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The Inflammatory Bowel Disease Middle East Registry: Challenges Faced, and Lessons Learned from Setting Up a Multi-Country Patient Registry

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Abstract

The burden of inflammatory bowel disease is rising globally, including in the Middle East. There is a paucity of real-world data related to the disease and its treatment in many countries in this region. Patient registries can provide real-world evidence of disease incidence and aetiology, treatment and patient outcomes. The authors designed a non-interventional, multicentre registry to evaluate treatment pathways, resource consumption, and clinical outcomes of patients with inflammatory bowel disease in the Middle East. This article describes challenges faced, and lessons learned from setting up the registry. Registry development requires time, effort, expertise, and skills development to be functional and meet international standards. Careful consideration of legal, governance, ethical and financial issues; data protection and control, minimum data set, data quality assurance, data collection methods, inclusion criteria as well as data sources is critical to the development process. Our findings present stakeholders with a guide for the development and implementation of future registries in the Middle East and offer valuable lessons learned that other countries or regions can utilise as they address inflammatory bowel disease burden and establish their own registries.

Keywords: Inflammatory bowel disease, Ulcerative Colitis, Chron's Disease, Outcomes Research, Registries; Real-World Data.

INTRODUCTION

The burden of inflammatory bowel disease (IBD) is rising globally, including in the Middle East, with geographical variation in the epidemiology of the disease (Alatab *et al.*, 2020) (Adam *et al.*, 2020). Knowledge of disease prevalence and an understanding of these differences is critical in planning effective prevention and treatment strategies (Alatab *et al.*, 2020).

The Global Burden of Disease Study (GBD) 2017 shows that real-world data (RWD) from largescale studies are valuable in providing real-world insights into the aetiology of IBD (Alatab *et al.*, 2020). The GETAID cohort study is also an example of how collecting retrospective RWD on Chron's Disease (CD) in patients with severe upper gastrointestinal (UGI) tract strictures,

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provided solid real-world evidence (RWE) of patient outcomes and treatment efficacy (Lambin *et al.*, 2020).

In many countries of the Middle East there is a paucity of RWD related to IBD and its treatment (Sharara *et al.*, 2018). RWD is needed to better understand the added value that different treatments and interventions offer patients.

Patient registries are organized systems that use observational methods to collect uniform data for a certain population — defined by a particular disease, condition, or exposure — to evaluate specified outcomes over time (Gliklich *et al.*, 2014) (McGettigan *et al.*, 2019). Because disease-specific patient populations are often small and geographically dispersed and funding support for research is restricted, patient registries are continually evolving as effective and convenient tools to support clinical research, while including patients as research partners and uniting rare communities around a common initiative (Boulanger *et al.*, 2020). When they are appropriately designed and utilised to their full potential, patient registries can provide RWE of disease incidence and aetiology, trends in clinical practice, medicine safety and effectiveness and patient outcomes (Gliklich *et al.*, 2014) (Richesson *et al.*, 2010). They integrate clinical expertise and patient values to better inform clinical decision making, evaluate patient outcomes, and have the potential to aid regulatory decisions through enabling systematic comparisons and analyses across multiple sites (McGettigan *et al.*, 2019) (Szajewska *et al.*, 2018) (Haynes *et al.*, 2002) (Nelson *et al.*, 2016). Multi-national registries offer additional research opportunities beyond those offered by local registries, as they can enrol more patients and explore geographic variations in aetiology and course of disease, treatment patterns and comparative effectiveness in different populations (Leavy *et al.*, 2018).

There are however concerns within the medical community that RWD and RWE often neglect integrity, transparency, and succumb to bias. Therefore, the successful uptake of RWE will depend on transparency of the research methods used in collecting and reporting RWD. The Real-World Evidence Transparency Initiative aimed to develop processes that improve transparency and promote trust in RWD and recommends that investigators pre-register their RWE studies and study protocols in a publicly available forum before starting RWD studies (Orsini *et al.*, 2020).

Given the above realities, the authors designed a non-interventional registry of patients with IBDs including Ulcerative Colitis (UC), CD, Inflammatory Bowel Disease Unclassified (IBDU) and Indeterminate Colitis (IC), in Jordan, Kuwait, Lebanon, the Kingdom of Saudi Arabia (KSA) and the United Arab Emirates (UAE): the Inflammatory Bowel Disease Middle East (IBD-ME) Registry. The objective of this registry is to use RWE to assess clinical and patient-reported outcomes and to analyse specific research questions related to disease characteristics and resource consumption of these patients. Consideration of the learnings and recommendations of other multi-country registries (Leavy *et al.*, 2018), the International Society of Pharmacoeconomics and Outcomes Research (ISPOR)'s guidance on setting up a registry (Orsini *et al.*, 2020) (de Groot *et al.*, 2017) and credibility issues posed by RWD and RWE (Berger *et al.*, 2022), were key in setting up the registry — the purpose was to construct a transparent, credible, and robust registry.

This research will contribute towards building a body of RWE on IBD in these Middle Eastern countries.

