Value-based evidence across health care sectors: a push for transparent real-world studies, data, and evidence dissemination

Remon W. M. van den Broek1*, Robert J. Matheis2, Jennifer L. Bright3, Tessa E. Hartog1 and Eleanor M. Perfetto4,5

1Excerpta Medica B.V., Amsterdam, The Netherlands, 2International Society for Medical Publication Professionals (ISMPP), Tarrytown, NY, USA, 3Innovation and Value Initiative Foundation, Alexandria, VA, USA, 4School of Pharmacy, University of Maryland, Baltimore, MD, USA and 5National Health Council, Washington, DC, USA

*Corresponding author. Email: remon.vandenbroek@excerptamedica.com

(Received 2 February 2021; revised 26 November 2021; accepted 15 February 2022; first published online 6 April 2022)

Abstract
There is currently a heightened need for transparency in pharmaceutical sectors. The inclusion of real-world (RW) evidence, in addition to clinical trial evidence, in decision-making processes, was an important step forward toward a more inclusive established value proposition. This advance has introduced new transparency challenges. Increasing transparency is a critical step toward accelerating improvement in type, quality, and access to data, regardless of whether these originate from clinical trials or from RW studies. However, so far, advances in transparency have been relatively restricted to clinical trials, and there remains a lack of similar expectations or standards of transparency concerning the generation and reporting of RW data. This perspective paper aims to highlight the need for transparency concerning RW studies, data, and evidence across health care sectors, to identify areas for improvement, and provide concrete recommendations and practices for the future. Specific issues are discussed from different stakeholder perspectives, culminating in recommended actions, from individual stakeholder perspectives, for improved RW study, data, and evidence transparency. Furthermore, a list of potential guidelines for consideration by stakeholders is proposed. While recommendations from different stakeholder perspectives are made, true transparency in the processes involved in the generation, reporting, and use of RW evidence will require a concerted effort from all stakeholders across health care sectors.

Keywords: Health care system; peer review; real-world evidence; transparency; value assessment; value communication

1. Introduction
Across health care sectors, there is an accelerating recognition of the need for concrete action to secure a transparent flow of information on treatment effectiveness and value, given the specific and unique requirements for regulatory approval and, ultimately, access to new medications and health care technologies (Ross et al., 2012; Fraser et al., 2018). In parallel, the information available to inform health care decisions – especially decisions optimized for the individual – is expanding rapidly, and interest in the use of evidence beyond clinical trials has been growing for many years in step with technological and methodological advances. Besides patients and their caregivers, members of the general public are also entitled to transparency in health care decision-making. The inclusion of real-world (RW) evidence has been an important step forward in moving toward a more inclusive established value proposition (Dhruva et al., 2018). However, this advance has brought with it new transparency challenges.

© The Author(s), 2022. Published by Cambridge University Press. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

https://doi.org/10.1017/S1744133122000056 Published online by Cambridge University Press
Society only truly benefits if the health care sector is universally transparent in inputs, processes, and outcomes, and integrates the participation and viewpoints of all key stakeholders (Henke et al., 2011). Transparency of methods, assumptions, and data is fundamental to improving the credibility and relevance of efforts to identify and pay for the highest-value health care. In turn, transparency increases the accountability of all stakeholders and constituencies regarding their actions, ensures visibility about the roles of stakeholders in decision-making processes, increases the awareness of patients and caregivers that the decisions being made reflect their preferences and priorities, and allows decision-makers to assess both the rigor and relevance of the evidence on which they base their choices in resource allocation (Henke et al., 2011; Leviton and Melichar, 2016). Transparency, in itself, does not equate to quality, but rather allows for the evaluation of quality. The achievement of true transparency in the processes involved in the generation, reporting, and use of RW evidence will require an intensification of the ongoing efforts from all stakeholders across health care sectors, taking concrete action to improve procedures and processes.

This policy perspective paper aims to highlight the need for wide-ranging transparency concerning RW studies, data, and evidence (see Figure 1) across the health care sector, and to identify areas for improvement and provide concrete recommendations and practices to help bring about substantive change for the future.

2. Methods
An initial virtual meeting was hosted to discuss aspects of transparency surrounding RW studies, data, and evidence dissemination. The participants consisted of a small but diverse panel of six experts, who could draw on specific expertise and experience, with backgrounds in relevant fields and professional organizations, including International Society for Medical Publication Professionals (ISMPP), global pharmaceutical companies, academia with health policy expertise, medical communications agencies, and a value framework agency. The participants agreed to participate in a roundtable discussion and act as authors of a subsequent manuscript. The roundtable consisted of two informal but structured virtual events during which participants discussed transparency issues from their individual perspectives and drawing on their professional experience. The discussions focused on identifying themes, deficiencies, and potential solutions, aiming to arrive at clear recommendations for improvements moving forward. Ideas generated during the first discussion were collected and presented to the participants prior to the second discussion, during which they were further refined. Further discussion and refinement of ideas occurred by email at various stages during the drafting of this manuscript.

