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Contents

ISPE Officers & Board of Directors	2
2020 ISPE Scientific Program Committee	4
Chairs/Co-Chairs & Liaisons	5
Student Chapters	7
Development Committee	7
Organizational & Institutional Members	9
Abstract Reviewers	9
Newcomer Track Reviewers	15
Congratulations to Our New Fellows	15
Thank You to Our Sponsors!	16
Program At-A-Glance	18
Wednesday, September 16	19
Thursday, September 17	21
2020 ISPE Awards	24
Skills Courses	26
Symposia / Workshops	40
Oral Sessions	42
Poster Sessions	64
Mid-Year 2020 Posters	158



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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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it isn't done.
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	Katie Suda	Rachel Williams	
	Janet Sultana	Jerome Wilson	

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Congratulations to Our New Fellows



Ian Douglas, FISPE



Stanley Edlavitch, FISPE



Joshua Gagne, FISPE



Alicia Gilsonan, FISPE



Charles Leonard, FISPE



Kevin Lu, FISPE



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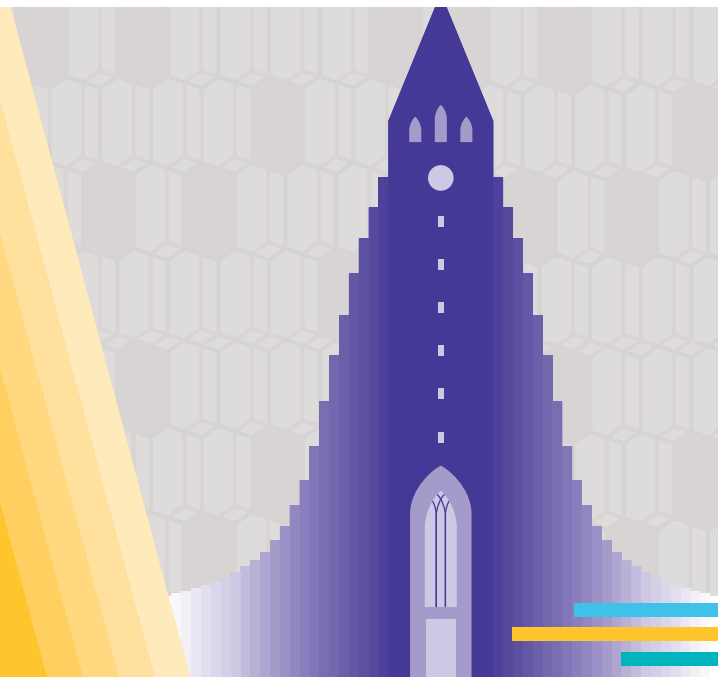
Mid-Year Meeting

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

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
12:45-12:50pm	Closing Remarks

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

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 2020-2024 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 Hojé, 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?

12:45-12:50pm

Closing Remarks

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

Stanley Edlavitch, FISPE

Joshua Gagne, FISPE

Alicia Gilsean, FISPE

Charles Leonard, FISPE

Kevin Lu, FISPE

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Montse Soriano-Gabarró, FISPE

Douglas Steinke, FISPE

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

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 Marguilis, 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

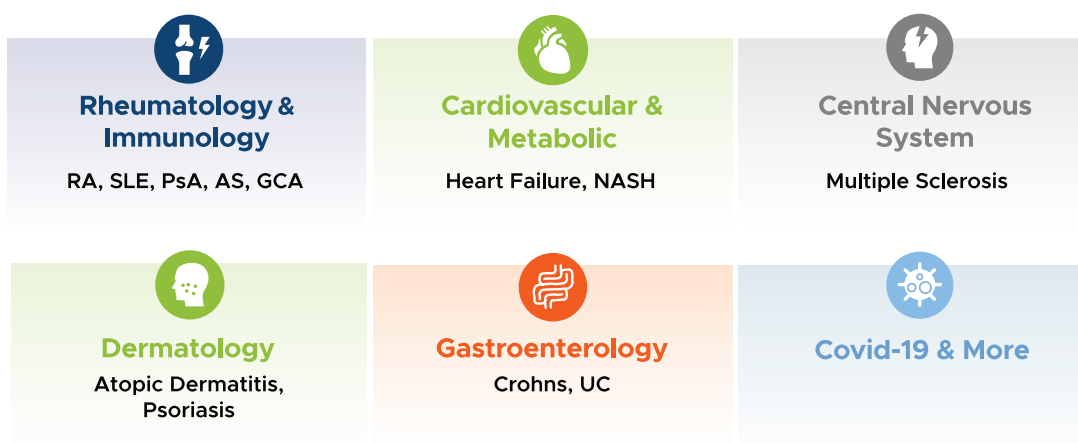
Description: As reinforced by the current COVID-19 pandemic, vaccines are key tools for global public health. Increasingly, pharmacoepidemiological studies are providing critical evidence needed for risk-benefit assessment to inform immunization policy, both for mature immunization programs and for low-and 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 Experts

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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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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The ISPE Exchange is the best way to connect with members and become involved with the Society. Communities allow you to participate in discussions and share resources with other members

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



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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--	---

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Contact Dr Liz Lynn for more information:
elizabeth.lynn@dru.org

DSRU, Southampton, UK, www.dru.org

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.

The Pharmacoepidemiologist's Toolbox for Professional Empowerment

Speakers: Caitlin A. Knox, Mary Beth Ritchey, Vincent Lo Re, III, Juan M. Hincapie-Castillo, Almut G. Winterstein, Susana Perez-Gutthann

Description: This course will include pre-recorded sessions which participants are expected to view prior to the live virtual meeting. The course will address on multiple professional development topics with each lecture providing the necessary tools for the attendees to apply the discussed principles to their own career paths.

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

Oral Session Categories

Benefit-Risk Assessment, Communication, and Evaluation (BRACE)	43	Methods in Pharmacoepidemiology » Confounding/ Bias - Methods to avoid bias and confounding, including confounder summary scores (e.g., propensity scores, disease risk scores)	53
Biologics/Biosimilars	43	Methods in Pharmacoepidemiology » Measurement Methods - Validation methods to confirm data (including patient reported outcomes development and validation); Methods to deal with missing data	54
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
Disease Epidemiology/Clinical Course » Neurological/Mental Health	46	Pharmacovigilance » Cancer	57
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
Health Economics/Outcomes Research	51	Safety End Points » Other	62
Informatics	52	Vaccines	63
Methods in Pharmacoepidemiology » Analytical Methods (e.g., marginal structural models, instrumental variables, sensitivity analyses)	52		

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**
Weihuan 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)



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 Mellekjær, Søren Friis, Bent Ejlertsen, 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 Mellekjær, Søren Friis, Bent Ejlertsen, 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 Katzmann, 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, Nirosen Vijiaratnam, 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, Bjørn 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**
Yuanyuan Wang, Victor Pera, H. Marike 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 Sturmer, 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, Evelyne 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, Saphthagirishwaran 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 Patorno, 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, Pattria 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 Ishtiaq-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**

Katsiaryna Bykov, Brian T. Bateman, Jessica M. Franklin, Elisabetta Patorno. (United States)

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

Pearl L Mok, Matthew J Carr, Bruce Guthrie, Daniel Morales, Tjeerd van Staa, Antony J Avery, Darren M Ashcroft. (United Kingdom)

Pharmacovigilance » Other

4039 **Measuring the Impact of Calcitonin Marketing Authorisation Withdrawal on Public Health in France, Germany and UK**

Samantha Lane, Elizabeth Lynn, Jim Slattery, Saad Shakir. (United Kingdom)

4070 **Vortioxetine's Post-marketing Safety Profile Determined Through Cluster Analysis of Global Adverse Event Reports**

Corine Ekhart, Florence van Hunsel, Eugène van Puijenbroek, Rebecca Chandler, Eva-Lisa Meldau, Niklas Norén. (Netherlands)

Oral Sessions

- 4128 **A Tree-based Statistic Data Mining Approach to Assess the Post-marketing Safety of New Glucose-lowering Medications in Routine Care**
Michael Fralick, Martin Kulldorff, Donald Redelmeier, Shirley V Wang, Seanna M Vine, Sebastian Schneeweiss, Elisabetta Paterno. (United States)
- 4267 **Increased Intolerance to Angiotensin Converting Enzyme Inhibitors in Asthma: A United Kingdom Population-based Cohort Study Using Electronic Medical Records**
Daniel R Morales, Brian Lipworth, Peter Donnan, Huan Wang. (United Kingdom)
- 4371 **An Empirical Evaluation of Adverse Event Cluster Analysis in Pharmacovigilance**
G. Niklas Norén, Eva-Lisa Meldau, Rebecca E Chandler. (Sweden)
- 4479 **Acute Pancreatitis Associated with Methimazole Treatment: A Population-based Study on Regional Italian Databases**
Alessandro Pecere, Marina Caputo, Andrea Sarro, Angelica Zibetti, Andrealuna Ucciero, Paolo Marzullo, Gianluca Aimaretti, Francesco Barone-Adesi. (Italy)
- 4769 **Proactive Signal Detection of Serious Medical Events Following Antidepressant Initiation Using Big Healthcare Data**
Mia Aakjær, Marie Louise De Bruin, Murat Kulahci, Morten Andersen. (Denmark)
- Pregnancy and Lactation**
- 85 **First Trimester Pregnancy Exposure to Modafinil and Risk of Congenital Malformations**
Anne Broe, Per Damkier. (Denmark)
- 2389 **Prenatal Exposure to Non-steroidal Anti-inflammatory Drugs and Risk of Attention Deficit Hyperactivity Disorder Diagnosis and Symptoms - A Follow-up in the Norwegian Mother, Father and Child Cohort Study**
Sarah Hjorth, Angela Lupattelli, Marte Handal, Olav Spigset, Eivind Ystrom, Hedvig Nordeng. (Norway)
- 2502 **Comparing Maternal and Neonatal Outcomes with Use of Different Antihypertensive Medications in Pregnancy**
Sascha Dublin, Mary Akosile, Lyndsay A Avalos, T Craig Cheetham, Thomas R Easterling, Lu Chen, Nerissa Nance, Zoe Bider-Canfield, Victoria L Holt, Romain S Neugebauer, Kristi Reynolds, Sylvia E Badon, Susan M Shortreed. (United States)
- 2544 **Prenatal Opioid Exposure and Risk of Asthma in Childhood: A Population-based Study from Denmark, Norway, and Sweden**
Ingvild Odsbu, Marte Handal, Vidar Hjellvik, Sonia Hernandez-Diaz, Helle Kieler, Mette Nørgaard, Svetlana Skurtveit, Buket Öztürk, Milada Mahic. (Sweden)
- 2665 **Validation of an ICD-10-based Algorithm to Identify Stillbirth in the Sentinel System**
Susan E Andrade, Mayura Shinde, Tiffany Moore Simas, Steven Bird, Justin Bohn, Kevin Haynes, Lockwood Taylor, Julianne Luring, Erin Longley, Cheryl McMahill-Walraven, Connie Trinacty, Cassandra Saphirak, Christopher Delude, Sandra DeLuccia, Tancy Zhang, David Cole, Nina DiNunzio, Autumn Gertz, Elnara Fazio-Eynullay and Danijela Stojanovic. (United States)
- 2676 **Oral Corticosteroids and Risk of Preterm Birth in the California Medicaid Program**
Kristin Palmsten, Gretchen Bandoli, Jim Watkins, Gabriela Vazquez-Benitez, Todd P. Gilmer, Christina D. Chambers. (United States)
- 2682 **Personal History of Febrile Seizure Increases Risk of Measles-Mumps-Rubella Vaccine Attributable Seizure**
Shirley V Wang, Lily Bessette, Kristina Stefanini, Bruce Fireman, Ned Lewis, Jonathan Duffy, Michael McNeill, Seanna Vine, Krista Huybrechts, Martin Kulldorff. (United States)

- 2684 **Treescan for Active Surveillance of the Safety of Medications Used in Pregnancy**
Krista F Huybrechts, Martin Kulldorff, Sonia Hernandez-Diaz, Brian T Bateman, Yanmin Zhu, Helen Mogun, Shirley V Wang. (United States)
- 3705 **Fetotoxicity of RAAS-Inhibitors**
Tania Schink, Marlies Onken, Nadine Wentzell, Katarina Dathe, Ulrike Haug. (Germany)
- 3882 **A Prospective Study of Pregravid Injectable Contraceptive Use and Spontaneous Abortion**
Jennifer J Yland, Elizabeth E Hatch, Kenneth J Rothman, Lauren A Wise. (United States)
- 3938 **Trajectories of Prescription Opioid Utilization During Pregnancy Among Pre-pregnancy Chronic Users and Risk of Neonatal Abstinence Syndrome**
Loreen Straub, Krista F Huybrechts, Sonia Hernandez-Diaz, Yanmin Zhu, Seanna Vine, Rishi J Desai, Kathryn J Gray, Brian T Bateman. (United States)
- 3977 **Periconceptional Prescription Opioid and Alcohol or Tobacco Use and Birth Defect Risk**
Kayla N. Anderson, Elizabeth C. Ailes, Cheryl S. Broussard, Clark H. Denny, Jennita Reefhuis. (United States)
- 4162 **Off-label Use of Domperidone Among Postpartum Women: A Multi-database Study**
Carolina Moriello, J. Michael Paterson, Pauline Reynier, Matthew Dahl, Wusiman Aibibula, Anat Fisher, John-Michael Gamble, I Fan Kuo, Paul E Ronksley, Brandce Winquist, Kristian B Fillion, the CNODES Investigators. (Canada)
- 4251 **Use of Beta-adrenergic Agonist Ritodrine in Tocolysis and Risk of Maternal Cardiovascular Events: A Nationwide Nested Case-control Study**
Chih-Wan Lin, K. Arnold Chan, Yi-Yung Chen, Wei-I Huang, Pi-Hui Chao, Wen-Wen Chen, Fei-Yuan Hsiao. (Taiwan)
- 4257 **Anti-thyroid Drug Use During the First Trimester of Pregnancy and the Risk of Birth Defects in Offspring: Systematic Review and Meta-analysis of Observational Studies with Methodological Considerations**
Daniel R Morales, Lionel Fonkwen, Hedvig Nordeng. (United Kingdom)
- 4401 **Chronic Prescription Opioid Use in Pregnancy in the United States**
Loreen Straub, Krista F Huybrechts, Sonia Hernandez-Diaz, Yanmin Zhu, Seanna Vine, Rishi J Desai, Kathryn J Gray, Brian T Bateman. (United States)
- 4406 **Validation of Claims-based Algorithms to Identify Specific Major Congenital Malformations**
Loreen Straub, Krista F Huybrechts, Sonia Hernandez-Diaz, Yanmin Zhu, Kathryn J Gray, Brian T Bateman. (United States)
- 4428 **Epidemiology of Prenatal Opioid Use and Associated Maternal Characteristics in Ontario, Canada**
Andi Camden, Teresa To, Joel G Ray, Tara Gomes, Li Bai, Kinwah Fung, Astrid Guttmann. (Canada)
- 4446 **Opioid Use After Vaginal Birth and the Risk of Serious Opioid-related Events: Is There a Safe Dose?**
Andrew D. Wiese, Sarah S. Osmundson, Ed Mitchel, Margaret Adgent, Sharon Phillips, Stephen W. Patrick, Marie Griffin, Carlos G. Grijalva. (United States)
- 4481 **Neural Tube Defect Risk Among Infants Exposed to Opioids During Early Pregnancy**
Denise M Boudreau, Jennifer F Bobb, Gaia Pocobelli, T Craig Cheetham, Sascha Dublin, Susan Andrade, Ladia Albertson-Junkans, Marie Griffin, De-Kun Lee, Marsha A Raebel, Rulin Hechter, David H Smith, Pam A Pawloski, Darren Toh, Darren Toh, Lockwood Taylor, Wei Hua, David Graham, Rita Ouellet-Hellstrom, Pamela Horn, Miriam Dinatale, Carrie Ceresa, Mat Soukup, Yong Ma, and James P Trinidad. (United States)

Oral Sessions

- 4509 **Prevalence of Prescription Opioid Use During Pregnancy in 8 U.S. Health Plans During 2001-2014**
Gaia Pocobelli, Sascha Dublin, Jennifer F Bobb, Ladia Albertson-Junkans, Susan Andrade, T. Craig Cheetham, Gladys Salgado, Marie Griffin, Marsha A Raebel, David Smith, De-Kun Li, Pamala A Pawloski, Sengwee Toh, Lockwood Taylor, Wei Hua, Pamela Horn, James P Trinidad, and Denise M Boudreau. (United States)
- 4529 **Obstetrical Complications and Prescription Opioid Use During Pregnancy - Using a Marginal Structural Model of Time-dependent Exposure**
Shuang Wang, Kristina Ward, E Christine Brousseau, Egle Bavry, Xuerong Wen. (United States)
- 4532 **Discontinuation and Reinitiation of Antidepressants During Pregnancy in South Korea, 2013-2017**
Yunha Noh, Seung-Ah Choe, Ju-Young Shin. (Korea, Republic of)
- 4756 **Antidepressant Use in Pregnancy and Major Birth Defects**
Laurent Chouchana, Nathanael Beeker, Jean-Marc Treluyer, Florentia Kaguelidou. (France)
- 4893 **Opioid Use During Pregnancy and Ischemic Placental Disease**
Daina B Esposito, Brian Bateman, Martha Werler, Loreen Straub, Sonia Hernandez-Diaz, Helen Mogun, Krista Huybrechts. (United States)
- 4901 **Paternal Isotretinoin and the Risk of Major Malformations and Spontaneous Abortion**
Jon T Andersen, Niklas Andersson, Mia Nørgaard, Ditte Gotfredsen, Thomas Bo Jensen. (Denmark)
- 4957 **Developing Methodology to Estimate Gestational Age Using Administrative Claims**
Aziza Jamal-Allial, Xintong He, Ramya Avula, Jade Dinh, Stephan Lanes. (United States)
- 4971 **Birth Control Utilization Among Mothers of Infants with an Extended Stay in the NICU**
Sara Z Dejene, Alison Stuebe, Christine Tucker, Virginia Pate, Katherine Bryant, Michele Jonsson-Funk. (United States)
- 4989 **Missing Links in Pregnancy Safety Studies: How Different are Mothers with Non-linkable Infants in Claims Databases?**
John D Seeger, Michael Doherty, Kelesitse Phiri, Monica L Bertoia, Ryan Seals, Florence T Wang. (United States)
- 5116 **Antipsychotic Use During Pregnancy and Neurodevelopmental Outcomes in Children: A Nordic Population Register-based Study**
Óskar Ö Hálfðánarson, Jacqueline M Cohen, Øystein Karlstad, Carolyn E Cesta, Maarit K Leinonen, Buket Öztürk, Kari Furu, Kristjana Einarsdóttir, Mika Gissler, Mette Nørgaard, Helle Kieler, Marte-Helene Bjørk, Johan Reutfors, Helga Zoega. (Iceland)

Safety End Points » Cancer

- 4077 **Use of Hydrochlorothiazide and Risk of Melanoma and Nonmelanoma Skin Cancer**
Julie Rouette, Hui Yin, Anton Pottegård, Laurent Azoulay. (Canada)
- 4659 **Statins and Breast Cancer Risk in a Cohort of Postmenopausal Women**
Laure Dossus, Véronique Chajès, Mathilde His, Manon Cairat, Marie Al-Rahmoun, Guy Fagherazzi, Gianluca Severi, Marc J Gunter, Agnès Fournier. (France)
- 4673 **Studies on the Effect of Drugs on Colorectal Cancer Incidence: Considerable Risk of Misleading Results**
Ulrike Haug, Sarina Schwarz. (Germany)
- 4955 **Use of Hydrochlorothiazide and Risk of Uveal Melanoma**
Anton Pottegård, Sidsel A Pedersen, Kasper B Kristensen. (Denmark)

Safety End Points » Cardiovascular

- 47 **Incidence and Risk Factors for Major Bleeding Among Patients Undergoing Percutaneous Coronary Intervention: Findings from the Norwegian Coronary Stent Trial (NORSTENT)**
Per-Jostein Samuelsen, Anne Elise Eggen, Terje Steigen, Tom Wilsgaard, Andreas Kristensen, Anne Skogsholm, Elisabeth Holme, Christian van den Heuvel, Jan Erik Nordrehaug, Bjørn Bendz, Dennis W Nilsen, Kaare Harald Bønnaa. (Norway)
- 2380 **Fluoroquinolones and Risk of Aortic Aneurysm or Dissection**
Chandrasekar Gopalakrishnan, Katsiaryna Bykov, Michael Fischer, John G Connolly, Joshua J Gagne, Michael Fralick. (United States)
- 2447 **Cardiotoxic Effects of Sequential Aromatase Inhibitors Use in Women with Breast Cancer**
Farzin Khosrow-Khavar, Nathaniel Bouganim, Kristian B. Filion, Samy Suissa, Laurent Azoulay. (Canada)
- 2485 **Sex and the Risk of Acute Reduction in Kidney Function After Renin-angiotensin Blockade: Parallel Analyses of a Primary Care Cohort and Two Randomised Trials**
Angel Wong, Peggy Gao, Kathryn Mansfield, Krishnan Bhaskaran, Juan Jesus Carrero, Sarah-Jo Sinnott, Dorothea Nitsch, Liam Smeeth, Johannes Mann, Catherine Clase, Laurie Tomlinson. (United Kingdom)
- 3728 **The Acute Effects of Azithromycin Use, as Compared with Amoxicillin-clavulanate, on Cardiovascular Mortality in United States Veterans**
Maral DerSarkissian, Mei S Duh, Rachel Bhak, Niki Palmetto, Yinong Young-Xu, Eric Mortensen, Antonio Anzueto, Catherine Nguyen, Mu Cheng, Vera Frajzyngier, Suna Park, Angie Lax, Lisa Weatherby, Alexander M Walker. (United States)



- 3928 **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. (China)
- 4054 **Statin Treatment and Muscle Symptoms: A Series of Randomised, Placebo Controlled N-of-1 Trials**
Emily Herrett, Elizabeth Williamson, Kieran Brack, Danielle Beaumont, Alexander Perkins, Andrew Thayne, Haleema Shakur-Still, Ian Roberts, Danielle Prowse, Ben Goldacre, Tjeerd van Staa, Thomas M MacDonald, Jane Armitage, Jon Wimborne, Paula Melrose, Jayshireen Singh, Maurice Hoffman and Liam Smeeth. (United Kingdom)
- 4411 **Effectiveness and Safety of Standard and Reduced Dose of Rivaroxaban Compared to Vitamin K Antagonists, According to Stroke and Bleeding Risk Score in Non-valvular Atrial Fibrillation, from a Hdps Matched Cohort within the Snds French Nationwide Claims**
Nicholas Moore, Patrick Blin, Laurent Fauchier, Frédéric Sacher, Jean Dallongeville, Caroline Dureau-Pournin, Régis Lassalle, Marie-Agnès Bernard, Cécile Droz-Perroteau. (France)

Oral Sessions

4478 **Evaluating Signals Generated in a Large-scale Sequence Symmetry Analysis: Macrolides and Heart Failure; NSAIDs and Pneumonia**

Sarah-Jo Sinnott, KJ Lin, Shirley Wang, Jesper Hallas, Rishi Desai, Sebastian Schneeweiss, Joshua J Gagne. (United States)

4808 **Five Alpha-reductase Inhibitors and the Risk of Venous Thromboembolism Among Patients with Benign Prostatic Hyperplasia**

Henok Tadesse Ayele, Pauline Reynier, Laurent Azoulay, Robert W. Platt, Serge Benayoun, Kristian B. Filion. (Canada)

Safety End Points » Diabetes

2591 **Sodium-glucose Co-transporter 2 Inhibitors and the Risk of Diabetic Ketoacidosis: A Multicenter International Cohort Study**

Antonios Douros, Lisa M. Lix, Michael Fralick, Sophie Dell'Aniello, Baiju R. Shah, Paul E. Ronksley, Éric Tremblay, Nianping Hu, Silvia Alessi-Severini, Anat Fisher, Shawn C. Bugden, Pierre Ernst, Kristian B. Filion, the CNODES Investigators. (Canada)

3800 **Risk of Clinically Relevant Hyperglycemia with Metoprolol Compared to Carvedilol in Older Adults with Heart Failure and Diabetes**

Chintan Dave, Brian Strom, Fred Kobylarz, Daniel Horton, Tobias Gerhard, Chin-Lin Tseng, Ilja Dejanovic, Abner Nyandege, Soko Setoguchi. (United States)

3981 **The Association Between Digoxin and Development of Diabetes: A Danish Nationwide New User, Active Comparator Cohort Study**

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

4246 **Use of Low-dose Quetiapine and the Risk of Diabetes: A Nation-wide Cohort Study Using a High-dimensional Propensity Score**

Mikkel Højlund, Lars C Lund, Kjeld Andersen, Christoph U Correll, Jesper Hallas. (Denmark)

4706 **Glucagon Like Peptide-1 Receptor Agonists and the Risk of Anaphylactic Reactions Among Patients with Type 2 Diabetes**

Richeek Pradhan, Elisabetta Patorno, Sebastian Schneeweiss, Hui Yin, Helen Tesfaye, Ajinkya Pawar, Christina Santella, Christel Renoux, Oriana Yu, Laurent Azoulay. (Canada)

4879 **Risk of Serious Hypoglycemia of Angiotensin Converting Enzyme Inhibitors Used Concomitantly with Insulin Secretagogues or Metformin**

Young Hee Nam, Colleen M. Brensinger, Warren B. Bilker, Charles E. Leonard, Sean Hennessy. (United States)

5084 **Real-world Evidence of Inhaled Corticosteroids and Type II Diabetes Manifestation**

Yasser Albogami, Yu-Jung Wei, Michael J Daniels, Kenneth Cusi, Almut G Winterstein. (United States)

Safety End Points » Neurological/Mental Health

56 **The Association Between Initiation of Gabapentinoids and Lower-extremity Oedema Treated with Loop-diuretics - A Symmetry Analysis**

Daniel P. Henriksen, Jesper Hallas. (Denmark)

5009 **Potentially Inappropriate Medication Use in Combination with Opioids Among Older Dental Patients**

Jifang Zhou, Gregory Calip, Susan Rowan, Jessina McGregor, Rosanne Perez, Charlesnika Evans, Walid Gellad, Katie Suda. (United States)

Safety End Points » Other

43 **Combined Oral Contraceptive Utilization and Uterine Fibroid Incidence in a Novel Cohort**

Sarah R Hoffman, Jennifer S Smith, Michele Jonsson Funk, Michael G Hudgens, Charles Poole, Wanda K Nicholson, Donna D Baird, Quaker E Harmon. (United States)

106 **Development and Validation of a Machine Learning Algorithm to Identify Anaphylaxis in US Administrative Claims Data**

Daniel C Beachler, Devon H Taylor, Mary S Anthony, Ruihua Yin, Ling Li, Catherine W Saltus, Lin Li, Alka Shaunik, Kathleen E Walsh, Stephan Lanes, Kenneth J Rothman, Catherine Johannes, Vanita Aroda, Warner Carr, Pinkus Goldberg, Andrew Accardi, J. Shane O'Shura, Kristen Sharma, Juhaeri Juhaeri and Chuntao Wu. (United States)

2332 **Association Between Non-vitamin K Antagonist Oral Anticoagulants or Warfarin and Liver Injury: A Cohort Study**

Jiaxi Zhao, Joseph E Blais, Celine S Chui, In-Hye Suh, Esa Y Chen, Wai-Kay Seto, Michael T Mok, Vincent K Yan, Wallis C Lau, Ian C Wong, Esther W Chan. (Hong Kong)

2393 **Effect Modification of Inflammatory Bowel Disease on Thromboembolism Risk of Combined Oral Contraceptive**

Thuy Thai, Xi Wang, Phuong Pham, Almut Winterstein. (United States)

3829 **Concomitant Use of Dipeptidyl Peptidase-4 Inhibitors with Statins and the Risk of Acute Kidney Injury in Patients with Type 2 Diabetes**

Antonios Douros, Pauline Reynier, Kristian B. Filion. (Canada)

4523 **Risk of Thromboembolic Events Associated with Concomitant Use of Oral Hormonal Contraceptives and Selective Serotonin Reuptake Inhibitors**

Phuong Pham, Yasser Albogami, Brian Cicali, Patrick Squires, Amir Sarayani, Thuy Thai, Victoria Reams, Kiyon Rhew, Amie Gooddin, Stephan Schmidt, Almut G. Winterstein, Joshua Brown. (United States)

4655 **Fracture Incidence on Tenofovir Disoproxil Fumarate: A South African Cohort Analysis**

Johannes P Mouton, Karen Cohen, Gary Maartens. (South Africa)

4761 **The Risk of Muscular Events Among New Users of Different Statins: An Observational Cohort Study**

Alexandra M Mueller, Evangelia Liakoni, Cornelia Schneider, Theresa Burkard, Susan S Jick, Stephan Krähenbühl, Julia Spöndlin, Christoph R Meier. (Switzerland)

Vaccines

2369 **Post-Licensure Observational Safety Study After Meningococcal B Vaccine (4CMenB) Vaccination in Routine UK Care**

Gillian C Hall, Ian Douglas, Paul T Heath, Prab Prabhakar, Dominique Rosillon, Javeed Khan, Victoria Abbing-Karahagopian. (United Kingdom)

4447 **Individual and Neighborhood Factors Associated with Failure to Vaccinate Against Influenza During Pregnancy**

Ousseny Zerbo, Thomas Ray, Lea Zhang, Kristin Goddard, Alyce Adams, Bruce Fireman, Saad Omer, Martin Kulldorff, Nicola P. Klein. (United States)

4871 **Obstetric Perinatal and Early Childhood Health Outcomes Following Pertussis Immunization During Pregnancy in Ontario Canada**

Deshayne B Fell, Romina Fakhraei, Meghan Laverty, Natasha Crowcroft, Shelly Bolotin, Kumanan Wilson, Steven Hawken, Laura Gaudet, Gayatri Amirthalingam, Anne Biringer, Jocelynn Cook, Vinita Dubey, Scott Halperin, Frances Jamieson, Jeff Kwong, Manish Sadarangani, and Mark Walker. (Canada)

4906 **Active Follow-up of Adverse Events Following Immunization During the Mass Measles Rubella and Polio Vaccine Campaign in Rural Uganda**

Dan Kajungu, Michael Muhoozi, Victoria Nambasa. (Uganda)