This article describes the challenges faced and lessons learned from setting up the IBD-ME Registry. Our findings present stakeholders such as researchers, health care providers and industry with a guide for the development and implementation of future registries in the Middle East.

METHODS

Table 1 describes the aims and real-world applications of the IBD-ME Registry.

Table 1: Aims and real-world applications of the IBD-ME Registry

Registry Aims	Real-World Applications
Create a cohort of well-characterised patients with IBD† for participation in retrospective and prospective research.	• Clinical data collected in the registry will support retrospective and prospective research on IBD† and drive improvement in the quality of life and outcomes of patients with IBD†. • Such research will contribute towards building a body of real-world evidence about IBD† in the Middle East. • Multi-national registries offer additional research opportunities beyond those offered by local registries, as they can enroll more patients and explore geographic variations in aetiology, course of disease, treatment patterns and comparative effectiveness in different populations.
Collect data on the differing patterns of clinical care for patients with IBD†.	
Improve awareness of IBD† and facilitate patient enrolment into clinical trials and research studies (subject to ethics compliance and best practices).	
Gather data on healthcare utilisation.	
Assess the disease characteristics, treatment and response, interventions and longitudinal treatment outcomes in IBD† patients treated with different treatment modalities including pharmaceutical, diagnostic and surgical interventions.	

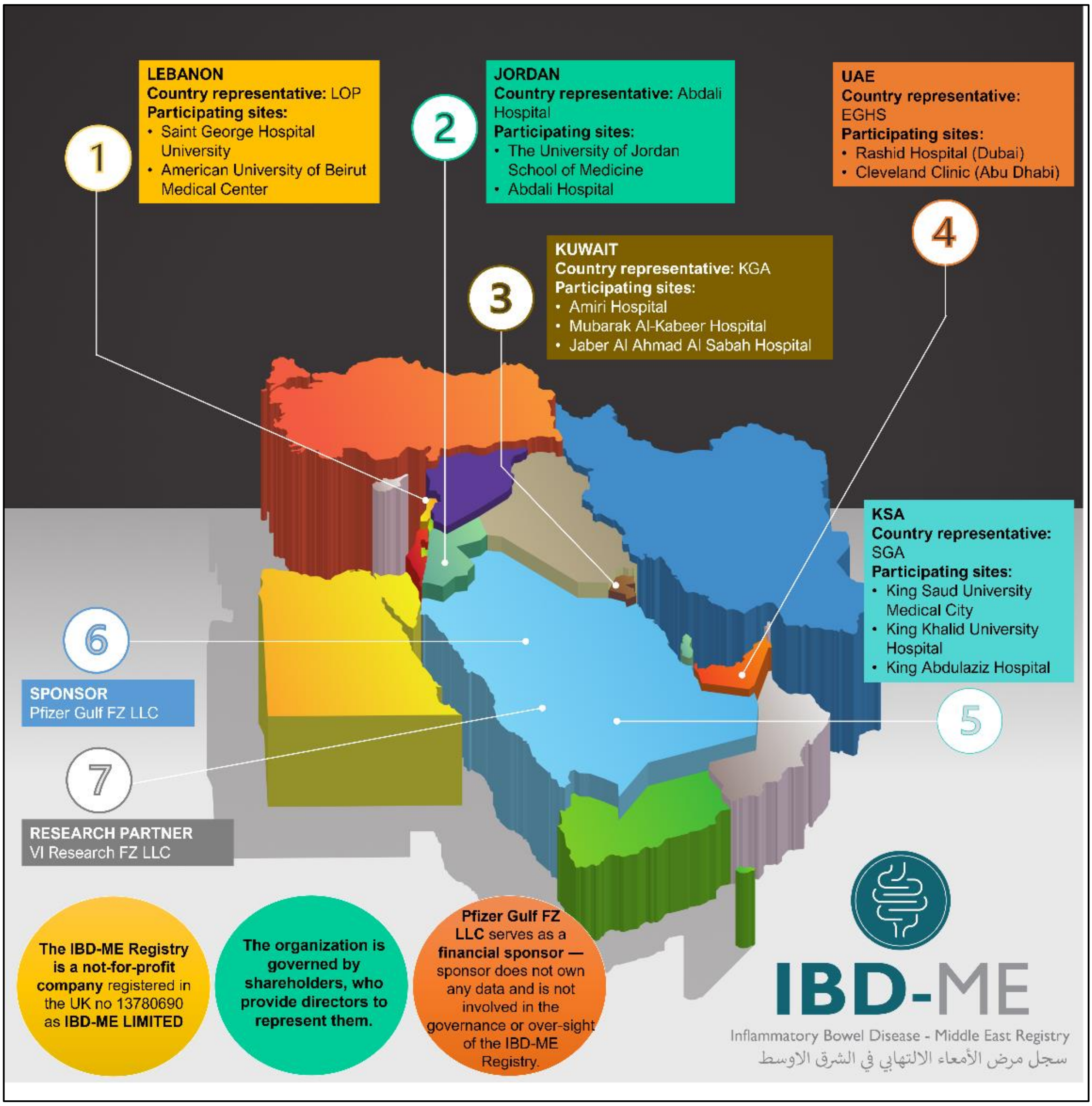
Registry Aims	**Real-World Applications**
HCPs[‡] obtain eligible patient registry participants' permission to contact them to ascertain their interest in participating in future IBD research studies conducted in the Middle East.	• By obtaining permission to review patient registry participants' medical record information, HCPs[‡] will be able to identify their patients who may be eligible for participation in future research studies conducted in the Middle East.