3. Results from the roundtable discussions
There are many concepts and definitions of what constitutes ‘RW studies’, ‘RW data’, and ‘RW evidence’. The authors feel that an initial step toward improving transparency would be a general acceptance of clearly defined terms. We suggest that a ‘RW study’ is an initiative to prospectively collect data on patients in a RW setting, or to retrospectively gather data from databases or health records that have been collected in a RW setting. ‘RW data’ are data originating from a RW study. ‘RW evidence’ is information from RW studies that has either been publicly communicated or assessed for relevance and quality (by peer review). These definitions are summarized in Table 1. In the following sections, specific issues concerning RW study, data, and evidence transparency are discussed. Recommended actions for improved transparency are discussed, and those recommendations together with associated key stakeholders are presented in Table 2. As an aid to achieving enhanced RW data transparency among stakeholders, a number of guidelines and standards could be useful for consistency. Potential guidelines for consideration by governing societies (some already under consideration, and some new) are given in Table 3.
4. Health care in the real world and the need for transparency

Historically, health care decisions were primarily based on clinician expert opinion and were heavily reliant upon clinical trial data (Umscheid et al., 2011). Bias in the selective reporting of clinical trials, concealing relevant information from patients and health care providers, led to a call to action for clinical trial submission requirements. Publishers introduced ICMJE authorship guidance (ICMJE 2018), the CONSORT (Schulz et al., 2010) and SPIRIT (Chan et al., 2013) guidelines, and other guidelines included in the EQUATOR network (2020). This resulted in obligatory registration of clinical trials and reporting of trial results (EU 536/2014, 2020; FDAAA 801 and the Final Rule, 2020), one of the first major advances aiming for greater transparency across health care sectors.

A driving force in the development of alternative research designs has been the need to generate evidence with greater external validity to complement the internal validity of RCT data.

Figure 1. The transparency challenge. Key recommendation themes as described in Table 2 are depicted on the outside as well as their place within the evolution from RW study, data toward evidence. Inner circles depict key stakeholders and the level of current transparency, with red indicating the need for more transparency and green indicating a transparent process.
Additionally, clinical trials are expensive and lengthy, tend to be relatively small and lacking in diversity, are difficult if not impossible to perform for ultra-rare disorders, and are sometimes precluded by ethical issues, such as the need for a cancer trial without a control arm or with a synthetic control arm. In response, RW studies were introduced, and they have been evolving in quality, availability, and size, as well as methods for data analysis (Berger et al., 2017; Khosla et al., 2018).

The combination of increasing health care costs, the drive toward patient centricity, and a growing interest in the effectiveness of treatments in RW settings have also contributed to the need for supplemental forms of data beyond clinical trials in relevant patient settings (Califf et al., 2016; Sherman et al., 2016; FDA, 2019). Decision-making should be based on a synthesis of data on RW effectiveness and clinical trial efficacy, combining external and internal evidence.

Table 1. Definitions of RW study, data, and evidence

| Term            | Definition                                                                 |
|-----------------|---------------------------------------------------------------------------|
| RW study        | Designed to prospectively collect data on RW patients or retrospectively draw on existing RW databases and health records |
| RW data         | Data originating from RW studies                                          |
| RW evidence     | RW studies that have either been publicly communicated or assessed for relevance and quality (peer review) |

RW, real-world.

Table 2. Recommended actions for improved RW study, data, and evidence transparency and responsibilities of stakeholders

**Pharmaceutical and biotechnology company responsibilities**

- Transparency of engagement processes that include patient/caregiver experience and expertise in defining real-world outcomes of interest. Use of RW and appropriate/relevant PRO measures to allow assessment of evidence quality
- Transparent design and conduct of RW studies, through hosting of protocols and results on an online platform similar to requirements for clinical trials

**Researchers, publishers, and professional society responsibilities**

- Submission of transparent RW manuscripts by all researchers for peer review
- Investment by journals in understanding RW studies and endorsement of the peer review and publishing of such studies, and assurance by publishers that peer review includes reviewers with real-world study experience (at a scientific, clinical, and patient expertise level)
- Development and implementation of good RW communications practice by publishers and professional societies, through the development of specific RW-communication checklists (similar to the CONSORT checklist) including adherence to guidelines for conducting studies and reporting data, the use of study registration numbers, and access to study protocols
- Communication of evidence through peer-reviewed publications involving the cooperation of publishers, scientists, and societies
- Provision of no-cost, open-access, lay-audience summaries to enable patients, caregivers, and the general public to properly assess evidence

**Medical evaluation and decision-maker responsibilities**

- Implementation of solid methodology and good assessment practices to allow for proper evaluation of RW evidence
- Engagement with the patient community to inform the decision-making process

CONSORT, Consolidated Standards of Reporting Trials; PRO, patient-reported outcome; RW, real-world.
validity. Although different RW data sources have different strengths and limitations, the selection of appropriate RW data sources should be performed in a way that provides an appropriate level of validity, reliability, and transparency. So far, tangible improvements in transparency have been relatively restricted to clinical trials, and real progress in advancing standards of transparency concerning the generation and reporting of RW data has lagged behind (Loder et al., 2010; Szkultecka-Dębek and Drozd, 2015; International Society for Pharmacoeconomics and Outcomes Research, 2017; ISPE-ISPOR Special Task Force, 2020). Transparency surrounding RW study design and reporting of RW data is not regulated, and there remains a lack of clear guidance on best practices. Furthermore, there is not yet a consensus on appropriate uses of RW data, nor is there a system to evaluate the scientific rigor of RW evidence on a par with that of clinical evidence (e.g., GRADE) (Dhruva et al., 2018; Malone et al., 2018; Miksad and Abernethy, 2018).

