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JAPAN OHDSI オデッセイ ジャパン
OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

OHDSI Japan evening conference #54

イブニング カンファレンス(第54回)

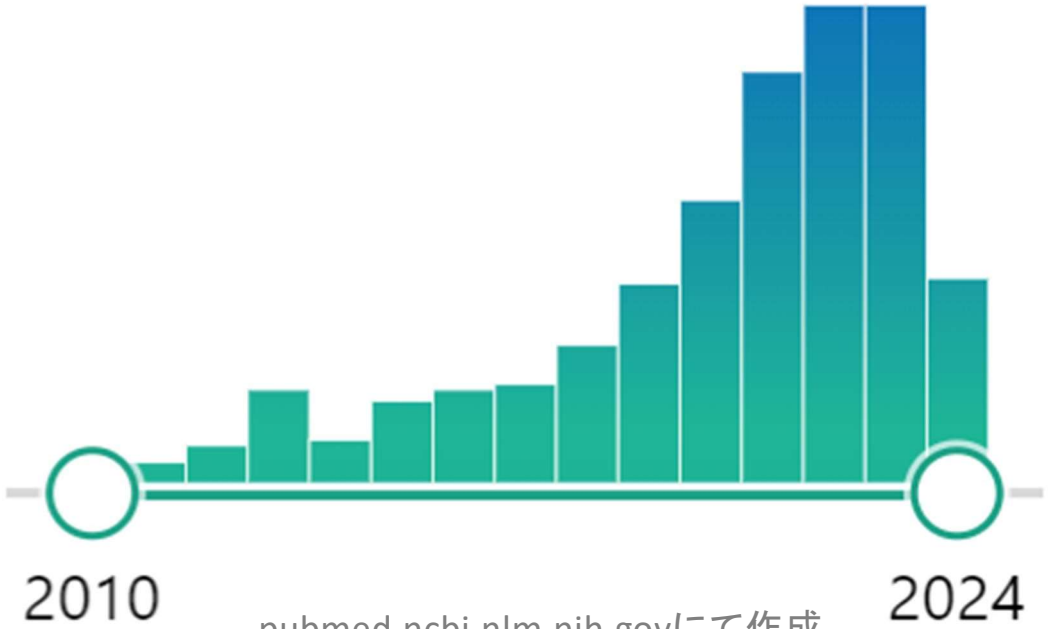
2024.5.31

本日の内容

- OHDSI関連論文紹介
- OHDSI Global の話題から
- Vocabulary探検その２

OHDSI関連論文

Pubmedで”OHDSI or OMOP”を検索



pubmed.ncbi.nlm.nih.govにて作成

全期間累計：3月416本→5月432本

- 検索に漏れているものがあるため、実際は累計500本を超えている。
- 年間では約100本ペース。

1. Increase transparency and reproducibility of real-world evidence in rare diseases through disease-specific Federated Data Networks. Pharmacoepidemiol Drug Saf. 2024 Apr;33(4):e5778. doi: 10.1002/pds.5778. PMID: 38556812 Review.

2. Research Protocol for an Observational Health Data Analysis on the Adverse Events of Systemic Treatment in Patients with Metastatic Hormone-sensitive Prostate Cancer: Big Data Analytics Using the PIONEER Platform. / Eur Urol Open Sci. 2024 Mar 25;63:81-88. doi: 10.1016/j.euros.2024.02.019. eCollection 2024 May. PMID: 38572301 Free PMC article.

3. Converge or Collide? Making Sense of a Plethora of Open Data Standards in Health Care. / J Med Internet Res. 2024 Apr 9;26:e55779. doi: 10.2196/55779. PMID: 38593431 Free PMC article.

4. Predictive Models for Assessing Patients' Response to Treatment in Metastatic Prostate Cancer: A Systematic Review. Lawlor A, at al. Eur Urol Open Sci. 2024 Apr 4;63:126-135. doi: 10.1016/j.euros.2024.03.012. eCollection 2024 May. PMID: 38596781 Free PMC article. Review.

5. Effectiveness of COVID-19 vaccines to prevent long COVID: data from Norway. Trinh NT, Lancet Respir Med. 2024 May;12(5):e33-e34. doi: 10.1016/S2213-2600(24)00082-1. Epub 2024 Apr 10. PMID: 38614106 No abstract available.

