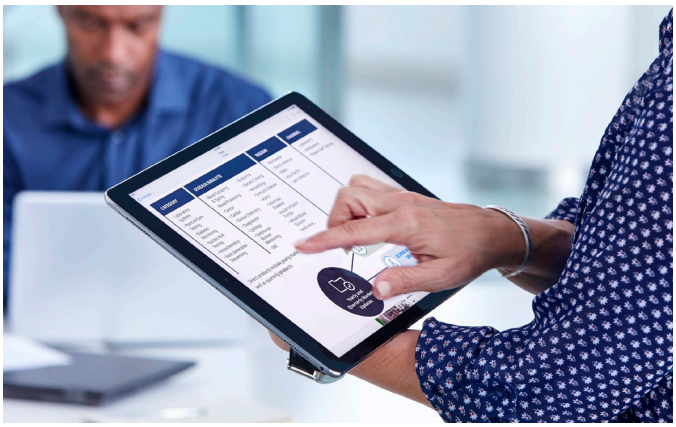
IQVIA E360™ Features and Capabilities Introduction

IQVIA E360™ Platform is a self-service data exploration, analytics, and visualization platform. Helping you optimize research for Clinical Development, HEOR & Data Science, Commercial teams as well as Government agencies.

IQVIA E360™ enables faster business decisions from data to actionable results. E360™ can be tailored to the needs of each user, making it easy for anyone in your organization to understand and apply business insights.



Our vision is to support users across the spectrum from data scientist to business executive in the production, dissemination and consumption of Real World evidence, efficiently created from Real World data from across treatment areas, countries and data types, wherever that data may be.

For Pharma, Life Science, Payers, Providers and Regulators, we aim to release the inherent value within real-world data by enabling the generation and dissemination of compelling evidence that helps to better inform healthcare decision making and ultimately improve outcomes for patients.

HOW CAN WE HELP YOU?

- Real World Evidence/Analytics - You can: Optimize RWD access and usage to create reliable and reusable evidence across the enterprise.
- HEOR – You Can: Explore data to understand what research questions to tackle first. Secondary data first approach allowing for HEOR database queries and FDA submission evidence
- EPI and Data Scientists – You Can: Conduct clinical trial/study feasibility/design, hypothesis development and retrospective studies
- Brand Lead – You Can: Communicate seamlessly with your colleagues by tracking and monitoring standard and repetitive analysis. Clearly articulate new drug opportunities and patient journey/disease history (studies on demand) including Commercial source-of-business type tracking
- Government/Regulatory - You can: Use E360's dataset explorer and patient visualiser for a deep understanding of patient experience and disease progression to inform policy decision making

KEY FEATURES:

- Access to 1 billion+ patient lives
- Analytics on any dataset regardless of location
- Real-time cohort development
- Save time with reusable building blocks (cohorts, codelists, definitions, analytics, visualizations)
- Optimize RWD access and usage across the entire company
- Create reliable and reusable evidence across the company
- Integrate 3rd-party data/tools, as well as internal data