Increasing transparency is a critical step toward accelerating improvement in type, quality, and access to data, regardless of whether those data originate from clinical trials or from RW studies (Henke et al., 2011). The imperative to improve transparency, if RW evidence is to be trusted and optimally utilized in decision-making processes, has been recognized by the ISPOR-led Real World Evidence Transparency Initiative (Orsini et al., 2020). Short-, mid-, and long-term recommendations have been made concerning RW secondary data studies, including the identification of the best site to register studies using secondary data, determination of a ‘good’ registration process, and provision of incentives for routine registration of studies (Orsini et al., 2020). For such calls for increased transparency concerning RW studies to result in real change, a concerted effort will be required from all associated stakeholders within the health care sector.

Fortunately, clearer guidance on conducting, reporting, and using RW data for regulatory purposes has been proposed by governmental bodies (Perfetto et al., 2015; US Government Information, 2016; Gabay, 2017; FDA, 2018), and professional societies, such as ISPOR (Berger et al., 2017; Orsini et al., 2020) and CONSORT (Husereau et al., 2013; Calvert et al., 2018).

Transparency in generating data and communicating robust evidence beyond clinical trials, across health care decision-making sectors, is an overall goal for the future. Throughout the health care sector, the drive toward this goal requires adaptation of current practices and careful considerations and collaborations with all stakeholders involved. Collectively, all health care sectors must work to overcome the challenges that prevent transparency (Figure 1).
5. Recommendations from the roundtable discussions

5.1. Transparency of engagement processes that include patient/caregiver experience and expertise in defining RW outcomes of interest; use of RW and appropriate/relevant PRO measures to allow assessment of evidence quality

Generating data is a key step in gathering information on the clinical value of a treatment. Often pharmaceutical companies collaborate closely with clinical institutes or contract research organizations to develop clinical trials. While this process is transparent, it is mainly focused on meeting primary efficacy and safety objectives and endpoints. Regulatory bodies, such as the European Medicines Agency (EMA) and US Food and Drug Administration (FDA), have acknowledged that a deeper integration of the patient and caregiver experience is important and that integration of clinical outcome assessments [including patient-reported outcomes (PROs)] in clinical trial programs broadens the available evidence and can better describe the impact of interventions on the patient experience (FDA, 2018; European Medicine Agency, 2020). This guidance primarily focuses on the integration of PROs in a controlled clinical trial setting. However, health care trends, combined with increasing evidence linking the patient experience to clinical outcomes, are driving the need to integrate the patient/caregiver experience into drug development programs beyond the clinical trial setting. As the number of RW studies, including RW PRO studies, has been increasing over the last decade, the medical industry should actively engage with the move toward more transparent design and conduct of RW patient-orientated studies. Governmental and independent initiatives, such as the CAHPS surveys from AHRQ, and research supported by PCORI, do strengthen the validity of using RW patient-orientated outcomes (AHRQ CHAPS, 2020; Patient-Centered Outcomes Research Institute, 2020a). In addition, comparative-effectiveness research (CER) to assess relative effectiveness, using clinical endpoints that matter to the relevant (subset of) patients is becoming increasingly important to stakeholders such as health technology assessment (HTA) and value framework (VF) bodies and payers (Berger et al., 2017; Law et al., 2018), but is not yet a regulatory requirement of the FDA or the EMA (Patient-Centered Outcomes Research Institute, 2020b).

Additionally, although the patient perspective is becoming increasingly important, interpretation of results, and communication of findings, guidelines, and expectations for how the patient perspective should be incorporated into clinical research are currently lacking (Dhruva et al., 2018; Hoddinott et al., 2018; UK Standards for Public Involvement, 2020).

5.2. Transparent design and conduct of RW studies, through hosting of protocols and results on an online platform similar to requirements for clinical trials

The number of RW study registrations is increasing; however, many researchers currently do not provide RW study registration as there is no requirement for protocol registration. A key issue that drove the active implementation of clinical trial registration was the endorsement by the International Committee of Medical Journal Editors (ICMJE) of the CONSORT guidelines for reporting controlled trials as one of the requirements for publication of results in high-tier journals (DeAngelis et al., 2004). Subsequently, the FDA Amendments Act (FDAAA) of 2007, as well as agencies such as the EMA, required registration of summaries of trial protocols for ‘applicable clinical trials’ (FDA, 2007; EU 536/2014, 2020). Another important transparency measure was introduced through the requirement to report results within one year of completion of the clinical trial (with some provisions for delayed reporting) (Wood, 2009; Commission Guideline, 2012).