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10. Mapping the Bulgarian Diabetes Register to OMOP CDM: Application Results. Stud Health Technol Inform. 2024 Apr 26;313:28-33. doi: 10.3233/SHTI240007. PMID: 38682500

11. Towards an Electronic Health Prevention Record Based on HL7 FHIR and the OMOP Common Data Model. Stud Health Technol Inform. 2024 Apr 26;313:107-112. doi: 10.3233/SHTI240020. PMID: 38682513

12. The Health Equity Explorer: An open-source resource for distributed health equity visualization and research across common data models. J Clin Transl Sci. 2024 Apr 5;8(1):e72. doi: 10.1017/cts.2024.500. eCollection 2024. PMID: 38690224

13. Symptoms and Conditions in Children and Adults up to 90 Days after SARS-CoV-2 Infection: A Retrospective Observational Study Utilizing the Common Data Model. J Clin Med. 2024 May 15;13(10):2911. PMID: 38792452

14. Converting OMOP CDM to phenopackets: A model alignment and patient data representation evaluation. J Biomed Inform. 2024 May 21;155:104659. PMID: 38777085

15. Calculating daily dose in the Observational Medical Outcomes Partnership Common Data Model. Pharmacoepidemiol Drug Saf. 2024 Jun;33(6):e5809. PMID: 38773798

16. Taipei Medical University Clinical Research Database: a collaborative hospital EHR database aligned with international common data standards. BMJ Health Care Inform. 2024 May 14;31(1):e100890. PMID: 38749529

OHDSI論文 新規1

2 つのOMOPベースFDN

Review > Pharmacoepidemiol Drug Saf. 2024 Apr;33(4):e5778. doi: 10.1002/pds.5778.

Increase transparency and reproducibility of real-world evidence in rare diseases through disease-specific Federated Data Networks

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Affiliations – collapse

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PMID: 38556812 DOI: 10.1002/pds.5778

Abstract

Purpose: In rare diseases, real-world evidence (RWE) generation is often restricted due to small patient numbers and global geographic distribution. A federated data network (FDN) approach brings together multiple data sources harmonized for collaboration to increase the power of observational research. In this paper, we review how to increase reproducibility and transparency of RWE studies in rare diseases through disease-specific FDNs.

Method: To be successful, a multiple stakeholder scientific FDN collaboration requires a strong governance model in place. In such a model, each database owner remains in full control regarding the use of and access to patient-level data and is responsible for data privacy, ethical, and legal compliance. Provided that all this is well documented and good database descriptions are in place, such a governance model results in increased transparency, while reproducibility is achieved through data curation and harmonization, and distributed analytical methods.

Results: Leveraging the OHDSI community set of methods and tools, two rare disease-specific FDNs are discussed in more detail. For multiple myeloma, HONEUR-the Haematology Outcomes Network in Europe-has built a strong community among the data partners dedicated to scientific exchange and research. To advance scientific knowledge in pulmonary hypertension (PH) an FDN, called PHederation, was established to form a partnership of research institutions with PH databases coming from diverse origins.

要旨

目的: 希少疾患では、患者数が少ないことや世界的な地理的分布のため、実臨床エビデンス（RWE）の作成が制限されることが多い。連携データネットワーク（Federated Data Network：FDN）アプローチでは、複数のデータソースを連携させることで、観察研究の力を高めることができる。本論文では、疾患固有のFDNを通じて、希少疾患におけるRWE研究の再現性と透明性を高める方法について概説する。

方法: 複数の利害関係者による科学的なFDNコラボレーションを成功させるには、強力なガバナンスモデルが必要である。このようなモデルでは、各データベース所有者は、患者レベルデータの使用とアクセスに関して完全なコントロールを維持し、データプライバシー、倫理的、法的コンプライアンスに責任を持つ。これらすべてが十分に文書化され、適切なデータベースの説明が行われているのであれば、このようなガバナンスモデルは透明性の向上につながり、データのキュレーションと調和、分散された分析手法によって再現性が達成される。

結果: OHDSI コミュニティの一連の手法とツールを活用し、2 つの希少疾患特異的 FDN について詳述する。多発性骨髄腫については、HONEUR（オナー、Haematology Outcomes Network in Europe）が、科学的交流と研究に専念するデータパートナー間の強力なコミュニティを構築した。肺高血圧症(PH)の科学的知識を向上させるために、PHederation と呼ばれる FDN が設立され、多様な起源を持つ PH データベースを持つ研究機関のパートナーシップを形成した。

OHDSI論文 新規2

mHSPCでの併用療法と関連する 薬剤性有害事象（AE）の報告研究

Eur Urol Open Sci. 2024 Mar 25:63:81-88. doi: 10.1016/j.euros.2024.02.019. eCollection 2024 May.