Poster Sessions

Poster Sessions

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

Poster Session Categories

Benefit-Risk Assessment, Communication, and Evaluation (BRACE)	65	Methods in Pharmacoepidemiology » Confounding/ Bias - Methods to avoid bias and confounding, including confounder summary scores (e.g., propensity scores, disease risk scores)	122
Biologics/Biosimilars	66	Methods in Pharmacoepidemiology » Measurement Methods - Validation methods to confirm data (including Patient Reported Outcomes development and validation); Methods to deal with missing data	124
Disease Epidemiology/Clinical Course » Cancer	69	Methods in Pharmacoepidemiology » Study Design - Studies assessing study design (e.g., choice of comparator, self-controlled methods, avoiding immortal time bias)	128
Disease Epidemiology/Clinical Course » Cardiovascular	72	Molecular Epidemiology/Biomarkers/ Pharmacogenetics	131
Disease Epidemiology/Clinical Course » Diabetes	73	Pediatric Pharmacoepidemiology	132
Disease Epidemiology/Clinical Course » Neurological/Mental Health	74	Pharmacovigilance » Cancer	134
Disease Epidemiology/Clinical Course » Other	76	Pharmacovigilance » Cardiovascular	135
Drug Effectiveness	81	Pharmacovigilance » Diabetes	137
Drug Utilization Research » Changing Drug Utilization (interventions and implementation research)	86	Pharmacovigilance » Neurological/Mental Health	137
Drug Utilization Research » Health Policy and Governance	88	Pharmacovigilance » Other	138
Drug Utilization Research » Other	90	Pregnancy and Lactation	143
Drug Utilization Research » Quality Use of Medicines (including indicators and guidelines)	95	Rare Disease	147
Drug Utilization Research » Trends and Comparisons	99	Safety End Points » Cancer	149
Geriatric Pharmacoepidemiology	107	Safety End Points » Cardiovascular	150
Health Economics/Outcomes Research	111	Safety End Points » Diabetes	152
Informatics	114	Safety End Points » Neurological/Mental Health	152
Medical Devices	117	Safety End Points » Other	153
Methods in Pharmacoepidemiology » Analytical Methods - e.g., marginal structural models, instrumental variables, sensitivity analyses	120	Vaccines	155
Methods in Pharmacoepidemiology » Clinical Trial Methodology - Including pragmatic trials, cluster/sub-analyses of RCTs	122		

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

- 102 **Evaluation of the Effectiveness of Direct Healthcare Professional Communication Regarding New Dosage of Paracetamol Paediatric Syrup**
Françoise Guillaume, Martine Sabbe, Javier Sawchik, Jamila Hamdani. (Belgium)
- 2372 **Medication Storage and Disposal in Saudi Arabia: Opportunities for Public Health Improvement**
Rasha Almubark, Aljoharah Algabbani, Nora Althumairi, Nasser Bin Dhim. (Saudi Arabia)
- 2588 **Proton Pump Inhibitor Use and the Risk of Hepatocellular Carcinoma: A Systematic Review of Real-world Data**
Ambrish Singh, Robin Jha, Salman Hussain, Benny Antony. (Australia)
- 2600 **Process Indicators and Outcomes to Assess the Effectiveness of Additional Risk Minimisation Measures in Europe**
Esther Artime, Nawab Qizilbash, Rafael Herruzo, Macarena Garrido-Esteba. (Spain)
- 2615 **Digital Tools for the Communication of Risk Minimization Measures for Medicines**
Michael Forstner. (Switzerland)
- 2639 **Hypoglycemia-related ED Visits and Hospitalizations Among Initiators of Insulin Analogues Compared to NPH Insulin**
Marie C Bradley, Yoganand Chillarige, Hana Lee, Xiyuan Wu, Shruti Parulekar, Stella Muthuri, Michael Wernecke, Thomas E MaCurdy, Jeffrey A Kelman, David Graham. (United States)
- 3699 **Real-world Data Collection in Early Access Programs: An Additional Source of Data to Inform Benefit-risk Assessment in the Pre-approval Phase**
Mira Soni, Delphine Saragoussi, Dara Stein, Doug Eckley, Jodie Block. (United Kingdom)

- 3723 **Risk of Stroke and Bleeding in Atrial Fibrillation Treated with Apixaban Compared to Warfarin**
Marie C Bradley, Emily C Welch, Efe Eworuke, David Graham, Rongmei Zhang, Ting-Ying Huang. (United States)
- 3744 **Heterogeneity of Patient Preferences for Benefits and Risks of Antiplatelet Therapies**
Cathy Anne Pinto, Gin Nie Chua, Ella Brookes, Johanna Hyacinthe, Tommi Tervonen. (United States)
- 3786 **Can Monitoring Instructions Provided in Direct Healthcare Professional Communications (DHPCs) be Applied in Clinical Practice? - A Retrospective Analysis of DHPCs Sent Out Between 2007 and 2018**
Christine E Hallgreen, Arnela F Boskovic, Maja-Marie G Højer, Marie Louise de Bruin. (Denmark)
- 3818 **Evaluation of Spontaneous Adverse Event Reports for Hepatocellular Carcinoma Attributed to Sofosbuvir and Its Combinations within the FDA Adverse Events Reporting System**
Mai M. Salama, Ahmed M. Elkersh, Mohamed A. Mekki. (Egypt)
- 3969 **Changes in Zolpidem Exposure Cases in the National Poison Data System After FDA Drug Safety Communications**
Esther Zhou, Zhou Feng, Ellen Pinnow, Joann Lee, Amarilys Vega, Gerald DalPan. (United States)
- 4097 **Evaluation of the Physician Education Component of the Ozurdex Risk Management Plan**
Laurie Zografos, Elena Rivero-Ferrer, Staci Abramsky, Jean Lou, Eric Davenport, Daniel Wolin. (Spain)

Poster Sessions

- 4138 **Attitudes of Pharmacy Students Towards Patient Safety: A Multinational Cross-sectional Study**
Abdallah Y. Naser, Zahra Khalil Alsairafi, Ahmed Awaisu, Hassan Alwafi, Oriana Awwad, Salman Hussain, Avinash Kumar Singh, Alaa Alsharif, Fatima B Jeragh-Alhaddad, Angga Prawira Kautsar, Amal Khaleel AbuAlhommos. (Jordan)
- 4176 **Participation in Survey Studies of the Effectiveness of Risk Minimisation Measures in Europe**
Esther Artime, Nawab Qizilbash, Rafael Herruzo, Macarena Garrido-Estepa. (Spain)
- 4239 **Medication Errors Current Situation in Saudi Arabia; A Nationwide Observational Study**
Khalidah A Alanazi, Yasser Alatawi, Ali F Altebainawi, Thamir M Alshammari. (Saudi Arabia)
- 4295 **How Patient Preferences Can Inform Net Clinical Benefit: A Personalized, Patient-centered, Benefit Risk Assessment Using Real-world and Clinical Trial Data**
Tommi Tervonen, Thibaud Prawitz, Gin Nie Chua, Johanna Hyacinthe, Cathy Anne Pinto. (United Kingdom)
- 4301 **Handling Information About New Drug Safety Issues in Dutch Hospitals: A Mixed-methods Approach**
Esther de Vries, Elisabeth Bakker, Peter G. Mol, Petra Denig. (Netherlands)
- 4372 **Measuring the Uptake of Pharmacoepidemiologic Research Through Bibliometric Analysis: A Pilot Study from the Canadian Network for Observational Drug Effect Studies**
Robyn L Traynor, Wusiman Aibibula, Melissa Helwig, Kristian B Filion, Ingrid S Sketris, Samuel A Stewart. (Canada)
- 4449 **Patient Perceptions on Transplant with Organs from Donors with Hepatitis C Virus Infection**
M. Elle Saine, Erin M Schnellinger, Michaella Moore, Ashley J Woodards, Caitlin Phillips, David S Goldberg, Peter P Reese, Frances K Barg. (United States)
- 4852 **Stakeholders' Perspective in Implementation of Additional Risk Minimization Measures: Reflection on Challenges and Solutions**
Harshil Patel. (India)
- 4880 **Deprescribing of Inappropriately Consumed Proton Pump Inhibitors and Its Clinical Consequences: A Prospective Study**
Eswaran Maheswari. (India)
- 5049 **Benefit-harm Balance of Fingolimod in Patients with MS: A Modelling Study Based on FREEDOMS**
Alessandra Spanu. (Switzerland)
- Biologics/Biosimilars**
- 27 **Why Not Biosimilars: Biologic and Biosimilar Utilization Trends in Japanese RA Patients**
Lu Zhang, Tiffany S Woodworth, Joseph Menzin. (United States)
- 2324 **Monoclonal Antibody Induced Progressive Multifocal Leukoencephalopathy and Cytokine Release Syndrome: Analysis of EudraVigilance and FAERS Databases and Risk Minimisation Measures**
Kalindi N Hapani. (India)
- 2477 **Long-term Safety and Effectiveness of Etanercept in Pediatric Psoriasis Patients: Results from a Prospective Observational Cohort Study**
Yun Gu, Emma Brinkley, Rachel E. Sobel, Joel M. Gelfand, Marieke Seyger, Zsuzsanna Szalai, Jean-Philippe Lacour, Mona Stähle. (United States)
- 2605 **Association Between Biologics and Risk of Herpes Zoster in Patients with Psoriasis**
Chaw-Ning Lee, Hsing-Chun Hsieh, Tzu-Chi Liao, Edward Chia-Cheng Lai. (Taiwan)
- 3709 **Different Safety Reporting Profiles of Infliximab Biosimilar from Originator: Comparison Among Countries**
Kimie Sai, Yoshiko Aoki, Yoshiro Saito. (Japan)

3751 **Switching from Originator Infliximab to Biosimilar: Missed Dose and Discontinuation in a Population-based Cohort**

Cristiano S Moura, Jeffrey R Curtis, Denis Choquette, Gilles Boire, Gilles Boire, Vivian P Bykerk, Walter P. Maksymowych, Peter L. Lakatos, Waqqas Afif, Sasha Bernatsky. (Canada)

3916 **Machine Learning Coupled with Patient Reported Outcome Data to Classify & Predict RA Disease Activity: Results from the AWARE Trial**

Jeffrey R Curtis, Fenglong Xie, Shelly Kafka, Shawn Black. (United States)

3930 **Variation in Definitions of Granulocyte Colony Stimulating Factor Prophylaxis and Patient Outcomes: A Scoping Review of Observational Studies**

Cara L McDermott, Pamala A Pawloski, Prasad Gawade, Cynthia Holmes, Edward Li, Aaron Mendelsohn, Gary Yee, Catherine M Lockhart. (United States)

4057 **Do Labels of Drugs with the Same Mechanism of Action Describe the Same Adverse Drug Reactions? A Case Study on TNF-alpha Inhibitors**

Lotte A Minnema, Thijs J Giezen, Jarno Hoekman, Toine C Egberts, Hubert G Leufkens, Helga Gardarsdottir. (Netherlands)



Poster Sessions

- 4167 **Insulin Glargine and Hypersensitivity Reactions as an Example of Biosimilars Pharmacovigilance**
Ayad K Ali, Martin S Bohm. (United States)
- 4275 **Trends in Formulary Coverage of and Point-of-sale Prices for Short-acting Filgrastim Products**
Shelley A. Jazowski, Stacie B. Dusetzina. (United States)
- 4421 **Changes in Patient-reported Outcome (pro) Scores for Nausea and Fatigue Following Weekly Methotrexate Dose in a Real-world Sample of RA and PsA Patients in the ArthritisPower Registry**
W. Benjamin Nowell, Elaine Karis, Kelly Gavigan, Laura Stradford, Scott Stryker, Huifeng Yun, Shilpa Venkatachalam, Gregory Kricorian, Lang Chen, Hong Zhao, Fenglong Xie, Jeffrey R Curtis. (United States)
- 4575 **Effect of Biosimilar Market Entry on Cost of Biologics in the United States: The Case of Filgrastim**
Morgane Mouslim, Caleb Alexander, Jodi Segal. (United States)
- 4583 **Traceability of Biosimilar and Reference Products in Adverse Drug Events Reports in Saudi Arabia**
Fares Alrubaish, Rayan Alolayet, Muhanad Alharbi, Hamad Alnomay, Fawaz Alharbi. (Saudi Arabia)
- 4586 **Cardiovascular Risk in Patients Receiving Ranibizumab Therapy for Exudative Age-related Macular Degeneration: A Nationwide Self-controlled Case-series Study**
Ha-Lim Jeon, Seong Jun Byun, Nicole L Pratt, Janet Sultana, Sang Jun Park, Ju-Young Shin. (Korea, Republic of)
- 4617 **Biosimilar Formulations of Gonadotropins in a Central Italian Region: Use Patterns and Time Trends**
Alessandro Cesare Rosa. (Italy)
- 4807 **Comparability of Patients with CIDP Using Intravenous Immunoglobulin in Medicaid vs Commercial or Medicare Claims Data**
J. Bradley Layton, Mary E. Ritchey, Zhongwen Huang, Colin Anderson-Smits. (United States)
- 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)**
Stephen D. Silberstein, Shoshana Reshef, Joshua M. Cohen, Sanjay Gandhi, Michael Seminerio, Verena Ramirez Campos, Yoel Kessler, Stephen Thompson, Andrew Blumenfeld. (United States)
- 4829 **Identifying Immunoglobulin Use in Claims Data with Procedure Coding and Pharmacy Dispensing Data**
Colin Anderson-Smits, Bradley Layton, Zhongwen Huang, Mary Beth Ritchey. (United States)
- 4861 **Profile of Patients with Rheumatic Diseases and Treated at a Brazilian Health System Unit in Belo Horizonte City**
Natália Brandão, Marina Morgado, Gerusa Araújo, Juliana Alvares-Teodoro, Francisco Acúrcio, Augusto Afonso Guerra. (Brazil)
- 5008 **The Adherence Patterns Among Patients Using Infliximab Bio-originator and Biosimilar**
Joseph C Alanaeme, Sarvesh Sujith, Jeffrey R Curtis, Huifeng Yun. (United States)
- 5035 **Real-world Evidence of the Risk of Neutropenia Among Patients Treated with Filgrastim**
Elnara Fazio-Eynullayeva. (United States)
- 5120 **Seasonal Differences in Omalizumab Utilization Among Persons with Asthma and Allergic Rhinitis in the United States**
Ayobami Akenroye, Kayte Andersen, Corinne Keet, Jodi Segal, Caleb Alexander. (United States)

5124 **Use of Monoclonal Antibodies for Asthma in the United States, 2003-2019**

Ayobami Akenroye, Jamie Heyward, Corinne Keet, Caleb Alexander. (United States)

Disease Epidemiology/Clinical Course » Cancer

129 **Screening for Potential Prescription Drug Effects on Prognosis of Localized Colorectal Cancer**

Anne Katrine Duun-Henriksen, Klaus K. Andersen, Irene Petersen, Henrik Toft Sørensen, Anssi Auvinen, Laurel A. Habel, Jesper Hallas, Anton Pottegård, Jiri Bartek, Søren Friis, Christian Dehlendorff. (Denmark)

2371 **Venous Thromboembolism and Risk of Cancer in Users of Low-dose Aspirin: A Danish Population-based Cohort Study**

Frederikke Schønfeldt Troelsen, David Nagy, Nils Skajaa, Dóra Körmendiné Farkas, Rune Erichsen, Henrik Toft Sørensen. (Denmark)

2376 **Antidepressant Dispensing Among Women with Breast Cancer, United States, 2001-2018**

Jihye Park, Sara Dejene, Sophie E Mayer, Alan Kinlaw, Hazel B Nichols, Michele Jonsson-Funk, Virginia Pate, Eliza M Park, Katherine E Reeder-Hayes, Jennifer L Lund. (United States)

2378 **Deriving the European Leukemia Net (E L N) Risk Categorisation in Acute Myeloid Leukemia (A M L) Patients in a Real-world Data Source**

Tao Xu, Ana Ferro, Felipe Castro, Anne-Marie Meyer, Bruno Medeiros, Tarec Christoffer El Galaly, Evelyn M Flahavan. (Switzerland)

2425 **Serum Lipid Trajectories in the Years Before a Lymphoma Diagnosis**

Joan Fortuny, Estel Plana, James A Kaye. (Spain)

2452 **End-of-life Anticancer Treatment. A Nationwide Registry-based Study**

Thea O Mattsson, Anton Pottegård, Trine L Jørgensen, Anders Green, Mette Bliddal. (Denmark)

2469 **Biliary Tract Cancer (BTC) Epidemiology in the United States**

Huifen Wang, Binbing Yu, Katherine Baria. (United States)

2594 **Methodologic Considerations for Evaluating Adherence to Oral Oncologic Therapy in a High Mortality Population**

Danielle Chun, Blánaid Hicks, Sharon Peacock-Hinton, Hung-Jui Tan, Michele Jonsson-Funk, Alex Keil, Til Stürmer, Jennifer Lund. (United States)

3711 **Glucocorticoid Use and Breast Cancer Risk in a Prospective Cohort Study of Postmenopausal Women**

Manon Cairat, Marie Al Rahmoun, Marc Gunter, Gianluca Severi, Dossus Laure, Agnes Fournier. (France)

3727 **A US Multicenter Chart Review Study of Patients with Metastatic Pancreatic Ductal Adenocarcinoma Receiving Liposomal Irinotecan After Gemcitabine-based Therapy**

Kenneth H Yu, Andrew Hendifar, Olatunji Alese, Amber Draper, Maen Abdelrahim, Ethan Burns, Gazala Khan, Paul Cockrum, Rachel Bhak, Maral DerSarkissian, Catherine Nguyen, Mei S Duh, Nathan Bahary. (United States)

3792 **Risk Factors and Disease Burden of Metastatic Melanoma: A Population-based Study in South Korea**

Hae-Young Park, Hyun-Ju Yang, Soo Min Jeon, Sena An, Jin-Won Kwon. (Korea, Republic of)

3918 **Declines in Health Related Quality of Life Among Older Patients with Hematologic Malignancies**

Ashwini Zolekar, Nadia A. Nabulsi, Alemseged A. Asfaw, Jifang Zhou, Karen Sweiss, Pritesh R. Patel, Brian C-H Chiu, Edith A. Nutescu, Gregory S. Calip. (United States)

Poster Sessions



4165 **Epidemiology of HER2+ Metastatic Breast Cancer in Germany and France in 2019**

Kendra DeBusk, Naomi R. Schwartz, Susan Dennett, Nicolas Lindegger, Sonia Pulgar. (United States)

4175 **Association of Calcium Channel Blocker Subtypes and Prostate Cancer Related Mortality**

Kevin Yan, Kathy Li, Mahyar Etminan, HJ Gober, Bruce Carleton. (Canada)

4183 **Comparative Risks of Cardiotoxicity Following Initiation of Checkpoint Inhibitors, BRAF/MEK Inhibitors, and Interferon Alpha in Patients with Metastatic Melanoma**

Benjamin Bates, Poonam Gandhi, Soko Setoguchi. (United States)

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

Hideki Onishi, Izumi Sato, Mayumi Ishida. (Japan)

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

Sang Oh Kang, Kyung Hyun Min, Harim Yeon, Kyungeun Lee. (Korea, Republic of)

4213 **Disease Characteristics, Treatment and Clinical Outcomes of Patients with B-cell Non-hodgkin Lymphoma: A Retrospective Study in Taiwan**

Sung-Nan Pei, Hong Qiu, Lee Anne Rothwell, Yanfang Liu. (Singapore)

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

Francois-Xavier Lamy, Craig Knott, James Harnett, Amerah Armin, Leo Russo, Emmanuelle Boutmy, Patrice Verpillat. (Germany)

- 4298 **Evaluation of Electronic Health Record (EHR) Data of Patients with Acute Myeloid Leukaemia (AML) for Real-world Data Analyses**
Charlotta Früchtenicht, Evelyn M Flahavan, Tao Xu, Tarec Christoffer El-Galaly, Jessica Davies, Craig Gower-Page, Anne-Marie Meyer. (Switzerland)
- 4397 **Incidence, Prevalence, and Survival in Patients with Metastatic Non-small Cell Lung Cancer in the United States (US)**
Engels Chou, Alyssa B. Klein, Ion Cotarla, Brian Seal. (United States)
- 4419 **KADor: A French Retrospective Study Describing the Therapeutic Management of Patients Who Received Herceptin® Based Neoadjuvant Treatment for HER2+ Early Breast Cancer (eBC)**
Paul Cottu, David Perol, Olivier Tredan, Alain Livartowski, Melina Gilberg, Rim Ghorbal, Julien Dupin, Cathy Maillard. (France)
- 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**
Evie Merinopoulou, Beth Nordstrom, Samuel Huse, Nataliya Trunova, Christianah Kolajo, Engels Chou, Alyssa B Klein. (United Kingdom)
- 4441 **Treatment Patterns and Clinical Outcomes of Patients with Metastatic Non-small Cell Lung Cancer Receiving Immune Checkpoint Inhibitors in Combination with Chemotherapy in the First-line Setting in Community-based Practices in the United States**
Evie Merinopoulou, Beth Nordstrom, Samuel Huse, Nataliya Trunova, Christianah Kolajo, Engels Chou, Alyssa B Klein. (United Kingdom)
- 4503 **Use of Proton Pump Inhibitors and Histamine-2 Receptor Antagonists and Risk of Gastric Cancer in Two Population-based Studies**
Peipei Liu, Úna McMenamin, Brian Johnston, Peter Murchie, Lisa Iversen, Amanda Lee, Pauline Vissers, Christopher Cardwell. (United Kingdom)
- 4519 **Identifying Microsatellite Instability Associated Cancer Patients in the Veterans Affairs Healthcare System**
Shahed Iqbal, Amanda M De Hoedt, Kai-Li Liaw, Stephen J Freedland, Mayur Amonkar, Deepti Aurora-Garg, Zachary Klaassen. (United States)
- 4663 **Characteristics and Study Eligibility of British Lung Cancer Patients for Clinical Trials Evaluating Targeted Therapies (TTS) or Immune Checkpoint Inhibitors (ICIS)**
Ard van Veelen, Shahab Abtahi, Patrick Souverein, Johanna H Driessen, Olaf H Klungel, Anne-Marie Dingemans, Robin van Geel, Frank de Vries, Sander Croes. (Netherlands)
- 4691 **Clinical Value of Oncology Medicines in Europe: Is it Different for Conditionally Approved Medicines?**
Lourens T Bloem, Rosa E Bot, Aukje K Mantel-Teeuwisse, Menno E van der Elst, Olaf H Klungel, Hubert G Leufkens, Jarno Hoekman. (Netherlands)
- 4746 **Antiplatelet Drug Use and Breast Cancer Risk in a Prospective Cohort Study of Postmenopausal Women**
Manon Cairat, Marie Al Rhamoun, Gianluca Severi, Marc Gunter, Laure Dossus, Agnes Fournier. (France)
- 4777 **The Potential of Claims Data for Long-term Follow-up of Breast Cancer Patients in Germany**
Miriam Heinig, Ulrike Haug. (Germany)

Poster Sessions

- 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**
Helen Strongman, Emily Herrett, Rod Jackson, Michael Sweeting, Alexander R Lyon, Susannah Stanway, Claire Lawson, Umesh Kadam, Liam Smeeth, Krishnan Bhaskaran. (United Kingdom)
- 4873 **Association of Surgical Complications with In-hospital Mortality Among Patients Undergoing Major Pancreatic Resection**
Joseph Guilfoyle, Neal Bhutani, Stephen Johnston, Hari Dwarakanathan, Anuprita Patkar, Robert C Martin. (United States)
- 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)
- Disease Epidemiology/Clinical Course »
 Cardiovascular
- 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**
Thomas P Leahy, Cormac Sammon, Sreeram Ramagopalan. (United Kingdom)
- 4055 **Venous Thromboembolism and Risk of Cancer in Users of Statins: A Danish Population-based Cohort Study**
Nils Skajaa, David Nagy, Frederikke Schønfeldt Troelsen, Dóra Körmendiné Farkas, Henrik Toft Sørensen. (Denmark)
- 4117 **Coprevalence of Comorbidities in Medicare Older Adults with Chronic Obstructive Pulmonary Disease**
Tham T. Le, Linda Simoni-Wastila. (United States)
- 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**
Sara N Levintow, Catie Wiener, Kate K Orroth, Karminder Gill, Andrew Mullard, M. Alan Brookhart, Leah J McGrath. (United States)
- 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**
Catie Wiener, Sara N Levintow, Kate K Orroth, Karminder Gill, Andrew Mullard, Leah J McGrath, M. Alan Brookhart. (United States)
- 4581 **The Prevalence and Determinants of Over- and Undertreating Hypertension and Cholesterol Levels in the Rhineland Study**
Nersi Alaeddin, Folgerdiena M de Vries, Gökhan Pehlivan, Monique M Breteler. (Germany)



Disease Epidemiology/Clinical Course »
Diabetes

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

Talip Eroglu, Carlo Barcella, Michiel Hulleman, Asger Granfeldt, Patrick Souverein, Grimur Mohr, Rudolph Koster, Mads Wissenberg, Anthonius de Boer, Christian Torp-Pederson, Fredrik Folke, Marieke Blom, Gunnar Gislason, Hanno Tan. (Netherlands)

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)

4872 **Characteristics of Patients Newly Diagnosed with Atrial Fibrillation After Ischemic Stroke Hospitalization**

Lu Zhang, Anna Watzker, Tiffany S Woodworth, Mark Friedman, Joseph Menzin. (United States)

2546 **Dental Resource Service Utilization Among Type 2 Diabetes Patients: A Real-world Analysis Using a Linked Claims and Dental Database**

Ellen R. Thiel, Kristin Evans, Christopher Gregory, Debra E. Irwin. (United States)

2678 **Individualized Glycemic Control in Type 2 Diabetes in the US and Europe**

Dominik Lautsch, Euan McLeod, Tongtong Wang, Swapnil Rajpathak, Claudio Gonzalez, Seema Malkani, Gary Milligan, James Jackson, Victoria Higgins. (United States)

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**

Sia Kromann Nicolaisen, Lasse Bjerg, Diana Hedevang Christensen, Reimar Wernich Thomsen, Jens Steen Nielsen, Signe Toft Andersen, Henning Beck-Nielsen, Troels Staehelin Jensen, Anneli Sandbæk, Daniel Witte, Morten Charles. (Denmark)

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

Raymond Milan, Jacques LeLorier, Ivan Litvinov, Kaberi Dasgupta, Elham Rahme. (Canada)

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

Seth Kuranz, Christian Haudenschild. (United States)

Poster Sessions

- 3962 **Statin Therapy and Risk of Polyneuropathy in Type 2 Diabetes: A Population-based Cohort Study**
Frederik Pagh Kristensen, Diana Hedevang Christensen, Brian Callaghan, Søren Tang Knudsen, Søren H. Sindrup, Eva L. Feldman, Leif Østergaard, Henning Andersen, Troels Staehelin Jensen, Henrik Toft Sørensen, Reimar Wernich Thomsen. (Denmark)
- 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**
Kazuaki Enomoto, Azusa Hara, Nanae Tanemura, Takumi Hirata, Tomonori Okamura, Hisashi Urushihara. (Japan)
- 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**
Sampada Gandhi, Chuntao Wu, Maximiliano Waschbusch, Madlen Michael, Meng Zhang, Xinyu Li, Juhaeri Juhaeri. (United States)
- 4228 **Cardiorenal Disease is the Most Common First Cardiovascular Manifestation in Type 2 Diabetes and Associated with Increased Mortality**
Jetty A Overbeek, Esmé Lighaam, Gerard C Linssen, Ron M Herings, Johan Bodegård. (Netherlands)
- 4272 **The Pharmo Diabetes, Management, and Treatment (DIAMANT) Cohort: A Population-based Cohort of People with Type 2 Diabetes**
Jetty A Overbeek, Louise Lemmens, Amber A van der Heijen, Giel Nijpels, Ron M Herings. (Netherlands)
- 4321 **Factors Related to Sodium Glucose Cotransporter 2 Inhibitor (SGLT2i) and Dipeptidyl Peptidase 4 Inhibitor (DPP4i) Dispensing Among Naive, Incident, and Prevalent New Users**
Yandong Qiang, Casie H. Horgan, Andrew B Petrone, Joy Kolonoski, Aaron Hansbury, Christian Hampp, Sarah Dutcher, Sruthi Adimadhyam, Sengwee Toh. (United States)
- 4363 **The Pattern of Incident Fractures in Patients with Newly Diagnosed Type 2 Diabetes Mellitus**
Johanna H Driessen, Cindy Sarodnik, Nicklas H Rasmussen, Sandrine P Bours, Nicolaas C Schaper, Peter Vestergaard, Patrick C Souverein, Morten Jensen, Frank de Vries, Joop P van den Bergh. (Netherlands)
- 4391 **Ethnic Differences in Statin Prescribing for People with Type 2 Diabetes**
Sophie V Eastwood, Rohini Mathur, Liam Smeeth, Krishnan Bhaskaran, Nishi Chaturvedi. (United Kingdom)
- 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)

Disease Epidemiology/Clinical Course »
 Neurological/Mental Health

- 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**
Merete Osler, Martin B Jørgensen. (Denmark)

- 2527 **Treatment Patterns of Patients with Major Depressive Disorder and Suicidal Ideation or Attempt**
David M Kern, M. Soledad Cepeda, Frank Wiegand. (United States)
- 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**
Joan Forn, J Bradley Layton, Jennifer Bartsch, Mary Ellen Turner, Colleen Dempsey, Mary Anthony, Mary E Ritchey, George Demos. (Spain)
- 3775 **Excess Deaths Associated with Treatment Resistance in Patients with Major Depressive Disorder**
Philip Brenner, Lena Brandt, Michel Nijs, Johan Reutfors, Therese Andersson. (Sweden)
- 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)**
Claudia Becker, Laura Eggenschwiler, Susan S Jick, Christoph R Meier. (Switzerland)
- 3806 **Caregiving Burden, Chronic Pain and Opioid Utilization Among Parents of Children with Special Healthcare Needs**
Wendy Camelo Castillo, Oluwadamilola Onasanya, Beth B Hogans, Susan dosReis, Gloria Reeves. (United States)
- 3983 **A Population-based Cohort Study of Disruptive Mood Dysregulation Disorder Among Youth in the US**
Xiaofeng Zhou, Prethibha George, Rongjun Shen, Gong Richard, Robert L. Findling, Phillip B. Chappell. (United States)
- 4018 **Association of Renal and Cognitive Function in an Elder Population: Analysis of NHANES 2011 and 2013**
David Vizcaya, Peter Kolkhof, Montse Soriano-Gabarro. (Spain)
- 4180 **Leveraging Real World Data to Characterize Rates of Elevated Liver Enzyme Levels Among Patients Diagnosed with Migraine**
William K. Mountford, Matthew Butler, Carissa Dukes, Jiatao Michael Ye. (United States)
- 4268 **Development Trajectories in Asd Based on Symptoms Measured by the Vineland Adaptive Behaviour Scale Second Edition Using Data from the US and Europe**
Chuang Liu, Mariabeth Silkey, Hannah Furby, Yajing Zhu. (Switzerland)
- 4316 **Hospital-diagnosed Infections, Community-based Antibiotic Prescriptions, and Risk of Subsequent Guillain-Barré Syndrome: A 30-year Nationwide Population-based Case-control Study**
Lotte S Levison, Reimar W Thomsen, Søren H Sindrup, Henning Andersen. (Denmark)
- 4443 **Co-occurrence of Schizophrenia and Dementia**
Tobias Gerhard, T. Scott Stroup, Melanie Wall, Cecilia Huang, Mark Olfson. (United States)
- 4497 **Infection Dynamics in Patients with Multiple Sclerosis Over the Past 15 Years: A Retrospective Cohort Study in the UK Clinical Practice Research Datalink**
Melissa W Leung, Marloes T Bazelier, Patrick C Souverein, Hubert G Leufkens, Romijn Pajouheshnia. (Netherlands)
- 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)

