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Increasing uptake through collaboration in the development of core outcome sets: Lessons learned at OMERACT 2023

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ABSTRACT

Objective: This manuscript highlights the importance of enhancing the uptake of Core Outcome Sets (COS) by building partnerships with Collaborators and addressing their needs in COS development.
Methods and setting: This session was structured as a simulation, resembling a format akin to a classic television game show. The moderator posed a series of questions to eight different Collaborator groups who briefly described the importance of COS within their areas of interest.
Previous studies examining the uptake of individual core outcomes revealed disparities in uptake rates. The Identified barriers to the uptake of COS include the lack of recommendations for validated instruments for each domain, insufficient involvement of patients and key Collaborator groups in COS development, and a lack of awareness regarding the existence of COS.
Conclusions: This analysis underscores the need for COS development approaches that prioritize the inclusion of patients and diverse Collaborator groups at every stage. While current studies on COS uptake are limited, future research should explore the broader implementation of COS across diverse disease categories and delve into the factors that hinder or facilitate their uptake such as, the importance of COS developers extending their work to recommending domains with well validated instruments. Embracing patient leadership and multifaceted engagement is essential for advancing the relevance and impact of COS in clinical research.

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Introduction

Over the past decade, there has been an increased focus on understanding the uptake of Core Outcome Sets (COS) [1]. Preliminary evidence is mixed, with some disease-specific COS being used in almost all relevant studies, and some not used at all [2,3]. Given the considerable time, energy and resources that underpin the development of a single COS, there needs to be a clearer collaborative strategy to promote their use and avoid research waste [4]. OMERACT stands for Outcome Measures in Rheumatology and supports the development of COS, identifying patient and disease-relevant areas to be measured (domains) and the corresponding instruments for use in clinical trials and Longitudinal studies, including those for regulatory approval of new treatments [5].

To improve COS uptake, OMERACT established a group in 2015 with two main goals: The first was to develop a formal knowledge translation framework, and the second to promote the uptake of COS. The work and presentations at OMERACT 2016 led to the publication of the OMERACT integrated knowledge translation framework [1], which formalized OMERACT strategies for translating knowledge into action. As part of this framework, OMERACT developed strategies to improve Collaborator engagement throughout the process of COS development and identified innovative ways to promote their uptake.

During OMERACT 2018 [6], a plenary session focused on implementation and knowledge translation. Participants discussed ways to promote the uptake of COS using the OMERACT integrated knowledge translation framework. The importance of maintaining attention on this issue was highlighted by the results of two questions put to participants. Although 76 % of respondents believed that 90 % of clinical trials should report all measures in each OMERACT COS, 62 % estimated that less than 30 % of clinical trials were utilizing these COS These results underscore the ongoing need for continued efforts to raise awareness and promote the uptake of standardized domains and outcome measures across diverse research contexts. OMERACT remains committed to advancing the science and practice of patient-centered outcome measurement and to fostering collaboration and innovation across diverse Collaborator groups.

Collaborators refer to those who are responsible for or affected by healthcare and healthcare-related decisions. Other terms may include Interested people and groups, end-users, knowledge users, affected groups, decision-makers, and contributors, among others. We previously used the term ‘stakeholder’ to refer to these individuals, however OMERACT recognized several negative historical uses of the word "stakeholder", such as its colonial roots in which a stakeholder was the person who drove a stake into the land to demarcate the land they were occupying/stealing from Indigenous territories. In this context, it has been suggested that stakeholders should instead be referred to as “partners” or “rights holders” (Government of British Columbia, 2021). Continued use of the term ‘stakeholder’ is disrespectful to our Aboriginal and Indigenous partners. In consultation with the MuSE Consortium (https://methods.cochrane.org/equity/projects/multi-stakeholder-engagement-muse) and others external to this group we have selected ‘Collaborators)’ as a suitable replacement. We will shorten this to ‘Collaborators’ throughout this paper to help distinguish this group from others (e.g., external groups).