Research Protocol for an Observational Health Data Analysis on the Adverse Events of Systemic Treatment in Patients with Metastatic Hormone-sensitive Prostate Cancer: Big Data Analytics Using the PIONEER Platform

PMID: 38572301

Pawel Rajwa [1 2], Angelika Borkowetz [3], Thomas Abbott [4], Andrea Alberti [5], Anders Bjartell [6], James T Brash [7], Riccardo Campi [5], Andrew Chilelli [8], Mitchell Conover [9], Niculae Constantinovici [10], Eleanor Davies [7], Bertrand De Meulder [11], Sherrine Eid [12], Mauro Gacci [5], Asieh Golozar [13 14], Haroon Hafeez [15], Samiul Haque [12], Ayman Hijazy [11], Tim Hulsen [16], Andreas Josefsson [17 18], Sara Khalid [19], Raivo Kolde [20], Daniel Kotik [21 22], Samu Kurki [23], Mark Lambrecht [12], Chi-Ho Leung [24], Julia Moreno [12], Rossella Nicoletti [5], Daan Nieboer [25], Marek Oja [20], Soundarya Palanisamy [12], Peter Prinsen [26], Christian Reich [13 14], Giulio Raffaele Resta [5], Maria J Ribal [27], Juan Gómez Rivas [28], Emma Smith [29], Robert Snijder [9], Carl Steinbeisser [30], Frederik Vandenberghe [12], Philip Cornford [31], Susan Evans-Axelsson [10], James N'Dow [32], Peter-Paul M Willemse [33]

Abstract

Combination therapies in metastatic hormone-sensitive prostate cancer (mHSPC), which include the addition of an androgen receptor signaling inhibitor and/or docetaxel to androgen deprivation therapy, have been a game changer in the management of this disease stage. However, these therapies come with their fair share of toxicities and side effects. The goal of this observational study is to report drug-related adverse events (AEs), which are correlated with systemic combination therapies for mHSPC. Determining the optimal treatment option requires large cohorts to estimate the tolerability and AEs of these combination therapies in "real-life" patients with mHSPC, as provided in this study. We use a network of databases that includes population-based registries, electronic health records, and insurance claims, containing the overall target population and subgroups of patients defined by unique certain characteristics, demographics, and comorbidities, to compute the incidence of common AEs associated with systemic therapies in the setting of mHSPC. These data sources are standardised using the Observational Medical Outcomes Partnership Common Data Model. We perform the descriptive statistics as well as calculate the AE incidence rate separately for each treatment group, stratified by age groups and index year. The time until the first event is estimated using the Kaplan-Meier method within each age group. In the case of episodic events, the anticipated mean cumulative counts of events are calculated. Our study will allow clinicians to tailor optimal therapies for mHSPC patients, and they will serve as a basis for comparative method studies.

要旨

転移性ホルモン感受性前立腺癌（mHSPC）における併用療法は、アンドロゲン除去療法にアンドロゲン受容体シグナル伝達阻害剤および/またはドセタキセルを追加するもので、この病期の管理におけるゲームチェンジャーとなっている。しかし、これらの治療には毒性や副作用が伴う。この観察研究の目的は、mHSPCに対する全身併用療法と相関する薬剤関連有害事象（AE）を報告することである。

最適な治療法を決定するためには、本研究で提供されるような、mHSPC患者におけるこれらの併用療法の忍容性とAEを推定する大規模コホートが必要である。我々は、mHSPCにおける全身療法に関連する一般的なAE発生率を計算するために、対象集団全体、および特定の特徴、人口統計学、併存疾患によって定義された患者のサブグループを含む、人口ベースの登録、電子カルテ、保険請求などのデータベースネットワークを使用している。これらのデータソースはOMOPを用いて標準化されている。

記述統計とAE発生率の算出は、各治療群について年齢層別、指標年別に行った。各年齢群において、最初の事象が発生するまでの期間をKaplan-Meier法を用いて推定する。エピソード性事象の場合は、予想される平均累積事象数を算出する。本研究は、臨床医がmHSPC患者に最適な治療法を調整することを可能にし、比較法研究の基礎となるであろう。

OHDSI論文 新規3

医療データ標準多過ぎ！どうする？

Editorial > J Med Internet Res. 2024 Apr 9:26:e55779. doi: 10.2196/55779.

