

PCORnet Algorithm Library

Sources of Existing Algorithms and Computable Phenotypes¹

BACKGROUND

Algorithms and “computable phenotypes” refer to clinical conditions/characteristics, as well as procedures and other health status indicators that can be ascertained via computerized query to a clinical or claims information source (e.g., electronic health record (EHR) system, claims database or clinical data repository) using a defined set of data elements and logical expressions.

Purpose and Audience for this document:

The purpose of this document is to list known sources of algorithms and computable phenotypes.

The intended audience of this document includes PCORnet DRN OC staff working on queries of data available in PCORnet, as well as researchers, investigators or sponsors who plan to submit a Front Door request to PCORnet. All PCORnet-funded researchers and applicants are encouraged to re-use existing algorithms and computable phenotypes wherever possible and appropriate.

PRIMARY ALGORITHM SOURCES

Source	Notes
Clinical Classifications Software (CCS)	Based upon ICD diagnosis and procedure codes, very large listing of conditions Both ICD-9-CM and ICD-10-CM/PCS classifications exist. http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp
CMS Chronic Conditions Warehouse (CCW) ²	Claims-based algorithms utilizing diagnosis codes https://www.ccwdata.org/web/guest/condition-categories
Sentinel	Thoroughly researched/validated algorithms for a limited number of conditions https://www.sentinelssystem.org/communications/report-finder
PheKB (Phenotype Knowledge Base)	PheKB is a collaborative environment to support development, validation, and storage of computable phenotype algorithms. Algorithms from multiple initiatives are housed in this repository. https://www.phekb.org/phenotypes
Quality Net	Inpatient Specifications Manual is the result of the collaborative efforts of the Centers for Medicare & Medicaid Services (CMS) and The Joint Commission to publish a uniform set of national hospital quality measures https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1141662756099 Hospital Outpatient Quality Reporting Specifications Manual was developed by the Centers for Medicare & Medicaid Services (CMS) to provide a uniform set of quality measures to be implemented in hospital outpatient settings.

¹Adapted from content published by the NIH Health Care Systems Research Collaboratory. Resources for Computable Phenotype Development: Sources of Existing Phenotypes. In Rethinking Clinical Trials: A Living Textbook of Pragmatic Clinical Trials. Available at: <https://www.nihcollaboratory.org/Products/Phenotype%20Authoritative%20Sources.pdf/>. Accessed November 7, 2016.

²<http://www.ncbi.nlm.nih.gov/pubmed/21649659>

	https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1196289981244
Value Set Authority Center (VSAC)	Downloadable access to all official versions of vocabulary value sets contained in the electronic Clinical Quality Measures (eQMs).
Professional society guidelines	American Diabetes Association: http://www.diabetes.org/ National Kidney Foundation: https://www.kidney.org/ American College of Cardiology: http://www.acc.org/
Reimbursement coding guidance	For procedures, especially procedures that include a device. Medicare Coverage Database: https://www.cms.gov/medicare-coverage-database/ National Coverage Determinations: https://www.cms.gov/medicare-coverage-database/indexes/ncd-alphabetical-index.aspx https://www.bostonscientific.com/content/dam/bostonscientific/Reimbursement/IC/2016/IC-362504-AA_2016_IC_Procedural_Reimbursement_Guide.pdf

SECONDARY ALGORITHM SOURCES

Source	Notes
Algorithms published in peer-reviewed literature	Algorithms and computable phenotypes that have been developed and/or implemented and documented in the peer-reviewed literature. See PCORnet Algorithm and Computable Phenotype literature search tips for search strategies.