The lack of RW study protocol registration and reporting of results can potentially lead to significant bias in reporting positive/selective results, as studies that do not produce the expected data will probably not be completed or submitted for peer review. RW studies, regardless of the origin of RW data, need to be registered in a manner equivalent to that of clinical trials. It is, however, not always possible to fit RW study parameters, which include medical claims
data, EHR data, product and disease registries, patient-generated data (including from in-home-use settings), and data gathered from other sources such as mobile devices, into a CONSORT-style guideline. Consequently, as these CONSORT-style guidelines and officially recognized registration platforms with design features specific for RW studies to provide appropriate study registration information are not yet in place, a concerted effort will be needed with researchers registering RW studies, societies/publishers developing and endorsing RW publication guidelines and requirements, and governments signing measures into law. Additionally, a summary of the results should be made available, within a set time frame of 1 year (or 6 months for pediatric studies), as is now obligatory for clinical trials. Furthermore, there is often confusion concerning the definitions of ‘exploratory’ research vs confirmatory hypothesis testing, which can also contribute to a failure to report RW data, and can generate bias. With obligatory registration of RW study protocols and reporting of results, RW data would become more transparent and assessable (FDA, 2018; Katkade et al., 2018). The pharmaceutical industry, RW outcomes researchers, RW data database agencies, and patient advocacy groups, need to be prepared if study registration and reporting becomes mandatory in the future.

5.3. Submission of transparent RW manuscripts by all researchers for peer review

Various methodology guidelines are available for submission of RW data for peer review, such as CHEERS for health economic evaluations, and STROBE for observational (RW) studies, but these guidelines are not suitable for every type of RW study (e.g., claims database studies, patient surveys, etc.), and they have a predominant focus on reporting of the study methodology alone. Regardless, we encourage submission of RW studies that adhere to the most relevant methodology guidelines, where available. Besides adhering to methodology guidelines, in the absence of official mandatory registration and reporting guidelines, it is recommended to register RW studies on existing platforms such as clinicaltrials.gov, to at least future-proof the publication for uptake in later value-based decisions.

Integrity, accountability, and responsibility for accurate, complete, and transparent reporting are key. The introduction of GPP and subsequent further development of GPP2, and GPP3 guidelines, as directed by the ISMPP, provided recommendations for individuals and organizations that contribute to the publication of research results sponsored or supported by the pharmaceutical industry, and has led to a more responsible and ethical manner of submitting trials and studies for peer review (Battisti et al., 2015). Nonetheless, there is still a lack of trust in the reporting of industry-sponsored studies (Fisher, 2008), which might only be expected to grow with sponsored RW studies. The challenge of achieving credibility for industry-sponsored research is heightened in the communication of RW evidence where there is often an inherent perception of bias and a corresponding lack of guidelines to effectively mitigate this. Thus, clear, transparent submission of data is warranted (Khosla et al., 2018).

5.4. Investment by journals in understanding RW studies and endorsement of the peer review and publishing of such studies, and assurance by publishers that peer review includes reviewers with RW study experience (at a scientific, clinical, and patient-expertise level)

Reporting through peer review is considered to be the gold standard to communicate outcomes and is regarded as a credible mechanism for assessing the quality and trustworthiness of research (Mayden, 2012). Most high-tier journals have robust peer-review processes in place with publication guidelines; these are, however, mostly focused on controlled clinical trials and lack clear guidance on RW study reporting. Moreover, existing RW reporting guidelines are not fully endorsed by most medical journals, thereby enabling the submission of less transparent RW studies for peer review. In some instances, even reputable peer-reviewed journals may struggle to find
appropriate peer reviewers, or may render a decision of non-acceptance due to evaluating RW studies through a clinical trial lens.

A report presenting the point of view of journal editors themselves identified some practical barriers, including the large volume of often confidential patient data and the lack of robust computational models with which to analyze it (Oehrlein et al., 2018). There may be restrictions in making the data and algorithms from RW publications publicly available. Additionally, identifying peer reviewers who have familiarity with RW data sources, as well as the specific analytic skills to evaluate the data, is a very real difficulty for journals. In an on-line article published by ESMO, Javier Carmona Sanz, Deputy Editor at Nature Medicine suggests that, “a set of ‘best practices’ for submitting RW [evidence], endorsed by both editors and researchers, to safeguard the confidentiality of patients’ data while also encouraging transparency about computational models, may facilitate the proliferation of these studies in the scientific literature” (ESMO, 2021).

With RW evidence becoming increasingly important throughout the health care sector, it is thus of great importance for journals to acknowledge the need to publish high-quality and transparent RW studies, but also to grow their expertise in allowing for appropriate peer review.