Converge or Collide? Making Sense of a Plethora of Open Data Standards in Health Care

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PMID: 38593431

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論文3

Abstract

Practitioners of digital health are familiar with disjointed data environments that often inhibit effective communication among different elements of the ecosystem. This fragmentation leads in turn to issues such as inconsistencies in services versus payments, wastage, and notably, care delivered being less than best-practice. Despite the long-standing recognition of interoperable data as a potential solution, efforts in achieving interoperability have been disjointed and inconsistent, resulting in numerous incompatible standards, despite the widespread agreement that fewer standards would enhance interoperability. This paper introduces a framework for understanding health care data needs, discussing the challenges and opportunities of open data standards in the field. It emphasizes the necessity of acknowledging diverse data standards, each catering to specific viewpoints and needs, while proposing a categorization of health care data into three domains, each with its distinct characteristics and challenges, along with outlining overarching design requirements applicable to all domains and specific requirements unique to each domain.

要旨

　デジタルヘルスの実践者は、エコシステムの異なる要素間の効果的なコミュニケーションをしばしば阻害する、分断されたデータ環境に精通している。このような分断は、サービスと支払いの不一致、無駄、そして特に、提供されるケアがベストプラクティスを下回るといった問題につながる。相互運用可能なデータが潜在的な解決策であることは長年認識されてきたにもかかわらず、相互運用性を達成するための努力はバラバラで一貫性がなく、その結果、**多くの互換性のない標準が生み出されてきた**。

　本稿では、医療データのニーズを理解するためのフレームワークを紹介し、この分野におけるオープンデータ標準の課題と機会について議論する。各々が特定の視点とニーズに応える多様なデータ標準を認識する必要性を強調する一方で、**医療データを3つのドメインに分類**し、それぞれが明確な特徴と課題を持つことを提案し、すべてのドメインに適用可能な包括的な設計要件と各ドメインに固有の要件の概要を示す。

臨床ケアと管理　openEHR
データ交換　HL7 FHIR
縦断的分析　OMOP

カスタマイズ性と硬直性の適切なバランス
持続可能な標準のためのコミュニティ
共通の用語

OHDSI論文 新規4

転移性前立腺がんの系統的レビュー

Review > Eur Urol Open Sci. 2024 Apr 4:63:126-135. doi: 10.1016/j.euros.2024.03.012. eCollection 2024 May.

Predictive Models for Assessing Patients' Response to Treatment in Metastatic Prostate Cancer: A Systematic Review

Ailbhe Lawlor [1], Carol Lin [2], Juan Gómez Rivas [3], Laura Ibáñez [3], Pablo Abad López [4], Peter-Paul Willemse [5], Muhammad Imran Omar [6], Sebastiaan Remmers [2], Philip Cornford [7], Pawel Rajwa [8], Rossella Nicoletti [9] [10], Giorgio Gandaglia [11] [12], Jeremy Yuen-Chun Teoh [10], Jesús Moreno Sierra [3], Asieh Golozar [12] [13], Anders Bjartell [14], Susan Evans-Axelsson [15], James N'Dow [16], Jihong Zong [17], Maria J Ribal [16], Monique J Roobol [2], Mieke Van Hemelrijck [1], Katharina Beyer [2]; PIONEER Consortium

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PMID: 38596781

論文4

Abstract

Background and objective: The treatment landscape of metastatic prostate cancer (mPCa) has evolved significantly over the past two decades. Despite this, the optimal therapy for patients with mPCa has not been determined. This systematic review identifies available predictive models that assess mPCa patients' response to treatment.

Methods: We critically reviewed MEDLINE and CENTRAL in December 2022 according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses statement. Only quantitative studies in English were included with no time restrictions. The quality of the included studies was assessed using the PROBAST tool. Data were extracted following the Checklist for Cri
criteria.