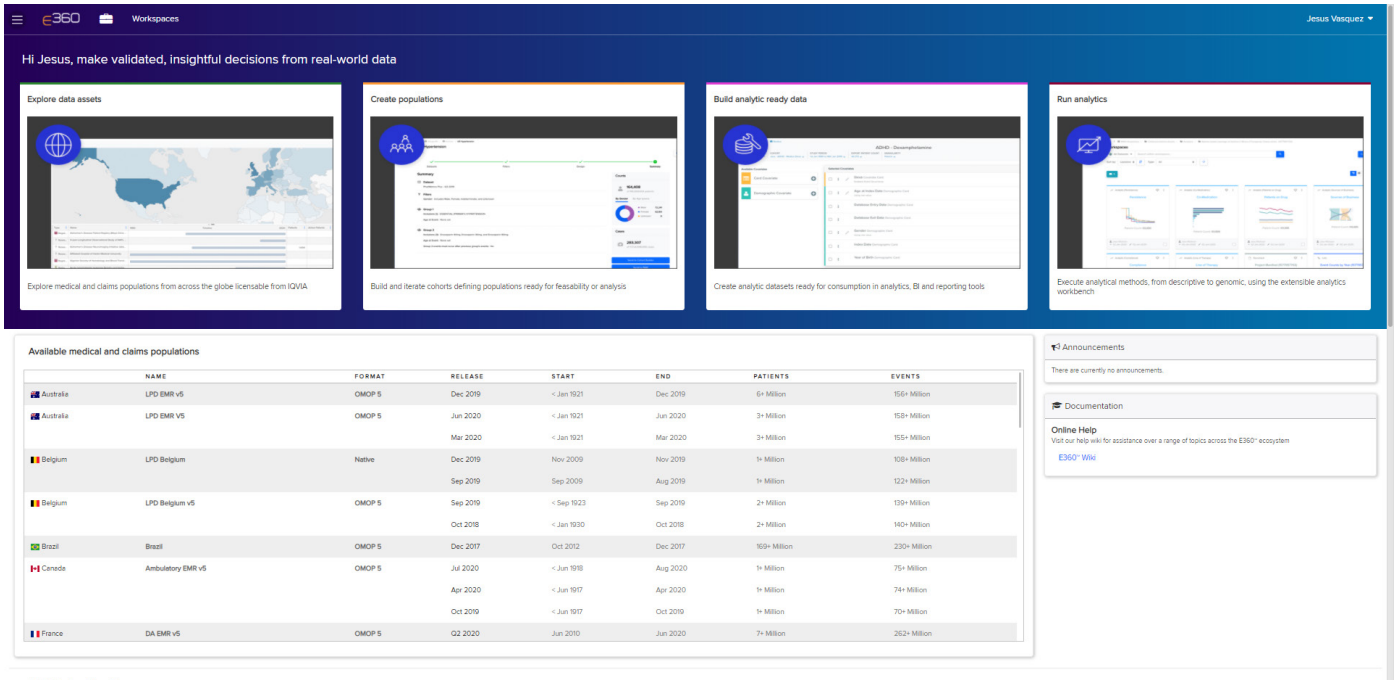
PLATFORM APPLICATION CAPABILITIES

Platform - The IQVIA E360™ Platform is the foundation that everything within E360™ is built upon. All E360™ applications are available from the navigation bar, giving users the ability to swap between the different applications with an easy to use interface. Workspaces is the central hub of the Platform, allowing users to store, share and download assets created within the E360™ Platform. These various assets can be related to each other within the context of a workspace, but do not need to be related to each other to co-exist. Access to a workspace itself is controlled by the workspace owner. Owners can grant and revoke permissions to their workspace by other users.

All aspects of security of data and applications is handled by the E360™ Platform, allowing multiple permission based scenarios to adapt to a specific client need.

KEY FUNCTIONALITY:

- Big data hosting and management
- View which applications and datasets you have access to
- Store, share and download assets created within the E360™ Platform
- Workspace API allows interaction with 3rd party applications



Landing page view showing application titles and data you have access to.

Workspaces – The IQVIA E360™ Workspaces allows you to organize, store and share work across your organization or working groups.

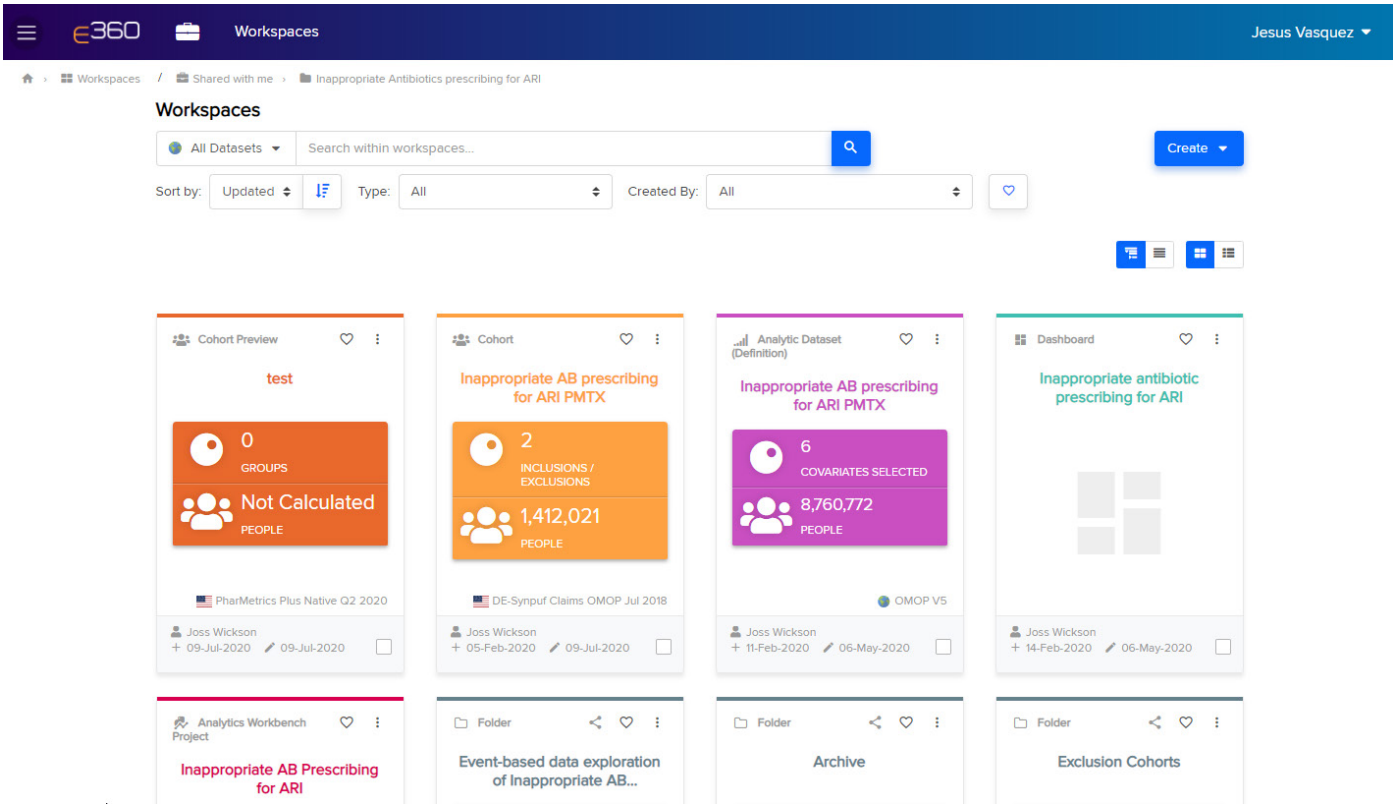
These various work assets can be created on or off platform with access directly in the workspaces UI, or via our extensive API.