Poster Sessions

- 4639 **All-cause Mortality, Suicide and Self-harm in Patients with Treatment-resistant Depression**
Frederikke Gronemann, Martin Balslev Jørgensen, Merete Nordentoft, Per Kragh Andersen, Merete Osler. (Denmark)
- 4700 **Postnatal Depression and Infant “5-in-1” Vaccine Adherence in the United Kingdom**
Holly C Smith, Fahima Choudry, Irene Petersen. (United Kingdom)
- 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**
Nydjie Grimes, Cortney Hayflinger, Cynthia Jones. (United States)
- 5032 **Prevalence of Anxiety, Depression and Drug Utilization of Antidepressants Among Cancer Patients in the Inpatient Settings: A Cross-sectional Study in Jordan**
Abdallah Y Naser, Anas Nawfal Hameed, Nour Mustafa, Hassan Alwafi, Haya Khalil. (Jordan)
- 5134 **Medication Use Among Migraine Sufferers: An Analysis of Electronic Medical Records**
Jessica D. Albano, Kelly Oh, Sara Ephross. (United States)
- Disease Epidemiology/Clinical Course » Other**
- 52 **Identifying Patients with Chronic Kidney Disease in a Population-based Laboratory Database**
Uffe Heide-Jørgensen, Christian F Christiansen, Henrik Birn, Reimar W Thomsen, Søren V Vestergaard. (Denmark)
- 53 **Identification of Risk Factors Associated with Mortality in Neonatal Sepsis Patients**
Vijayanarayana Kunhikatta, Puspita Sahu, Meenakshi Srinivasan, Shivakumar M, Leslie Edward Lewis. (India)
- 70 **The Impact of Socioeconomic Status on the Risk of Total Hip Arthroplasty During 1995 to 2017 in Denmark**
Nina M Edwards, Claus Varnum, Søren Overgaard, Alma B Pedersen. (Denmark)
- 92 **Association Between Dietary Diversity and All-cause Mortality Among Chinese Adults 65 Years of Age or Older, a Community-based Cohort Study**
Liyuan Tao, Lin Zeng, Nan Li, Yanyan Shi, Hua Zhang, Xiaoxiao Wang, Hongling Chu, Lin Zhuo, Kaiwen Ni, Xiaoli Liu. (China)
- 95 **Evaluation of Reporting Quality for Prediction Models of HBV-related Hepatocellular Carcinoma by Tripod Statement**
Liyuan Tao, Lin Zeng, Nan Li, Yanyan Si, Hua Zhang, Xiaoxiao Wang, Hongling Chu, Kaiwen Ni, Xiaoli Liu, Siyan Zhan, Lin Zhuo. (China)
- 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**
Huifang Liang, Varinder Singh, Dongmu Zhang, Jianzhong Liu, Philip Sugerman, Colleen Wegzyn, Ryan D Kilpatrick. (United States)
- 2512 **Comorbidities and Characteristics in a Cohort of Patients with NAFLD/NASH from the Netherlands**
Jetty A Overbeek, Marieke Krol, Kelly Mulder, Marina Bakker, Ger H Koek, Ron M Herings. (Netherlands)
- 2518 **Risk of Hospitalisation Due to Infection in Patients with Psoriasis: A Population-based Cohort Study Using the United Kingdom Clinical Practice Research Datalink**
Zenas Z Yiu, Rosa Parisi, Mark Lunt, Richard B Warren, Christopher E Griffiths, Sinéad M Langan, Darren M Ashcroft. (United Kingdom)
- 2569 **Incidence of Anemia in Patients with Chronic Kidney Disease - A Population-based Cohort Study**
Søren V Vestergaard, Uffe Heide-Jørgensen, Heleen van Haalen, Glen James, Katarina Hedman, Henrik Birn, Reimar W Thomsen, Christian F Christiansen. (Denmark)
- 2610 **Probabilistic Linkage of the French Cystic Fibrosis Patient Registry with the French National Health Data System**
Manon Belhassen, Deborah Walther, Lydie Lemonnier, Marjorie Bérard, Faustine Dalon, Isabelle Durieu, Eric Van Ganse. (France)
- 2674 **Characterization of Women with Adenomyosis Identified in a Large U.S. Electronic Health Record Database with and without Hysterectomy**
Stephanie E Chiuve, Anita M Loughlin, Stacey A Missmer, Michael C Snabes, Keith Gordon, Gally Reznor, Michael C Doherty, Cheryl Enger. (United States)



Poster Sessions

- 2685 **Applying Machine Learning to Define Phenotypes of Women with Endometriosis Undergoing Laparoscopic Surgery**
Andrea K Chomistek, Cheryl Enger, Stacey A Missmer, Stephanie J Estes, Jenna F Calderbank, Michael C Doherty, Stephanie E Chiuve. (United States)
- 3695 **Occurrence of Metabolic Risk Factors Stratified by Psoriasis Severity a Swedish Population-based Matched Cohort Study**
David Hägg, Marie Linder, Mohammadhossein Hajiebrahimi, Ci Song, Therese M-L Andersson, Reginald Villacorta. (Sweden)
- 3735 **Treatment, Healthcare Resource Utilization, and Healthcare Costs for Medicare Patients with Generalized Pustular Psoriasis and Palmoplantar Pustulosis**
Allison A Petrilla, Sudeepti Pahuja, Shambhavi Kumar, Courtney R Jaeger. (United States)
- 3741 **The Spectrum of Adenomyosis Identified in a Large US Electronic Health Record Database**
Anita M. Loughlin, Gally Reznor, Michael Doherty, Stephanie E. Chiuve, Cheryl Enger. (United States)
- 3742 **Dopamine Agonists and Risk of Lung Cancer**
Maria P Hernandez-Con, Justine Shults, Allison Willis, Yu-Xiao Yang. (United States)
- 3834 **21-year Trends in First Hospitalization for Acute Urinary Retention and Subsequent Mortality in the Danish Male Population: A Nationwide Cohort Study**
Maria B Bengtsen, Uffe Heide-Joergensen, Michael Borre, Mette Nørgaard. (Denmark)
- 3837 **Prevalence of Contraindication in Chronic Kidney Disease According to eCrCl and eGFR Equations and Patient Related Risk Factors**
Susanne Stolpe, Cornelia Blume. (Germany)
- 3920 **Participant Engagement in an ArthritisPower Real-world Study to Capture Smartwatch and Patient-reported Outcome Data Among Rheumatoid Arthritis Patients**
Jeffrey R Curtis, W Benjamin Nowell, Fenglong Xie, Hong Zhao, David Curtis, Kelly Gavigan, Shilpa Venkatachalam, Laura Stradford, Jessica Boles, Justin K Owensby, Cassie Clinton, Ilya Lipkovich, Amy Calvin, Virginia S Haynes. (United States)
- 3985 **Incidence of Opioid Abuse, Dependence, and Overdose in Osteoarthritis Patients Prescribed Opioids in the United States - A Retrospective Cohort Study**
Xiaofeng Zhou, Qing Liu, Rongjun Shen, Charles Wentworth, Richard Gong, Leo Russo. (United States)
- 3989 **Potential Utility of a Novel Aggregated US Electronic Medical Record Database: Renal Transplant Pilot**
Rachel E Sobel, Robert J Taylor, Stacey N. Purinton, Aaron Berger. (United States)
- 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**
Jeffrey R Curtis, Virginia S Haynes, Fenglong Xie, Ilya Lipkovich, Hong Zhao, Carol Kannowski, Jiat L Poon, Kelly Gavigan, David Curtis, Sandra Nolot, W Benjamin Nowell. (United States)
- 4105 **Two Machines are Better Than One: Using Multi-agent Reinforcement in Machine Learning to Simulate a Clinical Second Opinion**
Cao Xiao, Junyi Gao, Lucas Glass, Jimeng Sun, Christina Mack. (United States)
- 4106 **Agreement Between Administrative Database and Medical Chart Review for the Prediction of Chronic Kidney Disease Stage**
Sylvie Perreault, Louise Roy, Michael Zappitelli, Brian White-Guay, Jean-Philippe Lafrance, Marc Dorais. (Canada)

- 4125 **Real World Evidence of Graft Survival in Four Types of Transplants: Fifteen Years Analysis in Brazil**
Ludmila P Gargano, Túlio T Sarmento, Natália C Freitas, Guilherme F Nascimento, Rosângela M Gomes, Lucas L Torres, Carolina M Ferreira, Carolina Z Dias, Isabella F Zuppo, Francisco A Acúrcio, Juliana Álvares-Teodoro, Augusto A Guerra. (Brazil)
- 4136 **Weight Gain Following Antiretroviral Therapy (ART) Initiation in ART-naive Participants in the Current Treatment Era**
Stephanie Ruderman, Heidi Crane, Robin Nance, Bridget Whitney, Barbara Harding, Kenneth Mayer, Richard Moore, Joseph Eron, William Mathews, Benigno Rodriguez, Michael Saag, Amanda Willig, Sara Lindstrom, Brian Wood, Ann Collier, Greer Burkholder, Mari Kitahata and Joseph Delaney. (United States)
- 4142 **Defining Phenotypes of Women with Endometriosis Undergoing Hysterectomy or Oophorectomy Using Machine Learning**
Andrea K Chomistek, Cheryl Enger, Stacey A Missmer, Stephanie J Estes, Jenna F Calderbank, Michael C Doherty, Stephanie E Chiuve. (United States)
- 4225 **Incidence of Community-acquired Pneumonia in China: A Nationwide Claims Database Analysis**
Yixin Sun, Yinchu Cheng, Siyan Zhan. (China)
- 4266 **Changes in Serum Creatinine Values During and After Pregnancy in a Cohort of Women with or without Pre-existing Chronic Kidney Disease**
Carole Marxer, Katrina W. Hagberg, Rishi J. Desai, Julie M. Paik, Susan S. Jick, Christoph R. Meier, Julia Spoendlin. (Switzerland)
- 4274 **Utilising Mobile and Web-based Technology for Capturing Patient Specific Information: Methods from the DISCOVER CKD Program**
Glen James, Juan Jesus Carrero, Jenny Wei, Gary Curhan, Eric Wittbrodt, Steven Fishbane, Carol Moreno Quinn, Hiddo Heerspink, Katarina Hedman, Eiichiro Kanda, Tony Chen, Naoki Kashihara, Björn Holmqvist, Mikhail Kosiborod, Peter Fenici, Mitja Lainscak, Jennie Medin, Carolyn Lam, Roberto Pecoits-Filho, Carol Pollock, Peter Stenvinkel and David Wheeler. (United Kingdom)
- 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**
Cristi Cavanaugh, Greg Donadio, Kathryn Starzyk, Kathleen Mortimer, Michael Behling, Gary Curhan, Rich Gliklich. (United States)
- 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)

Poster Sessions



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, Pareen 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)

Poster Sessions

- 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 Lähteenvuo, 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 Tagalakis. (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 Patorno. (United States)



Poster Sessions

- 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**
Thanh Phuong Pham Nguyen, Dylan Thibault, Allison Willis. (United States)
- 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 Tiihonen, 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**
Nicolai E Munk, Jakob S Knudsen, Anton Pottegård, Daniel R Witte, Reimar W Thomsen. (Denmark)
- 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. (Taiwan)
- 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)

Poster Sessions

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 Pjougheshnia, Geert-Jan Geersing, Sander van Doorn. (Netherlands)

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

68 **Changes in Prescribing of Sodium-glucose Co-transporter 2 Inhibitors and Dipeptidyl Peptidase 4 Inhibitors in Singapore**

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**
Anne Mette S Sørensen, Lotte Rasmussen, Martin T Ernst, Stine H Mogensen, Mona V Laursen, Espen Jimenez Solem, Anton Pottegård. (Denmark)
- 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 Schalbeter, 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, Machelle 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 Germa, Olivier Rascol, Jean-Louis Montastruc, Maryse Lapeyre-Mestre. (France)

Poster Sessions



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 Daviglius, 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)

Drug Utilization Research » Other

- 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 Brillì, Giada Crescioli, Alessandra Bettioli, Ippazio Cosimo Antonazzo, Giampiero Mazzaglia, Stefano Fumagalli, Guido Mannaioni, Alfredo Vannacci, Rosa Gini. (Italy)

Poster Sessions

- 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 Haardoefer, Nancy J. Thompson. (United States)
- 4198 **Cutaneous Adverse Drug Reactions to Antiretroviral Therapy Among HIV-infected Patients in a Nigerian Teaching Hospital**
Abdulwasiu 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, Elien 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)



Poster Sessions

- 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)

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

- 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, Nitesh 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**
Zaietuni 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**
Massoud Toussi, Florence Coste, Margarita Shlaen, Dimos Vasilis, Sigal Kaplan. (France)
- 4247 **Use of Medication Among Nursing Home Residents: A Danish Drug Utilization Study**
Carina Lundby, John Jensen, Søren Post Larsen, Helene Hoffmann, Anton Pottegård, Mette Reilev. (Denmark)
- 4285 **Adherence and Persistence to Methylphenidate in Children in the Netherlands**
Chii Chyi Cheung. (Netherlands)

- 4299 **The Effect of a Pharmacist Intervention on Guideline Adherence for Double and Triple Antithrombotic Therapy in a Clinical Setting**
Renate C Uden. (Netherlands)
- 4304 **Treatment Patterns and Medication Adherence Among Newly Diagnosed Migraine Patients: A Drug Utilization Study**
Sara Mucherino, Valentina Orlando, Valeria M Monetti, Ugo Trama, Enrica Menditto. (Italy)
- 4323 **Adherence and Risk Factors for Stopping Treatment in a Cohort of Quebec Patients Newly Initiated on Statins (OBSTAT Cohort)**
Sarasa M Johnson, Manon Choinière, Michele Bally, Marie-Pierre Dubé, Jean-Claude Tardif, Daniel Gaudet, Jean Bergeron, Hélène Lanctôt, Jacques Lelorier. (Canada)
- 4325 **Trends in Fluoroquinolone Use in the Inpatient and Outpatient Settings in Nairobi, Kenya: A Drug Utilisation Study**
Sylvia A Opanga, Yvonne L Isaidi, Antony B Kodiwo, Joy N Waithaka. (Kenya)
- 4375 **Adverse Events Related to Overtreatment for Hypertension in Type 2 Diabetes Patients: Impact of Age and Polypharmacy**
Martina Ambrož, Sieta T. de Vries, Klaas Hoogenberg, Petra Denig. (Netherlands)
- 4455 **The Comparison of Drug Use in Children and Adults with Allergy in Primary Care**
Volkan Aydin, N Ipek Kirmizi, Omer Atac, Narin Akici, Ahmet Akici. (Turkey)
- 4518 **Qualitative Assessment of Special Instructions or Warnings Provided to Patients Prescribed a Nitrate with a Concurrent Contraindicated Medication**
Anthony P. Nunes, Andrew Stewart, Alankar Gupta, Thomas McGraw, Jennifer Song, John D. Seeger. (United States)
- 4611 **Assessment of World Health Organisation Core Drug Use Indicators in Tertiary Care Hospital of Kathmandu, Nepal: A Cross-sectional Study**
Rakesh Ghimire, Bijay Bhandari, Nirmal Poudel, Sandesh Pradhan, Shristi Kharel. (Nepal)
- 4675 **Inappropriate Drug Therapy Prescription in Older Outpatients in Italy**
Federica Galimberti, Manuela Casula, Elena Olmastroni, Veronica Russo, Enrica Menditto, Alberico L Catapano, Elena Tragni. (Italy)
- 4689 **Differential Missingness of Antibiotic Indications in Claims Data**
Paula D Strassle, Rachael K Ross, Ashley H Marx, Zachary I Willis, Claire E Farel, Alan K Kinlaw. (United States)
- 4712 **Utilization of Rotigotine Transdermal Patch in Germany: Results from a Claims Database Study**
Lars Joeres, Stephan Luca, Guilhem Pietri, Lisa Zimmermann. (Germany)
- 4785 **Appropriateness of Outpatient Antibiotic Prescribing in China: Nationwide Cross-sectional Study**
Houyu Zhao, Jiaming Bian, Siyan Zhan. (China)
- 4805 **Use of Adjusted Sequence Symmetry Analysis to Quantify the Impact of a New Diagnosis on Off-label Prescribing: A Case Example with NAFLD and Pioglitazone**
Anthony P. Nunes, Danni Zhao, Matthew J. Alcusky. (United States)
- 4819 **Antipsychotics Used to Treat Patients with Severe Mental Disorder in Outpatient Follow-up at a Psychiatric Hospital**
Ronaldo Portela, Cristina M Ruas, Helian N Oliveira, Mariana D Lula. (Brazil)

Poster Sessions

- 4827 **Prevalence and Characteristics of Adverse Drug Reaction-related Hospital Admissions in Older Patients**
Caitriona Cahir, Carmel Curran, Caroline Walsh, David J Williams, Kathleen Bennett. (Ireland)
- 4834 **Pharmacological Treatment of Insomnia in General Practice**
Mette H Bakker, Nina A Oldejans, Henriëtte E van der Horst, Jacqueline G Hugtenburg, Pauline Slottje. (Netherlands)
- 4851 **Agreement Between Self-reported Morbidity and Pharmacy Claims Data for Prescribed Medications in a Community Based Population**
Clionadh Mannion, John Hughes, Frank Moriarty, Kathleen Bennett, Caitriona Cahir. (Ireland)
- 4922 **Bacterial Isolates and Their Patterns of Antibiotic Resistance in the Critical Care Unit of a National Referral Hospital in Kenya**
Emmah B Obegi, Margaret N. Oluka, Sylvia A Opanga, Faith A Okalebo. (Kenya)
- 5015 **Influence of Dementia on Medication-related Quality of Care in Long-term Aged Care**
Gillian E Caughey, Catherine Lang, Janet Sluggett, Steve Wesselingh, Maria C Inacio. (Australia)
- 5016 **Prevalence of and Factors Associated with Chronic Opioid Utilization Among Commercially Insured US Adults with Comorbid Chronic Pain and Mental Health Disorders**
Abisola Olopoenia, Linda Simoni-Wastila. (United States)
- 5034 **Linacotide Utilization and Potential for Off-label Use or Misuse in Three European Countries**
Javier Cid Ruzafa, Anna Schultze, Mai Duong, Yi Lu, Robert Donaldson, Darren Weissman, Ahunna Ukah. (Spain)
- 5059 **The Use of Antibiotics without Prescription and the Emergence of Multidrug-resistant Bacteria**
Jose J. Hernandez. (United States)
- 5061 **Adherence to Oral Anticoagulant and Antiplatelet Therapies After an Acute Ischemic Stroke or TIA in Atrial Fibrillation Patients**
Judit Riera-Arnau, Gabriel Sanfèlix-Gimeno, Clara Liliana Rodriguez-Bernal, Daniel Bejarano-Quisoboni, Isabel Hurtado, Anibal García-Sempere, Salvador Peiró. (Spain)
- 5075 **Concurrent Use of Multiple Antipsychotics Plus Excessive Polypharmacy: Cross-sectional Study of a Vulnerable Population**
Maíra R Alves, Rejane C Mayer, Fabiane R Motter, Luciane C Lopes. (Brazil)
- 5078 **The Role of the Patient-provider Relationship in Racial/ethnic Disparities in Nonadherence to Antihypertensive Medications**
Macarius Donneyong, Teng-Jen Chang, Autumn Carey, John Bridges. (United States)
- 5096 **Prevalence of Exposure to High-priority Drug-drug Interactions Among Community-dwelling Non-elderly Adults in Quebec, Canada**
Araceli Gonzalez Reyes, Pierre Pluye, Denis Roy, Tibor Schuster. (Canada)
- 5132 **Factors Driving Self-medication with Antimicrobials in Karaikal, India**
Devashree Moktan, Syed Ilyas Shehnaz. (India)
- 5146 **Utilization of Antihypertensive Medication in Ghana**
Macarius Donneyong, Teng-Jen Chang, Anton Pottegård, Jesper Hallas. (United States)

Drug Utilization Research » Trends and Comparisons

- 49 **Characteristics of New Users of Newer Antidiabetic Drugs in Canada and the United Kingdom**
Vanessa C Brunetti, Audray St-Jean, Sophie Dell'Aniello, Anat Fisher, Oriana HY Yu, Shawn C Budgen, Jean-Marc Daigle, Nianping Hu, Silvia Alessi-Severini, Baiju R Shah, Paul E. Ronksley, Lisa M. Lix, Pierre Ernst, Kristian B Filion, and the CNODES Investigators. (Canada)
- 103 **Time-varying Medication Use and Colectomy for Crohn's Disease and Ulcerative Colitis in the United States 2007-2018**
Xintong Li, Edward L Barnes, Virginia Pate, Alan C Kinlaw. (United States)
- 130 **Temporal Trends and Changes in Indication for Opioid Use in Catalonia, 2007-2017: A Population-based Study of 6 Million Individuals**
Junqing Xie, Aleksandra Turkiewicz, Gary Collins, Martin Englund, Victoria Y Strauss, D. Prieto-Alhambra. (United Kingdom)
- 133 **Prescription Drug Use in Testicular Cancer Patients: A Danish Nationwide Registry Study**
Anne Katrine Duun-Henriksen, Michael Kreiberg, Jakob Lauritsen, Mikkel Bandak, Thomas Wagner, Josephine Rosenkilde, Irene Petersen, Klaus K. Andersen, Christian Dehlendorff, Gedske Daugaard. (Denmark)
- 2354 **Over - the - Counter Drugs: A Pharmacoepidemiological Study in Greece**
Georgios Poulentzas, Panagiotis Nikolaos Lalagkas, Theodora Tatsiou, Eleftherios Berberoglou, Dimitra Hadjipavlou - Litina, Christos Kontogiorgis, Theodoros Constantinides. (Greece)
- 2415 **Decreasing Adherence to Antiretroviral Therapy Over 4 Years of Follow-up in a Commercially-insured US Population of Patients with HIV**
Julie Priest, Rachel Bhak, Maral DerSarkissian, Cindy Garris, Alan Oglesby, Colin Kunzweiler, Ellie Fuqua, Suna Park, Mei S Duh. (United States)
- 2450 **Prescription Patterns of Outpatients and the Potential of Multiplexed Pharmacogenomic Testing**
Sze Ling Chan, Hariz Z Liew, Francis Nguyen, Julian Thumboo, Wan Cheng Chow, Cynthia Sung. (Singapore)
- 2556 **Trends in Gabapentinoid Prescriptions and Coprescription with Opioids in the Four UK Nations**
Alvi Rahman, Joseph Kane, François Montastruc, Christel Renoux. (Canada)
- 2574 **Incidence of Anorexia Nervosa and the Prescribing of Psychotropic Medications from UK Primary Care, 1996-2016: A Retrospective Database Study**
Maedeh Y Beykloo, Dasha Nicholls, Ian Wong, Mima Simic, Elizabeth Mills, Ruth Brauer. (United Kingdom)
- 2619 **The Impact of Changing Biosimilar Policies for Rheumatic Conditions and Inflammatory Bowel Disease in Ontario, Canada**
Mina Tadrous, Daniel McCormack, Sophie Kitchen, Martins Diana, Tara Gomes. (Canada)
- 2651 **Correlation Between Antibiotic Consumption and Resistance at an Intensive Care Unit in Serbia**
Radmila Popović, Ana Tomas, Sanja Vicković, Gordana Jovanović, Olga Horvat, Zdenko Tomić, Ana Sabo. (Serbia)
- 2657 **Sensitivity of Treatment Patterns to Grace Period Selection in Medications with Tolerability Issues: A Real-world Example of Hedgehog Inhibitor Use in Basal Cell Carcinoma**
Wenzhen Ge, Ning Wu, Chieh-I Chen, Matthew G Fury, Emily Ruiz, Jessica J Jalbert. (United States)

Poster Sessions

- 2661 **Medication of Diabetes in Middle-aged and Elderly: Survey Data from the China Health and Retirement Longitudinal Study (CHARLS)**
Lili Liu, Shengfeng Wang, Siyan Zhan. (China)
- 2681 **Asthma Maintenance Medication Users in the Sentinel Distributed Database**
Marie C Bradley, Elnara Fazio-Eynullayeva, Yan Li, Jianmeng Chen, Stacy Chin, Sandra Deluccia, Efe Eworuke, Katherine Freitas, Judith Maro, Catherine A Panozzo, Yunzhao Ren, Chandradas Sahajwalla, Rongmei Zhang, David Martin, Sally Seymour, Kenneth Quinto, and Robert Busch. (United States)
- 3717 **Utilization of Spironolactone in Patients with Reduced or Preserved Ejection Fraction Heart Failure**
Sruthi Adimadhyam, Austin Cosgrove, Qoua L. Her, Jennifer Lyons, Efe Eworuke. (United States)
- 3738 **How Marketing Approval Changed the Use of Tranlycypromine in the Netherlands**
Angela van der Salm, Magdalena Gamba, Toine Egberts. (Netherlands)
- 3761 **Trend of Pattern Change of Antihypertensive Medications Using Real-world Data in Korea**
Minji Jung, Eunjung Choo, Sukhyang Lee. (Korea, Republic of)
- 3771 **Changes in Prescribing of Hormone Replacement Therapy in Germany Between 2004 and 2016**
Miriam Heinig, Malte Braitmaier, Ulrike Haug. (Germany)
- 3807 **Trends in the Use of Pharmacologic Treatments for Pulmonary Arterial Hypertension from 2013-2017**
Rob F Walker, Thenappan Thenappan, Kurt W Prins, Neil A Zakai, Joel F Farley, Richard F MacLehose, Alvaro Alonso, Pamela L Lutsey, Pamela L Lutsey. (United States)
- 3832 **Prevalence and Prescribing Trends in Bipolar Disorder in Hong Kong from 2001-2018**
Vanessa Ng, Kenneth Man, Le Gao, Esther Chan, Edwin Lee, Ian Wong. (Hong Kong)
- 3838 **Trends in HbA1c Thresholds for Initiation of Hypoglycaemic Agents: Impact of Changed Guideline Recommendations for Older and/or Frail Patients with Type 2 Diabetes**
Martina Ambroz, Sieta de Vries, Klaas Hoogenberg, Petra Denig. (Netherlands)
- 3840 **Statin Use and Discontinuation in Older Danes: A Nationwide Drug Utilization Study**
Wade Thompson, Dorte Jarbøl, Jesper B Nielsen, Peter Haastrup, Anton Pottegård. (Denmark)
- 3850 **Use of Antipsychotics in Denmark 1997-2018: A Nation-wide Drug Utilization Study with Focus on Off-label Use and Associated Diagnoses**
Mikkel Højlund, Jacob H Andersen, Kjeld Andersen, Christoph U Correll, Jesper Hallas. (Denmark)
- 3870 **National Variation and Factors Associated with the Transition from First Use to Long-term Opioid Use for Non-cancer Pain**
Meghna Jani, Belay Birlie-Yimer, Therese Sheppard, Mark Lunt, William Dixon. (United Kingdom)
- 3891 **Use of Hormonal Therapy Before and After Diagnosis of Breast, Endometrial and Colon Cancer**
Lina Mørch, Charlotte Skovlund, Amani Meaidi, Christian Dehlendorff, Søren Friis, Irene Petersen, Anne Katrine Duun-Henriksen. (Denmark)
- 3898 **Racial/ethnic Disparities in Pharmacotherapy and Recurrence of Urinary Tract Infections Among Medicare Beneficiaries**
Erlene E Martinez-Miller, Julia B Ward, Brian R Matlaga, Kevin C Abbott, Tamara Bavendam, Ziya Kirkali, John Lim, Casey Pierce, Lydia B Feinstein. (United States)

3906 **Utilization of Antidepressants in Brazil: A Study Based on Private and Public Consumption Data**

Lívia Teixeira de Mattos, Cláudia Du Bocage Santos-Pinto, Claudia Garcia Serpa Osorio-de-Castro. (Brazil)

4024 **A Population-based Cohort Study on the Associations Between Selective Serotonin Reuptake Inhibitor Use Before, During, and After Pregnancy Using Data from the Health Improvement Network**

Jet W Scheffers, Irene Petersen. (Netherlands)

4029 **Methodological Considerations and Learnings from Setting up the SABINA Program**

Cassandra Nan, Sofie Arnetorp, Maarten J Beekman, Niklas Lindarck, Jennifer K Quint, Claudia S Cabrera. (Sweden)

4036 **Trends in Benzodiazepine Utilization in Romania During 1998-2018**

Irina Cazacu, Anamaria Cristina, Andreea Maria Farcaș-Călugăr, Sinziana Gheorghe-Cetean, Cristina Pop, Irina Brumboiu, Cristina Mogosan. (Romania)

4037 **Use of Analgesics Among Breast Cancer Patients in Denmark: A Nationwide Cohort Study**

Charlotte Skriver, Anne Katrine Duun-Henriksen, Irene Petersen, Christian Dehlendorff, Søren Friis. (Denmark)

4066 **Substantial Differences in the Anticholinergic Burden Across Sex and Age Groups in a Large Population-based Sample**

Jonas Reinold, Oliver Riedel, Ulrike Haug. (Germany)

4087 **Trends In The Use Of Disease-modifying Therapies Among Reproductive-aged Women With Multiple Sclerosis In The United States 2001-2017**

Emilie D Duchesneau, Michele Jonsson Funk, Alan C Kinlaw, Jennifer L Lund. (United States)

4098 **Controlled Drug Prescribing of Opioids by Private Prescribers in England, 2014-2018**

