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Poster Presentations during ICPE 2020

Analysing Patient Level Data From Norwegian Registries: Challenges and Considerations

*Graham S, Lambrelli D, Schultze A, Donaldson R, Ghanima W,
Carroll R, Ulvestad M*

Factors Associated with Losses to Follow-up in Pregnancy Exposure Registries

Covington D, Veley K, Buus R, Churchill P

Heterogeneity of Patient Preferences for Benefits and Risks of Antiplatelet Therapies

Pinto CA, Chua GN, Brookes E, Hyacinthe J, Tervonen T

How Patient Preferences Can Inform Net Clinical Benefit: A Personalized, Patient-centered, Benefit Risk Assessment Using Real-world And Clinical Trial Data

Tervonen T, Prawitz T, Chua GN, Hyacinthe J, Pinto CA

Innovation and Pragmatism in Retrospective Chart Review Methodology for Post-Approval Drug Utilization Studies

*Saragoussi D, Rouleau A, Capart P, Deveras CC, Brett NR,
Ognar R, Gazay H, Payne K*

Prevalence of Outcomes in Pregnancy Registries Versus General Population

Veley K, Covington D, Chan RL, Churchill P

Real-world Data Collection In Early Access Programs: An Additional Source Of Data To Inform Benefit-risk Assessment In The Pre-approval Phase

Soni M, Saragoussi D, Stein D, Eckley D, Block J

Sample Size Calculations for Pregnancy Registries: Improving Accuracy

Veley K, Covington D, Buus R, Chan RL, Churchill P

Trends in Post-Approval Pregnancy Safety Studies Required by the United States Food and Drug Administration, 2015-2019

Simeone JC, Nordstrom BL

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Market Access

Interventional Studies

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Congratulations to Our New Fellows



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Joshua Gagne, FISPE



Alicia Gilsenan, FISPE



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Christina Mack, FISPE



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Mid-Year Meeting

April 18-20, 2021

Hilton Reykjavik Nordica
Reykjavik, Iceland



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Academic Showcase

Brown University School of Public Health
 Brigham and Women's Hospital Division of
 Pharmacoepidemiology & Pharmacoeconomics
 University of Massachusetts Medical School, Clinical
 and Population Health Research PhD Program

University of North Carolina at Chapel Hill, Dept of
 Epidemiology, Gillings School of Public Health
 University of Florida, Dept of Pharmaceutical Outcomes
 and Policy



37th ICPE

August 21-25, 2021

Washington State Convention Center
Seattle, Washington, USA



International Conference on Pharmacoepidemiology &
Therapeutic Risk Management

37TH ICPE/SEATTLE ABSTRACTS INVITED

*The essential pharmacoepidemiology annual scientific conference is
scheduled for Seattle, August 21-25, 2021*

KEY DATES

- **December 2020:** Online abstract submission opens. Abstracts are only accepted via the online submission site
- **February 2021:** Abstract submissions closes; abstracts are not accepted past this date in any form
- **March 2021:** ICPE Scholarship submission closes
- **April 2021:** Abstracts reviewed by ISPE's Scientific Program Committee
- **June 2021:** Acceptance notifications issued

All presenters and panelists (workshop/symposia) must register to attend 37th ICPE/Seattle.

STUDENT AWARDS & SCHOLARSHIPS

ISPE grants awards to recognize and encourage student excellence in pharmacoepidemiology and scholarships to help defray conference expenses. Details of awards and scholarships will be available on pharmacoepi.org in December 2020.

SPONSORSHIPS, EXHIBITS & ACADEMIC SHOWCASE

ISPE offers organizations, institutions and academic programs opportunities to support the conference while sharing products and services with attendees. Visit pharmacoepi.org/meetings/37ICPE in December for a conference sponsorship/exhibitor prospectus.

Visit 37ICPE.org for conference information



International Society
for Pharmacoepidemiology



Program At-A-Glance

Program At-A-Glance

How to join or access a session: Go to www.ICPE-AllAccess.org. Login using your ISPE credentials. Locate your session in the schedule of events or via the dedicated tiles on the homepage. Click the session. Click the appropriate content option button, e.g., Video or Live Stream.

Throughout this program book, all times are US Eastern Daylight Time (EDT).

Programming on Wednesday, September 16 and Thursday, September 17 are live-streamed. If you are unable to attend, recordings of these sessions will be added to the meeting library after the meeting.

Wednesday, September 16 (page 19)

9:00-9:30am	Welcome Session
9:30-11:00am	Keynote Session: Drug Regulatory Sciences and Real-World Evidence
11:00-11:30am	Break
11:30am-1:00pm	Hot Topics Session: Medications, Weather, and Health Outcomes

Thursday, September 17 (page 21)

8:00-9:30am	Plenary: Real-World Evidence and COVID-19
9:30-10:00am	Break
10:00-11:00am	Annual Meeting of ISPE Members & 2020 Awards Ceremony
11:00-11:15am	Break
11:15am-12:45pm	Plenary Session: Science Communication of Pharmacoepidemiology for Patient and Public Health

Symposia/Workshops (page 40): live-streamed series starts in late September; full schedule will be published on the meeting site on September 18th.

Skills Courses (if purchased; page 26): session content is on-demand; full schedule of live Q&A events with skills course speakers will be published on the meeting site on September 18th.

On-Demand only

From September 16 through December 31, 2020, the following content is available at your convenience:

- Oral Presentations (page 42)
- Posters (page 64)
- Exhibitors

Wednesday, September 16

9:00-9:30am

Welcome Session

Tobias Gerhard, FISPE, Chair, 2020 ISPE Scientific Program Committee

Almut Winterstein, FISPE, ISPE President

9:30-11:00am

Keynote Session: Drug Regulatory Sciences and Real-World Evidence

The current drug regulatory landscape is shifting, driven by need to keep pace with scientific and technological advancements. Using science to inform regulatory decision making throughout the drug life cycle is essential. Regulatory science is essential to improve regulatory effectiveness and efficiency and to enable timely access to new therapies. Pharmacoepidemiological methods are often applied to regulatory science related questions and use of real-world evidence in decision making on medicines. Current developments of pharmacoepidemiological methods are often driven or intertwined with new needs and challenges within the drug regulatory field.

Keynote Speaker

Bert Leufkens, FISPE, Professor Pharmaceutical Policy and Regulatory Science, Utrecht Institute for Pharmaceutical Sciences

Moderator

Helga Gardarsdottir, FISPE, Associate Professor of Drug Regulatory Sciences, Utrecht University

Panelists

- **Susana Perez-Gutthann, FISPE**, Vice President and Global Head of Epidemiology, RTI-HS
- **Xavier Kurz**, Head of Data Analytics, Data Analysis and Methods Task Force, EMA
- **Issam Zineh**, Director, Office of Clinical Pharmacology, FDA

11:00-11:30am

Break

Program Schedule | Wednesday, September 16

11:30am-1:00pm

Hot Topics Session: Medications, Weather, and Health Outcomes

Climate change is one of the defining challenges of our time. Eight of the ten hottest years on record occurred in the past decade. Such change has profound detrimental health consequences throughout the lifespan, including both direct effects such as heatwaves, floods, or wildfires, and indirect effects, such as lack of food security, increased air pollution, and greater vulnerability to mosquito-borne diseases. Extreme temperatures and weather events also interact with medication use. Heatwaves, ambient air pollution, and other extreme weather events can act synergistically to increase adverse effects of commonly used medications through a variety of pathways. However, the interplay of medication use and climate-related extreme weather events is only beginning to be systematically examined.

Moderator

Stephen Evans, FISPE, Professor of Pharmacoepidemiology, London School of Hygiene and Tropical Medicine

Speakers

- **Jeffrey Shaman**, Professor, Department of Environmental Health Sciences; Director of the Climate and Health Program, Columbia University Mailman School of Public Health
- **Sean Hennessy, FISPE**, Professor of Epidemiology, University of Pennsylvania
- **Soko Setoguchi, FISPE**, Professor of Medicine and Epidemiology, Rutgers University



Thursday, September 17

8:00-9:30am

Plenary: Real-World Evidence and COVID-19

This session will be addressing large scale efforts in the US, Europe and Asia to building Real-World Evidence capacity to support development of COVID-19 treatment approaches.

Moderator:

Vincent Lo Re III, FISPE, Associate Professor of Medicine and Epidemiology, Perelman School of Medicine, the University of Pennsylvania

Speakers:

Xin Sun, Director, Center for Clinical Epidemiology and Evidence-based Medicine, West China Hospital, Sichuan University, Chengdu, China; Director, Chinese Evidence-based Medicine Center, and Cochrane China Center

The Use of Real-World Data to Support COVID-19 Prevention and Control: Experiences from China

Peter Arlett, Head of Data Analytics and Methods, European Medicines Agency, Amsterdam, the Netherlands

Collaboration Between Medicines Regulators to Increase the Impact of Real-World Evidence for COVID-19

Amy Abernethy, Principal Deputy Commissioner of Food and Drugs, US Food & Drug Administration, Department of Health and Human Services

Leveraging Real-World Data to Accelerate Evidence Generation During COVID-19

9:30-10:00am

Break

Instructor-Lead Chair Yoga (15min)

Program Schedule | Thursday, September 17

10:00-11:00am

Annual Meeting of ISPE Members & 2020 Awards Ceremony

- Call to Order; President's Report. Almut Winterstein, FISPE, President
- Financial Report, Krista Huybrechts, FISPE, Vice-President/Finance
- Strategic Plan 2025 presentation, Olaf Klungel, FISPE, Chair, Strategic Planning Committee
- New Business
 - Vote to correct Society name with State of New Jersey
- Awards Ceremony (see page 24 for 2020 ISPE Awards)
- ISPE Board Transition

Retiring Officers & Directors

Alison Bourke, FISPE, Immediate Past President

Krista Huybrechts, FISPE, Vice-President/Finance

Cynthia Girman, FISPE

Michele Jonsson Funk, FISPE

Deborah Layton

Jasmanda HsiaoHui Wu, FISPE

Installation of New Directors

Tomoko Kobayashi, Industry/Service Provider (Asia/Pacific)

Mette Nørgaard, Academic (Europe/Africa)

Jeremy Rassen, FISPE, Industry/Service Provider (Americas)

Montse Soriano-Gabarró, FISPE, Industry/Service Provider (Europe/Africa)

Shirley Wang, Academic (Americas)

Installation of 2020-2021 Officers

Olaf Klungel, FISPE, President

Vincent Lo Re III, FISPE, President-Elect

Almut Winterstein, FISPE, Immediate Past President

Wei Zhou, FISPE, Vice-President/Finance

11:00-11:15am

Break

11:15am-12:45pm

Plenary Session: Science Communication of Pharmacoepidemiology for Patient and Public Health

People around the globe feel threatened by multiple risks arising from technology, leading to mistrust in science, as much as hopes that science will remedy the problems. The field of medicine and pharmaceuticals is no exception and the coronavirus epidemic demonstrates this dramatically once more. Understanding science communication of pharmacoepidemiology as processes for designing research, disseminating research findings and evaluating communication outcomes impacting on patient and public health, is therefore important to every pharmacoepidemiologist, and requires a multidisciplinary approach.

Moderator: Priya Bahari

Speakers:

Priya Bahari, Principal Scientist Pharmacovigilance, EMA

Science Communication of Pharmacoepidemiology: What Is It?

Elaine Morrato, ISPE BRACE SIG Co-chair, Loyola University, Founding Dean of Parkinson School of Health Sciences and Public Health, Chicago

Science Communication of Pharmacoepidemiology: What Can Implementation Science Add?

Bert Leufkens, FISPE, Professor Pharmaceutical Policy and Regulatory Science, Utrecht Institute for Pharmaceutical Sciences, Utrecht

Communicating Pharmacoepidemiological Findings in Scientific Journals: What Makes a Journal?

François Hojiez, Director, Information & Access to Therapies, EURODIS, Paris
Comprehending Scientific Information: What is the Patient Perspective?

Odette Wegwarth, Senior Research Scientist, Max Plank Institute for Human Development, Berlin

Communication and Therapeutic Decision-Making: What Can the Cognitive Sciences Bring to Pharmacoepidemiology?

Sara ElShafie, Doctoral Candidate, Department of Integrative Biology and Museum of Paleontology, University of California, Berkeley

Engaging the Public with Science: What Can Medical Professionals Learn from Science Communication Experts?

2020 ISPE Awards

2020 ISPE Awards

ISPE Awards

Honorary Lifetime Fellow

Frank May, FISPE

Sustained Service Award

Hubert Leufkens, FISPE

Michael Lewis, FISPE

Emerging Leader Award

Juan Hincapie-Castillo

Induction of ISPE Fellows

Ian Douglas, FISPE

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Joshua Gagne, FISPE

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Gianluca Trifirò, FISPE

Ilse Truter, FISPE

ICPE 2020 Awards

Andrew McAfee Award

For best abstract submitted by a researcher or student/postdoc living in a developing country
Risk of Fracture in Patients with Nonvalvular Atrial Fibrillation Initiating Direct Oral Anticoagulants Versus Vitamin K Antagonists

Na He, Sophie Dell'Aniello, Suodi Zhai, Samy Suissa, Christel Renoux

John Snow Award

Fracture Incidence on Tenofovir Disoproxil Fumarate: A South African Cohort Analysis

Johannes Mouton, Karen Cohen, Gary Maartens

Best Methods Award (student)

Electronic Medical Records Vs Insurance Claims: Comparing the Magnitude of Opioid Use Prior, During, and Following Surgery

Jessica Young, Nabarun Dasgupta, Virginia Pate, Til Sturmer, Brooke Chidgey, Michele Jonsson Funk

Best Drug Utilization Research Abstract (student)

Impact of Delays in Initiation of Adjuvant Endocrine Therapy on Survival Among Patients with Breast Cancer

Kimberley Lee, Jodi Segal, Lisa Jacobs

Third Best Abstract (student)

Fluoroquinolone Antibiotic Exposure and Risk of Achilles Tendon Injury in Adolescents in the United States 2000-2018

Rachel Ross, Jeffrey Gerber, Mackenzie Herzog, Michele Jonsson-Funk, Alan Kinlaw

Second Best Abstract (student)

Threatened Abortion and Risk of Epilepsy, Cerebral Palsy and Attention-deficit/hyperactivity Disorder in Offspring: A Registry-based Cohort Study in Denmark

Elena Dudukina, Erzsébet Horváth-Puhó, Henrik Toft Sørensen, Vera Ehrenstein

The Stanley A. Edlavitch Award (student)

Non-vitamin K Antagonist Oral Anticoagulant and Proton-pump Inhibitor Cotreatment and the Association with Upper Gastrointestinal Bleeds in Patients with Atrial Fibrillation: A Multi-database Cohort Study

Joris Komen, Anton Pottegård, Tomas Forslund, Aukje Mantel-Teeuwisse, Björn Wettermark, Maja Hellfritsch, Jesper Hallas, Lisa Smits, Ron Herings, Paul Hjerdahl, Olaf Klungel

Pharmacoepidemiology and Drug Safety Ronald D Mann Best Paper Award

For manuscripts published in Vol.28, 2019

First prize

Antidepressant Use During Pregnancy and Risk of Congenital Heart Defects: A Case-Time-Control Study

Yuelian Sun, Lars Henning Pedersen, Chun Sen Wu, Irene Petersen, Henrik Toft Sørensen, Jørn Olsen

Honorable Mentions

The Devil's in the Details: Reports on Reproducibility in Pharmacoepidemiologic Studies

Andrew Petrone, April DuCott, Joshua Gagne, Sengwee Toh, Judith Maro

Causal Inference for Evaluating Prescription Opioid Abuse Using Trend-in-Trend Design

Nabarun Dasgupta, John Schwarz, Sean Hennessy, Askhan Ertefaie, Richard Dart

An Empirical Assessment of Immeasurable Time Bias in the Setting of Nested Case-Control Studies: Statins and All-Cause Mortality Among Patients with Heart Failure

In-Sun Oh, Kristian Fillion, Han Eol Jeong, Ju-Young Shin

Identification of Potential Drug Name Confusion Errors in the Sentinel System

Noelle Cocoros, Kevin Haynes, Qoua Her, Austin Cosgrove, Elizabeth Dee, Nancy Lin, Chi-Ming Tu, Yulan Ding, Michael Nguyen, Sengwee Toh



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Skills Courses

Join us for these exciting skills courses throughout the rest of the year!

This year all of the ICPE fun can't be contained in just a few days. Browse through this collection of skills courses to improve your practice and keep an eye on the website for information on scheduling.

Skills Course Listings

<i>Principles of Pharmacoepidemiology</i>	27	<i>Modern Pregnancy Pharmacoepidemiology: Threats to the Validity of Studies on Drug Safety in Pregnancy and Approaches to Address Them.</i>	34
<i>Overview and Essential Methods of Drug Utilization Research</i>	27	<i>Pediatric Pharmacoepidemiology</i>	35
<i>Adherence to Medication</i>	28	<i>Pharmacoepidemiologic Considerations for Biologics and Biosimilars</i>	35
<i>Advanced Pharmacoepidemiology</i>	28	<i>Pharmacovigilance and Signal Detection</i>	36
<i>Applied Sensitivity Analysis</i>	28	<i>Pragmatic Trials: Design, Methods, and Implementation</i>	36
<i>Cancer Pharmacoepidemiology and Genomics: What You Should Know in the Era of Precision Medicine</i>	28	<i>Propensity Scores in Pharmacoepidemiology</i>	36
<i>Comparative Effectiveness Research: Real-World Evidence in Health Technology Assessment</i>	30	<i>Prospective Research Using Today's Technologies for Community-Driven Research</i>	37
<i>Effective Risk Management: Best Practices for Designing, Implementing, and Evaluating Risk Minimization Programs</i>	30	<i>Real World Evidence (RWE) generation for rare diseases drug development: data sources and innovated methods.</i>	37
<i>Epidemiology of Vaccine Safety</i>	30	<i>Regulatory Pharmacoepidemiology</i>	38
<i>How To Collaborate Effectively With Machine Learning Expert</i>	30	<i>Using Field Studies to Value-Add in Pharmacoepidemiology</i>	38
<i>Intermediate Pharmacoepidemiology: Approaches to Unmeasured Confounders</i>	31	<i>Using Pharmacoepidemiology Database Resources to Address Drug Safety Research</i>	38
<i>Introduction to Pharmacogenomics & Precision Medicine for Pharmacoepidemiologists</i>	32	<i>Weighing the Benefits & Risks: The Science and Methods of Benefit-Risk Assessment in Drug Development</i>	38
<i>Medical Device Epidemiology</i>	32		

Principles of Pharmacoepidemiology

Speakers: Tobias Gerhard, Anton Pottegard, Almut Winterstein

Description: This course will provide participants with a succinct introduction to the basic principles, concepts, and study designs of pharmacoepidemiology. The course includes lectures on:

- Cohort studies
- Case-control studies
- Confounding and other sources of bias

Overview and Essential Methods of Drug Utilization Research

Speakers: Gillian Caughey, Doug Steinke, Lisa Pont, Bjorn Wettermark, Katja Taxis, Lisa Kalisch Ellett, Petra Denig

Description: This educational program provides an overview of drug utilization research (DUR), presenting essential methods for basic to advanced drug utilization studies. Participants will be exposed to:

- Description of the theoretical framework and practical applications of methods used in drug utilization research using selected examples
- Classification systems used in drug utilization monitoring and research

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Skills Courses

- Benefits and potential limitations of data sources, study design and analytical methods
- Interpretation of aggregate and individual-based data, variation and change
- Using drug utilization research to improve drug use, and evaluate the effects of clinical and policy decisions on drug utilization
- Application of principles derived from Health Services and Implementation Research to the design of a clinical intervention
- Use of prescribing data and quality measures to assess prescribing

Adherence to Medication

Speakers: Jacqueline Hugtenburg, Julie Lauffenburger, Robert Gross, Job van Boven

Description: Adherence to medication is indispensable for achieving clinical goals. Non-adherence is a complex and multifactorial problem leading to poor clinical outcomes, increased morbidity and death rates, and unnecessary healthcare costs. Assessing (non-)adherence is challenging and both subjective and objective measures are applied. This course is aimed at introducing students to the various constructs of adherence behavior and techniques to evaluate (non-)adherence and data analysis. Using several examples of studies among patients using a variety of medicines, students are guided through the subsequent steps in making decisions concerning measurements and analyses of data. The influence of a variety of assumptions and decisions is shown, and students are guided through the process of data preparation and transformation needed for adherence calculations.

Advanced Pharmacoepidemiology

Speakers: Caitlin Knox, Andrea Margulis, Jaclyn Bosco, Sonia Hernandez-Diaz, Matthew Reynolds, Daniel Prieto-Alhambra, Nicolle Gatto, and Jeremy Rassen

Description: This course will include pre-recorded session which participants are expected to view prior to the live virtual meeting. The course will touch on multiple pharmacoepidemiologic methods utilized in COVID research with each lecture providing the necessary overview for the attendees to apply the discussed topics to their own pandemic research.

Applied Sensitivity Analysis

Speakers: Sebastian Schneeweiss, Jeremy Rassen, Nicolle Gatto, Liz Garry

Description: It is widely recognized that sensitivity analyses of pharmacoepidemiology study design choices and analytic assumptions help us understand the robustness of and interpret our results. To encourage increased use of well-described techniques, this workshop will provide an introduction and demonstrations of a range of sensitivity analyses typically applied in pharmacoepidemiology with an interactive case study. The course is interactive in that participants will be able to vote on which sensitivity analyses to present during the live portion of the course.

Cancer Pharmacoepidemiology and Genomics: What You Should Know in the Era of Precision Medicine

Speakers: Gillian Bartlett-Esquilant, Bruce Carleton, Kelly Filipski, Andrew Freedman, Geoffrey Liu, Anton Pöttgard, Donna Rivera, Leah Sansbury, Wei Zhou

Description: This course, co-sponsored by the Molecular Epidemiology, Biomarkers, and Pharmacogenomics and Oncology SIGs, will focus on the essentials every pharmacoepidemiologist



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ICPE 2020 POSTER PRESENTATIONS

PODIUM PRESENTATION:

Characteristics of Severe Sepsis Hospitalizations and Sepsis-related Mortality in U.S. Claims

Tiffany S Woodworth, Erik Gunnarsson, Kerrin Gallagher, Lu Zhang and Joseph Menzin

POSTERS:

Machine Learning Applications Using Real-World Data: A Literature Review

Nicholas Adair, Zeynep Icten, Mark Friedman and Joseph Menzin

Why Not Biosimilars: Biologic and Biosimilar Utilization Trends in Japanese RA Patients

Lu Zhang, Tiffany S Woodworth and Joseph Menzin

Identifying Predictors of a Composite Cardiovascular Outcome among Diabetes Patients Using Machine Learning

Zeynep Icten and Joseph Menzin

Characteristics of Patients Newly Diagnosed with Atrial Fibrillation after Ischemic Stroke Hospitalization

Lu Zhang, Anna Watzker, Tiffany S Woodworth, Mark Friedman and Joseph Menzin

Identifying Comorbidity-based Subtypes of Type 2 Diabetes: An Unsupervised Machine Learning Approach

Zeynep Icten and Joseph Menzin

Impact of The ICD-10-CM Transition on Claims-based Severe Sepsis Events among US Medicare Enrollees

Tiffany S Woodworth, Kerrin Gallagher, Erik Gunnarsson and Joseph Menzin



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Skills Courses

should know about study design and real-world applications of cancer personalized medicine including precision medicine, companion diagnostics, biomarkers, and the biomarker development pipeline, diagnosis and treatment coding, drug and cancer risk associations and linking databases with genomic information.

Comparative Effectiveness Research: Real-World Evidence in Health Technology Assessment

Speakers: Joshua Gagne, Sebastian Schneeweiss, Shirley Wang

Description: Comparative effectiveness research (CER) is increasingly important for generating real-world evidence to inform clinicians, patients, regulators, and other decision makers. The Prescription Drug User Fee Act reauthorization (PDUFA VI) and the 21st Century Cures Act in the US and adaptive pathways in the EU all have implications for the use of real-world evidence to inform regulatory decision making. This course will describe CER methods for generating evidence using real-world data, focusing specifically on observed biases and investigator errors that are avoidable in CER. The course will include a tutorial on creating design diagrams, which can assist in identifying biases and errors in CER studies. Participants will apply the design diagram to a real-world CER study.

Effective Risk Management: Best Practices for Designing, Implementing, and Evaluating Risk Minimization Programs

Speakers: Elaine Morrato, Meredith Smith, Doris Auth, Alicia Gilsenan

Description: This course presents an overview of risk management principles, with a focus on best practice methods for designing, implementing and evaluating risk minimization programs. For the 2020 ICPE, this course will consist of a 90 minute,

pre-recorded moderated session, and a follow-up, 60 minute live session. The pre-recorded session will include a didactic component which will feature presentations from experts in regulatory, industry, academia and research organizations who will present three modules on scientific frameworks, methodologies and an illustrative case application. The session will include moderated panel discussion about pragmatic considerations for effective risk minimization program design, implementation and evaluation techniques. The live session will provide an opportunity for participants to ask clarifying questions of the course faculty and to share perspectives on pragmatic applications given the regulated context of risk minimization programs.

Epidemiology of Vaccine Safety

Speakers: Cathy Panozza, Robert Chen, Patricia Saddier, Rebecca Chandler, Martin Kulldorff, Miriam Stukenboom, Daniel Salmon, Walter Straus, Robert T. Chen, Michael McNeil

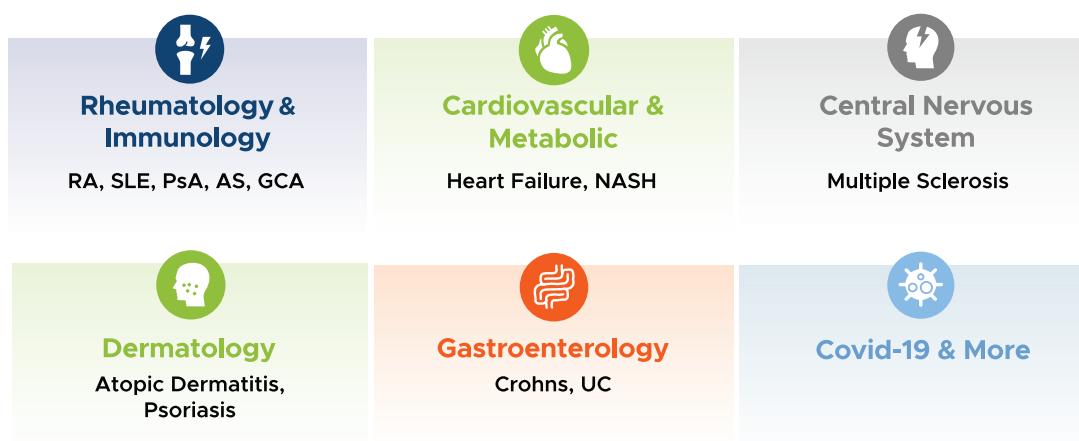
Description: As reinforced by the current COVID-19 pandemic, vaccines are key tools for global public health. Increasingly, pharmacoepidemiological studies are providing critical evidence needed for risk-benefit assessment to inform immunization policy, both for mature immunization programs and for low-and middle-income countries (LMIC) for which innovative vaccines against challenging diseases (e.g., dengue, Ebola, malaria) are under development.