Access to the workspace and work contained within it is controlled by the workspace owner. Owners can grant and revoke permissions for their workspace to other users.

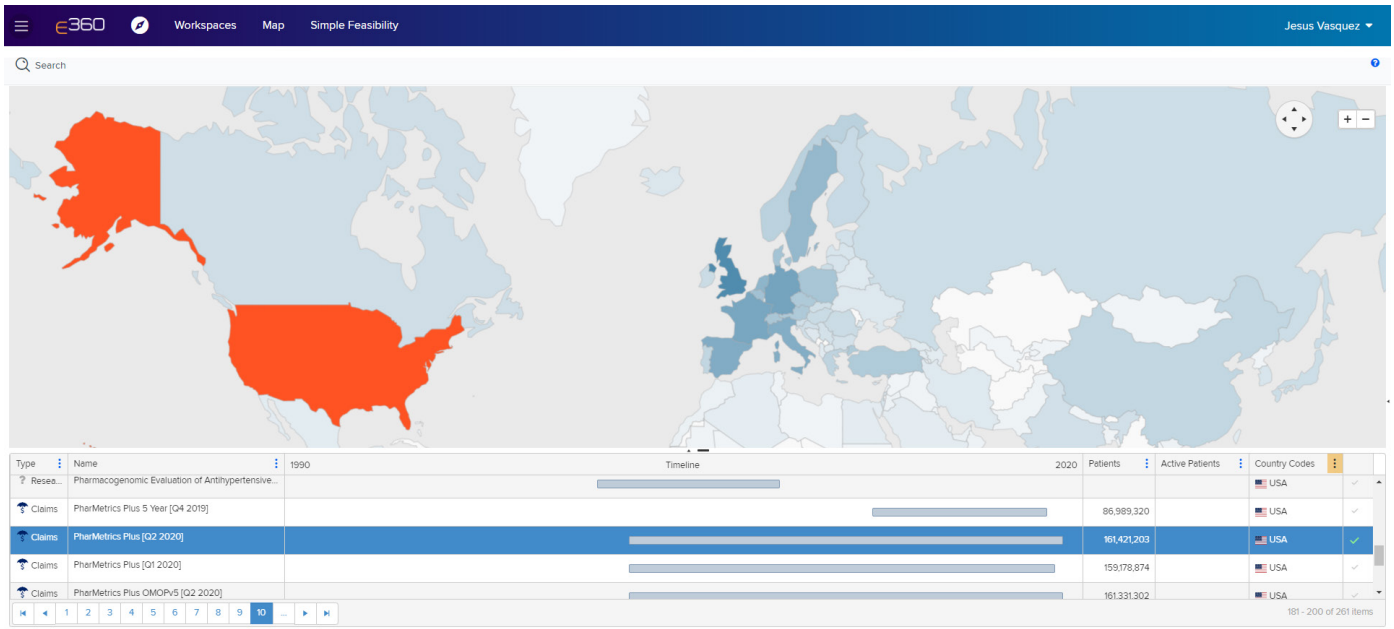
Dataset Explorer - Using IQVIA's E360™ Dataset Explorer you can find the next data asset for your research study or analytics. The tool allows you to search different selection criteria (such as geography, therapeutic area, analysis type, etc.) to view meta-data about specific datasets.

KEY FUNCTIONALITY:

- Interactive dataset explorer that allows advanced searching on key dataset variables
- Refine the search to pinpoint relevant datasets for research
- Search via both geographical map and table interfaces
- Download reports and comparison tables
- View interactive visualizations on E360™ loaded datasets



Workspaces allow users to store, share and download assets created by E360™.



Cohort Builder – IQVIA's E360™ Cohort Builder allows for the rapid selecting and understanding the feasibility of performing a study against populations. Using optimized workflows that enable advanced cohort definitions returning patient counts even on the largest of datasets.

With over 1 billion patient lives available for analysis in Cohort Builder, almost every disease and therapy area are available for analysis.