5.5. **Provision of no-cost, open-access, lay-audience summaries to enable patients, caregivers, and the general public to properly assess evidence**

Patient-centeredness and patient engagement with health care stakeholders has become an important part of health care decision-making. The paradigm has shifted from the more exclusive provision of information from a health care provider to a patient, toward a more collaborative relationship in which patients and their caregivers are involved and consulted with regards to health care decision-making processes. One way to increase the transparent transfer of information is for journals to intensify efforts to provide open access to publications together with the provision of freely accessible, researcher-provided, lay summaries of published research, especially with regards to RW studies, which may involve medications that are currently available to patients, rather than drugs being evaluated for clinical efficacy and safety.

5.6. **Implementation of solid methodology and good assessment practices to allow for proper evaluation of RW evidence**

Health care decision makers are involved at every level of the provision of care, whether it be governmentally/federally driven, state/regionally driven, or locally driven. The assessment of evidence and assessment of the value of a drug are key steps for health care organizations, whether at the approval level to assess the efficacy and safety of a drug, the appraisal of a drug with regard to comparative clinical effectiveness and cost-effectiveness (Figure 2), or by independent or commercial formulary review boards. Ultimately, these steps are required to allow access to a drug based on provided evidence (Rovira, 2008; Akehurst et al., 2017; EPHA, 2018; Paschke et al., 2018).

In parallel, the demand for transparent economic modeling is increasing (Eddy et al., 2012; Cohen et al., 2017; Cohen and Wong, 2017; Chapman and Kumar, 2019; Hay, 2019; Incerti et al., 2019; ICER, 2020). HTA and VF agencies require that models should be able to accommodate RW data in addition to randomized controlled trial data; however, established methods are not well suited to this. Current methods merely enable the narrative inclusion of qualitative aspects of the patient experience, but there is growing attention for the development of new methods to facilitate quantification (e.g., the potential of multi-criteria decision analysis) and incorporate alternative stakeholder perspectives (Leviton and Melichar, 2016; Hoddinott et al., 2018).

Sound clinical, access, and reimbursement decisions rely on proper appraisals, which include inputs from HTA and VF agencies. Many such agencies [e.g., National Institute for Health and Care Excellence (NICE), Haute Autorité de Santé (HAS), Canadian Agency for Drugs and
Technology in Health (CADTH), etc.] are government-driven, as they are ultimately responsible for making decisions for an entire country. The US health care system is decentralized, and although assessment of value is becoming more commonplace, it is often performed by independent agencies (ICER, IVI, etc.) or societies [National Comprehensive Cancer Network (NCCN), American Heart Association (AHA), etc.] (Wilke et al., 2018) or through commercial health care plan review boards and local (hospital) formulary committees.

Approval and appraisal decisions are based on provided evidence, either through information provided by the drug manufacturer or through independent research assessment. HTA and VF assessment of a drug takes place at market approval, but ideally would take place later to allow for evaluation of RW evidence. Nonetheless, evidence synthesis methodology to allow for proper assessment of the evidence, whether from clinical trials or RW studies is widely variable among agencies (Desai et al., 2020), and reporting of methods is not uniform. Furthermore, although some agencies, such as ICER and NCCN, provide transparent assessment methodology, it is often unclear what the impact of RW evidence is on the overall assessment process. Clear guidance from those involved is warranted.

5.7. Engagement with the patient community to inform the decision-making process

The integration of RW and patient-centered outcomes is playing an increasingly important role in enabling better selection of treatments for those populations who benefit the most (and that show a favorable cost profile). This is reflected in the calls from leadership sectors, such as the FDA guidance on the use of RW evidence (FDA, 2019), and the white paper published by the Duke-Margolis Center for Health Policy exploring how and when studies producing RW evidence can inform FDA regulatory decisions concerning the effectiveness of a drug (Duke Margolis Center for Health Policy, 2020b).

With the integration of RW and patient-centered outcomes in the appraisal of drugs, questions arise regarding how these types of evidence weigh in the decision-making process. Stakeholders should shift their engagement from a more informing type of engagement toward a more collaborative involvement of the patient at every step of the process, and information provided should allow for patient evaluation of the evidence (EUPATI, 2016).
6. Conclusions

In conclusion, a truly transparent health care sector will only evolve if all stakeholders increase their efforts and bring about tangible changes resulting in greater transparency surrounding the generation and reporting of RW studies. Trust in the system can only be established if all evidence is generated meaningfully, reported uniformly, processed equally, and discussed openly. Ultimately, data and communication transparency will leverage the true value of a treatment or service for the benefit of the patient and society.

Acknowledgements. The authors would like to thank Bryan Johnstone, former Vice President, Evidence Based Medicine at Sanofi, who contributed to this manuscript, from concept development to outline stage. This manuscript could not have been completed without his involvement. The authors would also like to thank Patrick Crowley from Excerpta Medica for his editorial assistance.