†: inflammatory bowel disease; ‡ healthcare practitioners

Organizational Structure

In structuring the IBD-ME Registry, we considered best practices globally. For example, the IBD Registry in the United Kingdom (UK) [https://ibdregistry.org.uk/who-are-we/]. It is structured as a non-profit entity with the required oversight and governance in place.

Figure 1 illustrates the collaboration between the founding partners.



LEBANON
Country representative: LOP
Participating sites:
- Saint George Hospital University
- American University of Beirut Medical Center

JORDAN
Country representative: Abdali Hospital
Participating sites:
- The University of Jordan School of Medicine
- Abdali Hospital

UAE
Country representative: EGHS
Participating sites:
- Rashid Hospital (Dubai)
- Cleveland Clinic (Abu Dhabi)

KUWAIT
Country representative: KGA
Participating sites:
- Amiri Hospital
- Mubarak Al-Kabeer Hospital
- Jaber Al Ahmad Al Sabah Hospital

KSA
Country representative: SGA
Participating sites:
- King Saud University Medical City
- King Khalid University Hospital
- King Abdulaziz Hospital

SPONSOR
Pfizer Gulf FZ LLC

RESEARCH PARTNER
VI Research FZ LLC

The IBD-ME Registry is a not-for-profit company registered in the UK no 13780690 as **IBD-ME LIMITED**

The organization is governed by shareholders, who provide directors to represent them.

Pfizer Gulf FZ LLC serves as a **financial sponsor —** sponsor does not own any data and is not involved in the governance or over-sight of the IBD-ME Registry.

IBD-ME
Inflammatory Bowel Disease - Middle East Registry
سجل مرض الأمعاء الالتهابي في الشرق الاوسط

Figure 1: Collaboration between founding parties of the IBD-ME Registry
EGHS: Emirates Gastroenterology and Hepatology Society; IBD-ME: Inflammatory Bowel Disease Middle East; KGA: Kuwait Gastroenterology Association; LOP: Lebanese Order of Physicians; SGA: Saudi Gastroenterology Association; UK: United Kingdom

Registry Design

The IBD-ME Registry was designed as an observational, multicentre patient registry to evaluate treatment pathways, resource consumption, and clinical outcomes of patients with IBD in the Middle East. Figure 2 graphically illustrates the setup and design of the IBD-ME Registry.

