conversations with researchers that support mutual learning (in line with the role of the ECT).

6) Design a system of recognition that duly acknowledges patients' contribution in research, and the value of collaboration (*e.g. expenses reimbursed, results co-authored by patients, patients as peer-reviewers and open access research*).

7) Define budget and timeline for the execution of the Patient Engagement Plan.

8) Define reporting, meetings and communication channels. The reporting should include mechanisms to monitor and evaluate the performance and value of Patient Engagement ex-post and during implementation (e.g. describe the review process in relation to the performance and value of the Patient Engagement, describe how the objectives for Patient Engagement are met, the performance and return on Patient Engagement), define the value for Patient Engagement (Patient Engagement Plan/ Cost to put in place the Plan = Value)[43].

9) Check that the Patient Engagement Plan complies with ethical regulations.

10) Check the coherence of the Patient Engagement Plan with the MULTI-ACT model, criteria and minimum requirements.

11) Define technicalities and operational aspects to enable a supportive research ecosystem.

3.4 Methods to engage patients

The following paragraphs concern the recommendations that seem to be the most appropriate in terms of methods of patient engagement. The evidence to support these recommendations comes from the landscape analysis carried out in D1.4, the preliminary guidelines drawn up by the consortium in D1.5, the public consultation and the literature review (see APPENDIX 2 – Literature Review on empowering experiential knowledge). The assessment of the implementation of the Patient Engagement Plan is aligned to the key phase **Prepare/Implement** of the third Governance criterion: clear, effective and inclusive methodology of stakeholder engagement, Sub-criterion 3.1: Define and approve a methodology to engage stakeholders (D5.4).

General recommendations for establishing the conditions for an effective partnership between the members of the Engagement Coordination Team

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[43] The reporting and monitoring system shall be defined on the basis of a shared vision (see D5.4 - criterion 5).

The selection process of patients and other stakeholders as partners should take into account communication skills, motivation, and constructive assertiveness in a team setting.

Patients and other stakeholders[44] must be present from the beginning of the R&I process and considered on the same level as the other members and professionals of the Engagement Coordination Team, despite the differences in the contributions they can give (Experiential Knowledge versus Scientific and technical Expertise). This means that they want to "learn" but also to "teach" others in a co-learning perspective.

It is important to establish a supportive research ecosystem leveraging Patient Engagement (communication channels, resources, infrastructures, organizational/institutional). It is necessary to assure that patients understand and agree on the research agendas; and assure that they feel comfortable and recognize their unique perspective (motivation).

It is important to empower team attitudes by creating an environment that supports partnership, cultivating supporting attitudes in recognizing the partnership and keeping open dialogue (strong communication actions, shared goals).

In order to allow full participation, the patients should be placed in the best possible conditions with regard to the needs of their condition. Respect and consideration must be guaranteed, so as to manage prejudice and hostile behavior towards the participation of patients in R&I.

Patients should be guaranteed adequate empowerment to play their role in the team, first of all through comprehensible information, in their familiar language. There also should be adequate compensation in terms of return on engagement (Smith et al. 2019).also aligned, as for the other stakeholders, to the expectations for their engagement and what they hope to achieve.

The landscape analysis of existing PE experiences (D1.4) reported that the best way to engage patients is to use mixed methods: *offline* (face-to-face) methods (engagement without using computers, smartphones, tablets, or other internet-connected device/digital systems) and *online* methods (engagement through computers, smart phones, tablets, or other internet-connected device/digital systems)[45]. Online methods allow stakeholders to gather patient's perspective on a global scale while offline methods are useful to facilitate patients in providing their experiential knowledge as they may feel more comfortable to express their feelings face-to-face and they may be supported by a professional skilled managerial team (i.e. the ECT). Moreover, offline methods allow stakeholders to discuss more in-depth and to establish and to maintain a good partnership with patients. In particular, the ECT works mainly *offline* and they may use *online* methods to reach their community and a large consensus.

In the Engagement Coordination Team's work process, it is useful to increase public awareness and provide open access publication and return of results to the patients' community. Prior to release of research outcomes, a final discussion with patients should assure consensual decision.

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[44] See GLOSSARY: Patients are people with and affected by the diseases (i.e. relatives, caregivers). Other stakeholders are Patients organizations, Society, Payers and purchasers, Care providers, Policy makers, Industry companies, Regulators, Research and education organizations Research Organizations

[45] Consolidated mapping of existing patient engagement initiatives and analysis of gaps and barriers to patient engagement in current health R&I processes (MULTI-ACT Deliverable D1.4)

A partnership with culturally specific groups to ensure compliance among different cultures and geographical settings (especially underserved populations) should be sought. Cultural context, belief and tradition impact on patients' lived experience and provide additional insights to inform knowledge.

Multimedia information technologies and tools are useful for monitoring conversations, proactively resolving complaints, and facilitating transparency, contributing to enhanced patient experiences and helping organizations comply with meaningful use criteria, such as engaging patients and families in their care, improving quality and care coordination, and reducing disparities (Thielst Christina 2011). Implementation of social media may affect patient engagement and satisfaction in healthcare and research. The integration of social media into clinical practice and research can empower surgeons to synthesize effectively a patient support community that augments patient engagement and satisfaction. (Dhar VK Kim et. al. 2018). The same may apply as well to the R&I domain and environment.

Social media might have a determinant role in identifying patient insights and engage them in R&I for capturing their experiential knowledge. Evidence related to the efficacy and effectiveness of social media is currently limited. Various challenges have also been identified relating to privacy and security concerns, usability, the manipulation of identity, and misinformation. (Househ M et al. 2014). A great deal of momentum surrounds the application of new technologies, such as mobile devices and other digital platforms, to both deliver care and generate real-world data on patients' experiences The use of social media for patient engagement in research should be scientifically validated. The Science of Social Media[46] as a method to capture patients' voice should be investigated[47,48].

Review methods for the engagement of patients and other stakeholders

Following the results of the landscape analysis (D1.4), the literature review (D1.6 APPENDIX 2 – Literature Review on empowering experiential knowledge) and the Public Consultation (D1.6 APPENDIX 3 – Public Consultation), historically used methods for Patient Engagement are the following: Focus Group, Democs Cards Games, World Café, Consensus Conference, Community Advisory Board, Delphi Method, Citizens Hearing, and Serious Gaming.

MULTI-ACT will exploit dedicated training that will also build on historical methods that have features that might be relevant to capture experiential knowledge and Give Voice to Patients[49], such as Focus Group and Democs card game.

A brief presentation of the other mentioned methods, which is based on the descriptions contained in the Engage2020 – ActionCatalogue[50], is presented below.

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[46] The use of social media and social networks for science and research purposes is subject to a scientific validation.

[47] https://publichealth.jmir.org/2019/3/e14447/pdf

[48] http://sites.les.univr.it/eisic/wp-content/uploads/2018/11/39-Musso-Pinna-Melis-Carrus.pdf

[49] Boenink M, van der Scheer L, Garcia E, van der Burg S. Giving Voice to Patients: Developing a Discussion Method to Involve Patients in Translational Research Nanoethics. 2018;12(3):181-197. doi: 10.1007/s11569-018-0319-8. Epub 2018 Jul 9.

[50] http://actioncatalogue.eu/

The **Focus Group** is a qualitative method which is used to determine the preferences of people or to evaluate strategies and concepts. The method has originally been designed for market research. Participants are selected according to certain characteristics in common that relate to the research topic and are grouped into 8-10 people. It can be conducted face to face or in virtual digital space. The method is often used to generate or evaluate hypotheses and ideas in conjunction with a quantitative method, or as a primary data-collection method. Focus group is undoubtedly the most widespread technique of engagement. It is rooted in qualitative studies, where it is a standard way of gathering patients' input and learning about their views and experiences. Its scope of application has widened in recent years, with the method being used for decision-making and guidelines formulation (Doria et al. 2018), not without some criticism regarding insufficient separation of these two functions. *Example: Selected patients and stakeholders are invited to a meeting to discuss about a topic.*

The **Democs** is both a card game and a policy-exploration tool that enables small groups of people to engage with complex public policy issues. It aims to help people find out about a topic, express their views, seek common ground with the other participants, and state their preferred policy position. There are already a number of Democs kits on different issues which can be bought or downloaded for free from New Economics Foundation (NEF) and Play Decide (https://playdecide.eu/). *Example: Patients are provided with discussion cards that help them to express their views on a topic, to seek common ground with the other participants, and to express their preferences.*

World Café is a method for engaging groups, both within organisations and in the public sphere. World Cafés are based on seven design principles and a simple method. World Cafés should offer an antidote to the fast-paced fragmentation and lack of connection in today's world. It is founded on the assumption that people have the capacity to work together, no matter who they are. Research indicated that World Café was not a popular method of engaging patients in the healthcare context, although some examples emerged. This may be in part due to the open-ended feature of the method. It is suitable for generating and sharing ideas, but does not guarantee a structured result, and does not support structured decision-making. World Cafes can be semi-structured, except for the agenda creation phase that should be an open process. The preparation and facilitation of the World Café is instrumental to its effectiveness. *Example: A selected group of patients and stakeholders are invited to share their vision and position about a topic in a friendly space, and are encouraged to provide contribution to the debate.*

The **Community Advisory Board** (CAB) is a working group where patient advocate leaders from all world regions, work together to improve outcomes of patients covering patient information, research priorities, access to treatment and capacity building in the patients' community. The CAB method is one of the methods used in Leukaemia communities[51] and also by the HIV movement. *Example: Patient advocate leaders are invited as members of the working Group to work on a topic.*

The **Delphi method** is a multiple iteration survey method that enables anonymous, systematic refinement of expert opinion with the aim of arriving at a combined or consensual position. Its purpose is to generate discussion and enable a judgement on a specified topic to be made so that policy decisions can be taken which can claim to represent a given group's wants and views. Along with the modified Delphi Method, it emerged as the second most popular patient engagement technique after Focus Group. Initially designed for panels of experts, it is increasingly used for including patients, either

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[51] https://www.cmladvocates.net/cml-cab

forming their own panel, or together with experts and other stakeholders (e.g. community, healthcare professionals) (Hall et al. 2018). Delphi can be applied online and it often is. Delphi Method appears to be a popular tool for prioritisation of core-outcomes in patient-centred guidelines (Humphrey-Murto and de Wit 2019), often in multi-stakeholder initiatives. *Example: anonymous patients answer multiple surveys to express their opinion about an approach defined by experts.*

Consensus Conference: The purpose of this method is to enrich and expand a debate on a socially controversial topic. A group of citizens gather and set the agenda and the basis for assessment within a problem area. Originally, in the medical field, consensus conferences gathered practitioners and experts to build a consensus on either health knowledge (e.g. diagnostic criteria) or practices (e.g. best practices, treatment protocols). The "Danish model" Consensus Conference engagement method[52], has a "jury" of citizens and a witness panel of experts, stakeholders and civil society representatives, which provides the method a wider application into policy-making. This literature review found papers describing engagement of patients using the consensus conference method in the course of research with the view of formulating guidelines or core outcomes. *Example: A series of public events are organized to gather patients' opinions about a topic and result in a position paper.*

Citizens Hearing: "The purpose of a citizens hearing is to inform and create discussion among citizens. The method uses brainstorming, dialogue, prioritization, reasoning and voting. Through dialogue and without interference of either experts or politicians, the citizens formulate their own suggestions and ideas (as to how a political (technological) problem can be dealt with) and present them to politicians" (Engage2020 - ActionCatalogue). Some examples show how citizens hearing has been used to investigate the preferences of patients with respect to specific issues such as for example the use of health data[53] and the status of health rights[54]. This method showed enhanced understanding and awareness of the barriers to achieving positive solutions to help overcome them; and seek commitment on a joint plan for monitoring and acting on the topics. *Example: Patients brainstorming, dialogue, reason and voting about a topic, without interference from any experts.*

Serious Gaming: The primary objective of 'serious games' or 'applied games' is to train and/or educate the user. These games serve as tools for acquiring complex knowledge in fields such as health care, education, engineering, city planning, emergency management, etc. Some serious games simulate real-life events and/or processes, thus providing the user with a problem-solving training environment. Furthermore, 'serious games' can be used in order to develop innovative products and services. *Example: Patients are trained with an ICT game that presents the problem in a simple and fashionable way. The game is structured to provide patients with a training environment for problem-solving.*

Following the Public Consultation and the review of the members of the MULTI-ACT Patient Engagement Group and Patient Focus, other methods and tools used for patient engagement are

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[52] Simon Joss, Danish consensus conferences as a model of participatory technology assessment: An impact study of consensus conferences on Danish Parliament and Danish public debate, Science and Public Policy, Volume 25, Issue 1, February 1998, Pages 2–22, https://doi.org/10.1093/spp/25.1.2
[53] https://understandingpatientdata.org.uk/sites/default/files/2019-03/Public%20attitudes%20study%20summary.pd;
https://www.connectedhealthcities.org/chc-hub/public-engagement/citizens-juries-chc/citizens-juries/
[54] https://www.alliance-scotland.org.uk/blog/events/citizens-hearing-on-the-right-to-health/

Research Studios methods; Scenario Workshops; World Wide Views; Voting Conference; Informed and deliberative surveys.

Research Studios Method: methods which enables researchers to work closely with community members in focused sessions as they design studies. In 2009, the Meharry-Vanderbilt Community-Engaged Research Core began testing new approaches for community engagement[55], which led to the development of the Community Engagement Studio (CE Studio). This structured program facilitates project-specific input from community and patient stakeholders to enhance research design, implementation, and dissemination. Developers used a team approach to recruit and train stakeholders, prepare researchers to engage with stakeholders, and facilitate an in-person meeting with both. Literature reported that input from stakeholders was valuable and that the CE Studio helped determine project feasibility and enhanced research design and implementation[56].

Scenario Workshops: "The scenario workshop is an instrument for participatory planning, based on dialogue and collaboration between a group of local citizens, stakeholders, experts and policy makers. The method aims to stir dialogue, provide the opportunity for exchanging experience and knowledge about existing barriers and possible solutions, enhance the understanding on the central topic/problem of discussion, and facilitate consensus on proposed solutions among the involved groups. The scenario workshop is a two-days meeting involving 25-30 local multi-stakeholder representatives to assess different solutions to a specific problem. Before the workshop, a set of scenarios is developed and used as visions and inspiration at the scenario workshop. The participants comment on the scenarios based on their views, knowledge and experiences, providing both positive and negative feedback and highlighting barriers. From these the participants develop visions in groups through discussion such as local plans of action to solve the problem." *Example: A Scenario Workshop is organized to discuss in a multi-stakeholder group on a specific R&I problem. The assessment of the different solutions proposed by patients and stakeholders results in defined and agreed actions to solve the problem. Patients comments on the scenario based on their experiential knowledge.*

World Wide Views: "The purpose of this method is to engage citizens in debates about important, but often complex, issues with the aim of giving advice to politicians. The method is designed to minimize the democratic gap between citizens and policy makers as more and more policy making becomes global in scale. Citizens at multiple sites debate the same policy related questions on a given issue on the same day. The citizens are given information material before and during the day and vote on a set of predefined questions. The votes are collected and reported online for comparison. It is possible to compare the votes across countries, continents, gender, age and other criteria. The results are analysed and presented to policy-makers." *Example: A World Wide Views is organized to gather patients' votes on a set of predefined research questions and results are used by policy-makers to design R&I and healthcare policies.*

The same approach used by the World Wide Views can be used in small setting and diverse target group by organizing virtual or face-to-face **Voting Conference**. The E-conference (temporary online

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[55] https://www.pubfacts.com/author/Yvonne+Joosten
[56] Joosten YA, Israel TL, Williams NA, Boone LR, Schlundt DG, Mouton CP, Dittus RS, Bernard GR, Wilkins CH. Community Engagement Studios: A Structured Approach to Obtaining Meaningful Input From Stakeholders to Inform Research. Acad Med. 2015 Dec;90(12):1646-50. doi: 10.1097/ACM.0000000000000794.

forum on a specific topic) can be used as tool. *Example: A Voting Conference is organized to collect patients' votes on a set of predefined research questions and results are integrated in R&I activities.*

Informed and deliberative surveys and methods can also be used to gather patients' opinions. Deliberative surveys and methods have the function of deliberating and usually have to do with policies. Some example of deliberative methods from Engage2020 – ActionCatalogue are:
"Deliberative Polling®, developed by James Fishkin, is a method which combines deliberation in small group discussions with scientific random sampling to provide public consultation for public policy and for electoral issues. **Deliberative online forum** is a Web-based (in online forums) discussions between informed individuals about issues which concern them, leading to some form of consensus and collective decision. **Deliberative Mapping**, involving both specialists and members of the public, it combines varied approaches to assess how participants rate different policy options against a set of defined criteria. The method allows substantial involvement of public participants in shaping the scope of the questions discussed. **Deliberative Workshops** are dialogue events where the focus is on having in-depth informed discussions on a complex or controversial issues to gather social intelligence to inform policy, anticipate regulation, exchange opinion or raise awareness. Deliberative workshops have also been used to develop research agendas and objectives that more closely reflect public views."