Conflict of interest. R. W. M. v. d. B. and T. E. H. are employees of Excerpta Medica. E. M. P. is an employee of the National Health Council and the University of Maryland Baltimore. The National Health Council is a non-profit membership organization that receives dues, grants, and sponsorships. A list of its members and sponsors can be found at www.nhcouncil.org. Dr Perfetto also reports funding from the FDA, PCORI, Pfizer, and Excerpta Medica, which were not provided in support of the preparation of this paper. J. L. B. is principal of Momentum Health Strategies and consults as Executive Director for IVI Foundation, a non-profit research organization that receives funding from memberships and grants, including PCORI. A list of members may be accessed at www.thevalueintiative.org. She receives no other funding relevant to the topic or preparation of this paper. R. J. M. is employed by the International Society for Medical Publication Professionals, a global not-for-profit professional Society for medical communication professionals. He is a shareholder of Bristol Meyers Squibb, a global pharmaceutical research and manufacturing organization.

References

AHRQ CHAPS (2020) Databases. Available at https://www.ahrq.gov/cahps/cahps-database/index.html (Accessed 10 December 2020).

Akehurst RL, Abadie E, Renaudin N and Sarkozy F (2017) Variation in health technology assessment and reimbursement processes in Europe. Value in Health 20, 67–76.

Battisti WP, Wager E, Baltzer L, Bridges D, Cairns A, Carswell CI, Citrome L, Gurr JA, Mooney LA, Moore BJ, Peña T, Sanes-Miller CH, Veitch K, Woolley KL, Yarker YE and International Society for Medical Publication Professionals (2015) Good publication practice for communicating company-sponsored medical research: GPP3. Annals of Internal Medicine 163, 461–464.

Berger ML, Sox H, Willie RJ, Brixner DL, Eichler HG, Goettsch W, Madigan D, Makady A, Schneeweiss S, Tarricone R, Wang SV, Watkins J and Mullins DC (2017) Transforming evidence generation to support health and health care decisions. Value in Health 20, 1003–1008.

Califf RM, Robb MA, Bindman AB, Briggs JP, Collins FS, Conway PH, Coster TS, Cunningham FE, De Lew N, Deyo RA, D'Agostino RB, Dyneck KB, Dynek C, Dzau VJ, Fleurence RL, Frank RG, Gaziano JM, Kaufmann P, Lauer M, Marks PW, McGinnis JM, Richards C, Selby JV, Shulkin DJ, Shuren J, Slavitt AM, Smith SR, Washington BV, White PJ, Woodcock J, Woodson J and Sherman RE (2016) Transforming evidence generation to support health and health care decisions. New England Journal of Medicine 375, 2395–2400.

Calvert M, Kyte D, Mercieca-Bebber R, Slade A, Chan AW, King MT, Hunn A, Bottomley A, Regnault A, Chan AW, Ells C, O’Connor D, Revicki D, Patrick D, Altman D, Basch E, Velikova G, Price G, Draper H, Blazevy J, Scott J, Coast J, Norquist J, Brown J, Haywood K, Johnson LL, Campbell L, Frank L, von Hildebrand M, Brundage M, Palmer M, Kluetz P, Stephens R, Golub RM, Mitchell S, Groves T and SPIRIT PRO Group (2018) Guidelines for inclusion of patient-reported outcomes in clinical trial protocols: the SPIRIT-PRO extension. JAMA 319, 483–494.

Chan AW, Tetzlaff JM, Altman DG, Laupacis A, Gotzsche PC, Krleža-Jerić K, Hrobjartsson A, Mann H, Dickersin K, Berlin JA, Doré CJ, Parulekar WR, Summerskill WS, Groves T, Schulz KE, Sox HC, Rockhold FW, Rennie D and Moher D (2013) SPIRIT 2013 statement: defining standard protocol items for clinical trials. Annals of Internal Medicine 158, 200–207.

Chapman RH and Kumar V (2019) Can we develop sustainable and sharable cost-effectiveness models for value assessment in the U.S. health care system? Journal of Managed Care & Specialty Pharmacy 25, 521–524.

Cohen JT and Wong JB (2017) Can economic model transparency improve provider interpretation of cost-effectiveness analysis? A response. Medical Care 55, 912–914.

Cohen JT, Neumann PJ and Wong JB (2017) A call for open-source cost-effectiveness analysis. Annals of Internal Medicine 167, 432–433.
Duke Margolis Center for Health Policy (2020a) Real-world evidence collaborative. Available at https://healthpolicy.duke.edu/projects/real-world-evidence-collaborative (Accessed 12 December 2020).

Duke Margolis Center for Health Policy (2020b) Understanding the need for non-interventional studies using secondary data to generate real-world evidence for regulatory decision making, and demonstrating their credibility. Available at https://healthpolicy.duke.edu/sites/default/files/2020-08/Non-Interventional%20Study%20Credibility.pdf (Accessed 12 December 2020).

Eddy DM, Hollingsworth W, Caro JJ, Tsevat J, McDonald KM, Wong JB and ISPOR-SMDM Modeling Good Research Practices Task Force (2012) Model transparency and validation: a report of the ISPOR-SMDM Modeling Good Research Practices Task Force-7. Value in Health 15, 843–850.

