A Comparison of Patient Characteristics and Outcomes in Selected European and U.S. Rheumatoid Arthritis Registries[1]

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Purpose: Randomized controlled trials (RCTs) have demonstrated the efficacy of biologic agents in the treatment of rheumatic diseases. However, results from RCTs may not be generalizable to clinical practice because of their strict inclusion and exclusion criteria. Assessment of safety using RCT data also is limited by short duration of follow-up and relatively small sample sizes, which generally preclude analysis of longer term outcomes and rare adverse events. In rheumatology, various observational cohorts and registries have been created to complement information obtained from RCTs, some with the primary purpose of monitoring effectiveness and safety of biologic agents. Most registries are either drug based or disease based. These registries include patients with a variety of rheumatic diseases including RA.

Methods: To provide a qualitative comparison of selected U.S. and European rheumatoid arthritis (RA) biologics registries and cohorts including ARTIS, BIOBADASER, BSRBR, BRASS, CLEAR, CORRONA, NDB, RABBIT, SCQM, and VARA.

Results: A careful comparison of these registries, as provided in this article, can provide a basis for understanding the many similarities and differences inherent in their design, as well as societal context and content, all of which can significantly impact their results and comparisons across registers.

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Summary: The increasing use of biologic agents for treatment of rheumatic diseases has raised important questions about cost, safety, and effectiveness of these agents. The unique and variable features of patient populations and registry designs in Europe and the U.S. provide valuable and complementary data on comparative effectiveness and safety of biologic agents to what can be derived from RCTs.

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Rheumatoid arthritis (RA) is a systemic inflammatory disease associated with chronic articular pain, disability, and excess mortality. There has been a growing emphasis on diagnosing and treating RA early and intensively with the goal of minimizing disability and mortality. The introduction of biologics in the past decade has revolutionized the treatment of RA because of their substantial impact on disease signs and symptoms as well as their ability to slow radiographic progression of joint damage. However, cost and safety concerns continue to be important considerations as these agents are used by an increasing number of patients, particularly those with less severe disease and with a greater burden of comorbidities than typically represented in randomized clinical trials (RCTs). Additionally, comparative effectiveness research is becoming increasingly important, and RCTs are unlikely to provide answers to many important comparative effectiveness questions.

To complement information obtained from RCTs, various observational cohorts and registries have been established in the last decade for patients with rheumatic diseases. A cohort is a structured organization of patients; as 1 type of cohort, a registry is typically prospective and enrolls patients for a specific reason (1). The registries are either drug based (ie, patient enrolled if they are starting particular medications) or disease based (ie, enrollment is predicated on a patient having a particular diagnosis such as RA), or both, and most allow evaluation of outcomes referent to a comparator group of RA patients. Many but not all drug-based registries enroll patients treated with a variety of medications for a given disease such as RA. In addition to broadly studying disease-related outcomes, an important purpose of most rheumatic disease registries is to monitor the long-term effectiveness and safety of new therapies. These registries are designed as longitudinal cohorts and can compare, for example, biologic users to nonbiologic users or to national population registers in a comparator arm. Many registries have unique features, such as a link to a national death database, bio-repositories, or access to laboratory data that makes them particularly suited to answer certain research questions. Some of the cohorts have reported results with differing magnitudes of effect or seemingly discrepant conclusions for the same safety questions. A careful comparison of the characteristics (similarities and differences) of these rheumatologic registries can lead to a better understanding of the reasons that may sometimes underlie heterogeneous results.

In this article, we present published and unpublished data to allow a qualitative comparison across European and U.S. RA registries and cohorts. The purpose of this approach was 4-fold, as follows: (1) to compare and contrast how similar information is collected and reported by the different registries; (2) to highlight the unique features of registries, the consequence of which results in certain registries being able to answer particular types of research questions; (3) to compare outcomes reported by the various registers; and (4) to explore how differences in registry design and analytic approaches may impact their results. In achieving these 4 goals, we compared registries across the domains of (1) recruitment methods and inclusion criteria for both biologic and comparator cohort patients; (2) demographics and comorbidities; (3) outcomes such as effectiveness and medication persistence; (4) safety; in particular, the rate of serious infections, acute myocardial infarction, and malignancy. Recognizing that harmonization of analytic approaches may improve the ability to compare result across registries, inherent differences in registry populations and the design features of the registry may provide results that are generalizable only to specific RA populations, a topic also addressed in this article.

METHODS

Selection of Registries and Cohorts

While recognizing the existence of numerous RA registries, we identified published articles that report comparable data for the domains described above, with a particular focus on registries and cohorts that allowed for addressing questions related to patient characteristics and comorbidities and the effectiveness, safety, and adherence to biologics used for the treatment of RA. Based largely on size, the European registries selected for this qualitative comparison included the U.K. British Society for Rheumatology Biologics Register (BSRBR), the German Rheumatoid Arthritis oBservation of Biologic Therapy (RABBIT) registry, the Swedish Rheumatology Registers including the Biologics register, the Swiss SCQM registry, and the Spanish Registry of Biologics in Rheumatology (BIOBADASER). For U.S. registries, we described the Consortium of Rheumatology Researchers of North America (CORRONA), the National Data Bank (NDB) for Rheumatic Diseases, the Veterans Affairs Rheumatoid Arthritis Registry (VARA), the Consortium for the Longitudinal Evaluation of African Americans with Early