At OMERACT 2023, further work was undertaken to understand multiple Collaborator perspectives on COS uptake. The Collaborators were offered an opportunity to gather as a community to discuss how COS uptake can enhance the value and impact of research, inform clinical decision-making, and support health policy. Another goal was to assess the reasons that appropriate COS are not being used and applied.

Methods

In a unique approach, the session mirrored a television game show, with the COS perspective represented by JPP as the host. Collaborators including patient research partners (PRPs), healthcare providers, researchers, Health Technology Assessment (HTA), policymakers, and regulators, were asked specific questions designed to explore COS compatibility. The focus of the discussion was not merely on the theoretical aspects of compatibility. Instead, Collaborator groups were encouraged to share practical insights, drawing from their experiences and knowledge. By doing so, the session transcended abstract discussions, delving into the real-world applicability of the COS in diverse contexts. As the simulation progressed, the dialogue between the COS and the Collaborator groups gained more insight. Each response contributed to an understanding of the collaborator’s needs, priorities, and expectations concerning COS. This sessions’ structure facilitated active participation and collaboration among eight different Collaborator groups, who briefly ’described their interaction with research and COS within their areas of interest. These are summarized in the Table 1 below.

Three questions were explored with the Collaborator panel.

Responses were prepared with the moderator in advance, and this was shared with the panelists, one participant submitted a prerecorded video, another participated by video conference (live) and the rest were present in the room. A moderator and a chair facilitated the discussion. The panelists had the questions ahead of time and were able to discuss them with the moderator and chair prior to the session.

Our multiple Collaborator groups were asked the following three questions:

1. What are the most important things about a COS that you are looking for when considering the potential for a "long-term relationship"?
2. What do you need in a COS to "fall in love" with it, and what are the turn offs?
3. Who would you bring to a multi-collaborator open research relationship"?

The panel discussions were transcribed, and a senior methodologist (BS) verified the quality of the transcription against the video of the session. Thematic analysis was conducted looking for similarities and differences in the responses to the questions. Exemplars were highlighted during this process.

Results

Synthesis of responses from across the various Collaborator groups

Several themes arose across the Collaborator groups. Perhaps the most important aspect was the imperative that the COS must reflect what patients consider most important. It was about involving patients in every step of the COS development process and ensuring that the outcomes chosen resonated with their experiences, priorities, preferences, and overall well-being. Recognizing that patients are the ultimate recipients of healthcare interventions, it was unanimously expressed that the outcomes measured must hold genuine meaning and relevance in their lives. This patient-centered approach, where the COS truly reflects patients’ perspectives, was identified as the cornerstone of meaningful healthcare research.

Each of these themes highlights a fundamental aspect of the COS development process: the need for patient-centeredness, seamless integration into research and policy, and alignment with the practical, everyday concerns of patients. In the subsequent sections, these themes will be explored in detail, emphasizing the impact they have on the quality and patient-centeredness of healthcare research, practices, and policies.

Question 1: What are the most important things about a COS that you are looking for when considering the potential for a long-term relationship?

Evidence of patient engagement and collaboration with multiple Collaborators: All Collaborator groups expressed that patients play a central role in healthcare, and their active involvement in the

development of COS ensures that research questions, interventions, and outcomes are genuinely aligned with their needs and priorities. Given the diversity of experiences and preferences within healthcare, COS development must be inclusive and adaptable to reflect this diversity. They expressed that it is essential that patient engagement should be conducted as a co-production and not just limited to the initial development stage; it must persist throughout the lifetime of COS, up to its uptake and eventually updating of the COS. Sustained engagement guarantees that the COS remains impactful in enhancing patient-centered care.