Georgia C Richards, Helen J Curtis, Brian MacKenna, Alex Walker, Ben Goldacre. (United Kingdom)



Poster Sessions

- 4099 **Psychotropic Medications Utilization in Adult Cancer Patients in China: Based on National Health Insurance Database**
Lin Bai, Cong Huang, Haishaerjiang Wushouer, Ziyue Xu, Xiaodong Guan, Luwen Shi. (China)
- 4113 **Infection-related Hospitalisations After Common Infections are Associated with Antibiotic Prescribing in Primary Care**
Birgitta van Bodegraven, Victoria Palin, Chirag Mistry, Matthew Sperrin, Andrew White, William Welfare, Darren M Ashcroft, Tjeerd P van Staa. (United Kingdom)
- 4127 **Self-reported Misuse of Oral Tramadol in the U.S.A.: Analysis of the National Survey on Drug Use and Health (NSDUH), 2002-2017**
Thomas Rhodes, Sydney T. Thai, Molly Aldridge, Suzanne F. Cook, Cynthia J. Girman. (United States)
- 4141 **Hormonal Contraception Before and After a Breast Cancer Diagnosis**
Charlotte Skovlund, Anne Katrine Duun-Henriksen, Christian Dehlendorff, Søren Friis, Irene Petersen, Lina Mørch. (Denmark)
- 4148 **Utilisation of Oral Anticoagulants for Stroke Prevention in Older People in the UK**
Anneka Mitchell, Margaret C Watson, Tomas J Welsh, Julia Snowball, Anita McGrogan. (United Kingdom)
- 4153 **Identifying Cohorts of Patients with Type2 Diabetes Mellitus Initiating Dapagliflozin in Three Data Sources**
J. Bradley Layton, Cindy K Zhou, Heather E Danysh, Daniel C Beachler, Ryan Ziemiecki, Jade Dinh, Ruihua Yin, Brian Calingaert, Phillip R Hunt, Alicia W Gilsenan, Catherine B Johannes. (United States)
- 4154 **Development of Antipsychotic Doses Among Persons with Newly Diagnosed Schizophrenia - Ten Years of Follow-up**
Antti Tanskanen, Marjaana Koponen, Markku Lähteenvuori, Jari Tiihonen, Heidi Taipale. (Finland)
- 4157 **Do Early Prescribers of New Drugs Have Different Risk Management Practices?**
Nabarun Dasgupta, John R Brown, Patricia Rippetoe Freeman, Maryalice Nocera, Svetla Slavova. (United States)
- 4190 **Sociodemographic and Clinical Predictors of Prescription Opioid Use in a Longitudinal Community-based Cohort Study of Middle-aged and Older Adults**
Kristin Y Shiue, Nabarun Dasgupta, Rebecca B Naumann, Amanda E Nelson, Yvonne M Golightly. (United States)
- 4232 **Understanding Real-world Use and Survival with the Use of Anaplastic Lymphoma Kinase (ALK) Inhibitors for ALK-positive Non-small Cell Lung Cancer: A Hong Kong-wide Cohort Study**
Swathi Pathadka, Jesse Zhao, Joseph E Blais, David CL Lam, Jessica P Shami, Esther WY Chan. (Hong Kong)
- 4262 **Prescribing Pattern of Antibiotics in Children**
Ching-Lan Cheng, Ju-Ling Chen, Yea-Huei Kao Yang, Wen-Liang Lin. (Taiwan)
- 4269 **Secular Trends in First Line Treatment with Disease Modifying Antirheumatic Drugs in Rheumatoid Arthritis: An International Real-world Study by the OHDSI and EHDEN Networks**
Anthony G. Sena, Nigel Hughes, Emily S. Brouwer, Edward Burn, Jennifer Lane, Marcel de Wilde, Katia Verhamme, Peter R. Rijnbeek, Daniel Prieto-Alhambra, Patrick B. Ryan. (United States)
- 4273 **Geographical Variation and Prescribing Trajectories of Opioids in the Scottish Primary Care Setting**
Teng-Chou Chen, Amanj Kurdi, Li-Chia Chen. (United Kingdom)

- 4278 **Trajectories of Use of Biologic Disease Modifying Anti-rheumatic Drugs in Rheumatoid Arthritis: A Cohort Study of Tuscan Patients, Italy**
Irma Convertino, Sabrina Giometto, Rosa Gini, Massimiliano Cazzato, Giulia Valdiserra, Emiliano Cappello, Sara Ferraro, Marco Fornili, Giuseppe Turchetti, Valentina Lorenzoni, Leopoldo Trieste, Marta Mosca, Corrado Blandizzi, Marco Tuccori, Ersilia Lucenteforte. (Italy)
- 4290 **The Associations Between Personality Traits and Medication Use, Dietary Supplement Use and Blood Pressure Control**
Dianna F de Vries, Julia C Stingl, Monique M Breteler. (Germany)
- 4291 **Persistently High Levels of Opioid Utilization Among Older Patients with Urinary Stone Disease: Findings from the Urologic Diseases in America Project**
Lydia Feinstein, Julia B Ward, Kevin C Abbott, Tamara Bavendam, Ziya Kirkali, Erlene Martinez-Miller, Brian R Matlaga. (United States)
- 4310 **Drug Utilization Disparities Regarding Rural-urban Area and Economic Status in Primary Healthcare in China: A Nationwide Cross-sectional Survey**
Mengyuan Fu, Haishaerjiang Wushouer, Luwen Shi, Xiaodong Guan. (China)
- 4318 **Increasing Use of Muscle Relaxants in the US 2005-2016**
Samantha E. Soprano, Sean Hennessy, Warren B. Bilker, Charles E. Leonard. (United States)
- 4328 **Trends of Non-insulin Antidiabetic Medicines Prescribing in Romania During 2012-2018**
Camelia Bucsa, Adriana Rusu, Andreea Farcas, Cristina Mogosan. (Romania)
- 4329 **Utilization Characteristics for Inhaled Corticosteroid-based Asthma Medications in the Sentinel Distributed Database**
Tancy C Zhang, Inna Dashevsky, Yan Li, Marie C Bradley, Jianmeng Chen, Stacy Chin, Sandra DeLuccia, Efe Eworuke, Judith C Maro, Yunzhao Ren, Rongmei Zhang, Chandrahas Sahajwalla, David Martin, Sally Seymour, Kenneth Quinto, Robert Busch, and Catherine A Panozzo. (United States)
- 4343 **Changes in Therapeutic Strategy in Metastatic Castration Resistant Prostate Cancer Between 2012 and 2014 from the French Nationwide Claims Database**
Nicolas H Thurin, Magali Rouyer, Jérémy Jové, Marine Gross-Goupil, Thibaud Haaser, Xavier Rebillard, Michel Soulié, Gérard de Pourville, Camille Capone, Marie Pierrès, Stéphanie Lamarque, Emmanuelle Bignon, Cécile Droz-Perroteau, Nicholas Moore and Patrick Blin. (France)
- 4348 **Global Trends in Anti-dementia Medications Consumption in 66 Countries/regions from 2008 to 2018**
Chengsheng JU. (United Kingdom)
- 4366 **Treatment Patterns in People with Parkinson's Disease in the United States and the Association with Cardiovascular Disease**
Loes C Rutten-Jacobs, Spyros Roumpanis, Yutong Liu, Preciosa M Coloma. (Switzerland)
- 4368 **Antihypertensive Medicine Use in the Baltic States Between 2008 and 2018**
Indre Trečiokiene, Nomeda Bratcikoviene, Jolanta Gulbinovic, Bjorn Wettermark, Katja Taxis. (Lithuania)
- 4405 **Prescribing Trends of Antidepressants and Coprescription with Other Psychotropic Medications for Children and Adolescents in Primary Care in the United Kingdom, 2000-2018**
Dai Cao, Lara Fraga, Emma Fergusson, Sophie Dell'Aniello, Hui Yin, Soham Rej, Laurent Azoulay, Christel Renoux. (Canada)

Poster Sessions

- 4431 **Trends and Characteristics in Cough Prescription Use in Ambulatory Care Settings in the United States: 2003-2016**
Seonkyeong Yang, Juan M Hincapie-Castillo, Ching-Yuan Chang, Debbie L Wilson, Jenny Lo-Ciganic. (United States)
- 4445 **Spending on Hepatitis C Antivirals in the United States and Canada, 2014-2018**
Ahmad Shakeri, Narthaanan Srimurugathasan, Katie Suda, Tara Gomes, Mina Tadrous. (Canada)
- 4448 **Trends in Consumption of Psychiatric Drugs Among Patients Attended in Primary Healthcare in Brazil: An Ecological Time-series Study**
Julia Raso Oliveira, Iahel Manon Ferreira, Marcela Jirón Aliste, Manuela Roque Siani-Morello, Fabiana Rossi Varallo, Leonardo Regis Pereira. (Brazil)
- 4487 **In-hospital Post-operative Analgesic Use in Patients Undergoing Primary Total Hip or Knee Replacement: A Drug Utilization Study within the Capital Region of Denmark**
Astrid Blicher Schelde, Anne Mette Skov Sørensen, Martin Erik Nyeland, Anders Odgaard, Espen Jimenez-Solem. (Denmark)
- 4488 **Patterns of Triptan Use by Gender in Tuscany Region, Italy**
Giulia Hyeraci, Rosa Gini, Silvia Benemei, Francesco De Cesaris, Chiara Lupi, Pierangelo Geppetti, Giuseppe Roberto. (Italy)
- 4510 **Trends in Truvada (Emtricitabine and Tenofovir) Utilization Among HIV Positive and HIV Negative Persons in the U.S. 2011 - 2016**
Carter McCormick, Dima Qato. (United States)
- 4528 **Trends in Buprenorphine Prescribing Among Medicare Part D Providers, 2013-2017**
Kristin Shiue, Mary Figgatt, Yvonne Golightly. (United States)
- 4560 **Injectable Paliperidone Palmitate Showed a Higher Adherence Rate Compared to Oral Atypical Antipsychotics in Japan**
Ting Zhang, Hsingwen Chung, Tao Wu, Yongjing Zhang, Yanfang Liu, Hong Qiu. (China)
- 4593 **Influencing Factors for Medications in Patients with Stroke in a Nationally Representative Sample of Older Chinese: Results from CHARLS**
Jingnan Feng, Shengfeng Wang, Siyan Zhan. (China)
- 4610 **Differential Prescription Patterns of Drospirenone-containing Combined Oral Contraceptives in Eastern Europe and North America - Insights from the INAS-FOCUS Study**
Clare Barnett, Thai Do Minh, Suzanne Reed, Klaas Heinemann. (Germany)
- 4631 **Nationwide Patterns of Long-term Ranitidine Use and Its Associated Factors in Korea**
Myo-song Kim, Seung-Hun You, Min-Taek Lee, Ye-Jin Kang, Ye-Jee Kim, Joongyub Lee, Sun-Young Jung. (Korea, Republic of)
- 4642 **Overall Quality of Antibiotic Consumption in a Middle-income Developing Country over 16 Years**
Maryam Taghizadeh-Ghehi, Fatemeh Rezaei, Aarefeh Jafarzadeh-Kohneeloo, Mona Kargar. (Iran, Islamic Republic of)
- 4643 **Increasing Tramadol Utilisation Under Strict Regulations for Opioid Prescribing - A Cross-sectional Study in Taiwan**
Teng-Chou Chen, Ting-Chun Wang, Chih-Peng Lin, Kerina Bonar, Darren M. Ashcroft, K. Arnold Chan, Li-Chia Chen. (United Kingdom)
- 4649 **Adherence and Persistence of Once versus Twice-daily Direct Oral Anticoagulants**
Claudia Bartolini, Rosa Gini, Tania Schink, Elisabeth Smith, Eline Houben, Fernie JA Penning- van Beest, Georgios Spentzouris, Ron MC Herings. (Italy)

- 4651 **A Multidatabase Study of Trajectories of Antidepressant Use in Italy**
Ippazio Cosimo Antonazzo, Olga Paoletti, Claudia Bartolini, Giuseppe Roberto, Valdo Ricca, Giovanni Castellini, Marco Menchetti, Elisabetta Poluzzi, Elisa Sangiorgi, Giampiero Mazzaglia, Rosa Gini. (Italy)
- 4665 **Channelling Bias of Initiating Fixed Ratio Combination (FRC) Therapy in Adults with Type 2 Diabetes (T2D): A Retrospective Observational US Study**
Robert Lubwama, Anders Boss, Alka Shaunik. (United States)
- 4680 **Trend and Contributing Factors of Prescribing Antidepressants in Primary Care in England: 2013-2019**
Xinchun Gu, Tehreem Fatima Ahmed, Teng-Chou Chen, Douglas Steinke, Li-Chia Chen. (United Kingdom)
- 4681 **Trends in Nationwide Metamizole Utilization in Turkey**
Caner Vizardiklar, Volkan Aydin, Ahmet Akici. (Turkey)
- 4683 **Prescription Opioids Dispensed in Romania During 2017-2018**
Irina Cazacu, Camelia Denisa Bucsa, Cristina Pop, Anamaria Cristina, Bogdan Apan, Cristina Mogosan. (Romania)
- 4685 **Impact of Changes in Controlled Drugs Legislation on Benzodiazepine and Z-drug Prescribing in Ireland**
Cathal A. Cadogan, Colin P. Bradley, Kathleen Bennett. (Ireland)
- 4692 **Antidepressant Use and Concurrent Psychopathology in Danish Children, Adolescents and Young Adults**
Rikke Wesselhoeft, Peter B. Jensen, Lotte Rasmussen, Johan Reutfors, Lena Brandt, Kari Furu, Svetlana Skurtveit, Randi Selmer, Per Damkier, Anton Pottegård, Mette Bliddal. (Denmark)



- 4694 **Spatial Exploration of Deprivation Driven Inequalities in Opioids 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)
- 4719 **Trends of Use of Opioids in the Period 2010 to 2018: Findings from a Real-world Cohort of 2 Million Patients in Spain**
Isabel Hurtado, Gabriel Sanfelix-Gimeno, Salvador Peiro, Anibal Garcia-Sempere. (Spain)
- 4721 **Use of Low-dose Aspirin for Primary Prevention from 1998 to 2018: A Nationwide Danish Cohort Study**
Espen Jimenez-Solem, Mikkel B Christensen, Erik L Grove, Morten Schmidt, Martin T Ernst, Anton Pottegård. (Denmark)

Poster Sessions

- 4741 **Prescription Patterns of Denosumab in Spain: A Population-based Cohort Study**
Mar Martín-Pérez, Patricia García Poza, Belén Castillo Cano, Elisa Martín-Merino. (Spain)
- 4745 **Prescribing Trend and Factors Associated with Prescribing Benzodiazepines in Primary Care in England: 2013-2019**
Xinchun Gu, Laura Hayward, Teng-Chou Chen, Douglas Steinke, Li-Chia Chen. (United Kingdom)
- 4752 **Prescribing Patterns of Antidepressants in Slovenia: A Nationwide Database Study**
Nanca Cebron Lipovec, Andrej Anderlic, Igor Locatelli. (Slovenia)
- 4763 **Trends in the Use of Systemic Anti-inflammatory Biologics in Denmark - A Nationwide Drug Utilization Study**
Mette Reilev, Alexander Egeberg, Lene Dreyer, Jesper Hallas, Tine Jess, Anton Pottegård. (Denmark)
- 4765 **Inventory of Biological and Biosimilar Medicine Data Sources in Europe at a National and Hospital Level: The EU-inbiobase Initiative**
Carla Sans, Lina Leguízamo, Judit Riera, Elena Ballarín, Mònica Sabaté, Alethea Charlton, Alessia Bonora, Xavier Vidal, Luisa Ibanez. (Spain)
- 4782 **The Role of High-deductible Health Plans on the Use of Lenalidomide**
Shelley A. Jazowski, Lauren Wilson, Stacie B. Dusetzina, Yousuf Zafar, Leah L. Zullig. (United States)
- 4800 **Trends in the Prevalence of Polypharmacy and Potentially Inappropriate Medication Among People with Type 2 Diabetes**
Monika P Oktorá, Sofa D Alfian, Catharina C. M. Schuiling-Veninga, Jens H.J Bos, Katja Taxis, Eelko Hak, Petra Denig. (Netherlands)
- 4814 **Prescribing Patterns in Patients with Type 2 Diabetes in Slovenia: A Nationwide Pharmacoepidemiological Study**
Spela Zerovnik, Mitja Kos, Igor Locatelli. (Slovenia)
- 4839 **Prescribing Trends of Antihypertensive Drugs in the United Kingdom: A 30-year Assessment**
Julie Rouette, James M Brophy, Tibor Schuster, Laurent Azoulay. (Canada)
- 4866 **Using the Web 2.0 to Inform on Drug Utilisation Worldwide**
Alessandra Spanu, Roman Keller, Milo Alan Puhan, Antoine Flahault, Christian Lovis, Margot Muetsch, Raphaelle Beau-Lejdstrom. (Switzerland)
- 4882 **Discontinuation and Switching Rates Among Women of Childbearing Age Taking Oral Hormonal Contraceptives: A Retrospective Cohort Study in the United States**
Sebastian Jugl, Amie Goodin, Carl Henriksen, Almut G Winterstein, Joshua Brown. (United States)
- 4912 **Comparing Drug Expenditures in the Scandinavian Capitals**
Martin Erik Nyeland, Love Linner, Kristine Olsen, Espen Jimenez-Solem, Gustaf Befrits, Björn Wettermark. (Denmark)
- 4917 **Antidepressant Use and Adherence Among Breast Cancer Patients Using Tamoxifen**
Sara Dejene, Jihye Park, Sophie E Mayer, Alan Kinlaw, Hazel B Nichols, Michele Jonsson-Funk, Virginia Pate, Eliza M Park, Katherine E Reeder-Hayes, Jennifer L Lund. (United States)
- 4936 **Off-label Gabapentin Utilization for Psychiatric Indications Using the Food and Drug Administration Adverse Event Reporting System Database from 1993-2019**
Brianna Costales, Joshua D Brown, Carl Henriksen, Amie J Goodin. (United States)

- 4980 **Identification of Opioids Use Disorder Related Emergency Department Visits from Recently Collected Data of the National Hospital Care Survey, 2016**
Adewumi Adegboye. (United States)
- 4991 **Comparison of New Oral Anticoagulants Use in Atrial Fibrillation Patients from Pivotal Clinical Trials vs. Southern Italian Real-world Setting**
Ylenia Ingrasciotta, Andrea Fontana, Valentina Ientile, Maurizio Pastorello, Gianluca Trifirò. (Italy)
- 4997 **Ambulatory Treatment of Type 2 Diabetes in the United States, 2013-2019**
James Heyward, Sudipa Sarkar, Jacob Christopher, Rita Kalyani, Caleb Alexander. (United States)
- 5007 **Investigation of Opioid Analgesic Use in Primary Care**
Ömer Ataç, Volkan Aydın, Ahmet Akıcı. (Turkey)
- 5020 **Prevalence and Trend of Opioid Use After Total Knee Arthroplasty in Electronic Health Records**
Zhenna Huang, Deepak Krishnan, Chantal Holy, Julia Hwang, John Wright. (United States)
- 5021 **Trends and Patient Characteristics in Concurrent Use of Opioids with High-risk Medications Among Arizona Medicaid Beneficiaries, 2011-2017**
Ching-Yuan Chang, Juan M Hincapie-Castillo, Debbie L Wilson, Jenny Lo-Ciganic. (United States)
- 5025 **A Time Series Analysis of Opioid Use in Australian Nursing Homes from 2014 to 2019**
Lisa G Pont, Dung Chun (Lydia) Ko, Gerard Stevens. (Australia)
- 5036 **The Utilization Trends of Analgesics and Proton Pump Inhibitors in Turkey**
Volkan Aydın, Caner Vizdiklar, Ahmet Akici. (Turkey)
- 5041 **Rural Variation of the Impact of Medicaid Expansion on Naloxone Access**
Yue Cheng, Patricia Freeman, Minji Sohn, Eugene Shin, Chris Delcher. (United States)
- 5056 **Methylphenidate Adherence and Loss to Follow-up in ADHD Children in a Tertiary Care Psychiatric Hospital**
Nichaphat Kunacharoensuk, Tiwarat Kamjak, Nootjaree Kamduang, Penkarn Kanjanarat. (Thailand)
- 5087 **Opioid Agonist Therapy as Treatment for Opioid Use Disorder: Comparing Duration, Risks and Frequency of Healthcare Encounters**
Nima Tourchian, Mina Tadrous. (Canada)
- 5104 **Secular Trend and Determinants of Hydroxyurea Use Among Commercially Insured Adults with Sickle Cell Disease, 2005-2018**
Motomori O. Lewis, Yu-Jung Jenny Wei. (United States)
- 5137 **Prevalence, Patterns, and Risk Factors of Psychotropic Polypharmacy Among Individuals with Depressive Disorder in Mainland China: A Cross-sectional Analysis Based on a National Health Insurance Database in 2015**
Jingyuan Zhang, Guoxu Wei, Xiaodong Guan, Luwen Shi. (China)
- 5147 **Utilization Patterns of Multiple Sclerosis Medications in Saudi Arabia: A Cross-sectional Retrospective Study**
Zakiyah Alkherb, Almaha Alfakhri, Maha Alrasheed, Tariq Alhawassi. (Saudi Arabia)

Geriatric Pharmacoepidemiology

- 61 **Population Based Prevalence of Selected High Priority Prescribing Cascades Among Patients with Alzheimers Disease and Related Dementia**
Sonal Singh, Noelle Cocoros, Kevin Haynes, Vinit Nair, Inna Dashevsky, Thomas Harkins, Paula Rochon, Richard Platt, Sybil Crawford, Kathleen Mazor, Kathryn Anzuoni, Sarah Bloomstone, Jerry Gurwitz. (United States)

Poster Sessions

- 131 **Potentially Inappropriate Use of Non-steroidal Anti-inflammatory Drugs in the General Older German Population**
Thi Ngoc Mai Nguyen, Dana Clarissa Laetsch, Ben Schöttker. (Germany)
- 2334 **Concomitant Use of Benzodiazepines and Opioids and Risk of Fractures in Older Adults with Chronic Non-cancer Pain in South Korea, 2011-2015: A Nested Case-control Study**
Ye-Jin Kang, Hyun-Ji Koo, Min-Taek Lee, Seung-Hun You, Myo-Song Kim, Ji-hye Seo, Sun-Young Jung. (Korea, Republic of)
- 2414 **Nonselective Beta-blocker Eyedrops and the Risk of Fall-related Injuries: A Danish Nationwide Active Comparator, New User Propensity Score Matched Cohort Study**
Sidsel Arnspang Pedersen, Mette Reilev, Lars Christian Lund, Daniel Henriksen, Bjarke Viberg, Jesper Ryg. (Denmark)
- 2536 **Prescription Drugs Among Dementia Patients with Behavioral Disturbance**
Wenjun Zhong, Xinyue Liu, Tiffini Voss, Sauzanne Khalilieh, Rezaul Karim Khandker1 Khandker, Edward Bortnichak, Kai-Li Liaw. (United States)
- 2599 **Anticholinergic and Sedative Drug Load Among Medicare Beneficiaries**
Shahar Shmuel, Virginia Pate, Marc J. Pepin, Janine C. Bailey, Laura C. Hanson, Til Stürmer, Rebecca B. Naumann, Yvonne M. Golightly, Danijela Gnjidic, Jennifer L. Lund. (United States)
- 2611 **The Risk of Fractures, Acute Myocardial Infarction, Atrial Fibrillation and Ventricular Arrhythmia in Geriatric Patients Exposed to Promethazine**
Maurizio Sessa, Annamaria Mascolo, Kim Dalhoff, Morten Andersen. (Denmark)
- 2612 **Metoprolol versus Carvedilol in Patients with Heart Failure, Chronic Obstructive Pulmonary Disease, Diabetes Mellitus, and Renal Failure**
Maurizio Sessa, Daniel B Rasmussen, Magnus T Jensen, Kristian Kragholm, Christian-Torp Pedersen, Morten Andersen. (Denmark)
- 3708 **Three Strategies to Measure Frailty and/or Complex Health Needs in Real World Data: An Analysis of UK Primary Care and Hospital Linked Data**
Leena Elhussein, Ying HE, Danielle E. Robinson, Antonella Delmestri, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)
- 3768 **Negative Association Between Dementia and Gout or Gout Medications Using National Health Insurance Service Claim Database**
Kyung Hyun Min, Sang Oh Kang, Ha Rim Yeon, Kyung Eun Lee. (Korea, Republic of)
- 3784 **The Effect of Low-dose Oral Glucocorticoid Therapy on Osteoporotic Fracture Risk in Patients with Rheumatoid Arthritis. The Clinical Practice Research Datalink Gold**
Frank de Vries, Annemariëk Driessen, Andrea Burden, Patrick Souverein, Tjeerd van Staa, Joop van den Bergh, Shahab Abtahi. (Netherlands)
- 3926 **Potentially Inappropriate Medication in Older Adults Attended in the Emergency Department (ED) and Their Association with ED Visits**
Marcela Jirón, Matías F. Martínez, Luis Herrada. (Chile)
- 3951 **Evaluation and Comparison of Potential Over-treatment Rates Among Older Adults with Type-2 Diabetes in Manitoba Using Prescription vs. Dispensation Databases**
Sai Krishna Gudi, Shawn Bugden, Kevin Friesen, Jamie Falk. (Canada)
- 4002 **Systematic Review and Meta-analysis on the Associations of Polypharmacy and Potentially Inappropriate Medication with Adverse Outcomes in Older Cancer Patients**
Li-Ju Chen, Kira Trares, Dana Clarissa Laetsch, Thi Ngoc Mai Nguyen, Hermann Brenner, Ben Schöttker. (Germany)

- 4014 **Updated Data on Potentially Inappropriate Medications Use in Older Adults in France: A Population-based Study**
Barbara Roux, Pernelle Noize, Julien Bezin, Camille Morival, Marie-Laure Laroche. (France)
- 4032 **The Epidemiology of Polypharmacy in a Large Cohort with Linked Health Records Over 5 Years of Follow-up in Scotland**
Mina Khezrian, Phyo Myint, Chris McNeil, Marjorie Johnston, Alison Murray. (United Kingdom)
- 4052 **Anticholinergic Burden and Fractures in Older Adults: Results from a Methodological Systematic Review**
Jonas Reinold, Wiebke Schäfer, Lara Christianson, Francesco Barone-Adesi, Oliver Riedel, Federica Edith Pisa. (Germany)
- 4166 **Associations Between Patterns of Antipsychotic Use and Mortality Among Older Adults with Late-life Psychotic Disorders**
Soham Rej, Dallas Seitz. (Canada)
- 4171 **Patterns of Rate Control, Rhythm Control and Anticoagulant Medication Use Before and After Nursing Home Admission Among Residents with Dysrhythmias**
Qiaoxi Chen, Kate Lapane, Matthew Alcusky. (United States)
- 4174 **Barriers and Enablers of Deprescribing Preventive Cardiovascular /diabetes Medication Health Care Professionals' Perspective**
Jamila Abou. (Netherlands)
- 4185 **The Association Between Polypharmacy and Frailty in Older Adults**
Deng-Chi Yang, Chien-Chou Su, Yea-Huei Kao Yang. (Taiwan)
- 4224 **Inflammatory Bowel Disease Medication Use Among Community-dwelling Persons with and Without Alzheimer's Disease**
Tuulia Heikkilä, Anna-Maija Tolppanen, Marjaana Koponen, Sirpa Hartikainen, Miia Tiihonen. (Finland)
- 4294 **Identification of Dementia Diseases in Health Claims Data - Results from the German Pharmacoepidemiological Research Database**
Oliver Riedel, Malte Braitmaier, Ingo Langner. (Germany)
- 4312 **Incidence and Predictors of Potentially Inappropriate Medication Use (PIMU) in the Elderly Population**
Ramesh Madhan, Anna George Fenn Archa, Penumarthi Krishna Sai, Johny Rosangkima, Rithika V. R, Sri Harsha Chalasani. (India)
- 4349 **Polypharmacy as a Risk Factor for All-cause Mortality Among Older People in England**
Yun-Ting Huang, Andrew Steptoe, Li Wei, Paola Zaninotto. (United Kingdom)
- 4381 **Proton Pump Inhibitors Following Strongly Anticholinergic Medications: A Novel Prescribing Cascade**
Shanna C Trenaman, Susan K Bowles, Susan Kirkland, Melissa K Andrew. (Canada)
- 4470 **Identifying Fractures in Medicare Claims Before and After the ICD-9-CM to ICD-10-CM Transition**
Shahar Shmuel, Virginia Pate, Yvonne Golightly, Laura Hanson, Rebecca B. Naumann, Til Stürmer, Marc Pepin, Janine C. Bailey, Danijela Gnjidic, Jennifer L. Lund. (United States)
- 4516 **Opioid Prescribing Among Medicare Part D Providers Before and After the Introduction of National Prescribing Guidelines in the United States**
Mary C Figgatt, Kristin Y Shiue, Yvonne M Golightly. (United States)
- 4557 **Impact of Polypharmacy on Risk of Mortality Among Older People Who Received Home Care: A Retrospective Longitudinal Cohort Study**
Shih-Tsung Huang, Liang-Kung Chen, Fei-Yuan Hsiao. (Taiwan)

Poster Sessions



- 4589 **Antipsychotics and Mortality Risk in Patients with Dementia and Comorbidities**
Ane Nørgaard Christensen, Theresa Wimberley, Thomas M. Laursen, Kazi Isthiak Ahmed, Jesper Hastrup Svendsen, Christina El-Ali Jensen-Dahm, Gunhild Waldemar, Christiane Gasse. (Denmark)
- 4607 **Incident Antiepileptic Use and Risk of Hip Fracture Among Persons with Alzheimer's Disease**
Federica Pisa, Jonas Reinold, Piia Lavikainen, Marjaana Koponen, Heidi Taipale, Antti Tanskanen, Jari Tiihonen, Sirpa Hartikainen, Anna-Maija Tolppanen. (Belgium)
- 4718 **The Association Between Medication and Alcohol Use and the Incidence of Frailty Among Older Adults: An International Retrospective Cohort Study**
Janja Jazbar, Igor Locatelli, Mitja Kos. (Slovenia)
- 4735 **Discharge Prescribing in Older Adults with Type 2 Diabetes Hospitalised for Diabetes-related Complications**
Stephen Wood, J Simon Bell, Dianna Magliano, Jenni Ilomäki. (Australia)
- 4749 **Prescription Gabapentinoid Use and Opioid-related Adverse Events in Medicare Older Adults**
Cheng Chen, Almut G Winterstein, Wei-Hsuan Jenny Lo-Ciganic, Patrick J Tighe, Yu-Jung Jenny Wei. (United States)
- 4885 **Factors Associated with Opioid Use Among Long-stay Nursing Home Residents**
Aida Kuzucan, Sarah Holmes, Linda Simoni-Wastila. (United States)
- 5043 **The Use of Preventative Treatments (Statins, Bisphosphates and Anti-hypertensives) in Older Patients with Complex Health Needs: An Analysis of UK Primary Care and Linked Hospital Data**
Ying He, Leena Elhusssein, Antonella Delmestri, Danielle Robinson, Victoria Y Strauss, Daniel Prieto-Alhambra. (United Kingdom)
- 5113 **Predicting Fall Risks in Older Adults with Atrial Fibrillation**
Kueiyu Joshua Lin, Ajinkya Pawar, Nileesa Gautam, Dae Hyun Kim. (United States)
- 5138 **Anticholinergic Burden and Mortality: An Updated Systematic Literature Review**
Lauren Strand, Naomi Schwartz, Shelly Gray. (United States)