Key findings and limitations: The search identified 616 citations, of which 15 studies
validated internally or externally. Only one study had a low risk of bias and a low risk
performance adequately, resulting in a high risk of bias. Where reported, the model

Conclusions and clinical implications: Most of the identified predictive models requ
studies before these can be implemented in clinical practice to assist with treatment

Patient summary: In this review, we evaluate studies that predict which treatments will work best for which metastatic prostate cancer patients. We found that existing studies need further improvement before these can be used by health care professionals.

転移性前立腺がんに関する
システマティックレビュー論文
OMOPとは関係ない
（検索でなぜ出てきたのかもわからない）

要旨

背景と目的 転移性前立腺癌（mPCa）の治療法は、過去20年間で大きく進歩した。にもかかわらず、mPCa患者に対する最適な治療法は決定されていない。この系統的レビューでは、mPCa患者の治療に対する反応を評価する、利用可能な予測モデルを同定する。

PRISMAガイドライン

方法 2022年12月のMEDLINEとCENTRALをPreferred Reporting Items for Systematic Reviews and Meta-analysesに従って批判的にレビューした。英語の定量的研究のみを対象とし、時間的制限は設けない。対象研究の質はPROBASTツールを用いて評価した。データは、Checklist for Critical Appraisal and Data Extraction for Systematic Reviewsの基準に従って抽出した。

主な所見と限界： 検索により616件の引用が同定され、そのうち15件の研究がレビューに含まれた。組み入れられた研究のうち9件は、内部または外部で検証されたものであった。バイアスのリスクが低く、適用性に関するリスクが低い研究は1件のみであった。多くの研究はモデルの性能を十分に詳述しておらず、バイアスのリスクが高かった。報告されている場合、モデルは良好または優れた性能を示していた。

結論と臨床的意義 同定された予測モデルのほとんどは、mPCaを有する男性の治療方針の決定を支援するために臨床に導入する前に、適切にデザインされた研究における追加的な評価と妥当性確認が必要である。

患者の要約：本総説では、どの治療がどの転移性前立腺がん患者に最も有効であるかを予測する研究を評価した。既存の研究は、医療専門家が使用できるようになるにはさらなる改善が必要であることが分かった。

OHDSI論文 新規5

公開スクリプトによる追試

Lancet Respir Med. 2024 May;12(5):e33-e34. doi: 10.1016/S2213-2600(24)00082-1. Epub 2024 Apr 10.

Effectiveness of COVID-19 vaccines to prevent long COVID: data from Norway

Nhung Th Trinh [1], Annika M Jödicke [2], Martí Català [2], Núria Mercadé-Besora [2], Saeed Hayati [3], Angela Lupattelli [3], Daniel Prieto-Alhambra [4], Hedvig Me Nordeng [5]

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2,000万人以上の参加者のデータを用いた我々の最近の研究では、COVID-19ワクチンが成人におけるCOVIDの長期症状を一貫して予防することが示されており、（中略）であった。さらに（中略）が示されている。 OMOP CDMを使用し、欧州医薬品庁（European Medicines Agency）が資金提供するData Analysis and Real World Interrogation Network (DARWIN)で使用されているものと同様の連携解析を用いて、患者データを転送することなく、欧州3カ国（**エストニア、スペイン、英国**）ですべての解析を実施した。

ここでは、オスロ大学のNorwegian Linked Health Registriesに同じ解析を適用した結果について報告する。2018年から2021年のプライマリケアとセカンダリケア、入院、予防接種、感染症届出、処方、社会人口統計学的要因をカバーする6つの登録からのデータをOMOP CDMにマッピングした。以前の方法を再現し、2021年1月9日から2021年8月6日の間のノルウェーのワクチン接種キャンペーン展開に合わせて、75歳以上の人（コホート1）、65歳以上と臨床的に極めて脆弱な人、および基礎疾患を有する18歳以上の人（コホート2）、基礎疾患を有する18歳以上の人（コホート3）、18歳以上の人（コホート4）の4つの研究コホートを作成した。次に、公開されているスクリプトを適用して、COVID-19ワクチンの長期COVIDおよび急性期以降の合併症予防効果を評価した。