Alignment with Priorities: Our Collaborator groups expressed the need that COS should enable healthcare providers to make comprehensive treatment comparisons, leading to evidence-based care and shared decision-making. There is a need to measure pathophysiologic manifestations. Pharmaceutical companies strategically use COS to detect meaningful treatment changes, align with regulatory criteria, and inform resource allocation. COS becomes a tool for guiding long-term planning and positioning in the market. Payers, such as Centers for Medicare and Medicaid Services (CMS), value COS that align with their decision-making criteria. When COS match payer priorities and offer transparent evidence supporting outcomes related to healthcare value, they become efficient tools for making evidence-based coverage decisions that improve health outcomes and promote value. Policy makers and regulators prioritize evidence-based regulatory decisions and appreciate COS that incorporate diverse Collaborator perspectives. Alignment with safety and efficacy objectives ensures that policies are grounded in scientific rigor.

Question 2: What do you need in a COS to fall in love with it, and what are the turn offs?

Patient-Centered Outcomes and Continuous Engagement was again a central theme expressed by all and revolves around the fundamental principle of patient-centric healthcare decision-making, emphasizing the role of patients in shaping COS. This will again ensure that research questions, interventions, and most importantly outcomes are in alignment with their diverse priorities.

Shared decision-making: As an outcome of patient engagement in COS development, patients gain information to participate in treatment decisions, aligning care with their values. Collaboration among patients, healthcare providers, researchers, and policymakers were again emphasized by our panel members, ensuring genuine reflection of patient experiences. Ongoing patient and caregiver engagement maintains COS validity, responsiveness to changing healthcare priorities, and alignment with patient-centered care. COS evolution aligns with healthcare changes, encompassing broader patient life dimensions beyond just clinical metrics. But patient engagement may look very different for each of our Collaborator groups. This was expressed particularly by our regulatory panel members.

Bringing high quality instruments as well as domains to the relationship. Turn OFF would be a domain set without validated instruments to make it useable. All panel members stated their necessity for consistency in measurement within COS, particularly to enable cross-study comparisons and evidence-based decision-making among all Collaborators. Transparent development based on solid evidence builds trust and credibility among clinicians, patients, and researchers, enhancing the acceptance of COS. Well defined domains and validated instruments, supported by regulatory endorsement, were expressed as pivotal for ensuring clinical relevance and enhancing the reliability of COS. OMERACT and other COS developers need to prioritize these aspects in future developments.

Question 3: Who would you bring to a multi-collaborator, open research relationship?

Inclusive Collaboration in COS Development: The need for this ongoing collaborative approach was voiced by most of our panel members. They emphasized the value of multiple perspectives and experiences in shaping COS. Inclusivity in COS development ensures that the outcomes measured are relevant and meaningful across various contexts. Collaboration among a variety of Collaborator groups, could ensure the credibility and applicability of COS, making their outcomes more effective in the long-term.

This multi-disciplinary and inclusive collaboration in COS development ensures a methodologically sound approach, advancing the field of COS and contributing to the broader understanding of healthcare outcomes and decision-making processes.

Common ground across multi-collaborator groups

Patient-Centeredness*:* A common thread across all Collaborator groups is to patient-centeredness. The Collaborators repeatedly expressed that 'Patients and their representatives are at the heart of COS development, ensuring that the outcomes are meaningful, relevant, and aligned with real-world patient experiences.'- This shared commitment of co-production highlights the universal recognition that healthcare decisions should prioritize the well-being and perspectives of those directly affected by the condition. For *example,* PRPs should actively collaborate with various Collaborator groups to bring the patient voice to the forefront, promoting patient-centered COS.

Instruments: Another shared theme is the recognition that COS should come equipped with domains and validated instruments. These instruments provide the means to objectively assess and quantify the defined outcomes. Whether it's patients, healthcare providers, regulators, or payers, all panel members acknowledged the importance of not only identifying what to measure but also how to measure it accurately. Healthcare providers also stress that COS should not only define relevant domains but also offer validated instruments to ensure precise assessment. The suggestion of having high-quality instruments align with current recognized standards and guidelines is a shared expectation. This ensures that COS produce reliable, valid, and credible data, underpinning evidence-based decision-making across the board. 'This is a given for core set development within OMERACT, as well as in other groups.' For *example,* Regulatory representatives emphasized the need for validated instruments within COS to meet objective and interpretable criteria, ensuring the highest standards of evidence.

