Upcoming OHDSI Community Calls

Date	Topic
Oct. 19	Focus Topic: The LEGEND Project
Oct. 26	Trick or Treat
Nov. 2	Collaboration Opportunities: Methods Res., Data Standards, Open-Source, Clinical App.
Nov. 9	Demos: Tools for Adoption of OHDSI Data Standards
Nov. 16	Open Network Studies
Nov. 23	History of OHDSI
Nov. 30	Collaborator Showcase Presentations

Three Stages of The Journey

Where Have We Been?
Where Are We Now?
Where Are We Going?

Upcoming Workgroup Calls

Date	Time (ET)	Meeting
Tuesday	1 pm	Common Data Model
Tuesday	2 pm	Health Equity
Tuesday	3 pm	OMOP CDM Oncology – Outreach/Research Subgroup
Wednesday	9 am	Vaccine Vocabulary
Wednesday	10 am	OMOP CDM Oncology – Development Subgroup
Wednesday	1 pm	Data Quality Dashboard
Wednesday	7 pm	Medical Imaging
Thursday	12 pm	HADES
Thursday	1 pm	OMOP CDM Oncology – CDM/Vocabulary Subgroup
Friday	1 pm	Phenotype Development and Evaluation
Monday	10 am	GIS-Geographic Information System
Monday	11:30 am	Pharmacovigilance Evidence Investigation (PEI)
Tuesday	9 am	OMOP CDM Oncology – Genomic Subgroup

www.ohdsi.org/upcoming-working-group-calls

Get Access To Different Teams/WGs/Chapters

Welcome to OHDSI!

The Observational Health Data Sciences and Informatics (or OHDSI, pronounced "Odyssey") program is a multi-stakeholder, interdisciplinary collaborative to bring out the value of health data through large-scale analytics. All our solutions are open-source.

OHDSI has established an international network

2020 OHDSI Symposium

Our 2020 OHDSI Global Symposium brought together a global research community for 18 hours of open science, international collaboration and community fun. The day included research presentations from community members, panels that brought together leaders from major healthcare organizations, as well as network sessions, the annual collaborator

5. Select the workgroups you want to join (you can refer to the WIKI for work group objectives www.ohdsi.org/web/wiki/doku.php?id=projects:overview)

- [ ] ATLAS
- [ ] Clinical Trials
- [ ] Common Data Model
- [ ] Data Quality Dashboard Development
- [ ] Early-stage Researchers
- [ ] Education Work Group
- [ ] Electronic Health Record (EHR) ETL
- [ ] Geographic Information System (GIS)
- [ ] HADES Health Analytics Data-to-Evidence Suite
- [ ] Health Equity
- [ ] Latin America
- [ ] Medical Devices
- [ ] Natural Language Processing
- [ ] OHDSI APAC
- [ ] OHDSI APAC Steering Committee
- [ ] OHDSI Steering Committee
- [ ] Oncology
- [ ] Patient-Generated Health Data
- [ ] Pharmacovigiliance Evidence Investigation

- [ ] Phenotype Development and Evaluation
- [ ] Population-Level Effect Estimation / Patient-Level Prediction
- [ ] Psychiatry
- [ ] Registry (formerly UK Biobank)
- [ ] Surgery and Perioperative Medicine
- [ ] Vaccine Safety
- [ ] Vaccine Vocabulary
- [ ] Women of OHDSI

6. Select the chapter(s) you want to join

- [ ] Africa
- [ ] Australia
- [ ] China
- [ ] Europe
- [ ] Japan
- [ ] Korea
- [ ] Singapore
- [ ] Taiwan

7. Select the studies you want to join

- [ ] HERA-Health Equity Research Assessment
- [ ] PIONEER for Prostate Cancer (study-a-thon ended)
- [ ] SCYLLA (SARS-Cov-2 Large-scale Longitudinal Analyses)

Get Access To Different Teams/WGs/Chapters

5. Select the workgroups you want to join (you can refer to the WIKI for work group objectives www.ohdsi.org/web/wiki/doku.php?id=projects:overview)

- [ ] ATLAS
- [ ] Clinical Trials
- [ ] Common Data Model
- [ ] Data Quality Dashboard Development
- [ ] Early-stage Researchers
- [ ] Education Work Group
- [ ] Electronic Health Record (EHR) ETL
- [ ] Geographic Information System (GIS)
- [ ] HADES Health Analytics Data-to-Evidence Suite
- [ ] Health Equity
- [ ] Latin America
- [ ] Medical Devices
- [ ] Natural Language Processing
- [ ] OHDSI APAC
- [ ] OHDSI APAC Steering Committee
- [ ] OHDSI Steering Committee
- [ ] Oncology
- [ ] Patient-Generated Health Data
- [ ] Pharmacovigiliance Evidence Investigation