How To Collaborate Effectively With Machine Learning Expert

Speakers: Harriet Dickenson, Dorothee Bartels, Lisa Weiss, Dana Teltsch, Victoria Strauss, Stephen Schachterle, Orla Doyle, Nassim Haddad

Description: The aim of this course is to provide a helpful framework for engaging with machine learning (ML) experts through collaborative

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projects. ML methods can generate exciting and innovative types of evidence, and often pharmacoepidemiologists work in partnerships with ML experts to design and conduct analyses together.

This course will give attendees the tools to engage and work effectively with ML experts, without having to become a ML expert themselves. The course will help attendees understand what ML experts do in their day-to-day role, their core skills, and any differences in terminology used. The basic data preparation and tools required for a ML analysis will be explained, and some examples of adaptive ML analysis plans will be shared. This course will also help attendees to learn how ML experts validate their models and interpret any findings.

At the end of the course, attendees will participate in a 'choose-your-own-adventure' collaboration exercise with ML experts to plan and interpret an example data set.

Intermediate Pharmacoepidemiology: Approaches to Unmeasured Confounders

Speakers: Michele Jonsson Funk, Jennifer Lund, Sudha Raman, Mugdha Gokhale, Til Stürmer

Description: This course will introduce students to multiple approaches to addressing unmeasured confounders through study design and analysis, the requirements and assumptions of each, and an opportunity to compare these approaches through facilitated discussion of a case study.

Skills Courses

Introduction to Pharmacogenomics & Precision Medicine for Pharmacoepidemiologists

Speakers: Amalia Issa, Gillian Bartlett, Bruce Carleton, Steve Kimmel, Leah Sansbury, Anke-Hilse Maitland van der Zee

Description: This course, sponsored by the Genomics & Precision Medicine SIG will focus on the essentials every pharmacoepidemiologist should know about real world applications of pharmacogenomics epidemiology including

- the role of epidemiology in pharmacogenomics;
- definitions of genetic terms and basic genetic concepts;
- quality control and analytical procedures required in a pharmacogenetic analysis;
- step-by-step planning guide to designing a pharmacogenomic analysis;
- phenotyping considerations and breaking down examples of pharmacogenomic successes;

- databases available to study pharmacogenomics;
- designing a companion pharmacogenomic diagnostic in drug development;
- designing a prospective observational cohort or case-control study of pharmacogenomics;
- designing a clinical utility trial: a guide with examples;
- collecting health related quality of life data using an innovative role playing game.

Medical Device Epidemiology

Speakers: Mary Beth Ritchey, Daniel Prieto Alhambra, Theodore Lystig, Paul Coplan

Description: Over the past few years, there has been increased focus on generating real-world evidence for medical products. Thus, observational studies of medical products are gaining visibility outside of ISPE. Medical device epidemiology uses methodologies similar to those



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Source 1: What is Cancer?: Types of Cancer. National Cancer Institute, 2015

Source 2: Exascale Computing Project Funds Three CI/Argonne Projects. Computation Institute & The University of Chicago, 2016



Skills Courses

for medicines. However, alternative strategies are often implemented due to the nature of the products, data sources, and situational use. With the changing regulatory and reimbursement environments, it is more important than ever for pharmacoepidemiologists to better understand the methods and practice of medical device epidemiology, both for study of medical devices and combination products of pharmaceuticals/biologics with medical devices. Methods discussed will be applicable across therapeutic products and provide deeper understanding of the current regulatory and clinical context of medical device epidemiology.

Modern Pregnancy Pharmacoepidemiology: Threats to the Validity of Studies on Drug Safety in Pregnancy and Approaches to Address Them.

Speakers: Andrea Margulis, Brian Bateman, Krista Huybrechts

Description: In this course, faculty will present and discuss considerations related to threats to the validity of research on pregnancy pharmacoepidemiology.

The course will consist of three recorded presentations by faculty, each of them 30'-40' long, and a live 30'-60' Q&A session. This is a new format for this course, in line with all skill courses offered as a part of ICPE All Access 2020. In 2015, the course provided an overview of issues that are particular to drug safety research in pregnancy. In 2016 the course focused on challenges related to exposure measurement, in 2017 the focus was on maternal and neonatal outcomes, in 2018 the course presented pros and cons of various study designs. In 2019, the course discussed significance testing and analytical approaches to address biases. The content of the 2020 edition of this course will cover some of the main themes discussed in previous years.

The course will start with a general overview on drug safety in pregnancy, planned to provide



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- **Join** Regional Interest Groups
- **Join** Council Groups
- **Join** Special Interest Groups
- **Join** Chapter Groups



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context to the course and to be especially useful for first-time course attendees; followed by more focused talks on unmeasured confounding, selection bias, random error and external validity.

Pediatric Pharmacoepidemiology

Speakers: Tamar Lasky, Daniel Horton, Steven Bird, Mehemt Burcu

Description: The increasing use of medications by children and the history of excluding children from clinical trials have created the need for pediatric pharmacoepidemiology, a sub-specialty within pharmacoepidemiology. Unique challenges in studying children, accessing data, defining outcomes, and designing pediatric studies will be discussed. This course

will introduce participants who have a good understanding of pharmacoepidemiology to the specific methodologic issues arising in pediatric pharmacoepidemiology and operational approaches used to study medications in children

Pharmacoepidemiologic Considerations for Biologics and Biosimilars

Speakers: Jaclyn Bosco, Thijs Giezen, Gianluca Trifirò, Rohini Hernandez

Description: This workshop will provide participants with information on the following topics:

- Background on originator biologics, biosimilars and differences from small molecules

Skills Courses

- Naming and traceability issues for originator biologics and biosimilars
- Interchangeability, switching, and automatic substitution from a regulatory, methodological, and clinical perspective
- Review country-specific regulatory guidelines, particularly focused on post-marketing monitoring, pharmacovigilance, and risk management requirements for biologics and biosimilars
- Conducting observational studies of originator biologics and biosimilars, including primary data collection and secondary use of data sources for evaluating patterns of use as well as comparative safety and effectiveness of biologics and biosimilars
- Special emphasis will be given to the methodological issues concerning post-marketing assessment of the interchangeability of originator biologics and corresponding biosimilars
- Impact of coronavirus on pharmacoepidemiology studies of biologics including biosimilars

Pharmacovigilance and Signal Detection

Speakers: Joshua Gagne, Andrew Bate, Gianluca Trifirò, Judy Maro

Description: This course will introduce participants to the principles of surveillance in pharmacovigilance with a focus on quantitative aspects and recent advances in the field. The course will briefly cover classical pharmacovigilance signal detection using spontaneous adverse event reports and then move quickly into quantitative signal detection methods for electronic medical record and claims data. Real-world examples will be used across the lecture sessions to illustrate and connect different concepts. Participants will engage in interactive

discussions about contemporary issues in and challenges facing pharmacovigilance.

Pragmatic Trials: Design, Methods, and Implementation

Speakers: Jennifer Christian, Priscilla Velentgas, Cynthia Girman, Anne Trontell, Elaine Irving

Description: Pragmatic randomized clinical trials (pRCTs) require the expertise of pharmacoepidemiologists who understand considerations and methodologic challenges that arise with more “pragmatic” RCTs compared with traditional “explanatory” RCTs. This course will highlight issues such as real-world site and patient identification, enrollment and retention, ethical review issues, approach to randomization, selection bias, and defining the appropriate comparator. In addition, choice of the study design including cluster randomization, step wedge design or individual randomization, and associated analytic considerations will be highlighted. Randomizing patients to “standard of care (SOC)”, accounting for changes in therapies over time, and other methodological considerations will also be discussed. Operational challenges and lessons learned from conducting pRCTs will be shared along with case examples.

Propensity Scores in Pharmacoepidemiology

Speakers: John Seeger, Jeremy Rassen

Description: Issues of bias and confounding relate to study design and analysis in the setting of non-random treatment assignment where compared subjects might differ substantially with respect to comorbidities. Failing to address a lack of balance in the covariates between treated and comparison groups can produce confounded estimates of treatment effect.

Prospective Research Using Today's Technologies for Community-Driven Research

Speakers: Nancy Dreyer, Christina Mack, Nabarun Dasgupta, William Dixon

Description: This course will provide an overview of the methods and applications for studies that use primary data collection for effectiveness and safety research, without the assistance of health care providers. Examples of tools used outside of the traditional healthcare setting will be presented, along with an active discussion of what we have learned so far, with current examples from COVID, rheumatology and oncology.

Real World Evidence (RWE) generation for rare diseases drug development: data sources and innovated methods.

Speakers: Jasmanda Wu, Federica Pisa, Rima Izem, Janet Sultana, Cynthia Jones, Xabier García-Albéniz, Emily Bratton

Description: This course presents an overview of approaches to generate Real World Evidence (RWE) for Rare Diseases (RD) drug development, with a focus on identifying adequate data source/s and innovative methods. RWE generation is required at various stages of RD drug development, yet it faces specific challenges related to the very small number of patients, disease heterogeneity, disease coding, and frequent lack of treatment standards. The course will start with an overview of data sources and data collection approaches to capture relevant RD patient populations and information, describe data and methods to measure the prevalence and incidence of RD, and present methods for generating evidence to evaluate effectiveness and safety of RD drugs. These include methods based on target trial emulation, Natural History Studies and statistical methods for borrowing evidence. Course faculty will present real-world case studies to facilitate discussion.


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Skills Courses

Regulatory Pharmacoepidemiology

Speakers: Gerald Dal Pan, Danica Marinac-Dabic, Stephen Evans

Description: Medical product regulation increasingly relies on pharmacoepidemiologic analyses to assess the safety of medical products once they are marketed. This course is aimed at describing how pharmacoepidemiologic analyses are used in regulatory decision making and the challenges that regulators face when using such analyses.

Using Field Studies to Value-Add in Pharmacoepidemiology

Speakers: Veronika Wirtz, Lisa Pont, Katja Taxis

Description: This course provides basic theory and practical tips in conducting pharmacoepidemiologic studies when required information is not captured in databases or when large databases are not available. Common study designs used to collect data through observations, medical records or questionnaires will be presented and the strengths and limitations of working without large databases discussed. Hands on experience via a workshop will expose course participants to different study designs and rich discussions on how to answer relevant questions about safety and utilization of medicines in primary and secondary care settings using field studies.

Using Pharmacoepidemiology Database Resources to Address Drug Safety Research

Speakers: Kevin Haynes, Gillian Hall, Matthew Reynolds, Daniel Beachler, Sudha Raman

Description: Pharmacoepidemiology requires the utilization of database resources to evaluate drug safety. This course will define the different types of data resources available for pharmacoepidemiology and the selection

criteria to select the most appropriate resource. The course focuses on the Guidelines for good database selection and use in pharmacoepidemiology research, provides an overview of available resources, addresses the need for outcome validation, and highlights data linkage considerations.

Weighing the Benefits & Risks: The Science and Methods of Benefit-Risk Assessment in Drug Development

Speakers: Rebecca Noel, Tarek Hammad, Juhaeri Jhuaeri, Brett Hauber

Description: Benefit-risk assessment is now a fundamental science for understanding and evaluating the development, approval, and continued marketing of drugs and devices. This course is aimed at introducing attendees to core concepts and tools of both the science and practice of benefit-risk assessment.



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Symposia / Workshops

Benefit-Risk Assessment, Communication, and Evaluation (BRACE)

- 4069 **Retirement of Statistical Significance Testing**
Olaf Klungel, Kenneth J Rothman, Hans Hillege, John Fletcher. (Netherlands)
- 4983 **Establishing Drug Safety and Effectiveness Strategies in Low and Middle Income Countries**
Edward Mills, Nathan Ford, Sabin Nsanzimana. (Canada)

Drug Utilization Research » Changing Drug Utilization (interventions and implementation research)

- 4661 **Deprescribing in Older People: Pharmacoepidemiological Tools and Measures**
Katja Taxis, Carina Lundby, Lisa Pont, Wade Thompson, Petra Denig, Anton Pottegård. (Netherlands)

Drug Utilization Research » Health Policy and Governance

- 57 **Methods to Evaluate the Effects of Policy Changes During the Opioid Crisis**
Juan M Hincapie-Castillo, Amie J Goodin, Gerald J Dal Pan, Mina Tadrous. (United States)

Health Economics/Outcomes Research

- 60 **Trial Participants vs. Real-world Users of Medicines - How Different are They Really and Does It Matter?**
Anton Pottegård, Olaf Klungel, Daniel Morales, Mehdi Najafzadeh. (Denmark)
- 4850 **Head to Head Comparisons of Therapies Using Real World Data: What is Needed to Emulate Target Trials?**
Miguel Hernan, Thomas Wilke, Edward J Mills, Sonal Singh. (Canada)

Informatics

- 2636 **Will Data Privacy and Confidentiality Squeeze out Research?**
Alison Bourke, David Miller, Amanda Culley, Georgina Bourke. (United Kingdom)
- 3730 **"That Tablet Made Me Sick as a Dog (MedDRA PT: Nausea)"**
William G Dixon, Nabarun Dasgupta, Andrew Bate, Niklas Noren, Florence van Hunsel. (United Kingdom)

Methods in Pharmacoepidemiology » Analytical Methods - e.g., marginal structural models, instrumental variables, sensitivity analyses

- 4384 **Use of External Data in Pharmacoepidemiology**
Til Stürmer, Michele Jonsson Funk, Olaf Klungel, Kaatje Bollaerts. (United States)

Methods in Pharmacoepidemiology » Clinical Trial Methodology - Including pragmatic trials, cluster/sub-analyses of RCTs

- 4841 **Lessons Learned from Replicating Clinical Trials with Real-World Data**
Solomon Iyasu, David Martin, Sebastian Schneeweiss, William Crown, Thomas Jemielita. (United States)

Methods in Pharmacoepidemiology » Confounding/Bias - Methods to avoid bias and confounding, including confounder summary scores (e.g., propensity scores, disease risk scores)

- 2631 **Increasing the Credibility of Real World Evidence: Identifying and Reducing Bias Using Negative Controls**
Alexander Breskin, Matthew Maciejewski, Leah McGrath, Vera Ehrenstein, Brian Bradbury, Gianmario Candore. (United States)

4395 **Machine Learning to Optimize and Automate Confounding Control in Studies Using High-Dimensional Healthcare Data**

Xuerong Wen, Mark van der Laan, Richard Wyss, Robert W. Platt, Romin Pajouheshnia, Sebastian Schneeweiss. (United States)

Methods in Pharmacoepidemiology »
 Measurement Methods - Validation methods to confirm data (including Patient Reported Outcomes development and validation);
 Methods to deal with missing data

4910 **Harmonizing Fit for Purpose Assessment of Datasources, the Next Step Towards Creation of Credible Real-World Evidence**

Miriam C Sturkenboom, Jeff Brown, Robert Ball, Caitlin Dodd, Peter Arlett, Rosa Gini. (Netherlands)

Methods in Pharmacoepidemiology » Study Design - Studies assessing study design (e.g., choice of comparator, self-controlled methods, avoiding immortal time bias)

2658 **When Decisions Can't Wait: Delivering Rapid Real World Studies**

Xavier Kurz, Simone Pinheiro, Sabine Straus, Marcel Kwa, Peter Rijnbeek, Katia Verhamme, Judith Maro. (Netherlands)

3733 **Drug-Drug Interaction Research: Twice the Fun (or More!)**

Katsiaryna Bykov, Charles E. Leonard, Anton Pottegård, Meijia Zhou, Sean Hennessy. (United States)

4118 **ISPE RWE Task Force: Current Status and Future Directions**

Wei Zhou, Almut Winterstein, Shirley Wang, Mehmet Burcu, Mary E Ritchey, Helga Gardarsdottir. (United States)

4905 **Visual Space: Using Visualization in Pharmacoepidemiology to Design and Disseminate Valid Real-World Evidence in a Structured Framework**

Jeremy A Rassen, Shirley V Wang, Nicolle M Gatto, M. Alan Brookhart. (United States)

Mid-Year Workshops

MY01 **At the intersection of frailty and pharmacoepidemiology: Foundations, applications, and future directions**

Todd Manini, Daniela Moga, Andrew Zullo, Jennifer Lund



Oral Sessions

Oral Sessions

Oral Presentations are available on-demand through the ICPE All Access Conference Site

Oral Session Categories

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Disease Epidemiology/Clinical Course » Cancer	44	Methods in Pharmacoepidemiology » Study Design - Studies assessing study design (e.g., choice of comparator, self-controlled methods, avoiding immortal time bias)	55
Disease Epidemiology/Clinical Course » Cardiovascular	45	Molecular Epidemiology/Biomarkers/Pharmacogenetics	56
Disease Epidemiology/Clinical Course » Diabetes	45	Pediatric Pharmacoepidemiology	56
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Disease Epidemiology/Clinical Course » Other	46	Pharmacovigilance » Cardiovascular	57
Drug Effectiveness	46	Pharmacovigilance » Neurological/Mental Health	57
Drug Utilization Research » Changing Drug Utilization (interventions and implementation research)	48	Pharmacovigilance » Other	57
Drug Utilization Research » Health Policy and Governance	48	Pregnancy and Lactation	58
Drug Utilization Research » Other	49	Safety End Points » Cancer	60
Drug Utilization Research » Quality Use of Medicines (including indicators and guidelines)	49	Safety End Points » Cardiovascular	61
Drug Utilization Research » Trends and Comparisons	50	Safety End Points » Diabetes	62
Geriatric Pharmacoepidemiology	51	Safety End Points » Neurological/Mental Health	62
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Benefit-Risk Assessment, Communication, and Evaluation (BRACE)

- 4069 **Retirement of Statistical Significance Testing**
Olaf Klungel, Kenneth J Rothman, Hans Hillege, John Fletcher. (Netherlands)
- 2627 **Association Between Dose and Duration Patterns of Opioid and Benzodiazepine Use and Risk of Overdose Among U.S. Medicare Beneficiaries: A Group-based Multi-Trajectory Model**
Weihsuan Jenny Lo-Ciganic, Ting Wang, Yong Ge, Bobby Jones, James Huang, Gary Reisfield, Jeanne Lee, C. Kent Kwoh, Juan Hincapie-Castillo, P. Chris Delcher, Ching-Yuan Chang, Debbie Wilson, Walid Gellad. (United States)
- 3736 **Comparative Risk Assessment of Severe Abnormal Uterine Bleeding Associated with Non-vitamin K Oral Anticoagulants**
Efe Eworuke, Laura Hou, Rongmei Zhang, Hui-Lee Wong, Peter Waldron, Abby Andersen, Audrey Gassman, David Moeny, Ting-Ying Huang. (United States)
- 3739 **Risk of Neuropsychiatric Adverse Events Among Montelukast Users**
Efe Eworuke, Nicole Haug, Andrew Mosholder, Noelle Cocoros, Marie Bradley, Dinci Pennap, Elizabeth C Dee, Sengwee Toh, Ella Prestine, Andrew Petrone, Ivone Kim, Yong Ma, Jennifer G. Lyons, Veronica V Sansing. (United States)
- 3826 **Risk of Non-melanoma Skin Cancer Associated with Hydrochlorothiazide-containing Products in the United States**
Efe Eworuke, Nicole Haug, Marie Bradley, Austin Cosgrove, Elizabeth C Dee, Sruthi Adimadhyam, Hana Lee, Tiffany Woodworth, Sengwee Toh. (United States)
- 4187 **Pregnancy Outcomes Among Women Exposed to Potentially Harmful Drugs**
Thuy Thai, Amir Sarayani, Yasser Albogami, Xi Wang, Sabina Nduaguba, Preya Patel, Almut Winterstein. (United States)

- 5070 **A Comprehensive Analysis of the Characteristics of External Control Arms in Approved Oncology Therapies**

Caitlin Knox, Cherise Wong, Lewis Raynor, Asieh Golozar. (United States)

Biologics/Biosimilars

- 2511 **Infliximab Use in the Netherlands: Uptake and Characteristics of Originator and Biosimilars Over Time**
Jetty A. Overbeek, Josephina G. Kuiper, Marina Bakker, B.J.F. (Bart) van den Bemt, Ron M. Herings. (Netherlands)
- 3900 **Persistence in Rheumatoid Arthritis Patients on Biosimilar and Bio-originator Etanercept a Pooled Analysis of Pan-Canadian Cohorts**
Cristiano S Moura, Denis Choquette, Louis Coupal, Orit Schieir, Vivian Bykerk, Marie-France Valois, Gilles Boire, Walter P. Maksymowych. (Canada)
- 4544 **Risk of Preterm Delivery and Small for Gestational Age Among Women with Inflammatory Bowel Disease Using TNF Alpha Inhibitors During Pregnancy**
Xi Wang, Ellen Zimmerman, Joshua Brown, Amie J Goodin, Almut Winterstein. (United States)
- 4750 **Dupilumab and the Risk of Conjunctivitis and Serious Infection in Patients with Atopic Dermatitis: A Propensity Score-matched Cohort Study**
Maria Schneeweiss, Seoyoung Kim, Sebastian Schneeweiss, Joseph Merola. (United States)
- 4853 **Agreement Between Electronic Health Record and Medical Claims Data for Defining Exposure to Infused Biologic Treatments in Inflammatory Bowel Disease**
Carrie Huisinigh, Lani R Wegrzyn. (United States)

Oral Sessions



5141 **Tumor Necrosis Factor Alpha-inhibitor (TNF α -I) Use and Hip Fracture in United States (US) Veterans with Rheumatoid Arthritis (RA)**

Sarah Homann, Carlos Grijalva, S. Bobo Tanner, James Morrow. (United States)

Disease Epidemiology/Clinical Course » Cancer

2572 **Risk and Prognosis of Cancer After Acute Kidney Injury**

Christian Fynbo Christiansen, Dóra K Farkas, Jon P Fryzek, Paola Romagnani, Mette Nørgaard, Kenneth J Rothman, Henrik Toft Sørensen. (Denmark)

2648 **The Risk of Late Breast Cancer Recurrence in Denmark During 17 Years of Follow-up**

Rikke Nørgaard Pedersen, Buket Öztürk, Lene Mellemkjær, Søren Friis, Bent Ejlersen, Timothy L. Lash, Mette Nørgaard, Deirdre Cronin-Fenton. (Denmark)

2653 **Improving Predictive Ability of Survival Models: Comparison of Multiple State of the Art Models**

Hugo Loureiro, Tim Becker, Anna Bauer-Mehren, Narges Ahmidi, Janick Weberpals. (Germany)

3993 **Risks of Squamous Cell Carcinoma of the Lip and Cutaneous Melanoma in Older Australians Using Hydrochlorothiazide (HCTZ)**

Benjamin Daniels, Sallie-Anne Pearson, Claire M Vajdic, Anton Pottegard, Nicholas A Buckley, Nicholas A Buckley, Helga Zoega. (Australia)

4067 **Mortality After Late Breast Cancer Recurrence in Denmark**

Rikke Pedersen, Lene Mellemkjær, Søren Friis, Bent Ejlersen, Mette Nørgaard, Deirdre Cronin-Fenton. (Denmark)

4102 **Adverse Mental Health Outcomes in Women with a History of Breast Cancer: A Matched Population-based Cohort Study in the United Kingdom (1988-2018)**

Helena Carreira, Rachael Williams, Garth Funston, Susannah Stanway, Krishnan Bhaskaran. (United Kingdom)

4253 **Parity, Use of Statins and Breast Cancer Risk in a Danish Population-based Cohort**

Agnès Fournier, Aurélie Mailhac, Bianka Darvalics, Henrik T. Sørensen, Marc J. Gunter, Deirdre Cronin-Fenton. (Denmark)

4934 **Hydrochlorothiazide and Risk of Melanoma Subtypes**

Laurel A Habel, Ninah Achacoso, Bruce Fireman, Sidsel Arnspang Pedersen, Anton Pottegard. (United States)

5054 **Site-specific Cancer Risk from Exposure to Cobalt Alloys in Orthopedic Implants or Cobalt in Occupational Settings: A Systematic Review and Meta-analysis**

Chantal Holy, Shumin Zhang, Laura Perkins, Laurence B Katz, Jason Brown, Luca Orlandini, Gion Fessel, Behrooz Nasser-Aghbosh, Gary Eichenbaum, Natalie S. Egnot, Paul M Coplan. (United States)

Disease Epidemiology/Clinical Course »
 Cardiovascular

2564 **Transatlantic Differences in Healthcare Systems Captured by Large Administrative Databases: Assessing the Burden of COPD in Patients Admitted for Heart Failure**

Claudia Gulea, Rosita Zakeri, Jennifer K Quint. (United Kingdom)

4013 **Cumulative Exposure to Bisphosphonates and Risk of Cardiovascular and Cerebrovascular Events**

Elena Olmastroni, Manuela Casula, Federica Galimberti, Elena Tragni, Giovanni Corrao, Lorenza Scotti, Alberico L. Catapano. (Italy)

4017 **Apolipoprotein B and Risk of Cardiovascular Disease: A Meta-analysis of Randomized Controlled Trials**

Federica Galimberti, Alberico L Catapano, Julius L Katzmman, Arjen J Cupido, Brian A Ference. (Italy)

4022 **Evaluation of the Effect of Omega-3 Polyunsaturated Fatty Acids Supplementation on Cardiovascular Outcomes: An Updated Meta-analysis of Randomized Controlled Trials**

Elena Olmastroni, Manuela Casula, Marta Gazzotti, Federica Galimberti, Elena Tragni, Alberto Zambon, Alberico L. Catapano. (Italy)

4767 **Metabolic Surgery and Cardiovascular Benefits: The Consequence of Information Bias in a Real-world Evidence Study**

William Murk, Jeremy Rassen, Sebastian Schneeweiss. (United States)

Disease Epidemiology/Clinical Course »
 Diabetes

2533 **Differential Risk of Parkinsons Disease According to Diabetes Treatments: A Cohort Study**

Ruth Brauer, Li Wei, Tiantian Ma, Dilan Athauda, Christine Girges, Niroso Vijiartnam, Grace Auld, Cate Whittlesea, Ian Wong, Thomas Foltynie. (United Kingdom)

3694 **Metabolic Factors and Lifestyle Habits Associated with Prevalence of Polyneuropathy in Early Type 2 Diabetes: A Cross-sectional Study of 5,249 Patients in the Danish DD2 Cohort**

Diana H Christensen, Søren T Knudsen, Sandra S Gylfadottir, Lotte B Christensen, Jens S Nielsen, Henning Beck-Nielsen, Henrik T Sørensen, Henning Andersen, Brian C Callaghan, Eva L Feldman, Nanna B Finnerup, Troels S Jensen, Reimar W Thomsen. (Denmark)

Oral Sessions

4986 **Characterizing Trajectories of HbA1c Control and Associations with Vascular Outcomes in Adults with Type 2 Diabetes**

Rohini Mathur, Christopher Rentsch, Sophie V Eastwood, Nish Chaturvedi, Jessica Franklin, Niteesh Choudhry, Ian Douglas, Liam Smeeth. (United Kingdom)

Disease Epidemiology/Clinical Course »
 Neurological/Mental Health

2501 **Threatened Abortion and Risk of Epilepsy, Cerebral Palsy and Attention-deficit/hyperactivity Disorder in Offspring: A Registry-based Cohort Study in Denmark**

Elena Dudukina, Erzsébet Horváth-Puhó, Henrik Toft Sørensen, Vera Ehrenstein. (Denmark)

Disease Epidemiology/Clinical Course » Other

2561 **40-year Mortality Among Patients Hospital-diagnosed with Overweight or Obesity**

Sigrid B Gribsholt, Dóra K Farkas, Reimar W Thomsen, Børn Richelsen, Henrik T Sørensen. (Denmark)