ノルウェーのワクチン接種者2 364 651人、未接種者1 532 935人を対象とした。ワクチン接種者のうち、1576人（0-09%）が、COVID-19陽性検査または診断日から90日から365日の間に記録されたWHOリスト25症状のうち少なくとも1つを発症し、SARS-Cov-2感染180日前にはその症状が記録されていなかったため、長期COVID症例と同定されたのに対し、ワクチン未接種者では2922人（0-17%）であった。コホート別の研究集団の背景的特徴を付録に示す。ワクチン接種群とワクチン未接種群間の共変量バランスは、重み付け後に十分となった。追跡期間と打ち切りに関する情報は付録にまとめてある。

要約すると、COVID-19ワクチンがノルウェー人においてCOVIDの長期症状およびCOVID後の血栓塞栓症や心血管合併症を予防し、他国（英国、スペイン、エストニア）の過去の知見と一致する実世界での有効性を示した。 さらに、OMOP CDMにマッピングされたリンクされた実世界のデータを分析するために、国境を越えて適用される連携分析の使用を示すものである。**一般に公開されているスクリプトを適用することで、最近発表された2つの論文の一般性と再現性を確認し、その知見を強化した。**

OHDSI論文 新規6

FHIRとOMOPにもとづく 治験患者リクルート支援システム

独MIRACUM内のプロジェクト

> Comput Biol Med. 2024 May:174:108411. doi: 10.1016/j.compbiomed.2024.108411. Epub 2024 Apr 6.

recruIT: A cloud-native clinical trial recruitment support system based on Health Level 7 Fast Healthcare Interoperability Resources (HL7 FHIR) and the Observational Medical Outcomes Partnership Common Data Model (OMOP CDM)

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PMID: 38626510

Abstract

Background: Clinical trials (CTs) are foundational to the advancement of evidence-based medicine and recruiting a sufficient number of participants is one of the crucial steps to their successful conduct. Yet, poor recruitment remains the most frequent reason for premature discontinuation or costly extension of clinical trials.

Methods: We designed and implemented a novel, open-source software system to support the recruitment process in clinical trials by generating automatic recruitment recommendations. The development is guided by modern, cloud-native design principles and based on Health Level 7 (HL7) Fast Healthcare Interoperability Resources (FHIR) as an interoperability standard with the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) being used as a source of patient data. We evaluated the usability using the system usability scale (SUS) after deploying the application for use by study personnel.

Results: The implementation is based on the OMOP CDM as a repository of patient data that is continuously queried for possible trial candidates based on given clinical trial eligibility criteria. A web-based screening list can be used to display the candidates and email notifications about possible new trial participants can be sent automatically. All interactions between services use HL7 FHIR as the communication standard. The system can be installed using standard container technology and supports more sophisticated deployments on Kubernetes clusters. End-users (n = 19) rated the system with a SUS score of 79.9/100.

Conclusion: We contribute a novel, open-source implementation to support the patient recruitment process in clinical trials that can be deployed using state-of-the art technologies. According to the SUS score, the system provides good usability.

要旨

背景: 臨床試験（CT）は、エビデンスに基づく医療を推進するための基盤であり、十分な数の参加者を募集することは、臨床試験を成功させるための重要なステップの一つである。しかし、リクルート不足は、臨床試験の早期中止や費用のかかる延長の最も頻繁な理由である。

方法: 我々は、臨床試験における被験者募集プロセスを支援するために、新規のオープンソースソフトウェアシステムを設計し、実装した。開発は、最新のクラウドネイティブデザイン原則に基づき、HL7 FHIRを相互運用性標準として、OMOP CDMを患者データのソースとして使用した。試験担当者が使用するアプリケーションをデプロイした後、システムユーザビリティスケール（SUS）を用いてユーザビリティを評価した。

結果: OMOP CDMを患者データのリポジトリとして利用し、所定の臨床試験適格基準に基づいて継続的に試験候補者を照会する。ウェブベースのスクリーニングリストを用いて候補者を表示し、新たな治験参加者の可能性に関する電子メール通知を自動的に送信することができる。サービス間のすべてのやりとりは、通信標準としてHL7 FHIRを使用する。システムは標準的なコンテナ技術を使用してインストールすることができ、Kubernetesクラスタ上でのより洗練されたデプロイメントをサポートしている。エンドユーザー（n = 19）は、このシステムを79.9/100のSUSスコアで評価した。

結論: 臨床試験における患者募集プロセスをサポートするための、オープンソースによる新しい実装を提供する。SUSスコアによれば、本システムは良好なユーザビリティを提供している。

OHDSI論文 新規7

豪プライマリケアデータのOMOP変換

Observational Study > PLoS One. 2024 Apr 18;19(4):e0301557.
doi: 10.1371/journal.pone.0301557. eCollection 2024.