- [ ] Phenotype Development and Evaluation
- [ ] Population-Level Effect Estimation / Patient-Level Prediction
- [ ] Psychiatry
- [ ] Registry (formerly UK Biobank)
- [ ] Surgery and Perioperative Medicine
- [ ] Vaccine Safety
- [ ] Vaccine Vocabulary
- [ ] Women of OHDSI

6. Select the chapter(s) you want to join
- [ ] Africa
- [ ] Australia
- [ ] China
- [ ] Europe
- [ ] Japan
- [ ] Korea
- [ ] Singapore
- [ ] Taiwan

7. Select the studies you want to join
- [ ] HERA-Health Equity Research Assessment
- [ ] PIONEER for Prostate Cancer (study-a-thon ended)
- [ ] SCYLLA (SARS-Cov-2 Large-scale Longitudinal Analyses)

2021 APAC Symposium – Nov. 18

Nov 18 (APAC time zone)	Contents	Speaker(s)
Morning	OHDSI State of the Community	George Hripcsak/Patrick Ryan
	OHDSI APAC State of the Community	Mui Van Zandt
	EHDEN	Peter Rijnbeek
	FHIR and OHDSI Collaboration	Christian Reich
	APAC Chapter vision for 2022	APAC chapter leaders
Break		
Afternoon	Networking Session	All

www.ohdsi.org/apac

Next CBER Best Seminar Series

Topic	CBER BEST Initiative Seminar Series - Exploring Vaccine Safety Datalink COVID vaccine rapid cycle analysis (RCA) methods
Description	Background: The CBER BEST Initiative Seminar Series is designed to share and discuss recent research of relevance to ongoing and future surveillance activities of CBER regulated products, namely biologics. The series focuses on safety and effectiveness of biologics including vaccines, blood components, blood-derived products, tissues and advanced therapies. The seminars will provide information on characteristics of biologics, required infrastructure, study designs, and analytic methods utilized for pharmacovigilance and pharmacoepidemiologic studies of biologics. They will also cover information regarding potential data sources, informatics challenges and requirements, utilization of real-world data and evidence, and risk-benefit analysis for biologic products. The length of each session may vary, and the presenters will be invited from outside FDA. Please see the details below for our upcoming seminar. Anyone can register and join for free. Stay tuned for more details and additional webinars during the year. Topic: Exploring Vaccine Safety Datalink COVID vaccine rapid cycle analysis (RCA) methods Description: We will review statistical methods used in observational studies of the safety and effectiveness of COVID-19 vaccines. Topics will include: • How to compare recent vaccinees with concurrent comparators (unvaccinated or less recently vaccinated) and • with comparators who are not concurrent (historical rates or self-controls) to make inferences about outcome rates • that would be expected among vaccinees had they not been vaccinated • Methods for estimating risk ratios • How to examine change in vaccine effectiveness (waning) or vaccine safety over time-since-vaccination • Sequential tests Presenter: Nicola P. Klein, MD, PhD
Time	Oct 20, 2021 11:00 AM in Eastern Time (US and Canada)

#OHDSISocialShowcase This Week

Prediction of early acute readmission after colorectal cancer surgery using only clinical preoperative variables.

PRESENTER: **Johan** Clausen

INTRO
Early unplanned readmission following colorectal cancer surgery is a significant economic burden to the health care system and may delay patient recovery and adjuvant chemotherapy onset. Identifying patients at high risk of readmission when planning the surgical and oncological treatment is of high value, as preoperative training or extensive postoperative monitoring can be planned.

METHODS
A CDM was built using data from the Danish colorectal cancer group's nationwide database (DCCG), **containing clinical data from all colorectal cancer surgeries since 2001**. DCCG-Data was enriched with information about readmission from the Danish National Patient registry.
OHDSI's ATLAS tool and R was used to build a patient-level prediction model with **acute readmission as outcome**. The target cohort was **colorectal cancer patients undergoing surgery**, and **time-at-risk was date of surgery until 30 days after**. Covariates in the age, gender, measurement values, conditions, procedures and observation domain available **any time prior to surgery** was included in the model. Custom covariates were constructed for specific clinical scales (e.g., ASA score).

16.6%

RESULTS
- **62.824** patients underwent colorectal cancer surgery between 2001 to 2019. The incidence of unplanned 30-day readmission was **10.423 (16,6%)**.
- **96 variables** were included in the model.
- Using only preoperative available variables, the prediction model had a **AUC of 0.60 (95%CI 0.59:0.61) and an AUPRC of 0.22**. Calibration was considered acceptable with a **brier score of 0.14.**

Preoperative clinical variables can **predict early** acute **readmission** after colorectal cancer surgery.