3722 **Identifying Adenomyosis and Undiagnosed Adenomyosis within Natural Language Processed Clinical Notes of an Electronic Health Record Database**

Anita M. Loughlin, Gally Reznor, Michael Doherty, Stacey A Missmer, Stephanie E Chiuve, Cheryl Enger. (United States)

Drug Effectiveness

105 **Effectiveness of Proton Pump Inhibitors in Idiopathic Pulmonary Fibrosis: A Population-based Cohort Study**

Tanja Tran, Deborah Assayag, Pierre Ernst, Samy Suissa. (Canada)

2353 **Impact of Maternal Depression During Pregnancy and Its Treatment Options on Fetal Health: A Prospective Cohort Study of 84,000 Pregnant Women**

De-Kun Li, Jeannette R Ferber, Roxana Odouli, Charles Quesenberry, Lyndsay A Avalos, Mason Turner, Tracy Flanagan. (United States)

2437 **Sodium-glucose Cotransporter-2 Inhibitors and the Risk of Gout - A Danish Nationwide Symmetry Analysis and Active Comparator New User Cohort Study**

Lars Christian Lund, Kasper Kristensen, Jesper Hallas, Daniel P Henriksen. (Denmark)

2453 **Sodium-glucose Cotransporter-2 Inhibitors and Risk of Urolithiasis in Patients with Type 2 Diabetes. A Population-based Active Comparator New User Cohort Study**

Kasper Bruun Kristensen, Daniel Pilsgaard Henriksen, Jesper Hallas, Lars Christian Lund. (Denmark)

2500 **Comparative Effectiveness and Safety of SGLT2 Inhibitors vs. GLP-1 Receptor Agonists Among Real-world Older Adult**

Elisabetta Patorno, Ajinkya Pawar, Lily G Bessette, Dae H Kim, Chintan Dave, Robert J Glynn, Medha N Munshi, Sebastian Schneeweiss, Deborah J Wexler, Seoyoung C Kim. (United States)

3798 **Risk of Cardiovascular Outcomes Following Addition of SGLT2 Inhibitors versus Sulfonylureas to Baseline GLP-1RA Therapy**

Chintan Dave, Seoyoung Kim, Allison Goldfine, Robert Glynn, Angela Tong, Elisabetta Patorno. (United States)

3810 **Transporting Treatment Effects from Clinical Trials to Clinical Practice Using a Hybrid Study Approach: The Case of Adjuvant FOLFOX versus 5FU for Colon Cancer Treatment**

Jennifer L Lund, Michael A Webster-Clark, Alexander P Keil, Daniel Westreich, Til Sturmer, Hanna K Sanoff. (United States)

3814 **Use of Sodium-glucose Co-transporter-2 Inhibitors, Changes in Body Mass Index and Risk of Fracture. The Clinical Practice Research Datalink Gold**

Frank de Vries, Annemariëk Driessen, Andrea Burden, Martijn Brouwers, Peter Vestergaard, Joop van den Bergh, Richard Eastell, Judith van Dalem. (Netherlands)

- 3956 **Comparative Treatment Effectiveness of Oral Fingolimod and Injectable Disease Modifying Agents in Multiple Sclerosis**
Jagadeswara Rao Earla, George Joseph Hutton, J. Douglas Thornton, Hua Chen, Michael L Johnson, Rajender R Aparasu. (United States)
- 3980 **Cohort Selection in Registry-based Studies of Direct Oral Anticoagulant Users with Atrial Fibrillation: An Inevitable Trade-off Between Selection Bias and Misclassification**
Maja Hellfritsch, Erik L Grove, Lotte Rasmussen, Simone B Haastrup, Anton Pottegård. (Denmark)
- 4041 **Cardiovascular Effectiveness of Empagliflozin Compared to DPP4 Inhibitors and to GLP1 Receptor Agonists: Interim Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study**
Elisabetta Patorno, Ajinkya Pawar, Jessica Franklin, Mehdi Najafzadeh, Deborah Wexler, Anouk Déruaz-Luyet, Kimberly Brodovicz, Lily Bessette, Sebastian Schneeweiss. (United States)
- 4063 **Statins and Risk of Diverticular Disease: Nested Case-control Study in Denmark**
Nils Skajaa, Frederikke Schønfeldt Troelsen, Ola Ekholm, Lars Pedersen, Rune Erichsen, Henrik Toft Sørensen. (Denmark)
- 4091 **Outcomes in Patients Receiving Nintedanib or Pirfenidone for Idiopathic Pulmonary Fibrosis**
Vincent Cottin, Paolo Spagnolo, Philippe Bonniaud, Maeva Nolin, Faustine Dalon, Jenny Chia, Klaus Kirchgässler, Tripti Kamath, Eric Van Ganse, Manon Belhassen. (France)
- 4100 **Comparative Effectiveness of Ovulation Induction Medications: Evidence from a Large Healthcare Database in the United States**
Jennifer J Yland, Yu-Han Chiu, Sean McGrath, Sonia Hernández-Díaz. (United States)
- 4129 **SGLT2 Inhibitors and the Risk of Major Adverse Cardiovascular Events: A Multi-database Study Using a Prevalent New-user Design**
Kristian B. Filion, Lisa M. Lix, Oriana H.Y. Yu, Sophie Dell'Aniello, Antonios Douros, Baiju R. Shah, Audray St-Jean, Anat Fisher, Eric Tremblay, Shawn C. Bugden, Silvia Alessi-Severini, Paul E. Ronksley, Nianping Hu, Colin R. Dormuth, Pierre Ernst, Samy Suissa, and the CNODES Investigators. (Canada)
- 4230 **Comparison of Effectiveness and Safety Between Glecaprevir/pibrentasvir and Sofosbuvir/velpatasvir in Patients with Chronic Hepatitis C - A Multi-institutional Cohort Study in Taiwan**
Mu-Hsuan Hou, Shih-Chieh Shao, Hui-Yu Chen, Yuk-Ying Chan, Edward Chia-Cheng Lai. (Taiwan)
- 4602 **Non-vitamin K Antagonist Oral Anticoagulant and Proton-pump Inhibitor Cotreatment and the Association with Upper Gastrointestinal Bleeds in Patients with Atrial Fibrillation: A Multi-database Cohort Study**
Joris Komen, Anton Pottegård, Tomas Forslund, Aukje Mantel - Teeuwisse, Björn Wettermark, Maja Hellfritsch, Jesper Hallas, Lisa Smits, Ron Herings, Paul Hjemdahl, Olaf Klungel. (Netherlands)
- 4641 **No Added Benefit of Benzodiazepines to Antidepressant Monotherapy on Mortality in Patients with Depression**
Han Eol Jeong, Woo Jung Kim, In-Sun Oh, Ha-Lim Jeon, Ju-Young Shin. (Korea, Republic of)
- 4758 **Real-world Short- and Long-term Effects of Antibiotic Treatment of Acute Copd Exacerbations in Outpatients: A Cohort Study under the Pharmlines Initiative**
Yuan Yuan Wang, Victor Pera, H. Marika Boezen, Jan-Willem C. Alffenaar, Bob Wilffert, Rolf H. Groenwold, Eelko Hak. (Netherlands)

Oral Sessions

- 4996 **Safety and Effectiveness of Medical Cannabis in the Real-world: Results of the Quebec Cannabis Registry**
Yola Moride, Michelle Canac-Marquis, Rihab Gamaoun, Pierre Beaulieu, Andr  e N  ron, Marc O. Martel, Jordi Perez, Julie Desroches, Maja Kalaba, Marc Ware, Antonio Vigano. (Canada)
- 5105 **Comparing Cardiovascular Benefits of Sodium Glucose Cotransporter-2 Inhibitors and Glucagon-like Peptide-1 Receptor Agonists in Older Adults with Diabetes**
Phyo Htoo, John Buse, Tiansheng Wang, Virginia Pate, Matthew Crowley, Til St  rmer. (United States)
- 5109 **Dementia and Effectiveness and Safety of Apixaban versus Warfarin and Other Direct Oral Anticoagulants in Older Adults with Atrial Fibrillation**
Kueiyu Joshua Lin, Sebastian Schneeweiss, Ajinkya Pawar, Dae Hyun Kim. (United States)
- 5121 **Safety and Effectiveness of Extended Treatment with Oral Anticoagulants in Patients with Venous Thromboembolism**
Ajinkya Pawar, Katsiaryna Bykov, Chandrasekar Gopalakrishnan, Geetha Iyer, Helen Tesfaye, Kristyn Chin, Joshua J Gagne. (United States)

Drug Utilization Research » Changing Drug Utilization (interventions and implementation research)

- 2364 **Changes in Sales of Over-the-counter and Prescription Medicines After Rescheduling of Codeine to a Prescription-only Medicine in Australia**
Andrea L Schaffer, Rose Cairns, Jared A Brown, Natasa Gisev, Nicholas A Buckley, Sallie-Anne Pearson. (Australia)

- 4794 **Association Between Digoxin Use and SCD in Individuals with the rs10494366 Variant of the NOS1AP Gene: The Rotterdam Study**
Negin Soroush, Albert-Jan Aarnoudse, Fereshteh Shokri, Marten Van den Berg, Fariba Ahmadizar, Bruno Stricker. (Netherlands)
- 4868 **Impact of the Food and Drug Administration Safety Warnings and Removal of Indications for Use of Oral Quinolones**
Phuong T Tran, Patrick J Antonelli, Juan M Hincapie-Castillo, Almut G Winterstein. (United States)
- 5001 **Utilization of Oral Anticoagulants in Patients with Venous Thromboembolism**
Geetha Iyer, Ajinkya Pawar, Chandrasekar Gopalakrishnan, Helen Tesfaye, Kristyn Chin, Joshua J Gagne, Katsiaryna Bykov. (United States)

Drug Utilization Research » Health Policy and Governance

- 2575 **Program Churn Among Children Enrolled in North Carolina Medicaid**
Alexander Breskin, Rushina Cholera, David Anderson, Suzanne Landi, Aaron McKethan, Charlene Wong. (United States)
- 2577 **Utilization of Hydroxyprogesterone During the Second and/or Third Trimester Among Pregnancies with Live Birth Deliveries in the Sentinel Distributed Database**
Huei-Ting Tsai, Mayura Shinde, Austin Cosgrove, Jie Li, Christina Chang, Christine Nguyen, Corinne Woods, Joy Kolonoski, Tiffany Woodworth, David Moeny. (United States)
- 2634 **Estimating the Impact of Prescribing Limits on Prolonged Opioid Use Following Surgery**
Jessica C Young, Nabarun Dasgupta, Virginia Pate, Til St  rmer, Brooke A Chidgey, Michele Jonsson Funk. (United States)

2688 **Impact of Hydrocodone Rescheduling on Opioid Prescribing by Dentists in the United States, 2012-2017**

Connie H Yan, Colin Hubbard, Gregory S Calip, Lisa K Sharp, Charlesnika T Evans, Susan Rowan, Jessina C McGregor, Allen Campbell, Walid F Gellad, Katie J Suda. (United States)

4595 **Hormone Replacement Therapy (HRT) and Risk of Breast Cancer: Nested Case-control Studies Using QResearch and Clinical Practice Research Datalink (CPRD)**

Yana Vinogradova, Carol Coupland, Julia Hippisley-Cox. (United Kingdom)

Drug Utilization Research » Other

2495 **Older Adults with Colorectal Cancer Receive Higher Opioid Dose**

Sean P Fleming, Tham T Le, Julia F Slejko. (United States)

4034 **The One Percent: Screening Danish Nationwide Drug Utilisation Data for Patterns of Misuse**

Lars Christian Lund, Mette Reilev, Anton Pottegård, Jesper Hallas. (Denmark)

4351 **Prediction of COPD Treatment Nonadherence Using Real World Medicare Data**

Tham T Le, Danya M Qato, Margrét Bjarnadóttir, Larry Magder, Zafar Zafari, Linda Simoni-Wastila. (United States)

4360 **Personalized Comparisons of Flare Rates After Hydroxychloroquine Tapering or Discontinuation in Systemic Lupus**

Celline C Almeida-Brasil, Christian A Pineau, Evelynne Vinet, John G Hanly, Christine A Peschken, Ann E Clarke, Paul R Fortin, Michal Abrahamowicz, Sasha Bernatsky. (Canada)

Drug Utilization Research » Quality Use of Medicines (including indicators and guidelines)

2471 **The Association Between Adherence to Multiple Chronic Medications and Healthcare Utilisation in Older Community Dwelling Adults with Multimorbidity**

Caroline A Walsh, Caitriona Cahir, Kathleen E Bennett. (Ireland)

2532 **Impact of Delays in Initiation of Adjuvant Endocrine Therapy on Survival Among Patients with Breast Cancer**

Kimberley Lee, Jodi Segal, Lisa Jacobs. (United States)

2585 **Longitudinal Cumulative Dose: A Novel Measure to Evaluate Multiple Dimensions of Chemotherapy Adherence Over Time**

Michael A Webster-Clark, Alexander Keil, Hanna K Sanoff, Til Stürmer, Daniel Westreich, Jennifer L Lund. (United States)

4779 **Real-world Therapeutic Management of Stroke Survivors with Atrial Fibrillation, Predictors, and Clinical Outcomes. A Population-based Cohort**

Clara Liliana Rodríguez-Bernal, Daniel Bejarano-Quisoboni, Isabel Hurtado, Anibal Garcia-Sempere, Salvador Peiró, Gabriel Sanfelix-Gimeno. (Spain)

4840 **Prevalence and Predictors of Potential Drug-drug Interactions in an Older Community-based Population**

John Hughes, Kathleen Bennett, Veronica Russo, Caroline Walsh, Enrica Menditto, Caitriona Cahir. (Ireland)

5133 **Are Patients Less Likely to Adhere to Antidepressant Treatment If They are Not Satisfied with Their Provider?**

Macarius Donneyong, Teng-Jen Chang, John Bridges, Olivia Okereke. (United States)

Oral Sessions

Drug Utilization Research » Trends and Comparisons

- 113 **Spatial Distribution of Deprivation Driven Inequalities in Opioid Prescribing in English Primary Care: A Cross-sectional Analysis**
Magdalena Nowakowska, Salwa Zghebi, Rosa Parisi, Li-Chia Chen, Darren M Ashcroft, Evangelos Kontopantelis. (United Kingdom)
- 2427 **Frequency of Opioid Dispensing After Surgical Abortion in the United States**
Liza R Gibbs, Julia A Pisc, Kari P Braaten, Brian T Bateman, Elizabeth M Garry. (United States)
- 2548 **Predicting Persistent High-dose Opioid Use After Total Knee Replacement**
Chandrasekar Gopalakrishnan, Jessica M Franklin, Yinzhu Jin, Daniel H Solomon, Jeffrey N Katz, Yvonne C Lee, Patricia D Franklin, Joyce Lii, Rishi J Desai, Seoyoung C Kim. (United States)
- 2633 **Trends in Oral Anticoagulant Co-prescription with Antiepileptic Drugs Among Adults with Epilepsy, 2010-2018**
Emily K. Acton, Allison W. Willis, Michael A. Gelfand, Sean Hennessy, John R. Pollard, Scott E. Kasner. (United States)
- 2667 **Drug Utilization for Symptom Management by Patients with Multiple Sclerosis by Phenotype in Germany**
Denise Oleske, Lou Barbato, Bruce Barger. (United States)
- 2672 **Factors Associated with Concurrent Use of Prescription Opioids and Benzodiazepines: A Population-based Assessment**
Erin Y Liu, Robyn Tamblyn, Kristian B. Filion, David L. Buckeridge. (Canada)
- 3787 **Antidiabetic Medication Use in Children and Adolescents from 2004 to 2019: Real World Data from a Commercially Insured Population in the United States**
Jenny W Sun, Sonia Hernández-Díaz, Florence T Bourgeois, Sebastien Haneuse, Brian T Bateman, Elisabetta Patorno, Krista F Huybrechts. (United States)
- 3799 **Use of Levothyroxine for the Treatment of Subclinical Hypothyroidism Among Pregnant Women in the United Kingdom: A Population-based Assessment**
Ya-Hui Yu, Sonia M Grandi, Robert W Platt, Oriana H Yu, Kristian B Filion. (Canada)
- 4334 **Applicability of Renal Outcome Trials of Canagliflozin to the Real World: Implications from Comparisons of Characteristics Between Trial Patients and Real-life Patients**
Ling-Chen Hsu, Kai-Cheng Chang, Shih-Chieh Shao, Hui-Yu Chen, Yuk-Ying Chan, Edward Chia-Cheng Lai. (Taiwan)
- 4402 **Characterizing Real-world Patterns of Early Childhood Vaccination**
Anne M. Butler, Jason G. Newland, John M. Sahrman, Caroline A. O'Neil, Sena Sayood, Leah J. McGrath. (United States)
- 4451 **Recent Trends in First-line Glucose-lowering Treatment Choice for Type 2 Diabetes in Younger and Older Adults in the U.S.**
Hojin Shin, Sebastian Schneeweiss, Robert Glynn, Elisabetta Patorno. (United States)
- 4553 **Sex Differences in Patterns of Systemic Agents' Use Among Individuals with Psoriasis**
Raymond Milan, Jacques LeLorier, Ivan Litvinov, Elham Rahme. (Canada)
- 5000 **Trends in Gabapentin Utilization in the United States, 2004-2016**
Abisola Olopoenia, Sean Fleming, Linda Simoni-Wastila. (United States)



- 5023 **Melatonin Use Among Children, Adolescents and Young Adults: A Scandinavian Drug Utilization Study**
Rikke Wesselhoeft, Peter B. Jensen, Poul Jennum, Svetlana Skurtveit, Randi Selmer, Ingeborg Hartz, Lotte Rasmussen, Johan Reutfors, Lena Brandt, Lene A. Mølstrøm, Mette Bliddal, Anton Pottegård. (Denmark)

- 5098 **Dupilumab Treatment Trends Among Patients with Atopic Dermatitis**
Maria Schneeweiss, Sebastian Schneeweiss. (United States)

Geriatric Pharmacoepidemiology

- 55 **Oral Anticoagulants and Risk of Acute Liver Injury in Patients with Nonvalvular Atrial Fibrillation: A Propensity-weighted Nationwide Cohort Study**
Géric Maura, Marc Bardou, Cécile Billionnet, Alain Weill, Jérôme Drouin, Anke Neumann. (France)
- 2652 **Identifying Frequent Drug Combinations Associated with Delirium in Older Adults: Application of Association Rules Method to A Case-time-control Design**
Prasad Nishtala, Te-yuan Chyou. (United Kingdom)

- 4060 **Longitudinal Trajectories of Frailty in Older Populations: Latent Curve Models and Mortality**

Victoria Y Strauss, Danielle E Robinson, Antonella Delmestri, Daniel Prieto-Alhambra, Alan Silman. (United Kingdom)

- 4237 **“I Simply Don’t Know Because I Don’t Know Which Drugs I Get”: A Qualitative Study of Perspectives on Deprescribing Among Nursing Home Residents and Their Relatives**

Carina Lundby, Trine Graabæk, Jesper Ryg, Jens Søndergaard, Anton Pottegård, Dorthe Susanne Nielsen. (Denmark)

- 4678 **Network Analysis of Interacting Medication Use in Elderly Persons in Norway**

Mohsen Askar, Kristian Svendsen. (Norway)

Health Economics/Outcomes Research

- 3783 **Policy Options for Improving Insulin Affordability**

Stacie B Dusetzina, Laura Keohane, Haiden Huskamp, Nancy Keating. (United States)

Oral Sessions

- 3785 **Medicare Part D Plan Coverage of Brand-name Drugs When Generics are Available**
Stacie B Dusetzina, Juliette Cubanski, Leonce Nshuti, Sarah True, Jack Hoadley, Andrew Roberts, Tricia Neuman. (United States)
- 4119 **Patient, Provider and Formulary Characteristics Associated with Initiation of a SGLT2i or GLP-1RA Among Medicare Beneficiaries with Type 2 Diabetes: A Retrospective Cohort Study**
Jing Luo, Inmaculada Hernandez, Joseph Gabriel, Walid Gellad. (United States)
- 4121 **Coverage, Formulary Restrictions and Average Retail Prices of SGLT2 Inhibitors and GLP-1 Receptor Agonists Across Medicare Part D Plans in 2019**
Jing Luo, Robert Feldman, Scott Rothenberger, Walid Gellad. (United States)
- 4146 **Cost-Effectiveness of Taxane/platinum and Doxorubicin/platinum Combination Therapies in Adjuvant Treatment of Endometrial Cancer**
Swetha Srinivasan, Joehl T Nguyen, Megan C Roberts. (United States)
- 4242 **Effect Modifications on Risk of Hospitalization Due to Heart Failure in Type 2 Diabetes Patients Receiving Dapagliflozin versus Empagliflozin**
Shih-Chieh Shao, Kai-Cheng Chang, Hui-Yu Chen, Yuk-Ying Chan, Yea-Huei Kao Yang, Edward Chia-Cheng Lai. (Taiwan)
- 4657 **Cost-sharing Increase, Adherence and Hospitalizations in Schizophrenic Patients: A Population-based Difference-in-differences Analysis in the Valencia Region, Spain**
Miquel Serra-Burriel, Isabel Hurtado, Anibal Garcia-Sempere, Gabriel Sanfelix-Gimeno, Salvador Peiró. (Spain)
- 5125 **Characteristics of Severe Sepsis Hospitalizations and Sepsis-related Mortality in US Claims**
Tiffany S Woodworth, Erik Gunnarsson, Kerrin Gallagher, Lu Zhang, Joseph Menzin. (United States)

Informatics

- 2608 **Machine Learning and Semantic Information for Unstructured Healthcare Data: Comparison of Methods Through the Automatic Analysis of Adverse Drug Reaction Reports**
Louis Letinier, Julien Jouganous, Ghada Miremont, Alicia Bel-Létoile, Francesco Salvo, Franck Rouby, Joëlle Micallef, Mehdi Benkebil, Antoine Pariente. (France)
- 4486 **Using Machine Learning to Identify Heterogeneous Treatment Effects: DPP-4i versus Sulfonylurea on Cardiovascular Outcomes in US Medicare**
Tiansheng Wang, Alexander P. Keil, Virginia Pate, Michele Jonsson Funk, Michael R. Kosorok, John B. Buse. (United States)
- 4887 **Deep Learning Techniques to Predicting Depression in Rheumatoid Arthritis Patients: A Real-world Data Analysis**
Santosh Murugan, Julius Asubonteng, Sara Haredasht, Sapthagirishwaran Sivarama, Ejim Mark, Robertino Mera. (United States)

Methods in Pharmacoepidemiology »
 Analytical Methods (e.g., marginal structural models, instrumental variables, sensitivity analyses)

- 2516 **Two-stage G-computation: Estimating Effects of Treatment Policies from Observational Data When Treatment Information is Missing**
Tiffany L Breger, Jessie K Edwards, Stephen R Cole, Daniel Westreich, Brian W Pence, Michele Jonsson Funk, Adaora A Adimora. (United States)
- 2628 **Estimating Vaccine Effects: A Comparison of Causal Methods**
Alexander Breskin, Anne M Butler, John Sahrman, M. Alan Brookhart. (United States)

- 3858 **Causal Estimands in Survival Analysis with Competing Events: An Application to Breast Cancer Screening**

Xabier Garcia de Albeniz, John Hsu, Miguel A Hernán. (Spain)

- 4179 **Replication of Protocol-based Analyses of Saxagliptin and Sitagliptin Using Sentinel Modular Programs**

Christian Hampp, David J Graham, Rongmei Zhang, Yandong Qiang, Laura Hou, Sheryl Kluberg, Sengwee D Toh, Justin Bohn. (United States)

- 4206 **Comparing Three Signal Identification Methods with Self-controlled Designs**

Judith C. Maro, Shirley V. Wang, Inna Dashevsky, Joshua J. Gagne, Sai Dharmarajan, Esther H. Zhou, Sandra DeLuccia, Elande Baro, Monica Munoz, Danijela Stojanovic, Jesper Hallas, G. Niklas Norén, Martin Kulldorff, Michael D. Nguyen. (United States)

Methods in Pharmacoepidemiology »
 Confounding/Bias - Methods to avoid bias and confounding, including confounder summary scores (e.g., propensity scores, disease risk scores)

- 80 **Methodological Considerations for Pooling Patient-level Data (PLD) from Noninterventional Studies (NIS) and Clinical Trials (CT) in Oncology**

Francois-Xavier Lamy, Vivien Rothe, Caroline Foch, Regina Esser, Wenfeng Chen, Diethelm Messinger. (Germany)

- 2582 **What Quacks Like a Confounder and Walks Like an Instrument?**

Michael A Webster-Clark, Charles Poole. (United States)

- 3947 **Development of a Nordic Frailty Index Based on Hospital Contacts and Prescribed Medications**

Kasper Bruun Kristensen, Peter Bjødstrup Jensen, Mette Bliddal, Anne Broe, Lars Christian Lund, Emelie Rotbain, Per Damkier, Jacob Harbo Andersen, Daniel Pilsgaard Henriksen, Mikkel Højlund, Morten Olesen, Anton Pottegård, Lotte Rasmussen, Mette Reilev, Morten Rix Hansen, Martin Thomsen Ernst, Rikke Wesselhöft and Jesper Hallas. (Denmark)

- 4019 **Deep Learning-based Propensity Scores for Confounding Control in Comparative Effectiveness Research: A Large-scale Real-world Data Study**

Janick Weberpals, Tim Becker, Jessica Davies, Fabian Schmich, Dominik Ruettinger, Fabian Theis, Anna Bauer-Mehren. (Germany)

- 4775 **Impact of Missing Information Recorded Outside of Study Electronic Health Records on Comparative Safety and Effectiveness Studies**

Kueiyu J Lin, Joshua J Gagne, Yinzhu Jin, Sebastian Schneeweiss. (United States)

- 4795 **Comparison of Methods for Incorporating Test Result Information within the High-dimensional Propensity Score Framework**

John Tazare, Jeremy P Brown, Liam Smeeth, Stephen J Evans, Elizabeth Williamson, Ian J Douglas. (United Kingdom)

- 4824 **Transparency of High-dimensional Propensity Score Analyses: Guidance for Diagnostics and Reporting**

John Tazare, Richard Wyss, Jessica M Franklin, Liam Smeeth, Stephen J Evans, Shirley V Wang, Sebastian Schneeweiss, Ian J Douglas, Elizabeth Williamson, Joshua J Gagne. (United Kingdom)

- 4835 **Comparing Optimization Techniques and Propensity Scores for Matching in Observational Studies of Rare Populations**

Stephen Fortin, Stephen Johnston, Paul Coplan. (United States)

Oral Sessions

5088 **Evolving Channeling Among Initiators of SGLT2 Inhibitors as First-line Treatment for Type 2 Diabetes**

HoJin Shin, Sebastian Schneeweiss, Robert Glynn, Elisabetta Patorno. (United States)

5128 **Use of Negative Controls in a Prescription Sequence Symmetry Analysis Used to Mitigate Time-varying Bias**

Scott M Vouri, Xinyi Jiang, Babette Brumback, Almut G Winterstein. (United States)

Methods in Pharmacoepidemiology »

Measurement Methods - Validation methods to confirm data (including patient reported outcomes development and validation);
 Methods to deal with missing data

3743 **Electronic Medical Records vs Insurance Claims: Comparing the Magnitude of Opioid Use Prior, During, and Following Surgery**