The OMOP common data model in Australian primary care data: Building a quality research ready harmonised dataset

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Abstract

Background: The use of routinely collected health data for secondary research purposes is increasingly recognised as a methodology that advances medical research, improves patient outcomes, and guides policy. This secondary data, as found in electronic medical records (EMRs), can be optimised through conversion into a uniform data structure to enable analysis alongside other comparable health metric datasets. This can be achieved with the Observational Medical Outcomes Partnership Common Data Model (OMOP-CDM), which employs a standardised vocabulary to facilitate systematic analysis across various observational databases. The concept behind the OMOP-CDM is the conversion of data into a common format through the harmonisation of terminologies, vocabularies, and coding schemes within a unique repository. The OMOP model enhances research capacity through the development of shared analytic and prediction techniques; pharmacovigilance for the active surveillance of drug safety; and 'validation' analyses across multiple institutions across Australia, the United States, Europe, and the Asia Pacific. In this research, we aim to investigate the use of the open-source OMOP-CDM in the PATRON primary care data repository.

Methods: We used standard structured query language (SQL) to construct, extract, transform, and load scripts to convert the data to the OMOP-CDM. The process of mapping distinct free-text terms extracted from various EMRs presented a substantial challenge, as many terms could not be automatically matched to standard vocabularies through direct text comparison. This resulted in a number of terms that required manual assignment. To address this issue, we implemented a strategy where our clinical mappers were instructed to focus only on terms that appeared with sufficient frequency. We established a specific threshold value for each domain, ensuring that more than 95% of all records were linked to an approved vocabulary like SNOMED once appropriate mapping was completed. To assess the data quality of the resultant OMOP dataset we utilised the OHDSI Data Quality Dashboard (DQD) to evaluate the plausibility, conformity, and comprehensiveness of the data in the PATRON repository according to the Kahn framework.

Results: Across three primary care EMR systems we converted data on 2.03 million active patients to version 5.4 of the OMOP common data model. The DQD assessment involved a total of 3,570 individual evaluations. Each evaluation compared the outcome against a predefined threshold. A 'FAIL' occurred when the percentage of non-compliant rows exceeded the specified threshold value. In this assessment of the primary care OMOP database described here, we achieved an overall pass rate of 97%.

Conclusion: The OMOP CDM's widespread international use, support, and training provides a well-established pathway for data standardisation in collaborative research. Its compatibility allows the sharing of analysis packages across local and international research groups, which facilitates rapid and reproducible data comparisons. A suite of open-source tools, including the OHDSI Data Quality Dashboard (Version 1.4.1), supports the model. Its simplicity and standards-based approach facilitates adoption and integration into existing data processes.

要旨

背景: 日常的に収集される健康データを二次研究目的で利用することは、医学研究を進展させ、患者の転帰を改善し、政策を導く方法論として認識されつつある。電子カルテ（EMR）に見られるようなこの二次データは、他の比較可能な健康指標データセットと一緒に分析できるように、統一されたデータ構造に変換することで最適化することができる。これはOMOP-CDMによって達成できる。OMOP-CDMは標準化された語彙を採用しており、様々な観察データベースを横断して系統的な解析を容易にする。OMOP-CDMのコンセプトは、独自のリポジトリ内で用語、語彙、コーディングスキームを調和させることにより、データを共通のフォーマットに変換することである。OMOPモデルは、オーストラリア、米国、欧州、アジア太平洋地域の複数の研究機関にわたって、共有の分析・予測技術の開発、医薬品の安全性を積極的に監視するためのファーマコビジランス、および「検証」分析を通じて研究能力を向上させる。本研究では、PATRONプライマリケアデータリポジトリにおけるオープンソースのOMOP-CDMの使用を調査することを目的とする。