Accurate prediction of acute readmission may assist the multidisciplinary team in the decision-making of the patients' treatment trajectory.

CLINICAL USE OF THE PREDICTION MODEL
The patients' treatment trajectories are often planned at a multidisciplinary team conference (MDT). Identifying patients with high risk of postoperative morbidity is crucial at MDT, and a decision support tool visualizing personalized readmission risk may prove to be of high value for identifying high-risk patients and deciding the treatment plan accordingly.

Interventions on high-risk patients may include
- **Delay of surgery** and **preoperative training (prehabilitation)**.
- Increased **postoperative monitoring** or **delayed discharge**.

The prediction model can not be used as a stand-alone tool in the MDT-setting but **combining results from multiple prediction models** may be useful for assisting the clinicians in the decision-making process.

PERSPECTIVES
Enriching the CDM with further **phenomics from other nationwide data sources** may improve the performance of the prediction model significantly.
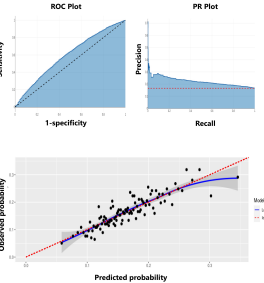
Johan Stub Rønø Clausen, Andreas Weinberger Rosen, Karoline Bendix Bräuner, Mikail Gögenur, Viviane Annabelle Lin, Eldar Allakhverdiiev, Julie Sparholt Walbech, Ismail Gögenur

CENTER FOR SURGICAL SCIENCE
REGION ZEALAND
ZEALAND UNIVERSITY HOSPITAL

OHDSI

MONDAY

Prediction of early acute readmission after colorectal cancer surgery using only clinical preoperative variables
Authors: Johan Clausen, Andreas Weinberger Rosen, Karoline Bendix Bräuner, Mikail Gögenur, Viviane Annabelle Lin, Eldar Allakhverdiiev, Julie Sparholt Walbech, Ismail Gögenur
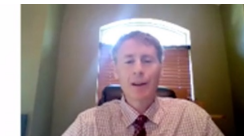
@OHDSI   www.ohdsi.org   #JoinTheJourney   ohdsi

#OHDSISocialShowcase This Week

TreatmentPatterns: An R package to analyze treatment patterns of a study population of interest

👤 PRESENTER: Aniek Markus

INTRO
- There is no R package available to analyze treatment patterns of a study population of interest and the standard analytics tool available in ATLAS has the disadvantage that it is not customizable to specific research needs.

METHODS
- We defined the process of constructing pathways following earlier work, highlighting key decisions in the process that need to be made (see Figure 1).
- We demonstrate the functionalities of the package and outputs by analyzing treatment patterns of three common chronic diseases (type 2 diabetes, hypertension, and depression) in the Dutch Integrated Primary Care Information (IPCI) database (see online Shiny application).

RESULTS
- The R package TreatmentPatterns creates sunburst plots (see Figure 2), Sankey diagrams, and various other outputs (e.g. percentage of people treated, average duration of event cohorts) to give insight in first-, second- and higher line treatments.
- The results can be explored in an interactive Shiny application: https://aniekmarkus.shinyapps.io/TreatmentPatterns/

CONCLUSION
- This tool is intended to make the analysis of treatment patterns more accessible, more standardized, and more interpretation friendly.
- We hope it thereby contributes to the accumulation of knowledge on real-world treatment patterns across disease domains.

How to perform a treatment patterns study in 5 steps:

Step 1: define target and event cohorts

cohortId	cohortName	cohortType	atlasId	conceptSet
1	T2DM	target	589	NA
2	Biguanides	event	NA	1593986;1503297;19033909;40798673
3	Sulfonylureas	event	NA	1502809;1502855;1559684;1560171;1594973;1597756;19097821

Step 2: (optional) specify baseline characteristics of interest

covariateName	covariateId
Male	8507001
Age	1002
Charlson comorbidity index	1901

Step 3: specify settings to construct treatment pathways

param	analysis1
studyName	T2DM
targetCohortId	1
eventCohortIds	2;3; etc.
includeTreatmentsPriorToIndex	0
minEraDuration	5
splitEventCohorts	
eraCollapseSize	30
combinationWindow	30
minStepDuration	30
filterTreatments	Changes
maxPathLength	5
minCellCount	5
minCellMethod	Adjust
groupCombinations	10
addNoPaths	TRUE