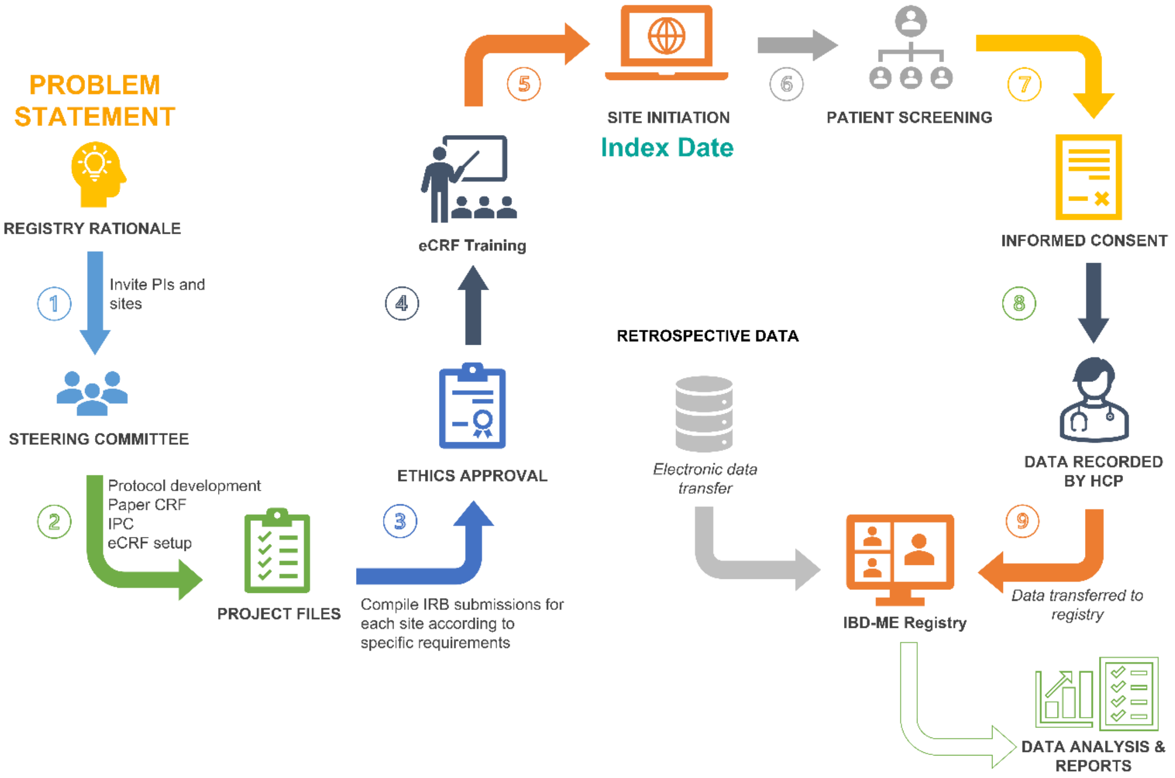


Figure 2: **Graphic representation of the IBD-ME Registry design**

CRF: clinical report form; eCRF: electronic clinical report form; HCP: healthcare practitioner; IBD-ME: Inflammatory Bowel Disease Middle East; IRB: Institutional Review Board; IPC: informed patient consent; PI: principal investigator

The IBD-ME Registry consists of four cohorts comprised of patients with confirmed UC, CD, IBDU or IC. Multiple visits are recorded as and when patients seek care from HCPs at participating sites.

Patients are screened to assess eligibility and are required to provide informed consent. The relevant patient data are collected by the principal investigator (PI) during routine care. The IBD-ME Registry was designed with two distinct components: a longitudinal, prospective component, and retrospective component.

Design Overview

Prospective Registry

The prospective registry was initiated at the registry index date which is the date on which a registry is initiated at a specific participating site. Index dates will differ from site to site, as site initiation is completed over time. All new and existing patients are screened for inclusion and exclusion criteria and patients are required to provide informed consent for their data to be collected in the registry. A baseline visit captures information as outlined in the electronic clinical report form (eCRF). During each subsequent HCP visit or intervention, patient data are recorded in the eCRF for both in- and out-patient settings. Site visits are not scheduled for specific dates. There is no timeframe for the registry.

Patient data entry termination can occur at any time and the reason is recorded on the eCRF, subject to the patient’s consent. This can include reasons such as lost to follow up (LTFU), exclusions during the registry period, and withdrawal of consent.

Retrospective Registry

For the retrospective component of the registry, all existing and historical data that were captured on an existing IBD registry by the treating and participating HCP are exported electronically into the newly designed IBD-ME Registry using an electronic data capturing platform (www.viedoc.com). The retrospective component of the registry is only applicable where an existing independent registry exists of existing or previous patients. Existing data are merged into the IBD-ME Registry, subject to the treating HCP, site and/or institution providing consent.

Access and oversight

Patient data are only accessible by the treating HCP through role-based, password-protected, login to the registry. The HCP has full access to data that were captured in the past, including patient identities. Data managers and data users will only have access to de-identified data, subject to permission by the HCP.

Outcomes and primary endpoints

The IBD-ME Registry outcomes relate to the primary objectives: to assess the disease characteristics, treatment and response, interventions, and overall treatment outcomes in IBD patients treated with different treatment modalities including pharmaceutical, diagnostic, and surgical interventions in the Middle East. As this is a disease registry, no specific primary endpoint is stated. More specific endpoints will be designed when specific research questions are submitted to the governing body of the IBD-ME Registry.

This multicentre registry will be launched in Jordan, Kuwait, Lebanon, KSA, and the UAE. All patients diagnosed with IBD who are eligible to participate and who are willing to sign informed consent will be eligible for inclusion in the registry.

The IBD-ME Registry will collect data on any number of patients at approximately 9 clinical sites in the following countries:

- Jordan
- Kuwait
- Lebanon
- Kingdom of Saudi Arabia
- United Arab Emirates

Patients will be followed from the time of consent through the lifetime of the registry (unless the patient chooses to withdraw sooner from the registry). To be eligible to participate in the IBD-ME Registry, patients must meet both the following inclusion criteria:

Inclusion Criteria

1. Confirmed diagnosis of IBD (diagnostic evaluation must be based on criteria in local or global guidelines that are adopted by the participating country in accordance with standard clinical, endoscopic, and histological criteria).
2. Understand and sign the informed consent document

There are no exclusion criteria.

Observation Period

For the prospective registry, patients will be followed up from the time of providing consent to participate in the registry (index date) until LTFU, withdrawal of informed consent, or the end of the data collection period, whichever comes first. The retrospective data transfer will be a once-off process whereby all existing registry data will be transferred from the legacy platform into the EDC platform.

Considerations: *challenges faced, and lessons learned*

Initiating a multi-country registry is often challenging where a good understanding of factors that might impact successful implementation is crucial (Holtrop *et al.*, 2017). In setting up the IBD-ME Registry, several challenges were faced, and valuable lessons learned.