5139 **Impact of Central Nervous System Depressant Burden on the Relationship Between New Opioid Use and Fracture Risk**

Qi Guan, David Juurlink, Siyu Men, Susan Bronskill, Hannah Wunsch, Pat Messner, Marie McMillan, Tara Gomes. (Canada)

Health Economics/Outcomes Research

100 **Readmissions and Postoperative Mortality of Coronary Artery Revascularization in People with and without Alzheimer's Disease: A Nationwide Cohort Study**

Mai Vu, Marjaana Koponen, Heidi Taipale, Raimo Kettunen, Sirpa Hartikainen, Anna-Maija Tolppanen. (Finland)

2457 **Drug Use Variability by Community Sampling Place and Setting for Rural Women**

Carl Leukefeld, Megan Dickson, Christopher J. McLouth, Matt Webster, Michele Staton. (United States)

2461 **Real-world Outcomes of Patients with Locally Advanced or Metastatic Epithelioid Sarcoma**

Mrinal M Gounder, Priscilla Merriam, Ravin Ratan, Shreyaskumar R Patel, Rashmi Chugh, Victor M Villalobos, Mark Thornton, Brian A Van Tine, Amr H Abdelhamid, Preeti Joshi, Jennifer Whalen, Jay Yang, Anand Rajarethinam, Mei Sheng Duh, Priyanka J Bobbili, Lynn Huynh, Todor I Totev, Angela K Lax and George D Demetri. (United States)

2476 **High Pollen Levels Increase the Likelihood of Asthma-related Inpatient Admissions and Emergency Department Visits in Children with Asthma: A Matched Case Control Study Using Patient-level Claims and Linked Weather Data**

Elizabeth R Packnett, Nicole M Zimmerman, Caroline Hendriques, Debra E Irwin. (United States)

2478 **Clinical Outcomes in the First Year of Life Among Infants of Mothers with Preeclampsia or Gestational Diabetes: An Analysis of Linked Maternal and Infant Claims**

Elizabeth R Packnett, Helen V Varker, Kristin A Evans, Debra E Irwin. (United States)

2515 **Using Electronic Data to Validate Acute Pancreatitis Diagnoses**

Gregory A Nichols, Anouk Deruaz-Luyet, Hristo Iliev, Kimberly G Brodovicz. (United States)

2589 **Scale-up of Amoxicillin Dispersible Tablet in the Management of Uncomplicated Childhood Pneumonia in Nigeria: A Cost-benefit Analysis**

Charles E Okafor, Obinna I Ekwunife, Sabina O Nduaguba. (Australia)

2668 **Cost of Illness Studies Using the Clinical Practice Research Datalink: A Review of Costing Methodologies**

Preveina Mahadevan, Elaine Stamp, Cormac Sammon, Robert Carroll. (United Kingdom)

3765 **Psychometric Assessment of Urdu Version of WHOQOL HIV BREF Among Pakistani HIV Infected Patients**

Ali Ahmed, Juman Dujaili. (Malaysia)

3836 **Disease Severity, Comorbid Conditions, Treatment Patterns, and Flares in Adults with Systemic Lupus Erythematosus in the United Kingdom: A Real-world Observational Retrospective Cohort Analysis**

Julia Langham, Volkan Barut, Mihail Samnaliev, Sue Langham, Sharada Weir, Xia Wang, Barnabas Desta, Edward R Hammond. (United States)

Poster Sessions

- 3860 **Health Care Utilization and Costs in Adults with Systemic Lupus Erythematosus in the United Kingdom: A Real-world Observational Retrospective Cohort Study**
Mihail Samnaliev, Volkan Barut, Sharada Weir, Julia Langham, Sue Langham, Xia Wang, Barnabas Desta, Edward R Hammond. (United States)
- 3863 **Direct Medical Burden of Antimicrobial Resistant Healthcare Associated Infections - An Analysis with Propensity Score Matching Method**
Xinliang Liu, Dan Cui, Hao Li, Quan Wang, Zongfu Mao, Liang Fang, Nili Ren, Jing Sun. (China)
- 3910 **The Use of Real-world Evidence in Economic Assessments of Pharmaceuticals in the United States**
Woojung Lee, Victoria Dayer, Boshen Jiao, Josh Carlson, Beth Devine, David Veenstra. (United States)
- 3917 **Time in Therapeutic Range (TTR) Values Among Incident Warfarin Users and Predictors of TTR**
Kebede Beyene, Patricia Näslund, Amy Hai Yan Chan, Jeff Harrison. (New Zealand)
- 3946 **The Prevalence of Sun Protective Behaviors Across Different Age Groups in the US Population: Findings from the 2015 US Health Interview Survey**
Ching-Yuan Chang, Haesuk Park, Jenny Lo-Ciganic. (United States)
- 4009 **Pharmaceutical Care in Chinese Public Tertiary Hospitals: Findings from the 4th National Healthcare Improvement Initiative Survey**
Mingshuang Li. (China)
- 4158 **Cost-related Nonadherence for Prescription Medications: A Cross-sectional Study in Jordan**
Abdallah Y. Naser. (Jordan)
- 4177 **Comparison of Symptoms, Treatments and Healthcare Resource Utilization in Patients with Multiple Sclerosis by Sex in a Real World Cohort in the United States**
Ia Topuria, Cristi Cavanaugh, Greg Donadio, Kathryn Starzyk, Rich Gliklich. (United States)
- 4245 **Risk of Breastfeeding Newborns by Hepatitis B Surface Antigen and Hepatitis B E Antigenpositive Mothers**
Zhe Chen, Lingli Zhang. (China)
- 4286 **Societal Impact for Patients with Psoriasis: A Nationwide Swedish Register Study**
Marie Linder. (Sweden)
- 4292 **The Practice of Early Conversion from Intravenous to Oral Antibiotic Therapy in Uncomplicated Urinary and Respiratory Tract Infections: Assessment and Evaluation of Clinical and Economic Outcomes in Hospitalized Patients**
Anusha Bellapu, Preethi Shanmugam, Subeesh K Viswam, Vasista Sharma, Stephy T Chacko. (India)
- 4313 **Pharmaceutical Health Outcomes and Policy Curricula Among Arab Countries: An Evaluation of 191 Academic Institutions**
Eman Alghamdi, Thamer Alshammery, Omar Albalawi. (Saudi Arabia)
- 4315 **Impact of the ICD-10-CM Transition on Claims-based Severe Sepsis Events Among US Medicare Enrollees**
Tiffany S Woodworth, Kerrin Gallagher, Erik Gunnarsson, Joseph Menzin. (United States)
- 4354 **A Bayesian Analysis of Observational Studies: Theoretical and Practical Considerations**
Gisèle Nakhlé, James Brophy, Paul Khairy, Jacques LeLorier, Christel Renoux, Patrick Bélisle. (Canada)

- 4358 **Association of Industry Payments to Physicians with Pimavanserin Prescribing and Medicare Expenditures**
Hemalkumar B Mehta, Thomas J Moore, G. Caleb Alexander. (United States)
- 4466 **Real-world Treatment Patterns and Adherence of First-line Anti-diabetic Treatments Among T2dm Patients Using Japanese Claims Data**
Jocelyn Ruoyi Wang, Amanda Patrick, Pattra Mattox, Ashley Jaksa. (United States)
- 4492 **Multi-state Markov Modelling of Long-term Outcomes Using Machine-learned Dynamic Bayesian Networks**
Alind Gupta, Darren Brenner, Paul Arora. (Canada)
- 4520 **Real-world Cost-effectiveness of Direct Oral Anticoagulants in the Quebec Setting**
Philippe Lachapelle, Anne Holbrook, Mireille Mireille Schnitzer, Jean-Éric Tarride, Christel Renoux, Brian J. Potter, Alexis Matteau, Denis Talbot, Madeleine Durand, Jason Guertin. (Canada)
- 4538 **Selection Bias Associated with Lab Records in Administrative Claims from the United States**
Kathleen M Andersen, Derek K Ng, Michael J Blaha, G Caleb Alexander, Jodi B Segal. (United States)
- 4591 **Statin Use and the Risk of Prostate Cancer**
Wei Ho, Dan-Wei Choo, Yi-Jung Wu, Yu-Sheng Lin, Bing-Jyue Chen, Chuan-Shen Hu, Jui Wang, Yu-Wen Wang, Po-Yu Chen, Ting-Fang Chan, Zhen-Fang Lin. (Taiwan)
- 4609 **Healthcare Resource Utilization in Patients with Treatment Resistant Depression - A National Danish Cohort Study**
Kristoffer J Jensen, Frederikkke H Gronemann, Mikkel Z Ankarfeldt, Espen J Solem, Sarah Alulis, Jesper Riise, Nikolaj Bødker, Merete Osle, Janne Petersen. (Denmark)

- 4644 **Insights into Back Pain Through Linkage of Digital Patient Generated Data with Electronic Health Records**
Alejandra Martinez De Pinillos, Toby Helliwell, Matthew Cooper, Mick Mullane, Stephanie Meleck, Shaun O'Hanlon, Pierre Engel, Joshua Hiller, Jaskiran Dhanjal. (United Kingdom)
- 4650 **Elevated Annual Healthcare Utilization and Direct Medical Costs Associated with Diabetes Mellitus Patients with Osteoporosis in China**
Zheng Yin, Yigong Zhou, Jun Liu, Yang Xie. (China)



Poster Sessions

- 4670 **Evaluation of Cost of Illness in Patients with Rheumatoid Arthritis in a Tertiary Healthcare Setting**
Rajesh V, Nishma D Khetia, Surulivelrajan Mallayasamy, Manjunatha Hande H. (India)
- 4672 **Association Between Hydrochlorothiazide Use and Risk of Malignant Melanoma: A Meta-analysis Using Epidemiological Studies**
Md Salman Hussain, Abul Kalam Najmi. (India)
- 4715 **The Effect of Depression on Health Care Utilization and Health Expenditure in Patients with Diabetes**
Yang Xie, Hanyuying Wang, Angela Yin, Yigong Zhou. (China)
- 4813 **Cardinality Matching vs Propensity Score Matching for Targeted Estimands**
Stephen Fortin, Stephen S Johnston, Paul Coplan. (United States)
- 4874 **Does Intraarticular Involvement Increase the Risk of Complications After Fracture Repair Surgery?**
Zhenna Huang, Deepak Krishnan, Aatheep Gurubaran, Chantal Holy, Mollie Vanderkarr, Sparks Charisse. (United States)
- 4908 **Healthcare Resource Utilisation and Cost Burden of Chronic Obstructive Pulmonary Disease in the United States: A Literature Review**
Anil Dasari, Salman Hussain, Pradeep Basa. (India)
- 4974 **Lost Productivity as a Result of Cognitive Impairment Among Older Adults in the U.S.**
Kevin Lu, Xiaomo Xiong, Sam Li. (United States)
- 4976 **Estimated Costs of Pivotal Trials for U.S. Food and Drug Administration (FDA)-approved Oncology Drugs, 2015-2017**
Emily Hsiue, Thomas J. Moore, Caleb Alexander. (United States)
- 5027 **Deep Joint Infection Comparison Between Simultaneous and Staged Bilateral Total Knee Arthroplasty**
Zhenna Huang, Deepak Krishnan, Aatheep Gurubaran, Chantal Holy, Julia Hwang, John Wright. (United States)
- 5047 **Costs and Healthcare Resource Utilization of Patients Who Escalate P2y12 Therapy Following Acute Coronary Syndromes**
Nicholas Belviso, Stephen Kogut, Herbert D Aronow, Jason Simeone, Marilyn Barbour, Xuerong Wen. (United States)
- 5066 **Global Survey on Needs and Resources for Pharmacoepidemiology: Implementation Challenges and Lessons Learned**
Wendy Camelo Castillo, Kayleigh R Majercak, T. Rose Love, Lucia D Juarez, Maribel Salas. (United States)
- 5074 **The 100 Million Brazilian Cohort: How Does the Most Vulnerable Brazilian Population Live, Born and Die?**
Gabriela Borges, M Sanni Ali, Rosemeire L Fiaccone, Liam Smeeth, Mauricio L. Barreto, Maria Yury Ichihara. (Brazil)
- 5091 **Characteristics of Hospitals Participating in Low-dose CT Lung Cancer Screening of Medicare Populations**
Shumin Zhang, Duncan Whitney, Matthew Mailman, Iftekhar Kalsekar, Sashi Yadalam, Meijia Zhou, Paul M. Coplan. (United States)
- 5123 **Comparing Methods for Estimating Annualized Costs Using Administrative Claims**
Amanda Kelly, Kammy Kuang, Liza Gibbs, Kaiyi Luo, Natalia Petruski-Ivleva. (United States)

Informatics

- 59 **The Availability of Laboratory Data in Real-world Data and Association of Temporal and Patient Factors**
Paul Dillon, Phil Arnold, Nayan Chaudhary, Evelyn M Flahavan, Anne-Marie Meyer, Jessica Davies. (Switzerland)

- 107 **A Standardized and Reusable Method to Link Multiple Distributed Health Plan Databases to the National Death Index**
Candace Fuller, Wei Hua, Robert Ball, Ryan Carnahan, Michael Dizinno, Sarah Dutcher, Charles E Leonard, Andrew Mosholder, Andrew B Petrone, Robert Rosofsky, Laura Shockro, Jessica Young, Margaret Adgent, Ingrid Binswanger, Denise M Boudreau, Marie Griffin, Jennifer Kuntz, Cheryl McMahill-Walraven, Pamala A Pawloski and Sengwee Toh. (United States)
- 2315 **Use of Machine Learning versus Traditional Regression to Predict Multiple Sclerosis-related Inpatient Visits Among Newly Diagnosed Patients**
Nicole M Zimmerman, Brenna Brady, Debra E Irwin. (United States)
- 2323 **A Comparison Study Based on Multi-view Latent Dirichlet Allocation**
Lin Zhuo, Yu Yang, Ruogu Meng, Lin Zeng, Hongling Chu, Liyuan Tao, Nan Li, Yanyan Shi, Hua Zhang, Xiaoxiao Wang, Weiwei Wang, Xiaoli Liu, Siyan Zhan. (China)
- 2377 **Feasibility of Integrating a Web-based Tool to Monitor Adherence to Respiratory Medications Using Pharmacy Claims Data in Primary Care**
Alia Yousif, Catherine Lemièrre, Amélie Forget, Marie-France Beauchesne, Lucie Blais. (Canada)
- 2462 **Concordance of Race Information Derived from Electronic Health Records and Imputed Using Health Plan Administrative Data**
Nancy D Lin, Laura Yochum, John D Seeger. (United States)
- 2489 **Benefits and Limitations of Using Individual and Linked English Routine Data Sources to Identify Incident Cancers in Cancer Epidemiology Studies**
Helen Strongman. (United Kingdom)
- 2602 **Availability of Secondary Healthcare Data Sources in Colombia: A Systematic Review**
Juan S Franco, David Vizcaya. (Colombia)
- 2643 **Comparing the Performance of Logistic Regression versus Machine Learning Tree Based Classification Methods in Predicting Rare Outcomes Using Real-world Observational Data**
Stella Min, Ellen Thiel, Kristin Evans, Debra E. Irwin. (United States)
- 4088 **Validity of a State-based Death Certificate / Health Plan Linkage to Support Mortality Studies**
Margaret Adgent, Candace Fuller, Tony Morrow, Christine Whitmore, Carlos Grijalva, Wei Hua, Sarah Dutcher, Sengwee Toh, Marie Griffin. (United States)
- 4114 **Identifying Comorbidity-based Subtypes of Type 2 Diabetes: An Unsupervised Machine Learning Approach**
Zeynep Icten, Joseph Menzin. (United States)
- 4326 **Business Intelligence Data in Central Denmark Region and Quality Assurance in Psychiatry: Possibilities and Challenges**
Martin V. Borg, Nickolai Gaardsvig-Kjær, René B. Brund, Jacob D. Redder, Søren D. Østergaard, Christiane Gasse. (Denmark)
- 4331 **Evaluation of a Novel Enriched Study Approach to Complement Electronic Medical Records (EMR)**
Timo Smieszek, Dorothea von Bredow, Tina Kunz, Sabine Piesch, Benno Antoni, Gianluca Lucrezi, Iris Winkler, Timo Rockel, Johanna Engelhard. (Germany)
- 4353 **Application of Gradient-boosted Trees to Model the Association Between Anatomical Metrics and Functional Outcomes**
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, Geetanjoli 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 Squarzo, 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, H el ene 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 Prayck. (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-Uribe, 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, Irmarie 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-Uribe, 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 Fillion, 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**
Heather E. Danysh, Alicia Gilsenan, Daniel C. Beachler, James A. Kaye, Xabier Garcia-Albeniz, Rita Schmid, Shannon Hunter, Phillip R. Hunt, Jaume Aguado, Brian Calingaert, J. Bradley Layton, Lia Gutierrez. (United States)
- 3821 **Multimorbidity Case Definition and Lookback Window: Impact on Prevalence and Associated Health Outcomes in Population Health Administrative Databases**
Marc Simard, Elham Rahme, Marjolaine Dubé, Caroline Sirois. (Canada)
- 3874 **Validation of an Algorithm Identifying Relapses in Multiple Sclerosis Using the French Nationwide Claims Database**
Pauline Bosco-Levy, Patrick Blin, Séverine Lignot-Maleyran, Régis Lassalle, Abdelilah Abouelfath, Pauline Diez-Andreu, Marc Debouverie, Bruno Brochet, Céline Louapre, Olivier Heinzlef, Elisabeth Maillart, Nicholas Moore. (France)

Poster Sessions



3886 **Assessing Outcomes of Uterine Perforation and IUD Expulsion Before and After ICD-9-CM to ICD-10-CM Transition in Women with IUD Insertions**

Catherine Saltus, Alex Asiimwe, Jeffrey Peipert, Susan Reed, Darios Getahun, Amy Alabaster, Mary E Ritchey, Laura Ichikawa, Jennifer Gatz, Vicki Chiu, Maqdooda Merchant, Michael Fassett, Ann-Kathrin Frenz, Mary Anne Armstrong, Jinyi Wang, Shannon Hunter, Giulia Chillemi and Mary Anthony. (United States)

3903 **IUD Type and Indicators of Difficult Insertion Among Women with Intrauterine Devices**

Catherine Saltus, Susan Reed, Jeffrey Peipert, Michael Fassett, Maqdooda Merchant, Alex Asiimwe, Mary E Ritchey, Fagen Xie, Mary Anne Armstrong, Jennifer Gatz, Laura Ichikawa, Darios Getahun, Richard Lynen, Jinyi Wang, Shannon Hunter, Giulia Chillemi, and Mary Anthony. (United States)

3905 **Data Element Agreement in CPRD Aurum: Concordance Between Labs, Diagnoses, and Treatments**

Katrina Wilcox Hagberg, Rebecca Persson, Catherine Vasilakis-Scaramozza, Tim Williams, Puja Myles, Susan S Jick. (United States)

3908 **Quality and Completeness of Cancer Diagnoses Recorded in the New CPRD Aurum Database**

Katrina Wilcox Hagberg, Rebecca Persson, Catherine Vasilakis-Scaramozza, Tim Williams, Tarita Murray-Thomas, Puja Myles, Susan S Jick. (United States)

4078 **Bias Considerations Due to Outcome Misclassification in Observational Studies Evaluating Association Between Treatments and Mortality Using Administrative Claims**

Rishi J Desai, Raisa Levin, Kueiyu Joshua Lin, Elisabetta Patorno. (United States)

- 4139 **Value of Adding Secondary Read Diagnosis Codes to Identify Breast Cancer and Bladder Cancer in the Clinical Practice Research Datalink: A Pilot Validation Study**
Lia Gutierrez, Heather E. Danysh, Jaume Aguado, Phillip R. Hunt, James A. Kaye, Xabier Garcia-Albeniz, Alicia Gilsean. (Spain)
- 4244 **Translation, Cross-cultural Adaptation, and Psychometric Properties of the Danish Version of the Revised Patients' Attitudes Towards Deprescribing Questionnaire**
Carina Lundby, Trine Simonsen, Jesper Ryg, Jens Søndergaard, Anton Pottegård, Henrik Hein Lauridsen. (Denmark)
- 4347 **Validity of Self-reported Antidepressants Use - The Norwegian Women and Cancer Study**
Marit Waaseth, Guro Forsdahl, Martina Havelkova, Eiliv Lund, Tomas Log. (Norway)
- 4355 **Use of the Waiting Time Distribution Method to Determine the Duration and Number of Episodes of Antipsychotic Treatment in Older People**
Juan Carlos Bazo-Alvarez, Mary Elizabeth Jones, Cini Bhanu, Tra My Pham, Claudia Cooper, Tim P Morris, Joseph Hayes, Kate Walters, Irene Petersen. (United Kingdom)
- 4387 **The Validity of Diagnostic Algorithms to Identify Asthma Patients in Healthcare Administrative Databases: A Systematic Review**
Alia Yousif, Roxanne Dault, Mireille Courteau, Lucie Blais, Anne-Marie Cloutier, Anaïs Lacasse, Alain Vanasse. (Canada)
- 4404 **Validation of Venous Thromboembolism Diagnoses in Patients Receiving Rivaroxaban or Warfarin in the Health Improvement Network Database of Primary Care Electronic Health Records in the United Kingdom**
Ana Ruigomez, Gunnar Brobert, Pareen Vora, Luis García Rodríguez. (Spain)
- 4554 **Lookback Period Definition in Electronic Medical Record Data**
Mackenzie M Herzog, Stephen W Marshall, Nancy A Dreyer, Christina D Mack. (United States)
- 4579 **Validation Study of Medication Adherence Based on Claims Data in Japan**
Yoshiyuki Saito, Hiroshi Yoshihara, Ataru Igarashi, Chieko Ooe, Takeo Nakayama. (Japan)
- 4605 **Registration of Pharmacological Treatment Registered in the Danish Hip and Knee Arthroplasty Registries: A Validation Study within the Capital Region of Denmark**
Astrid Blicher Schelde, Janne Petersen, Thomas Bo Jensen, Kirill Gromov, Søren Overgaard, Jonas Bjerring Olesen, Espen Jimenez-Solem. (Denmark)
- 4621 **Identification and Validation of Major Bleeding in a Primary Care Database in Spain**
Airam de Burgos Gonzalez, Luz María Leon Muñoz, Verónica Bryant Cerezo, Miguel Ángel Macia Martínez, María Dolores Montero Corominas, Consuelo Huerta Álvarez. (Spain)
- 4684 **Impact of Exposure Misclassification Due to Information from Different Prescribers on the Risk of Bleeding Associated with DOACs**
Mirjam Hempenius, Rolf H Groenwold, Patrick C Souverein, Antonius Boer, Olaf H Klungel, Helga Gardarsdottir. (Netherlands)
- 4762 **Are Diabetes and Glucose-lowering Drugs Equivalently Reco(r)ded in CPRD GOLD and Aurum?**
Estel Plana, Ryan Ziemiecki, David Martinez, Jaume Aguado, Cristina Rebordosa. (Spain)
- 4788 **Reco(r)ding of Lifestyle Variables in CPRD Aurum Compared with GOLD**
Jaume Aguado, David Martinez, Estel Plana, Ryan Ziemiecki, Cristina Rebordosa. (Spain)

Poster Sessions

- 4809 **Is Chronic Obstructive Pulmonary Disease Reco(r)ded Similarly in CPRD GOLD and Aurum?**
David Martinez, Ryan Ziemiecki, Jaume Aguado, Estel Plana, Cristina Rebordosa. (Spain)
- 4810 **An Application of Natural Language Processing to Validation of Melanoma and Non Melanoma Skin Cancers in a Spanish Electronic Healthcare Database**
Luz M León-Munoz, Jesus Santamaria, Ana LLorente, Airam de Burgos, Arturo Alvarez, Dolores Montero, Consuelo Huerta. (Spain)
- 4865 **Identification of Cases of NSCLC in the Pathology Registry of the University Hospital of Siena: A Validation Study**
Andrea Spini, Pietro Rosellini, Cristiana Bellan, Folco Furiesi, Silvano Giorgi, Sandra Donnini, Rosa Gini, Marina Ziche, Francesco Salvo, Giuseppe Roberto. (Italy)
- 4867 **Developing a Structured Process to Identify Fit for Purpose Data Framework**
Ulka B Campbell, Robert F Reynolds, Emily Rubinstein, Nicolle M Gatto. (United States)
- 4886 **Validation of Diagnosis Code-based Algorithms to Identify Metastatic Renal Cell Carcinoma Patients in Medicare Claims Data**
Danielle Chun, Blánaid Hicks, Sharon Peacock-Hinton, Hung-Jui Tan, Alex Keil, Til Stürmer, Jennifer Lund. (United States)
- 4979 **Comparison of International Classification of Diseases, Tenth Revision Coding Patterns Between the United States and Japan**
Patricia Prince, Kammy Kuang, Emily Rubinstein. (United States)
- 5017 **Classifying Exposure - An Application of the Waiting Time Distribution to Estimate Treatment Status and Duration**
Morten Madsen, Henrik Støvring, Astrid Lunde, Grethe S Tell, Helle Kieler, Gerhard Sulo, Vera Ehrenstein. (Denmark)
- 5060 **Machine Learning Methods to Predict Unmeasured Confounders in Claims Data: A Real-world Application**
Yasser Albogami, Michael J Daniels, Yu-Jung Wei, Kenneth Cusi, Almut G Winterstein. (United States)
- 5076 **Plasmode Simulation of Multiple Imputation Performance Using Internal Validation Data to Adjust for Unmeasured Confounders**
Yasser Albogami, Almut G Winterstein. (United States)
- 5099 **Impact of Extending the Lookback Period on the Estimated Prevalence of Inflammatory Bowel Disease in Administrative Claims Data**
Ghadeer K. Dawwas, Kevin Haynes, Lauren Parlett, Colleen M. Brensinger, Xiaoxue Chen, Qufei Wu, Michael D. Kappelman, James D. Lewis. (United States)
- 5117 **Utility of Electronic Health Records to Support Post-marketing Drug Safety Surveillance**
Nancy D Lin, Jenna Calderbank, David Anderson, John Seeger. (United States)
- 5142 **Analysis of Risk Associated with Delayed Renal Function Recovery Among Medication-related Acute Kidney Injury Survivors**
You-Lin Tain, Chien-Ning Hsu. (Taiwan)
- 79 **Prevalence of Time-related Biases in Pharmacoepidemiology Studies of Anti-emetics, Antifungal, and Antibiotic Medications During Pregnancy: A Systematic Review**
Ugochinyere Vivian Ukah, Wusiman Aibibula, Robert W. Platt, Kristian B. Filion. (Canada)

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

- 128 **Impact of the Choice of Clinical Code Set on the Outcomes of a Real-world Database Study**
Audrey Artignan, Amy Buchanan-Hughes. (United States)
- 2362 **The Application of Mixed Methods Research in Pharmacoepidemiology: A Synthesis Review**
Hongling Chu, Bin Zhu, Fengwei Li, Lin Zeng, Nan Li, Liyuan Tao, Lin Zhuo, Yanyan Shi, Hua Zhang, Xiaoxiao Wang, Siyan Zhan, Yiming Zhao. (China)
- 2406 **Drug-drug Interaction Surveillance Study: Comparing Self-controlled Designs in Five Empirical Examples in Real-world Data**
Katsiaryna Bykov, Hu Li, Sangmi Kim, Vincent Lo Re III, Joshua J. Gagne. (United States)
- 2472 **An FDA Quality Assessment Tool for Evaluation of Real-world Evidence Observational Studies**
Marie C Bradley, Wei Hua, Simone Pinheiro. (United States)
- 2530 **The State of Real-world Evidence in Comparative Effectiveness and Safety Studies Based on Healthcare Insurance Claims**
Katsiaryna Bykov, Elisabetta Patorno, Mengdong He, Hemin Lee, Elvira D'Andrea, Jennifer S. Graff, Jessica M. Franklin. (United States)
- 2677 **Prevalent New Users: When is Time Not Enough?**
Michael Webster-Clark, Rachael Ross. (United States)
- 3776 **Challenges in the Analyses of Time-to-event Data in Cohort Studies Based on Exposure Definitions**
Beatriz Seoane Nuñez, Mario Ouwens, Rosa Lamarca, Satya Sanikommui, Noman Lateef, Annalisa Rubino. (United Kingdom)
- 3820 **The Basket or Umbrella Real-world Observational Study (B U R O S) Design for Molecular Cancer Subtypes**
Geoffrey Liu, Stavroula Raptis, Maryam Mirshams, Devalben Patel, Simren Chotai, Abraam Ghattas, Aein Zarrin, Audra Stitt, Patrick Moriarty, Karen Pope. (Canada)
- 3943 **Predicting the Best Achievable Precision of a Register-based Case-control or Cohort Study. A “Bottleneck Count” Analysis**
Jesper Hallas, Morten R Hansen, Anton Pottegård, Henrik Støvring. (Denmark)
- 3970 **A Self-controlled Analysis of Cumulative Drug Effects, a Simulation Study Based on Real-world Prescriptions**
Lars Christian Lund, Malcolm Maclure, Anton Pottegård, Jesper Hallas. (Denmark)
- 4042 **Risk of Acute Kidney Injury During Antibiotic Treatment: A Self-controlled Screening Study Utilising Biochemical Data**
Lars Christian Lund, Jesper Hallas, Daniel P Henriksen. (Denmark)
- 4164 **Dulaglutide Proactive Safety Surveillance Program (PSSP)**
Ayad K Ali. (United States)
- 4182 **Handling of Statistical Heterogeneity in Meta-analyses of Comparative Effectiveness Studies: A Systematic Review**
Jean-Francois Nepveu, Tiffany Cristarella, Teigna Arredondo Bisono, Franziska Schmidt, Mareva Faure, Yola Moride. (Canada)
- 4264 **Differential Lags in Treatment Information in Electronic Health Record Derived Databases**
Anne-Marie Meyer, Jessica Davies, Michael Taylor, Charlotta Fruechtenicht. (Switzerland)
- 4297 **Open Cohorts and Ghost-time Bias in Real World Data**
Anne-Marie Meyer, Jessica Davies, Michael Taylor, Charlotta Fruechtenicht. (Switzerland)