Discussion

The discussion surrounding the development of COS among various Collaborators is a complex interplay of common ground and unique perspectives. At its core, the commitment to patient-centeredness emerged as a universal value among all Collaborator groups. This shared commitment recognizes that healthcare decisions must prioritize the experiences, well-being, and voices of patients who are directly affected by a medical condition. Patients and their representatives actively collaborate with healthcare providers, regulators, and payers to ensure that COS truly reflects what matters most to those receiving care.

Another agreement across Collaborator groups was the need for domains and validated instruments within COS. Identifying which outcomes to measure is essential, but equally important is determining how to measure them accurately and objectively. This shared understanding emphasizes the importance of validated instruments that can produce reliable and credible data. Healthcare providers stress the need for these instruments to ensure precise assessment and enhance the quality of care.

Quality standards are also a common theme, with all Collaborator groups emphasizing the importance of aligning COS with recognized standards and guidelines for developing COS, such as COS-STAD, COS-STAP and COS-STAR [7–9]. Unique perspectives and priorities emerged among different Collaborator groups. Regulators, for instance, apart from their commitment to patient-centered outcomes need to assure that the safety and efficacy of medical treatments remains demonstrated, outcomes do not only need to be patient-centered but also scientifically validated and practical. Regulators play a crucial role in safeguarding public health, and their focus on objective standards underscores their

commitment to regulatory rigor.

Payers, including organizations like CMS, bring their own set of priorities into the discussion. They emphasized the practicality and actionability of COS within healthcare systems. For payers, the alignment of COS with structured decision-making rules is critical. They evaluate COS for their potential impact on tailored coverage and reimbursement decisions, reflecting their role in making informed resource allocation choices within healthcare systems, that result in improved health outcomes and promote value.

This manuscript focuses on the current development and uptake of COS. It highlights the need to have a comprehensive collaborative strategy to foster their widespread uptake. By actively involving multiple Collaborators throughout the development process, OMERACT and other organizations such as the FDA and EMA will ensure the inclusion of outcome measures that truly reflect patient-centered needs.

The strategies suggested in the current work will help to strengthen our Collaborator engagement more effectively. This will potentially bring in more diverse views of key Collaborators.

The use of the structured simulation where the OMERACT moderator posed a series of questions to various Collaborator groups during our 2023 workshop, brought forward the spirit of collaboration between the various organizations. The creative and engaging approach displayed an appreciation for the benefit of COS uptake among the various Collaborator groups. COS uptake will no doubt contribute to the advancement of evidence-based medicine and the overall improvement of patient care and health outcomes.

Conclusion and implications

· Recap of Perspectives on COS Compatibility Recommendations and Future Tasks:

Call to Action for OMERACT and other COS developers:

1. **Patient Centric COS:** OMERACT has been very successful in partnering with patients to develop COS, but we can share this success to maintain the patient-centered focus within and across all Collaborator groups. OMERACT will also be implementing the Patient Engagement Research Scale (PEIRS-22 [11]
2. **Instruments:** Another shared theme is the recognition that COS should come equipped with domains and validated instruments.
3. **Multi-disciplinary and inclusive collaboration in COS development:** Encourage cross-disciplinary collaboration among all Collaborator groups. This can involve bringing together diverse groups, including patient advocacy organizations, healthcare professionals, researchers, HTA, regulators, and payers, to collectively advance the field of COS development. This collaboration could involve the early engagement of regulatory authorities in the COS development process to align expectations and ensure that COS meet both patient-centered and regulatory standards.
4. **Dissemination and Accessibility:** Efforts should be made to disseminate COS widely and share the knowledge about COS, along with the ongoing development of COS. This includes the use of centralized repositories or databases such as the COMET Database [10], where COS can be accessed by healthcare providers, researchers, and policymakers. Ensuring accessibility promotes the uptake of COS in various healthcare settings.