Equator Network (2020) Enhancing the QUAlity and Transparency Of health Research. Reporting guidelines. Available at https://www.equator-network.org/reporting-guidelines/ (Accessed 12 December 2020).

ESMO (2021) There is a growing place for real-world evidence in medical journals. Perspectives. https://perspectives.esmo.org/past-editions/issue-10-february-2021/there-is-a-growing-place-for-real-world-evidence-in-medical-journals (Accessed 22 October 2021).

EU 536/2014 (2020) Regulation (EU) No 536/2014 of the European Parliament and of the Council of 16 April 2014 on European Patients [version 1; peer review: 3 approved, 2 approved with reservations]. Available at https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-1/reg_2014_536/reg_2014_536_en.pdf (Accessed 12 December 2020).

European Medicine Agency (2020) EMA regulatory science to 2025. Strategic reflection. https://www.ema.europa.eu/en/documents/regulatory-procedural-guideline/ema-regulatory-science-2025-strategic-reflection_en.pdf (Accessed 12 December 2020).

European Patients’ Academy (EUPATI) (2016) Patient involvement in the HTA decision-making process. Available at https://toolbox.eupati.eu/resources/patient-involvement-in-the-hta-decision-making-process/ (Accessed 12 December 2020).

European Public Health Alliance (EPHA) (2018) The proposed European Commission Regulation on HTA: a golden opportunity for patients and health budgets. Available at https://epha.org/proposed-ec-regulation-on-hta-golden-opportunity-for-patients-and-health-budgets/ (Accessed 12 December 2020).

FDA 801 and the Final Rule (2020) ClinicalTrials.gov. Available at https://clinicaltrials.gov/ct2/manage-recs/fdaaa (Accessed 12 December 2020).

FDA (2007) US Food and Drug Administration. Amendments Act of 2007. Public Law No 110–85.

FDA (2018) Framework for FDA’s Real-World Evidence Program. Available at https://www.fda.gov/media/120060/download (Accessed 12 December 2020).

FDA (2019) Real-world evidence. Available at https://www.fda.gov/science-research/science-and-research-special-topics/real-world-evidence (Accessed 12 December 2020).

Fisher JA (2008) Institutional mistrust in the organization of pharmaceutical clinical trials. Medicine, Health Care, and Philosophy 11, 403–413.

Fraser AG, Butchart EG, Szynanski P, Caiani EG, Crosby S, Kearney P and Werf FV (2018) The need for transparency of clinical evidence for medical devices in Europe. Lancet 392, 521–530.

Gabay M (2017) 21st Century Cures Act. Hospital Pharmacy 52, 264–265.

Hay JW (2019) Now is the time for transparency in value-based healthcare decision modeling. Value in Health 22, 564–569.

Henke N, Kelsey T and Whately H (2011) Transparency – the most powerful driver of healthcare improvement. Health International 11, 64–73.

Hoddinott P, Pollock A, O’Cathain A, Boyer I, Taylor JMD, Macdonald C, Oliver S and Donovan JL (2018) How to incorporate patient and public perspectives into the design and conduct of research [version 1; peer review: 3 approved, 2 approved with reservations]. F1000Research 7, 752.

Husereau D, Drummond M, Petrou S, Carswell C, Moher D, Greenberg D, Augustovski F, Briggs AH, Mauskopf J, Loder E and ISPOR Health Economic Evaluation Publication Guidelines-CHEERS Good Reporting Practices Task Force (2013) Consolidated Health Economic Evaluation Reporting Standards (CHEERS) statement. Value in Health 16, 231–250.

ICER (2020) Statement of ICER’s commitment to economic model transparency. Available at https://icer.org/who-we-are/history-impact/statement-of-icers-commitment-to-economic-model-transparency/ (Accessed 12 December 2020).

ICMJE (2018) Recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals. Updated December 2018. Available at http://www.icmje.org/icmje-recommendations.pdf (Accessed 12 December 2020).

Incerti D, Curtis JR, Shafrin J, Lakdawalla DN and Jansen JP (2019) A flexible open-source decision model for value assessment of biologic treatment for rheumatoid arthritis. Pharmacoeconomics 37, 829–843.
International Society for Pharmacoeconomics and Outcomes Research (2017) ISPOR and ISPE collaborate to advance good practices for use of real-world evidence May 22 ISPOR News & Press. Available at https://www.ispor.org/health-economics-policy-and-law/newsview/2017/05/22/isor-and-ispe-collaborate-to-advance-good-practices-for-use-of-real-world-evidence (Accessed 12 December 2020).

ISPE-ISPOR Special Task Force (2020) Available at https://www.ispor.org/member-groups/task-forces/joint-ispe-ispor-special-task-force (Accessed 12 December 2020).

Katlake VB, Sanders KN and Zou KIH (2018) Real world data: an opportunity to supplement existing evidence for the use of long-established medicines in health care decision making. Journal of Multidisciplinary Healthcare 11, 295–304.