Poster Sessions

- 4361 **Plotting Daily Incidence of Influenza Vaccine Reactions Among Patients with End-stage Renal Disease to Inform Study Design Decisions**
J. Bradley Layton, Leah J McGrath, John M Sahrman, Vikas R Dharnidharka, Caroline A O'Neil, Anne M Butler. (United States)
- 4436 **Real-world Endpoints to Support Regulatory Decision-making**
Jennifer B Christian, Edward J Warren, David Cameron. (United States)
- 4540 **Who are We Missing?: Underrepresentation of Data Sources Used for Pharmacoepidemiology Research in the United States**
Suzanne Landi, Pardiss Kaviani, Aaron McKethan, M. Alan Brookhart, Leah McGrath. (United States)
- 4608 **Multi-database Studies in the Post-authorisation Setting: A Review the EU PAS Register**
Janet Sultana, Mariana Almas, Ippazio Antonazzo, Esme Baan, Claudia Bartolini, Maria Paola Bertuccio, Salvatore Crisafulli, Fedele Bonifazi, Antonella Didio, Vera Ehrenstein, Carmen Ferrajolo, Remy Francisca, Annie Fourrier-Reglat, Joan Fortuny, Rosa Gini, Giulia Hyeraci, Christel Hoeve, Valentina Isgro', Christos Kontogiorgis, Panagiotis Lalagkas, Deborah Layton, Annalisa Landi, Silvia Narduzzi, Leonardo Pereira, George Poulentzas, Concita Rafaniello, Simona Ravera, Giuseppe Roberto, Giulia Scondotto, Liberata Sportiello, Maddalena Toma, Massoud Toussi, Katia Verhamme, Elisabetta Volpe and Gianluca Trifiro'. (Italy)
- 4628 **Risk of Neuropsychiatric Adverse Events Associated with Varenicline Treatment for Smoking Cessation: A Prescription Sequence Symmetry Analysis**
Yuanyuan Wang, Job F. van Boven, Jens H. Bos, Catharina C. Schuiling-Veninga, H. Marike Boezen, Bob Wilffert, Eelko Hak. (Netherlands)
- 4811 **Feasibility of Addressing Family Burden of Disease Through Variable Linkage in US Claims Data**
Hannah Furby, Athanasios Siadimas. (United Kingdom)
- 4821 **Using Real World Data for Hypothesis Strengthening to Support Early Discovery Activities: Examining Associations Between Patients with Treated Autoimmune Conditions and Incident Parkinson's Disease**
Jolyon Fairburn-Beech, Usha Gungabissoon, Marni Stott Miller, Paul Wilson. (United Kingdom)
- 4822 **A Comparison of Sampling Methods to Select Real-world Relapsed/refractory (R/R) Diffuse Large-cell B-cell Lymphoma (DLBCL) Patients with Multiple Eligible Index Dates**
Paul Dillon, Andy Surinach, Felipe Castro, Nathalie Spielewoy, James A Black, Aijing Shang, John Radford. (Switzerland)
- 4837 **Potential Bias in Matched Cohort Studies When the Referent Exposure Group Lacks a Clearly Defined Time Origin for Follow-up**
Samantha R Eiffert, Virginia Pate, Jennifer L Lund, Andrew W Roberts, Til Stürmer, Alan C Kinlaw. (United States)
- 4843 **Comparison of the Prevalent New User and Active Comparator New User Designs for Assessing the Real-world Safety and Effectiveness of NSAIDs and COX-2 Inhibitors**
John Tazare, Daniel C Gibbons, Liam Smeeth, M Sanni Ali, Elizabeth Williamson, Ian J Douglas, John Logie. (United Kingdom)
- 5019 **Innovation and Pragmatism in Retrospective Chart Review Methodology for Post-approval Drug Utilization Studies**
Delphine Saragoussi, Alice Rouleau, Philippe Capart, Claudia C Deveras, Neil R Brett, Raphael Ognar, Henry Gazay, Krista Payne. (France)

5053 **Characteristics of Network Meta-analyses Presented at ICPE and ISPOR**

Nicole Fusco, Thrudur Gunnarsdottir, Alisa Wilson, Laura C Morgan, Kristina Lindsley. (United States)

5148 **Use of Anti-diabetic Medications and Fatal Traffic Crashes: A Case-based Analysis**

Ye-Jee Kim, Xue-Mei Jin, Bo Ram Yang, Byungkwan Hwang, Nam-Kyong Choi, Sun-Young Jung, Byung-Joo Park, Joongyub Lee. (Korea, Republic of)

Molecular Epidemiology/Biomarkers/
Pharmacogenetics

62 **Medication Errors and Pharmacogenetic Factors as Possible Causes of Therapeutic Failures and Adverse Drug Reactions in a Group of Colombian Epilepsy Patients**

Carlos Calderon-Ospina, Jubby-Marcela Gálvez-Bermúdez, Claudia López-Cabra, Natalia Morales, Juan-David Cala, Jesús Rodríguez, Fabio Aristizábal, Alberto Vélez-Van Meerbeke, Dora Fonseca-Mendoza. (Colombia)

2632 **Finnished Geneness: Linking Biobank with Electronic Health Record Data - TRK Fusion in a Predefined Finnish Cancer Cohort**

Wei Zhang, Jihong Zong, Bahman Farahmand, Mikko Tukiainen, Merja Perälä, Sebastian Bender, Arndt Schmitz, Renate Schulze-Rath. (United States)

2644 **Tailoring Type II Diabetes Treatment: Effect of 5-HTT Polymorphism on HbA1c Levels After Metformin Initiation**

Taichi Ochi, Petra Denig, Hiddo Heerspink, Eelko Hak, Bob Wilffert. (Netherlands)

3778 **The Needs of Many vs. the Needs of Few: Is Society Willing to Pay for Stratified Medicine?**

Marco Boeri, Alan McMichael, Jonathan J Rolison, Frank Kee. (United Kingdom)



3894 **Mineralocorticoid Receptor as a Novel Therapeutic Target for Alcohol Use Disorder? Preliminary Evidence in Rodents and Humans**

Christopher T. Rentsch, Mehdi Farokhnia, Janet P. Tate, Brendan J. Tunstall, Adriana Gregory-Flores, Kendall J. Bryant, George F. Koob, Leandro F. Vendruscolo, David A. Fiellin, Lorenzo Leggio, Amy C. Justice. (United Kingdom)

3997 **Predictors for Malignancy in Pulmonary Nodules**

Hong Qiu, Meng Shu, Hao Huang, Xiaoyan Fang, Wenhua Liang. (China)

4004 **Pharmacogenetics and Prescription Psychotropic Drug Use in the Danish Population**

Carin A Lunenburg, Alexander S Hauser, Kazi Ishtiak-Ahmed, Christiane Gasse. (Denmark)

4006 **A Genome-wide Association Study on Predictive Genetic Polymorphisms for Oxaliplatin Treatment Efficacy in Colorectal Cancer**

Hanla Park, Dominic Edelmann, Petra Seibold, Axel Benner, Federico Canzian, Martin Schneider, Lina Jansen, Michael Hoffmeister, Brenner Hermann, Jenny Chang-Claude. (Germany)

Poster Sessions

- 4201 **Association Between NRI2 Polymorphisms and the Susceptibility to Anti-tuberculosis Drug-induced Hepatotoxicity in a Chinese Han Population: A Case-control Study**
Miaomiao Yang, Wenpei Liu, Bilin Tao, Hua You, Honggang Yi, Shaowen Tang. (China)
- 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**
Fiona Grimson, Sudhir Venkatesan, Lorena Cirneanu, Svetomir Hitov, Valeria Lascano, Mounika Parimi, Rosalind Polya, Benjamin Bray. (United Kingdom)
- 4386 **Association of Proton Pump Inhibitor Use with Endothelial Function and Metabolites of the Nitric Oxide Pathway: A Cross-sectional Study**
Michael Nolde, Martin Bahls, Nele Friedrich, Marcus Dörr, Tobias Dreischulte, Stephan B. Felix, Ina-Maria Rückert-Eheberg, Nayeon Ahn, Ute Amann, Edzard Schwedhelm, Henry Völzke, Markus M. Lerch, Jakob Linseisen, Christa Meisinger and Sebastian E. Baumeister. (Germany)
- 4396 **What Counts as a Cancer Diagnosis in Real World Data? Cohort Identification and Oncology Endpoints in a Linked Genomic-clinical Database**
Sudhir Venkatesan, Fiona Grimson, Lorena Cirneanu, Svetomir Hitov, Valeria Lascano, Mounika Parimi, Rosalind Polya, Benjamin Bray. (United Kingdom)
- 4556 **Data Sources for Studying Genetic Factors of Chronic Obstructive Pulmonary Disease (COPD)**
Anokhi Kapasi, Sharmila A Kamani, Judith K Jones. (United States)
- 4640 **Effect Modification by BMI in Association of PHOSPHO1 Gene Methylation with the Change in HDLC Response to Simvastatin**
Juanlin Fan, Shanqun Jiang, Scott Venners. (China)

- 4653 **GWAS of Antidepressant Treatment Non-response in Depression**
Christiane Gasse, Janne P Thirstrup, Søren D Østergaard, Thomas D Als, Ole Köhler-Forsberg, Merete Nordentoft, Ole Mors, Anders Børghlum. (Denmark)
- 5090 **Pharmacogenetics-based Preliminary Model Improves Prediction of Infection in Patients Receiving Cytotoxic Chemotherapy for Hematological Malignancies**
Matias F Martinez, Enzo Alveal, Tomas Soto, Eva Bustamante, Ivonne Flores, Claudia Benavides, Fernanda Avila, Scarlette Jara, Ricardo Morales, Nelson M Varela, Luis A Quinones. (Chile)
- 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**
Lidija Latifovic, Wei Xu, Rayjean Hung, Geoffrey Liu. (Canada)

Pediatric Pharmacoepidemiology

- 30 **Androgen Therapy and Longitudinal Outcomes for Hypospadias Repair Procedures in the United States**
Julia B Ward, Brian R Matlaga, Kevin C Abbott, Tamara Bavendam, Ziya Kirkali, John Lim, Erline E Martinez-Miller, Casey Pierce, Lydia Feinstein. (United States)
- 78 **Comparative Effect of Four Antimalarial Treatments on Haematocrit in Children in Southwest Nigeria**
Zacchaeus F Olofin, Adebola E Orimadegun, Catherine O Falade. (Nigeria)
- 88 **Liver Enzymes During and After Antimalarial Therapy in Nigerian Children with Uncomplicated Plasmodium Falciparum Infection**
Zacchaeus F. Olofin, Adebola E. Orimadegun, Catherine O. Falade. (Nigeria)

- 120 **Changes in Early Life Exposure to Antibiotics: A Comparison of Birth Cohorts Based on German Claims Data**
Oliver Scholle, Susann Grill, Ulrike Haug. (Germany)
- 2317 **Maternal Thyroid Dysfunction During Pregnancy and the Risk of Adverse Outcomes in the Offspring: A Systematic Review**
Mengqin Ge, Miriam T.Y. Leung, C.L. Cheung, Ian C.K. Wong. (Hong Kong)
- 2498 **The Efficacy and Safety of Metformin for Insulin Resistance and Obesity in Children and Adolescents: A Systematic Review and Meta-analysis**
Reem Masarwa, Vanessa C. Brunetti, Staphanie Aloe, Melanie Henderson, Robert W. Platt, Kristian B. Filion. (Canada)
- 2558 **Assessment of Parents Knowledge Attitude and Practice Towards Vaccines That are Not Covered Under Expanded Program on Immunization in India**
Juny Sebastian, Rechitha Mary Mathews, Haritha Gopal, Ashmy Jose. (India)
- 2645 **Prevalence and Effects of Suicidal Ideation Diagnosis Code Position in Claims on Readmission Rate Estimates**
Aram Babcock, Richard Moussa, Vakaramoko Diaby. (United States)
- 3713 **Polypharmacy Among Hospitalized Children in the Capital Region of Denmark**
Thomas B. Jensen, Mia M. Nørgaard, Jon T. Andersen. (Denmark)
- 3752 **Association of Antipsychotic Medications with Seizure in Children and Adolescent**
Soo Min Jeon, Susan Park, Hae-Young Park, Sena An, Jin-Won Kwon. (Korea, Republic of)
- 3839 **Safety Data Collection and Risk Management in Paediatric Clinical Trials: Literature Review of Points to Consider During Protocol Development**
Beate Aurich. (France)
- 3873 **Impact of Bronchiolitis Guidelines Publication on Primary Care Prescriptions in Italian Children**
Elisa Barbieri, Carlo Giaquinto, Antonio Scamarcia, Luigi Cantarutti, Daniele Donà. (Italy)
- 3998 **Predictors of Opioid Analgesic Utilization in Children and Adolescents with Active Asthma**
Abhishek Nair, Harold J Farber, Mark L Fleming, Hua Chen. (United States)
- 4010 **The Recording And Incidence Of Thyroiditis In Girls' Primary Care Medical Spanish Records**
Belén Castillo Cano, Mar Martín-Pérez, Dolores Montero Corominas, Elisa Martín Merino. (Spain)
- 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**
Florentia Kaguelidou, Aya Ajrouche, Veronique Houdouin, Sylvie Guillo, Isabelle Naim, Yann de Rycke, Florence Tubach. (France)
- 4504 **Recent Trends in the Prevalence of Pediatric and Neonatal Venous Thromboembolism in Portugal and the United States**
Stephen E. Schachterle, Sophie Shen, Charles Wentworth, Prethibha George, Jenna Jones, Syd Phillips, Jill Dreyfus, Teresa Davis, Anthony Nunes, John D Seeger, Sarah MacDonald, James Revkin. (United States)
- 4508 **Epidemiology of Heart Failure with Preserved Ejection Fraction in Pediatric Population with Obesity**
Ayad K Ali. (United States)

Poster Sessions

4511 **Life-course Pharmaceutical Phthalate Exposure and Pediatric Cancer Incidence: A Danish Nationwide Cohort Study**

Thomas P. Ahern, Logan G. Spector, Per Damkier, Sinna P. Ulrichsen, Buket Ozturk, Katrine Eriksen, Henrik Toft Sorensen, Deirdre P. Cronin-Fenton. (United States)

4515 **Hydroxyzine Use in Preschool Children and Its Effect on Neurodevelopment: A Population-based Study**

Hans J Gober, Kathy Li, Mahyar Etminan, Anthony J Bailey, Bruce C Carleton. (Canada)

4570 **Signal Detection of Suspected Drug-induced Liver Injury in Children Using the FDA Adverse Event Reporting System (FAERS) Database**

Hailong Li, Lingli Zhang. (China)

4760 **Real World Use of Posaconazole in Pediatric Populations: A Review of Published Literature**

Nicole Cossrow, Alexandria Kachurak, Yun-Ping Zhou, Havilland Campbell, Deborah D. Brown, Hetty Waskin. (United States)

4790 **Antipsychotic Medication Use Among Hospitalized Infants Using Inpatient Data in FDA's Sentinel System**

Mayura Shinde, Candace Fuller, Rong Tilney, Austin Cosgrove, Jason Hickok, Russell Poland, Karla Miller, Crystal Garcia, Corinne Woods, Andrew Mosholder. (United States)

4890 **Stopping Medicines for Inactive Juvenile Idiopathic Arthritis: What Do Patients and Families Consider?**

Daniel B Horton, Jomaira Salas, Aleksandra Wec, Pooja Kapadia, Timothy Beukelman, Alexis D Boneparth, Jaime Guzman, Ky Haverkamp, Melanie Kohlheim, Melissa L Mannion, Lakshmi N Moorthy, Elizabeth Stringer, Lori Tucker, Sarah Ringold and Marsha Rosenthal. (United States)

5006 **Irrational Treatment of Childhood Diarrhoea Among Internally Displaced Persons in Maiduguri, Northeast Nigeria**

Sulayman Tunde Balogun, Aisha Grema Mustapha, Kenneth O Okon, Ayodele O. Akanmu, Leonard M. Paul, Olufunke A. Sodipo. (Nigeria)

Pharmacovigilance » Cancer

28 **Drug Related Problems & Its Associated Factors Among Breast Cancer Patients at University of Gondar Comprehensive Specialized Hospital, Ethiopia**

Amsalu Defersha, Kassu Kebede. (Kenya)

2328 **Time to Onset Analysis of Letrozole Associated Osteonecrosis of Jaw in FDA Adverse Event Reporting System (FAERS) Database**

Subeesh Kulangara Viswam, Neha Reddy, Nair Gouri, Minnikanti Satya Sai, Radhika Kunnivil, Eswaran Maheswari. (India)

2401 **Evaluation of Spontaneous Adverse Event Reports for Kidney Injury Attributed to Atezolizumab within the FDA Adverse Events Reporting System**

Ola Zaafan. (Egypt)

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

Ola Zaafan. (Egypt)

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

Bora Yeon, Ahyoung Suh, Eunmi Choi, Bonggi Kim, Soon Young Han, Soo Yeon Chung. (Korea, Republic of)

3801 **Vascular Endothelial Growth Factor Tyrosine Kinase Inhibitors and the Risk of Aortic Dissection: A Pharmacovigilance Analysis**

Michael Dörks, Kathrin Jobski, Falk Hoffmann, Antonios Douros. (Canada)

- 3899 **Prevalence of Cancer Chemotherapy Related Problems Among Breast Cancer Patients at a Specialty Hospital in Ethiopia**
Amsalu Defersha, Kassu Kebede. (Kenya)
- 4168 **Use of Ranitidine and Risk of Bladder Cancer**
Mette Nørgaard, Uffe Heide-Jørgensen, Rune Erichsen, Lars Pedersen, Judy Rees, Margaret R Karagas, Henrik T Sørensen. (Denmark)
- 4284 **Checkpoint Inhibitors and Potential Risks of Acute Vascular Event: A Case Series**
Hadir Aljohani, Eman Alghamdi, Waad Alghamdi, Fawaz Al-Harbi. (Saudi Arabia)
- 4307 **Vedolizumab Associated Haematochezia: A Disproportionality Analysis in USFDA Adverse Event Reporting System Database**
Anusha Bellapu, Subeesh K Viswam, Vasista Sharma, Stephy T Chacko. (India)
- 4330 **The Mirabegron Post-marketing Requirements (PMRs)/ Non-interventional Post-authorization Safety Study (NI-PASS) Program**
Stefan de Vogel, Veena Hoffman, Kelesitse Phiri, John Seeger, Alejandro Arana, Andrea Margulis, Lisa McQuay, Susana Perez-Gutthann, Jesper Hallas, Nina Sahlertz Kristiansen, Brandon Suehs, Claudia Uribe, Kwame Appenteng, Noah Jamie Robinson. (Netherlands)
- 4379 **Immune-mediated Necrotizing Myopathy and Pembrolizumab**
Thierry Trenque, Elise Lepoix, Agathe Trenque, Aurore Morel, Brahim Azzouz. (France)
- 4393 **Safety of Abiraterone and Enzalutamide in French Real-world Experience**
Lucie-Marie Scailteux, Fabien Despas, Sandrine Kerbrat, Boris Campillo-Gimenez, Romain Mathieu, Sébastien Vincendeau, Frédéric Balusson, André Balusson, Emmanuel Nowak, Emmanuel Oger. (France)
- 4491 **Risk of Posterior Reversible Encephalopathy Syndrome with Tyrosine Kinase Inhibitors: A Disproportionality Analysis from Vigibase and AERS Databases**
Luis Velez-Nandayapa, Gopal Sharma, Senthilkumaran Janagyraman, Paul W Manley, Paola Aimone, Maria Nicolaidis, Pierre de Zeeuw, Christiane Michel, Johannes Eisinger, Andreas Brueckner. (Switzerland)
- 4797 **Ramucirumab Use and Potential Risks of Interstitial Lung Disease and Pneumonitis: Analysis of Individual Case Safety Reports in VigiBase**
Nouf Alfadel, Fawaz Alharbi. (Saudi Arabia)
- 4818 **Safety and Risk Minimization of CAR T Cell Therapies: US and EU Perspectives**
Harshil Patel. (India)
- 5033 **Serious Chemotherapy-induced Neurotoxicity in Multiple Myeloma Patients**
Paula Lana de Miranda Drummond, Jéssica Malta Soares, Lívia Pena Silveira, Naiane Lima Costa, Taisa Roberta Lopes Machado, Roberta Márcia Marques dos Santos, Adriano Max Moreira Reis, Cristiane Aparecida Menezes de Pádua. (Brazil)

Pharmacovigilance » Cardiovascular

- 2381 **Continuous versus Traditional, 28-day Cycle Combined Oral Contraceptives and Risk of Venous Thromboembolism**
Sigalit Kaplan, Monica L Bertoia, Li Zhou, Amir Lass, Florence T Wang, John D Seeger. (Israel)
- 3718 **Utilisation and Safety of Rivaroxaban for Acute Coronary Syndrome (ACS) in Secondary Care in the UK: Results from the Rivaroxaban Observational Safety Evaluation Post ACS (ROSE-ACS) Study**
Alison Evans, Sandeep Dhanda, Vicki Osborne, Debabrata Roy, Saad Shakir. (United Kingdom)

Poster Sessions

- 3769 **Effect of Tramadol, Dabigatran and Concomitant Use on the Risk of Hospitalised Bleeding Using Bifap Database in Spain**
Consuelo Huerta, María José Peñalver Jara, Isabel Herrera Marcos, Natalia Gutierrez Albadalejo, Airam de Burgos, Lucia Cea Soriano. (Spain)
- 3856 **The Association Between Initiation of Statins and Fluid Retention Treated with Loop-diuretics - A Symmetry Analysis**
Daniel P. Henriksen, Jesper Hallas. (Denmark)
- 3885 **Incidence of Arrhythmia and Cardiac Conduction Disorder Among Dulaglutide Initiators: - Results from a Multi-country Post Authorization Safety Study (PASS)**
Miranda Davies, Lorna Hazell, Sandeep Dhanda, Vicki Osborne, Ayad K Ali, Jonas Reinold, Susann Grill, Jetty A Overbeek, Edith M Heintjes, Ron M Herings, Janet Sultana, Gianluca Trifirò, Saad Shakir. (United Kingdom)
- 4178 **Percutaneous Transluminal Septal Myocardial Ablation and Common Procedural Complications: A Descriptive Study**
John G Connolly, Laura Hou, Justin Bohn, Talia Menzin, Ting-Ying Huang, Fortunato Senatore, Efe Eworuke, Marie Bradley. (United States)
- 4229 **Risk of Aortic Aneurysm and Aortic Dissection with Use of Fluoroquinolones in Korea**
Nayeong Son, Jeongeun Oh, Eunmi Choi, Bonggi Kim, Soo Yeon Chung, Soon Young Han. (Korea, Republic of)
- 4252 **Worth a Second Look: Pharmacovigilance Data Support Current Concerns for JAK Inhibitors**
Enriqueta Vallejo-Yagüe, Stefan Weiler, Andrea M. Burden. (Switzerland)
- 4357 **Dronedarone-induced Hyperkalemia**
Qun-Ying Yue. (Sweden)



4389 **Post Authorization Safety Study of Pitavastatin: A Disproportionality Analysis in FDA Adverse Event Reporting System Database (FAERS)**

Subeesh Kulangara Viswam, Neha Reddy, Alekhya Mandepudi, Gayathri Padmanabuni, Vasista Sharma, Nair Gouri. (India)

4399 **Statins-associated Myopathy**

Thierry Trenque, Camille Douilly, Elise Lepoix, Agathe Trenque, Aurore Morel, Brahim Azzouz. (France)

4720 **What Drugs are Associated with Orthostatic Hypotension?: An Overview of Findings from Randomised Controlled Trials**

Cini Bhanu, Irene Petersen, Danielle Nimmons, Daniel Davis, Mine Orlu, Kate Walters. (United Kingdom)

5026 **Ivabradine Registry: An Assessment of the Effectiveness of Ivabradine Restricted Access Program in Three Cardiac Centers in Saudi Arabia**

Amal Alshatri Almotiry, Wed AlGannam, Budur Alshuraihi, Naser Aljaser, Adel Alrwisani. (Saudi Arabia)

5062 **Evaluation of the Beta Blocker - Edema - Loop Diuretic Prescribing Cascade Among Adults: A Prescription Sequence Symmetry Analysis**

Earl J. Morris, Xinyi Jiang, Carl J. Pepine, Steven M. Smith, Scott M. Vouri. (United States)

Pharmacovigilance » Diabetes

3774 **Incidence of Acute Pancreatitis Among Dulaglutide Initiators: Results from a Multi-country Post Authorization Safety Study (PASS)**

Miranda Davies, Lorna Hazell, Sandeep Dhanda, Vicki Osborne, Ayad K Ali, Jonas Reinold, Susann Grill, Jetty A Overbeek, Edith M Heintjes, Ron M Herings, Janet Sultana, Gianluca Trifirò, Saad Shakir. (United Kingdom)

3902 **Sodium-glucose Co-transporter 2 Inhibitors and the Risk of Early Breast Cancer Among Women with Type 2 Diabetes**

Melanie Suissa, Hui Yin, Oriana Yu, Stephanie Wong, Laurent Azoulay. (Canada)

4243 **Risk of Genital and Urinary Tract Infections Associated with SGLT2 Inhibitors as an Add-on Therapy to Metformin in Patients with Type 2 Diabetes Mellitus**

Eunjun Park, Hyeri Yang, Eonji Na, Eunmi Choi, Bonggi Kim, Soon Young Han, Soo Yeon Chung. (Korea, Republic of)

Pharmacovigilance » Neurological/Mental Health

29 **Adherence to Laboratory Monitoring Among People Taking Oral Drugs for Multiple Sclerosis: A Population-based Study**

Huah Shin Ng, Elaine Kingwell, Feng Zhu, Tingting Zhang, Ruth Ann Marrie, Robert Carruthers, Helen Tremlett. (Canada)

36 **Fingolimod Associated with Molluscum Contagiosum Virus Infection as Adverse Events: Safety Review**

Abdulrahman Alomair, Abdulziz Alaqeel, Mohammed Fouda, Adel Alrwisani, Hajer Al-saleh. (Saudi Arabia)

2404 **Evaluation of Spontaneous Adverse Event Reports for Alopecia Attributed to Erenumab within the FDA Adverse Events Reporting System**

Mohamed Mekkawy. (Egypt)

2439 **Role Of Dopamine D3 And Serotonin 5-HT_{2A} Receptors In Antipsychotic Associated Hyponatraemia: A Pharmacovigilance-pharmacodynamic Assessment Through An Analysis Of The Us Food And Drug Administration Adverse Event Reporting System (FAERS) Database**

Faizan Mazhar, Carla Carnovale, Vera Battini, Sonia Radice, Emilio Clementi. (Italy)

Poster Sessions

- 2507 **Comparative Pharmacovigilance Analyses of Pimavanserin and Mortality in Parkinson's Disease**
Joshua Brown, Brian Cicali, Carl Henriksen, Irene Malaty, Michael Okun, Melissa Armstrong. (United States)
- 2567 **Time to Onset Analysis of Montelukast Associated Suicidal Ideation Using Data from FDA Adverse Event Reporting System Database (FAERS)**
Subeesh Kulangara Viswam, Neha Reddy, Jahnavi Yalamanchili, Prizvan Lawrence Dsouza, Faizan Mazhar, Nair Gouri. (India)
- 2616 **Comparative Risk of Parkinsonism Associated with Olanzapine, Risperidone and Quetiapine in Older Adults**
Te-yuan Chyou, Revathi Nishtala, Prasad Nishtala. (New Zealand)
- 2656 **Evaluation of Spontaneous Adverse Event Reports for Drug Abuse, Misuse, Dependence or Off-label Use Attributed to Pregabalin within the FDA Adverse Events Reporting System (FAERS)**
Ahmed M. Elkersh, Mai M. Salama, Mohamed A. Mekki. (Egypt)
- 4086 **Association Between Desloratadine Use and Incidence of Non-febrile Seizure - A Nordic Cohort Study**
Annette Kjær Ersbøll, Thora Majlund Kjærulff, Kaushik Sengupta, Eero Pukkala, Kristian Bolin, Martha Emneus, Daniel Mines, Dena Rosen Ramey, Joanne E Brady, Kristian Aasbjerg, Christian Vestergaard, Gunnar Gislason. (Denmark)
- 4137 **Safety Profile of Ocrelizumab for the Treatment of Multiple Sclerosis: A Systematic Review**
Huah Shin Ng, Constanza Luzon, Helen Tremlett. (Canada)
- 4578 **Risperidone and Methylphenidate: Case Reports and Pharmacovigilance Safety Reports on Adverse Motor Effects**
Andrea Michelle Burden, Dominik Stämpfli, Stefan Weiler. (Switzerland)
- 4601 **Antipsychotics and the Risk of Catatonia**
Julien Da Costa, Etienne Very, Vanessa Rousseau, Jordan Virolle, Maximilien Redon, Simon Taïb, Alexis Revet, François Montastruc. (France)
- 4645 **Impact of Clinical Pharmacists Interventions on Pharmacotherapy Management of Ambulatory Psychiatry Patients Through JSS MINDS Initiative**
Srikanth Siddalingegowda, P B Samaksha, Ramesh Madhan, M Kishor, Raman Rajesh. (India)
- 5048 **Evaluation of a Potential Gabapentinoid - Somnolence - Stimulant Prescribing Cascade Among Adults: A Prescription Sequence Symmetry Analysis**
Earl J. Morris, Brianna Costales, Xinyi Jiang, Amie Goodin, Scott M. Vouri. (United States)
- 5057 **Evaluation of a Potential Atypical Antipsychotic - Diabetes - Antidiabetic Agent Prescribing Cascade Among Adults: A Prescription Sequence Symmetry Analysis**
Earl J. Morris, Zachary A. Marcum, Xinyi Jiang, Scott M. Vouri. (United States)