Definitions

A **core outcome set** (COS) is a consensus-derived collection of outcomes and instruments that allows researchers to measure a consistent set of clinical endpoints in studies of a health condition. Core outcome sets are developed through an evidence-based and iterative process during which all possible outcomes for a health condition are methodologically gathered and then selected by an international group of experts and patients.

CRediT authorship contribution statement

Beverley Shea: Methodology, Writing – original draft. **Jordi Pardo Pardo:** Conceptualization, Methodology. **Shawna Grosskleg:** Conceptualization, Methodology, Writing – original draft. **Dorcas E Beaton:** Methodology, Writing – original draft. **Philip Conaghan:** Methodology. **Wim Goettsch:** Conceptualization, Methodology. **Catherine Hofstetter:** Conceptualization, Methodology. **Lara Maxwell:** Methodology, Writing – review & editing. **Joachim Musaus:** Methodology, Investigation. **Daniel Ollendorf:** Conceptualization, Methodology. **Grayson Schultz:** Conceptualization, Methodology. **Randall Stevens:** Conceptualization, Methodology. **Vibeke Strand:** Conceptualization, Methodology, Investigation. **Peter Tugwell:** Conceptualization, Methodology, Writing – original draft. **Paula Williamson:** Conceptualization, Methodology. **Sean Tunis:** Conceptualization, Methodology, Writing – original draft. **Lee S Simon:** Conceptualization, Methodology, Writing – original draft.

Declaration of competing interest

Beverley Shea: Senior methodologist support

Jordi Pardo Pardo: Travel costs for the meeting were covered by OMERACT.

Shawna Grosskleg: None

Dorcas E Beaton: Member of the management committee. Leads the Methods initiative and Co-Chair-of the Technical Advisory Group.

Philip Conaghan: Member of the management committee.

