

## Enhancements to Sentinel's Routine Querying System

### 2014- 2024 Enhancements

Year	Enhancement	Description
<b>2014</b>	Query Request Package (QRP) 1.0	<ul style="list-style-type: none"> <li>First release of the QRP, which included the ability to calculate background rates and define episodes of new use of a medical product of interest and evaluates the occurrence of health outcomes of interest</li> </ul>
<b>2015</b>	QRP 2.0	<ul style="list-style-type: none"> <li>Added ability to conduct a study using a self-controlled risk interval design</li> </ul>
<b>2016</b>	QRP 2.2	<ul style="list-style-type: none"> <li>Added the medical product use during pregnancy cohort identification strategy</li> </ul>
	QRP 3.0	<ul style="list-style-type: none"> <li>Enhanced Propensity Score (PS) Analysis capabilities to 1) add the ability to define covariates to include in propensity score estimation models and 2) produce PS model diagnostics</li> </ul>
<b>2017</b>	QRP 4.0	<ul style="list-style-type: none"> <li>Redesigned the underlying code base to maximize the consistency across available cohort identification strategies</li> </ul>
	QRP 5.0	<ul style="list-style-type: none"> <li>Added the medical product utilization cohort identification strategy</li> <li>Added the ability to describe the most frequent claims in a cohort of interest</li> </ul>
<b>2018</b>	QRP 6.0	<ul style="list-style-type: none"> <li>Added manufacturer-level product utilization and switching patterns cohort identification strategy</li> <li>Added ability to 1) evaluate events in a pre-defined observation window in relation to an episode, 2) describe the overlap between two different episodes, and 3) evaluate events during the concomitant use of two different treatment episodes</li> </ul>
	QRP 7.0	<ul style="list-style-type: none"> <li>Added ability to query the Mother Infant Linkage Sentinel Common Data Model (SCDM) table and to perform a PS analysis to evaluate maternal and/or infant outcomes following a maternal exposure</li> </ul>
<b>2019</b>	QRP 8.0	<ul style="list-style-type: none"> <li>Added ability to perform signal identification using PS based TreeScan™ and Self-Controlled TreeScan</li> </ul>
	QRP 9.0	<ul style="list-style-type: none"> <li>Added ability to perform an Interrupted Time Series analysis</li> </ul>
<b>2020</b>	QRP 10.0	<ul style="list-style-type: none"> <li>Enhanced PS analysis capabilities to 1) add ability to perform Inverse Probability of Treatment Weighted analysis and PS Stratum Weighting analysis following an Exposures and Follow-up Time analysis, 2) refine how PS stratification is performed, 3) produce weighted baseline characteristics tables, 4) add ability to perform fixed ratio matching in a PS matching</li> </ul>

Year	Enhancement	Description
		analysis, and 5) add additional user options when computing a high dimensional PS
2021		<ul style="list-style-type: none"> <li>Redesigned the underlying code base and modified user options in order to reduce query execution time</li> </ul>
	QRP 10.4	<ul style="list-style-type: none"> <li>Added cohort attrition tables for all cohort identification strategies</li> </ul>
	QRP 11.0	<ul style="list-style-type: none"> <li>Added ability to analyze cumulative, average daily dose, and current filled daily dose in Medical Product Utilization analyses</li> <li>Enhanced cohort selection capabilities to restrict cohort based on cumulative and average filled daily dose</li> <li>Incorporated QRP Reporting Tool into QRP to produce an automated summary report in distributed queries</li> </ul>
	QRP Reporting Tool 1.0	<ul style="list-style-type: none"> <li>First release of a reporting tool with the capability to 1) produce a Characteristics table, 2) produce descriptive summary tables, 3) produce an attrition table, 4) produce figures for inferential and descriptive analyses, and 4) produce the appendices that accompany reports</li> </ul>
2022	QRP 12.0	<ul style="list-style-type: none"> <li>Enhanced PS analysis capabilities to 1) produce Kaplan Meier curves for PS Stratum Weighting and Inverse Probability of Treatment Weighting analyses, 2) re-compute PS when conducting subgroup analyses, 3) perform Firth Logistic Corrected Method when computing a PS, and 4) test the Cox proportional hazard assumption</li> <li>Added ability to query the SCDM laboratory table when defining baseline covariates</li> </ul>
	QRP Reporting Tool 2.0	<ul style="list-style-type: none"> <li>Expanded PS analysis reporting to include 1) Kaplan Meier curves and 95% confidence intervals for all analyses and 2) additional reporting tables for subgroup analyses</li> </ul>
2023	QRP 12.2	<ul style="list-style-type: none"> <li>Added ability to compute a disease risk score composed of medical codes (diagnosis, procedure, and dispensing) and demographic information</li> </ul>
	QRP 13.0	<ul style="list-style-type: none"> <li>Enhanced the pregnancy identification and gestational age estimation algorithm and expanded available pregnancy outcomes to include non-live births</li> <li>Enhanced inclusion/exclusion and covariate assessment in pregnancy analyses to define cohort characteristics throughout the entire gestational period</li> </ul>

Year	Enhancement	Description
<b>2024</b>	QRP 14.0.0	<ul style="list-style-type: none"> <li>• Added the ability to perform Inverse Probability of Treatment Weighted analysis and PS Stratum Weighting analysis in pregnancy analyses</li> <li>• Added ability to perform signal identification using tree-based scan statistics with a Poisson probability model</li> <li>• Added ability to conduct a survival analysis using a pregnancy cohort identification strategy</li> </ul>
	QRP Reporting Tool 4.0.0	<ul style="list-style-type: none"> <li>• Expanded signal identification reporting to include: 1) aggregation of data for tree-based scan analysis with a Poisson probability model and 2) reporting tables for tree-based scan analysis with a self-controlled design</li> <li>• Added ability to conduct a survival analysis using a pregnancy cohort identification strategy</li> </ul>