Example: Patients are engaged in deliberative surveys, small group discussions, online forums, dialogue events, etc. to express their opinions on specific R&I's questions and issues and the results are used for deliberating on specific R&I policies. Patients can also rate different policy options against a set of defined criteria.

3.5 Measure the performance and effectiveness of patient engagement

In order to maximize the impact of Patient Engagement, the multi-stakeholder initiative/ECT has to identify indicators able to measure the performance and the effectiveness of patient engagement in R&I processes. The assessment of the implementation of the Patient Engagement Plan is aligned to the key phase **Review and improve** of the third Governance criterion: clear, effective and inclusive methodology of stakeholder engagement, Sub-criterion 3.1: Define and approve a methodology to engage stakeholders (D5.4).

Merging the results from the landscape analysis (D1.4) and the public consultation, we identified some metrics that can be used for this purpose. The assessment should mix quantitative and qualitative evaluation.

The most important benefit of engagement in scientific research and innovation for patients is impact on outcomes that matter to patients (i.e. Patient Reported Outcomes: measures reported by patients through questionnaire) on how they feel regarding symptoms and/or functions.

In this section we provide a menu of metrics to evaluate:

- the **performance** of patient engagement (i.e. the success of the initiative in terms of participation).
- the **effectiveness** of patient engagement (i.e. the success of the initiative in term of real impact of the participation on the research process, if the actions performed have effectively produced impact and change in the R&I process).

The metrics related to **performance** of patient engagement should be selected ex-ante, included in the Patient Engagement Plan and verified ex-post the development of the plan.

The metrics related to the **effectiveness** will be further developed under the activities of T1.5 "Integration of Patient Reported Outcomes and perspective into the CRIF" and results will be included in D1.8 "Report on the integration of Patient Reported Outcomes and perspective into the CRIF". The metrics to evaluate the **effectiveness** of patient engagement will be included in the MULTI-ACT Digital Toolbox as a sub-set of the Patient Reported Dimension.

Performance Assessment

To measure the performance (success) of the engagement process, the core metrics that emerged from our research are as follows (classified according to the preference given by the participants in the public consultation):

- The number of different phases of the research process patients have been engaged in.
- The number of patients engaged across different socio-economic statuses, education backgrounds, genders, etc., to assess the capacity to engage diverse groups, including the most vulnerable ones.
- The number of engagement actions (online and offline) that have taken places in which patients have had the possibility to express their views.

Additional metrics are presented below:

Quantitative:

- The number of KPIs selected to assess the impact of patient engagement.
- The number of training conducted.
- The extent into which the patient engagement at the end is implemented in the research path.
- The number of interviews about patients' experience in the engagement process.
- The numbers of co-created tools.
- The number of reality tests made by the patients.
- The number of patient 'intervention's directly, or indirectly.

Qualitative:

- The analysis of whether the patients' and stakeholders' expectation with respect to the patient engagement were met.
- The analysis of whether the patients have felt engaged, listened and valued.
- The analysis of how meaningful the engagement was to the patients as well as to the other stakeholders.
- The analysis of how patients have been engaged (e.g. collecting comments, surveys, feedback, etc.).

Methodological consideration:

Integrated top down approach from sources like technology wearable data create a quicker way to measure engagement.

Effectiveness and value assessment

To measure the value and effectiveness of the engagement process (in terms of the impact of engagement on research), the metrics that emerged from our research are as follows (ranked according to the preference given by participants in the public consultation):

- The number of changes in the research process (e.g. policies, composition of boards, objectives and priorities, strategic plan, evaluation of results, dissemination actions, etc.) according to the review made by patients.
- The number of research initiatives, programs and projects that include and show an effect on Patient Reported Outcomes (i.e. questionnaire reporting how they feel about symptoms and functions).
- The number of research initiatives, programs and projects involving patients in research activities, according to the needs of the mission.

Additional metrics are are presented below:

Quantitative:

- The number of patients engaged in research activities, according to mission's requirements.
- The degree of representativeness: the number of the underrepresented population and of disadvantaged patients involved in the research.
- The number of dissemination actions carried out by patients (e.g. events where patients presented and endorsed research results).
- The number of scientific articles in which patients are co-authors and/or reviewers.
- The number of endorsements given by patients to research activities and results.
- The number of endorsements given by patient organisations.

Qualitative:

- The analysis of whether patients' expectation with respect to the research and mission of the initiative are met.
- The analysis of the achievement in terms of new knowledge produced, from the perspective of all the stakeholders.
- The analysis of how patients' lives may be or have been improved by the research.
- The analysis of the long-term improvement in health indicators
- The analysis of whether the value of patient contribution is the same as others stakeholders
- The evaluation of the project plan, of all single research phases and of the final results by patient and if and how their suggestions have been integrated into the research activities.

It is important to assess the impact of Patient Engagement on "outcomes that matter to patients", this aspect will be analysed and detailed in D1.8 "Report on the integration of Patient reported outcomes and perspective into the CRIF".

CONCLUSION

The guidelines included in this deliverable represent a component of the MULTI-ACT framework and are the result of a set of WP1 activities, presented in the previous deliverables (i.e. D1.4, D1.5) and the Appendixes included in this document.

The comprehensive instructions on how to apply and use the MULTI-ACT framework in all its parts (Governance Model, the Patient Engagement Strategy, and the impact assessment) will be released in the MULTI-ACT manual[57] and in the Digital Toolbox[58].

Next phases of the project will be the adoption of the guidelines in the MS Care Unit as a case study within the activities of WP4 "Implementation of the MULTI-ACT framework" (M12-M24) and integration of the guidelines in the final MULTI-ACT model within the activities of WP6 "Collective Research Politics: governance and guidelines" (M21-M36).

Additional activities will be directed to the exploitation of the guidelines. It emerged that a particular attention should be directed to patients and stakeholders' training on how to capture patient experiential knowledge, providing also ideas and commercial opportunities for the exploitation phase of MULTI-ACT. Relevant future activities will be directed to the exploitation of these guidelines. In particular a training module to support the use of MULTI-ACT model in the management Multi-Stakeholder Research Initiatives and Patient Engagement will be developed [59]After the assessment of the guidelines we will move forward to scientifically validate the guidelines by submitting a scientific paper to relevant journals.

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[57] MULTI-ACT Deliverables of Work Package n.6 "Collective Research Politics: governance and guidelines".
[58] MULTI-ACT Deliverables of Work Package n.2 "Development of the information sharing application (MULTI-ACT Toolbox 2.0)".
[59] MULTI-ACT Academy on Multi-Stakeholder Research Initiatives and Patient Engagement management.

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APPENDIX 1 – Methodology

The guidelines are a 'How to' document, or operational manual (i.e. how to apply the MULTI-ACT Patient Engagement strategy within the activities of a multi-stakeholder initiative) connected to the MULTI-ACT framework. The MULTI-ACT framework aims to allow for effective cooperation of all relevant stakeholders in multi-stakeholder health research initiatives. The framework includes tools and guidelines for the governance, the stakeholder engagement and the impact assessment of such initiatives. Every time that a multi-stakeholder research initiative, including Health RFPOs that may already have been grouped in a multi-stakeholder initiative (e.g. Alliance) or that are willing to start conducting their R&I with a multi-stakeholder and co-accountable approach[60], wants to reach a transformational mission they can apply the MULTI-ACT framework in all its components: the governance model, the patient engagement strategy, and the impact assessment Master Scorecard.

The landscape analysis of WP1 reported a lack of evidence and clarity in relation to best practices and benefit of patient engagement in R&I.

Figure 9 The consolidated MULTI-ACT Patient Engagement Guidelines
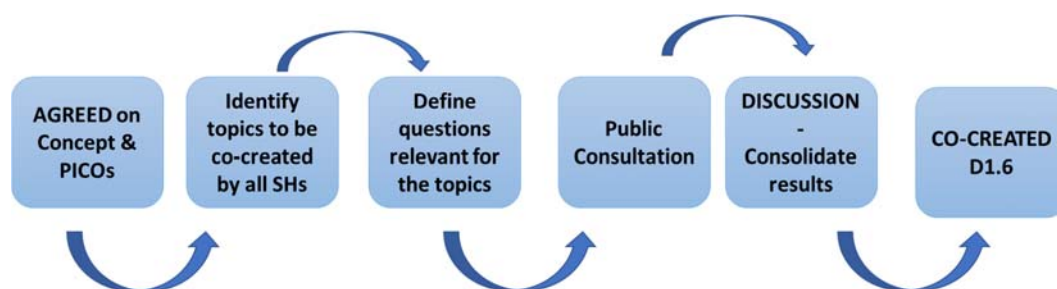
Moving from the preliminary Patient Engagement guidelines (D1.5) toward the consolidated version of guidelines (D1.6), and based on a comparison of MULTI-ACT approach to good standards[61] for guidelines development, a series of validation actions have been performed by stakeholders as part of the activities of WP1, Task T1.3 "Empirical assessment and validation of criteria and rules" (see Figure 9 The consolidated MULTI-ACT Patient Engagement Guidelines):

1. Development of PICO questions ("PICO" format: Population, Intervention, Comparator, Outcomes)
2. Literature review focused on answering the questions and on empowering patients' experiential knowledge in R&I
3. Public consultation
4. Review of relevant multi-stakeholder groups (e.g. Patient Forum, Patient Engagement Group, etc.)

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[60] Categories of users of MULTI-ACT model are indicated in the DoA (KPI n.1): "Innovative framework used by various R&I stakeholders for their strategic planning; Beneficiaries: RFPO, Academia, Industries (Pharma, Biotech, ICT, consultancy), Policy makers (EC, Ministries, Regions, Local Agencies, Insurers), Regulatory agencies (EMA, Medicine National Agencies), Patients organizations, Foundations".
In H2020 strategic orientation, RFPOs should be understood broadly as organisations developing or funding activities in the field of R&I as one of their objectives.
[61] World Health Organization (WHO) Handbook for guidelines production; US National Health Council (NHC) National Health Council Rubric to Capture the Patient Voice

5. Elaboration of recommendations

Next steps will be the adoption of the guidelines in the MS Care Unit as case study within the activities of Work Package n.4 "Implementation of the MULTI-ACT framework" (M12-M24) (see Figure 10 Work Package n.1 timeline and outputs).

Figure 10 Work Package n.1 timeline and outputs
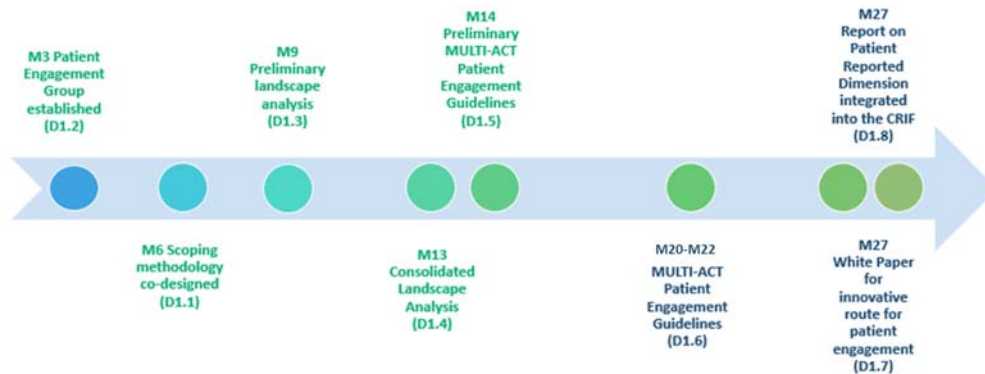
Comparison of good standards for guidelines development

The MULTI-ACT approach was compared with good practices and standard in guidelines development and patient engagement:

- World Health Organization (WHO) Handbook for guidelines production
- US National Health Council (NHC) National Health Council Rubric to Capture the Patient Voice[62]
- ISEAL Code of Good Practice which helps organization to define sustainability standards
- AA1000 ACCOUNTABILITY PRINCIPLES STANDARD 2008

We decided to rely on the "World Health Organization (WHO) Handbook for guidelines production" and we analyzed the steps in relation to our actions. The actions performed for D1.5 were in line with the good practices identified, and additional actions to implement in the WP1 plan have been identified:

- Develop questions that the guidelines want to address and related outcomes (*GRADE principles* – "PICO" format: Population, Intervention, Comparator, Outcomes)

- Conduct literature review on specific topic the guidelines wants to address: empowering patient's experiential knowledge.

- Study to validate the new "intervention" (i.e. test in the MS Care Unit)

- Design, launch and disseminate a Public Consultation

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[62] The National Health Council Rubric to Capture the Patient Voice: A Guide to Incorporating the Patient Voice into the Health Ecosystem. June 2019. Washington, DC. Available from: https://www.nationalhealthcouncil.org/Patient-Engagement-Rubric

The analysis of actions that have been implemented in the development of the MULTI-ACT Patient Engagement Guidelines to fulfil the recommendations included in the "WHO Handbook for guidelines production" are presented in Table 3 Steps for guidelines production

Table 3 Steps for guidelines production

Steps of WHO handbook	Actions implemented in D1.6 guidelines
Planning guidelines	• Literature review focused on the specificity of the guidelines (i.e. how to empower patients' experiential knowledge). – See Section 2 • Define structure and content of tools, in particular use of the guidelines in the Digital Toolkit (WP2) – See Section 4.5 • Include the translations of guidelines in the Exploitation plan (D8.5 Exploitation and capitalization strategy, M24)
Setting up guideline groups	• Finalize the guidelines with a methodologist • Define missing representatives and related integration in the setting-up activities (e.g. caregivers/male with MS balanced in working groups)
Declaration and management of interests	• MULTI-ACT provides guidelines and tools to allow effective multi-stakeholder collaboration. The Governance proposed by MULTI-ACT aims indeed to address the conflict of interests' mitigation by having the mission as explicit driver and by promoting shared measurements of impact and a co-accountability approach where each stakeholder may see his own return on investment. In fact, MULTI-ACT provides a framework to enable true alignment of efforts and accountability of results for an effective engagement of different and sometime competing stakeholders.
Formulating questions and choosing outcomes	• Develop the questions that the guidelines aim to address (in PICO format) and test related outcomes in the WP4 case study (positive and negative) (see APPENDIX 1 Development of PICO questions) • Get approval on outcomes: Public Consultation (See APPENDIX 3 – Public Consultation), review of relevant multi-stakeholder groups: Consortium, Patient Engagement Group, Patient Forum
Evidence retrieval and synthesis	• Assessment of multiple systematic reviews (Suggested portal: AMSTAR)
Evidence assessment	• Design and perform a study to validate the "intervention" suggested by the guidelines. The study has to report how the PICO outcomes were reached and measures of effectiveness. The evidence assessment will be done in the MS Care Unit as case study in WP4. • Additional actions toward the publication of the guidelines on relevant scientific journals may be for example the assessment on the Appraisal of Guidelines for Research and valuation (AGREE) tool available (http://www.agreetrust.org/).