Jessica C Young, Nabarun Dasgupta, Virginia Pate, Til Sturmer, Brooke A Chidgey, Michele Jonsson Funk. (United States)

3788 **Validity of Claims-Based Definitions for Ulcerative Colitis in Japan: Can Intractable Disease Registry be Used as Gold Standard?**

Haoqian Chen, Haruei Ogino, Taku Kobayashi, Keita Fukaura, Hiromu Morikubo, Tasuku Okui, Naoki Nakashima, Sean Gardiner, Naonobu Sugiyama, Tsutomu Kawaguchi, Noritoshi Yoshii, Edward Nonnenmacher, Soko Setoguchi. (United States)

3924 **Validating Claims-based Algorithms Identifying Pregnancy Outcomes**

Keran Moll, Hui Lee Wong, Kathryn Fingar, Shayan Hobbi, Minya Sheng, Timothy Burrell, Bethany Baer, Steven Immel, Nasim Lari, Linda Eckert, Flor Munoz, William Rosenfeld, Joyce Obidi, Kristin Sepulveda, Azadeh Shoaibi, Steven Anderson. (United States)

4170 **Comparing the Centers for Medicare and Medicaid Services (CMS) Enrollment Database Death Dates to the National Death Index (NDI)**

Dinci Pennap, Scott Swain, Sandia Akhtar, Jiemin Liao, Yuqin Wei, Jiaqi Li, Michael Wernecke, Thomas MaCurdy, Jeffrey Kelman, Andrew Mosholder, David Graham. (United States)



4219 **Analytical Approaches to Reduce Selection Bias in As-treated Analyses with Missing In-hospital Drug Information**

Yeon-Hee Baek, Yunha Noh, In-Sun Oh, Han Eol Jeong, Kristian B. Filion, Hyesung Lee, Ju-Young Shin. (Korea, Republic of)

4440 **Validity of Healthcare Database Codes and Vital Statistic Records for Identifying Neural Tube Defects (NTD) in Infants**

T Craig Cheetham, Sascha Dublin, Gaia Pocobelli, Jennifer Bobb, Susan Andrade, Rulin Hechter, Cecilia Portugal, Mercedes Munis, Ladia Albertson-Junkans, Gladys Salgado, Lawrence Wong, Timothy Maarup, Kecia Carroll, Marie Griffin, Marsha Raebel, David Smith, De-Kun Li, Pamala Pawloski, Sengwee Toh, Lockwood Taylor, Wei Hua, Miriam Dinatale, Carrie Ceresa, James Trinidad and Denise Boudreau. (United States)

4826 **How to Deal with Missing Data in Interrupted Time Series Analysis with Electronic Health Records**

Juan Carlos Bazo-Alvarez, Tim P Morris, Tra My Pham, James R Carpenter, Irene Petersen. (United Kingdom)

Methods in Pharmacoepidemiology » Study Design - Studies assessing study design (e.g., choice of comparator, self-controlled methods, avoiding immortal time bias)

3789 **How Many Controls Do You Need?**

Henrik Stovring, Anton Pottegård, Morten R Hansen, Jesper Hallas. (Denmark)

3827 **Immeasurable Time Bias in Case-only Designs**

Han Eol Jeong, In-Sun Oh, Hyesung Lee, Kristian B Filion, Ju-Young Shin. (Korea, Republic of)

3848 **Is Your Sibling Design Biased?**

Buket Öztürk, Vera Ehrenstein, Henrik T Sørensen, Lars Pedersen. (Denmark)

4143 **Assessment of Immortal Time Bias in a Retrospective Study of Exenatide Use and Pancreatic and Thyroid Cancers**

Caihua Liang, Monica L. Bertoia, C. Robin Clifford, Yan Ding, Qing Qiao, Joshua J. Gagne, David D. Dore. (United States)

4848 **External Comparators Supporting Regulatory Submissions: 2017-2019**

Joan A. Largent, Priscilla Velentgas. (United States)

4909 **Tools for Assessing the Validity of Non-randomized Studies: A Systematic Review. Recommendations by the International Society for Pharmacoepidemiology Comparative Effectiveness Research Special Interest Group (CER SIG)**

Elvira D'Andrea, Lydia Vinals, Elisabetta Paterno, Jessica M. Franklin, Dimitri Bennett, Joan A. Largent, Daniela C. Moga, Hongbo Yuan, Xuerong Wen, Andrew A. Zullo, Thomas P. Debray, Grammati Sarri. (United States)

5145 **Review of Oncology Real-world Comparator Arm Submissions in Support of Effectiveness Claims in 2019 FDA Original Approvals Reveals Label-grade Real-world Study Best Practices**

Ilker Oztop, Wesley Eddings, Amanda Patrick, Pattra Mattox, Christina Purpura, Nicolle Gatto. (United States)

Oral Sessions

Molecular Epidemiology/Biomarkers/ Pharmacogenetics

- 2340 **Bronchial Airway Inducible Expression and Methylation QTL Mapping Identifies a Single Nucleotide Polymorphism Predicting Inhaled Corticosteroids Response Heterogeneity in Childhood Asthma**
Elise MA Slob, MSc, Alen Faiz, Susanne JH Vijverberg, Cristina Longo, Merve Kutlu, Patricia Soares, Fook Tim Chew, Esther Herrera-Luis, Antonio Espuela Ortiz, Maria Pino-Yanes, Esteban G Burchard, Uroš Potočnik, Colin Palmer, Cyrielle Maroteau, Steve Turner, Katia Verhamme, Leila Karimi, Somnath Mukhopadhyay, Wim Timens, Pieter Hiemstra, Mariëlle W Pijnenburg, Maarten van den Berge, Anke-Hilse Maitland-van der Zee, and Gerard H Koppelman. (Netherlands)
- 2542 **Association Between Genetic Variants and Cisplatin Nephrotoxicity: A Genome-wide Approach**
Zulfan Zazuli, Wei Xu, Susanne Vijverberg, Rosalinde Masereeuw, Maryam Mirshams, Khaleeq Khan, Bayardo Ordonez-Perez, Shao Hui Huang, Anna Spreafico, Aaron Hansen, David Goldstein, Scott Bratman, Andrew Hope, Bruce Carleton, Anke Hilse Maitland-van der Zee, and Geoffrey Liu. (Netherlands)
- 2647 **Danish Population Prescription Drug Use and Related Actionable Drug-gene Interactions**
Carin A Lunenburg, Alexander S Hauser, Kazi Ishtiak-Ahmed, Christiane Gasse. (Denmark)
- 3895 **Polygenic Risk for Alcohol Consumption Predicts Drinking Response to a Mineralocorticoid Receptor Antagonist**
Christopher T. Rentsch, Rachel L. Kember, Mehdi Farokhnia, Brendan J. Tunstall, Henry R. Kranzler, Adriana Gregory-Flores, Kendall J. Bryant, George F. Koob, Leandro F. Vendruscolo, Amy C. Justice, David A. Fiellin, Lorenzo Leggio, and Janet P. Tate. (United Kingdom)

Pediatric Pharmacoepidemiology

- 2531 **Development and Validation of a Pediatric Comorbidity Index to Predict the Risk of Hospitalization in the ICD-10-CM Era**
Jenny W Sun, Florence T Bourgeois, Sebastien Haneuse, Sonia Hernández-Díaz, Brian T Bateman, Krista F Huybrechts. (United States)
- 2579 **Fluoroquinolone Antibiotic Exposure and Risk of Achilles Tendon Injury in Adolescents in the United States 2000-2018**
Rachael K Ross, Jeffrey S Gerber, Mackenzie M Herzog, Michele Jonsson-Funk, Alan C Kinlaw. (United States)
- 3887 **Data Mining for Adverse Events of Tumor Necrosis Factor-alpha Inhibitors in Pediatric Patients - A Tree-based and Tree-temporal Scan Statistics Analysis of Danish Nationwide Health Data**
Viktor Wintzell, Henrik Svanström, Mads Melbye, Jonas F. Ludvigsson, Björn Pasternak, Martin Kulldorff. (Sweden)
- 3934 **Association Between Proton Pump Inhibitor Use and Risk of Fracture in Children**
Yun-Han Wang, Viktor Wintzell, Jonas F Ludvigsson, Henrik Svanström, Björn Pasternak. (Sweden)
- 4714 **The Relationship Between Psychotropic Use and Community-based Measures Among Children in Foster Care**
Laura M. Bozzi, Pinky Shah, O'Mareen Spence, Susan dosReis. (United States)
- 4766 **Comparative Effectiveness of Diuretics and Inhaled Corticosteroids for Evolving Bronchopulmonary Dysplasia in Preterm Infants**
Jonathan L Slaughter, Mark A Klebanoff, Erinn M Hade. (United States)

- 4796 **Antipsychotics Use and Weight Gain in Children Compared to Adults: Analysis of Spontaneous Adverse Drug Reaction Reports**

Florentia Kaguelidou, Zaba Lieber, Francois Montastruc, Genevieve Durrieu, Jean-Marc Treluyer, Laurent Chouchana. (France)

Pharmacovigilance » Cancer

- 2436 **Pharmacovigilance Cohort Study of Osteonecrosis of the Jaw and Serious Infection Among Cancer Patients Treated with Denosumab or Zoledronic Acid in Denmark, Norway, and Sweden**

Vera Ehrenstein, Uffe Heide-Jørgensen, Morten Schiødt, Olof Akre, Bente B Herlofson, Svein Hansen, Cecilia Larsson Wexell, Sven Erik Nørholt, Steinar Tretli, Anders Kjellman, Henrik T Sørensen, Anthony Glennane, Kimberly Lowe. (Denmark)

- 3965 **Use of Methotrexate and Risk of Skin Cancer: A Nationwide Case-control Study**

Sam Polesie, Martin Gillstedt, Sigrún Alba Jóhannesdóttir Schmidt, Alexander Egeberg, Anton Pottegård, Kasper Bruun Kristensen. (Denmark)

- 4352 **A Study of Cancer Occurrence in Users of Mirabegron and Antimuscarinic Treatments for Overactive Bladder**

Kelesitse Phiri, Jesper Hallas, Marie Linder, Andrea Margulis, Brandon Suehs, Alejandro Arana, Shahram Bahmanyar, Cheryl Enger, Libby Horter, Ingvild Odsbu, Morten Olesen, Susana Perez-Gutthann, Nina Sahlertz Kristiansen, Kwame Appenteng, Stefan de Vogel and John Seeger. (United States)

Pharmacovigilance » Cardiovascular

- 4302 **Association Between Desloratadine Use and Incidence of Cardiac Outcomes - A Nordic Cohort Study**

Annette Kjær Ersbøll, Thora Majlund Kjærulff, Kaushik Sengupta, Eero Pukkala, Kristian Bolin, Martha Emneus, Dena Rosen Ramey, Joanne E Brady, Daniel Mines, Kristian Aasbjerg, Christian Vestergaard, Gunnar Gislason. (Denmark)

Pharmacovigilance » Neurological/Mental Health

- 3745 **Concomitant Use of Gabapentinoids and Opioids Following Surgery and the Risk of Opioid-related Adverse Events**

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- 4053 **Risks of Adverse Cardiovascular Outcomes Associated with Antipsychotic Use in People with Dementia**

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- 4820 **Adverse Event Profiles of Therapies That Target the Calcitonin Gene-related Peptide (CGRP) Pathway, During the First Six Months After Launch: A Real-world Data Analysis Using the FDA Adverse Events Reporting System (FAERS)**
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- 5035 **Real-world Evidence of the Risk of Neutropenia Among Patients Treated with Filgrastim**
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- 5120 **Seasonal Differences in Omalizumab Utilization Among Persons with Asthma and Allergic Rhinitis in the United States**
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3727 **A US Multicenter Chart Review Study of Patients with Metastatic Pancreatic Ductal Adenocarcinoma Receiving Liposomal Irinotecan After Gemcitabine-based Therapy**

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4199 **Thiamine Deficiency as a Misdiagnosed and Unrecognized Cause of Delirium in Referred Patients with Cancer**

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4205 **Risk of Malignancy in Rheumatoid Arthritis Patient and Association with Biologic DMARDs Using National Health Insurance Service Claim Database**

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4223 **Novel Use of the England National Cancer Registry to Describe Treatment Patterns and Disease Outcomes in Patients with Advanced or Metastatic Cancer**

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- 4298 **Evaluation of Electronic Health Record (EHR) Data of Patients with Acute Myeloid Leukaemia (AML) for Real-world Data Analyses**
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- 4397 **Incidence, Prevalence, and Survival in Patients with Metastatic Non-small Cell Lung Cancer in the United States (US)**
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- 4419 **KADor: A French Retrospective Study Describing the Therapeutic Management of Patients Who Received Herceptin® Based Neoadjuvant Treatment for HER2+ Early Breast Cancer (eBC)**
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- 4433 **Treatment Patterns and Clinical Outcomes of Patients with Metastatic Non-small Cell Lung Cancer Receiving Immune Checkpoint Inhibitor Monotherapy in the First-line Setting in Community-based Practices in the United States**
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- 4503 **Use of Proton Pump Inhibitors and Histamine-2 Receptor Antagonists and Risk of Gastric Cancer in Two Population-based Studies**
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- 4519 **Identifying Microsatellite Instability Associated Cancer Patients in the Veterans Affairs Healthcare System**
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- 4663 **Characteristics and Study Eligibility of British Lung Cancer Patients for Clinical Trials Evaluating Targeted Therapies (TTS) or Immune Checkpoint Inhibitors (ICIS)**
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- 4691 **Clinical Value of Oncology Medicines in Europe: Is it Different for Conditionally Approved Medicines?**
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- 4746 **Antiplatelet Drug Use and Breast Cancer Risk in a Prospective Cohort Study of Postmenopausal Women**
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- 4777 **The Potential of Claims Data for Long-term Follow-up of Breast Cancer Patients in Germany**
Miriam Heinig, Ulrike Haug. (Germany)

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- 4847 **Approximating Line of Treatment Using Drug Exposure Data and Clinical Information of Patients with Metastatic Breast Cancer Using U.S. Electronic Health Record Data**

Thibaut Sanglier, Jinjoo Shim, M K Downer, Carlos Flores, Patricia Luhn. (Switzerland)

- 4862 **Performance of QRISK-3 Scores in Predicting Cardiovascular Disease in Adult Cancer Survivors Compared to Matched Cancer Free Controls**

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- 4873 **Association of Surgical Complications with In-hospital Mortality Among Patients Undergoing Major Pancreatic Resection**

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- 5092 **Patterns of Recurring Colorectal Polyps and Risk of Colorectal Cancer in Commercially Insured US Adults**

Laura L Hester, Christopher Knoll, Dina M Gifkins. (United States)

- 5115 **Incidence and Management Trends for Cervical HSIL in a Large US Cohort from 2008 Through 2018**

Katherine C. Hughes, Timothy Herring, Jennifer Song, Robert Gately, Lindsay Nowak, Judy Wong, Mark Twyman, Prakash Bhuyan, John D. Seeger. (United States)

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- 2392 **Uncontrolled Blood Pressure and Therapeutic Inertia in Treated Hypertensive Patients: A Descriptive Cohort Study in Clinical Practice Research Datalink (CPRD)**

Céline Darricarrère, Marc Bénard, Stéphanie Bricout-Hennel, Caroline Louis, Emmanuelle Jacquot. (France)

- 2465 **Identification of an Appropriate Time Window for the Exclusion of Prevalent Cases Recorded Following Registration with the Clinical Practice Research Datalink**

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- 4055 **Venous Thromboembolism and Risk of Cancer in Users of Statins: A Danish Population-based Cohort Study**

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- 4453 **History of Lipid Lowering Therapy Use Among Adults Initiating Treatment with Proprotein Convertase Subtilisin / Kexin Type 9 Antibody Inhibitors in the United States, 2015-2019**

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- 4472 **Real World Treatment Patterns Following the Initiation of Proprotein Convertase Subtilisin / Kexin Type 9 Antibody Inhibitors Among Adults in the United States, 2015-2019**

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- 4581 **The Prevalence and Determinants of Over- and Undertreating Hypertension and Cholesterol Levels in the Rhineland Study**

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3706 **Polyneuropathy in Early Type 2 Diabetes is Associated with Higher Risk of Subsequent Cardiovascular Disease: Evidence from the Danish Centre for Strategic Research in Type 2 Diabetes (DD2) Cohort**

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3725 **Sex Differences in the Risk of Diabetes Mellitus Among Individuals with Psoriasis**

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3729 **Using Rwd to Assess Changes in GFR Among DKD Patients and the Rate of Heart Failure**

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4726 **Beta-blockers and Initial Heart Rhythm in Out-of-hospital Cardiac Arrest: A Multi-country Case-control Study**

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4786 **Epidemiology and Treatment of Atrial Fibrillation in Patients with Type 2 Diabetes Mellitus 2001-2016: An Electronic Database Study in the United Kingdom**

Hassan Alwafi, Ian Wong, Amitava Banerjee, Pajaree Mongkhon, Cate Whittlesea, Abdallah Y Naser, Wallis Lau, Li Wei. (United Kingdom)

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- 3979 **Daily Lifestyle Behaviors Associated with Initiating of Renal Replacement Therapy in Japanese Patients with Chronic Kidney Disease: A Descriptive Study Using a Claims Database Linked with Specific Health Checkup Results**
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- 4150 **Age- and Sex-specific Incidence of Non-traumatic Lower Limb Amputation in Patients with Type 2 Diabetes Mellitus in a Claims Database from the United States**
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- 4228 **Cardiorenal Disease is the Most Common First Cardiovascular Manifestation in Type 2 Diabetes and Associated with Increased Mortality**
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- 4321 **Factors Related to Sodium Glucose Cotransporter 2 Inhibitor (SGLT2i) and Dipeptidyl Peptidase 4 Inhibitor (DPP4i) Dispensing Among Naïve, Incident, and Prevalent New Users**
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- 4458 **Impact of Policy Changes on the Delivery of Community Medication Review Services Among Adults with Diabetes in Ontario**
Ahmad Shakeri, John-Michael Gamble, Lori MacCallum, Lisa Dolovich, Nancy He, Suzanne M. Cadarette. (Canada)
- 4757 **Assessing the Impact of a Non-Alcoholic Fatty Liver Disease (NAFLD) Diagnosis on Prescribing of GLP-1RA, DPP4i, and TZD Medications**
Danni Zhao, Matthew J Alcusky, Anthony P Nunes. (United States)

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- 2525 **Associations of Benzodiazepines, Z-drugs and Other Anxiolytics with Subsequent Dementia in Patients with Affective Disorders. A Nationwide Cohort and Nested Case-control Study**
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- 2527 **Treatment Patterns of Patients with Major Depressive Disorder and Suicidal Ideation or Attempt**
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- 2607 **Prevalence and Incidence of Narcolepsy in Japan: A Study Using Japanese Claims Data**
Motonobu Sakaguchi, Motonobu Sakaguchi, Yumiko Ogino, Chao Chen, Shreya Davé. (Japan)
- 2671 **Increased Risk of Falls and Fractures in Patients with Psychosis and Parkinson Disease**
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- 3775 **Excess Deaths Associated with Treatment Resistance in Patients with Major Depressive Disorder**
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- 3779 **Incidence Rates (IR) and IR Ratios of Parkinson Disease in Patients with Cataract Compared to the General Population: Analyses Using the Clinical Practice Research Datalink (CPRD)**
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- 3983 **A Population-based Cohort Study of Disruptive Mood Dysregulation Disorder Among Youth in the US**
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- 4268 **Development Trajectories in Asd Based on Symptoms Measured by the Vineland Adaptive Behaviour Scale Second Edition Using Data from the US and Europe**
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- 4316 **Hospital-diagnosed Infections, Community-based Antibiotic Prescriptions, and Risk of Subsequent Guillain-Barré Syndrome: A 30-year Nationwide Population-based Case-control Study**
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- 4443 **Co-occurrence of Schizophrenia and Dementia**
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- 4497 **Infection Dynamics in Patients with Multiple Sclerosis Over the Past 15 Years: A Retrospective Cohort Study in the UK Clinical Practice Research Datalink**
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- 4566 **Incidence, Survivorship, and Treatment of Motor Neuron Disease in Hong Kong: A Population-based Study**
Min Fan, Gary KK Lau, Xue Li, Ian CK Wong, Celine S.L. Chui. (Hong Kong)

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- 4639 **All-cause Mortality, Suicide and Self-harm in Patients with Treatment-resistant Depression**
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- 4700 **Postnatal Depression and Infant “5-in-1” Vaccine Adherence in the United Kingdom**
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- 4915 **Infectious Processes and Schizophrenia: Is There Any Correlation?**
Túlio Tadeu R Sarmiento, Isabella F Zuppo, Pâmela S Azevedo, Ludmila P Gargano, Natália D Brandão, Juliana Alvares-Teodoro, Francisco A Acurcio, Augusto A Guerra, Mariana B Deleprane, Rafael L dos Santos. (Brazil)
- 4972 **Characteristics of Multiple Sclerosis by Ethnoracial Groups in Medicaid and Electronic Health Records**
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- 5032 **Prevalence of Anxiety, Depression and Drug Utilization of Antidepressants Among Cancer Patients in the Inpatient Settings: A Cross-sectional Study in Jordan**
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- 53 **Identification of Risk Factors Associated with Mortality in Neonatal Sepsis Patients**
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- 95 **Evaluation of Reporting Quality for Prediction Models of HBV-related Hepatocellular Carcinoma by Tripod Statement**
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- 2352 **Elevated Risk of Hospitalization for Infection in Anemic Patients in Japan at the Beginning of Impaired Renal Function**
Tomomi Kimura, Satoshi Onozawa, Masataka Morita, Osamu Yamamoto, Tadao Akizawa. (United States)
- 2370 **Doxycycline Adherence Scale: The Impact on the Incidence of Leptospirosis Among Flood Affected South Indian Population**
Jose J Kochuparambil, Aleena Issac. (India)
- 2467 **Clinical Characteristics of Sepsis Patients by Survival Status: An Analysis of Electronic Medical Records**
Brian Buysse, Claire Le Nguyen, Jessica Albano. (Spain)

- 2484 **Comorbidities Analysis of Patients with Atopic Dermatitis on Non-biologic Systemic Drug Therapy Using Optum Electronic Health Records Databases**
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- 2512 **Comorbidities and Characteristics in a Cohort of Patients with NAFLD/NASH from the Netherlands**
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- 2518 **Risk of Hospitalisation Due to Infection in Patients with Psoriasis: A Population-based Cohort Study Using the United Kingdom Clinical Practice Research Datalink**
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- 2569 **Incidence of Anemia in Patients with Chronic Kidney Disease - A Population-based Cohort Study**
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- 2610 **Probabilistic Linkage of the French Cystic Fibrosis Patient Registry with the French National Health Data System**
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- 2674 **Characterization of Women with Adenomyosis Identified in a Large U.S. Electronic Health Record Database with and without Hysterectomy**
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- 2685 **Applying Machine Learning to Define Phenotypes of Women with Endometriosis Undergoing Laparoscopic Surgery**
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- 3695 **Occurrence of Metabolic Risk Factors Stratified by Psoriasis Severity a Swedish Population-based Matched Cohort Study**
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- 3735 **Treatment, Healthcare Resource Utilization, and Healthcare Costs for Medicare Patients with Generalized Pustular Psoriasis and Palmoplantar Pustulosis**
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- 3741 **The Spectrum of Adenomyosis Identified in a Large US Electronic Health Record Database**
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- 3742 **Dopamine Agonists and Risk of Lung Cancer**
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- 3834 **21-year Trends in First Hospitalization for Acute Urinary Retention and Subsequent Mortality in the Danish Male Population: A Nationwide Cohort Study**
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- 3837 **Prevalence of Contraindication in Chronic Kidney Disease According to eCrCl and eGFR Equations and Patient Related Risk Factors**
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- 3920 **Participant Engagement in an ArthritisPower Real-world Study to Capture Smartwatch and Patient-reported Outcome Data Among Rheumatoid Arthritis Patients**
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- 3985 **Incidence of Opioid Abuse, Dependence, and Overdose in Osteoarthritis Patients Prescribed Opioids in the United States - A Retrospective Cohort Study**
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- 3989 **Potential Utility of a Novel Aggregated US Electronic Medical Record Database: Renal Transplant Pilot**
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- 4095 **Using Self-reported Outcomes to Detect New-onset Flare in a Real-world Study of Participants with Rheumatoid Arthritis - Interim Results from the Digital Tracking of Arthritis Longitudinally (DIGITAL) Study**
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- 4105 **Two Machines are Better Than One: Using Multi-agent Reinforcement in Machine Learning to Simulate a Clinical Second Opinion**
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- 4106 **Agreement Between Administrative Database and Medical Chart Review for the Prediction of Chronic Kidney Disease Stage**
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- 4125 **Real World Evidence of Graft Survival in Four Types of Transplants: Fifteen Years Analysis in Brazil**
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- 4136 **Weight Gain Following Antiretroviral Therapy (ART) Initiation in ART-naïve Participants in the Current Treatment Era**
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- 4142 **Defining Phenotypes of Women with Endometriosis Undergoing Hysterectomy or Oophorectomy Using Machine Learning**
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- 4225 **Incidence of Community-acquired Pneumonia in China: A Nationwide Claims Database Analysis**
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- 4266 **Changes in Serum Creatinine Values During and After Pregnancy in a Cohort of Women with or without Pre-existing Chronic Kidney Disease**
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- 4274 **Utilising Mobile and Web-based Technology for Capturing Patient Specific Information: Methods from the DISCOVER CKD Program**
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- 4377 **Population Trends in the 10-year Prevalence and Incidence of Psoriasis and Psoriatic Arthritis in Taiwan: A Nationwide, Population-based Cohort Study**
Ireny Y. Iskandar, Teng-Chou Chen, Li-Chia Chen, Meng-Sui Lee, K. Arnold Chan, Christopher E. Griffiths, Darren M. Ashcroft. (United Kingdom)
- 4390 **Assessing Comorbid Inflammatory Arthritis Conditions and Swollen to Tender Joint Count Ratios in a Real World Systemic Lupus Erythematosus Cohort**
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- 4413 **Description of COPD Patients Treated with Multiple Inhaler Triple Therapies (MITT) Using the CPRD GOLD and CPRD Aurum Electronic Health Record (EHR) Databases**
Gema Requena, Leah Sansbury, Achim Wolf, Rachael Williams, Jennifer Quint, Daniel Dedman, Jeanne M Pimenta. (United Kingdom)
- 4417 **Enhancing Model Interpretability and Accuracy for Disease Progression Prediction via Phenotype-based Patient Similarity Learning**
Christina Mack, Yue Wang, Fan Zhang, Corey M. Benedum, Yunlong Wang, Emily Zhao. (United States)

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- 4420 **The Incidence of Acute Pancreatitis in the United States: Identification of Cases in an Electronic Healthcare Database with Supportive Laboratory Evidence**

Usha Gungabissoon, Megan Delgado, Selin Cooper, Liyuan Ma, Iain Uings. (United Kingdom)

- 4439 **Incidence of Acute Pancreatitis Among US Adolescents and Adults Diagnosed with Atopic Dermatitis, Asthma, or Chronic Rhinosinusitis with Nasal Polyposis, 2014-2018**

Andrea F Marcus, Cherise Wong, Sarah-Jo Sinnott, Anna Coleman, Faisal Khokhar, John D Huber, David Lederer, Steve Gao. (United States)

- 4442 **Stigma as a Barrier to the Hepatitis C Virus Continuum of Care in the Era of Direct-acting Antiviral Therapies**