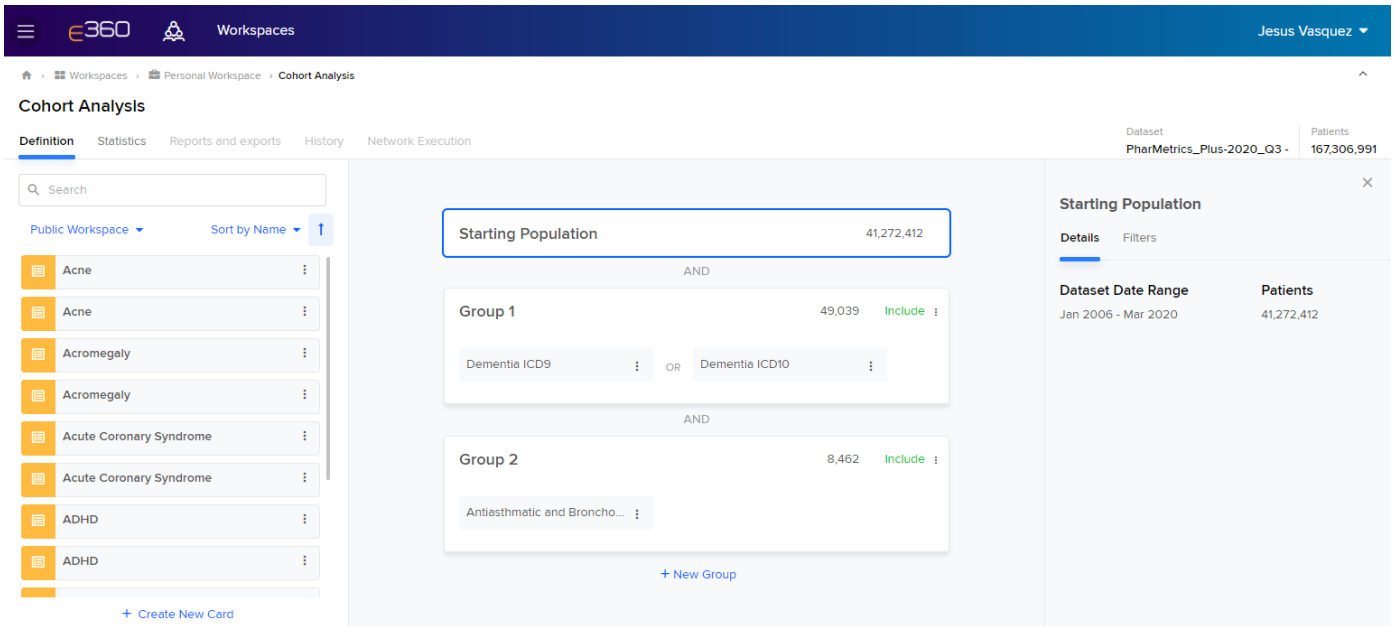
Cohort Builder lets you manage, build, and apply codelists, test and clinical results, and various demographic and geographic filters on multiple datasets spanning geographies across the globe.

Cohort Builder also includes various reporting capabilities including: patient visualization, attrition reporting, incidence and prevalence, cohort definition reporting, patient group by location etc.

Cohort Builder seamlessly integrates with both native and OMOP data sources allowing researchers to use one platform to analyze all RWD data.

KEY FUNCTIONALITY:

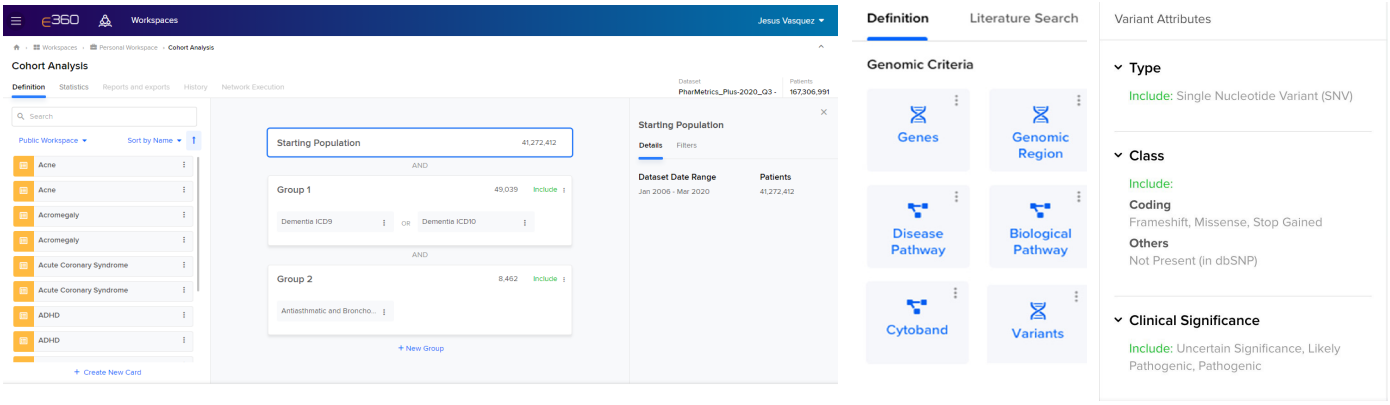
- Real time protocol creation and optimization
- Trial feasibility with real world patient populations
- Integrated codelist management to create definitions of therapy areas, treatments, and procedures, for use as patient selection criteria or covariates
- Define filters by geography, and other demographic variables
- Handles multiple datasets (Both Native and OMOP format) with inline dataset switching to compare datasets



Genomics – E360™ Genomics is a scalable, privacy-preserving genotypic-phenotypic research platform that provides an efficient way to conduct genomic research with genomic and clinical databases. E360™ Genomics platform provides life science customers immediate access to aggregated data at scale. Enabling them to conduct a wide range of research including association studies of genomics and observable traits, comparative efficacy and safety trials, and burden-of-illness and discovery analytics, by using de-identified data in a secure environment that protects patients' privacy.