Pharmacovigilance » Other

- 35 **Potential Association of Aromatase Inhibitors and Osteonecrosis of Jaw: Signal Refining to Identify False Positive / Pseudo Signal**
Subeesh Kulangara Viswam, Neha Reddy, Eswaran Maheswari, Ann Mary Swaroop, Nair Gouri, Faizan Mazhar. (India)
- 74 **Classification and Disproportionality Analysis of Medication Errors Reported to the Drug Commission of German Pharmacists**
Natalie Parrau, André Said, Matthias Ganso, Martin Schulz. (Germany)
- 108 **Prescribing and Non-Medical Use of Tramadol and Other Opioid Analgesics: U.S., 2009-2018**
Saranrat Wittayanukorn, Ibrahim Ibrahim, Rose Radin, Sara Karami, Rajdeep Gill, Grace Chai, Jana McAninch. (United States)

- 2355 **Effect of Tenofovir Containing First-line Art in Patients with Moderate/severe Reduced Creatinine Clearance at Baseline: A Retrospective Study at Two Referral Hospitals in Namibia**
Francis Kalemeera, Brian Godman, Andy Stergachis, Tim Rennie. (Namibia)
- 2358 **Drug Dispensing Errors in a Regional Hospital: Challenges for Promoting Patient Safety**
Amanda de Araújo, Isabela Vieira, Carolina Santos, Mário Rosa, Karla Almeida, Cláudia Carneiro, Renata Nascimento. (Brazil)
- 2363 **Patient Safety: Diagnostics of Prescription in Microrregional Hospital**
Isabela Vieira. (Brazil)
- 2366 **Linezolid Induced Skin Reactions in a Multidrug-resistant Infective Endocarditis Patient: The First Case with Systematic Review**
Jose J Kochuparambil, Asha K Rajan, Muhammed Rashid, Ananth Kashyap, Manik Chhabra. (India)
- 2430 **Liver Injury Associated with Lipid Emulsions**
Xiao-Xiao LI, Yin-Chu Cheng, Suo-Di Zhai, Peng Yao, Si-Yan Zhan, Luwen Shi. (China)
- 2468 **Drug-induced Vitamin B12 Deficiency - A Population-based Hypothesis-free Symmetry Analysis Screening**
Daniel P. Henriksen, Jesper Hallas, Mads Nybo, Per Damkier, Lars Christian Lund. (Denmark)
- 2496 **Using Natural Language Processing to Improve Patient Age Ascertainment from Adverse Event Reports**
Phuong Pham, Carmen Cheng, Eileen Wu, Ivone Kim, Rongmei Zhang, Yong Ma, Cindy M. Kortepeter, Monica A. Muñoz. (United States)
- 2545 **Knowledge and Practice of Adverse Drug Reporting Among Healthcare Workers in Ekiti State, South-west Nigeria**
Joseph O Fadare, Theophilus Adegbuyi, Ebisola J Araromi, Abayomi Sijuade. (Nigeria)
- 2557 **Medication Error Reporting by African Countries to VigiBase**
George Tsey Sabblah, Delese Mimi Darko, Mahama Duwiejua, Florence van Hunsel, Katja Taxis, Eugène van Puijenbroek. (Ghana)
- 2562 **Twenty Years of Modified Prescription-Event Monitoring: Summary of Studies Conducted Between 2000 and 2020**
Vicki Osborne, Saad A Shakir. (United Kingdom)
- 2565 **Estimating Patient Satisfaction from Disease Blog Texts on the Internet: A Pilot Study for Patient-centric Pharmacovigilance**
Shinichi Matsuda, Takumi Ohtomo, Masaru Okuyama, Hiraku Miyake, Kotonari Aoki. (Japan)
- 2568 **Ten Years of Specialist Cohort Event Monitoring: Summary of Studies Conducted Between 2010 and 2020**
Vicki Osborne, Saad A Shakir. (United Kingdom)
- 2597 **A Comprehensive Adverse Drug Event Susceptibility Map from Observational Health Data**
Chen Yanover, Barak Mizrahi, Nir Kalkstein, Pini Akiva. (Israel)
- 2626 **Knowledge, Attitude and Practice of Healthcare Professionals Towards Pharmacovigilance in Alexandria, Egypt- A Cross Sectional Survey**
Mai M. Salama, Omaima G. Yassine, Iman El Sayed, Sherif Abdelmonem, Fayek S. Elkhwsky. (Egypt)
- 2663 **Quantification of Adverse Drug Reactions Related to Drug Switches in the Netherlands**
Pieter J. Glerum, Marc Maliepaard, Vincent de Valk, Joep H Scholl, Florence P van Hunsel, Eugène P van Puijenbroek, David M Burger, Cees Neef. (Netherlands)

Poster Sessions

- 3864 **Detection on Safety Alerts of Non-fluoroquinolones Antibiotics Using Tree-based Scan Statistics with Propensity Score Matching**
Miyuki Hsing-Chun Hsieh, Edward Chia-Cheng Lai. (Taiwan)
- 3883 **Signals from a National Spontaneous Reporting System; What Regulatory Action Do They Lead to?**
Florence van Hunsel, Liana Gross-Martirosyan, Jarno Hoekman. (Netherlands)
- 3897 **Are Further Interventions Needed to Prevent Hospital-acquired Hyponatraemia? A Cross-sectional Survey of IV Fluid Prescribing Practices in Denmark**
Per Sindahl. (Denmark)
- 3939 **Complementary and Alternative Medicine Indicated for Immune System Health: A Shelf Inspection in a Sample of Community Pharmacies in South Africa**
Cassim M Mandlazi, Dayna L Thomas, Nonjabulo Ndaba, Anthony Torcida, Ilse Truter, Raj Naidoo. (South Africa)
- 3958 **Pattern of Adverse Drug Reaction Reporting by Community Pharmacist in Dharan Nepal**
Kadir Alam, Yogendra Baral. (Nepal)
- 3996 **The Australian Pharmacoepidemiology Research Landscape: The More Things Change the More They Stay the Same**
Claudia Bruno, Juliana de Oliveira Costa, Smriti Raichand, Sallie-Anne Pearson. (Australia)
- 4005 **Predictors of Post Marketing Regulatory Actions Concerning Hepatotoxicity**
Saja Alhabardi, Mona Almaghrabi, Adel Alrwisan. (Saudi Arabia)
- 4026 **A Semantic-based Visualization of Drug Safety Profiles**
Chen Yanover, Karni Marcus, Pini Akiva. (Israel)
- 4035 **Prevalence of Potential Drug-drug Interactions During Hospital Discharge in a Tertiary Care Center in Nepal**
Bijay Bhandari, Pratik Lamichhane, Dipendra Yadav, Sangha Ratna Bajracharya. (Nepal)
- 4075 **What Else is in the Pill? Systematic Review of Injection Consequences from Inactive Ingredients**
Nabarun Dasgupta, Blythe Rhodes, Jennifer S Walker, Michelle Cawley. (United States)
- 4085 **Improved Detection Statistical Signals in Pharmacovigilance by Combining Multiple Variables from the Reports**
Thomas Berbain, Ismail Ahmed, Pascale Tubert-Bitter, Serge Brunel, Pascal Auriche, Mehdi Benkebil. (France)
- 4108 **Tramadol (Oral and for Injection) Adverse Event Spontaneous Reports in the World Health Organization Programme for International Drug Monitoring Database, Vigibase: 2009-2019**
Sydney T. Thai, Thomas Rhodes, Molly Aldridge, Suzanne F. Cook, Cynthia J. Girman. (United States)
- 4140 **Cannabidiol Exposure Calls to U.S. Poison Control Centers**
Sara Karami, Silvia Perez-Vilar, Kira Leishear. (United States)
- 4235 **Risk of Tympanic Membrane Perforation with Combination Quinolone and Steroid Otic Therapy for Acute Otitis Externa**
Kiyon Rhew, Phuong T Tran, Xi Wang, Almut G Winterstein, Patrick J Antonelli. (Korea, Republic of)
- 4259 **Incidence, Severity and Cost Associated with the Management of Adverse Events Following Anaesthesia- an Intensive Surveillance in a Tertiary Care Hospital**
Ramesh Madhan, Resha Dangol, Gurudatt C L, Sri Harsha Chalasani. (India)



- 4400 **Incidence of Cutaneous Small Vessel Vasculitis Associated with Oral Anticoagulant Use**
Adebola Ajao, Oren Shapira, Efe Eworuke, Mohamed Mohamoud, Rongmei Zhang, Joy Kolonoski, John Connolly. (United States)
- 4464 **Polypharmacy as an Independent Risk Factor for Serious Adverse Drug Reactions: A Systematic Review**
Diogo Mendes, Rita Gomes, Carlos Alves, Francisco Batel Marques. (Portugal)
- 4524 **Utility of Electronic Medical Record for Detecting Adverse Drug Reaction Signals in Pediatrics - Discussion Based on Drug Prescription and Laboratory Data in Pediatrics in a Single Institution**
Saeko Hirota, Shi-Wei Chiu, Munenori Takata, Ryusuke Inoue, Masaharu Nakayama, Chiharu Ota, Noriko Sugawara, Saori Katayama, Dai Suzuki, Yu Abe, Takuhiro Yamaguchi. (Japan)
- 4590 **Pharmacists' Perception of Educational Material: A Survey on Practices and Awareness by the Drug Commission of German Pharmacists**
André Said, Leonard Freudewald, Natalie Parrau, Matthias Ganso, Martin Schulz. (Germany)
- 4619 **Impact of European Medicines Agency Regulatory Action on Hydroxyzine Initiation, Discontinuation and Switching to Other Medicines in Scotland, England, Denmark and the Netherlands: An Interrupted Time Series Regression Analysis**
Daniel R Morales, Tom MacDonald, Rob Flynn, Steve Morant, Isla Mackenzie, Alex Doney, Lyn Mitchell, Jesper Hallas, Anton Pottergard, Martin Ernst, Lisa Smits, Ron Herings, Jetty Overbeek, Marion Bennie, Chris Robertson, Li Wei, Lizzie Nicholson and Tatiana Macfarlane. (United Kingdom)

- 4276 **Ixekizumab and the Potential Risk of Urinary Tract Infection: A Systematic Review and Analysis of Individual Case Safety Reports in the Who Global Database**
Mona Almaghrabi, Fawaz Alharbi. (Saudi Arabia)
- 4287 **Barriers and Facilitators of Medication Error Reporting Amongst Health Care Professionals**
Ramesh Madhan, Gunam Usha Keerthana, Ann Raju Roona, Annu Philip Aleena, Joshy Jiya, Sri Harsha Chalasani. (India)
- 4339 **Vaxbatch: A Stratified Disproportionality Analysis Tool for Batch-related AEFI Monitoring in Vaccines**
Joep Scholl, Florence van Hunsel, Wil Hilgersom, Eugene van Puijenbroek. (Netherlands)

Poster Sessions

- 4629 **Impact of European Medicines Agency Regulatory Action for Hydroxyzine Initiation in People with Contraindications in Scotland, England, Denmark and the Netherlands: An Interrupted Time Series Regression Analysis**
Daniel Morales, Rob Flynn, Tom MacDonald, Steve Morant, Isla Mackenzie, Alex Doney, Lyn Mitchell, Jesper Hallas, Anton Pottergard, Martin Ernst, Lisa Smits, Ron Herings, Jetty Overbeek, Marion Bennie, Chris Robertson, Li Wei, and Tatiana Macfarlane. (United Kingdom)
- 4636 **Direct Healthcare Professional Communication: A Quantitative Assessment Study**
Hajar Alsaleh, Thamir Alshammari. (Saudi Arabia)
- 4662 **The Role of the Portuguese Patients' Associations in the Pharmacovigilance System**
Margarida Nieto, Paula Sousa Ferreira, Ana Paula Martins, Carla Torre. (Portugal)
- 4698 **Implementation of Medication Error Reporting System in Community Pharmacy Setting**
Marappa Umesh. (India)
- 4699 **Proactive Drug Safety Monitoring of Adverse Events in Saudi Arabia: 2019 Experience**
Hajar ALSaleh, Adel Alrwisan, Fawaz Alharbi. (Saudi Arabia)
- 4705 **Pattern of Adverse Drug Events Reported with Use of Fluoroquinolone Among Children in Saudi Arabia**
Eman Alghamdi, Fawaz Alharbi. (Saudi Arabia)
- 4730 **Spontaneous Reporting of Adverse Drug Reactions by Patients - A Comparative Study Between European Countries**
Ana Isabel Parreira, Paula Sousa Ferreira, Ana Paula Martins, Carla Torre. (Portugal)
- 4737 **Clinical Pharmacist Initiated Home Medication Review (HMR) for Geriatric Patients in A Developing Country's City**
Jehath Syed, Jaidev Kumar B. R., Joslin Mariya Jose, Francis Lalhmिंगliana. (India)
- 4739 **Drug-induced Hearing Disorders in Children: A Review Using the WHO Pharmacovigilance Database**
Cyrielle Gonzales, Vanessa Rousseau, Leila Chebane, Geneviève Durrieu. (France)
- 4742 **Longitudinal Medical Insights from Internet Fora**
Gregory Powell. (United States)
- 4900 **Use of Proton Pump Inhibitors and Renal Function: ELSA-Brasil Results**
William Neves Oliveira, Sandhi Maria Barreto, Roberto Marini Ladeira, José Geraldo Mill, Roberta Carvalho Figueiredo. (Brazil)
- 4904 **Patients' Perspective on Pharmacovigilance and Adverse Drug Reactions Reporting in Lithuania: Qualitative Study**
Agne Valinciute-Jankauskiene, Loreta Kubiliene. (Lithuania)
- 4977 **Drug Reaction with Eosinophilia and Systemic Symptoms: Analysis of the German Registry over 15 Years**
Maja Mockenhaupt, Camilla Berger, Sylvia H Kardaun, Maren Paulmann. (Germany)
- 5044 **Off-label Use of Intravitreal Bevacizumab at a National Hospital in Peru: An Active Pharmacovigilance Experience**
Yesenia Rodríguez, Denys Romero, Paola Fernández, Violeta Saromo. (Peru)
- 5072 **Health Outcomes Coding Trends in the US FDA'S Sentinel System During the ICD-9/10 Transition: A Review**
Young Hee Nam, Aaron B. Mendelsohn, Judith C. Maro, Jeffrey S. Brown. (United States)
- 5153 **Barriers to Reporting of Adverse Drugs Reactions: A Cross Sectional Study Among Community Pharmacists in Indian Locality**
Srikanth M S, Ramesh Adepu. (India)

Pregnancy and Lactation

- 39 **“I Know My Body Better Than You”:
 Patient Focus Groups to Inform a Shared
 Decision Aid on Oral Corticosteroid (OCS)
 Use During Pregnancy**
Kristin Palmsten, Dani Bredesen, Meghan
 JaKa, Jeanette Zigenfuss, Elyse Kharbanda.
 (United States)
- 82 **Ssri/snri Discontinuation in Pregnancy
 and Obstetrical Outcomes: A Nordic
 Population Register-based Study**
Carolyn E Cesta, Óskar Ö Hálfánarson,
 Jacqueline M Cohen, Kristjana Einarsdóttir,
 Kari Furu, Mika Gissler, Maarit Leinonen,
 Mette Nørgaard, Johan Reutfors, Randi
 Semler, Helga Zoega, Laura Pazzagli, Helle
 Kieler. (Sweden)
- 2387 **Fertility Treatment and Oral
 Contraceptive Discontinuation for
 Identification of Pregnancy Planning
 in Routinely Collected Health Data - An
 Application to Analgesic and Antibiotic
 Utilisation**
Sarah Hjorth, Mollie Wood, Fatima
 Tauqeer, Hedvig Nordeng. (Norway)
- 2412 **In Utero Exposure to Antiretroviral Drugs
 and Pregnancy Outcomes: Secondary
 Analysis of the ANRS Pharmacovigilance
 Database from the ANRS-promoted HIV
 Research Studies**
Laura Saint-Lary, Alpha Diallo, Laure-
 Amélie de Monteynard, Christelle Paul,
 Lucie Marchand, Claire Rekecewicz,
 Ventzislava Petrov-Sanchez, Roland
 Tubiana, Josiane Warszawski, Laurent
 Mandelbrot, Albert Faye, Jeanne Sibiude,
 François Dabis, Valériane Leroy and Agnès
 Sommet. (France)
- 2487 **Risk of Pregnancy Loss After In Utero
 Exposure to Triptans**
Caroline Hurault-Delarue, Christophe
 Demattei, Christine Damase-Michel,
 Alexandra Benachi, Antoine Pariente,
 Jeanne Stadler, Pascale Tubert-Bitter,
 Emmanuelle Ripoché, Isabelle Lacroix.
 (France)
- 2488 **Drug Prescriptions in French Pregnant
 Women Between 2015 and 2017, a Study in
 the EGB Database**
Mélanie Araujo, Caroline Hurault-Delarue,
 Agnès Sommet, Christine Damase-Michel,
 Justine Benevent, Isabelle Lacroix. (France)
- 2551 **Hypertensive Disorders of Pregnancy and
 Use of Antihypertensive Medications in
 the 2015 Pelotas Birth Cohort Study**
Lisiane F Leal, Sonia M Grandi, Vanessa I
 Miranda, Tatiane da S. Dal Pizzol, Robert W
 Platt, Andréa D Bertoldi. (Canada)
- 2555 **Co-occurrence of Birth Defects Among
 Infants with Neonatal Abstinence
 Syndrome, 2012-2016**
Elizabeth Ailes, Pam Owens, Jason Salemi,
 Caitlin Green, Jan Cragan, Kristie Clarke,
 Margaret Honein, Jennita Reefhuis. (United
 States)
- 2613 **A Validation Study on the Natural
 History of Miscarriages in an Established
 Pregnancy Cohort Using BIFAP Database
 in Spain**
Sara Sanchez Ortiz, Consuelo Huerta,
 Paloma Ortega, Paloma Astasio, LLorente-
 García Ana, Lucia Cea Soriano. (Spain)
- 2650 **Online Information Discrepancies in
 Patient Information Regarding Medicine
 Use During Pregnancy and Lactation: A
 Conception Study**
Agnes Kant, Ulrika Nörby, Benedikte-
 Noël Cuppers, Michael Steel, Monali Desai,
 Sashka Hristoskova, Linda Härmak,
 Ludivine Douarin. (Netherlands)
- 3704 **Exploratory Analyses of Modafinil
 Utilization During Pregnancy and
 Diagnoses of Malformations in the
 Offspring**
Anna Julia Witzleb, Nadine Wentzell,
 Tania Schink, Ulrike Haug. (Germany)
- 3724 **Preconception Antibiotic Use and
 Spontaneous Abortion: A Prospective
 Study**
Holly M Crowe, Lauren A Wise, Amelia
 K Wesselink, Charles R Horsburgh, Ellen
 M Mikkelsen, Elizabeth E Hatch. (United
 States)

Poster Sessions

- 3747 **Association Between Antipsychotics Use in Pregnancy and the Risk of Gestational Diabetes: Population-based Cohort Studies from the United Kingdom and Hong Kong**
Zixuan Wang, Kenneth K Man, Tiantian Ma, Louise M Howard, Li Wei, Ian C Wong, Ruth Brauer. (United Kingdom)
- 3791 **Automated Large-scale Signal Detection in Pregnant Women from Medico-administrative Databases and Scientific Literature**
Romain Demailly, Sylvie Escolano, Pascale Tubert-Bitter, Ismaïl Ahmed. (France)
- 3844 **Utilization Patterns Of Valproate In Women With Epilepsy Before And During Pregnancy**
Nadine Wentzell, Tania Schink, Anna Julia Witzleb, Ulrike Haug. (Germany)
- 3851 **Ciprofloxacin in First Trimester and Adverse Pregnancy Outcomes: A Danish Nationwide Cohort Study**
Mia Nørgaard, Jon Trærup Andersen. (Denmark)
- 3901 **Pregnancy Research within a Global Distributed Network of Health Systems: A Feasibility Study**
Jeffrey S Brown, Megan Hiley, Kimberly Barrett, Jennifer Stacey, Mayura Shinde. (United States)
- 3909 **Breastfeeding, Postpartum Timing, and Indicators of Difficult Insertion Among Women with Intrauterine Devices**
Mary Anthony, Darios Getahun, Mary Anne Armstrong, Jennifer Gatz, Alex Asiimwe, Catherine Saltus, Susan Reed, Jiaxiao Shi, Amy Alabaster, Michael Fassett, Jeffrey Peipert, Juliane Schoendorf, Shannon Hunter, Jinyi Wang, Giulia Chillemi and Mary E Ritchey. (United States)
- 3963 **Pregnancy Pharmacoevidence: How Often are Key Methodological Data Elements Reported in Publications?**
Andrea V Margulis, Alison T Kawai, Mary Anthony, Elena Rivero-Ferrer. (Spain)
- 4000 **Antiemetic Medication Use During Pregnancy: A Drug Utilization Study Among 777,991 Pregnancies in Norway**
Marleen van Gelder, Hedvig Nordeng. (Netherlands)
- 4211 **New-generation Antiepileptic Drugs During Pregnancy and the Risk of Attention-deficit Hyperactivity Disorder**
Christine Vaccaro, Emily Czaplinski, Ahmad Shakeri, Sherif Eltonsy. (Canada)
- 4218 **Identification of Pregnancies and Pregnancy Outcomes Using Real-world Healthcare Data**
Clara Weil, Ran Rotem, Anushua Sinha, Gabriel Chodick, Wei Wang, Shawna Calhoun, Efraim Bilavsky, Morgan A Marks. (Israel)
- 4248 **Maternal Use of Antidepressant Medication in Pregnancy and Risk of Gestational Diabetes Mellitus**
Angela Lupattelli, Francesco Barone-Adesi, Hedvig Nordeng. (Norway)
- 4250 **Treatment of Preterm Labor with Ritodrine in Taiwan, 2002-2016**
Chih-Wan Lin, K. Arnold Chan, Yi-Yung Chen, Wei-I Huang, Pi-Hui Chao, Wen-Wen Chen, Fei-Yuan Hsiao. (Taiwan)
- 4260 **Association Between Antidepressant Treatment During Pregnancy and Postnatal Self-harm Ideation: A Cross-sectional, Multinational Study Using the Edinburgh Postnatal Depression Scale**
Jennifer Vallee, Yih Wong, Eline Mannino, Angela Lupattelli. (Norway)
- 4261 **Antihypertensive Treatment During Pregnancy: An Evaluation of the German Embryotox Database**
Maria Hoeltzenbein, Evelin Beck, Anne-Katrin Fietz, Marjann Schäfer, Katarina Dathe, Christof Schaefer. (Germany)
- 4324 **Perinatal Use of Triptans and Other Migraine Medications - A Nationwide Drug Utilisation Study**
Fatima Tauqeer, Mollie Wood, Sarah Hjorth, Angela Lupattelli, Hedvig Nordeng. (Norway)

- 4403 **Multi-stakeholder Consortium on the Safety of Asthma Medications During Pregnancy and Lactation**
Christina D Chambers, Jerry A Krishnan, Michael Schatz. (United States)
- 4414 **Validity of Claims-based Algorithms to Identify Developmental Disorders in Children**
Loreen Straub, Sonia Hernandez-Diaz, Brian T Bateman, Yanmin Zhu, Kathryn J Gray, Krista F Huybrechts. (United States)
- 4432 **Factors Associated with Losses to Follow-up in Pregnancy Exposure Registries**
Deborah Covington, Kristin Veley, Rebecca Buus, Paige Churchill. (United States)
- 4471 **Prevalence of Outcomes in Pregnancy Registries versus General Population**
Kristin Veley, Deborah Covington, Ronna Chan, Paige Churchill. (United States)
- 4476 **Sample Size Calculations for Pregnancy Registries: Improving Accuracy**
Kristin Veley, Deborah Covington, Rebecca Buus, Ronna Chan, Paige Churchill. (United States)
- 4482 **Gestational Weight Gain Following Use of Antidepressant Medication in Pregnancy: Results from the Norwegian Mother and Child Cohort Study**
Angela Lupattelli, Francesco Barone-Adesi, Hedvig Nordeng. (Norway)
- 4526 **Comparing Adolescent and Adult Risk Factors for Postpartum Depression Following First Birth: A Retrospective Cohort Study**
Nakyung Jeon. (Kosovo, Republic of)
- 4543 **Postpartum Opioid Use and 1-year Risk of Death**
Arlyn Horn, Sarah Osmundson, Andrew Wiese, Edward Mitchel, Sharon Phillips, Stephen Patrick, Margaret Adgent, Marie Griffin, Carlos Grijalva. (United States)
- 4584 **The Effect of a Pharmacist Consultation in Early Pregnancy on Pregnant Women's Quality of Life: An Intervention Study**
Maria Bich-Thuy Truong, Elin Ngo, Hilde Ariansen, Ross T. Tsuyuki, Hedvig Nordeng. (Norway)
- 4615 **Use of Antiseizure Drugs in Pregnancy and in Women of Childbearing Age Between 2014 and 2018 in Switzerland: A Retrospective Analysis of Swiss Health Care Claims Data**
Julia Spoendlin, Eva Blozik, Sereina M Graber, Marlene S Rauch, Carole A Marxer, Stephan Rueegg, Christoph R Meier, Ursula Winterfeld, Alice Panchaud. (Switzerland)
- 4625 **Dispensing Patterns Among Pregnant Women of Eight Risky Drug Classes During Pregnancy: A French Nationwide Population-based Study**
Pierre-Olivier Blotière, Alain Weill, Géric Maura. (France)
- 4627 **Prevalence and Pharmacological Treatment of Gestational Diabetes in Norway 2013-2018**
Kari Furu, Lars J Kjerpeseth, Vidar Hjellvik, Hanne L Gulseth. (Norway)
- 4632 **Determinants of the Use of Gonadotropin Formulations in the Treatment of Female Infertility in a Central Italian Region**
Alessandro Cesare ROSA. (Italy)
- 4660 **Exposure to Mycophenolic Acid Products During Pregnancy from 2010 to 2017 in France: A Nationwide Cohort Study**
Emmanuelle Dufour, Stéphanie Duret, Thien Le Tri, Rosemary Dray-Spira. (France)
- 4668 **Unmeasured Confounding by Maternal Personality Traits on the Association Between Prenatal Medication Exposures and Child Developmental Outcomes**
Angela Lupattelli, Kristen Vamsæter, Eivind Ystrom, Hedvig Nordeng. (Norway)
- 4687 **Antibiotic Prescribing in the First Eight Weeks after Childbirth**
Holly C Smith, Sonia Saxena, Irene Petersen. (United Kingdom)

Poster Sessions



- 4696 **What Medications are Prescribed to Women During Their Postnatal Check?**
Holly C Smith, Sonia Saxena, Irene Petersen. (United Kingdom)
- 4728 **Screening for Associations Between Prescription Drug Use in Pregnancy and Risk of Congenital Malformations**
Anne Broe, Anton Pottegård, Jesper Hallas, Irene Petersen, Per Damkier. (Denmark)
- 4753 **Effect of Decision Support Tools in Pregnancy: A Systematic Review**
Elin Ngo, Hedvig Nordeng, Maria Bich-Thuy Truong. (Norway)
- 4791 **Periconceptional Oral Contraceptive Use and the Risk of Miscarriage: The PRIDE Study**
Lieve Tuitjer, Nel Roeleveld, Marleen van Gelder. (Netherlands)
- 4836 **Patterns of Antibiotic Medication Use During Pregnancy Among Publicly and Commercially Insured Women in the United States**
Yanmin Zhu, Brian T Bateman, Sonia Hernandez-Diaz, Kathryn J. Gray, Helen Mogun, Krista F. Huybrechts. (United States)
- 4842 **Incidence and Predictors of Surgical Site Infection Following Cesarean Section: Retrospective Analysis of Electronic Health Records**
Stephen S Johnston, Joseph E Guilfoyle, Nivesh Elangovanraaj, Giovanni A Tomaselli, Brian Chen. (United States)
- 4863 **Ecuzumab in Pregnant Women: A Viable Alternative to Prevent Invasive Hemolysis?**
Pamela S Azevedo, Isabella Zuppo, Túlio Tadeu Sarmento, Kennedy Ribeiro, Nélio Ribeiro, Natália Brandão, Ludmila Gargano, Carolina Nader, Juliana Alvares-Teodoro, Francisco Acurcio, Augusto Guerra. (Brazil)
- 4877 **Safety of Disease Modifying Drugs in Pregnant Women with Relapsing-remitting Multiple Sclerosis: Systematic Review and Meta-analysis**
Túlio Tadeu R Sarmento, Isabella F Zuppo, Pâmela S Azevedo, Nélio G Ribeiro, Natália D Brandão, Carolina M Nader, Ludmila P Gargano, Francisco A Acurcio, Juliana Alvares-Teodoro, Augusto A Guerra. (Brazil)

- 4889 **Trends in Post-approval Pregnancy Safety Studies Required by the United States Food and Drug Administration, 2015-2019**
Jason C. Simeone, Beth L. Nordstrom. (United States)
- 4902 **Bayesian Latent Class Model for Predicting Gestational Age at Birth in an Automated Database**
Shuang Wang, Gavino Puggioni, Xuerong Wen. (United States)
- 4907 **Validation of Claims-based Estimates of the Last Menstrual Period Using Electronic Health Records**
Ryan M Seals, Kelesitse Phiri, Robin Clifford, Michael C Doherty, Florence T Wang. (United States)
- 4911 **Variability in Date of Last Menstrual Period Estimated Using ICD-10 Weeks of Gestation Codes**
Ryan M Seals, Kelesitse Phiri, Li Zhou, Michael C Doherty, Florence T Wang. (United States)
- 4958 **Clinical Lactation Studies: Are They Meeting an Unmet Need for Scientific Evidence?**
Dava W Vandall, Susan M Sinclair, Deborah L Covington. (United States)
- 4982 **Medication Safety During Breastfeeding: An Analysis of Prescribing Information**
Dava W Vandall, Susan M Sinclair, Deborah L Covington. (United States)
- 4992 **Trends in Antinausea Medication Use in Pregnancy in New Zealand, 2006-2016**
Paige D Wartko, Anna S Howe, Susan M Shortreed, Rita Mangione-Smith, Sascha Dublin. (United States)
- 4998 **Utilization of IV Iron Among Pregnant Women with Live Births or Stillbirths in the Sentinel Distributed Database**
Steven T Bird, Nicole Haug, Richard S Swain, Kate Gelperin, Joy Kolonosky, Justin Bohn, Mayura Shinde. (United States)
- 5042 **Antiepileptic Drug Use in Pregnancy and the Incidence of Neurodevelopmental Disorders in Children**
Oluwadolapo Lawal, Kimford Meador, Justin Gold, Anne Hume, Kelly Matson, Xuerong Wen. (United States)
- 5045 **Prescription Medication Use During Pregnancy in the US**
Katherine C Hughes, Robin Clifford, Kelesitse Phiri, Rachel Ogilvie, Florence Wang. (United States)
- 5079 **Isotretinoin During Pregnancy and the Risk of Spontaneous Abortion**
Ditte Gotfredsen, Mia Nørgaard, Niklas Andersson, Thomas Bo Jensen, Jon T Andersen. (Denmark)
- 5083 **Podophyllotoxin is an Antimitotic Agent Primarily Used in the Local Treatment of Anogenital Warts. Data That Enable the Assessment of the Fetal Safety of Podophyllotoxin Use During Pregnancy are Lacking**
Niklas Andersson, Jon T Andersen. (Denmark)
- 5085 **Prediction of Future Cardiovascular Diseases for Women with Hypertensive Disorders of Pregnancy**
Ugochinyere Vivian Ukah, Natalie Dayan, Nathalie Auger, Robert Platt. (Canada)
- Rare Disease**
- 2687 **Incidence and Risk Factors of 30-day Readmission After Hospitalization for Chemotherapy Among Acute Lymphocytic Leukemia Patients**
Phuong T Tran, William B Slayton, Joshua Brown. (United States)
- 3927 **The Inclusion of Real-world Data in Health Technology Assessment Submissions is Associated with a Higher Likelihood of Positive Decisions**
Christina J. Qian, Alison M. Deighton, Meagan M. Harwood, Alexis T. Mickle, Shelagh M. Szabo. (Canada)