	Note: the MULTI-ACT guidelines are a 'How to' document/operational manual on how to apply the MULTI-ACT Patient Engagement strategy within the activities of a multi-stakeholder R&I initiative, connected to the MULTI-ACT framework.
Developing recommendations	• Define values and preferences of all stakeholders (i.e. Public Consultation, discussion).
Producing and publishing your guideline	• D1.6 are the final guidelines, a short version is prepared to be included in the MULTI-ACT Digital Toolbox. Submission to relevant scientific journals is planned. In WP6 "Collective Research Politics: governance and guidelines" the guidelines will be integrated into the MULTI-ACT framework Manual (D6.1). The Adoption Brief (D6.3) will mention the guidelines.
Implementation and evaluation	• The D8.6 Dissemination Plan includes all dissemination activities for the MULTI-ACT framework. • Include in the Exploitation Plan the implementation strategy (i.e. consider how to encourage the adoption of the recommendations and how to make the overall context favorable to the proposed changes). • Include baseline measures against which to assess performance in relation to the change induced by the guideline. Impact assessment of guidelines will need to be done in the places that they are implemented. In the exploitation phase, preliminary actions identified are: ➢ Analyses of local needs and priorities with respect to the recommendations (look for additional data on actual practice) ➢ Identification of all potential barriers and facilitating factors ➢ Determination of available resources for implementation *Note: PICO for D1.6 aims to include all the mentioned changes: practice performance, health outcomes, end-users' knowledge and understanding, economic consequences, while the Patient Reported Dimension aim to assess impact of the implementation of guidelines on outcomes that matter to patients.*

Development of PICO questions

Based on good practices in guidelines development, even if the MULTI-ACT Patient Engagement Guidelines are not clinical guidelines and they may be considered as a 'How to' document or operational manual (i.e. how to apply the MULTI-ACT Patient Engagement strategy within the activities of a multi-stakeholder initiative) connected to the MULTI-ACT framework, we used the GRADE approach and developed questions that the guidelines want to answers in the "PICO" format: Population, Intervention, Comparator, Outcomes. Figure 11 PICO questions for the guidelines presents the analysis of Population, Intervention, Comparator, Outcomes of the present guidelines.

Figure 11 PICO questions for the guidelines

PICO	D1.6
Population (Who is targeted by the action being recommended?)	Multistakeholder Health R&I initiative or RFPOs willing to start conduct their R&I in a multi-stakeholder approach.
Intervention (What action is being considered?)	Make patients as key stakeholder and co-researchers in Health R&I to integrate their experiential knowledge in all R&I phases (e.g. 7 R&I steps) of a multi-stakeholders initiative
Comparator (What are the alternative choices of action?)	Do not engage patient in R&I or engage patients as expert.
Outcome (What is the purpose of the recommendation? What will it achieve? What harms could it lead to?)	**Positive:** Maximize the impact of R&I on the outcomes that matter most to patients. More responsible R&I, more patient-reported information (PRIn) in R&I, see also KPIs in DoA; **Negative:** conflict of interest, delay in the process, initial increased budget compensated with return on engagement in the long period

At first, we defined topics we want to recommend in order to apply the MULTI-ACT framework, focusing on engaging patients as key stakeholders providing experiential knowledge.

The three main aspects the guidelines focus on are the following:

1. Skills/abilities of ECT in empowering experiential knowledge
2. Training features to empowering patients and stakeholders in capturing experiential knowledge
3. Indicators of return on engagement (to be further develop in D1.8)

In addition, another relevant topic has been identified:

4. Structured methods to enable patients and stakeholders in capturing experiential knowledge

Based on the topics mentioned above, a set of questions that the guidelines want to answer has been identified:

1) What **skills/abilities** are able to empower patients and stakeholders to provide their PPIn and translate them into experiential knowledge helpful for R&I (utility in the context) (O1)?

2a) What **training features** are able to empower patients to provide their PPIn and translate them into experiential knowledge helpful for R&I (utility in the context) (O2)?

2b) What **training features** are able to empower ECT to help patients to translate or to co-translate with patients PPIn into experiential knowledge helpful for R&I (utility in the context) (O3)?

3) What **indicators** are able to assess the performance and the cost-effectiveness of patient engagement on the outcomes that matter most to patients (O4)?

4) What **structured methods** are able to increase the participation of patients in R&I and the effective collection of PPIn (O5)?

5) What **discussion questions** are able to facilitate collection and translation of PPIn into experiential knowledge helpful for R&I (utility in the context) (O3)?

After having identified the questions, we searched for answers in the literature review and in previous activities of WP1 (i.e. D1.4 Landscape analysis and D1.5 preliminary guidelines).

Then we further developed them in the PICO format in order to use the PICO format questions to test the adoption of the guidelines in the Agenda of the MS Care Unit in WP4.

The core PICO question for the MULTI-ACT guideline is:

- "In Multistakeholder Health R&I initiative **(P)**, does the MULTI-ACT Patient Engagement "Make patients co-researchers with decision making power in Health R&I to integrate scientific knowledge with their experiential knowledge in R&I activities of a multi-stakeholders initiative" **(I)**, compared to no structured patient engagement/other strategies **(C)**, maximize the impact of their research activities on outcomes that matter to patients **(O)**?

The core question is then declined to the three main interventions proposed by the MULTI-ACT guidelines and on the connected other interventions:

1) In Multistakeholder Health R&I initiative (P), is the establishment of an ECT with the identified skills (see Section Composition and skills of Engagement Coordination Teamwith the identified skills) (I1), compared to no team for the engagement or team composed of only patients or only expert patients (C), able to empower patients to provide their PPIn and translate them into experiential knowledge helpful for R&I (utility in the context) (O1)?

2) In Multistakeholder Health R&I initiative (P), is the design of training programs with the identified features (see Section Training of Engagement Coordination Team members with training features identified as relevant) (I2), compared to no training or training patients with scientific knowledge (C), able to empower patients to provide their PPIn and translate them into experiential knowledge helpful for R&I (utility in the context) (O1) and to empower ECT to help patients to translate or to co-translate with patients PPIn into experiential knowledge helpful for R&I (utility in the context) (O2)?

3) In Multistakeholder Health R&I initiative (P), is the use of specific indicators to measure the return on engagement (RoE) (see Section 3.5 Measure the performance and effectiveness of patient engagement with the identified indicators) (I4), compared to no use of indicators or use of other indicators (C), able to assess the cost-effectiveness of patient engagement on the outcomes that matter most to patients (O4)?

4) Multistakeholder Health R&I initiative (P), is the use of specific engagement methods to collect PPIn along the 7-R&I-steps) (see Section 3.4 Methods to engage patients with the identified methods - e.g. D1.4 + preference from Public Consultation) (I5), compared to no structured methods (C), able to increase the participation of patients in R&I and the effective collection of PPIn (O5)?

APPENDIX 2 – Literature Review on empowering experiential knowledge

In Task 1.1 "Evaluation of patient engagement procedures across R&I", the Consortium performed a literature review as step of a broad landscape analysis of patient engagement experiences, resulting in an analysis of gaps and need for prioritization. The analysis led us to focus the MULTI-ACT patient engagement strategy on complementary actions such as "empowering patient in bringing their experiential knowledge to R&I". The MULTI-ACT Patient Engagement guidelines aim is to "Make patients co-researchers with decision making power in Health R&I to integrate scientific knowledge with their experiential knowledge in R&I activities of a multi-stakeholders' initiative". Considering the scope of the guidelines, we performed an additional literature review on this specific domain and in particular for the core PICO question: *"In Multi-stakeholder Health R&I initiative (P), does the MULTI-ACT Patient Engagement "Make patients co-researchers with decision making power in Health R&I to integrate scientific knowledge with their experiential knowledge in R&I activities of a multi-stakeholders initiative" (I), compared to no structured patient engagement/other strategies (C), maximize the impact of their research activities on outcomes that matter to patients (O)?"*, with the aim to identify any action, method, feature, recommendation that would help for the scope.

As for the literature review in D1.4 "Consolidated mapping of existing patient engagement initiatives and analysis of gaps and barriers to patient engagement in current health R&I processes", we followed 7 stages (see Figure 12 Stages of the literature review).

Literature review methodology

The process to perform the literature review entails seven steps summarized in the Figure 12 Stages of the literature review.

In **stage 1**, the research questions and the purpose of the literature review were defined: *What are methods to empower patients and stakeholders to integrate patients' experiential knowledge in R&I? Are there any guidelines, good practices, or documents focusing on how to empower experiential knowledge? Is there any evidence on the benefit of integrating patients' experiential knowledge in R&I?*

In **stage 2**, sources to be searched were identified and a combination of academic and grey literature was considered. A series of search terms were developed, along with a set of inclusion criteria. The search terms included key words and phrases that were used in databases to identify relevant sources and documents and defined to capture possible variation in terminology in the research area in question.

In **stage 3**, we performed the actual search. For the current systematic review, the following bibliographic databases were searched: Pubmed, Google Scholar, open access libraries suggested by the EC, Google search. The search strategy that was used was conducted with three different levels.

The following search words were used:

- Level 1: "*patient engagement, patient participation, patient involvement, patient support, patient co-creation, patient empowerment, patient consultation, patient decision making, user involvement, Patient centered approach, shared-decision making, co-production*"

- *Level 2: "research, research and development, research and innovation, healthcare[63]"*
- Level 3: "*experiential knowledge, experience, needs, feelings, uncertainties, stories, reflections, insights, capabilities and responsibilities, coping, information, self-presentation and relevant synonyms*"
- *Level 4: "guideline, protocol, practice guideline, recommendations, practices, conceptual models, frameworks, training and tools*"

The bibliographic search was conducted in August 2019 and was open to review, original articles, letters, comments, congress abstracts, peer-reviewed papers or dissertations written in English between 2016 and 2019.

Figure 12 Stages of the literature review

Stage in literature review process	Steps to be taken by the research team
STAGE 1 Set review's objectives and research questions	Confirm the objectives for the literature review and formulate the research questions guiding the review.
STAGE 2 Identify sources to be searched Identify and pilot search terms	Identify electronic databases with facilities to search academic and/or grey literature. Identify specialist websites to hand-search. Define combinations of search terms. Pilot and refine search terms.
STAGE 3 Conduct initial search and create initial database of references	Enter search terms systematically into the databases. Create Endnote database of all 'hits'.
STAGE 4 Remove duplicates, apply inclusion/exclusion criteria by reading title and abstract	Remove duplicated hits. Apply the inclusion/exclusion criteria by reading title and abstract.
STAGE 5 Read full text of included sources, complete data extraction template	Extract information relevant to research questions from each source using a data extraction template. Exclude sources that upon reading do not meet inclusion criteria.
STAGE 6 Hand-search and follow-up references and citations	Supplement the systematic search by hand-search of bibliographies of key sources.
STAGE 7 Quality assessment and synthesis	A narrative review approach: develop a summary of the available evidence pertinent to the review's research questions while taking into consideration the quality of included studies, as appropriate

In **stage 4** results were screened by title and by abstract against the inclusion and exclusion criteria. Items which did not meet the inclusion criteria were discarded. Two reviewers independently identified potentially eligible records through title and abstract screening and for selecting studies for final inclusion through full text screening in accordance with the steps outlined above. The **inclusion criteria** were studies that reported on patient engagement in research and innovation or responsible research focused on capturing experiential knowledge or connected reflections. **Exclusion criteria** included papers not handling patient engagement and R&I and experiential knowledge or similar, and non- English papers.

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[63] We decided to include also the key word healthcare as we can find suitable examples from the healthcare domain to be applied to R&I.

In **stage 5** full texts of the included sources were retrieved and reviewed.

In **stage 6** additional papers were identified by manually searching the reference lists of the retrieved articles and previous systematic reviews.

In the **stage 7**, a quality assessment, selection and analysis was conducted. In total, 17 articles met the inclusion criteria and were included in the narrative synthesis (see Table 4 Final list of literature reviewed).

Literature review results

Table 4 Final list of literature reviewed

#	Author	Year	Title	Abstract / Summary
1	Eva Marie Castro	2018	*Patient participation and empowerment. The involvement of experts by experience in hospitals.*	Several social trends promote the importance of participation, a trend which is also growing in the healthcare sector, partly because the number of people with chronic conditions is rising and the emancipation of patients is increasing. Supranational organisations such as the World Health Organisation have been promoting patient participation and empowerment since the late 1980s. More than thirty years later, however, there is still a gap between policy recommendations and hospital practices. One of the reasons is the lack of effective participation methods and impact studies. This research has therefore developed and tested a specific and innovative form of patient participation: the involvement of experts by experience in hospital services. A participatory action research was set up, in which the principles of empowerment research and responsive evaluation were used as a guideline, and qualitative (individual and group interviews) as well as quantitative research techniques (pre- and post-measurement) were combined. The results of this study led to six conclusions. A first conclusion is that implementing patient participation is a complex matter. There are various factors, at different levels, which can influence the intervention and its outcomes. Secondly, a well-considered selection, training and extensive support of the experts by experience is crucial. After all, not everyone is suitable to at some point be involved as an expert by experience. A positive attitude, social skills, an open mind and the ability to put things into perspective are important characteristics. The training and general support offered can further develop the competencies needed to expertly bring their knowledge into practice. For the selection, training and support, cooperation with intermediary organisations that promote participation is recommended. Thirdly, a preparatory co-design process is indispensable. It allows all stakeholders (including management) to have an equal say in the development and implementation of the plans. A fourth conclusion is that experts by experience have a specific role towards patients (a more supporting role) as well as professionals (a more advisory role). Although experts by

				experience seem to feel more comfortable in the first role, their collective experiential knowledge can provide valuable insights to improve the quality of care. The fifth conclusion concerns the follow-up research. In order to assess the external validity, this research needs to be extended to a multi-centric setting. Finally, it can be concluded that experiential knowledge and expertise are complementary to professional knowledge and expertise. To provide patients with chronic conditions with sufficient quality of life, hospitals therefore need to give them access to both forms of knowledge. In order to improve the quality of care, the insights of professionals as well as experts by experience must be brought together at departmental and organisational level. Healthcare policies should promote the cultural shift that is necessary for this purpose, and the structural involvement of experts by experience can facilitate this change. Moreover, the involvement of experts by experience contributes to an inclusive society with equal opportunities for all to participate.
2	Eva Marie Castro, Tine Van Regenmortel, Walter Sermeus, Kris Van haecht	2018	*Patients' experiential knowledge and expertise in health care: A hybrid concept analysis*	Although the concept of experiential expertise is relatively new in modern health care services, policy, and research, it has profound implications for improving participation in healthcare. The absence of theoretical and conceptual clarity has led to poor understanding and miscommunication among researchers, health practitioners, and policy makers. The aim of this article is to present a concept analysis of experiential expertise and to explain its defining characteristics, applicability, and significance. A comprehensive definition is provided, and the interrelatedness between experiential expertise and related concepts was mapped. Using experiential expertise in health care can facilitate patient empowerment leading to improved quality of life and health care. The present study offers clarity by proposing a conceptual model that can assist researchers, policy makers, and health care professionals in facilitating implementations in practice.
3	Eva Marie Castro, Tine Van Regenmortel, Walter Sermeus, Kris Van haecht	2016	*Patient empowerment, patient participation and patient-centeredness in hospital care: A concept analysis based on a literature review*	The concepts of patient empowerment, patient participation and patient-centeredness have been introduced as part of the trend towards a more participatory health care and have largely been used interchangeably. Although these concepts have been discussed for a number of years, their exact meaning in hospital care remains somewhat unclear. This absence of theoretical and conceptual clarity has led to (1) poor understanding and communication among researchers, health practitioners and policy makers and (2) problems in measurement and comparison between studies across different hospitals. Results Through these methods, the antecedents, attributes, consequences and empirical referents of each concept are determined. In addition, similarities and differences between