KEY FUNCTIONALITY:

- Ability to query linked clinico-genomic data and build cohorts using both clinical and genomic filters
- Instant availability of tools and analytic methods that are commonly used in genomic research
- Seamlessly connecting clinico-genomic data from multiple locations for integrated analysis in one UI



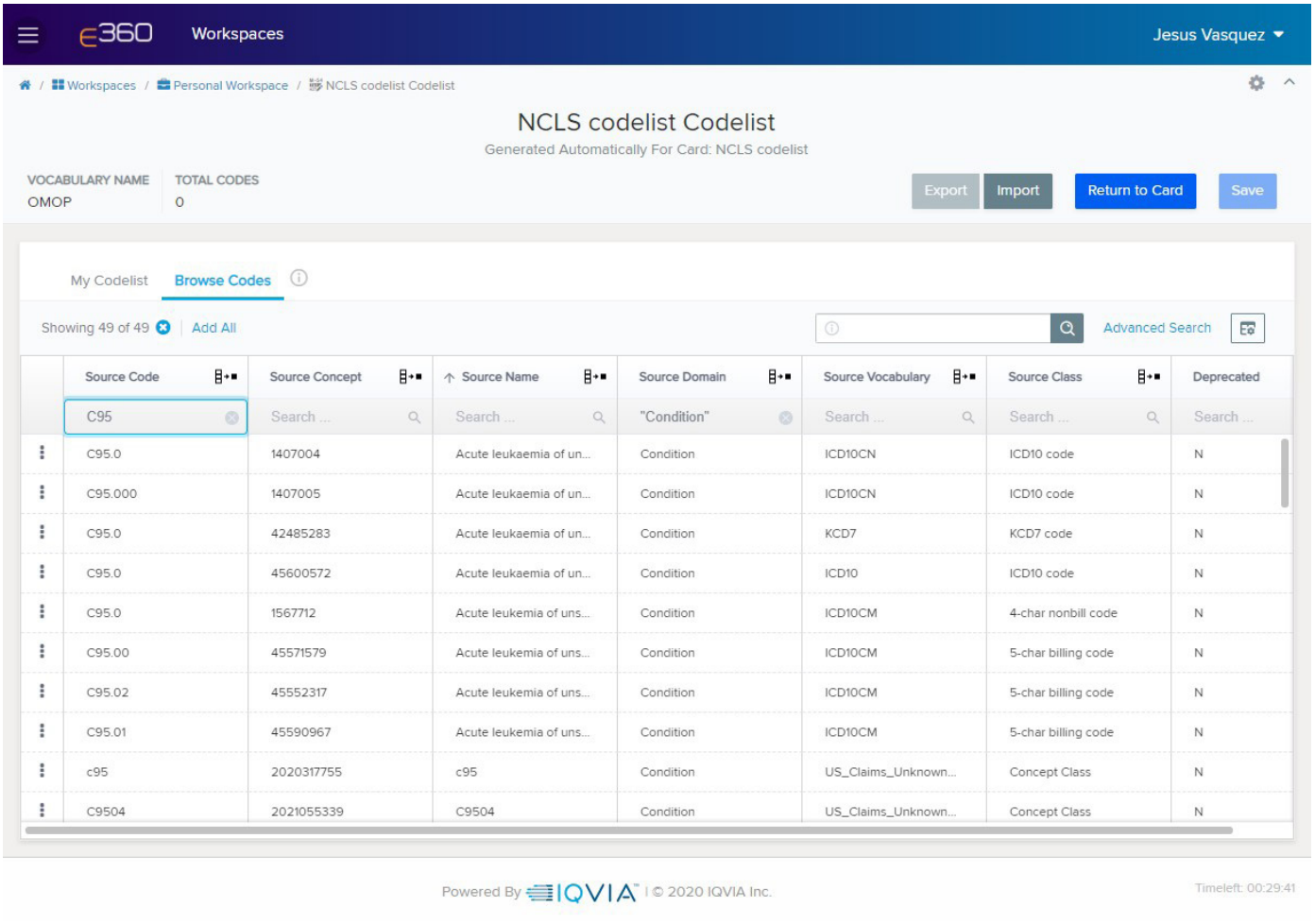
Codelists Manager - Build disease and therapy definitions for use in queries. Codelists are the common currency of cohort building (used for inclusion/ exclusion criteria) and for analytics (used for feature/dimension definition).

IQVIA E360™ Codelist Manager lets you set up, edit and share definitions of therapy areas, treatments and procedures, for use as patient selection criteria or covariates. With advanced search features such as multi-column filtering, code relationship navigation, support for OMOP and SNOMED hierarchies, multi-code selection and complex text searches – Codelist Manager is a one-stop shop for your medical terminology definitions.

E360™ supports custom codelist import, reporting and audit of definitions, with exportable codelists and a stored search history with user notations.