Wim Goettsch: None

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Joachim Musaus: None

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Appendix 1- Table 1

User of the Core Outcome Sets Developed at OMERACT	Notes on their roles in the development and update of COS
Patient research partners (PRPs)	PRPs have an important role in clinical research by collaborating with researchers, employing co-production principles to shape research questions, interventions, and outcomes. This approach prioritizes patient-centered, evidence-driven research, benefiting patients' lives. Their involvement impacts the development of COS by prioritizing a patient-centered and evidence-driven approach, ensuring outcomes measured are relevant and meaningful to patients. This engagement of PRPs contributes to the uptake of COS, aligning identified outcomes with patients' needs and priorities. Consequently, it enhances the relevance and applicability of research findings in clinical practice, benefiting patients' lives by improving healthcare outcomes.
Healthcare Providers	Healthcare Providers play a significant role in clinical research by actively contributing to data collection, patient engagement, and protocol adherence. Their expertise ensures ethical research conduct and alignment with patient safety and needs. In the development of COS, Healthcare Providers' expertise is instrumental in ensuring outcomes' relevance, practicality, and alignment with patient care. Their involvement bridges the gap between trial data and clinical decision-making. Healthcare Providers also play a role in the uptake of COS by implementing these standardized outcome measures. Their understanding of patient care needs enables the seamless integration and uptake of COS into routine clinical assessments, improving patient care and treatment outcomes.
Health policy decision makers	Health policy decision makers rely on HTAas a tool in evaluating the safety, efficacy, and value of medical technologies and drugs derived from clinical research. HTA reports serve as essential resources guiding healthcare policy decisions and shaping the selection of treatments and services for patients, particularly in nations with national health insurance systems. Their role in the direct development of COS might even be more indirect. Through their reliance on HTA reports assessing medical technologies and interventions, health policy decision makers indirectly influence the prioritization and uptake of outcome measures that align with demonstrated effectiveness and value, potentially shaping the development of COS. In the uptake of COS, health policy decision makers use HTA reports and evidence-based assessments to guide policies that facilitate the integration of standardized outcome measures into healthcare systems. Their decisions significantly impact the uptake of COS in clinical research, ensuring that healthcare services align with established effectiveness and value metrics, thereby benefiting patient care.
Payers of Health Research – Pharma	Payers of Health Research - Pharma actively participates in clinical research by providing disease expertise, resources, and funding for trials. Their involvement often extends to designing and conducting clinical trials, applying regulatory knowledge to ensure compliance, and collecting data necessary for drug development and approval. In the development of COS, Payers of Health Research - Pharma contribute significantly by leveraging their disease-specific expertise and resources. Their involvement aids in aligning outcomes with patient needs and specific impacts of products, thus influencing the selection and development of relevant outcome measures that reflect the effects of their drugs or interventions. Their role in the uptake of COS is crucial. Payers of Health Research - Pharma use their expertise and resources to support the integration and uptake of COS into clinical research. By ensuring that outcomes measured align with patient needs and reflect product-specific impacts, they facilitate the acceptance and utilization of COS in evaluating treatment effectiveness and informing healthcare decision-making.
Heath Technology Assessment (HTA)	HTA Collaborators play a role in assessing the effectiveness, safety, and value of healthcare services and technologies, ensuring that patient-centered outcomes are prioritized and considered in research evaluations. In the development of COS, their influence and guidance stress the necessity of developing outcome measures that allow for meaningful comparisons in healthcare assessments, thereby indirectly impacting the selection and development of COS. Additionally, their role in the uptake of COS is significant. By promoting the integration of COS into clinical practice, they facilitate the use of standardized outcomes for more meaningful evaluations and decision-making in healthcare services and policy.
Policymakers: Payers of Health Care Services – Centers for Medicare and Medicaid Services (CMS)	Policymakers stress the importance of aligning clinical trial outcomes with their mission to enhance healthcare quality and value for beneficiaries. They play a role in ensuring that clinical trial outcomes resonate with the goals of improving healthcare quality and value for those under Medicare and Medicaid programs. In the context of the development of COS, CMS emphasizes the significance of patient-centered care and seeks standardized outcomes derived from COS. Furthermore, CMS's role in the uptake of COS is pivotal. They advocate for and prioritize standardized outcomes obtained from COS to inform healthcare decision-making. By leveraging COS, CMS aims to enhance the relevance and applicability of outcomes in evaluating healthcare services, thereby contributing to improved decision-making and enhanced healthcare quality and promoting value for beneficiaries.
Regulatory Representatives/EMA	Regulatory Representatives, such as the EMA (European Medicines Agency), place significant emphasis on rigorous scientific evidence in drug evaluations. While maintaining a focus on scientific evidence, they also value the patient perspective in the evaluation process. This balanced approach ensures that drug evaluations consider both scientific rigor and the impact on patients. In the context of the development of COS, regulatory representatives like the EMA seek validation of COS to ensure alignment with patient priorities. They aim to establish clear expectations for trial outcomes, aspiring for consistency across regulatory bodies and alignment with HTA groups. This validation process ensures that COS reflect patient-centered outcomes and meet the standards expected by regulatory bodies, HTA groups, and patients alike. In regulatory assessments, patient experiences and scientifically validated outcomes hold paramount importance for representatives like the EMA. By prioritizing patient-centered outcomes and scientifically validated data, regulatory bodies ensure that drug evaluations consider both the measurable scientific evidence and the real-world impact on patients, aiming for an overall evaluation of drug safety and efficacy.
Regulatory Representatives/FDA	Regulatory Representatives, particularly the FDA (Food and Drug Administration), play a crucial role in ensuring that clinical trial outcomes align with public health and regulatory safety and effectiveness goals. Their primary responsibility involves overseeing the safety and efficacy of medical products, thus emphasizing the alignment of clinical trial outcomes with public health priorities and regulatory standards. In the context of the development of COS, the FDA's emphasis on patient-centered care is evident through programs aimed at gathering patient insights. By incorporating patient perspectives into clinical trial outcomes selection and product approval decisions, the FDA indirectly influences the development of COS that prioritize patient-centered outcomes and align with regulatory safety and efficacy goals.

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