Operational

Initiating a multi-country registry requires a significant focus on creating an operational plan that compliments the realities of the environment. These realities include determining the interest and availability of the relevant country stakeholders to participate in the registry. As a first step, it is critically important to create a Steering Committee, consisting of HCPs who are interested; willing and available to participate in the registry and who can provide guidance from a medico-scientific perspective. Secondly, one needs to identify and appoint a research entity to provide research expertise; full administrative support to the HCPs and to act as an organizer for the Steering Committee.

Legal

The construct of a multi-country registry needs to comply with different laws related to access to patient data; ensuring privacy and how data may be shared. Given this, an international legal firm was appointed to act as legal counsel to ensure that the relevant countries' local legal requirements were adhered to. The legal firm also played an important role in providing advice on good governance. This is further explored under the Governance heading below.

Ethics

The process of obtaining ethics approval for non-interventional studies differs significantly between countries, and between individual institutions within the same country an understanding of these differences is crucial. For example, in Kuwait, ethics approval is granted by the Ministry of Health (MOH), whereas individual sites in KSA, UAE, Jordan and Lebanon have their own institutional review boards (IRBs), each with their own unique process for ethics applications. Compiling an array of ethics submissions, not only across different sites, but also across different countries, was a complex and time-consuming process. Ideally, the first step should be to identify a contact person within the relevant IRB to assist with and guide the process.

There is a significant range of submission fees applied by different ethics committees; this should be considered when drafting the budget. Many ethics committees insisted on sharing a Clinical Trial Agreement (CTA) as part of the submission process. This tripartite agreement needs to stipulate how the relationship between the study sponsor (when applicable), the institution and the PI is to be managed, and as this is a legally binding agreement, the legal firm had to draw up a CTA.

Furthermore, while some ethics committees accepted applications in English, some required both English and Arabic applications. In all cases, the patient informed consent had to be in both English and Arabic. Provision should be made in the budget for translation fees.

Communication

Given the HCPs' time constraints, effective communication proved to be a key success factor. Ideally, the first meeting with the Steering Committee needs to be face-to-face. It is important to start the communication process as soon as possible: inclusiveness and transparency is critical for success. Early engagement with the participating HCPs and their administrative or research assistants at the site is recommended as this has a significant benefit in establishing effective communication between the participating site and the research entity organizing the registry. Considering this, access to sponsor resources with existing relationships with HCPs was very helpful. A multichannel communication strategy is important. This includes the use of e-mail, social media (WhatsApp), telephone calls, and visits to communicate with the site personnel.

Timeframe:

Involving several countries in the registry impacts on the timeframe of its implementation. A lesson learned from the set-up of the IBD-ME Registry, is that it took longer than anticipated. Defining core project deliverables and focusing on these objectives individually, assists in the overall positive progress of the project. For the IBD-ME Registry, these core tasks included protocol development; agreeing on the eCRF content; compiling ethics applications; ethics submission; governance and set-up of the EDC platform

Governance:

From the very onset of the project, it was clear that oversight and good governance of collected data would be critical, both from a legal as well as an ethical perspective. In addition, it was anticipated that given the fact that the registry involved multiple countries, an overarching governance structure would be required. With guidance from legal counsel, a UK based limited liability company (IBD-ME Limited) was set up. This provides a neutral ground where several countries are participating. It provides a judiciary that does not benefit or prejudice any member and it allows for a limited risk legal entity where members and directors are not exposed to financial risks. Company shareholdings were discussed with the different country gastroenterology societies (who in our opinion are the ideal shareholders). The shareholders appointed directors to represent them on a Board of Directors. An integral part of this company is to adopt a constitution that will govern access to data with formal application and approval processes that need to be followed. In essence, this structure acts as a gatekeeper to ensure that data are used ethically and within agreed parameters.

Electronic Case Report Form (eCRF)