				the three concepts are identified and a definition offered for each concept. Furthermore, the interrelatedness between the key concepts is mapped, and definitions are proposed.
				Conclusions
				It can be concluded that patient empowerment is a much broader concept than just patient participation and patient-centeredness.
4	Stuart Blume	2017	*In search of experiential knowledge*	In recent years, the concept of "experiential knowledge" has increasingly been used to characterize the distinctive contribution patients make to decision-making in the health field. Even though it seems well-nigh impossible to characterize it precisely, there is no doubting its significance for decision-making contexts ranging from the individual to the political. Since individual experiences of any condition or treatment differ widely, whose experiences come to constitute "knowledge"? In this paper, I argue that, rhetoric notwithstanding, numerous constraints "filter" the experiences which come to function as "experiential knowledge". Looking to the future of health care, likely to be marked by growing inequalities, I suggest that a reflection on the notion of experiential knowledge leads to two challenges for social scientists.
5	European Patient Forum	2017	*Toolkit for Patient Organisations on Patient Empowerment*	EPF conducted a one-year dramatic campaign on patient empowerment in 2015-2016, in order to promote understanding of what patient empowerment means from the patient perspective among political decision-makers and health stakeholders. As part of the campaign deliverables, EPF developed a Patient's Charter on Patient Empowerment and a Roadmap for Action.
6	Giuseppe Russo, Andrea Moretta Tartaglione and Ylenia Cavacece	2019	*Empowering Patients to Co-Create a Sustainable Healthcare Value*	Extensive literature suggests that a solution to the current problems of healthcare sustainability is the active involvement of patients in health management through the empowerment of their abilities. Latest marketing frameworks suggest that patients are important resources for co-creating health value together with operators. This research aims to analyze the effects of patient empowerment on patients' value co-creation behaviors. An empirical survey was conducted on 250 patients with chronic diseases in Italy. The results, analyzed using the structural equation modeling, showed that their empowerment enhanced value co-creation behaviors. Patients apply their health competencies and resources in their co-creation of health service with operators. It is, therefore, important to empower patients in their transformation from passive to active stakeholders, working with providers for the most optimal health outcomes. This research provides practitioners with suggestions for patient involvement which

				utilizes their knowledge, capabilities and responsibility to improving healthcare services.
7	Mirela Slomic , Bjørg Christiansen, Helene L. Soberg, and Unni Sveen	2016	*User involvement and experiential knowledge in interprofessional rehabilitation: a grounded theory study*	User involvement is increasingly important in developing relevant health care services. The aim of this study was to contribute to a deeper understanding of user involvement and patients' experiential knowledge as recognized and incorporated into clinical practice by rehabilitation professionals. A qualitative design using a grounded theory approach was applied. Data were collected by observations of the interprofessional meetings at two rehabilitation units treating patients with traumatic brain injury and multiple trauma and by individual semi-structured interviews with rehabilitation professionals. Patients' experiential knowledge was recognized as an essential component of the professionals' knowledge base. The professionals considered user involvement and patients' experiential knowledge as part of their clinical practice. Implementation of user involvement and contribution of patients' experiential knowledge could be improved by understanding the issues raised in practice, such as possible negative consequences of user involvement in form of burdening or disempowering the patients. A better understanding of the characteristics and measures of user involvement is necessary in order to be able to offer its full benefits for both the patients and the professionals.
8	Wytske Versteeg and Hedwigte Molder	2019	*Making expertise fit: On the use of certified versus experiential knowledge in becoming an informed patient*	This article reports a discursive psychological study of online conversations among patients with ADHD, diabetes, or ALS on what constitutes an "informed patient." Being informed means different things for different patient groups. Whether patients prioritize experiential or certified expert knowledge is not indicative of patients' preferences per se but depends on how they give meaning to the responsibilities particular to their disease. ADHD patients hold each other accountable for demonstrating the seriousness of their disease. ALS patients use expert information to orient to a norm of thinking positive. Diabetes patients challenge experts to carve out independence from the diabetes regimen.
9	Rangeel Singh Raina, Vijay Thawani	2016	*The Zest for Patient Empowerment*	Patient Empowerment (PE) can be considered as an active and self-determining role of patient than a passive recipient of health related services. It encourages the provider–patient relationship to blossom and helps in clearing patients' doubts, confusion and fears to bring in clarity, relief and assurance. For the active involvement of the patient's in own health management they need to be awakened, motivated, educated and enlightened to enable them to exercise their rights. Active patient involvement in the decision-making achieves favourable health outcome. In an empowerment based approach, the focus is not on defining a particular type of behaviour, but on how the behaviour is defined as a goal to be achieved by a particular individual. As a result of their

				empowerment process, the patients can better self-manage their illness and their lives. Thus empowerment of the patients will positively help medical uprising of the community by creating an educated, health aware, informed and health conscious mass.
10	Marta De Santis, Clara Hervas, Ariane Weinman, Valentina Bottarelli	2018	*RD Action Data & Policies for rare diseases: Patient Empowerment – Policy Brief*	The document is the result of a review of literature on topic, patient advocates' testimonials, EU policy documents and legislation, as well as consultation with EURORDIS European Public Affairs Committee (EPAC). The brief, after shedding light on the concept of "patient empowerment", tries to define the way in which patient empowerment is implemented and to identify the link between patient empowerment and equity, resilience and sustainability of healthcare systems. Specific policy recommendations are made at the end of the briefing.
11	Geneviève Rouleau, Jean-Vhristophe Bélisle Pipon, Stanislav Birko, Philippe Karazivan	2018	*Early career researchers' perspectives and roles in patient-oriented research*	Patient-oriented research (POR) has received increasing attention in recent years. In this approach, patients' experiential knowledge, derived from their experiences of living with a condition or illness and of interacting with the healthcare system, is recognized, valued, and seen as complementary to scientific knowledge. Early career researchers (ECRs) are the next generation of researchers, but little is known about how they perceive POR. In this study, ECRs were invited to reflect on what POR is, how patients can best contribute to research, and ECRs' own role in developing POR. Using a technique designed to collect expert opinions and find consensus—the Delphi method—a panel of 16 ECRs responded, in three rounds, to three questionnaires, with the second and third being built on responses to the preceding ones. Based on their understanding, the panelists agreed that the most important element in defining POR would be valuing, mobilizing, and legitimizing the experiential knowledge of patients who live with a particular health condition. Panelists considered patients to be integral members of the research team, but were less convinced that they should be considered co-researchers. The panelists saw themselves as taking part in developing POR by sharing information, teaching, and encouraging POR among their peers, as well as by participating actively in organizations interested in POR. This is the first study to examine the perspectives of ECRs, who, along with many others, have an important role in supporting the on-going development of POR so that it becomes more widely adopted.
12	Kristina Staley, Emma Cockcroft, Andrea	2019	*'What can I do that will most help researchers?' 'A different*	For patients and the public to work collaboratively with researchers, they need support and opportunities to engage in learning that builds on their skills and grows their confidence. In this article, we argue for a different approach to this learning, which starts with the expertise patients/ the public

	Shelly and Kristin Liabo		*approach to training the public at the start of their involvement in research*	arrive with, and helps them identify and develop the soft skills required to influence researchers effectively. Much of the current training for patients and the public focuses on addressing the gaps in their knowledge and awareness about how research works and how public involvement adds value. Our training complements this by exploring the concept of 'experiential knowledge' in more depth. Patients and the public possess experiential knowledge (knowledge gained through lived experience) that researchers may not have. In the training we explore the nature of this expertise and other skills that patients/ the public bring, as well as how to identify who has the most relevant experiential knowledge in any given situation, and how best to share experiential knowledge to benefit researchers and maximise the impact of involvement. We co-produced this training with a patient member of the project team, and through feedback from patients and carers in an initial pilot. Our approach adds another dimension to preparing people for involvement and in particular for taking part in conversations with researchers that support mutual learning. We suggest this approach should be supported by separate, mirror training for researchers, that also develops their soft skills in preparation for learning from involvement.
13	**John R. Kirwan et al.**	2017	*Emerging guidelines for patient engagement in research*	There is growing recognition that involving patients in the development of new patient-reported outcome measures helps ensure that the outcomes that matter most to people living with health conditions are captured. Here, we describe and discuss different experiences of integrating patients as full patient research partners (PRPs) in outcomes research from multiple perspectives (e.g., researcher, patient, and funder), drawing from three real-world examples. These diverse experiences highlight the strengths, challenges, and impact of partnering with patients to conceptualize, design, and conduct research and disseminate findings. On the basis of our experiences, we suggest basic guidelines for outcomes researchers on establishing research partnerships with patients, including: 1) establishing supportive organizational/institutional policies; 2) cultivating supportive attitudes of researchers and PRPs with recognition that partnerships evolve over time, are grounded in strong communication, and have shared goals; 3) adhering to principles of respect, trust, reciprocity, and co-learning; 4) addressing training needs of all team members to ensure communications and that PRPs are conversant in and familiar with the language and process of research; 5) identifying the resources and advanced planning required for successful patient engagement; and 6) recognizing the value of partnerships across all stages of research. The three experiences presented explore different approaches to partnering; demonstrate how this can fundamentally change the way research work is conceptualized, conducted, and disseminated; and can serve as exemplars for other forms of

					patient-centered outcomes research. Further work is needed to identify the skills, qualities, and approaches that best support effective patient-researcher partnerships.
14	**Elise Smith, Jean-Christophe Bélisle-Pipon and David Resnik**	2019		*Patients as Research Partners; How to Value their Perceptions, Contribution and Labor?*	Citizen Science refers to the consultation, participation, engagement or involvement of the general public in research. Rationales for this interaction include increased public access and involvement of citizens in research, immersion of community values relevant to research, outreach, and educational potential with the public, and ultimately, the democratization of science. This paper focuses on the specific subset of citizen science that seeks to engage "patient partners" in health research to gain the valuable experiential knowledge of those living with a disease. Greater patient engagement in research (PER) can provide researchers with insights about citizen values and needs relevant to determining research priorities, methodology, applications, and ethical parameters; this would ideally lead to more effective real-world applications. Over the last decade, projects involving patients partners in research (PPRs) have varied from mere tokenism and undervaluation to full involvement and empowerment of patient participants – the former, a subject of criticism, and the latter, promoted as an ideal. In this article, we will argue that the value of that experiential knowledge from PPRs should not only be acknowledged through its ongoing use, but also through recognition of participants who contribute to the creation and application of new knowledge. We will explore types of recognition that might be attributed to PPRs, including scientific recognition; financial recognition or reward; personal and altruistic recognition; and the beneficial outcomes of research applications. We also will consider whether such types of recognition could be applied to the broader field of citizen science.
15	**Alberta SPOR Support Unit**	*May 2018 (Version 8.0)*		*Patient Engagement in Health Research: A How-to Guide for Patients*	The "How-to Guide" wants to provide researchers answers to key questions such as: Why should I engage patients in health research? How is patient engagement defined? What does patient engagement in health research look like? How does the "patient and researcher engagement in health research" strategy differ from other participatory research approaches? How do I know I'm ready to engage patients in health research? Moreover, the Guide propose the five key steps to engaging patients throughout your research project are outlined: Why, Who, How, Engage, and Evaluate.
16	*Marianne Boenink & Lieke van der Scheer & Elisa*	2018		*Giving Voice to Patients: Developing a Discussion Method to Involve Patients in*	Biomedical research policy in recent years has often tried to make such research more 'translational', aiming to facilitate the transfer of insights from research and development (R&D) to health care for the benefit of future users. Involving patients in deliberations about and design of biomedical research may increase the quality of R&D and of resulting innovations and thus contribute to translation. However, patient involvement

	Garcia & Simone van der Burg		*Translational Research*	in biomedical research is not an easy feat. This paper discusses the development of a method for involving patients in (translational) biomedical research aiming to address its main challenges. After reviewing the potential challenges of patient involvement, we formulate three requirements for any method to meaningfully involve patients in (translational) biomedical research. It should enable patients (1) to put forward their experiential knowledge, (2) to develop a rich view of what an envisioned innovation might look like and do, and (3) to connect their experiential knowledge with the envisioned innovation. We then describe how we developed the card-based discussion method 'Voice of patients', and discuss to what extent the method, when used in four focus groups, satisfied these requirements. We conclude that the method is quite successful in mobilising patients' experiential knowledge, in stimulating their imaginaries of the innovation under discussion and to some extent also in connecting these two. More work is needed to translate patients' considerations into recommendations relevant to researchers' activities. It also seems wise to broaden the audience for patients' considerations to other actors working on a specific innovation.
17	*National Health Council*	2019	*The National Health Council Rubric to Capture the Patient Voice: A Guide to Incorporating the Patient Voice into the Health Ecosystem*	The purpose of the National Health Council (NHC) Rubric to Capture the Patient Voice (Rubric) is to provide a tool the patient community or any other health care stakeholder can use to evaluate attributes of patient centeredness and to guide them on meaningful patient engagement throughout any activity they might undertake. It is broadly applicable and more general in scope as compared to prior patient-engagement rubrics. The Rubric is not intended to replace other patient engagement/centricity rubrics and guides that promote patient centricity in specific applications (e.g., the Patient Engagement Quality Guidance, which is intended to guide patient-centricity in medical product development). Rubric development was undertaken by the NHC Rubric Committee to Capture the Patient Voice. The Committee met in February 2019 to evaluate past rubrics, consider the core domains of patient centeredness, and identify examples and up-front materials needed. The draft Rubric was initially sent to the Committee for feedback, revised, and then was opened for a 3-week public comment period. The Rubric includes level-setting definitions and two main sections: • **Section I: Meaningful Patient Engagement Processes.** This section outlines characteristics of direct, meaningful patient engagement. • **Section II. General Patient-Centeredness Considerations.** This section focuses on approaches that enhance patient centeredness throughout an activity but are not direct patient engagement.

Synthesis and main insights from the literature review

The D1.6 has been designed taking into consideration the above literature and focusing in particular to the following points:

**Patient-provided information (PPIn)** [64]

    A. PPIn broadly encompasses the **entirety of information** that can be collected from an interaction with a patient

    B. PPIn covers a wide variety of inputs from the patient regarding the patient's **experience, preferences, and needs**

    C. PPIn "validity" corresponds to utility, though within a given context (**utility in context**).

    D. Utility in context to be considered for each of the 7 R&I steps

Patient experiential knowledge

- An important assumption underlying practical arguments for patient engagement in research is that the life experience of patients leads to 'experiential knowledge', and that this knowledge may **complement the expertise of researchers.**

- The point of engaging patients in research is, then, to **open up the experiential knowledge of patients and to explore where this knowledge should and how it could be taken into account** (e.g. when developing novel biomedical technologies).

The type of PPIn and the concept for their translation into experiential knowledge is presented in Figure 13 Patient Provided Information translated into experiential knowledge. MULTI-ACT aims indeed to provide tools and training to facilitate the translation and to make experiential knowledge recognised and valued by all the Health R&I stakeholders.