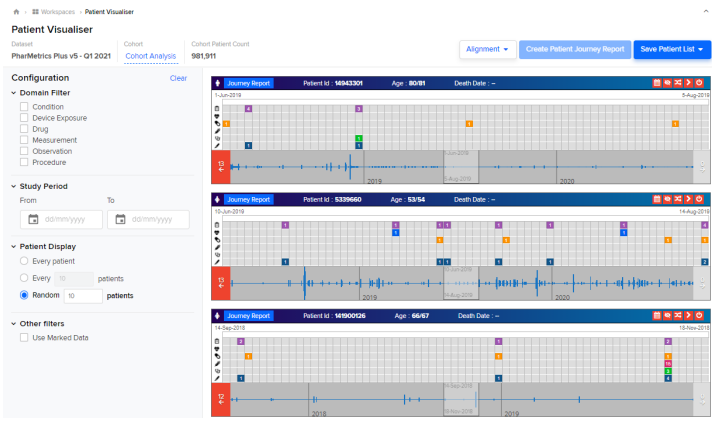
KEY FUNCTIONALITY:

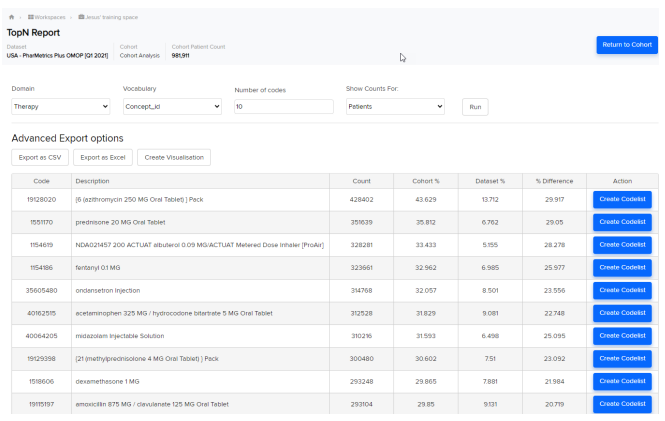
- Support for multiple dataset terminologies and hierarchies
- Complex, multi-column searching and filtering to target precise disease and treatment definitions
- Collaboration – multiple users can share and edit codelists, and codelists can be reused in multiple studies or cohorts
- Downloadable codelist history and version control showing changes linked to users
- Codelist import and export, for compatibility with other sources



Reporting Capabilities - E360™ reporting capabilities include descriptive analytics within Cohort Builder and allows you to view your chosen cohort definition at an aggregate level, these views include:

- Geographical view
- Age/Gender distributions
- Events over time
- Boolean (and/or/not/true/false) Logic Comparisons
- Attrition Reporting
- Patient Visualiser and Patient Journey reporting
- Top N Reporting (Top Therapy and Diagnostics within your cohort)





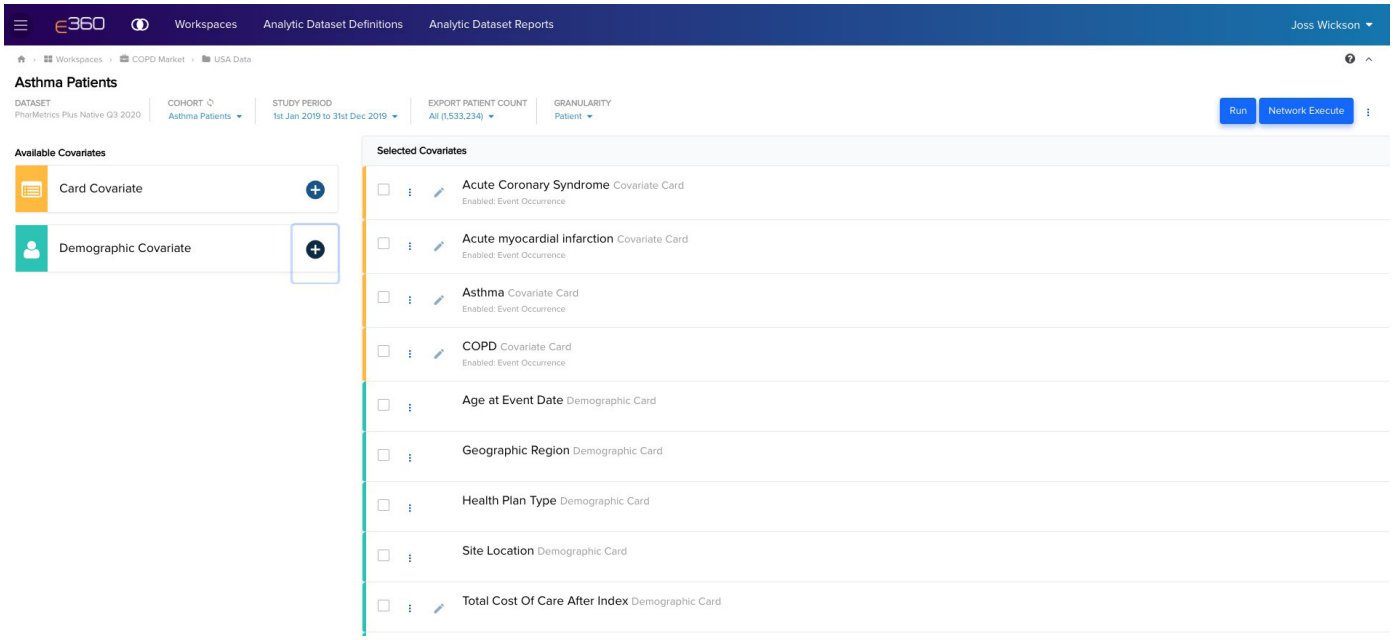
Analytic Dataset Tools - The IQVIA E360™ Analytic Dataset Tools allows you to build powerful covariate and time-based analytic datasets from any supported EMR, Claims or medical database within E360™. It provides a generic mechanism for generating analytic-ready files using codelist and phenotype definition libraries to define analytical features.