M. Elle Saine, Julia E Szymczak, Frances K Barg, Vincent Lo Re. (United States)

- 4444 **Prevalence, Mortality, Disease Progression and Associated Comorbidities of Chronic Obstructive Pulmonary Disease in the United States: A Literature Review**

Anil Dasari, Salman Hussain, Pradeep Basa. (India)

- 4456 **Estimating Chronic Obstructive Pulmonary Disease Prevalence in Portugal Using Pharmacy Sales Data**

António T. Rodrigues, Rúben Pereira, Mariana Romão, Peter Heudtlass, José Guerreiro, José Alves. (Portugal)

- 4647 **Adverse Events after Acute Kidney Injury Admission: A Cohort Study in the UK Clinical Practice Research Datalink**

Patrick Bidulka, Kathryn Mansfield, Viyaasan Mahalingasivam, Dorothea Nitsch, Laurie Tomlinson. (United Kingdom)

- 4667 **Prevalence and Baseline Characteristics of Dialysis and Non-dialysis Dependent CKD Patients with and without Anemia: A US Cohort from DISCOVER-CKD**

Eric Wittbrodt, Juan Jesus Carrero, Glen James, Steven Fishbane, Supriya Kumar, Roberto Pecoits-Filho, Juan Jose Garcia Sanchez, Carol Pollock, James Sloand, Katarina Hedman, David Wheeler. (United States)

- 4686 **Using Over-the-counter Medication Sales and the Moving Epidemic Method for Flu Surveillance in Portugal (2016-2020)**

Peter Heudtlass, Nuno Rodrigues, António T. Rodrigues, Rúben Pereira, Zilda Mendes. (Portugal)

- 4702 **Mortality in Preterm Infants with Bronchopulmonary Dysplasia Associated Pulmonary Hypertension: A Systematic Literature Review**

Laura Downham, Sofija Cerovic, Catherine Lesage, Sandrine Leroy. (Switzerland)

- 4707 **Identifying Chronic Kidney Disease in a Laboratory Database: Setting Does Matter**

Uffe Heide-Jørgensen, Christian F Christiansen, Henrik Birn, Reimar W Thomsen, Søren V Vestergaard. (Denmark)

- 4774 **Development of Novel Algorithms to Identify Cases of Focal Segmental Glomerulosclerosis in a Large Electronic Medical Record Database**
Irene Cosmatos, Cynthina de Luise, J. Brian Copley, Daniel I Levy, Nihad Tamimi, Stephen Berasi, Donal Gorman, Michael Bulgrien, Gretchen Dieck. (United States)
- 4799 **The Association Between the Use of Long-term Antibiotics Used to Treat Acne Vulgaris and Subsequent Infection Sequelae and Antimicrobial Resistance: A Systematic Review**
Ketaki Bhate, Liang-Yu Lin, John Barbieri, Sarah-Jo Sinnott, Rohini Mathur, Sinead Langan. (United Kingdom)
- 4894 **Digitization of Physical Behaviors**
Marie Mc Carthy, Paul Nolan, Antonio Lampasi, Jialiang Chen, Michal Skackov. (Ireland)
- 4987 **People Living with HIV with Higher CD4+ Lymphocyte Counts Rated Their Own Health as Good**
Cristiane A Menezes de Pádua, Letícia P Braga, Isabel N Santos, Letícia F Silva, Bianca R Guerra, Joyce C Faria, Cassia C Mendicino. (Brazil)
- 5003 **Analysis of a Large Cohort of Patients with Erythema Multiforme Majus: Epidemiology, Clinical Pattern and Risk Factors**
Maja Mockenhaupt, Susanne Martin, Maren Paulmann. (Germany)
- 5038 **Prevalence of Eosinophilia in the United States**
Hoa V Le, Chi H Le, Phuong H Le, Chi T Truong. (United States)
- 5063 **Use of Administrative Health Databases to Estimate Incidence and Prevalence of Rheumatic Arthritis in the General Population**
Francesco Barone-Adesi, Andrealuna Ucciero, Gianmarco Cotrupi, Antonio Isabella. (Italy)

Drug Effectiveness

- 94 **Drug Survival of Secukinumab, Ustekinumab, and Adalimumab in Patients with Psoriasis**
Zenas Z Yiu, BADBIR Study Group. (United Kingdom)
- 99 **Treatment Effectiveness, Safety and Health Related Quality of Life in Multiple Myeloma: Evidence from the Real World**
Mir Mahmood Asrar, Dipika Bansal, Deepesh P Lad. (India)
- 2320 **The Potential Beneficial Effects of Low-dose Aspirin for the Primary Prevention of Gastrointestinal Cancers: A Population-based Cohort Study in Hong Kong**
Jessica J Shami, Jiaxi Zhao, Swathi Pathadka, Preen Vora, Montse Soriano Gabarró, Ian Wong, Esther Chan. (Hong Kong)
- 2395 **Assessment of Clinical Outcome of Twice Daily Dosing Schedule of Deferasirox in Transfusion Dependent Paediatric Beta Thalassemia Patients a Randomized Controlled Study**
Juny Sebastian, Tirin Babu, George Mathew Panachiyil, Mandyam Dhati Ravi. (India)
- 2419 **Endostar Continuous versus Intermittent Intravenous Infusion Combined with Chemotherapy in Treating Patients with Advanced Non-small Cell Lung Cancer: A Meta-analysis**
Lu Xu, Bo Wang, Limai Mansai, Qihuan Li, Cheng Jin, Siyan Zhan, Yi Ning. (China)
- 2420 **Effects of Incretin-based Therapies on Weight-related Indicators Among Patients with Type 2 Diabetes: A Network Meta-analysis**
Lu Xu, Shuqing Yu, Zhirong Yang, Sanbao Chai, Yuan Zhang, Feng Sun, Siyan Zhan. (China)

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- 2432 **Comparative Effectiveness of Statins and Fibrates for Primary Prevention of Cardiovascular Disease and Mortality: A Cohort Study**
Joseph E Blais, Jiaxi Zhao, Stephen Weng, Eric Y Yan, Vincent K Yan, Michael Mok, Ian C Wong, Esther W Chan. (Hong Kong)
- 2449 **Comparative Effectiveness and Safety of Systemic Treatments for Metastatic Castration-sensitive Prostate Cancer: A Parametric Survival Network Meta-analysis of Randomized Controlled Trials**
Lin Wang, Channing Paller, Hwanhee Hong, Anthony De Felice, Otis Brawley, Caleb Alexander. (United States)
- 2554 **Systematic Evaluation of the Efficacy-effectiveness Gap of Systemic Treatments in Extensive Disease Small Cell Lung Cancer**
Christine Cramer, Franz Schramel, Bas Peters, John van Putten, Olaf Klungel, Harry Groen, Ewoudt van de Garde. (Netherlands)
- 2566 **The Effect of the Indicated Use of β -blockers on the Risk of Exacerbations in Chronic Obstructive Pulmonary Disease: The Rotterdam Study**
Leila Karimi, Guy Brusselle, Lies Lahousse, Phebe De Nocker, Bruno H. Stricker, Katia M. C. Verhamme. (Netherlands)
- 2592 **Effectiveness and Safety of Vitamin K Antagonists in Patients with Non-valvular Atrial Fibrillation and Renal Disease: A Cohort Study**
Antonios Douros, Julien Rousseau, Christopher Filliter, Brenda Hemmelgarn, Samy Suissa, Christel Renoux. (Canada)
- 2638 **Cardiovascular Safety of Sulfonylureas in Type 2 Diabetes: Effect Modification by Obesity?**
Karine Suissa, Antonios Douros, Laurent Azoulay, Kristian B Filion, Sebastian Schneeweiss. (United States)
- 3749 **Comparative Effectiveness of Biologics and Targeted Therapies for Psoriatic Arthritis**
Hanzhe Zhang, Jiajun Wen, G. Caleb Alexander, Jeffrey R Curtis. (United States)
- 3757 **Comparative Effectiveness of Antipsychotics for Risk of Attempted or Completed Suicide Among Persons with Schizophrenia**
Heidi Taipale, Markku Lähteenpää, Antti Tanskanen, Ellenor Mittendorfer-Rutz, Jari Tiihonen. (Finland)
- 3764 **Evaluation on Therapeutic Equivalence of Generic and Brand-name Clopidogrel**
Ju-Ling Chen, Ching-Lan Cheng, Yea-Huei Kao Yang. (Taiwan)
- 3767 **Early Real-world Experience with CD19-directed Chimeric Antigen Receptor T-cell Therapy (CAR T) Among Patients with Diffuse Large B-cell Lymphoma (DLBCL)**
Jessica J. Jalbert, Jon E. Arnason, Wenzhen Ge, Chieh-I Chen, Srikanth Ambati, Ning Wu, Aafia Chaudhry. (United States)
- 3773 **Comparing Stroke Prevention Therapy of Direct Oral Anticoagulants and Vitamin-K-antagonists in Patients with Atrial Fibrillation: A Nationwide Retrospective Observational Study**
Lena M Paschke, Maike Schulz, Kerstin Klimke, Attila Altiner, Dominik von Stillfried. (Germany)
- 3790 **Survival Outcome in Patients with Metastatic Castration-resistant Prostate Cancer According to First-line Treatment**
Nicolas H Thurin, Magali Rouyer, Jérémy Jové, Marine Gross-Goupil, Thibaud Haaser, Xavier Rebillard, Michel Soulié, Gérard de Pouvourville, Marie Pierrès, Camille Capone, Stéphanie Lamarque, Emmanuelle Bignon, Cécile Droz-Perroteau, Nicholas Moore and Patrick Blin. (France)

- 3794 **Implementation of Cluster Randomisation of Prescribing Policy for Studying Comparative Effectiveness: Experience from the Pilot of the Evidence Study**

Robert Flynn, Angela Flynn, Amy Rogers, Lewis McConnachie, Thomas MacDonald, Isla Mackenzie, Alexander Doney. (United Kingdom)

- 3797 **Effectiveness and Safety of Direct Oral Anticoagulants in Patients with Cancer Associated Venous Thromboembolism: A Population Based Cohort Study**

Antonios Douros, Christopher Filliter, Laurent Azoulay, Vicky Tagalakakis. (Canada)

- 3828 **Impact of Time in Therapeutic Range (TTR) on Clinical Outcomes in Patients Initiating Treatment with Warfarin**

Kebede Beyene, Patricia Näslund, Amy Hai Yan Chan, Jeff Harrison. (New Zealand)

- 3892 **Effectiveness of Dimethylfumarate on Multiple Sclerosis, a French Cohort within SNDS Nationwide Claims Database**

Pauline Bosco-Levy, Patrick Blin, Séverine Lignot-Maleyran, Régis Lassalle, Abdelilah Abouelfath, Pauline Diez-Andreu, Marc Debouverie, Bruno Brochet, Francis Guillemin, Nicholas Moore. (France)

- 3893 **Problematic Alcohol Use Influences Response to Systemic Therapies for Psoriasis: Findings from a Prospective Multicentre Cohort Study**

Ireny Y. Iskandar, Mark Lunt, Rachael J. Thorneloe, Lis Cordingley, Christopher E. Griffiths, Darren M. Ashcroft. (United Kingdom)

- 4065 **Statins and Risk of Amyotrophic Lateral Sclerosis: Danish Population-based Cohort Study**

Nils Skajaa, Istvan Bakos, Erzsébeth Horváth-Puhó, Victor W Henderson, Timothy Lash, Henrik Toft Sørensen. (Denmark)

- 4071 **The Risk of Overdose Associated with Concomitant Use of Antipsychotic Agents and Prescription Opioids**

Alejandro Szmulewicz, Brian Bateman, Raisa Levin, Krista Huybrechts. (United States)

- 4112 **Risk of Cardiovascular Events and Serious Hypoglycemia Comparing Patients with Type 2 Diabetes Initiating a GLPIRA or Basal Insulin: A Propensity Score Matched Cohort Study**

Jing Luo, Deborah Wexler, Dae Kim, Seoyoung Kim, Elisabetta Paterno. (United States)



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- 4156 **The Impact of Opioids on Adverse Events Among Older Breast Cancer Survivors**
Aaron N Winn, Devon Check, Nicole M Fergestrom, Joan M Neuner, Andrew Roberts. (United States)
- 4184 **Interventions to Improve Medication Adherence in Patients with Inflammatory Bowel Disease: A Systematic Review**
Shrey Gohil, Zahra Majd, Jared C. Sheneman, Susan Abughosh. (United States)
- 4193 **Effect Duration of Intramuscular Benzathine Penicillin for Preventing Recurrence of Cellulitis**
Nai-Yu Chen, Kuan-Sheng Wu, Chien-Chou Su, Edward Chia-Cheng Lai. (Taiwan)
- 4196 **Clinical Outcome and Medical Cost of Brand-name and Generic Antihypertensive Drugs: A Population-based Study in Yinzhou, China**
Tao Huang, Haishaerjiang Wushouer, Mingchun Yang, Luwen Shi, Xiaodong Guan. (China)
- 4197 **Real-world Effectiveness of Oral Disease-modifying Therapies for Multiple Sclerosis**
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- 4212 **Comparing the Effect of Combining Exercise with Rosuvastatin versus Atorvastatin on Lipid Profile and Functional Capacity: A Retrospective Cohort Study**
Sherif Eltonsy, Monique Dufour Doiron, Patrice Simard, Caroline Jose, Martin Senecal, Danielle Bouchard, Remi LeBlanc, Mathieu Belanger. (Canada)
- 4214 **Efficacy and Safety of Antithrombotic Therapy in Atrial Fibrillation Patients Undergoing Percutaneous Coronary Intervention with Stent or Concomitant Acute Coronary Syndrome**
Han-Hsin Chueh, Shih-Tsung Huang, Fei-Yuan Hsiao. (Taiwan)
- 4234 **Real-world Effectiveness of Mood Stabilizer Use in Persons with Schizophrenia**
Arto Puranen, Marjaana Koponen, Lähteenvuo Markku, Antti Tanskanen, Jari Tiuhonen, Heidi Taipale. (Finland)
- 4238 **Midodrine for Prevention of Intradialytic Hypotension in High Risk Patients at a Tertiary Referral Hospital: A Retrospective Study**
Saja Alhabardi, Maryam Aldhaefi, Mohammed Alessa, Maha Alammari, Yousef Alrajhi, Rami Bustami. (Saudi Arabia)
- 4289 **Lithium Use in Patients with Bipolar Disorder in Inpatient Care and Readmission: A Prospective Cohort Study in the Central Denmark Region in 2015-2018**
Kazi Ishtiak-Ahmed, Louise Meyer, Christiane Gasse, Søren Dinesen Østergaard. (Denmark)
- 4333 **Use of Thiazolidinediones and Glucagon-like Peptide-1 Receptor Agonists and the Risk of Non-alcoholic Fatty Liver Disease**
Johanna H Driessen, Judith van Dalem, Andrea M Burden, Coen D Stehouwer, Olaf H Klungel, Frank de Vries, Martijn C Brouwers. (Netherlands)
- 4337 **Impact of Multiple Cardiovascular Medications on Mortality After an Incidence of Ischaemic Stroke or Transient Ischaemic Attack: A 10-year Cohort Study**
Tiantian Ma, Ian CK Wong, Cate Whittlesea, Zixuan Wang, Kenneth KC Man, Wallis Lau, Ruth Brauer, Li Wei. (United Kingdom)

- 4340 **Rationale, Design and Feasibility of Conducting a Real-world Study of Outcomes in Patients with a History of MI Receiving Extended DAPT with Ticagrelor 60 mg**
Eva Lesén, Chris Hewitt, Evangelos Giannitsis, Jonatan Hedberg, Tomas Jernberg, Dimitra Lambrelli, Daniel Lindholm, Aldo P. Maggioni, Jennie Medin, Anna Schultze, Albert Ariza Solé, Robert F. Storey, Karolina Andersson Sundell, Jurrien ten Berg, Narinder Bhalla and Marc Bonaca. (United States)
- 4342 **Differences Between Randomized Clinical Trial Participants and Real-world Empagliflozin Users and the Changes in Their Glycated Hemoglobin Levels**
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- 4457 **Comparative Safety of JAK Inhibitors in Patients with Rheumatoid Arthritis: A Network Meta-analysis of Clinical Trials**
Carlos Alves, Diogo Mendes, Ana Penedones, Francisco Batel Marques. (Portugal)
- 4461 **Comparative Risk of Infections Among JAK Inhibitors Used in Rheumatoid Arthritis: A Network Meta-analysis of Clinical Trials**
Carlos Alves, Diogo Mendes, Ana Penedones, Francisco Batel Marques. (Portugal)
- 4498 **Ascertainment of Schizophrenia Relapse and Impact on the Comparative Effectiveness of Oral versus Injectable Antipsychotics in the Real-world Setting: A Systematic Review**
Tiffany Cristarella, Mareva Faure, Genaro Castillon, Jean-François Nepveu, Yola Moride. (Canada)
- 4506 **Use of Glycolysis Enhancing Medications is Associated with a Decreased Risk of Developing Parkinson's Disease**
Jacob E Simmering, Nandakumar Narayanan, Lei Liu, Michael J Welsh, Anton Pottegård. (United States)
- 4517 **Hypothetical Intervention of Sodium-glucose Cotransporter-2 Inhibitors on Renal Outcome in Type 2 Diabetes**
Masato Takeuchi, Koji Kawakami. (Japan)
- 4522 **Comparative Effectiveness of Amoxicillin-clavulanate versus Metronidazole and a Fluoroquinolone on Hospital Admission Risk Among Outpatient Diverticulitis Patients in the United States, 2000-2005**
Charles E Gaber, Anne F Peery, Jessie K Edwards, Jennifer L Lund, Til Stürmer, Sharon Peacock-Hinton, Robert S Sandler, Alan C Kinlaw. (United States)
- 4546 **Persistence to Bone Targeting Agents in Patients with Bone Metastases from Solid Tumors in Hong Kong, Korea, and Taiwan**
Chin-Yao Shen, Philip Chun-Ming Au, Yeon-Hee Baek, Ching-Lung Cheung, Wei-Pang Chung, Seasea Nan Gao, Yea-Huei Kao Yang, Nora Kleinman, Ju Hwan Kim, Jeff Lange, Tzu-Chi Liao, Tzu-Chieh Lin, Ju-Young Shin, Chor-Wing Sing, Ian Chi Kei Wong and Edward Chia-Cheng Lai. (China)
- 4576 **Genetic Alternations Correlated with Resistant to Abiraterone and Enzalutamide in Metastatic Prostate Cancer**
Yu-Hsuan Joni Shao, Tzu-Hung Hsiao, Yen-Chuan Ou. (Taiwan)
- 4648 **The Impact of Childhood Pneumococcal Conjugate Vaccine Immunisation on Pneumonia Admissions in Hong Kong: A Population-based Interrupted Time Series Analysis from 2004-2017**
Min Fan, Qiuyan Yu, Hong Qiu, Xue Li. (Hong Kong)
- 4725 **Sex Disparities in the Effect of Statins on Lipid Parameters: The PharmLines Initiative**
Nicholas Byron Hunt, Johanna Emmens, Sylvi Irawati, Jens H Bos, Bob Wilffert, Eelko Hak, Rudolf A. de Boer. (Netherlands)

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4999 **Effect of Adherence to Anticoagulation on the Incidence of Ischemic Stroke in the Patients with Atrial Fibrillation: A Retrospective Cohort Study**

Won Kyung Lee, Young-Jin Ko, Sun-Young Jung, Seongill Woo, Byung-Joo Park, Joongyub Lee. (Korea, Republic of)

5002 **Comparative Safety of Epoetin versus Darbepoetin in Prevention of Major Adverse Cardiovascular Events in Patients Undergoing Hemodialysis**

Raj Desai, Steven Smith, Rajesh Mohandas, Haesuk Park. (United States)

5024 **Newer Generation Diabetes Medications and Cardiovascular Outcomes Among Older Women with Breast Cancer and Diabetes**

Jifang Zhou, Nadia Nabulsi, Alemseged Asfaw, Inyoung Lee, Colin Hubbard, Gregory Calip. (United States)

5073 **Longitudinal LDL Changes Among Proprotein Convertase Subtilisin Kexin Type 9 Inhibitor (PCSK9i) Users in the United States**

Kathleen M Andersen, Derek K Ng, Michael J Blaha, Jodi B Segal, G Caleb Alexander. (United States)

5156 **Risk of Major Adverse Cardiac and Bleeding Events with Antiplatelet-apixaban Compared to Antiplatelet-rivaroxaban in Patients with Acute Coronary Syndrome**

Ghadeer K. Dawwas, Eric Dietrich, James D. Lewis. (United States)

5158 **Safety of Off-label Dose Reduction of Non-vitamin K Oral Anticoagulants in Patients with Atrial Fibrillation Treated in Routine Care**

Carline van den Dries, Rianne van den Ham, Patrick Souverein, Romin Pjoucheshnia, Geert-Jan Geersing, Sander van Doorn. (Netherlands)

Drug Utilization Research » Changing Drug Utilization (interventions and implementation research)

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Louise G. H. Goh, Jiandong Sun, Kwong Ng. (Singapore)

90 **Use of Hydrochlorothiazide in Denmark Following Publication of Skin Cancer Risk Findings**

Anton Pottegård, Bodil H Bech, Sidsel A Pedersen, Bo Christensen. (Denmark)

2347 **Hospitalization for Thromboembolic Events Does Not Improve Adherence to Oral Anticoagulants in High-risk Atrial Fibrillation Patients**

Thanh Phuong Pham Nguyen, Yong Chen, Dylan Thibault, Charles E. Leonard, Sean Hennessy, Allison Willis. (United States)

2418 **Trends Over Time in the Implementation of Opioid Risk Minimization Measures and in Opioid-related Harms in Canada: A Mixed-methods Study**

Camille Goyer, Genaro Castillon, Yola Moride. (Canada)

2434 **Application of a Frailty Index Threshold to Identify Older Patients at Risk of Potentially Inappropriate Prescribing and Adverse Drug Reactions: A Prospective Observational Study**

Shane Cullinan, Denis O'Mahony, Stephen Byrne. (Ireland)

3715 **Changes in Utilization of Antihypertensive Drugs Following Angiotensin Receptor Blocker Product Recalls in Germany**

Salka Enners, Marita Kieble, Ulrike Rudolph, Felix Mahfoud, Michael Böhm, Ulrich Laufs, Martin Schulz. (Germany)

- 3762 **Use of Tramadol and Other Opioids Following Media Attention and Risk Minimization Measures from Regulators: A Danish Nationwide Drug Utilization Study**
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- 3825 **Utilization of Sacubitril/valsartan in Real-world Settings**
Efe Eworuke, Talia Menzin, Joy Kolonoski, Ting-Ying Huang. (United States)
- 4031 **Utilization and Evaluation of Chemotherapeutic Agents in Management of Carcinoma Breast**
U R Rakshith, M S Vishveswara. (India)
- 4084 **A Mixed Methods Analysis of the Use of the Systematic Tool to Reduce Inappropriate Prescribing in Swiss Primary Care Practices**
Katharina T Jungo, Fabian Schalbetter, Michael J Deml, Sven Streit. (Switzerland)
- 4126 **When Less is Better: Increase in Paracetamol Use and Poisonings in Switzerland Following the Introduction of 1,000mg Oral Tablets**
Adrian Martinez-De la Torre, Stefan Weiler, Dominic Stefan Bräm, Hugo Kupferschmidt, Andrea M. Burden. (Switzerland)
- 4258 **The Impacts of Publishing Evidence on the Utilization of Oseltamivir and Peramivir at an Emergency Department in South Taiwan**
Chen-En Liu, Teng-Chou Chen. (Taiwan)
- 4309 **Effectiveness of a Targeted and Tailored Pharmacist-led Intervention to Improve Adherence to Antihypertensive Drugs Among Patients with Type 2 Diabetes in Indonesia: A Cluster Randomized Controlled Trial**
Sofa Dewi Alfian, Petra Denig, Rizky Abdullah, Hadyana Sukandar, Job F van Boven, Eelko Hak. (Netherlands)
- 4383 **Protocol for a Cluster Randomized Tailored Educational Intervention to Reduce Potentially Inappropriate Medication Among Older Adults at Community Healthcare Institutions in Beijing**
Mengyuan Fu, Xiaodong Guan, Luwen Shi. (China)
- 4513 **Effect of Bariatric Surgery on Opioid Uses for Osteoarthritis in the United States, 2010-2017**
Enoch J. Abbey, Richard Nudotor, Joseph Canner, Jennifer Mammen, Kimberley Steele. (United States)
- 4558 **Medication Use Among Long-term-care Residents with Advanced Dementia - Results from the OptimaMed Study**
Edeltraut Kröger, Jonathan Plante, Michèle Morin, Philippe Voyer, Pierre-Hugues Carmichael, Nathalie Champoux, Johanne Monette, Anik Giguère, Michèle Aubin, Pierre J Durand, Machel Wilchesky. (Canada)
- 4568 **Antihypertensive Treatment Patterns in the United Kingdom**
Tianze Jiao, Kristian B. Filion, Antonios Douros, Robert W. Platt. (Canada)
- 4585 **Drug Utilization Evaluation of Chemotherapy Drugs in Various Cancers in India**
Niharika Jupaka. (India)
- 4768 **Implementing the HOUVAST 2.0 Intervention in the Dutch Primary Care, Lessons Learned from a Process Evaluation**
Stijn Hogervorst. (Netherlands)
- 4771 **Antipsychotic Treatment Changes in Incident Parkinsonism Treated with Levodopa**
Sibylle de Gernay, Olivier Rascol, Jean-Louis Montastruc, Maryse Lapeyre-Mestre. (France)

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4812 **Factors Associated with Switching from Oral Glucose-lowering Medications to Insulin Therapy in Type 2 Diabetes: The Rotterdam Study**

Payam Peymani, Marten van den Berg, Bruno Stricker, Fariba Ahmadizar. (Switzerland)

4817 **Preventive Effect of Antiplatelet Salicylates in Individuals with Type 2 Diabetes-The Rotterdam Study**

Fereshteh Shokri, Negin Soroush, Bruno Stricker, Fariba Ahmadizar. (Netherlands)

4916 **Valproate Utilisation Trends Among Women of Child-bearing Potential in Ireland Between 2014 and 2017: A Drug Utilisation Study Using Interrupted Time Series**

John Hughes, Maeve Mullooly, Niamh Buckley, Yvonne Looney, Kathleen Bennett. (Ireland)

4943 **Low-dose Aspirin Use for Primary or Secondary Prevention of Cardiovascular Diseases in Patients with Type 2 Diabetes**

Payam Peymani, Najmeh Maharlouei, Azra Izanloo, Amir Hooshang Mohammadpour, Abbas Rezaianzadeh, Fariba Ahmadizar. (Switzerland)

5155 **Personalizing Pharmaceutical Care and Optimal Use of Professional Resources in Long-term Care: A Controlled Demonstration Study Reduced Use of Antipsychotics**

Edeltraut Kröger, Carolina Tisnado-Garland, Line Guénette, Marie-France Demers, Philippe Voyer, Pierre-Hugues Carmichael, Jason R Guertin, Machel Wilchesky, Krista Lanctôt, Nathan Herrmann, Caroline Sirois, Rachel Rouleau. (Canada)

Drug Utilization Research » Health Policy and Governance

2400 **Inequities in Primary Care Attachment Among People Receiving Opioid Therapy**

Tonya Campbell, Richard Glazier, Laura Robertson, Diana Martins, J. Michael Paterson, David Juurlink, Muhammad Mamdani, Tara Gomes. (Canada)