Figure 13 Patient Provided Information translated into experiential knowledge
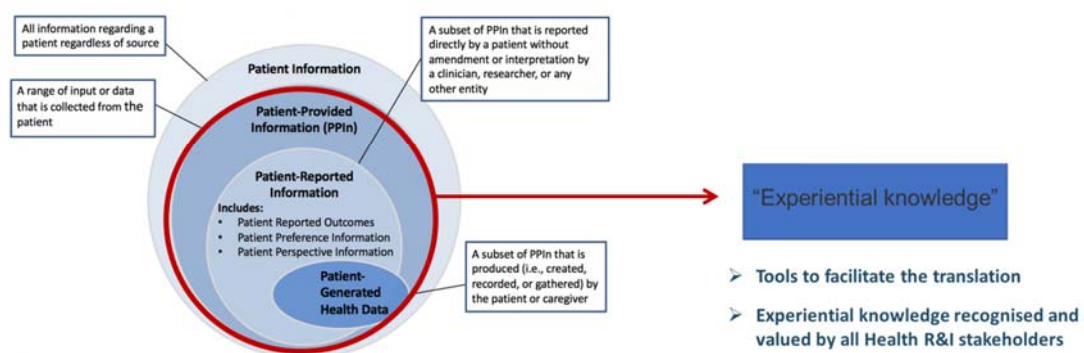
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[64] The National Health Council Rubric to Capture the Patient Voice: A Guide to Incorporating the Patient Voice into the Health Ecosystem. June 2019. Washington, DC. Available from: https://www.nationalhealthcouncil.org/Patient-Engagement-Rubric

APPENDIX 3 – Public Consultation

The Consortium designed and launched a public consultation targeted to Health R&I to consolidate the landscape analysis, and complement the above mentioned validation actions (i.e. literature review, comparison of good standards for guidelines development, development of PICO questions, planned test in the case study of WP4) to ensure evidence and validity as well as co-creation with all stakeholders, in line with RRI principles.

Through a web survey, the Consortium engaged stakeholders of Health R&I to share their views on specific aspects of the patient engagement in research and innovation in order to consolidate the MULTI-ACT patient engagement strategy with relevant insights.

Stakeholders have been invited to participate in the online consultation to express their opinions, perspectives and thoughts on how patient engagement should be implemented at different steps of the research process, in order to maximize its impact on people. By participating in the consultation, stakeholders contributed to the development of the MULTI-ACT Patient Engagement Strategy and Guidelines, for making research and innovation more responsible toward patient and society.

Participants have been asked a set of demographic questions aimed at better understanding their background and later to choose their opinions and preferences with respect to specific patient engagement matters. Participation in the survey was voluntary and participants had the right to withdraw at any point during the consultation, for any reason, and without any prejudice.

Scope and objectives

The objective of the consultations was to hear concrete opinions and experiences related to patient engagement in research from stakeholders of health R&I with the potential to complement and underpin the MULTI-ACT Patient Engagement strategy. The consultations represented a chance to hear from all concerned stakeholders in order to focus on where we needed to direct our attention and research.

This survey was directed to all Health R&I stakeholders (multi-variate). It is called Public Consultation because everybody was allowed to answer the survey as it was published on the MULTI-ACT website and on social media, and also because the general public is indeed a category of MULTI-ACT stakeholders. The main target stakeholders are the following:

- **Patients:** people with the diseases and affected by the diseases, including relatives and caregivers.
- **Patients organizations:** patient associations, advocacy organizations, etc.
- **Society:** individual citizens, civil society organizations and networks.
- **Payers and purchasers:** public and/or private entities responsible for underwriting the costs of health care.
- **Care providers:** health and social care organizations and professionals (doctors, nurses, etc.).
- **Policy makers:** EU institutions; national, regional and local policy makers, including regulators.
- **Industry:** companies developing and selling health products (drugs, devices, applications, etc.) and services.

- **Research and education organizations:** Research Organizations; Universities; Education Providers; Foundations; research projects

The survey intended to gather preliminary general opinions on engagement of patients in research and not expert feedback; the expert analysis was done by inviting relevant experts in specific workshop/focus groups. MULTI-ACT aims indeed to make patients the key stakeholder to work at the table with all the other stakeholders and have an equal power and voice to the other stakeholders.

In fact, in line with the MULTI-ACT approach, multi-stakeholders' collaboration and co-creation is effective when each interested party may see its return on engagement/investment aligned with the common goal of developing effective care for patients.

Online survey methodology

The consultations activities included the following:

- A **7-weeks** online public consultation was launched the **31st October 2019**, accessible via the MULTI-ACT website (https://www.multiact.eu/2019/10/31/consultation-on-the-multi-act-patient-engagement-strategy-now-open/), social networks, distribution list, and partner networks. The survey was online from **31st October 2019** to **30th November 2019**. Considering the received interest and specific request for extension, the Consortium decided to extend the survey for 10 more days and extend the consultation until the **20th December 2019.**

- **Discussions and reviews** held in **January - February 2020** with relevant stakeholders (i.e. Patient Engagement Group and Patient Forum)

- A series of interactions with relevant actors *(i.e. Multiple Sclerosis International Federation and its Research Staff Network, European Multiple Sclerosis Platform, Progressive Multiple Sclerosis Alliance, Accelerated Cure Project for MS, iConquerMS project, EUPATI, Patient Focused Medicine Development, European Patient Forum, NewHoRRIzon RRI Project, etc.)*

Questionnaire protocol

The survey protocol was developed by capturing topics from the landscape analysis of existing patient engagement procedures and the preliminary patient engagement guidelines (D1.5). In particular, the Consortium focused on the topics that mostly needed of co-creation.

The questions were reviewed by partners, the Patient Engagement Group and other stakeholders. With respect to the preliminary version, the questions were consolidated and reduced in order to not overwhelm the respondents.

After been constructed, the survey was piloted outside the survey-building-team using at least one respondent from each stakeholder category in the FISM network to ensure the questions applied to their group and were relevant and understandable for all stakeholders. After the piloting and Consortium review, the protocol was further refined and modified toward an easier version.

The survey was uploaded to Survey Monkey by the European Brain Council (EBC), partner leader of dissemination activities, and respondents were asked to complete the questionnaire online.

The questionnaire protocol includes a total of n. 24 questions. The survey comprised n. 5 demographics questions (i.e. name, age, country, gender, stakeholder category), n. 2 general questions on previous

experiences of patient engagement, n. 15 questions on specific topics we want to consolidate with stakeholders, and n. 2 questions on closing remarks.

All questions were optional for privacy and ethical issues and also due to the difficulty and the burdensome nature of the questions.

The questions were in two main matrix styles: some questions allowing for multiple choice and other asking for a prioritization by choosing only one option.

All questions consider the possibility of do not answer or to select "I don't know" or to provide comments in addition or beyond the fixed options. The protocol is presented in Figure 14 Protocol and purposes of questions.

Figure 14 Protocol and purposes of questions

Code	Core	Question	Purpose	Topic
Q1	Core	**Name and surname**	Gather demographics of the study population	Demographic
Q2	Core	**Age**	Gather demographics of the study population	Demographic
Q3	Core	**Country**	Gather demographics of the study population	Demographic
Q4	Core	**Gender**	Gather demographics of the study population	Demographic
Q5	Core	**Which group describes you best? (please choose the most relevant one)**	Categorize the study population	Demographic
Q6	Core	**Do you have some experience of patient engagement?**	Assess if the respondents have experiences of patient engagement.	Background
Q7	Additional	If you wish, please give us more info about your experiences (e.g. which type of engagement)? Where and when did it happen? What was your role? Did you find the engagement useful for your research activities? etc.) (max 600 characters)	Assess the patient engagement's experiences of the respondents.	Background
Q8	Core	**The main task of the Engagement Coordination Team is to make it possible for patients to be genuinely engaged, to ensure representativeness**	Gather approval and prioritization on the main assumptions with respect to patient engagement.	Assumptions for patient engagement

		of patients' contribution, to motivate them to participate, to bring out their experiences that are useful for research, to make the results of the research comprehensible to all and to stimulate feedback. Which of the following statements do you consider most appropriate for the purpose? Please choose the most relevant ones		
Q9	Core	What is the most important benefit of engagement in scientific research and innovation for patients? Please choose the most relevant one	Gather approval and prioritization on the proposed benefit of engagement in scientific research and innovation for patients, and identify additional benefit.	Benefit of engagement for patients
Q10	Core	The patient's disease experience is of enormous value in directing research towards relevant goals. This experience is composed of many different aspects: needs, feelings, uncertainties, stories, reflections, insights, etc. The task of the Engagement Coordination Team is to translate these inputs into an experiential knowledge useful for research. What skills do the Engagement Coordination Team's members need most to enable patients make their experience valuable for research? Please choose the most relevant ones (up to three).	Gather approval and prioritization on the proposed skills and abilities of the ECT and identify additional skills.	ECT skills and abilities
Q11	Core	What is the most suitable training for the Engagement Coordination Team to integrate patient experiential knowledge in research? Please choose the most relevant ones (up to three).	Gather approval and prioritize the proposed features for the ECT training modules, and identify additional features.	ECT training modules

Q12	Core	**What is the best way to measure the performance of patient engagement in research?** **Please Choose the most relevant one.**	Gather approval and prioritization on the proposed metrics to assess the performance of patient engagement, and identify additional metrics.	Performance of patient engagement
Q13	Core	**In MULTI-ACT, patient engagement should cover every step of the research and innovation activities. We have identified 7 steps in which patients should be engaged with other stakeholders in this process, according to the mission and objectives of the program and/or project.** **At which step of the research process do you think patients should be engaged?** **Please choose the most relevant ones.**	Gather approval on the 7 steps R&I path as path where patients need to be engaged in order to maximize the impact of R&I, and implement the path with missing steps (if any), and/or prioritize the steps.	7 steps R&I path
Q14	Additional	If you selected 'Breaking down boundaries between patients and other stakeholders' in question 13, Please choose the most appropriate patients' activities in this step.	Implement the step n.1 with examples of patient engagement activities	7 steps R&I path
Q15	Additional	If you selected "Setting research priorities" in question 13, Please choose the most appropriate patient's activities in this step.	Implement the step n.2 with examples of patient engagement activities	7 steps R&I path
Q16	Additional	If you selected "Steering institutions" in question 13, Please choose the most appropriate patients' activities in this step.	Implement the step n.3 with examples of patient engagement activities	7 steps R&I path
Q17	Additional	If you selected "Research design and plan" in question 13, Please choose the most appropriate patients' activities in this step.	Implement the step n.4 with examples of patient engagement activities	7 steps R&I path
Q18	Additional	If you selected "Research Execution" in question 13, Please choose the most	Implement the step n.5 with examples of patient engagement activities	7 steps R&I path

		appropriate patients' activities in this step.		
Q19	Additional	If you selected "Research Evaluation" in question 13, Please choose the most appropriate patients' activities in this step.	Implement the step n.6 with examples of patient engagement activities	7 steps R&I path
Q20	Additional	If you selected "Translation to the community" in question 13, Please choose the most appropriate patients' activities in this step.	Implement the step n.7 with examples of patient engagement activities	7 steps R&I path
Q21	**Core**	**Methods to integrate patients' experiences and knowledge.** **What method can facilitate patients in providing their experiences of the disease and make them usable for research purposes?** **You can read information about the methods here (an explanation of method available for download). Please choose up to three.**	Gather approval and prioritization on the proposed methods for effective patient engagement (focus on integrating patients' experiences and knowledge in R&I), and identify additional methods.	Methods to integrate patients' knowledge in R&I
Q22	**Core**	**What do you think is the best way to measure the real effectiveness of patient engagement in the research process? (Please select up to 3 options)**	Gather approval and prioritization on the proposed metrics to assess the effectiveness of patient engagement, and identify additional metrics.	Effectiveness of patient engagement
Q23	**Core**	**Is there anything else that you would like to contribute to this survey?**	Gather any other feedback that may be helpful in designing the guidelines and toward next steps of the WP1 activities. Give the respondents the possibility to express their view on the survey.	Closing remarks
Q24	**Core**	**If you wish, you can provide your e-mail address below to allow the consortium to contact you if they want to learn more about your experiences and suggestions? Moreover, if you**	Give the respondents the possibility to be contacted and to sign to the MULTI-ACT newsletter.	Closing remarks

		wish to subscribe to the MULTI-ACT newsletter (2 per year) please visit our website.		

Dissemination and distribution of the survey

The European Brain Council (EBC), leader of MULTI-ACT dissemination and communication, shared the survey on social media channels (Twitter and LinkedIn), via the MULTI-ACT newsletter and via direct emails.

The Consortium, Patient Engagement Group, Patient Forum, External Advisory Board – as well as other groups working in patient engagement (i.e. Multiple Sclerosis International Federation and its Research Staff Network, European Multiple Sclerosis Platform, Progressive Multiple Sclerosis Alliance, Accelerated Cure Project for MS, iConquerMS project, Patient Focused Medicine Development, European Patient Forum, EUPATI, NewHoRRIzon RRI Project) were asked to use a cascade technique to disseminate the survey within their network and invited stakeholders to participate.

Specific dissemination activities have been:

- Published on the **MULTI-ACT website** twice and headlined on the homepage

- Sent to **MULTI-ACT mailing list** (619 subscribers) (twice: invitation 31/10 + reminder 20/11)

- Asked **all partners** to send out to their **networks and social channels**, built Twitter coverage by key partners and reached a vast network of key stakeholders

- Direct contact with relevant stakeholders via **Twitter**

- At least **10 reminder tweets** to encourage participation over the 7-weeks it was open

- Identification of the main influencer(s) on relevant topic of patient engagement (n. 66 influencers, including the Coordinator of MULTI-ACT, were identified)

- Retweets and tweets from relevant stakeholders and stakeholder organizations, including Commission officials and EC RRI twitter feeds (via Influencers)

- Gained a number of Twitter follows due to outreach for the consultation (ca. 20 per day)

- Encouraged partners to tweet by inviting contacts and networks engaged in Health R&I to participate in the survey by adding specific tags *(e.g. #patientengagement, #patientparticipation, #patientinvolvement, etc.)*

- Dissemination through the WOVA App at the European Patient Forum EPF Congress

- Direct contact to relevant actors in patient engagement domain*:* PARADIGM, EUPATI, Patient Focused Medicine Development PFMD, European Patient Forum EPF, PCORI Patient Centered Outcomes Research Institute PCORI, Multiple Sclerosis 21st Century, Multiple Sclerosis Brain Human, NewHoRRIzon European Project, etc.

- Communication activities related to the extension of the consultation

Results & Key findings

The total respondents who completed the survey were 125.

In general, the survey has had a high number of responses (skipped < 5) compared to the total number of respondents (n=125). With the exceptions for questions asking for name (Q1 skipped n=31), details regarding experience of patient engagement (dependent on Q6) (Q7 skipped n=55), activities of patient engagement in the 7- steps R&I path (dependent on Q13) (Q14 skipped n=50, Q15skipped n=51, Q16 skipped n=87, Q17 skipped n=56, Q18 skipped n=90, Q19 skipped n=67, Q20 skipped n=46), additional comments (Q23 skipped n=100), and willingness to be contacted by giving the email address (Q24 skipped n=55).

In general, the respondents endorsed the concept of MULTI-ACT and there is a sort of balance among the proposed options. The possibility to add comments in the option "other" allowed us to capture additional insights and points for discussion with respect to each question and related topic.

Each comment has been elaborated together with the Consortium and the Patient Engagement Group, includign a methodologists, and reviewed by the MULTI-ACT Patient Forum.