E360™ Analytics Dataset Tools allows the production of covariate-based selection and refinement for diagnosis, test, and treatment covariates, as well as time based columns dependent on clinical or therapy-based index dates, demographics, or other drug usage patterns.

These generic analytic-ready datasets can be used with our own E360™ Analytics Workbench or imported into other statistical platforms such as SAS, R, or Python and locally developed analytics tools. The toolset also allows output of aggregated, clinical values and specific tests to form part of your covariate analysis.

KEY FUNCTIONALITY:

- Selection and refinement for matching demographic, diagnosis, test, and treatment covariates
- Export time-based columns dependent on index date, demographics, or other usage patterns
- Patient or Event level Analytics Datasets are both available
- Treatment and comparator group cohort generation and export
- Fully compatible with all aspects of E360™ reporting and metrics functionality



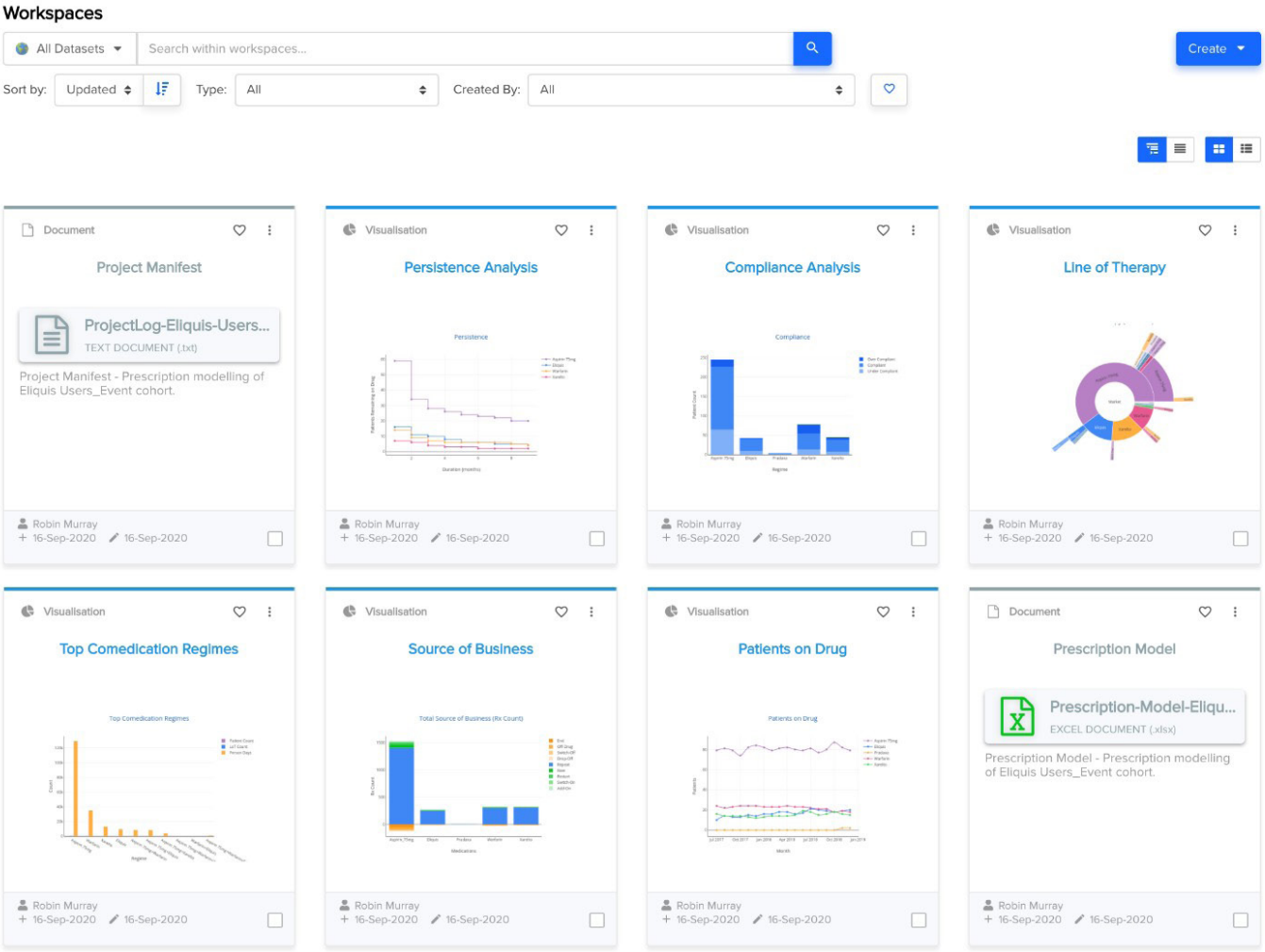
Analytic Workbench – IQVIA's E360™ Analytics Workbench provides a generalized framework for delivering sophisticated analytical methods that are portable across Real World Data sets. It includes a rapidly growing pre-configured library of basic and advanced HEOR, Commercial and Machine-learning analytical methods along with an extensible framework for custom development.