Poster Sessions

- 4073 **Representativeness of Komodo Claims and Identification of Patients with Rare Disease**
Carey Strader, Tom Haskell, Meghan Dierks. (United States)
- 4093 **Using Electronic Data to Validate Fourniers Gangrene Diagnoses**
Gregory A Nichols, Anouk Deruaz-Luyet, Hristo Iliev, Kimberly G Brodovicz. (United States)
- 4341 **Development of a Robust Real-world Data Platform for Rare Diseases**
Kristina Cotter, Brenda Simpson, Charlene Fernandez, Brett Chung, Leo Vandriel. (United States)
- 4350 **Clinical Burden and Healthcare Resource Utilization in Patients with Generalized Pustular Psoriasis: A Claims Database Study**
Nirali Kotowsky, Ran Gao, David Singer, Elizabeth M Garry, Amanda K Golembesky. (Germany)
- 4369 **Remaining 'Undiagnosed' in the Healthcare System: The Lack of Diagnosis Codes for Rare Diseases**
Aisling R Caffrey, Mohammad A Al-Mamun, Hans P Schlecht. (United States)
- 4416 **Clinical Burden and Healthcare Resource Utilization in Patients with Palmoplantar Pustulosis: A Claims Database Study**
Nirali Kotowsky, Ran Gao, David Singer, Elizabeth M Garry, Amanda K Golembesky. (Germany)
- 4500 **Estimation of the Prevalence of Spinal Muscular Atrophy in the Era of Treatment, Newborn Screening, and Updated Standards of Care: A Novel Epidemiologic Study**
Cathy A Lally, Susan A Hall, Anne B Dilley, Nicole B Johnson, W. Dana Flanders. (United States)
- 4502 **On Urbanisation and Haematological Malignancies in a South African Population**
Diana Oelofse, Ilse Truter. (South Africa)
- 4535 **The Diagnostic Journey for Rare Genetic Disorders**
Aisling R Caffrey, Mohammad A Al-Mamun. (United States)
- 4550 **A Pilot Study with Real World Data in Clinical Pharmacology: Height, Weight and Serum Creatinine in a Pediatric Population with Sickle Cell Disease**
Stephen E. Schachterle, Charles Wentworth, Brinda Tammara, Satyaprakash Nayak, Lutz O Harnisch, David Readett. (United States)
- 4574 **Postmarketing Safety of Orphan Drugs: A Longitudinal Analysis of U.S. Food and Drug Administration Database Between 2006 and 2015**
Adrienne Y Chan, Min Fan, Vincent K Yan, Eliza Y Tam, Esther W Chan, Ian C Wong, Xue Li. (Hong Kong)
- 4616 **Risk of Influenza Vaccine-induced Immune Thrombocytopenia. A Nationwide Population-based Study in France**
Margaux Lafaurie, Bérange Baricault, Laurent Sailler, Maryse Lapeyre-Mestre, Agnès Sommet, Guillaume Moulis. (France)
- 4793 **Epidemiology of Duchenne Muscular Dystrophy: A Population-based Study in Southern Italy from 2003-2018**
Salvatore Crisafulli, Janet Sultana, Andrea Fontana, Sonia Messina, Gianluca Trifirò. (Italy)
- 4823 **Global Epidemiology of Duchenne Muscular Dystrophy: An Updated Systematic Review and Meta-analysis**
Salvatore Crisafulli, Janet Sultana, Andrea Fontana, Francesco Salvo, Sonia Messina, Gianluca Trifirò. (Italy)
- 4895 **Assessing the Fitness of Patient Registry Data for Real World Evidence Generation: Lessons Learned from the My Retina Tracker® Registry of Rare Inherited Retinal Disorders**
Emily W Bratton, Todd A Durham. (United States)

- 5081 **Eosinophilia in Atopic and Non-atopic Individuals in the United States**
Chi H Le, Phuong H Le, Chi T Truong, Hoa V Le. (United States)

Safety End Points » Cancer

- 71 **The Safety of Antibody Drug Conjugates: A Literature Review**
Joan Forn, James A Kaye, Fabio A Lievano, Jerzy E Tyczynski, Andrea V Margulis. (Spain)

- 2396 **Pre-existing Autoimmune Disease and Immune-related Adverse Events (irAE) with Checkpoint Inhibitors in Metastatic Melanoma**

Marina A Machado, Cristiano S Moura, Kelvin Chan, Jeffrey R Curtis, Marie Hudson, Michal Abrahamowicz, Ines Colmegna, Rahima Jamal, Louise Pilote, An-Wen Chan, Sasha Bernatsky. (Canada)

- 2466 **Risk of Skin Cancer in New Users of Thiazides and Thiazide-like Diuretics: A Cohort Study Using an Active Comparator Group**

Rahel Schneider, Daphne Reinau, Seline Stoffel, Susan S. Jick, Christoph R. Meier, Julia Spoendlin. (Switzerland)

- 2522 **Proton Pump Inhibitors are Not Associated with an Increased Risk of Colorectal Cancer**

Josephina G. Kuiper, Myrthe P. Van Herk-Sukel, Valery E. Lemmens, Ernst J. Kuipers, Ron M. Herings. (Netherlands)

- 3702 **To What Extent are Topical Tacrolimus or Pimecrolimus Associated with Increased Risk of Skin Cancer and Lymphoma? Long-term Results from Joelle Study**

Alejandro Arana, Anton Pottegård, Josephina G Kuiper, Elizabeth Crellin, Johan Reutfors, Marcus Schmitt-Egenolf, Lars Christian Lund, Eline Houben, Helen Booth, Brian Calingaert, James A Kaye, Karin Gembert, Kenneth J Rothman, Daniel Dedman, Helle Kieler, Lia Gutierrez, Jesper Hallas and Susana Perez-Gutthann. (Spain)

- 3852 **Tumor Necrosis Factor Inhibitors (TNFis) and Cancer Risk in Older Adults with Rheumatoid Arthritis (RA)**

Monica E D'Arcy, Daniel Beachler, Jeffrey Curtis, Ruth M Pfeiffer, Donna R Rivera, Xavier Mariette, Raphael Seror, Eric A Engels. (United States)

- 3925 **Cancer Risk of Ranitidine and Nizatidine versus Other H2 Blockers: An Analysis of the Japan Medical Data Center Claims Database**

Masao Iwagami, Ryosuke Kumazawa, Yoshihisa Miyamoto, Yuri Ito, Nanako Tamiya, Hideo Yasunaga. (Japan)

- 4200 **Description of Acute Kidney Injury and Breast Cancer Outcome Validation Processes Across Three Databases**

Jade Dinh, Heather E Danysh, Catherine Johannes, Lia Gutierrez, Rita Schmid, Alejandro Arana, James A Kaye, Manel Pladevall-Vila, Xabier Garcia de Albeniz, Phillip R Hunt, Alicia Gilsean, Daniel C Beachler, Cindy Ke Zhou. (United States)

- 4480 **Risks of Acute Gastrointestinal Adverse Events Associated with Metastatic Melanoma Therapies: A Retrospective Cohort Study**

Sascha Van Boemmel-Wegmann, Joshua D Brown, Vakaramoko Diaby, Jinhai Huo, Natalie L Silver, Haesuk Park. (United States)

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

Luz M Leon-Munoz, Talita Duarte-Salles, Ana Llorente-Garcia, Yesika Diaz-Rodriguez, Anton Pottegard, Dolores Montero-Corominas, Consuelo Huerta-Alvarez. (Spain)

Poster Sessions

5010 **Second Cancers in Adults with Acute Promyelocytic Leukemia (APL) Treated with or without Arsenic Trioxide (ATO): A SEER-Medicare Analysis**

Kelly J Norsworthy, Steven Bird, Armen Avagyan, Yuchen Li, Sandia Akhtar, Jiemin Liao, Michael Wernecke, Albert B Deisseroth, Meredith Chuk, Thomas E MaCurdy, Richard Swain, Jeffrey A Kelman, Ann T Farrell, Richard Pazdur, Gideon Blumenthal and David J Graham. (United States)

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

Macarius Donneyong, Teng-Jen Chang, Autumn Carey, Jared Huling, Jared Huling, Christopher Coss, James Odei, Lang Li. (United States)

Safety End Points » Cardiovascular

2426 **Incidence of Severe Abnormal Uterine Bleeding Following Oral Anticoagulant Use**

Ting-Ying Huang, Laura Hou, Abby Anderson, Hui-Lee Wong, Rongmei Zhang, Peter Waldron, David Moeny, Audrey Gassman, Efe Eworuke. (United States)

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

Ashwin Kamath, PU Prakash Saxena, Maneesh K Rai. (India)

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

Wan-Ju A Lee, Shih-Chieh Shao, Yea-Huei Kao Yang, Tzu-Chi Liao, Edward Chia-Cheng Lai. (Taiwan)

2504 **The Magnitude of the Warfarin-amiodarone Drug-drug Interaction Varies with Renal Function: A Propensity-matched Cohort Study**

Todd A. Miano, Wei Yang, Michael G. Shashaty, Athena Zuppa, Jeremiah R. Brown, Sean Hennessy. (United States)

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

Jakub Z. Qazi, Mireille E. Schnitzer, Marie-Josée Martel, Robert Côté, Marc Dorais, Sylvie Perreault. (Canada)

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

Lu Hsuan Wu, Ching-Lan Cheng, Yea-Huei Kao Yang. (Taiwan)

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

Han Eol Jeong, Hyesung Lee, Edward C. Lai, Kenneth K. Man, Ian C. Wong, Ju-Young Shin. (Korea, Republic of)

4115 **Testosterone Treatment and the Risk of Venous Thromboembolism: A Systematic Review and Meta-analysis of Randomized Controlled Trials**

Henok Tadesse Ayele, Vanessa C Brunetti, Christel Renoux, Vicky Tagalakakis, Kristian B Filion. (Canada)

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

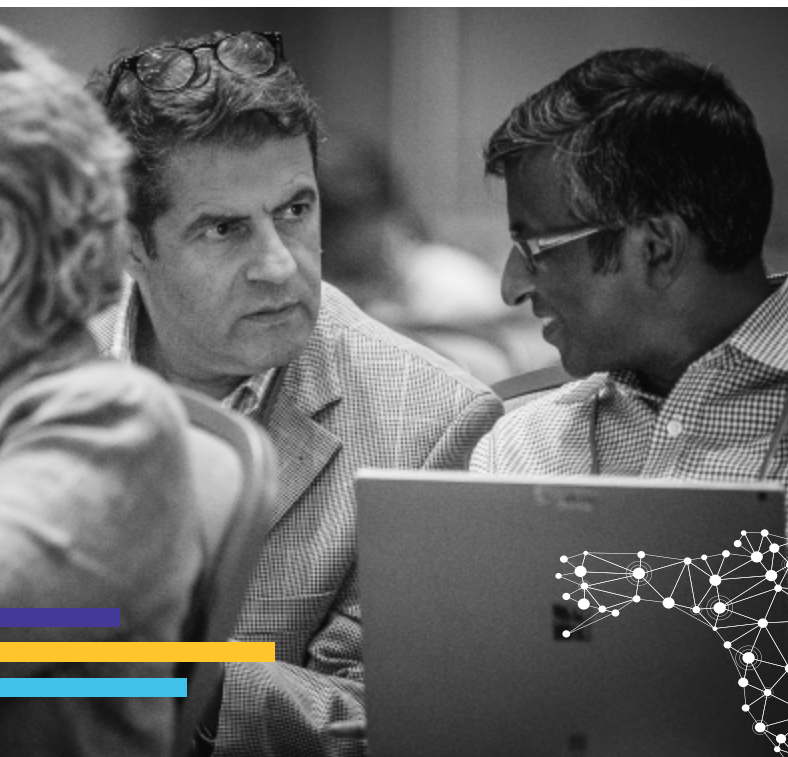
Xue Li, Swathi Pathadka, Kenneth Man, Vanessa Ng, Chung Wah Siu, Ian Wong, Esther Chan, Wallis Lau. (United Kingdom)

4163 **A Population-based Assessment of the Cardiovascular Safety of 5-alpha-reductase Inhibitors**

Henok Tadesse Ayele, Pauline Reynier, Laurent Azoulay, Robert W Platt, Serge Benayoun, Kristian B Filion. (Canada)

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

Mei-Tsen Chen, Shih-Tsung Huang, Ho-Min Chen, Bor-Sheng Ko, Fei-Yuan Hsiao. (Taiwan)



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

Amandine Gouverneur, Mickael Arnaud, Ana Jarne-Munoz, Yohann Mansiaux, Jean-Luc Faillie, Clara Bouché, Annick Fontbonne, Antoine Pariente, Francesco Salvo. (France)

4412 **Reporting of Statin-associated Muscle Symptoms Among Italian Dyslipidemic Patients Enrolled in the PROSISA Study: Prevalence and Risk Factors**

Marta Gazzotti, Manuela Casula, Elena Olmastroni, Federica Bonaiti, Liliana Grigore, Alberto Zambon, Alberico Luigi Catapano. (Italy)

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)**

Clare Barnett, Thai Do Minh, Christoph Wenger, Klaas Heinemann. (Germany)

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)**

Clare Barnett, Anja Bauerfeind, Thai Do Minh, Klaas Heinemann. (Germany)

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

Ya-Ling Huang, Chia-Ling Chiang, Ching-Yao Chen. (Taiwan)

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

Suzanne Reed, Carol Koro, Julia DiBello, Klaas Heinemann. (Germany)

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**

Patrick Blin, Yves Cottin, Caroline Dureau-Pournin, Abdelilah Abouelfath, Régis Lassalle, Estelle Guiard, Aurélie Balestra, Patrick Mismetti, Gérard de Pourville, Cécile Droz-Perroteau, Jacques Bénichou, Nicholas Moore. (France)

4921 **Validity of a Case-identification Algorithm for Venous Thromboembolism**

Monica Bertoia, Sigalit Kaplan, Li Zhou, Amir Lass, Florence T Wang, John D Seeger. (United States)

5106 **Cardiovascular Risk with Concomitant Use of Stimulants and Atypical Antipsychotics in US Children and Adolescents**

Chengchen Zhang, O'Mareen Spence, Gloria Reeves, Susan dosReis. (United States)

Poster Sessions

Safety End Points » Diabetes

- 3833 **Risk of Sodium-Glucose Cotransporter-2 Inhibitor on the Incidence of Urinary Tract Infection Among Diabetic Patients in Japan: A Nationwide Cohort Study**
Yoshinori Takeuchi, Hiraku Kumamaru, Yasuhiro Hagiwara, Hiroki Matsui, Hideo Yasunaga, Hiroaki Miyata, Yutaka Matsuyama. (Japan)
- 3982 **Risk of Venous Thromboembolism Amongst Initiators of SGLT-2 Inhibitors Compared to Other Glucose-lowering Agents**
Chandrasekar Gopalakrishnan, Rishi J Desai, Seoyoung C Kim, Elisabetta Patorno. (United States)
- 4203 **Lack of Insulin Secretagogue Deprescribing and Risk of Severe Hypoglycemia Following Bariatric Surgery**
Scott M Vouri, Jiajing Chen, Jayme Sparkman, Joshua D Brown, Hui Shao, Arghavan Salles, Scott T Micek. (United States)
- 4409 **Assessing Fit-for-purpose: Surrogate Endpoints and Clinically Important Outcomes in Japanese Real-world Data Source in Type-2 Diabetes**
Jocelyn Ruoyi Wang, Amanda Patrick, Pattra Mattox, Ashley Jaksa. (United States)
- 4587 **Use of Sodium-glucose Co-transporter-2-inhibitors and Risk of Lower Limb Amputation**
Nikki Werkman, Yannick Nielen, Joop van den Berg, Niels Ejskjaer, Johan Røikjer, Nicolaas Schaper, Olaf Klungel, Peter Vestergaard, Frank de Vries, Annemariëk Driessen. (Netherlands)

Safety End Points » Neurological/Mental Health

- 3731 **Falls and Fractures in Patients Treated for Parkinson's Disease-related Psychosis: Comparing an Established Class to a More Recently Introduced Treatment**
J. Bradley Layton, Joan Fornas, Colleen Dempsey, Mary Ellen Turner, Jennifer Bartsch, Mary S Anthony, Mary E Ritchey, George Demos. (United States)
- 3872 **Risk of Seizure in People with Autism Spectrum Disorder Using Antipsychotic Medication: A Population Based Study**
Basmah Alfageh, Tian-Tian Ma, Frank M. Besag, Kenneth K. Man, Ian C. Wong, Ruth Brauer. (United Kingdom)
- 4110 **Evidence of Fluoroquinolone-induced Acute Neurological Dysfunction in Large Adult Population**
Darcy E Ellis, Qing Liu, Theoklis E Zaoutis, Athena F Zuppa, Allison W Willis, Rebecca A Hubbard, Sean Hennessy. (United States)
- 4263 **Do Interruptions to the Continuity of Methadone Maintenance Treatment (MMT) in Specialist Addiction Settings Increase the Risk of Drug-related Poisoning (DRP) Deaths? A Retrospective Cohort Study**
Grainne Cousins, Louise Durand, Denis O'Driscoll, Fiona Boland, Eamon Keenan, Benedict Ryan, Joe Barry, Kathleen Bennett, Tom Fahey, Tom Fahey. (Ireland)
- 4280 **Lack of Association Between Proton Pump Inhibitor Intake and Brain Aging: A Population Based Cross-sectional Study**
Nayeon Ahn, Stefan Frenzel, Katharina Wittfeld, Henry Völzke, Markus M Lerch, Jean-Francois Chenot, Ulf Schminke, Michael Nolde, Ute Amann, Christa Meisinger, Jakob Linseisen, Sebastian E Baumeister, Hans-Jörgen Grabe, Ina-Maria Rückert-Eheberg. (Germany)

- 4388 **Trends in Age- and Sex-specific Rates of Suicide and Suicide by Drug Poisoning in the United States: 1999-2017**
Dinci Pennap, Scott Swain, Andrew Mosholder. (United States)
- 4561 **A Synthetic Control Arm from Observational Data to Estimate the Background Incidence Rate of an Adverse Event (Pneumonia) in Alzheimers Disease Subjects**
Innocent Ngwa, Christian Mueller. (Switzerland)
- 4776 **Risk of Suicidality After Exposure to Finasteride**
Robert Flynn, Jim Slattery, Karin Hedenmalm, Gianmario Candore, Xavier Kurz. (Netherlands)
- 4978 **Real-world Comparative Risk of Rhabdomyolysis with Cholinesterase Inhibitors for Alzheimer's Disease**
Pamela B Landsman-Blumberg. (United States)
- Safety End Points » Other**
- 48 **Risk of Cataract in Primary Immune Thrombocytopenia Adult Patients Treated with Eltrombopag**
Margaux Lafaurie, Bérangère Baricault, Vincent Soler, Myriam Cassagne, Laurent Sailer, Maryse Lapeyre-Mestre, Agnès Sommet, Guillaume Moulis. (France)
- 101 **Sex Differences in Hospital Admissions Related to Adverse Drug Reactions**
Linda C. Hendriksen, Paul D. van der Linden, Ron M. Herings, Bruno H. Stricker, Loes E. Visser. (Netherlands)
- 118 **Assessment of Awareness & Knowledge on HIV/AIDS Among People in Warangal Region**
Sanjay Vishwanath. (India)
- 121 **Real-world Safety of Palbociclib in Breast Cancer Patients in the United States**
Daniel C Beachler, Cynthia de Luise, Aziza Jamal-Allial, Ruihua Yin, Devon H Taylor, Stephan Lanes. (United States)
- 2481 **Drug-related Hospital Admissions Following Emergency Department Visits: Preliminary Results of a Cross-sectional Study**
Zuzana Ocovska, Martina Marikova, Jiri Vlcek. (Czech Republic)
- 2505 **Effect of Renin-angiotensin System Inhibitors on the Comparative Renal Safety of Nonsteroidal Anti-inflammatory Drugs and Opioids in Hospitalized Patients**
Todd A Miano. (United States)
- 2535 **Improving Identification of Anaphylaxis**
James S. Floyd, David S. Carrell, Maralyssa Bann, Susan Gruber, Ron L Johnson, Vina F Graham, Cosmin A Bejan, Yong Ma, Mayura Shinde, Robert Ball, Jennifer C Nelson. (United States)
- 2559 **Second-generation Antipsychotics and the Risk of Chronic Kidney Disease: A Population-based Case-control Study**
Mikkel Højlund, Lars C. Lund, Jonas L Herping, Maija B Haastrup, Per Damkier, Daniel P Henriksen. (Djibouti)
- 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)

Poster Sessions

- 3835 **A Multinational European Study of Anaphylaxis Among Recipients of Intravenous Iron**
Lia Gutierrez, Patrick Blin, Jochen Dress, Cecile Droz-Perroteau, Vera Ehrenstein, Carla Franzoni, Bianca Kollhorst, Regis Lassalle, Marie Linder, Nicholas Moore, Ingvild Odsbu, Jetty Overbeek, Susana Perez-Gutthann, Tania Schink, Katherine Rascher, Lawrence Rasouliyan, Jonas Reinold, Kenneth J Rothman, Nuria Saigi-Morgui, Mathias Schaller, Elisabeth Smits, Antje Timmer, Gunnar Toft, Gero von Gersdorff, Intravenous Iron Consortium and Joan Fortuny. (Spain)
- 3888 **Adverse Bleeding Events Among Patients Concomitantly Treated with Direct Anticoagulants 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**
Jeff Y Yang, Bharati D Kochar, Jennifer L Lund, Hans H Herfarth. (United States)
- 3915 **Are Indicators of Difficult Insertion Among Women with Intrauterine Devices Associated with Uterine Perforation and Expulsion?**
Mary E Ritchey, Susan Reed, Amy Alabaster, Darios Getahun, Jennifer Gatz, Catherine Saltus, Mary Anne Armstrong, Fagen Xie, Jinyi Wang, Michael Fassett, Giulia Chillemi, Jeffrey Peipert, Shannon Hunter, Laura Ichikawa, Alex Asiimwe, and Mary Anthony. (United States)
- 3919 **Risk Across Postpartum Timing of Insertion in Women with Intrauterine Devices**
Mary E Ritchey, Jennifer Gatz, Maqdooda Merchant, Michael Fassett, Susan Reed, Catherine Saltus, Darios Getahun, Jeffrey Peipert, Giulia Chillemi, Jennifer Bartsch, Theresa Im, Alex Asiimwe, Mary Anne Armstrong, Mary Anthony. (United States)
- 3974 **Comparative Risk of Infection for First Line csDMARD Therapy in Rheumatoid Arthritis: A Multinational Cohort Analysis of Real World Data**
Meghna Jani, Edward Burn, James Weaver, Loreto Carmona, Katerina Chatzidionysiou, Ben Illigens, David Vizcaya, Talita Duarte-Salles, Patrick Ryan, Daniel Prieto-Alhambra, RA Research Group EHDEN. (United Kingdom)
- 4074 **Real-world Evidence (RWE) Study to Access Motor Vehicle Accidents Data: Real-world Data Landscaping and Feasibility**
Hu Li, Michael Phinney, Rashna Khanna, Sonja M Bragg, Tammy Clemmer, Eva Oakkar. (United States)
- 4122 **Factors Associated with Serious Vehicular Accidents: A Real-life Study**
Nicholas Moore, Karelle Forest, Guillaume Valdenaire, Jean-Paul Lorendeau, Patricia Sagaspe, Benjamin Contrand, Charlotte Durand-Teissier, Dunia Sakr, Cedric Gil-Jardiné, Sebastien Boutreux, Emmanuel Lagarde, Helene Peyrouzet, Regis Lassalle, Pierre Philip and Pierre-Olivier Girodet. (France)
- 4319 **Time to Biologic Treatment and to Total Colectomy Associated with Diagnostic Delay in Ulcerative Colitis: Analysis of an Italian Regional Administrative Healthcare Database**
Sara Ferraro, Claudia Bartolini, Lorenzo Bertani, Irma Convertino, Ersilia Lucenteforte, Francesco Costa, Giulia Valdiserra, Emiliano Cappello, Corrado Blandizzi, Rosa Gini, Marco Tuccori. (Italy)
- 4475 **Incidence of Thromboembolic Events Among Prothrombin Complex Concentrate (Human)-treated Patients: A Review of the Literature and Meta-analysis**
Nicole Baker, Brahm Goldstein, Haley Kaplowitz, Jinesh Shah. (United States)

4496 **Validity of Hospital ICD-10-GM-codes to Identify Anaphylaxis**
Dominik de Sordi, Sanny Kappen, Fabian Otto-Sobotka, Lia Gutierrez, Joan Fortuny, Jonas Reinold, Tania Schink, Antje Timmer. (Germany)

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**
Steffen Heß, Michael Steffens, Jochen Fracowiak, Tatjana Hübner, Daria Langner, Marco Garling, Felix Falkenberg, Christoph Roethlein, Willy Gomm, Roland Linder, Julia Stingl, Britta Hänisch. (Germany)

4801 **Rapid Cycle Analytics to Obtain Descriptive Insight into Drug Utilisation and Background Disease Rates: Building on the Sentinel Modular Programs**
Jolyon Fairburn-Beech, Jiajun Wen, Rachel Williams, John Logie, Marianne Cunningham, Andrew Bate. (United Kingdom)

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**
Anne Butler, Michael Durkin, Yinjiao Ma, Matthew Keller, William Powderly, Margaret Olsen. (United States)

5068 **A Universal Method to Obtain Prediction Intervals for Prevalence and Rate Parameters Estimated from Meta-analyses**
Tibor Schuster, Araceli Gonzalez Reyes. (Canada)

Vaccines

37 **Comparative Safety of High-dose versus Standard-dose Influenza Vaccination in Patients with End-stage Renal Disease**
J. Bradley Layton, Leah J McGrath, John M Sahrman, Yinjiao Ma, Vikas R Dharnidharka, Caroline O'Neil, David J Weber, Anne M Butler. (United States)

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**
Elliott Bosco, Kevin W McConeghy, Patience Moyo, Barbara Bardenheier, Yoojin Lee, Jessica Ogarek, Robertus van Aalst, Ayman Chit, Vincent Mor, Stefan Gravenstein, Andrew R Zullo. (United States)

Poster Sessions

2528 **Selecting an Appropriate Comparator Group in Vaccine Cohort Studies of Older Adults: Recombinant Zoster Vaccine as an Example**

Jennifer H Han, Carla A Talarico, Soowoo Back, Susan dosReis, Aziza Jamal-Allial, Cheryl N McMahill-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**

Katherine Yih, Martin Kulldorff, Inna Dashevsky, Judith Maro. (United States)

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, Bélène 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**

François 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**
José Guerreiro, Maria Cary, Heloísa Galante, António T. Rodrigues. (Portugal)
- 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)

Mid-Year 2020 Posters



1 **Impact of anticholinergic medication burden on mobility and falls in the Lifestyle Interventions and Independence For Elders (LIFE) Study**

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

- 11 **Antiviral Chemoprophylaxis Policies and Use during Influenza Outbreaks in Long-term Care Facilities**
Joe Silva, Andrew Zullo, Elliott Bosco, Daniela Quilliam, Stefan Gravenstein
- 12 **Medicine Managers' Perspectives on use of medicines in public sector health facilities in The Kingdom of Eswatini: A Qualitative Study**
Nondumiso Ncube, Lucia Knight, Hazel Bradley, Richard Laing, Helen Schneider
- 13 **Determinants of Adverse Drug Reaction (ADR) Reporting among Healthcare Professionals in Ghanaian Hospitals: A Presentation of Preliminary Qualitative Findings.**
Walter-Rodney Nagumo, Richard Cooper, Robert Akparibo
- 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
- 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
- 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
- 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
- 18 **Corticosteroid Use and Risk of Deep Vein Thrombosis and Pulmonary Embolism: A Systematic Review and Meta-Analysis**
Ananth Kashyap, Muhammed Rashid, Manik Chhabra, Rishab Sharma, Rishab Arora, Asha K Rajan
- 19 **Effect of Biosimilar Market Entry on Utilization of Biologics in the United States: the Case of Filgrastim**
Morgane Mouslim, Jodi Segal
- 20 **Prescription Opioid Patterns Following Supply Restriction Policy among Patients Receiving Chronic Opioid Therapy: An Interrupted Time Series Analysis**
Yun Shen, Scott M Vouri, Juan M Hincapie-Castillo, Amie J Goodin
- 21 **Cost-effectiveness of L-glutamine (Endari) and Off-label Generic Hydroxyurea Comedication Compared to Hydroxyurea (Siklos) for Averting Pediatric Sick Cell Crisis-Related Hospital Admissions**
Oluwadamilola Onasanya
- 22 **Primary Care Chronic and High Dose Opioid Prescribing in 2011-2018: An Observational Study Using Electronic Medical Record Data**
Isaac Bai, Sarah Sabri, Heather Neville, Beverley Lawson, Virginia McIntyre, Fred Burge, Ingrid Sketris, Mathew Grandy
- 23 **Utilization and Adherence among Infliximab Biosimilar Initiators in a U.S. National Commercial Insurance database.**
Sujith Sarvesh, Alanaeme Chibuikwe Joseph, Jeffrey R Curtis, Hiufeng Yun
- 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 Hjemdahl