Step 4: execute study

```
TreatmentPatterns::executeTreatmentPatterns(dataSettings,
                                            cohortSettings,
                                            characterizationSettings,
                                            pathwaySettings,
                                            saveSettings)
```

Step 5: check out results

Go to results:
https://aniekmarkus.shinyapps.io/TreatmentPatterns/

R package TreatmentPatterns can be downloaded from GitHub, including:
- Vignettes
- Package manual
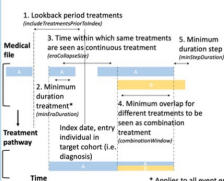
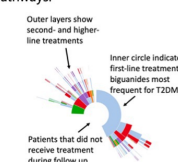Figure 1: Summary of decisions to construct individual treatment pathways.

1. Lookback period treatments *(includeTreatmentsPriorToIndex)*
3. Time within which same treatments are seen as continuous treatment *(eraCollapseSize)*
5. Minimum duration step *(minStepDuration)*
2. Minimum duration treatment* *(minEraDuration)*
4. Minimum overlap for different treatments to be seen as combination treatment *(combinationWindow)*

Medical file

Treatment pathway

Index date, entry individual in target cohort (i.e. diagnosis)

Time

* Applies to all event era's

Figure 2: Example sunburst plot.

Outer layers show second- and higher-line treatments
Inner circle indicates first-line treatment, biguanides most frequent for T2DM
Patients that did not receive treatment during follow up

👤 Aniek F. Markus, MSc,
Jan A. Kors, PhD,
Peter R. Rijnbeek, PhD,
Katia M.C. Verhamme, PhD

Erasmus MC
Health Data Science
EHDEN – EUROPEAN HEALTH DATA & EVIDENCE NETWORK
OHDSI

This project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking (JU) under grant agreement No 806968. The JU receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA.

imi innovative medicines initiative · efpia · European Union

WEDNESDAY

Treatment Patterns: An R package to analyze treatment patterns of a study population of interest
Authors: Aniek F. Markus, Peter R. Rijnbeek, Jan A. Kors, Katia Verhamme

#OHDSISocialShowcase This Week

Higher-Level Radiation Oncology Treatment Events derived from Lower-Level CPT Codes

PRESENTER: Michael Gurley[1], Asieh Golozar[1], Rimma Belenkaya[1], Tatyana Sandler[1]

1 OHDSI Oncology Workgroup

INTRO:
CPT codes are a common structured source of patient data for radiation oncology treatment. In OMOP, a radiation oncology treatment can be comprised of 72 lower-level clinical patient entries in the PROCEDURE_OCCURRENCE table across 11 CPT codes. Through an aggregation to a higher-level event that is one record in the EPISODE table, several use cases can be addressed such as, more intuitive treatment representation to an oncology professional and data more amenable to analytics. For the representation of higher-level events, the level of granularity of modality and technique recommended by the American Society for Radiation Oncology (ASTRO) in the minimum data elements for radiation oncology consensus paper was assessed against what can be derived and aggregated from CPT codes.

METHODS
1. Curate relevant CPT codes
2. Reconcile past efforts of modality and techniques assignments to the lower-level CPT codes[2,3,4].
3. Identified ASTRO's minimum relevant defined data standards for modality and technique of a radiation oncology treatment[5].
4. Assessed CPT codes assignments of higher-level treatment in step 2 against the modalities and techniques defined by ASTRO in step 3 to determine the extent of coverage using CPT codes.

RESULTS
Overall, the results show that CPT codes support a small subset of modalities and techniques represented in ASTRO's data elements. For a larger set, there are varying levels of details.
To use ASTRO's data elements for higher-level event representation, expanding the value sets of modality and technique to cover use cases with less information available about a treatment event. For example, when there is a CPT code for an "external beam radiotherapy" without additional details, addition of a higher-level event to capture "external beam radiotherapy" is needed.

There are challenges in deriving higher-level

Radiation Oncology treatment Events from CPT codes with the level of detail recommended by ASTRO.