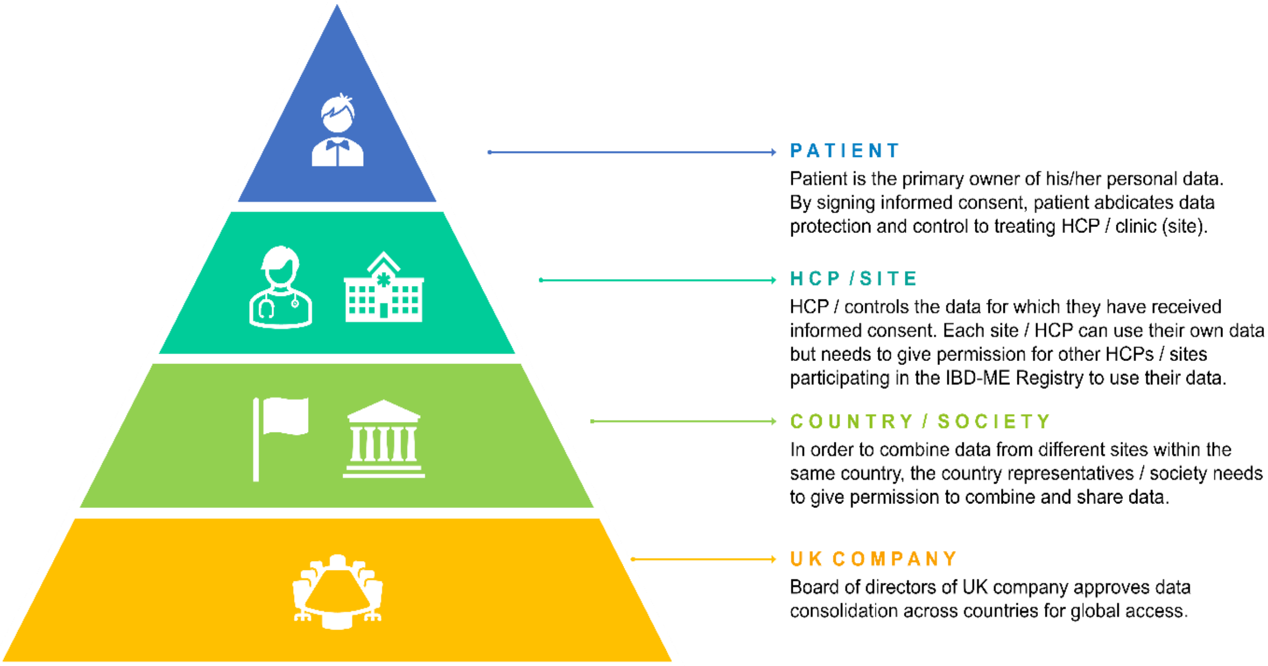
The creation of the eCRF was managed by creating an exhaustive list of data points that can be collected and then, systematically filtered to reach a balance of quantity and quality. Ultimately, typical research questions guided the content of the final eCRF. The eCRF was designed to be flexible to include additional data points in future, if needed.

Electronic data capturing (EDC) platform

Selecting an appropriate EDC platform is important. While most EDCs are designed for complex clinical trials, HCPs require a very simple, visually pleasing, easy to navigate intuitive platform that won't be time-consuming to use. Accordingly, we selected an EDC that meets these criteria and provides online analytics on data captured by the HCP. During site initiation, training and continued support on the EDC is of utmost importance. The data capture into the final eCRF is expected to take between 10 and 20 minutes for a first patient visit and less than five minutes for follow-up visits.

Data Protection and Control

The question of data protection is integral to the governance structure discussed above. The sponsor would act as a financial sponsor to initiate the project. They do not own the data *per se*. This approach supports the independence of the registry, the protection of the data and ensures the credibility of the data. There are three levels of data protection and control (Figure 3). The data are controlled by either the HCP or the healthcare facility. They have access to all their own fully identifiable patient data in the EDC. The second level of data control is at a country/society level. The objective of this is to ensure that all permissions are given by individual HCPs or healthcare facility before collated country data are shared. The third level of data control is at the UK company level, where data from the different countries are consolidated. The constitution of IBD-ME Limited provides the rules and standard operating procedures (SOP) to govern data access, and the Board of Directors are instrumental in ensuring that these rules are followed. These SOPs are based on the company's risk register and risk mitigation plans and include the procedures to follow to request access to data, data extraction, data use financial procedures and ensuring compliance with laws.



PATIENT

Patient is the primary owner of his/her personal data. By signing informed consent, patient abdicates data protection and control to treating HCP / clinic (site).

HCP / SITE

HCP / controls the data for which they have received informed consent. Each site / HCP can use their own data but needs to give permission for other HCPs / sites participating in the IBD-ME Registry to use their data.

COUNTRY / SOCIETY

In order to combine data from different sites within the same country, the country representatives / society needs to give permission to combine and share data.

UK COMPANY

Board of directors of UK company approves data consolidation across countries for global access.

Figure 3: **Levels of data protection and control**
HCP: healthcare practitioner; IBD-ME: Inflammatory Bowel Disease Middle East; UK: United Kingdom

Financial

Initiating and managing a registry incurs costs and therefore a sustainable financial plan is imperative. In this regard, the role of the sponsor was pivotal in that they provided the initial registry seed capital via a research company with experience in managing registries. However, the initial seed capital needs to be augmented by a long-term financial plan. We therefore foresee that the long-term viability of the registry will be based on deriving income from providing access to data at a fee. Potential data users include all institutions wishing to conduct research using RWD that is collected in the IBD-ME Registry. This could include pharmaceutical companies, academic institutions, or policy makers. This access to data will be governed by the Board of Directors of the IBD-ME Limited, in compliance with its constitution. As the company is not-for-profit, the funds will be managed by the Board of Directors. The funds can be allocated to appoint data capturers, pay fees for the EDC system license, data analytics, publications, education, training and management of the registry.

DISCUSSION

Table 2 summarizes the challenges faced and lessons learned in setting up the IBD-ME Registry.