2550 **Ability of Primary Healthcare Records to Assess Medicinal Products Discussed by the Pharmacovigilance Risk Assessment Committee**

Robert Flynn, Karin Hedenmalm, Tarita Murray-Thomas, Alexandra Pacurariu, Peter Arlett, Hilary Shepherd, Puja Myles, Xavier Kurz. (Netherlands)

- 2617 **Prescribing Trends of Direct Acting Antivirals for the Treatment of Hepatitis C in Ontario**
Mina Tadrous, Kate Mason, Bernadette Lettner, Mary Guyton, Zoë Dodd, Jeff Powis, Diana Martins, Tara Gomes. (Canada)
- 2622 **Impact of Two Recent Major Drug Shortages on Drug Utilization**
Mina Tadrous, Katie Suda, Tara Gomes. (Canada)
- 2646 **Strategies to Approach the Judicialization of Health Technology in Latin America and Caribbean**
Sueli Miyuki Yamauti, Luciane Cruz Lopes. (Brazil)
- 3758 **Impact of Pharmaceutical Cost Containment Policy Changes on the Use of Antidepressants in Japan**
Shinobu Imai, Anna Kiyomi, Munetoshi Sugiura, Kiyohide Fushimi, Karolina Andersson Sundell. (Japan)
- 3823 **Establish a Model for Mapping Chinese Indication with ICD-10-CM in Taiwan: Using Antipsychotics as Examples**
Chien Chou Su, Ching-Lan Cheng, Yi-Wei Wu, Yea-Huei Kao Yang. (Taiwan)
- 3911 **Serious Adverse Events with High-cost Drugs Accessed Through Litigation in Brazil**
Ricardo Eccard da Silva, Elisângela da Costa Lima, Maria Rita C Novaes, Claudia Garcia Serpa Osorio-de-Castro. (Brazil)
- 3944 **Citizenship Status and the Prevalence, Treatment, and Control of Cardiovascular Disease Risk Factors in United States, 2011-2016**
Jenny S Guadamuz, Ramon Durazo-Arvizu, Martha L Daviglus, Gregory S. Calip, Edith A. Nutescu, Dima M Qato. (United States)
- 3950 **Impact of Branded Generics on the Price of Anti-dementia Products in South Africa**
Ilse Truter. (South Africa)
- 3986 **Unblocking the Barriers of Access to Direct-acting Antiviral-based Hepatitis C Treatment in China: Lessons Learnt from Tianjin City**
Peiwen Zhang, Ran Guo, Jun Lian, Mengjia Zhi, Chengzhen Lu, Weishen Wu, Lihong Wang, Polin Chan, Zhongdan Chen, Jing Sun, Yuanli Liu. (China)
- 4062 **Medication Calculation Errors with Moderate, Severe and Fatal Patient Outcomes: Findings from the Norwegian Incident Reporting System**
Alma Mulac, Katja Taxis, Ellen Hagesæther, Anne Gerd Granas. (Norway)
- 4209 **Utilization and Expenses of Traditional Chinese Patent Medicines in Cancer Treatment: A Retrospective Study on Outpatients' Prescriptions**
Erdan Luo, Tianqi Zhang, Ying Bian. (Macao)
- 4254 **Real World Data to Identify Target Population for New CAR-T Therapies**
Valeria Belleudi, Francesco Trotta, Filomena Fortinguerra, Francesca Romana Poggi, Odoardo Olimpieri, Enrica Santelli, Ilaria Cozzi, Paola Michelozzi, Antonio Addis. (Italy)
- 4394 **The Rise and Fall of Prescription Fentanyl**
Shelley A. Jazowski, Stephen W. Patrick, Stacie B. Dusetzina. (United States)
- 4424 **Development and Testing of a Digital Observational Tool to Monitor Bar Code Medication Administration**
Alma Mulac, Rune Kristiansen, Synne Margrethe Nielsen, Yvonne Andersson, Sandra Rut Eikeland, Katja Taxis, Ellen Hagesæther, Anne Gerd Granas. (Norway)
- 4454 **Accelerated vs Regular Approval, Differences in Study Characteristics of Lung Cancer Treatments Approved by the US Food and Drug Administration**
Tatiane Ribeiro, Lewis Buss, Sanni Ali, Moacyr Nobre. (Brazil)

Poster Sessions

- 4490 **Association of Formulary Exclusions and Restrictions for Opioid Alternatives with Opioid Prescribing Among Medicare Beneficiaries**
Tanvi Rao, Zippora Kiptanui, Paul Dowell, Corey Triebwasser, G. Caleb Alexander, Ilene Harris. (United States)
- 4563 **Triptans-utilization Study for Regulatory Action on Medication-overuse Headache: Using Nation-wide Claim Database in Japan**
Sono Sawada, Haruka Shida, Kazuhiro Kajiyama, Mikiko Kubo, Yoko Takaashi, Chieko Ishiguro, Yoshiaki Uyama. (Japan)
- 4734 **Comparing Opioid Regulations Globally Across Regions with Different Levels of Opioid Utilisation**
Teng-Chou Chen, Björn Wettermark, Douglas Steinke, Gillian Caughey, Mina Tadrous, Veronika Wirtz, Li-Chia Chen. (United Kingdom)
- 4846 **Over 2000 Seniors Initiate Second-line Osteoporosis Pharmacotherapy Monthly in Ontario - Impact of Drug Policy Change and Call for Research**
Natalia Konstantelos, Nancy He, Kaley N Hayes, Suzanne M Cadarette. (Canada)
- 4883 **Impact of Meningioma Risk Minimization Campaign on Cyproterone Acetate Use in France**
Camille Morival, Marine Penichon, Clément Mathieu, Natapy Attoumi, Louis Letinier, Amandine Gouverneur, Antoine Pariente, Julien Bezin. (France)
- 4892 **Ecuador's Administrative Data Sources for Drug Utilization Research**
Mónica Tarapues, Carlos Durán, Belén Mena, Patricia Granja, Lisiane Leal, Monique Elseviers, Luciane Cruz. (Ecuador)
- 4990 **Ondansetron in Pregnancy: Patterns of Usage and Characteristics of Patients in UK General Practice**
Jim Slattery, Hedvig Nordeng. (Netherlands)

- 5014 **Key Evidence Supporting Prescription Opioids Approved by the U.S. Food and Drug Administration, 1997-2018**
James Heyward, Thomas J. Moore, Jennifer Chen, Kristin Meek, Peter Lurie, Caleb Alexander. (United States)
- 5040 **Pain Management Curricula within Health Professional Schools in the United States: A Landscape Analysis**
James Heyward, Beth Hogans, Jacob Christopher, Caleb Alexander. (United States)
- 5058 **Drug Use Research in Peru: Is Real-world Data Available?**
Yesenia Rodríguez, Maribel Salas, Lisiane Leal, Monique Monique, Luciane Cruz Lopes. (Peru)
- 5118 **Data Sources for Health Care Decision Making in Mexico: Challenges and Strength (Mexican Working Group on DUR)**
Diana Gomez, Svetlana Doubova, Anahí Dreser Mansilla, Juan Carlos Sanchez Salgado, Lucila Castro Pastrana, Yared Santa Ana Tellez, Elena Ibarra Cazares, Isabel Hernández Lira, Lisiane Leal, Maribel Salas, Monique Elseviers, Luciane Cruz Lopes. (Mexico)

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- 44 **Access to Insulin; a Success Story from the Sudan**
Isam Eldin Mustafa. (Sudan)
- 2329 **Pattern and Risks Perception of Medical Drugs Use Among Adults in Rural and Urban Communities, Southwest, Nigeria**
Waheed Adedeji, David M Dairo, Patrick Nguku, Fatai A Fehintola. (Nigeria)
- 2330 **Real - World Data Analysis of Potential Drug - Drug Interactions in Greek Community Pharmacies**
Georgios Poulentzas, Panagiotis Nikolaos Lalagkas, Lampros Tsiolis, Dimitra Hadjipavlou - Litina, Eleftherios Berberoglou, Antonios Douros, Christos Kontogiorgis, Theodoros Constantinides. (Greece)

- 2343 **Women are Started on a Lower Daily Dose of Metoprolol Than Men Irrespective of Dose Recommendations**
Linda C. Hendriksen, Paul D. van der Linden, Katia M. Verhamme, Bruno H. Stricker, Loes E. Visser. (Netherlands)
- 2397 **The Association Between Dental Opioid Prescription Characteristics and the Risk of Long-term Use and Overdose**
Tonya Campbell, Diana Martins, Mina Tadrous, David Juurlink, J. Michael Paterson, Muhammad Mamdani, David Mock, Tara Gomes. (Canada)
- 2423 **Psychotropic Medication Use in Former ICU Patients with Mental Health Problems: A Prospective Observational Follow-up Study**
Debbie G Janssen, Joep Jonker, Diederik van Dijk, Eibert R Heerdink, Toine C Egberts, Arjen J Slooter. (Netherlands)
- 2513 **Pain Severity and Analgesics Use in the Community-dwelling Older Population. A Drug Utilization Study from Germany**
Thi N Nguyen, Dana C Laetsch, Li-Ju Chen, Walter E Haefeli, Andreas D Meid, Hermann Brenner, Ben Schöttker. (Germany)
- 3719 **St. John's Wort: Utilization During Pregnancy and Pregnancy Outcomes**
Wiebke Schaefer, Nadine Wentzell, Ulrike Haug. (Germany)
- 3732 **Antidepressant Use Among Adults Patients in Primary Care in Brazil: Results of a National Survey**
Natalia P Torres, Juliana Alvares Teodoro, Augusto Afonso Junior, Francisco A Acurcio. (Brazil)
- 3748 **Variations in Long-term Opioid Use Definitions in Observational Research: A Systematic Review of Studies Using Routinely Collected Data**
Juliana de Oliveira Costa, Claudia Bruno, Navya Baranwal, Sallie-Anne Pearson. (Australia)
- 3819 **Biologic Use and Persistence for Crohn's Disease After Intestinal Resection in the United States 2002-2018**
Joehl T. Nguyen, Edward L Barnes, Swetha Srinivasan, Alan C. Kinlaw. (United States)
- 3865 **Are Acridinium and Acridinium/formoterol Used According to Their Approved Indication in Europe? Results of a Multicountry Drug Utilization Postauthorization Safety Study**
Elena Rivero-Ferrer, Anna Julia Witzleb, Morten Olesen, Estel Plana, Jaume Aguado, Nuria Saigi-Morgui, Annalisa Rubino, Sami Z Daoud, Alejandra Lei, Susana Perez-Gutthann, Tania Schink, Nina S Kristiansen, Anton Pottegård, Cristina Rebordosa. (Spain)
- 3879 **Trends in First Opioid Prescribing in More Than 600000 Opioid-naïve and Cancer Free Patients in Sweden - Drugs, Doses, and Diagnoses**
Carola Bardage, Maria Grünewald, Paulina Tuvendal, Rickard Ljung. (Sweden)
- 4001 **Prevalence of Chronic Drug Use in Pediatrics: Comprehensive Overview Based on German Claims Data**
Oliver Scholle, Antje Neubert, Oliver Riedel, Irmgard Toni, Ulrike Haug. (Germany)
- 4008 **Feasibility of Studying the Use of Tissue-agnostic Cancer Drugs in Population-based European Health Databases**
Xabier Garcia de Albeniz, Nuria Riera Guardia, Lia Gutierrez, Shahram Bahmanyar, Patrick Blin, Cécile Droz, Miriam Heinig, Marie Linder, Nicholas Moore, Renate Schulze-Rath, Janet Sultana, Gianluca Trifirò, Wei Wei Zhang, Jihong Zong. (Spain)
- 4079 **Patterns and Trends of Idarucizumab Use in an Italian Region: A Probabilistic Record-linkage Approach in a Real-life Setting**
Niccolò Lombardi, Valentina Brilli, Giada Crescioli, Alessandra Bettiol, Ippazio Cosimo Antonazzo, Giampiero Mazzaglia, Stefano Fumagalli, Guido Mannaioni, Alfredo Vannacci, Rosa Gini. (Italy)

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- 4096 **Dispensing Practices of Antibiotics by Community Pharmacies in Two Districts of Nepal**
Nisha Jha, Sunil Shrestha, Pathiyil Ravi Shankar. (Nepal)
- 4151 **Statin Use and Melanoma Recurrence**
Chrystelle Kiang, Anne Fia Grann, Uffe Heide-Jørgensen, Thomas P Ahern, Timothy L Lash, Henrik Toft Sørensen, Deirdre P Cronin-Fenton. (United States)
- 4188 **Polypharmacy at the Time of Opioid Overdose in Older Adults on Long-term Opioid Therapy**
Nazleen F. Khan, Katsiaryna Bykov, Joshua J. Gagne. (United States)
- 4194 **Effects on Seizure Activity of Co-prescribing Anti-epileptic Drugs and Antidepressant Medications Among African Americans with Epilepsy**
Courtney L Schlusser, Regine Haardoerfer, Nancy J. Thompson. (United States)
- 4198 **Cutaneous Adverse Drug Reactions to Antiretroviral Therapy Among HIV-infected Patients in a Nigerian Teaching Hospital**
Abdulwasiiu A Busari, Kazeem A Oshikoya, Divine-Favour C Imoh, Ibrahim A Oreagba. (Nigeria)
- 4240 **(In) appropriate LAMA Prescribing in Asthma Patients: A Cohort Analysis (the Alpaca Study)**
Christina Hoeve, Esme Baan, Maria de Ridder, Leis Demoen, Lies Lahousse, Guy Brusselle, Katia Verhamme. (Netherlands)
- 4265 **Identification of Clinical Cases to Educate Pharmacists on Medication-related Problems Leading to Hospital Readmissions After Discharge**
Selma En-nasery - de Heer, Elie B Uitvlugt, Patricia M van den Bemt, Bart J van den Bemt, Pierre M Bet, Eleonora L Swart, Fatma Karapinar, Jacqueline G Hugtenburg. (Netherlands)
- 4281 **Impact of Medication Adherence on Mortality and Cardiovascular Morbidity After Acute Coronary Syndrome: Population-based Cohort Study**
Gerard Sotorra-Figuerola, Dan Ouchi Vernet, Rosa Morros, Maria Giner-Soriano. (Spain)
- 4293 **Evidence Based Practice in Supplying of Over the Counter Medicines in Community Pharmacies. A Mixed Methods Study**
Nada Alobaid, Hind Aboheimed, Areej Alhumsi, Ghada Aboheimed, Nouf Aloudah, Noura Aboheimed. (San Marino)
- 4408 **Data Sources Publicly Available in Brazil for Drug Utilization Research**
Lisiane F Leal, Claudia G Osorio-de-Castro, Felipe Ferre, Ivan R Zimmermann, Daniel M Mota, Izabela Fulone, Marta M Fonteles, Andre O Baldoni, Monique Elseviers, Luciane C Lopes. (Canada)
- 4425 **Assessing the Feasibility of Evaluating Tacrolimus Use After Solid Organ Transplantation in Sentinel Distributed Database**
Mingfeng Zhang, Sarah Dutcher, Monique Falconer, Nicole Haug, Zhong Wang, Lockwood Taylor, Andrew Petrone, Sheryl Kluberg, Justin Bohn. (United States)
- 4437 **The Prevalence of Polypharmacy in the Elderly Population: A Multi-country Database Study in Europe**
Paola Nasuti, Marion Bennie, Katja Taxis, Shruti Menon, Julien Trehony, Laurence Sophie Jouaville Abrouk, Monique Elseviers, Elisabetta Poluzzi, Catherina Sermet, Sean MacBride Stewart, Ingrid Schubert. (United Kingdom)
- 4463 **Instruments to Measure Medication Literacy: A Scoping Review**
Lais L Pantuzza, Elizabeth do Nascimento, Stephanie F Botelho, Maria Auxiliadora P Martins, Adriano M Reis. (Brazil)

4512 **Defining Potential Exposure Periods from Prescription Medical Records of Nitrates Taken on an As-needed Basis**

Anthony P. Nunes, Andrew Stewart, Alankar Gupta, Thomas McGraw, Jennifer Song, John D Seeger. (United States)

4521 **Switching of Second Generation Antipsychotics in Patients with Severe Mental Disorders: A Cohort Study**

Izabela Fulone, Marcus Tolentino Silva, Luciane Cruz Lopes. (Brazil)

4542 **Mapping for Pre-existing Large-scale Observational Databases for Acute Coronary Syndrome in China**

Meng Su, Fuchun Li, Shusen Liu. (China)

4547 **A Scoping Review on Users of Medical Cannabis Against Chronic Non Cancer Pain**

Edeltraut Kröger, Daniela Furrer, Martine Marcotte, Nathalie Jauvin, Michele Aubin, Richard Bélanger, Guillaume Foldes-Busque, Mark Ware, Pierre Pluye, Clermont E Dionne. (Canada)

4565 **Evaluating the Performance of a Novel Urine-based Point-of-care Assay for Assessing Prep Adherence for HIV Prevention**

Randy M Stalter, Jared M Baeten, Deborah Donnell, Matthew A Spinelli, David V Glidden, Warren C Rodrigues, Guohong Wang, Michael Vincent, Nelly Mugo, Andrew Mujugira, Mark A Marzinke, Craig Hendrix, Monica Gandhi. (United States)

4704 **Acceptance of Real World Data Use in Evidence-based Medicine or Decision Making by Committee Members Affiliated with the Saudi Food and Drug Authority**

Fawaz Alharbi, Atheer Aldayel, Adel Alrwisan. (Saudi Arabia)



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- 4710 **Assessing the Feasibility of Leveraging Healthcare Databases to Conduct Cross-national Comparisons of Opioid Utilisation**
Teng-Chou Chen, Björn Wettermark, Douglas Steinke, Gillian Caughey, Mina Tadrous, Veronika Wirtz, Li-Chia Chen. (United Kingdom)
- 4798 **Non Antibiotic Medication Use in Children in Indonesia**
Jarir At Thobari, Cahya Dewi Satria, Yohanes Ridora, Jullie Bines, Yati Soenarto. (Indonesia)
- 4845 **Linking Regional Administrative Data with an Hospital Pathology Registry in Italy to Describe First-line Pharmacotherapy of Non-resectable Non-small Cell Lung Cancer in 2009-2017**
Andrea Spini, Giuseppe Roberto, Cristiana Bellan, Alessandra Pascucci, Pietro Rosellini, Adele Caldarella, Alessandro Barchielli, Sandra Donnini, Folco Furiesi, Lorenzo Leoncini, Silvano Giorgi, Claudia Bartolini, Marco Zappa, Marina Ziche, Francesco Salvo and Rosa Gini. (Italy)
- 4849 **Drug Utilization Study of the Medicinal Combination Product Conjugated Oestrogens/bazedoxifene in the European Union**
Dorothea von Bredow, Margarita Shlaen, Vera Frajzyngier, Nikolaus Kolb, Barbara Thun, Leo Russo, Jacco Keja. (Germany)
- 4870 **Outpatient Antibiotic Use in Chinese Pregnant Women**
Houyu Zhao, Jiaming Bian, Siyan Zhan. (China)
- 4896 **Characterizing Concurrent Use of Gabapentin with Opioid Analgesics Among Kentucky Residents with Long-term Opioid Prescriptions, 2018**
GYeon Oh, Svetla Slavova, Patricia R. Freeman. (United States)
- 5012 **Persistence with Teriparatide Treatment in Osteoporotic Patients: A Population-based Study Using Italian Regional Databases**
Andrealuna Ucciero, Andrea Sarro, Alessandro Pecere, Francesco Barone-Adesi. (Italy)
- 5028 **Real World Use of Opioids in COPD Patients**
Katia Verhamme, Marie Clyncke, Lies Lahousse, Esme Baan, Guy Brusselle. (Netherlands)
- 5037 **Quality of Life in Treatment-experienced Multiple Myeloma Patients: A Comparative Analysis of Therapeutic Regimens**
Jéssica S Malta, Paula L Drummond, Lívia P Silveira, Naiane L Costa, Taisa R Machado, Roberta M Santos, Adriano M Reis, Cristiane A Pádua. (Brazil)
- 5050 **Adherence to Immunomodulatory Drugs in Brazilian Patients with Multiple Myeloma**
Lívia Pena Silveira, Paula Lana de Miranda Drummond, Jéssica Soares Malta, Naiane Lima Costa, Roberta Márcia Marques dos Santos, Taísa Roberta Lopes Machado, Adriano Max Moreira Reis, Cristiane Aparecida Menezes de Pádua. (Brazil)
- 5071 **Effect of an Educational Program on the Medication Adherence in Adult Patients at Transition of Care**
Jimmy Reyes, Carolina Bobadilla, Carlos Silva, Natalia Carrillo, Cristóbal Gutiérrez, Tamara Sandoval, Marcela Jirón. (Chile)
- 5160 **Drug Use During Pregnancy According Risk Classification and Associated Factors**
Caroline T de Castro, Débora B Costa, Djanilson B dos Santos. (Brazil)

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- 40 **A Retrospective Audit of the Management of Childhood Acute Asthma Exacerbation in Children: Adherence to Global Treatment Guidelines**
Kazeem Adeola Oshikoya, Ibrahim Abayomi Ogunyinka, Shallom Ese Imuzie. (Nigeria)
- 119 **Potentially Inappropriate Psychotropic Medications Use Among Older Adults with Psychiatric Disorders in the Jazan Region, Saudi Arabia**
Abdulkarim M. Meraya, Otilia J Banji. (Saudi Arabia)
- 2367 **Disposal of Leftover Medicines: Prevalence and Practices Among the Rural Population of Kerala**
Jose J Kochuparambil, Akshay Nidha, Aleena Issac. (India)
- 2398 **Trends in Acid Suppressant Drug Prescriptions in Primary Care in the United Kingdom**
Devin Abrahami, Emily Gibson McDonald, Mireille Schnitzer, Laurent Azoulay. (Canada)
- 2402 **Utilization of Hydroxyprogesterone During the 2nd or/and 3rd Trimester Among Pregnancies with Live Birth Deliveries in the Sentinel Distributed Databases**
Huei-Ting Tsai, Mayura Shinde, Austin Cosgrove, Jie Li, Christina Chang, Christine P Nguyen, Corinne M Woods, Joy Kolonoski, Tiffany Siu Woodworth, David Moeny. (United States)
- 2490 **Comparison of a New Three-item Self-reported Measure of Adherence to Medication with Pharmacy Claims Data**
Julie C Lauffenburger, Constance P Fontanet, Thomas Isaac, Chandrasekar Gopalakrishnan, Thomas D Sequist, Joshua J Gagne, Cynthia A Jackevicius, Michael A Fischer, Daniel H Solomon, Niteesh K Choudhry. (United States)

- 2517 **Almost Half of Seniors Initiating Oral Bisphosphonate Therapy are Exposed for 3 or More Years - Understanding the Benefits and Harms of Prolonged Therapy is Needed**
Kaleen N Hayes, Kevin Brown, Angela Cheung, David Juurlink, Nancy He, Suzanne M Cadarette. (Canada)
- 2520 **Anti-hypertensive Drug Prescribing Pattern, Adherence to Guidelines and Blood Pressure Control at a Teaching Hospital in Ghana**
Mark Amankwa Harrison, Kwame O Buabeng, Afia F Marfo, Florence A Nkansah, Franklin Acheampong, Godwin Gulbi, Daniel K Arhinful, Daniel N Ankrah. (Ghana)
- 2543 **Community Pharmacy Practice Evaluation in the United Arab Emirates Using Simulated Patients with Common Cold**
Subish Palaian, Muaed Al Omar, Nageeb Hassan, Dina Mourad, Waad Ahmed, Arig Ewida. (United Arab Emirates)
- 2603 **Antihypertensive Polytherapy in Australia: Prevalence of Inappropriate Combinations, 2013-2018**
Michael O Falster, Nicholas A Buckley, David Brieger, Sallie-Anne Pearson. (Australia)
- 2604 **Long-term Trajectories of Medicine Use Among Older Adults Experiencing Polypharmacy in Australia**
Michael O Falster, Rayan Charrier, Sallie-Anne Pearson, Nicholas Buckley, Benjamin Daniels. (Australia)
- 3740 **Quality of Buprenorphine Care for Opioid Use Disorder**
Kelly E Anderson, Julia Eckstein, Christine E Chaisson, Sarah H Scholle, Lauren Niles, Sydney M Dy, Brendan Saloner, G Caleb Alexander. (United States)
- 3763 **Patterns of Direct-acting Antivirals (DAAs) Use for Hepatitis C: A Population-based Cohort Study in France**
Anne Bénard-Larivière, Elodie Pambrun, Elisabeth Polard, Pernelle Noize, Antoine Pariente. (France)

Poster Sessions

- 3803 **Assessment of Drug Utilisation Evaluation of Anti Retroviral Therapy and Medication Adherence Behaviour of Patients Receiving Medication at a District Hospital in South India**
Adepu Ramesh, Sonali Bendeskar, Akhila Gandikota, Divya Ramulakollu. (India)
- 3849 **Medication Errors: A Perspective from Four Hospitals in Rural Kenya**
Perpetua Karanja. (Kenya)
- 3878 **The Opioid Epidemic in the Netherlands, Causes and Consequences**
Ajda Bedene, Eveline L. van Dorp, Tariq Faquih, Suzanna C. Cannegieter, Dennis O. Mook-Kanamori, Marieke Niesters, Monique van Velzen, Maaïke G. Gademan, Frits R. Rosendaal, Marcel L. Bouvy, Albert Dahan, Willem M. Lijfering. (Netherlands)
- 3936 **Prescribed Daily Doses of Anti-dementia Drugs in South Africa: A Database Analysis**
Ilse Truter. (South Africa)
- 3941 **A Descriptive Study of the Clinical Experiences of Healthcare Providers with the Use and Quality of Oxytocin Injection Across the Six Geo-political Zones of Nigeria**
Chioma S Ejekam, Chimezie Anyakora, Florence Nyangara, Jude Nwokike. (Nigeria)
- 3954 **Anti-diabetic Drug Utilization Knowledge and Glycemic Index Control in Patients with Uncontrolled Diabetes Mellitus**
Naima Ahmed Tamanna. (Bangladesh)
- 4046 **Titration: Where is the Real-world Evidence?**
Aisling R Caffrey, Eric P Borrelli. (United States)
- 4048 **Fracture Rates in Patients Discontinuing Alendronate Treatment in Real-life: A Nationwide Cohort Study**
Bianka Darvalics, Anne Sophie Sølling, Diana H. Christensen, Torben Harsløf, Reimar W. Thomsen, Bente Langdahl. (Denmark)



- 4049 **Inappropriate Empiric Treatment with Antibiotics in a Tertiary Hospital, in Kenya**
Zaïetuni A. Mulaa, Maureen Nerima, Hilda K. Daywa. (Kenya)
- 4189 **Valproate Prescribing Practices Before and After Implementation of Risk Minimisation Measures (RMMs) in 5 European Countries**
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Sudhir Venkatesan, Emily Wilkes, Natasha Pillai, Moshe Havilio, Ray Griner. (United Kingdom)
- 4376 **Assessment of the Global Landscape of Real World Databases**
Bayarmagnai Munkhjargal, Ayo Adeyemi, Geetanjali Banerjee, Nicole Tsao, Angela Paradis, Charles Makin. (United States)