With complex protocols and end-points simulation, precise "what-if" analysis, incidence and prevalence analysis, and many other methods, Analytics Workbench has the right tool for the job at hand.

Analytics Workbench works on all E360™ loaded datasets; OMOP, LPD and native format, and on non-E360™ data.

KEY FUNCTIONALITY:

- Growing collection of Analytic Method categories
- Fully supports data generated by E360™ Analytics Dataset Output from internal and external data sources



Collaboration Tools - E360™ collaboration capabilities allow you to create customized views, bringing information together from across the platform into one place.

Enables executives and evidence consumers to explore and interact with analyses without modifying the underlying scientific methodology.

KEY FUNCTIONALITY:

- Create dashboards to highlight your workspace assets
- Use the built-in themes to customize the appearance of your dashboard
- Enhance your dashboards with custom images and text

For executives and evidence consumers to explore and interact with analyses without modifying the underlying scientific methodology.

Systemic Lupus Erythematosus

Unlock Interactive Report

1. Introduction

2. Population Demographics

2.1 Germany (German DA OMOP)
2.2 France (France DA OMOP)
2.3 UK (UK IMRD OMOP)

3. Prescription Modeling

3.1 Germany
3.2 France
3.3 UK

4. Patient Characteristics

4.1 Germany
4.2 France
4.3 UK

5. Comorbidity analysis

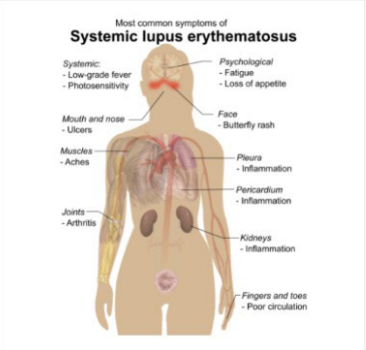
5.1 Germany
5.2 France
5.3 UK

1. Introduction

Lupus, technically known as systemic lupus erythematosus (SLE), is an autoimmune disease in which the body's immune system mistakenly attacks healthy tissue in many parts of the body.[1] Symptoms vary between people and may be mild to severe.[1] Common symptoms include painful and swollen joints, fever, chest pain, hair loss, mouth ulcers, swollen lymph nodes, feeling tired, and a red rash which is most commonly on the face.[1] Often there are periods of illness, called flares, and periods of remission during which there are few symptoms.[1]

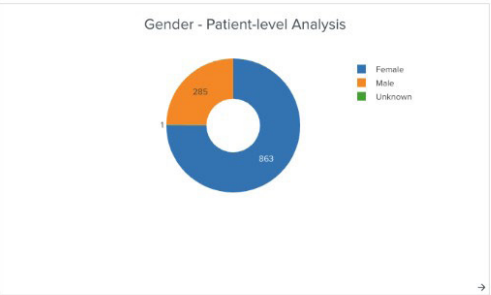
The cause of SLE is not clear.[1] It is thought to involve genetics together with environmental factors.[4] Among identical twins, if one is affected there is a 24% chance the other one will be as well.[1] Female sex hormones, sunlight, smoking, vitamin D deficiency, and certain infections are also believed to increase the risk.[4] The mechanism involves an immune response by autoantibodies against a person's own tissues.[1] These are most commonly anti-nuclear antibodies and they result in inflammation.[1] Diagnosis can be difficult and is based on a combination of symptoms and laboratory tests.[1] There are a number of other kinds of lupus erythematosus including discoid lupus erythematosus, neonatal lupus, and subacute cutaneous lupus erythematosus.[1]

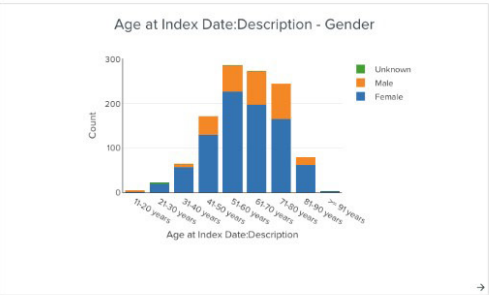
There is no cure for SLE.[1] Treatments may include NSAIDs, corticosteroids, immunosuppressants, hydroxychloroquine, and methotrexate.[1] Although corticosteroids are rapidly effective, long-term use results in side effects.[5] Alternative medicine has not been shown to affect the disease.[1] Life expectancy is lower among people with SLE.[6] SLE significantly increases the risk of cardiovascular disease with this being the most common cause of death.[4] With modern treatment about 80% of those affected survive more than 15 years.[3] Women with lupus have pregnancies that are higher risk but are mostly successful.[1]



2. Population Demographics

2.1 Germany (German DA OMOP)





**Index date refers to initial diagnosis of SLE*