Table 2: Challenges faced and lessons learned

Challenges	**Lessons Learned**
Operational • Operational plan that compliments the realities of the environment	• It is important to create a Steering Committee • A research entity needs to be identified and appointed to provide research; full administrative support to the HCPs[†] and to act as an organiser for the Steering Committee
Legal • Compliance with different patient data laws in different countries	• An international legal firm needs to be appointed to act as legal counsel to ensure compliance
Ethics approvals • Ethics approval process differs significantly between countries, and between individual institutions within the same country • Ethics submissions for multiple countries is a complex and time-consuming process	• A contact person must be identified within the relevant IRB[‡] to assist with and guide the process • Consider different ethics committee submission fees when drafting the budget • If ethics committees share the CTA[§] as part of the submission process, it needs to stipulate how the relationship between the study sponsor, the institution and the PI[¶], is to be managed • Ethics committees may require applications to be in more than one language • Provision should be made in the budget for translation fees

Challenges	**Lessons Learned**
Communication • Effective communication is key to success	• Communication should be inclusive and transparent • Early engagement with the participating HCPs[†] and their administrative or research assistants at the site is recommended has a significant benefit in establishing effective communication • Access to sponsor resources with existing relationships with HCPs[†] can be very helpful • A multichannel communication strategy is important
Timeframe • The number of countries involved in the registry impacts on the timeframe of its implementation	• Setting up the IBD-ME Registry took longer than anticipated • Defining core project deliverables and focusing on these objectives individually, assists in the overall positive progress
Governance • Oversight and good governance of collected data is critical, both from a legal and ethical perspective	• An over-arching governance structure is recommended for multi-country registries • The UK company was set up to provide a neutral ground for participating countries • An integral part of this company was to adopt a constitution that governs access to data with formal application and approval processes in place
eCRF[#] • An eCRF[#] should be robust in content: an exhaustive list of data points guided the creation of the eCRF[#] • Data should be collected and systematically filtered to reach a balance of quantity and quality	• Typical research questions guided the content of the final eCRF[#] • The eCRF[#] was designed to be flexible to include additional data points in future, if needed
EDC[♠] platform • Selecting an appropriate EDC[♠] platform is important • HCPs[†] require a very simple, visually pleasing, easy to navigate and intuitive platform that won’t be time-consuming to use	• We selected an EDC[♠] platform that meets these criteria and provides online analytics on data captured by the HCP[†] • During site initiation, training and continued support on the EDC[♠] platform is of the utmost importance

Data protection and control
• Data protection is integral to the governance structure
• The sponsor acts as a financial sponsor to initiate the project: they do not own the data
• There are three levels of data control:
    o HCP[†]
    o Country / society
    o UK company
	• The constitution of the UK company (IBD-ME) provides the rules and SOPs[♥] to govern data access
	• The Board of Directors are instrumental in ensuring that these rules are followed
	• These SOPs[♥] are based on the company’s risk register and risk mitigation plans and include the procedures to follow to request access to data, data extraction, data use, financial procedures and ensuring compliance with laws

Financial • Initiating and managing a registry incurs costs therefore a sustainable financial plan is imperative • The role of the sponsor is pivotal in providing initial registry seed capital via a research company with experience in managing registries	• The long-term viability of a registry should be based on deriving income from providing access to data at a fee • Potential data users include all institutions wishing to conduct research using RWD[♦]: these could include pharmaceutical companies, academic institutions, or policy makers. • In the case of a not-for-profit company, funds should be managed by the Board of Directors • Funds can be allocated to appoint data capturers, pay fees for the EDC[♠] system license, data analytics, publications, education, training, and management of the registry

†: healthcare practitioners; ‡ Institutional Review Board; §: Clinical Trial Agreement; ¶ principal investigator; #: electronic clinical report form; ♠: electronic data capturing; ♥: standard operating procedures; ♦: real-world data

The life-science industry has a strong interest in RWD (Grimberg *et al.*, 2021). The *ISPOR 2022-2023 Top 10 HEOR Trends* indicates that the generation of RWE remains an important global trend, with “*Real-World Evidence: Using real-world evidence in healthcare decision making*” occupying the number one trend [https://www.ispor.org/heor-resources/about-heor/top-10-heor-trends].

In multi-country registries, differences between the countries represented also need to be considered as these differences have a substantial impact on the study design as well as the feasibility, timeframe, and cost of the study (Gliklich *et al.*, 2014) (Leavy *et al.*, 2018).

A well-designed patient registry can provide an authentic view of the natural course of disease and treatment impact on patients by collecting RWD. (Gliklich *et al.*, 2014) (Malekzadeh *et al.*, 2019). However, the value that a patient registry offers, is only as good as the quality of data it collects. Given the scepticism (particularly of regulators) of the reliability and robustness of RWD, which questions the utility thereof, it is of utmost importance that patient registries are designed with the aim to improve the credibility of the data collected, and to be aligned with global standards (Berger *et al.*, 2022). Ultimately (as with any observational study) the goal must be to collect regulatory grade data when initiating a registry.