Demographic background of the study population

The largest respondent (stakeholder) group was the category **Patients** [30.08% (n=37)], followed by **Research and education organizations** [20.33% (n=25)], **Patients organizations** [15.45% (n=19)], **Care providers** [11.38% (n=14)], **Industry** [8.94% (n=11)], and **Society** [7.32% (n=9)]. The groups not represented is the category **Payers and purchasers** [0% (n=0)]. The different representation between the responder categories has been taken into account while drawing conclusions especially for the groups with the lowest representations (Figure 15 Stakeholder respondents).
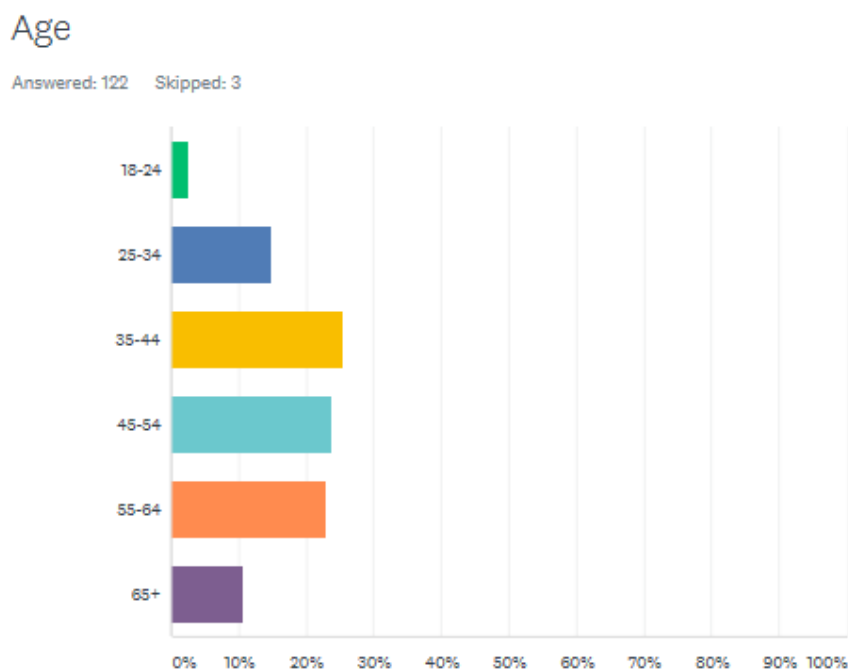
Figure 15 Stakeholder respondents
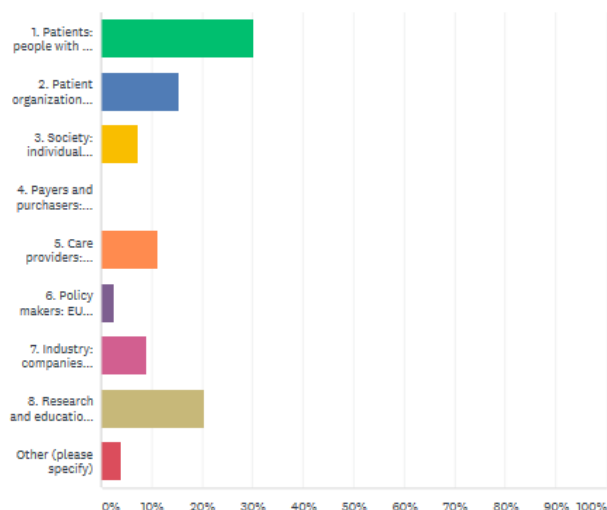
The age of respondents range mainly from 35 to 64 years old (see Figure 16 Age of respondents).

Figure 16 Age of respondents

Age

Answered: 122   Skipped: 3

Respondents completed the survey from n.34 countries. The majority of responses originated from the countries of the consortium and the associated networks: France [16.38% (n=19 + 1)], Belgium (EBC) [15.32% (n=19 + 1)], Italy (FISM) [15.32% (n=19)], UK (MSIF) [12.10% (n=15)], Spain UBU [6.45% (n=8)], Finland UTA [4.03% (n=5)], Greece INTRA [2.42% (n=3+1)]. The group 'Other' comprises n.6 countries (United States, Canada, Russia, Australia, Norway, Bosnia and Herzegovina), both within and outside the European Union. There were an high number from the US and Canada, also because US and Canadian MS Societies are members of the MS International Federation Research Staff Network deeply involved in Patient Engagement.

The respondents were unbalanced in terms of gender: Female 66.94% (n=81), Male 32.23% (n=39), X = 0,83 % (n=1). This can be associated to the fact that the majority of respondents for the Patient category [30.08% (n=37)] is probably representing patients with Multiple Sclerosis (MS), the case-study disease of MULTI-ACT. MS is now universally found to be more prevalent in women than men, a phenomenon shared with several other autoimmune diseases. Furthermore, the MS prevalence ratio of women to men, that has increased markedly during the last decades, is (2.3–3.5:1). [65]

Experience of patient engagement (Q7)

The majority of respondents had previous experience of patients engagement (79.03% n=98).

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[65] Jobin C, Larochelle C, Parpal H, Coyle PK, Duquette P: Gender issues in multiple sclerosis: an update. Womens Health (Lond Engl) 2010, 6(6):797-820

If you wish please give us more info about your experiences (e.g. which type of engagement)? Where and when did it happen? What was your role? Did you find the engagement useful for your research activities? etc.) (max 600 characters)

Answered: 70   Skipped: 55

Some of the reported experiences are presented below:

"My PhD is about eliciting patient preferences to inform decisions throughout the drug life cycle. In that context I am setting up two patient preference studies to make recommendations towards healthcare stakeholders on how to best elicit preferences. Research partners are patient organisations and patients from lung cancer and multiple myeloma patient groups. There contributions are very useful; ensuring the protocol answers patient relevant research questions, ensuring questions in the preference survey are understandable to patients, ensuring patient needs in general (e.g. communicating results back to patient community) are met."

"This is the collective response of many doctors across the EU. As healthcare professionals, a number of our members are involved in the establishment of patients' organizations in various countries e.g. "Keratoconus" in Denmark. Some are board members of such associations and respond to questions raised on the web sites of the organisations. Engaged also in research in patient engagement with patients being involved in translation a PROM from English to the target language for the various countries. The board of such organisations also answers questions raised on the web-page etc."

"I was one of the founders of a patient forum where we aim to discuss the science around ME (www.s4me.info) in this forum we aim to get a mixture of patients (many of whom have a science background) and other scientists to discuss the latest research. I am also a member of a patient advisory group for a consortia of researchers looking to get more ME funding. In both I have seen genuine engagement between patients and the research community. As patients (or carers) we have also collaborated to publish papers."

"It has been mostly limited to RFCs by organizations and so far has been very underwhelming, the substance of our input is largely dismissed."

"8 years representing a support group, dealing with local medical authorities; the 'officials' were disingenuous and wasted the time and well-being of me and others. Nothing positive to report."

"As an Adviser at the Research Section I have been responsible for User Representatives who participate in the assessment of research projects being proposed for funding from the Norwegian Cancer Society since 2016. The main premise for me (us) is that user involvement positively impacts the quality of health care and contributes to research that is more relevant. The purpose of user involvement is to ensure the quality of cancer research and to make the research more accessible through user involvement. Research is one of the Norwegian Cancer Society's main priorities, and we are the largest financial contributor to cancer research outside the public sector. In 2018, we allocated NOK 235 million to cancer research. Fields of research is broad: From more basic, to translational and also more Close to the patient; clinical and Epidemiological, health, and social science cancer Research."

"Patient involvement in guideline development; It's not only useful, a necessity if you want your guideline to be used; also if you want to get your guideline validated by the national committee, it is necessary to involve users."

The main experiences of patient engagement reported are:

- facilitators of patient engagement in project design for better services in health care,
- recruitment of patients as end-users, engagement of patients in sharing of research results and in the research steering committees,
- engagement in the pre-design phase of a medicine development protocol as EUPATI fellow, coordination of a network of volunteers involved in reviews of research funding application,
- engaged in the co-development and co-creation of tools to support patient doctor communication,
- facilitation of patient focus groups to understand unmet support needs (patients and carers),
- development of patient speaker programme to raise awareness and educate pharma on disease impact,
- input into strategic planning, insight of patient experience in clinical department,
- engagement as patients in evaluating and developing services and in users committee,
- working for project dedicated to enabling patient engagement and capturing patient preferences,
- experiences of writing with patients a consent form, working in patient organizations as a person with a chronic disease, supporting clinical teams in engaging with patients in R&D activities such as collaboration with patient advocates in designing protocols,
- co-creating accessible document templates and collecting their insights, coordination of a "patient on campus",
- activites to inform patients, etc.

Assumptions for patient engagement (Q8)

This paragraph analyses the additional comments (n=17) to questions n.8 *"The main task of the Engagement Coordination Team is to make it possible for patients to be genuinely engaged, to ensure representativeness of patients' contribution, to motivate them to participate, to bring out their experiences that are useful for research, to make the results of the research comprehensible to all and to stimulate feedback. Which of the following statements do you consider most appropriate for the purpose?"*

Although the majority prioritize the concept that *"All relevant stakeholders (including patients) should be duly represented and valued"* [76.80% (n=96)], all the statements have beeen found relevant.

Comments highlighted the fact that patient engagement should **not be a mere ticking the box**:

I. Ticking the Box may be easy but when real patient engagement happens, pitfalls and challenges arise. Those should be anticipated and taken into account.

II. "The actual substance of patient input has to be taken into account, not merely a part of the process that ultimately has no impact."

III. It's important to have a feedback loop "stakeholder input should be communicated back to show how knowledge has been integrated and the resulting actions developed"

IV. Patients should have influence on research outcomes and results.

Comments highlighted the importance of **recognition and rewarding**:

V. The expertise of patients should be recognised and compensated as for other types of experts. Patients' participation should take place from the start and should be planned and earmarked in the research budget.

VI.   Patients should be considered equal contributors to patient-centred research - both in terms of the work that they do but also in terms of compensation. Most patients contribute just out of altruism and a desire to make systematic change, "we cannot take advantage of their time and skills, they must be fairly compensated and we must see "patient representative" as a job in the team and not free labour".

The importance of **training**:

VII.   Co-learning protocols should be planned in order to identify shared needs

VIII.   Engagement and involvement is about relationships, researchers need to understand that involved patients need support, training, payment and respect and to be treated as a 'full' member of teams.

IX.   Training should be provided.

X.   Support should be provided to build the capacity of the patients to bring the best value from the engagement and involvement

The importance of patients' **decision making role** and to duly recognize the **relevance** of patients' contribution:

"If stakeholders (e.g. patient representatives) truly should have influence on the course and results of research, it is not enough to consider their opinions, stakeholders really need to be allowed to make important decisions in the areas where their view is decisive. If they are not able to decide at once, they need training to do so. Otherwise the researchers/project management, which most often consists of research professionals, will always believe that they have the most convincing arguments and overrule the stakeholders."

Other relevant aspects emerged from the comments:

XI.   Equitable access to medicines.

XII.   Increase contact with clinicians and value the experience of patients.

XIII.   "It is important that patients help researchers understand what the disease is."

XIV.   All parties should be vigilant and aware when their activities, statistics and studies cross over those of others and if appropriate ensure sharing of information is undertaken to support all.

Benefit of patient engagement (Q9)

This paragraph analyses the additional comments (n=11) to questions n.9 "What is the most important benefit of engagement in scientific research and innovation for patients?"

The majority reported that the most important benefit of engagement for patients is having "Impact on outcomes that care to patients (i.e. Patient Reported Outcomes: measures reported by patients through questionnaire) on how they feel regarding symptoms and/or functions" [77.42% (n=96)].

Comments to this question highlighted the importance of **patients' trust** *"is patient engagement a mere paper exercise?"*.

The most important benefit must be that the engagement makes the results from research **better for the future patients and contributes to patient outcomes**.

Patients can develop **extensive knowledge** and collaboration can lead to an improvement in the research and its methodology, including **selection of criteria and outcome**s.

User/patients engagement clarifies the responsibility of researchers towards society. A dialogue between researchers and user/patients representatives gives:

1. Awareness to researchers in terms of explaining their research objectives to the patient/layman;
2. Increased understanding of the design, purpose, goal and future impact of the research,
3. Better communication of the research findings to the patient community/organizations.

As emerged also for the question n.8, comments highlighted the need to avoid tokenism, "A genuine interest in the patient's experience and building the research, diagnostics, treatment and care in order to improve the patients well-being".

One comment stated that all of the mentioned options may be relevant reasons for being involved while another one stated that it is more important to focus on human values and not on external rewards like personal, financial etc.

Some comments focused more on medicine development:

- "More fully informed protocol development. Given that only 11.3% of all clinical trials are completed, mostly due to trial design, designing protocols with input from potential participants' perspective is valuable. This co-creation helps ensure protocols that can actually be managed by participants, increase the possibility of trial completion, improves the opportunity for real world data and experience thus better preparing the drug or device for market."
- "While we do research for "new treatments" we should get insight in the effectiveness of those we already use."

Skills of the Engagement Coordination Team (Q10)

This paragraph analyses the additional comments (n=12) to questions n.10 "The patient's disease experience is of enormous value in directing research towards relevant goals. This experience is composed of many different aspects: needs, feelings, uncertainties, stories, reflections, insights, etc. The task of the Engagement Coordination Team is to translate these inputs into an experiential knowledge useful for research. What skills do the Engagement Coordination Team's members need most to enable patients make their experience valuable for research?"

The three main skills prioritized for the ECT are "Empathy and active listening" [59.68% (n=74)], "Communication skills" [50.81% (n=63)]) and "Expertise in engagement strategies & methods (online and offline) [42.74% (n=53)].

Comments to this question highlighted some additional skills such as:

- Negotiation skills and innovative thinking
- Absence of bias and prejudice, which will ultimately dismiss patient input
- Empathy plus compassion; Knowledge, experience and willingness to take a comprehensive history

- An ability to talk to different audiences in a way that is relevant to all stakeholders, and to 'translate' across boundaries (e.g. academics speak and understand very differently than patients; clinicians are different compared to academics etc.)
- Know how the patient community works, from Association, to forums, advocates and Facebook groups
- Competences in social science research methods. Even patient's attitudes need to be examined scientifically, best in a multi-method approach including quantitative and qualitative research.
- Merge different abilities and assure a good general background knowledge

Training for the Engagement Coordination Team (Q11)

This paragraph analyses the additional comments (n=7) to questions n.11 "What is the most suitable training for the Engagement Coordination Team to integrate patient experiential knowledge in research?"

The three main features prioritized for the ECT are "Practical training on how to gather patients' story and information and translate them into Experiential Knowledge" [64.52% (n=80)], "Explanation of what is expected from patients/stakeholder" [45.16% (n=56)] and "Basic information about the mission of the initiative and the type of relevant patient information (PPI)" [42.74% (n=53)].

Comments to this question highlighted that training modules should use plain language and the content should be kept simple and respect for the human rights and the dignity of the patient should always be considered when designing a training program.

Information on methods for patients' engagement should be integrated with examples of application in real cases for each method.

Moreover, it is important to include in the training modules an explanation of what are the expected outcomes of the multi-stakeholder initiative and how do those outcomes relate to the patients' needs in the given disease area.

Measuring the performance of Patient Engagement (Q12)

This paragraph analyses the additional comments (n=21) to question n.12 "What is the best way to measure the performance of patient engagement in research?".

The three main options prioritized for measuring the performance of patient engagement in research are "measuring the number of patients engaged across different socio-economic status, education background, gender, etc., to assess the capacity to engage diverse groups, including the most vulnerable ones" [23.58% (n=29)], "measuring the number of engagement actions (online and offline) that have taken place in which patients have had the possibility to express their views" [21.95% (n=27)], and "measuring how many different phases of the research process patients have been engaged in" [18.70% (n=23)].

The survey protocol included two questions on assessment of patient engagement, one on the performance (Q12) and the other for the impact, effectiveness and value (Q21). Considering that the question on impact (Q21) arrived at the end most of the respondents anticipated the concept that not only performance should have been assessed but also the impact.

"To measure the performance of patients in research you need to co-create tools to do this measurement. It's more than a matter of just telling stories or looking at how many hours the patient spent you have to look at him meaningful the engagement was to the patients as well as to the research and the research team. I keep seeing this term more research needs to be done to determine the value of patient engagement."