Khosla S, White R, Medina J, Ouwens M, Emms C, Koder T, Male G and Leonard S (2018) Real world evidence (RWE) – a disruptive innovation or the quiet evolution of medical evidence generation? Version 2. F1000Research 7, 111.

Law E, Harrington R, Alexander GC, Saha S, Oehrlein EM and Perfetto EM (2018) Increasing uptake of comparative effectiveness and patient-centered outcomes research among stakeholders: insights from conference discussion. Journal of Comparative Effectiveness Research 7, 181–191.

Leviton LC and Melichar I (2016) Balancing stakeholder needs in the evaluation of healthcare quality improvement. BMJ Quality & Safety 25, 803–807.

Loder E, Groves T and Macauley D (2010) Registration of observational studies. BMJ 340, c950.

Malone DC, Brown M, Hurwitz JT, Peters I and Graff JS (2018) Real-world evidence: useful in the real world of US payer decision making? How? When? And what studies? Value in Health 21, 326–333.

Mayden KD (2012) Peer review: publication’s gold standard. Journal of the Advanced Practitioner in Oncology 3, 117–122.

Miksdad RA and Abernethy AP (2018) Harnessing the power of real-world evidence (RWE): a checklist to ensure regulatory-grade data quality. Clinical Pharmacology and Therapeutics 103, 202–205.

Oehrlein EM, Graff JS, Perfetto EM, Mullins CD, Dubois RW, Anyanwun C and Onuokwugha E (2018) Peer-reviewed journal editors’ views on real-world evidence. International Journal of Technology Assessment in Health Care 34, 111–119.

Orsini LS, Berger M, Crown W, Daniel G, Eichler HG, Goettisch W, Graff J, Guerino J, Jonsson P, Lederer NM, Monz B, Mullins CD, Schneeweiss S, Brunt DV, Wang SV and Willke RJ (2020) Improving transparency to build trust in real-world secondary data studies for hypothesis testing – why, what, and how: recommendations and a road map from the Real-World Evidence Transparency Initiative. Value in Health 23, 1128–1136.

Paschke A, Dimancesco D, Vian T, Kohler JC and Forte G (2018) Increasing transparency and accountability in national pharmaceutical systems. Bulletin of the World Health Organization 96, 782–791.

Patient-Centered Outcomes Research Institute (2020a) Highlights of PCORI-funded research results. Available at https://www.pcori.org/research-results/explore-our-portfolio/highlights-pcori-funded-research-results (Accessed 12 December 2020).

Patient-Centered Outcomes Research Institute (2020b) Influencing the culture of research. Available at https://www.pcori.org/engage/influencing-culture-research (Accessed 12 December 2020).

Perfetto EM, Burke L, Oehrlein EM and Gaballah M (2015) FDAMA section 114: why the renewed interest? Journal of Managed Care & Specialty Pharmacy 21, 368–374.

Ross JS, Gross CP and Krumholz HM (2012) Promoting transparency in pharmaceutical industry-sponsored research. American Journal of Public Health 102, 72–80.

Rovira J (2008) Transparency of economic evaluations of health technologies. Pharmacoeconomics 26, 181–183.

Schulz KF, Altman DG, Moher D and CONSORT Group (2010) CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. BMJ 340, c332.

Sherman RE, Anderson SA, Dal Pan GJ, Gray GW, Gross T, Hunter NL, LaVange L, Marinac-Dabic D, Marks PW, Robb MA, Shuren J, Temple R, Woodcock J, Yue LIQ and Califf RM (2016) Real-world evidence – what is it and what can it tell us? New England Journal of Medicine 375, 2293–2297.

Szkultecka-Dębek M and Drozd M (2015) Real world data guidelines – current status review. JHPOR 1, 10–14.

UK Standards for Public Involvement (2020) The UK Standards: setting the scene. https://sites.google.com/nihr.ac.uk/pi-standards/standards/setting-the-scene (Accessed 12 December 2020).

Umscheid CA, Margolis DJ and Grossman CE (2011) Key concepts of clinical trials: a narrative review. Postgraduate Medicine 123, 194–204.

US Government Information (2016) 21st Century Cures Act. Available at https://www.congress.gov/114/plaws/publ255/PLAW-114publ255.pdf (Accessed 12 December 2020).

Wilke RJ, Neumann PJ, Garrison LP Jr. and Ramsey SD (2018) Review of recent US value frameworks – a health economics approach: an ISPOR Special Task Force report. Value in Health 21, 155–160.

Wood AJ (2009) Progress and deficiencies in the registration of clinical trials. New England Journal of Medicine 360, 824–830.

Cite this article: van den Broek RWM, Matheis RJ, Bright JL, Hartog TE, Perfetto EM (2022). Value-based evidence across health care sectors: a push for transparent real-world studies, data, and evidence dissemination. Health Economics, Policy and Law 17, 416–427. https://doi.org/10.1017/S1744133122000056