Radiation oncology procedure	Derivable from CPT		
	Yes	Partial	No
Modality			
External beam radiation therapy (EBRT)			
Protons	X		
Electrons			X
Photons (LINAC)		X	
Photons (isotope source)		X	
Neutrons	X		
Carbon			X
Brachytherapy			
Low dose rate	X		
High dose rate	X		
Pulse dose rate			X
Radiopharmaceuticals	X		
Electronic brachytherapy	X		
kV x-rays			
Intraoperative radiation therapy			X
Superficial		X	
Orthovoltage		X	
Technique			
Passive scattering			X
Scanning beam intensity modulated proton therapy			X
Scanning beam multi-field optimization			X
Scanning beam single-field optimization			X
2-dimensional (2D)			X
Intraoperative radiation therapy	X		
3-dimensional (3D)	X		
Intensity modulated radiation therapy (IMRT)	X		
Intracranial stereotactic	X		
Interstitial permanent		X	
Interstitial temporary		X	
Intracavitary permanent		X	
Intracavitary temporary		X	
Sealed			X
Unsealed			X
Intracavitary	X		

References/Citations

1. Gurley Michael, Belenkaya Rimma. Extending OMOP CDM to Support Observational Cancer Research. OHDSI.2018;
2. Cancer Therapy Lookup Tables - Cancer Research Network (CRN). CRN. March 2018;
3. Daily Practice - Reimbursement - Practice Management Resources - Basics of RO Coding - American Society for Radiation Oncology (ASTRO) - American Society for Radiation Oncology (ASTRO). ASTRO. 2016;
4. CanMED and the Oncology Toolbox. SEER.
5. James A. Hayman, Andre Dekker, Mary Feng, Randi Kudner, Samantha Dawes, James B. Yu. Minimum Data Elements for Radiation Oncology: An American Society for Radiation Oncology Consensus Paper. Practical Radiation Oncology ASTRO 2019;VOLUME 9;ISSUE 6;P395-401.
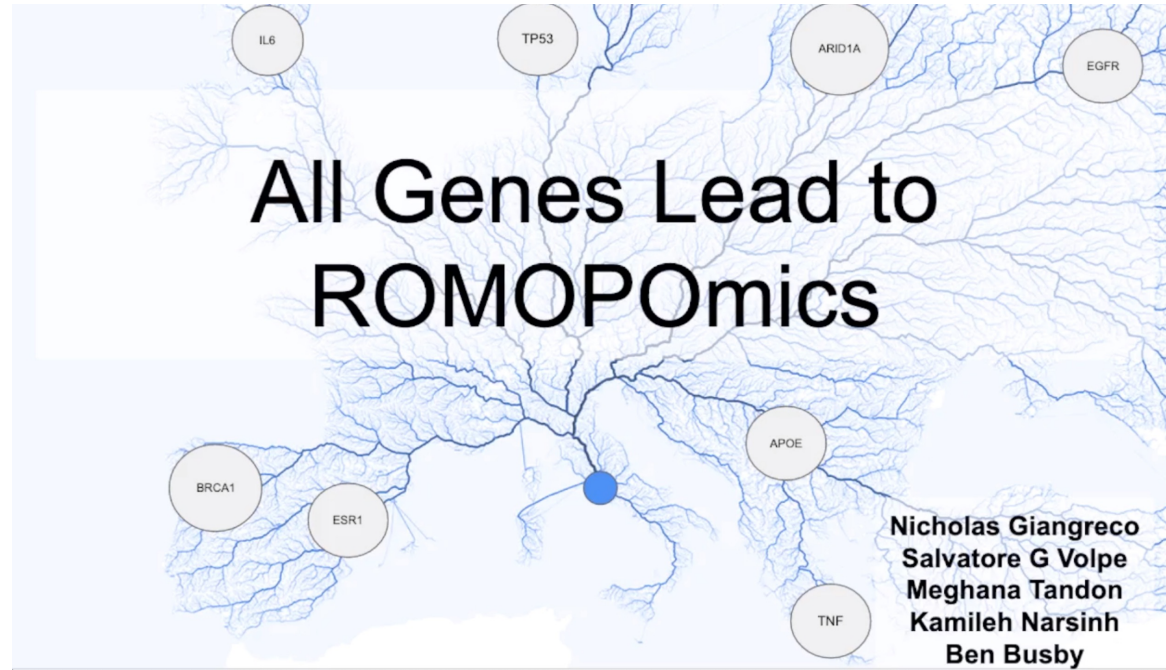

THURSDAY — **Representation of High-Level Radiation Oncology Treatment Events from CPT Codes**
Authors: Michael Gurley, Asieh Golozar, Rimma Belenkaya, Tatyana Sandler

@OHDSI   www.ohdsi.org   #JoinTheJourney   ohdsi

FRIDAY

All Genes Lead to ROMOPomics
Authors: Nicholas Giangreco, Salvatore G Volpe, Meghana Tandon, Kamileh Narsinh, Ben Busby

Where Are We Going?

Any other announcements
of upcoming work, events,
deadlines, etc?

Oct. 19 Community Call: The LEGEND Initiative

Fan Bu

RuiJun "Ray" Chen

Rohan Khera

Yuan Lu

Anna Ostropolets

Aki Nishimura

Marc Suchard