In fact, many comments were directed more to the assessment of the **impact, effectiveness and value of engagement** rather than performance and they have been taken into account for the purpose of question Q21 (Methods to integrate patients' experiential knowledge in R&I (Q21)).

The highlights that we consider more relevant for the impact assessment are:

PERFORMANCE ASSESSMENT (PA)

PA - Quantitative:

- Measure the number of KPIs able to assess the impact of patient engagement.
- Measure the number of trainings conducted.
- Measure the extent into which the patient involvement at the end is implemented in the research path.
- Measure the number of interviews about patients' experience in the engagement process.
- Measure the number of co-created tools.

PA - Qualitative:

- Analyse if the patients' expectation with respect to the patient engagement are met.
- Analyse if patients felt engaged.
- Analyse how meaningful the engagement was to the patients as well as to the research and the research team.

PA - Methodological:

- Integrated top down approach from sources like technology wearable data create a quicker way to measure engagement.

IMPACT & EFFECTIVENESS ASSESSEMENT (IA) – comment more relevant to question Q21

IA - Quantitative:

- Measure the number of patient 'interventions' directly, or indirectly.

IA - Qualitative:

- Analyse if patients' expectation with respect to the research and mission of the initiative are met.
- Analyse the achievement in terms of new knowledge produced by engaging patients in the research process, from the perspective of all the stakeholders.
- Analyse how patients have been engaged (e.g. collecting comments, surveys, feedback, etc.).
- Evaluation of the project plan, of all single project phases and of the final results by (trained) patient and if and how their suggestions have been integrated into the project activities.

Patient Engagement in the 7 steps R&I path (Q13)

This paragraph analyses the additional comments (n=6) to question n.13 "Features of patient engagement in research. In MULTI-ACT, patient engagement should cover every step of the research and innovation activities. We have identified 7 steps in which patients should be engaged with other stakeholders in this process, according to the mission and objectives of the program and/or project.At which step of the research process do you think patients should be engaged?".

The steps have been found more or less all relevant (>20% responses for each step), in line with the MULTI-ACT proposal that "patient engagement should cover every step of the research and innovation activities."

The steps prioritized (>50% responses) are "Translation to community" [64.23% (n=79)], "Setting research priorities" [58.54% (n=72)], "Breaking down boundaries between patients and stakeholders" [56.91% (n=70)], "Research design and plan" [52.03% (n=64)], "Research evaluation" [43.90% (n=54)], and "Steering institutions" and "Research execution" [26.02% (n=32)].

In particular, some respondents (n=2) commented that patient engagement is likely to have greater impact when performed at earlier stages, rather than only in the late-stage.

Comments to this question highlighted that the steps where to engage patients' depends on the mission and scope of the engagement. Patients themselves may inform where they prefer to be engaged and where they think they can contribute most.

The patients most impacted by the disease are seldom engaged and mechanism should be put in place to ensure representativeness: the less impacted may help the engagement of the most impacted to break down boundaries between research and the underrepresented patients.

It is important to note that for the purpose of the Public Consultation, special attention is given to patients as key stakeholder. The scope of the MULTI-ACT Patient Engagement Guidelines is indeed to enable patients to be a stakeholder as the others in the group. In this transition phase where the paradigm is shifting toward enabling the "Science with/of Patient Input" and avoiding tokenism, the stakeholder "patient", final beneficiary of research outcomes, deserves special attention for an effective integration in the R&I processes. Those activities will lead to patients as equal stakeholders in R&I as a standard and usual practice, bringing knowledge and expertise complementary to the ones of the other stakeholders.

ANALYSIS OF EACH R&I STEP (Q14-Q20)

This paragraph analyses the comments to the questions from n.14 to n.20 "Please choose the most appropriate patients' activities in each step".

The proposed activities for each step have been found for the majority relevant (>20% of responses each proposed option), except for the options below:

Setting research priorities Patients are engaged to exercise prioritization of research agenda	18.92% (n=14)
Steering institutions Patients are engaged in defining ethical issues, anticipating risks and barriers for patient engagement in committee	13.16% (n=5)

Research design and plan Patients are engaged to discuss the design of work plan and budget of research	15.94% (n=11)
Research Evaluation Patients are engaged in working with other stakeholders on research reports	13.79% (n=8)

Comments to the questions provide the following highlights:

"Breaking down boundaries between patients and other stakeholders":

- Patients are engaged in recruitment and training of staff/research team.
- Patients are engaged to identify commercially viable KPIs that represent effectiveness from their perspectives.
- Patients are engaged to help the stakeholders to better understand the specificities of the patient community.

"Research design and plan":

- Patients are engaged to define the relevance and acceptability of proposed research to the patient community.

"Research execution":

- Patients are engaged to facilitate enrolment and recruitment for studies and compliance with protocols.

"Translation to community":

- Patients are engaged in translation medicine have the potential to speed up the transition between research levels and TRL commercialization.
- Patients are engaged by collecting their own data and using it to build their knowledge.

Methods to integrate patients' experiential knowledge in R&I (Q21)

This paragraph analyses the additional comments (n=14) to question n.21 "Methods to integrate patients's experiences and knowledge. What method can facilitate patients in providing their experiences of the disease and make them usable for research purposes?".

The main preferences for methods to integrate patients's experiences in R&I is the "Focus Group. E.g. Selected patients and stakeholders are invited to a meeting to discuss about a topic." [51.24% (n=62)]

Comments to this question suggested to use multi-channel approaches and to match and adapt the methods to the profile of the patients.

It emerged that Apps use may allow different levels of participation. Also "crowd sourcing areas of research direction using gamification and technologies" may be helpful.

Methods where patients talk such as online forums and support groups and discuss research can be effective.

The best method depends on the purpose of the engagement and – where possible - patients should be asked on their preferred methods for the purpose .

Also collecting data about symptoms and treatments is an engagement method. MULTI-ACT addresses this in the Science of patient Input.

The fact that experiences change by time, emotion, and circumstances should also be taken into consideration.

Scientifically sound surveys are representative for the target group, because they cover a large part of the stakeholders. Qualitative methods as those mentioned can complement this.

Measuring the effectiveness and impact of Patient Engagement (Q22)

This paragraph analyses the additional comments (n=7) to question n.22 "What do you think is the best way to measure the real effectiveness of patient engagement in the research process?"

The three main options prioritized for measuring the effectiveness of patient engagement in research are "Measure the number of changes in the research process (e.g. policies, composition of boards, objectives and priorities, strategic plan, evaluation of results, dissemination actions, etc.) according to the review made by patient." [50.41% (n=61)], "Measure the number of projects that include and show an effect on Patient Reported Outcomes (i.e. questionnaire reporting how they feel about symptoms and functions)." [37.19% (n=45)], and "Measure the number of projects involving patients in research activities, according to the needs of the mission." [34.71% (n=42)].

Comments to this question highlighted that the assessment should mix quantitative and qualitative evaluation, with slightly more focus on the qualitative one.

The assessment of effectiveness depends on the project's aims and time-frame.

As emerged from question n.8, it is important to assess the impact of Patient Engagement on "outcomes that matter to patients".

In particular, the emerged measures, in addition to the n.8 options proposed by the survey, are:

IMPACT & EFFECTIVENESS ASSESSEMENT (IA)

IA - Quantitative:

1. Measure the number of endorsements made by patient organisations.
2. Measure the number of reality tests made by the patients.

IA - Qualitative:

3. Analyse if the lives of the engaged patients have been improved by the research.
4. Analyse how patients' lives may be or have been improved by the research.
5. Analyse the long-term improvement in health indicators when engaging patients in the research process.
6. Analyse if the value of patient contribution is the same as others stakeholders.

Feedback for co-designing of the MULTI-ACT Patient Engagement Strategy (Q23)

This paragraph analyses the additional comments (n=22) to question n.23 _"Is there anything else that you would like to contribute to this survey?"_.

The majority of comments are directed to the content of the survey, a minor part refers to methodological and technical aspects: n. 3 comments are constructive criticism on feasibility and n.1 comment is a methodological consideration.

The qualitative comments have been used to implement the strategy and the guidelines. A summary of comments on the content is presented below:

- to take into consideration country specific variations in performing engagement activities (methodological comment),
- to learn lessons from the cases where patient input has been rejected, to learn from mistakes and failures,
- to leverage on the testimony and experience of patients in addition to actual subject-matter experts,
- to manage prejudice and hostile behavior by the medical professionals towards the highly disabled patient population,
- to develop training to close the gap between patients and researchers, both 'sides' need to understand the issues faced by the other and how best to negotiate them (e.g. for staff, to understand the need for patient representation in research and how to go about it, for patients to help them understand what research is and how best to interact to represent patients). **"We also need to stop talking about 'sides'!"**,
- to listen to the patients and focus on quality,
- to keep the process simple,
- to engage patients in reviewing research proposals and in being part of the process of granting research proposals,
- to find the best way to engage patients as the feeling for researchers may be **"as a PhD student I realise that I might want the patient to be too much in the loop"**,
- to empower patients to deal with the disease instead of unconsciously becoming another one of their "harmers".

Comments included a suggestion of sources for benchmarking growth on patient engagement (European Patients' Forum developed a framework of evaluating the quality of patient involvement - https://www.eu-patient.eu/globalassets/projects/valueplus/doc_epf_handbook.pdf).

Some respondents reported (n=64) an interest in collaborating and provided additional feedback and left their contact details to know more about the project and to provide more experiences and suggestions, also including comments reporting enthusiasm and interest in the initiative, thanking us, wishing us good luck and looking forward to further steps (n=4).

N.3 out of n.117 made constructive criticism about the survey: n.2 respondents asked for easier questions and n.1 respondent asked for a more user-friendly design.

Study limitations and mitigation actions

As a consultation instrument, the questionnaire is not statistically representative but with the large response it received it gives strong indications of the preferences and concerns of various types of stakeholders.

Translation: Considering the timeline of WP1 and the fact that the main target groups were stakeholders of Health R&I that should in general have a good understanding of English as a recognised

scientific language, the questionnaire was conducted in English and replies were collected in English as well. A follow-up consultation translated in other EU languages could be considered in next steps for assuring geographical and socio-economic balance of responses, focussing on reaching awareness and endorsement of the final Patient Engagement strategy and guidelines.

Understanding and feasibility: Although the survey was originally intended for stakeholder engaged in Health R&I with experience and notion of patient engagement, the Consortium decided to make the Consultation open and public, extending it also to the general public as one of the Health R&I stakeholders. The protocol was accordingly, trying to balance the scientific relevance of the questions and the need to express the question in a lay format. The Consortium leveraged Survey Monkey for aspects such as user-friendly design and feasibility. In general, the survey had a high number of responses compared to the total number of respondents. A low rate of responses made constructive criticism about the survey: out of n.125, n.2 respondents asked for easier questions and n.1 respondent asked for a more user-friendly design.

Analysis of results & discussion: Given the fact that the survey was anonymous and that respondents could decide not to provide their contact for further discussion, we might have had bias in interpreting comments. The elaboration of the comments and their reflection in the guidelines may not reflect the original purpose of the respondents. However, each comment forced the Consortium to conduct a deeper analysis and, even though some comments might be understood not in their original intent, we came up with additional reflections, which resulted in an implementation of the discussion.
Some responses are collective responses of organisations or groups and this cumulative responses was counted as one even if it is already a group discussion. There are country specific variations that may not have emerged from the collective responses.

The first days the consultation was online, the annexes in PDF were not downloadable from all browsers because of technical problems, and the referent was promptly advised by a participant to the survey and the problem was fixed.

APPENDIX 4 – MULTI-ACT Patient Engagement Plan Template

Please note that fields with asterisks (*) in the Patient Engagement Plan are mandatory fields to enable Patient Engagement.

INITIATIVE/PROJECT TITLE:

MISSION/SCOPE:
Briefly describe the mission and vision and its specific objectives in a language that is clear and understandable by multi-variate stakeholders.

1) PURPOSE OF Patient Engagement *
Considering the mission, how can patients and stakeholders help to meet the challenge?

PE goals and challenges	How patients can help to meet the goals and overcome barriers
List the goals and challenges	*Describe how patients can help to meet the goals/overcome barriers.*

2) PATIENT ENGAGEMENT EXPECTATIONS IN RELATION TO THE 7-STEPS R&I PATH*
What we expect from patients? What type of patients we need to engage? What expertise we need to engage? What are discussion questions to capture patients' experiential knowledge? (Note: Given the expectation from LB, the ECT identify level of engagement, type of patients and requirements. An initiative/project does not necessarily have to act on all the steps).

BREAKING DOWN BOUNDARIES	Expectations: *Example - Patients help to identify requirements, roles and skills of boards in charge of Patient Engagement in order to integrate the patients' experiential knowledge into the R&I process.* Actions plan 1: *Example - Define a method to asks patients to provide an overview on the facilities, infrastructures, tools they need to be engaged in research.* Level of engagement: *Example - Co-design* Type of patients' representative: *Example – people with and affected by the disease, including family members and caregivers* Requirements: *Example - No specific or scientific expertise of patients is required other than their experiential knowledge*
RESEARCH PRIORITIES	Expectations: *Example - Patients help to identify and prioritize the unmet needs of Patients* Actions plan 2: *Examples - Action 2.1: ETC and WG design and launch a "Public consultation" to identify patients' needs, relevance of initiative/project approach and confirm compliance with the initiative/project direction. (online method)* *Action 2.2: ECT organize a Focus group with WG (and other relevant stakeholders) to revise the initiative/project according to the outcomes of the public consultation. (offline method)* *Action 2.3: ECT and WG works remotely to integrate outcomes of Action 1.1 and Action 1.2 into the development of the initiative/project.* Level of engagement: *Example - Consult* Type of patients' representative: *Patients, family members and caregivers* Requirements: *No specific or scientific expertise of patients is required other than their experiential knowledge*
STEERING INSTITUTIONS	Expectations: *Example - Patients are enabled to integrate their experiential knowledge in R&I being part of the governance and having decision making power.* Actions plan 3: *Example - Action 3.1: Establish governance bodies to enable Patient Engagement in line with MULTI-ACT Governance Model (i.e. ECT, PAB)* Level of engagement: *Example - Co-design* Type of patients' representative: *Example - Patients, family member and caregivers* Requirements: *No specific or scientific expertise of patients is required other than their experiential knowledge*
DESIGN & PLAN	Expectations: *Example - Patients help to co-design specific programs/project* Actions plan 4: *Example - Action 4.1: ECT engage patients as evaluators in the selection of funding or as peer-reviewers*

	Level of engagement: *Example - To be defined based on the identified actions* Type of patients' representative: *Example - To be defined based on the identified actions* Requirements: *Example - To be defined based on the identified actions*
RESEARCH EXECUTION	Expectations: *Example - Patients help the execution of R&I as co-researchers providing experiential knowledge.* Actions plan 5: *Example - Action 5.1: ECT engage patients for helping in recruitment and data collection* Level of engagement: *Example - To be defined based on the identified actions* Type of patients' representative: *Example - To be defined based on the identified actions* Requirements: *Example - To be defined based on the identified actions*
EVALUATION	Expectations: *Example - Patients help the evaluation of R&I on the outcomes that matter most to them.* Actions plan 6: *Action 6.1: ECT engage patients for data analysis and interpretation, patients asked to design PROs that matter to them.* Level of engagement: *To be defined based on the identified actions* Type of patients' representative: *To be defined based on the identified actions* Requirements: *To be defined based on the identified actions*
TRANSLATION TO COMMUNITY	Expectations: *Example - Patients participate to advocacy campaigns that leverage on R&I's results and help their translation to community as ambassadors.* Actions plan 7: *Example - Action 7.1: ETC engage patients in communication activities and outreach, patients co-authored publications and conduct knowledge translation.* Level of engagement: *Example- To be defined based on the identified actions* Type of patients' representative: *Example - To be defined based on the identified actions* Requirements: *Example - To be defined based on the identified actions* Discussion questions: *Example - Is the dissemination material understandable by patients? Are the papers resulting from R&I relevant also from the patient's perspective?*
Wrap-up for all steps	Considering all the action plans, summarize the actions, type of patients and requirements instrumental to define/implement governance boards composition (i.e. ECT and WGs). *Note 1: define if it is enough a WG for all the steps or if there is the need of multiple WGs. WGs are coordinated by the ECT.* *Note 2: assure to be sustainable and to maintain an easy structure.*