Poster Sessions

- 4415 **Performance Assessment of Machine Learning and Logistic Regression in Identifying Risk Factors for Diabetic Ketoacidosis in Adults with Type 1 Diabetes Using Electronic Health Records Data**
Lin Li, Chuang-Chung Lee, Chuntao Wu, Fang Liz Zhou, Cliona Molony, Zoran Doder, Evgeny Zalmover, Kristen Sharma, Juhaeri Juhaeri. (United States)
- 4423 **Training the Machine: Deployment of Federated Learning Algorithms for Machine Learning Models Across Electronic Health Record Networks**
Jon Ruffin, Yunlong Wang, Christina Mack. (United States)
- 4545 **Real World Data Utilization in Adverse Drug Reactions (ADRs) Information in China**
Yan Wang, Yuyao Huang, Shusen Liu. (China)
- 4597 **Building an Active Drug Safety Surveillance System in Taiwan: An Adaptation of the U.S. Sentinel System**
Chi-Chuan Wang, Fang-Ju Lin, Kelly Huang, Huang-Tz Ou, Chien-Ning Hsu. (Taiwan)
- 4623 **Approaches to Evaluate the Interchangeability of Laboratory Test Results in Real World Data to Derive Prognostic Scores**
Paul Dillon, Phil Arnold, Nayan Chaudhary, Evelyn M Flahavan, Anne-Marie Meyer, Jessica Davies. (Switzerland)
- 4658 **Standardisation of Disease Registry Data to the OMOP Common Data Model: The Pulmonary Hypertension Experience - Challenges and Achievements**
Patricia Biedermann, Alexander Davydov, Alexandra Orlova, Rose Ong, Graham Wetherill, Eva-Maria Didden. (Switzerland)
- 4740 **Challenges in Using Electronic Medical Records Datasets to Describe Patients with Porto-pulmonary Hypertension**
Sandrine Leroy, Eva-Maria Didden, Wassim Fares, Loïc Perchenet, Erica Voss, Daniel Rosenberg. (Switzerland)
- 4884 **Explaining the Inexplicable: Irregularities in Electronic Health Record Derived Data**
Megan Delgado, Sofia Dard, Michele Jonsson Funk, Timothy Carey. (United States)
- 4897 **Mapping National Drug Codes (NDCs) and Drug Concept Unique Identifiers (RxCUIs) to the Rx-risk Comorbidity Index Using RxNorm**
Jared J Vanderbleek, Justin K Owensby, Jeffrey R Curtis, Huifeng Yun. (United States)
- 4919 **A Novel Artificial Intelligence Algorithm of Synthetic Sampling for Boosting Accurate Machine Learning Prediction of Infrequent Health Outcomes**
Gang Fang, Izabela Annis. (United States)
- 4920 **Identifying Predictors of a Composite Cardiovascular Outcome Among Diabetes Patients Using Machine Learning**
Zeynep Icten, Joseph Menzin. (United States)
- 4988 **Machine Learning Applications Using Real-world Data: A Literature Review**
Nicholas Adair, Zeynep Icten, Mark Friedman, Joseph Menzin. (United States)
- 5004 **Agreement Between ICD Mortality Codes and Drug Mentions for Opioids in the Drug-involved Mortality Database (2010-2017)**
Richard S Swain, Sara Karami, Celeste Mallama. (United States)
- 5064 **Continuity and Completeness of Electronic Health Records: Findings from Three Delivery Systems in Taiwan**
Chien-Ning Hsu, Chi-Chuan Wang, Fang-Ju Lin, Huang-Tz Ou, Kelly Huang, Sengwee Toh. (Taiwan)

- 5077 **Challenges and Opportunities to Use Secondary Data in Country Level for Promoting Evidence-informed Policy and Management Decisions in Healthcare: Case Study in Chile**

Felipe D Vera, Juan Roldan Roldan, Dino Sepulveda, Lisiane Leal, Maribel Salas, Monique Elseviers, Luciane Cruz Lopes. (United Kingdom)

- 5080 **Predicting Gout Flares Using Electronic Medical Records**

Maranda Russell, Sujin Kim, Nayef Kazzaz. (United States)

- 5122 **The Disproportionate Importance of Data Quality and Feature Engineering: Demonstrations with Machine Learning Examples in a Surgical ICU Setting**

Andy Wilson, Jenny Alderden, Amanda R Shields, Kathryn Drake. (United States)

- 5127 **Studying Uninsured Americans Through the Lens of Survey Data and Electronic Health Records**

Dawn Albright, Elizabeth C Dabrowski, Nicolle Gatto, Liza R. Gibbs, Dana Y Teltsch. (United States)

- 5136 **Insurance Journeys: Quantifying Transitions Through Insurance Types**

Dawn Albright, Elizabeth C. Dabrowski, Nicolle M. Gatto, Liza R. Gibbs, Dana Y. Teltsch. (United States)

- 5159 **Data Transparency for Building a Stronger Healthcare Ecosystem: A Case Study from Argentina Health System Administrative Databases**

Marrtin Cañas, Gustavo H Marín, Raquel Herrera Comoglio, Martin A Urtasun, Lisiane Leal, Maribel Salas, Monique Elseviers, Luciane Cruz Lopes. (Argentina)

Medical Devices

- 2431 **Digital Breast Tomosynthesis in Diagnosis and Screening of Breast Cancer: A Systematic Review**

Lu Xu, Baoqi Zeng, Siyan Zhan, Feng Sun. (China)

- 2470 **Effect of Several Optimization Strategies in a Clinical Decision Support System for Drug-drug Interactions on Alert Burden and Alert Acceptance**

Katoo M Muylle, Kristof Gentens, Alain Dupont, Pieter Cornu. (Belgium)

- 2578 **Incidence of Ocular Adverse Events Associated with Mometasone Implants Among Patients with Nasal Polyposis**

Efe Eworuke, Emmanuel Ojo, Miya Paterniti, Emily C Welch, Mayura Shinde. (United States)

- 3693 **Long-term Survival and Healthcare Utilization Following Deep Brain Stimulation for Parkinson's Disease in Ontario, Canada**

James A. Crispo, Melody Lam, Britney Le, Salimah Z. Shariff, Dominique R. Ansell, Melanie Squarzolo, Danielle Ouellette, Dylan P. Thibault, Connie Marras, Allison W. Willis, Dallas Seitz. (Canada)

- 3712 **The Risk of Myocardial Infarction and Venous Thromboembolism After Partial or Total Knee Arthroplasty: A Self Controlled Case Series**

Danielle E Robinson, Albert Prats-Urbe, Klara Berencsi, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)

- 3817 **Risk of Mortality Up to 90 Days Following Uncemented vs Cemented Total Hip Arthroplasty for Primary Osteoarthritis. A Cohort Study Based on the Nordic Arthroplasty Register Association Data**

Alma Pedersen, Aurelie Mailhac, Søren Overgaard, Anne Garland, Ove Furnes, Stein Atle Lie, Anne Marie Fenstad, Cecilia Rogmark, Johan N. Karrholm, Ola Rolfson, Jaason Haapakoski, Antti Eskelinen, Keijo T. Mäkelä, Nils P. Hailer. (Denmark)

- 3913 **Real-world Use of Oscillating Positive Expiratory Pressure Devices for Chronic Obstructive Pulmonary Disease or Chronic Bronchitis: A Retrospective Study of Hospital Claims Linked to Medical and Prescription Claims**

Keiko Wada, Yi Wang, Jason Suggett, Jenny Tse, Vladimir Kushnarev, Dominic Coppolo, Aimee Near. (United States)

Poster Sessions



4083 **Risk of Heart Failure in Patients Undergoing Arthroplasties of the Hip**

Jennifer Wood, Zhongyuan Wei, Hélène Hardy, Anna Wallace, Richard Beech, Stephen Marcello. (United States)

4283 **Evaluating the Use of Social Media as a Recruitment Strategy for Women Participating in Mobile Medical Device Research: Experiences and Participant Engagement**

Pauline De Corte, Clare Barnett, Christoph Wenger. (Germany)

4338 **Comparison of Data Collected via Cardiac Device Registry versus Electronic Health Records**

Katherine Weiner, Joao Monteiro, Kara Southall, Andy Iverson, Jove Graham, Edgar P Simard. (United States)

4385 **Characterizing Medical Device Exposure in Observational Studies: Role of the Unique Device Identifier (UDI)**

Edgar Simard, Christina Mack, Shumin Zhang, Jackie Elkin, Joseph Drozda. (United States)

4549 **Real-world Performance of Magnetically Controlled Growing Rods in Early Onset Scoliosis**

Lukas G Keil, Christina D Mack, Alysa B Nash, Joseph D Stone, James O Sanders, Craig R Louer. (United States)

4679 **Incidence and Risk Factors of Proximal Junction Failure After Multi-level Spinal Fusion in an Integrated Network Delivery Care Setting**

Zhenna Huang, Katherine Corso, Deepak Krishnan, Aatheep Gurubaran, Chantal Holy, John Pracyk. (United States)

4716 **Country-specific Preparation Practices for the Insertion of Intrauterine Devices: HCP-reported Insertion Procedures from the EURAS-LCS 12 Study**

Christine Hagemann, Anja Bauerfeind, Jens Lange, Klaas Heinemann. (Germany)

4732 **Risk Factors for Aseptic Loosening After Primary Total Knee Arthroplasty with Cemented Knee Implants**

Chantal E Holy, Juan Daccach, John Leopold, Bidusee Ray, Paul Coplan, Daniel Hoeffel, John Wright. (United States)

- 4743 **Heterogeneity of Patients Treated with Multi-planar Software-assisted External Fixation Systems - Analyses of Operative Complications**
Spence Reid, Chantal E Holy, Mollie Vanderkarr, Bidusee Ray, Abhishek S Chitnis, Charisse Sparks. (United States)
- 4755 **Assessment of the Risk and Economic Burden of Surgical Site Infection Following Colorectal Surgery Using a US Longitudinal Database: Is There a Role for Innovative Antimicrobial Wound Closure Technology to Reduce the Risk of Infection?**
David J Leaper, Chantal E Holy, Maureen Spencer, Abhishek S Chitnis, Andrew Hogan, George Wright, Brian P. Chen, Charles E Edmiston. (United States)
- 4764 **Evaluation of the Association Between 30-day Post-operative Infection Types and Change in Operation Room Time Among Patients Who Underwent Spinal Fusion Procedures**
Zhenna Huang, Katherine Corso, Chantal Holy, John Pracyk. (United States)
- 4770 **Evaluation of the Association Between 30-day Post-operative Infection and Change in Operation Room Time by Spinal Anatomy**
Katherine Corso, Zhenna Huang, Chantal Holy, John Pracyk. (United States)
- 4802 **Issues During the Insertion of Intrauterine Devices Reported in the EURAS-LCS12 Study**
Christine Hagemann, Anja Bauerfeind, Jens Lange, Klaas Heinemann. (Germany)
- 4898 **Changes in Healthcare Use and Cost Associated with Catheter Ablation Among Patients with Paroxysmal and Persistent Atrial Fibrillation**
Daniel Friedman, Michael Field, Motiur Rahman, Laura Goldstein, Qun Sha, Sidharth M, Rahul Khanna, Jonathan Piccini. (United States)
- 4903 **A Machine Learning Approach for Sentiment Analysis of Breast Implant Recipients Using Social Media Data**
Safa Saifudeen, Shimonee Shah, Paul Coplan, Jennifer Wood, Subhadeep Debnath, Shubham Gupta. (United States)
- 4926 **Long-term Healthcare Use and Cost Comparison Pre-and-post Ablation Treatment Among Patients with Heart Failure and Atrial Fibrillation**
Michael E. Field, Motiur Rahman, Laura Goldstein, Sonia Maccioni, Abhishek Srivastava, Rahul Khanna, Jonathan P. Piccini, Daniel J. Friedman. (United States)
- 4981 **A Methodology to Characterize Breast Implant Illness Using Social Media**
Shimonee Shah, Paul Coplan, Safa Saifudeen, Jennifer Wood, Subhadeep Debnath, Shubham Gupta. (United States)
- 4984 **Evaluation of Two Severity Scores and Three Comorbidity Measures in an Administrative Claims Database to Predict Outcomes After Treatment with Intramedullary Nailing in Femur Fractures**
Abhishek Chitnis, Bidusee Ray, Mollie Vanderkarr, Chantal Holy. (United States)
- 4993 **Discriminative Ability of Two Severity Scores and Three Comorbidity Measures in an Administrative Claims Database to Predict Outcomes After Treatment with Intramedullary Nailing in Tibial Fractures**
Abhishek Chitnis, Bidusee Ray, Mollie Vanderkarr, Chantal Holy. (United States)
- 5011 **Comparison of Discriminative Ability of Two Severity Scores and Three Comorbidity Measures in an Administrative Claims Database to Predict Outcomes After Treatment with Intramedullary Nailing in Humerus Fractures**
Abhishek Chitnis, Bidusee Ray, Mollie Vanderkarr, Chantal Holy. (United States)

Poster Sessions

- 5022 **Reoperations and Risk Factors After Intramedullary Nail Fixation of Tibial Fractures**
Abhishek Chitnis, Mollie Vanderkarr, Bidusee Ray, Chantal Holy, Suzanne Hughson, Michael Blauth. (United States)
- 5039 **New Injury Severity Score: Does It Independently Predict the Treatment with Intramedullary Nailing in Tibial Fractures?**
Abhishek Chitnis, Mollie Vanderkarr, Bidusee Ray, Chantal Holy, Zhenna Huang, Charisse Sparks. (United States)
- 5052 **Is a Superficial Infection an Independent Predictor for a Later Deep Incisional Infection in Total Knee Arthroplasty?**
Abhishek Chitnis, Deepak Krishnan, Chantal Holy, John Wright. (United States)
- 5065 **Overall Cancer Risk from Exposure to Cobalt Alloys in Orthopedic Implants or Cobalt in Occupational Settings: A Systematic Review and Meta-analysis of Published Epidemiologic Studies**
Shumin Zhang, Chantal E. Holy, Gary Eichenbaum, Laura E. Perkins, Laurence B. Katz, Jason R. Brown, Luca Orlandini, Gion Fessel, Behrooz Nasser-Aghbosh, Natalie S. Egnot, Meijia Zhou, Richard Beech, Stephen R. Marcello, Paul M. Coplan. (United States)
- 5067 **Medical Devices-induced Harm in Peruvian Patients**
Yesenia Rodríguez, Elisa Gálvez, Gisela Pecho. (Peru)
- 5103 **Using Social Media to Characterize Adverse Events: A Case Study of Breast Implant Illness**
Paul Coplan, Safa Saifudeen, Shimonee Shah, Jennifer Wood, Subhadeep Debnath, Jesse Berlin, Shubham Gupta. (United States)
- 5130 **Comorbidities and Complications Associated with Hernia Repair Using Surgical Mesh in the United States**
Qiheng Zhou, Christina DeFilippo Mack, Deb Casso, Susan A. Oliveria. (United States)

Methods in Pharmacoepidemiology » Analytical Methods - e.g., marginal structural models, instrumental variables, sensitivity analyses

- 2448 **Applying Sufficient-cause Principle to Estimate Risks of Adverse Events in the General Indicated Patient Population Should a New Drug is Used**
Chuntao Wu, Lin Li, Juhaeri Juhaeri. (United States)
- 2506 **A Weighting Method to Remove Bias from Within-subject Exposure Dependency in Case-crossover Studies**
Kiyoshi Kubota, Lan Kelly, Tsugumichi Sato, Nicole Pratt, Libby Roughead, Takuhiro Yamaguchi. (Japan)
- 2581 **Covariate Missingness, Complete Case Analysis, and Transportability, Oh My!**
Michael Webster-Clark, Jessie K. Edwards. (United States)
- 2609 **Using Multiple Random Index Dates for Each Patient Improves Precision of Prescription Durations Estimated with the Reverse Waiting Time Distribution**
Katrine Bødkegaard Nielsen, Randi Marie Selmer, Jesper Hallas, Lars Jøran Kjerpeseth, Anton Pottegård, Eva Skovlund, Henrik Støvring. (Denmark)
- 2673 **Differential Cancer Screening During Follow-up as a Source of Bias in Pharmacoepidemiology**
Sophie E Mayer, Jessie K Edwards, Jesper Hallas, Jennifer L Lund, Til Stürmer. (United States)
- 3700 **Analysing Patient Level Data from Norwegian Registries: Challenges and Considerations**
Sophie Graham, Dimitra Lambrelli, Anna Schultze, Robert Donaldson, Waleed Ghanima, Robert Carroll, Maria Ulvestad. (United Kingdom)

- 3875 **Comparing Inverse Probability of Treatment and Standardized Mortality Ratio Weights in a Small Sample Setting**
Leah J. McGrath, Alexander Breskin, Bradley Saul, Ying Yu, Michael Kelsh, Kara Kilpatrick, Carrie M. Nielson, M. Alan Brookhart. (United States)
- 3884 **Random Effects Modelling Compared to Logistic Regression for Treatment Effect Estimation in Medical Device Safety: A Simulation Study**
Mike Du, M Sanni Ali, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)
- 3971 **Random Effects Modelling vs Logistic Regression for the Inclusion of Surgeon Covariates in Propensity Scores for Medical Device Epidemiology: A Simulation Study**
Mike Du, M Sanni Ali, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)
- 3972 **The Impact of Including Surgeon Covariates in Propensity Score Estimation in Medical Device Epidemiology: A Simulation Study**
Mike Du, M Sanni Ali, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)
- 4038 **Estimation of Treatment Effects in Registry Data: Informative Patient Visits Require Careful Modeling**
Thomas P Debray, Massimiliano Copetti, Robert W Platt, Carl de Moor, Fabio Pellegrini. (Netherlands)
- 4050 **The Performance of Instrumental Variables in Medical Device Epidemiology: A Simulation Study of Non-normally Distributed Continuous Outcome Data Based on Real World Post-operative PROMs**
Albert Prats-Urbe, M Sanni Ali, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)
- 4109 **Replicating the Findings of a Medicare Study on Stroke, and Bleeding Risk in Patients Using NOACs for Atrial Fibrillation in the Sentinel System**
Marie C Bradley, Emily C Welch, David J Graham, Efe Eworuke, Rongmei Zhang, Elande Baro, Mayura Shinde. (United States)
- 4195 **A Marginal Structural Model to Evaluate the Association Between Statins and the Risk of Developing Hepatocellular Carcinoma in Patients with Diabetes**
Yi-Chun Yeh, Pei-Chun Chen, Yen-Yu Chen. (Taiwan)
- 4277 **Avoiding Time-related Biases: An Application of the Parametric g-formula to a Very Large German Healthcare Database**
Tammo Reinders, Brenda Bongaerts, Vanessa Didelez, Ulrike Haug, Oliver Kuss, Iris Pigeot, Wolfgang Rathmann, Bianca Kollhorst. (Germany)
- 4462 **Machine Learning for Causal Inference in a Realistic Prescribing Scenario**
Alexander Breskin, Paul N Zivich. (United States)
- 4483 **Trajectories of Care in Patients with Chronic Obstructive Pulmonary Disease**
Sandrine Henri, Ronald Herrera, Alain Vanasse, Amélie Forget, Lucie Blais. (Canada)
- 4501 **A Novel Approach to Quantitatively Synthesize Subgroups Findings from Multiple Trials**
Devon Boyne, Paul Arora, Darren Brenner. (Canada)
- 4580 **Using Patient-level Data from Electronic Health Records to Replicate the Control Arm of the IMblaze370 Trial in Metastatic Colorectal Cancer**
Michael T Bretscher, Marcus Lawrance, Shivani K Mhatre, Carsten Schröder, Christelle Lenain, Marta Pereira, Irmarié Reyes-Rivera. (Switzerland)

Poster Sessions

4622 **Using a Random Forest Model to Identify Demographic and Clinical Characteristics That Predict Pain within a Cohort of Rheumatoid Arthritis Patients in the US**

Harriet A Dickinson, Daniel C Gibbons, Jolyon Fairburn-Beech. (United Kingdom)

4708 **Simulation of Pharmacological Treatments for Metabolic Disorders**

David Bernotas. (United States)

4738 **Combining Primary Care Electronic Health Record Data from Multiple Sources: A Systematic Review of Observational Studies**

Daniel Dedman, Melissa Cabecinha, Rachael Williams, Stephen J Evans, Krishnan Bhaskaran, Ian J Douglas. (United Kingdom)

4856 **Evidence of Distinct Censoring Dynamics Across Treatment Groups and Impact on Censoring Weight Model Specification: The Example of Anticoagulation in Atrial Fibrillation**

Liliya Sinyavskaya, Alexis Matteau, Jason Robert Guertin, Mireille Schnitzer, Christel Renoux, Madeleine Durand. (Canada)

5005 **Development and Validation of a Prediction Model for 1-year Risk of Thromboembolism in Hemodialysis Patients with Atrial Fibrillation**

Sapna Rao, Abhijit V Kshirsagar, M Alan Brookhart, Alexander Keil, Laura Loehr, Michele Jonsson Funk, Charles Poole. (United States)

Methods in Pharmacoepidemiology » Clinical Trial Methodology - Including pragmatic trials, cluster/sub-analyses of RCTs

3945 **Frequency and Characteristics of Uncontrolled Long-term Extensions to Randomized Controlled Trials**

Ching-Yu Wang, Joan Gretenkord, John D Seeger, Kourtney J Davis, Michelle R Iannacone, Wei Zhou, Nancy Dreyer, Almut G Winterstein, Nancy Santanello, Barry Gertz, Jesse A Berlin. (United States)

4107 **Quantitative Bias Analysis for External Comparator Studies**

Christen M Gray, Fiona Grimson, Deborah Layton, Joseph Kim. (United Kingdom)

4356 **A Picture is Worth 1000 Words: Visual Tools to Guide Transport of Trial Results to Real-world Populations**

Jennifer L Lund, Michael A Webster-Clark, Til Sturmer, Daniel Westreich, Hanna K Sanoff, Alexander P Keil. (United States)

4537 **Contextualizing Background Safety Rates Using Comparable Historical Clinical Trials**

Hu Li, Antoniu Fantana, Matthew Connelly, Thomas S Hilzinger, Manas Singh. (United States)

Methods in Pharmacoepidemiology » Confounding/Bias - Methods to avoid bias and confounding, including confounder summary scores (e.g., propensity scores, disease risk scores)

77 **Caliper Considerations for Propensity Score Matching**

Elizabeth M Garry, Wesley Eddings, Aditya Rajan, Amanda R Patrick, Nicolle M Gatto. (United States)

2614 **Application of Quantitative Bias Analysis for Unmeasured Confounding in Pharmacoepidemiology**

Jeremy P Brown, Clémence Leyrat, Nicholas Galwey, Kevin Wing, Ian J Douglas. (United Kingdom)

2624 **The Impact of Immortal Time Bias and the Adjustment Using Modified Kaplan-Meier Method and Time-dependent Cox Proportional Hazard Model: A Case Study**

Satoshi Onozawa, Masanori Ito, Tomomi Kimura. (United States)



- 2659 **Multi-level Propensity Scores in Comparative Effectiveness Research on Medical Devices: A Pragmatic Example of Partial vs Total Knee Replacement Using National Joint Registry Data Compared to RCT Findings**

Albert Prats-Urbe, M Sanni Ali, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)

- 2669 **Addressing Treatment Implementation Bias in the Construction of High Dimensional Propensity Scores**

Nicolas H Thurin, Jérémy Jové, Patrick Blin, Magali Rouyer, Stéphanie Lamarque, Pauline Bosco-Levy, Nicholas Moore, Cécile Droz-Perroteau. (France)

- 3746 **Effect Estimation by a Boosted Doubly Robust Method**

Wenxi Yu, Greg Ridgeway, Sander Greenland, William Marder, William Finkle. (United States)

- 3756 **Adherence to Statin Therapy and the Use of Preventive Health Services: Cohort Study Using Claims Databases in Japan**

Tsugumichi Sato, Yumiko Wakana, Motoyoshi Akiyama, Haruna Hasegawa, Moriya Ogino, Kiyoshi Kubota. (Japan)

- 3861 **A Systematic Review of How Missing Data is Handled and Reported in Multi-database Pharmacoepidemiology**

Nicholas B Hunt, Helga Gardarsdottir, Marloes T Bazelier, Olaf H Klungel, Romin Pajouheshnia. (Netherlands)

- 3862 **The Performance of Different Machine Learning Algorithms for Data Driven Variable Selection and Propensity Score Estimation in the Presence of Multiple Confounders and Big Sample Size: A Simulation Study**

Yuchen Guo, M Sanni Ali, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)

- 3904 **A Neural-network Driven Longitudinal Propensity Score for Evaluation of Drug Treatment Effects**

Jeremy A Rassen. (United States)

- 3953 **Assessing Techniques for Quantifying the Impact of Bias Due to an Unmeasured Confounder**

Julie Barberio, Thomas P Ahern, Richard MacLehose, Lindsay J Collin, Deirdre Cronin-Fenton, Per Damkier, Henrik Toft Sørensen, Timothy L Lash. (United States)

- 3973 **Use of Sensitivity Analyses to Assess Uncontrolled Confounding in Observational, Head-to-head Pharmacoepidemiologic Studies: A Systematic Review**

Chase Latour, Charles Poole, Jessie Edwards, Til Stürmer, David Martin, Jennifer L Lund, Nahleen Lopez, Michele Jonsson Funk. (United States)

Poster Sessions

- 4021 **Approaches to Reduce the Immeasurable Time Bias in Cohort Studies: A Monte Carlo Simulation Study and Real-world Example**
In-Sun Oh, Han Eol Jeong, Hyesung Lee, Kristian B Filion, Ju-Young Shin. (Korea, Republic of)
- 4362 **Example of an Over-fitting Issue in a Logistic Regression Estimating a High-dimensional Propensity Score**
Caroline Foch, Michael Batech, Ulrike Gottwald-Hostalek, Patrice Verpillat, Emmanuelle Boutmy. (Germany)
- 4604 **Mapping Warfarin Exposure in the Clinical Practice Research Datalink (CPRD)**
Anneka Mitchell, Julia Snowball, Anita McGrogan. (United Kingdom)
- 4612 **The Use and Quality of Reporting of Propensity Score Methods in Multiple Sclerosis Literature**
Mohammad Ehsanul Karim, Fabio Pellegrini, Robert W Platt, Gabrielle Simoneau, Julie Rouette, Carl de Moor. (Canada)
- 4754 **Divide and Recombine Approaches for Propensity Score Matching in Huge Data: A Case Study Using the Brazilian 100M Cohort**
Gabriela L Borges, M Sanni Ali, Mauricio Barreto, Dandara Ramos, Liam Smeeth, Rosemeire L Fiaccone. (Brazil)
- 4833 **Propensity Score Approaches with Multilevel Data: A Simulation Study**
Gabriela L Borges, Marisleane Moreira, M Sanni Ali, Mauricio L. Barreto, Liam Smeeth, Rosemeire L Fiaccone. (Brazil)
- 4975 **Plasmode Simulation to Address Confounding Bias Due to Missing Data in a Large Electronic Health Records Dataset**
Svetlana Puzhko, Gillian Bartlett, Tibor Schuster. (Canada)
- 5013 **Discriminative Ability of New Injury Severity Score to Predict Outcomes After Fracture Repair Surgery**
Zhenna Huang, Deepak Krishnan, Chantal Holy, Mollie Vanderkarr, Sparks Charisse. (United States)
- 5082 **A Systematic Review of the Use of Propensity Scores in Published Observational Research**
Tiansheng Wang, Michael Webster-Clark, Robert James Glynn, Til Stürmer. (United States)
- 5111 **Development of the Claims-based Comorbidity Index for Cardiovascular Disease Patients**
Heejin Kim, Sangshin Park, Mi-Sook Kim, Young-Jin Ko, Nam-Kyong Choi. (Korea, Republic of)
- Methods in Pharmacoepidemiology »
 Measurement Methods - Validation methods to confirm data (including Patient Reported Outcomes development and validation);
 Methods to deal with missing data
- 63 **Treatment Duration Estimation Based on Claims vs Primary Care Prescriptions Data: An Analysis of Opioid Use in the Sidiap Database**
Junqing Xie, Gary Collins, Victoria Y Strauss, D. Prieto-Alhambra. (United Kingdom)
- 76 **Incidence Rates of Acute Exacerbations of COPD in US Claims Data Using ICD-9 and ICD-10**
Ashley Cole, Yunhao Liu, Kieran J Rothnie. (United States)
- 122 **The Impact of Refill Gaps on the Estimation of Persistence with Opioids Use**
Junqing Xie, Gary Collins, Victoria Y Strauss, D. Prieto-Alhambra. (United Kingdom)