Considering the purpose of a registry is a logical starting point. This might include setting up an administrative registry that is used to motivate for reimbursement of special medication [e.g., The SARAA Biologics Registry. https://saraa.co.za/biologics-registry/]. However, the purpose of most registries is of a clinical nature to evaluate treatment effectiveness, patient outcomes, and quality of life. Based on the purpose, research questions should be defined. These are questions that could potentially be answered using the RWD. Reaching agreement on the purpose and potential research questions, paves the way to creating an eCRF that defines the actual data that will be collected in the registry.

The planning, design and implementation of a patient registry must pay specific consideration of this purpose, and the appropriateness and feasibility thereof. Establishing a good governance structure to oversee all activities and to ensure that the purpose and processes are implemented and followed, is one of the key factors for the long-term success of a registry. As an example, risks include the ownership of the intellectual property, data collection risks (informed patient consent), data access risks, data use risks, withdrawal risks, business continuation risks, compliance risks, regulatory risks, and ethical risks.

It is important to gain a better understanding of the capacity and factors that could help develop and improve registries as well as what challenges one might face (Stillman *et al.*, 2012). Drawing on experience from other disease registries in the Middle East region, some of these challenges include policy and funding deficiencies, inadequate health informatics infrastructure, lack of accurate health and death records, lack of accurate data on migrants, and conflict-related disruption (Abdul-Sater *et al.*, 2021).

Based on the experience in setting up the IBD-ME Registry, we recommend drawing up a framework for developing and implementing a registry based on the challenges faced and the lessons learned in this registry. Careful consideration of the minimum data set, data quality assurance, data collection methods, inclusion criteria as well as data sources is critical to the process of developing a registry.

Registry development requires time, effort, expertise, and skills development so they can become functional and meet international standards. The IBD-ME Registry will provide multi-national information for policy makers in the Middle East to better plan for IBD treatment in the region, and offer valuable lessons learned that other countries / regions can utilise as they address IBD burden and establish their own registries**.**

The IBD-ME Registry was designed and set-up with the clear objective to collect high quality data, free from bias, to generate credible RWE on IBD. This was accomplished firstly by ensuring that the eCRF was designed to only collect essential data, balancing quantity, and quality, and secondly by incorporating an EDC that allows for edit checks. Bias is minimised by using validated, quantitative instruments that measures disease activity scores. In this article, we have focused on the challenges faced, and lessons learned during the planning, implementation, and management of this multi-country registry. One of the main recommendations is that one actively leads and manages the efforts to create aligned commitment by all stakeholders. Commitment is more than “taking note” or “being involved”. Commitment entails a team of people with a shared vision and who passionately work together toward one goal. In this initiative, that one goal was to create a high-quality registry across several countries using shared resources. Ensuring autonomy of countries and HCPs, while respecting patient confidentiality, was fundamental. This also serves as an excellent example of how industry can participate and take a central role in improving patient outcomes through enabling arms-length research in the Middle East. This *arms-length* approach followed by the sponsor appears to be a unique feature of this registry and should be commended and encouraged.

To attain this goal, the importance of setting up good governance structures cannot be over-emphasized. IBD-ME Limited, with its shareholders from each country and appointed directors, is a key component of good governance of the IBD-ME Registry. Governance goes beyond normal company governance such as strategy implementation and financial governance. More importantly, it entails ethical and data governance. The first ethical principle of “Do no harm” places a significant obligation on the board of directors to protect the rights to access patients' data. In this regard, the company constitution plays a significant role as to how, what and when data might be made available, as well as in what format. The overarching principle that was adopted by the IBD-ME Steering Committee is that data should be used only for scientific purposes to enhance patient access and outcomes.

Cooperation with country professional societies is another important factor. Getting endorsement and support from country professional societies not only ensures inclusiveness and transparency, but also enhances the image of the registry as an independent and professional registry. Furthermore, it promotes aligned commitment as it leads to ownership of the registry within the country.

Notwithstanding the above layers of governance (IBD-ME Limited and professional societies), core to the success of the registry is the adoption and support of the HCPs and getting their aligned commitment. Data protection needs special mention: in some cases, data are protected by the HCP, while in other cases the data are protected by the site/healthcare facility. While this is not a major challenge, it is of the utmost importance that the registry structure and governance respects and considers these differences and ensures that all rights to data are protected at all times through strict procedures and oversight.

One of the biggest advantages of a registry is that it is a longitudinal study and as the data set grows over the years, its value will increase. It is therefore imperative that the board of directors adopts a strategy that ensures sustainability and longevity of the registry. While sponsorship with seed capital is an important element in the successful establishment of a new registry, it is preferred that it becomes self-sustaining by monetising its asset (patient data) in an ethical way (such as educational activities, fellowships, research grants, data sharing) and to use the proceeds in alignment with its goals and objectives.

CONCLUSION

In sharing our experience in setting up the IBD-ME Registry and the valuable lessons learned, we wish to contribute towards the enhancement of RWD access, its utility, and its role in informing healthcare decision making.

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