3) RISKS AND MITIGATION PLAN	
Risks *Anticipate potential risks*	Mitigation plan *Propose mitigation plan for the risk*
Low participation of the patient community	*Taking advantage of the network of patient organizations and relationships establishment*

4) PE PERFORMANCE ASSESSMENT* *MULTI-ACT provide a menu of indicators*	
Objectives *Define objectives for evaluating the PE Plan*	Means of verification *Clearly define how you are going to verify that the objectives are met.*
Example: *Patient engaged with mixed methods*	*Example:* *Number and type of methods used and events that have taken places to grant patients the possibility to express their views/experiences*
Vision and Agenda meet the needs of patients	*Number of reviews/changes made by patients to the Vision and Agenda according to the gaps identified by patients*
Outcomes of R&I are co-developed and endorsed by patients	*Number of reviews/changes of outcomes related to the 7-steps R&I path produced and endorsed by patients*

5) TRAINING FOR PATIENTS and ECT*
Describe the training program related to the Patient Engagement Plan.
Please note that the MULTI-ACT Training module® for the ECT is under development to address the needed skills. *SCOPE:* *Examples:* *Explain the mission and vision* *Provide basic information on the topic, the research context and process* *Explain what is expected from patients and the benefit of engagement (i.e. PE Plan)* *Keep informed on progress (regularly update)* *ACTIONs:* *Example:* *Online/offline training sessions for PWGs* *online engagement methods duly anticipated by exhaustive Information sheet*

6) RECOGNITION AND REWARDS - VALUE OF COLLABORATION*	
Clearly state the mutual benefit of engagement and the mechanism to assure it.	
Financial[66]	*Compensation for expenses incurred when participating in research activities (e.g., travel, fuel, parking)*
Personal	*Thank-you letter* *Public mention and acknowledgment (e.g., in social events, on social media)* *Certificate of participation*
Knowledge	*Access to publications resulting from the research to which they contributed* *Access to training* *Access to scientific literature (or other types of knowledge)* *Opportunities to exchange with researchers and other PPRs after completion of the project*
Academic	*Acknowledgement in knowledge transfer communications* *Acknowledgement in articles* *Invitations as speakers at scientific conferences* *Co-authorship in articles*
Altruistic	*Moral satisfaction* *Augmentation of self-worth* *Augmenting wellbeing of others*
Other	

7) PRELIMINARY BUDGET FOR THE PLAN*	
Define the cost and person months (PM) for the actions resulting from this Plan	
The 7-steps R&I path	Expected costs
BREAKING DOWN BOUNDARIES	*Cost and PM for needed infrastructure set-up* *Cost and PM for ECT establishment and training*
RESEARCH PRIORITIES	*Cost of Public consultation* *Cost for Focus Group (if other representatives beyond ECT and PWGs)* *Cost for ECT (PM needed to develop the actions)* *Cost for PWG (if remuneration is foreseen)*
STEERING INSTITUTIONS	*Cost and PM for the actions defined in step "Steering institution"…*
DESIGN & PLAN	*Cost and PM for the actions defined in step "Design & plan"…*
RESEARCH EXECUTION	*Cost and PM for the actions defined in step "Research execution"…*
EVALUATION	*Cost and PM for the actions defined in step "Evaluation"…*
TRANSLATION TO COMMUNITY	*Cost and PM for the actions defined in step "Translation to community"…*
SUSTAINABILITY	
FUNDIGN SOURCES[67]	*What % of budget may be dedicated to the actualization of PE Plan?*

8) Reporting, meetings & communication channels	
Channels	Use
Meetings (F2F, virtual)	*Meetings among the ECT*
emails	*Formal and informal communication*
Reporting format	*The Report is expected at M12, M24 describing:*

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[66] Please note that the template presents the rewarding model of Smith et Al. 2019 as example. A general description of recognition mechanism is sufficient.

[67] Consider and define the funding sources to cover budget for the Plan.

	- the review process in relation to the performance and value of the Patient Engagement; *- how the objectives of Patient Engagement are met (both on performance and on return on engagement),* *- the value for Patient Engagement (Patient Engagement Plan's outcomes/ Cost to put in place the Plan = Value).*

9) ETHICAL ASSESSMENT/ ETHICAL COMPLIANCE OF THE PLAN*

Describe any ethical aspects to be considered in the plan and propose compensative actions in case of gaps

Actions	Ethical aspects	Tools, mean of verification
Action 1.1: Establish governance bodies and team dedicated to the engagement (i.e. ECT)	*Agreement with the boards' members (i.e. ECT)*	*Term of Reference for boards (i.e. ECT)*
Action 2.1: "Public consultation": Data collection and management	*Develop/check a Data Management Plan (DMP) and integration of patient perspective into its development*	*Informed sheet, Informed consent. Possibility to edit and review DMP with a simple sharing tool (e.g. google drive doc, etc.)*
Action 2.2: Focus group with PWG including people with high disability (e.g. in wheelchair)	*Check accessibility of venue, agenda and timing not stressful.* *Possibility of web-streaming and recording in case the person cannot participate in person the day of the meeting.*	*Accessible location, light agenda. Recording and web-streaming of the meeting, possibility to give late contribution*
Action 2.3: ECT and PWG works remotely to integrate outcomes	*Compliance with respect of time*	*Appropriate technologies to connect and facilitate the people involved in activities*

10) COMPLIANCE OF THE PE PLAN TO THE MULTI-ACT CRITERIA
Check the criteria for Patient Engagement and list the criteria that are NOT met and if those may affect the performance or the value of the engagement.

Check file MULTI-ACT PATIENT ENGAGEMENT CRITERIA – see D1.6 - Appendix 5

11) TECHNICALITIES, OPERATIONAL ASPECTS
List material and document to be prepared and other technicalities

Timeline for Patient Engagement Plan (GANTT) – PLAN ANNEX 1
Description of rationale for deciding methods to be used – PLAN ANNEX 2 (See D1.6 for suggested methods), etc.

ANNEXES TO THE PATIENT ENGAGEMENT PLAN

1.   **PLAN - ANNEX 1** GANTT, PERT for Patient Engagement
2.   **PLAN - ANNEX 2** Analysis of method with respect to the mission and purpose of Patient Engagement and rationale for the methods to be used (an example is provided here after)

Methods	Analysis
Focus Group is a qualitative method which is used to determine the preferences of people or to evaluate strategies and concepts. The method has originally been designed for market research. Participants are selected according to certain characteristics in common that relate to the research topic and are grouped into 8-10 people. It can be conducted face to face or in virtual digital space.	*Example: Selected patients and stakeholders are invited to a meeting to discuss about a topic.*
Consensus Conference The purpose of the consensus conference is to enrich and expand a debate on a socially controversial topic. A group of citizens rather than experts and politicians get together and set the agenda and the basis for assessment within a problem area. This literature review found only a few papers describing engagement of patients using the consensus conference method in the course of research with the view of formulating guidelines or core outcomes.	*Example of qualitative analysis: Time and resources constraints for the purpose of the initiative –to be excluded*

APPENDIX 5 – Criteria for Patient Engagement

MULTI-ACT Governance Model has been used as the basis for defining specific qualitative indicators to evaluate the implementation of Patient Engagement strategies in line with the MULTI-ACT multi-stakeholder and co-accountable strategy. Each governance criterion and qualitative indicator (see Figure 4 The five criteria of the MULTI-ACT Governance Model[68]) has been analysed focusing on patients as key stakeholders. Customized/ad hoc criteria and indicators for engaging patients are presented in the Table 5 A first list of qualitative indicators to evaluate the implementation of MULTI-ACT Governance Model with respect to Patient Engagement . The criteria for Patient Engagement, indeed part of MULTI-ACT Governance Model, are the first attempt to provide good practices and recommendations under the MULTI-ACT Governance Model. The criteria and indicators for Patient Engagement have been shaped starting from the list of qualitative indicators to evaluate the implementation of MULTI-ACT Governance Model (D5.4, Annex 1). Each Governance criteria has been qualitatively analysed considering how to empower patients to become a stakeholder with an "equal decision power" of the other stakeholders. Moreover, the specific requirements of patients as stakeholder with special needs has been considered. Lastly, insights and recommendations emerged in the landscape analysis (D1.4) are reflected in the criteria and indicators.

Table 5 A first list of qualitative indicators to evaluate the implementation of MULTI-ACT Governance Model with respect to Patient Engagement

Governance Criteria	Specific criteria for Patient Engagement	Check-list and indicators
Vision and Agenda		
Vision and Agenda	Vision and agenda Patient Engagement adherence	Describe if and how Patient Engagement (focus on gathering patient experiential knowledge) can enable alignment with the vision and with the desired change (i.e. transformational mission) and facilitate the achievement of defined objectives.
Vision and Agenda	Vision and agenda Patient Engagement adherence	Rely on the identified intended beneficiaries (patients), covering different aspects, such as (not exhaustive); state of the disease, gender, sector, geographical background, culture, language, and background etc.
Participatory Governance		
Participatory Governance	Governance structure	Describe the governance boards in charge of Patient Engagement and, in particular, the structure and composition of the following bodies: - **Engagement Coordination Team** in charge of coordinating the patient and stakeholders' engagement, ensuring the representativeness of their communities. A MULTI-ACT Patients' Recruitment Plan relevant to the target mission should be developed based on the Governance (D5.4) and Patient Engagement Criteria. - **Patient Advisory Board** - **Compliance Committee** (describe how the board meets requirements to ensure ethical approaches to Patient Engagement)

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[68] More information on the meaning of MULTI-ACT Governance criteria are reported in D5.4.

Participatory Governance	Boards composition	Describe the composition of the Boards in terms of patients (gender, sector, geographical background, language, and background)
Participatory Governance	Procedure development	Confirm that the initiative/project has formalized a procedure that describes the governance structure (i.e. interaction between the boards) dedicated to implement Patient Engagement strategies, the roles and responsibilities of all participants and the decision-making processes
Participatory Governance	Mechanisms in place to ensure multi-stakeholder participation	Describe mechanisms in place to: 1) ensure that disadvantaged patients are represented; 2) protect the integrity and multi-stakeholder nature of the initiative; 3) maintain commitment and ownership among the participating patients; 4) assure that the perspective of underrepresented population is duly considered (and that individual perspective is turned into a population one); 5) support patients to express themselves avoiding the sense of self-deprecation; 6) maintain attitudes of respect, trust, reciprocity and co-learning; 7) ensure equality of treatment for all the stakeholders
Participatory Governance *(and Clear, effective and inclusive methodology of stakeholder engagement)*	Identify and cluster patients	List the patients, categories relevant for the MISSION, that should be involved according to the 7-steps R&I path in line with the objectives to be pursued by the initiative/project. It must be mandatory to include those affected by a certain measure in the process of change.
Participatory Governance *(and Clear, effective and inclusive methodology of stakeholder engagement)*	Identification of patients' need, challenges and barriers	Describe the analysis carried out to identify patients' main needs, challenges and barriers to guarantee genuine participation considering their goals and perceptions of impacts (since the beginning) and identify limitations that some specific category of patients might encounter in their participation within the initiative/project, in the 7-steps R&I path.
Clear, effective and inclusive methodology of stakeholder engagement		
Clear, effective and inclusive methodology of stakeholder engagement *(and Effective and efficient management and coordination of the initiative)*	Mechanisms in place to recognize the value of patients' experiential knowledge	Establish and describe appropriate mechanism for recognition of patients' contribution. Examples from Smith et al. 2019: Financial (compensation for incurred expenses, consultant fees, remuneration, etc.); Personal (thank-you letter, public mention, etc.); Knowledge (access to publications, access to training and scientific literature); Academic (acknowledgement in knowledge transfer, co-authorship in articles, etc.); Altruistic (moral satisfaction, augmentation of self-worth and wellbeing of others, etc.). Ensure equality of treatment with respect to the other stakeholders.
Clear, effective and inclusive methodology of stakeholder engagement	Define and approve a methodology to engage patients	Describe the methodology that will be adopted to engage patients, and list the actions that will be undertaken for each of the fundamental steps identified in such engagement processes (i.e. 7-steps R&I path)
Clear, effective and inclusive methodology of stakeholder engagement	Define the level of engagement and type of patients for each steps of the 7-steps R&I path	Based on the steps where patients are engaged (7-steps R&I path) define categories of patients and clearly define the related level of engagement; moreover, it should be formalized what the duties, rights and responsibilities are linked to each level of engagement.

Clear, effective and inclusive methodology of stakeholder engagement	Training and initiating intended beneficiaries	Assure that patients are duly trained for the purposes. Clearly describe and report the process of training patients 1) on the R&I and engagement process, 2) on what is expected from them and 3) on how to provide their experiential knowledge

Effective and efficient management and coordination of the initiative		
Effective and efficient management and coordination of the initiative	Define a clear framework, such as a Patient Engagement Plan	Confirm that the initiative/project has defined a "Patient Engagement plan", and describe all the actions contained that should be put in place by the ECT in order to achieve its objectives, and related responsibilities. The Patient Engagement Plan must contain as minimum requirements: - Patient Engagement actions that needs to be implemented in order to achieve the Vision; - Definition of roles and responsibilities of the ECT that should manage and carry out the implementation of such actions; - Definition of clear and measurable targets; - Presentation of clear timeline of activities; - Definition of a clear review process (e.g. objectives of Patient Engagement); - Information regarding the organization "touch points meetings" (such as periodic strategic meeting with PAB or other stakeholders)
Effective and efficient management and coordination of the initiative	Maintain flexibility and put in place mechanisms to avoid tokenism	Assure a process that allows the incorporation of feedbacks from patients and reviews to revise/change objectives and approach of the initiative/project in a flexible manner. Assure and report oversight and overtime mechanism to avoid tokenism and value the experiential knowledge of patients. Report on the following information: - Number and type of methods used and events that have taken places to grant patients the possibility to express their views/experiences - Number of reviews/changes of the Vision and Agenda, according to the gaps identified by patients - Number of reviews/changes of outcomes related to the 7-steps R&I path produced and endorsed by patients
Effective and efficient management and coordination of the initiative	Implement an effective cost management process	Describe the cost of the Patient Engagement implementation by the ECT, which should at least be composed by the following activities: - Determination of a clear budget for Patient Engagement - Implementation of a cost analysis and assure sustainability of the Patient Engagement plan - Identification of possible gaps and critical issues

Define a shared assessment and monitoring system		
Define a shared assessment and monitoring system	Progress Report development	Confirm that there is a regular publication of Progress Report (on-going, ex-post)
Define a shared assessment and monitoring system	Communication channels set up and maintenance	Confirm that the initiative has created communication channels for constant communication on progress to patients involved (to constantly keep engage patients)

Define a shared assessment and monitoring system	Review process in place	Describe the review process that the initiative has adopted to consider the performance and value of the Patient Engagement to make the initiative's produce outcomes that matter to patients.
		- Describe how objectives of Patient Engagement are met on performance and on /value, impact and return on engagement)
		- Define the value of Patient Engagement (Patient Engagement Plan/ Cost to put in place the Plan = Value)
Define a shared assessment and monitoring system	Feedback mechanisms in place	Describe the mechanisms in place to gather feedback on the Patient Engagement actions and outcomes from stakeholders and the public (other than PAB).