- 2411 **The Positive Predictive Value of Hip Fracture Diagnoses and Surgical Procedure Codes in the Danish Multidisciplinary Hip Fracture Registry and the Danish National Patient Registry**
Thomas J Hjelholt, Nina M Edwards, Jeppe D Vesterager, Pia K Kristensen, Alma B Pedersen. (Denmark)
- 2464 **Identifying Valid Algorithms for Number of Chemotherapy Treatment Lines in the Danish National Patient Registry**
Signe Sørup, Bianka Darvalics, Jakob S Knudsen, Anne S Rasmussen, Cathrine F Hjorth, Søren V Vestergaard, Leo Russo, Dina Oksen, Emmanuelle Boutmy, Patrice Verpillat, Henrik T Sørensen, Mikael Rørth, Deirdre Cronin-Fenton. (Denmark)
- 2473 **Missing Data Analysis in Multi-center Studies When Access to Person-level Data is Restricted**
Qoua Her, Yury Vilks, Xiaojuan Li, Di Shu, Rui Wang, Jenna Wong, Mia Gallagher, Sengwee Toh. (United States)
- 2618 **Assessment of a Claims-based Osteonecrosis of the Jaw Algorithm in the United States**
Lauren Stevens, Leslie Spangler, Laura Yochum, Yan Ding, Florence Wang. (United States)
- 2629 **Validation of a US Health Insurance Claims-based Algorithm to Identify Acute Exacerbations of Chronic Obstructive Pulmonary Disease**
Douglas W Mapel, Susan R Sama, Douglas W Roblin, Melissa H Roberts, Priyanka J Bobbili, Wendy Y Cheng, Julia M Certa, Devi Sundaresan, Thomas S Whiting, Catherine Nguyen, Philippe Thompson-Leduc, Jennifer L Brown, Melissa K Van Dyke, Kieran J Rothnie and Mei Sheng Duh. (United States)
- 2637 **Intentional Self-harm Classification in Medicare: An Interrupted Time Series Analysis Comparing ICD-9 Definitions to Corresponding ICD-10 Definitions**
Richard S Swain, Dinci Pennap, Sandia Akhtar, Jiemin Liao, Yuqin Wei, Yuhui Feng, Michael Wernecke, Thomas MaCurdy, Jeffrey Kelman, Andrew Mosholder, David Graham. (United States)
- 3811 **Validation of Acute Outcomes Among Patients with Type 2 Diabetes Mellitus in Medicare: A Pilot Study**
Heather E. Danysh, J. Bradley Layton, Daniel C. Beachler, Alejandro Arana, Manel Pladevall-Vila, Rita Schmid, Brian Calingaert, Ryan Ziemiecki, Phillip R. Hunt, Alicia Gilsenan, Catherine Johannes. (United States)
- 3815 **Validation of Breast Cancer and Bladder Cancer Among Patients with Type 2 Diabetes Mellitus in Medicare: A Pilot Study**
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- 3821 **Multimorbidity Case Definition and Lookback Window: Impact on Prevalence and Associated Health Outcomes in Population Health Administrative Databases**
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- 4380 **Impact of Tumour Genomic Characteristics on Healthcare Resource Utilisation and Real-world Outcomes in Patients with Non-small Cell Lung Cancer: A Real World Study Using Linked Whole Genome-clinical Databases**
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- 5112 **Genome-wide Pathway Analysis Identifies Biological Pathways Related to Treatment Response in Metastatic Colorectal Cancer Patients Given Cetuximab: A Secondary Analysis of Clinical Trials Data**
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- 4012 **Evolution of Medication Exposure in Children, from Prenatal Life Until Two Years of Age, Between 2010 and 2015: A Study Conducted in the POMME Cohort**
Justine Benevent, Caroline Hurault-Delarue, Mélanie Araujo, Agnès Sommet, Isabelle Lacroix, Christine Damase-Michel. (France)
- 4467 **Antibiotic Consumption in Asthmatic and Non-asthmatic Children: A National Cohort Study**
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- 4504 **Recent Trends in the Prevalence of Pediatric and Neonatal Venous Thromboembolism in Portugal and the United States**
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4515 **Hydroxyzine Use in Preschool Children and Its Effect on Neurodevelopment: A Population-based Study**

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2403 **Evaluation of Spontaneous Adverse Event Reports for Anaemia Attributed to Atezolizumab within the FDA Adverse Events Reporting System**

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2560 **Assessing the Risk of Non-melanoma Skin Cancer Associated with Hydrochlorothiazide Use in Hypertensive Patients: A Nested Case-control Study in Korea**

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- 2522 **Proton Pump Inhibitors are Not Associated with an Increased Risk of Colorectal Cancer**
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- 3925 **Cancer Risk of Ranitidine and Nizatidine versus Other H2 Blockers: An Analysis of the Japan Medical Data Center Claims Database**

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- 4711 **Use of Hydrochlorothiazide and Risk of Skin Cancer in a Large Nested Case-control Study in Spain**

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5150 **Lean Body Mass is Associated with Chemotherapy-induced Adverse Drug Effects**

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2480 **Effect of Domperidone, Ondansetron, and Olanzapine Containing Antiemetic Regimen on QTc Interval in Patients with Malignancy**

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2493 **Comparative Long-term Cardiovascular Outcomes Between Ranibizumab versus Aflibercept in Patients with Maculopathy**

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2666 **The Predictors of Major Gastrointestinal Bleeding Among Oral Anticoagulant New Users with Atrial Fibrillation**

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3822 **Association Between Antidepressants Use and Stroke Risk in Taiwan**

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3831 **No Association Between Methylphenidate Use and Myocardial Infarction: A Multinational Self-controlled Case Series Study**

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4131 **Suboptimal Use of Antithrombotic Treatments and Associated Clinical Outcomes in Chinese Patients with Atrial Fibrillation**

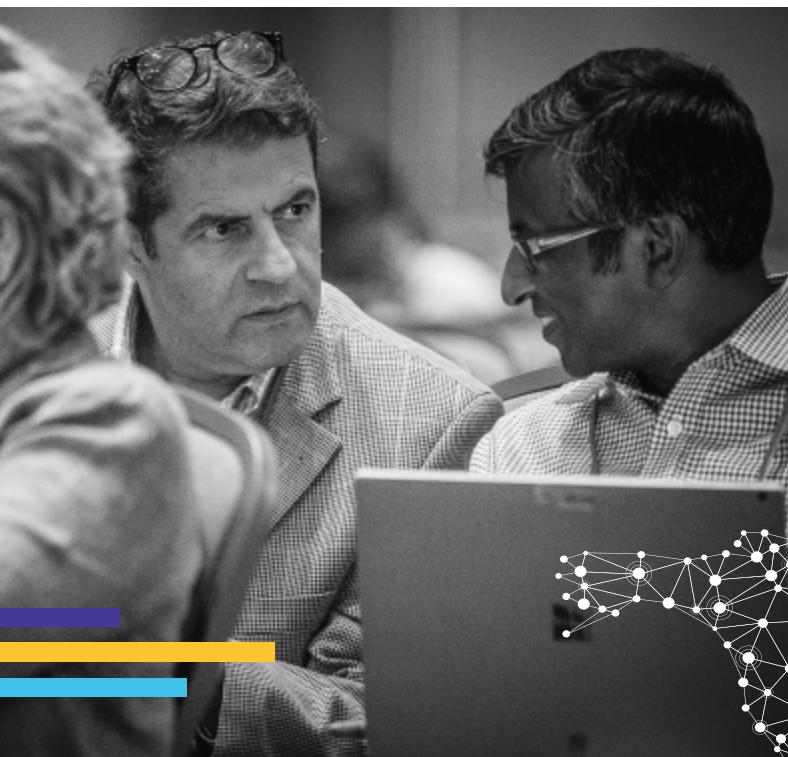
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4226 **Tyrosine Kinase Inhibitors-related Vascular Occlusive Events in Taiwanese Chronic Myeloid Leukemia Patients: A Population-based, Propensity Score-matched Cohort Study**

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4270 **A Potential Safety Signal of Venous Thromboembolic Events with the Use of DPP-4 Inhibitors**

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4592 **Incidence of Venous Thromboembolism in Users of Combined Oral Contraceptives in North America and Eastern Europe - Final Results from the International Active Surveillance - Folate and Oral Contraceptives Utilization Study (INAS-FOCUS)**

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4603 **Impact of the 2012 FDA Safety Communication on Drospirenone Containing Oral Contraceptives - Detection Bias in the International Active Surveillance - Folate and Oral Contraceptives Utilization Study (INAS-FOCUS)**

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4664 **Comparative Safety and Effectiveness of Direct Oral Anticoagulants and Warfarin on Major Bleeding and Thromboembolic Events in Atrial Fibrillation: A Retrospective Cohort Study**

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4688 **A 'Real-World' Study Population of NOMAC-E2 Users and COC-LNG Users: Baseline Characteristics from the Multinational PRO-E2 Study**

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4733 **Face-to-face 3-year Comparative Effectiveness and Safety of Dabigatran and Rivaroxaban, Standard and Reduced Doses, for Nonvalvular Atrial Fibrillation: A Cohort Study in the French Nationwide Claims Database**

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- 4203 **Lack of Insulin Secretagogue Deprescribing and Risk of Severe Hypoglycemia Following Bariatric Surgery**
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- 4409 **Assessing Fit-for-purpose: Surrogate Endpoints and Clinically Important Outcomes in Japanese Real-world Data Source in Type-2 Diabetes**
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- 3731 **Falls and Fractures in Patients Treated for Parkinson's Disease-related Psychosis: Comparing an Established Class to a More Recently Introduced Treatment**
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- 3872 **Risk of Seizure in People with Autism Spectrum Disorder Using Antipsychotic Medication: A Population Based Study**
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- 4110 **Evidence of Fluoroquinolone-induced Acute Neurological Dysfunction in Large Adult Population**
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- 4280 **Lack of Association Between Proton Pump Inhibitor Intake and Brain Aging: A Population Based Cross-sectional Study**
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2505 **Effect of Renin-angiotensin System Inhibitors on the Comparative Renal Safety of Nonsteroidal Anti-inflammatory Drugs and Opioids in Hospitalized Patients**

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2535 **Improving Identification of Anaphylaxis**

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2559 **Second-generation Antipsychotics and the Risk of Chronic Kidney Disease: A Population-based Case-control Study**

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2590 **Newer Second-line Glucose-lowering Drugs versus Thiazolidinediones and Cirrhosis Risk in Type 2 Diabetes**

Jeff Y Yang, Anastasia Alexopoulos, Andrew M Moon, Hannah Kim, Virginia Pate, A. Sidney Barritt, Til Stürmer, John B. Buse. (United States)

3691 **Revision Risk of Lower Joint Replacement for Non-steroidal Anti-inflammatory Drug Users: A Retrospective Cohort Study**

Mohammad Bakhriansyah, Arief Lalmohamed, Patrick C Souverein, Anthonius de Boer, Olaf H Klungel. (Indonesia)

3805 **Biologic Therapy and the Risk of Herpes Zoster Among Patients with Inflammatory Bowel Disease**

Christina Santella, Alain Bitton, Christopher Filliter, Maria Vutcovici, Talat Bessissow, Peter Lakatos, Paul Brassard. (Canada)

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- 3835 **A Multinational European Study of Anaphylaxis Among Recipients of Intravenous Iron**
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- 3888 **Adverse Bleeding Events Among Patients Concomitantly Treated with Direct Anti-coagulants and Antibiotics within a Swedish Nationwide Cohort**
Tatsuya Yagi, Helle Kieler, Johan Reutfors, Buster Mannheimer, Marie Linder. (Sweden)
- 3907 **Intravenous Bisphosphonate Use and 30-day Risk of Inflammatory Bowel Disease Flare**
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- 3915 **Are Indicators of Difficult Insertion Among Women with Intrauterine Devices Associated with Uterine Perforation and Expulsion?**
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- 3919 **Risk Across Postpartum Timing of Insertion in Women with Intrauterine Devices**
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- 3974 **Comparative Risk of Infection for First Line csDMARD Therapy in Rheumatoid Arthritis: A Multinational Cohort Analysis of Real World Data**
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- 4074 **Real-world Evidence (RWE) Study to Access Motor Vehicle Accidents Data: Real-world Data Landscaping and Feasibility**
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- 4122 **Factors Associated with Serious Vehicular Accidents: A Real-life Study**
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- 4319 **Time to Biologic Treatment and to Total Colectomy Associated with Diagnostic Delay in Ulcerative Colitis: Analysis of an Italian Regional Administrative Healthcare Database**
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- 4475 **Incidence of Thromboembolic Events Among Prothrombin Complex Concentrate (Human)-treated Patients: A Review of the Literature and Meta-analysis**
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- 4496 **Validity of Hospital ICD-10-GM-codes to Identify Anaphylaxis**
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- 4600 **Analysis Renal Dysfunction Incidence Caused by Acyclovir Injection in a Regional Teaching Hospital in Taiwan**
Suhan Hsu, Chia-Hui Lin, Yea-Jou Lou. (Taiwan)
- 4654 **Risk of Acute Liver Injury with Protease Inhibitor-based Antiviral Therapy for Hepatitis C**
Jessie Torgersen, Craig W. Newcomb, Dena M. Carbonari, Christopher T. Rentsch, Lesley S. Park, Rajni Mehta, Kathryn D'Addeo, Tamar Taddei, Amy C. Justice, Vincent Lo Re. (United States)
- 4703 **Impact of Metabolic Profiles on Drug Safety in Routine Care in Germany - Results from the EMPAR Study**
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- 4801 **Rapid Cycle Analytics to Obtain Descriptive Insight into Drug Utilisation and Background Disease Rates: Building on the Sentinel Modular Programs**
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- 4878 **Healthcare Utilization of Prescribing Long-term Opioids in HIV Patients Who Initiated Art: A Retrospective Cohort Study**
GYeon Oh, Erin L. Abner, David W. Fardo, Patricia R. Freeman, Daniela C. Moga. (United States)

- 4881 **Comparative Safety of Antibiotic Therapy for Outpatient Treatment of Urinary Tract Infections**
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- 5068 **A Universal Method to Obtain Prediction Intervals for Prevalence and Rate Parameters Estimated from Meta-analyses**
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- 2339 **Equality Analysis on Three Doses Coverage of DPT Vaccine Among Children Aged 12 ~ 59 Months in China**
Xiaoli Liu, Lin Zeng, Xiaoxiao Wang, Lin Zhuo, Hua Zhang, Nan Li, Liyuan Tao, Yanyan Shi, Yiming Zhao, Hongling Chu. (China)
- 2341 **Vaccination Coverage and Its Determinants of Japanese Encephalitis Vaccine Among Children Aged 12-59 Months in Rural Counties of China in 2016**
Xiaoli Liu, Lin Zhuo, Xiaoxiao Wang, Lin Zeng, Nan Li, Hua Zhang, Yanyan Shi, Liyuan Tao, Hongling Chu, Yiming Zhao. (China)
- 2342 **Variation in Influenza Vaccination Among Residents of Predominantly White and Black Long-term Care Facilities**
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Jennifer H Han, Carla A Talarico, Soowoo Back, Susan dosReis, Aziza Jamal-Allial, Cheryl N McMahon-Walraven, Talia J Menzen, Vinit P Nair, Young Hee Nam, Josephine C Ocran-Appiah, Jeffrey S Brown, Katherine W Yih. (United States)

2529 **A Broad Safety Assessment of the 9-valent Human Papillomavirus Vaccine**

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2541 **The Influenza Vaccination Continuity in Korean Elderly with High-risk Conditions**

Na-Young Jeong, Chulwoo Rhee, Joongyub Lee, Byung-Joo Park, Nam-Kyong Choi. (Korea, Republic of)

2552 **Operational Considerations and Challenges in Use of an External Comparator Arm to Contextualize Safety Data from Maternal Immunization Trials: The South Africa Epidemiology of Obstetric and Neonatal Outcomes (SAFE ONE) Study Example**

Vera Frajzyngier, Jean Le Roux, Shobna Sawry, Jeanne Louw, Kekane Kebonethebe, Lee Fairlie, Judith Absalon, Shaun Barnabas, Samantha Munson, Caroline Vika, Clare Cutland. (United States)

2576 **Pneumococcal Vaccination Coverage in Individuals (16 to 59 Years) with a Newly Diagnosed Risk Condition in Germany**

Arijita Deb, Victoria Louise Parsons, B  lene Podmore, Dominik Beier, Wolfgang Galetzka, Mai Duong, Nawab Qizilbash, Dennis Haeckl, Timo Boellinger, Sarah Mihm. (Germany)

2635 **Utilization of a Booster Dose of Influenza Vaccine Among Adults with End-stage Renal Disease in the United States**

Leah J. McGrath, J. Bradley Layton, John M. Sahrman, Vikas R. Dharnidharka, Caroline A. O'Neil, Anne M. Butler. (United States)

3759 **Influenza Vaccination in Adult Patients with Hypertension or Diabetes in South Korea: A Cross-sectional Study**

Seon-Ha Kim, Sangshin Park, Nam-Kyong Choi. (Korea, Republic of)

3923 **All-cause Pneumonia Among Adults 2007-2018 and Utility of a Simple Algorithm to Confirm Pneumonia**

Amber Hsiao, Joan Bartlett, John Hansen, Edwin Lewis, Ronika Alexander-Parrish, Raul E Isturiz, Jose A Suaya, Bradford D Gessner, Nicola P Klein. (United States)

3932 **Accuracy of Batch Production Identifiers of Vaccines Recorded in the Clinical Practice Research Datalink Gold**

Fran  ois Haguinet, Olivia Mahaux, Vincent Bauchau. (Belgium)

4030 **Tolerability of MenACWY-TT Vaccination in Adolescents in the Netherlands**

Jeanet Kemmeren, Leontine van Balveren, Agnes Kant, Hester de Melker. (Netherlands)

4072 **Where are Children in the United States Receiving Their Influenza Vaccination?**

Dana Gates, Mohammad A Al-Mamun, Kelly Orr, Steven A Cohen, Aisling R Caffrey. (United States)



- 4076 **Pharmacist Authority to Administer Pediatric Influenza Immunizations in the United States**
Dana Gates, Kelly Orr, Steven A Cohen, Aisling R Caffrey. (United States)
- 4147 **Venous Thromboembolism Among Male Recipients of the 4-valent Human Papillomavirus Vaccine in United States Insurance Claims Data**
Kandace Amend, Bruce Turnbull, Li Zhou, Morgan Marks, Christine Velicer, Patricia Saddier, John Seeger. (United States)
- 4181 **Selecting a Comparison Group for Outcomes Occurring on the Day a Vaccine is Administered**
Kandace Amend, Bruce Turnbull, Li Zhou, Morgan Marks, Christine Velicer, Patricia Saddier, John Seeger. (United States)
- 4192 **Change-point Analysis of Spontaneous Adverse Event Reporting Following Human Papillomavirus Vaccination**
Seung-Hun You, Myo-Song Kim, Min-Taek Lee, Ye-Jin Kang, Sun-Young Jung. (Korea, Republic of)
- 4207 **Anaphylaxis Following Vaccination in South Korea: A Large-linked Database Study**
Hyesung Lee, Young June Choe, Ju Hwan Kim, Ju-Young Shin. (Korea, Republic of)
- 4233 **Prescription Patterns of the Inactivated Influenza Vaccine in Private Healthcare Settings in South Africa**
Ilse Truter. (South Africa)
- 4473 **Maternal Tdap Vaccination Trends in the United States, 2016-2018**
Florence T Wang, Li Zhou, Kelesitse Phiri, John D Seeger. (United States)
- 4652 **Flu Vaccination in Portugal: Integration of Community Pharmacies as Vaccination Points of Public NHS**
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- 4674 **The Safety of Human Papillomavirus Vaccine Among Female Adolescents in Korea: A Cohort and Self-controlled Risk Interval Study**
Dongwon Yoon, Ji-Ho Lee, Hyesung Lee, Ju-Young Shin. (Korea, Republic of)
- 4744 **Determinants of the HPV Vaccination Among Girls Attending Spanish Primary Care Settings**
Belén Castillo Cano, Mar Martín-Pérez, Dolores Montero-Corominas, Elisa Martín-Merino. (Spain)
- 4772 **"If It Does Not Endanger Me or the Health of My Baby, I Will Take It Up..." Vaccine Safety is an Important Consideration for Maternal Immunization Acceptability in Rural Uganda - A Qualitative Study**
Dan Kajungu, Michael Muhoozi, James Stark, Daniel Weibel. (Uganda)
- 4787 **Seasonal Influenza Vaccine Effectiveness: Evidence from Test-negative Design Studies**
George Okoli, Florentin Racovitan, Christiaan Righolt, Salaheddin Mahmud. (Canada)
- 4985 **Risk of Central Demyelination and Use of Vaccines 2009-2017 in France**
Lamiae Grimaldi, Lucien Abenhaim. (France)
- 5069 **Defining Benchmarks for Tolerable Risk Thresholds in Cancer Screening: Impact of Human Papillomavirus Vaccination on the Future of Cervical Cancer Screening**
Joseph Tota, Sandra Isidean, Eduardo Franco. (United States)
- 5149 **A Systematic Review of Active Vaccine Surveillance Studies: Focused on the Vaccine Safety Datalink**
Eunsun Lim, Na-Young Jeong, Nam-Kyong Choi. (Korea, Republic of)

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Patrick Squires, Marco Pahor, Todd Manini, Joshua Brown
- 2 **Empirical assessment of case-based methods for identification of drugs associated with upper gastrointestinal bleeding in the French National Healthcare System database (SNDS)**
Nicolas Thurin, Régis Lassallel, Martijn Schuemie, Marine Pénichon, Joshua Gagne, Jeremy Rassen, Jacques Benichou, Alain Weill, Patrick Blin, Nicholas Moore, Cécile Droz-Perroteau
- 3 **Prevalence and pattern of antimicrobial use in Indian setting: An evidence from systematic review and meta-analysis**
Boya Chandrasekhar, Kota Vidyasagar, Manik Chhabra, Dipika Bansal

- 4 **Use of traditional and complementary medicine in people infected with HIV in Côte d'Ivoire: cross-sectional study**
Mariam Mama Djima, Jocelyne Moisan, Koumavi Didier Ekouevi
- 5 **Determinants of Stigma among Patients with Hepatitis C Virus (HCV) Infection**
M. Elle Saine, Julia E. Szymczak, Tyler M Moore, Laura P. Bamford, Frances K Barg, Jason Schnittker, John H Holmes, Nandita Mitra, Vincent Lo Re, III
- 6 **Accelerated vs Regular approval pathways: differences in study characteristics in the approval of lung cancer treatments by the FDA from 2006 to 2018**
Tatiane Ribeiro, Lewis Buss, Sanni Ali, Moacyr Nobre
- 7 **Linkage of Primary Care Prescribing Records and Pharmacy Dispensing Records in the Salford Lung Study: Application in Asthma**
Holly Tibble, James Lay-Flurrie, Aziz Sheikh, Rob Horne, Mehrdad Mizani, Athanasios Tsanas
- 8 **Cost benefits of trastuzumab subcutaneous versus intravenous in treatment of her2-positive breast cancer: a systematic review**
Thuy Nguyen, Student Duyen Tran, Student Chi Nguyen
- 9 **Tumor Necrosis Factor Alpha Inhibitor (TNF- α inhibitor) Exposure and Risk of Hip Fracture in Veterans with Rheumatoid Arthritis: A Nested Case Control Study**
Sarah Homann, Bobo Tanner, James Morrow, Carlos Grijalva
- 10 **Evaluation of concurrent use of opioids with high-risk medications among Arizona Medicaid beneficiaries: Cross-sectional analysis from 2011 to 2017**
Ching-Yuan Chang, Juan M. Hincapie-Castillo, Debbie Wilson, Weihsuan Lo-Ciganic

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| <p>11 Antiviral Chemoprophylaxis Policies and Use during Influenza Outbreaks in Long-term Care Facilities
 Joe Silva, Andrew Zullo, Elliott Bosco, Daniela Quilliam, Stefan Gravenstein</p> <p>12 Medicine Managers' Perspectives on use of medicines in public sector health facilities in The Kingdom of Eswatini: A Qualitative Study
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 Walter-Rodney Nagumo, Richard Cooper, Robert Akparibo</p> <p>14 Statin use and skin cancer risk: A French prospective cohort study
 Marie Al Rahmoun, Yahya Mahamat-Saleh, Iris Cervenka, Gianluca Severi, Marie-Christine Boutron-Ruault, Marina Kvaskoff, Agnès Fournier</p> <p>15 Coexisting conditions in children and adolescents with cancer in a section of the South African private health sector
 Marianne Naana Otoo, Martie Lubbe, Hanlie Steyn, Johanita Burger</p> <p>16 Associations between Antidiabetic Medications Use and Breast Cancer Survival Outcomes among Medicare Beneficiaries
 Shahariar Mohammed Fahim, Cassidi C. McDaniel, Jingjing Qian, Fang-Ju Lin, Chiu-Hsieh Hsu, Dr. Chiahung Chou</p> <p>17 Critical appraisal of clinical practice guidelines for treatment of urinary incontinence: systematic review
 Flávia Sorrilha, Lauren Mazzei, Luciane Lopes, Silvio Barberato-Filho, Juliana Castro, Analaura Castro, Claudia Marcela Velez, Cristiane Bergamaschi</p> | <p>18 Corticosteroid Use and Risk of Deep Vein Thrombosis and Pulmonary Embolism: A Systematic Review and Meta-Analysis
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 Morgane Mouslim, Jodi Segal</p> <p>20 Prescription Opioid Patterns Following Supply Restriction Policy among Patients Receiving Chronic Opioid Therapy: An Interrupted Time Series Analysis
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 Isaac Bai, Sarah Sabri, Heather Neville, Beverley Lawson, Virginia McIntyre, Fred Burge, Ingrid Sketris, Mathew Grandy</p> <p>23 Utilization and Adherence among Infliximab Biosimilar Initiators in a U.S. National Commercial Insurance database.
 Sujith Sarvesh, Alanaeme Chibuike Joseph, Jeffrey R Curtis, Hiufeng Yun</p> <p>24 Long-term adherence and persistence with non-vitamin K oral anticoagulants in patients with atrial fibrillation and their associations with stroke risk
 Joris Komen, Rob Heerdink, Olaf Klungel, Aukje Mantel - Teeuwisse, Tomas Forslund, Björn Wettermark, Paul Hjerdahl</p> |
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