方法: 標準的な構造化クエリー言語（SQL）を用いて、データをOMOP-CDMに変換するためのスクリプトの構築、抽出、変換、ロードを行った。さまざまな EMR から抽出された明確なフリーテキスト用語をマッピングするプロセスには大きな課題があった。その結果、多くの用語が手作業による割り当てを必要とした。この問題に対処するため、クリニカルマッパーに十分な頻度で出現する用語のみに注目するよう指示する戦略を実施した。各領域ごとに特定の閾値を設定し、適切なマッピングが完了した時点で、全レコードの95%以上がSNOMEDのような承認された語彙にリンクされるようにした。得られたOMOPデータセットのデータ品質を評価するため、OHDSI Data Quality Dashboard（DQD）を利用し、PATRONリポジトリのデータの妥当性、適合性、網羅性をKahnフレームワークに従って評価した。

結果: 3つのプライマリケアEMRシステムにおいて、203万人の有効患者のデータをOMOP共通データモデルのバージョン5.4に変換した。DQD評価には合計3,570件の個別評価が含まれた。各評価は事前に定義された閾値と結果を比較した。不適合行の割合が指定されたしきい値を超えると「不合格」となった。ここで説明するプライマリケアOMOPデータベースの評価では、全体で97%の合格率を達成した。

結論: OMOP CDMは国際的に広く使用され、サポートされ、訓練されているため、共同研究におけるデータ標準化のための確立された経路を提供している。その互換性により、国内外の研究グループ間で解析パッケージを共有することができ、迅速かつ再現性のあるデータ比較が容易になる。OHDSIデータ品質ダッシュボード（バージョン1.4.1）を含む一連のオープンソースツールがこのモデルをサポートしている。そのシンプルさと標準ベースのアプローチは、既存のデータプロセスへの導入と統合を容易にする。

OHDSI論文 新規8

HIRAの Covid19 OMOP DB

Int J Epidemiol. 2024 Apr 11;53(3):dyae062. doi: 10.1093/ije/dyae062.

Data Resource Profile: Health Insurance Review and Assessment Service Covid-19 Observational Medical Outcomes Partnership (HIRA Covid-19 OMOP) database in South Korea

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Abstract

Objective: Machine learning methods hold the promise of leveraging available data and generating higher-quality data while alleviating the data collection burden on healthcare professionals. International Classification of Diseases (ICD) diagnoses data, collected globally for billing and epidemiological purposes, represents a valuable source of structured information. However, ICD coding is a challenging task. While numerous previous studies reported promising results in automatic ICD classification, they often describe input data specific model architectures, that are heterogeneously evaluated with different performance metrics and ICD code subsets. This study aims to explore the evaluation and construction of more effective Computer Assisted Coding (CAC) systems using generic approaches, focusing on the use of ICD hierarchy, medication data and a feed forward neural network architecture.

Methods: We conduct comprehensive experiments using the MIMIC-III clinical database, mapped to the OMOP data model. Our evaluations encompass various performance metrics, alongside investigations into multitask, hierarchical, and imbalanced learning for neural networks.

Results: We introduce a novel metric, , tailored to the ICD coding task, which offers interpretable insights for healthcare informatics practitioners, aiding them in assessing the quality of assisted coding systems. Our findings highlight that selectively cherry-picking ICD codes diminish retrieval performance without performance improvement over the selected subset. We show that optimizing for metrics such as NDCG and AUPRC outperforms traditional F1-based metrics in ranking performance. We observe that Neural Network training on different ICD levels simultaneously offers minor benefits for ranking and significant runtime gains. However, our models do not derive benefits from hierarchical or class imbalance correction techniques for ICD code retrieval.

Conclusion: This study offers valuable insights for researchers and healthcare practitioners interested in developing and evaluating CAC systems. Using a straightforward sequential neural network model, we confirm that medical prescriptions are a rich data source for CAC systems, providing competitive retrieval capabilities for a fraction of the computational load compared to text-based models. Our study underscores the importance of metric selection and challenges existing practices related to ICD code sub-setting for model training and evaluation.

OHDSI論文 新規9

OMOPベースのHDSノードを作ってみた

Front Med (Lausanne). 2024 Apr 10:11:1301660. doi: 10.3389/fmed.2024.1301660. eCollection 2024.

Health data space nodes for privacy-preserving linkage of medical data to support collaborative secondary analyses

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Abstract

Introduction: The potential for secondary use of health data to improve healthcare is currently not fully exploited. Health data is largely kept in isolated data silos and key infrastructure to aggregate these silos into standardized bodies of knowledge is underdeveloped. We describe the development, implementation, and evaluation of a federated infrastructure to facilitate versatile secondary use of health data based on Health Data Space nodes.

Materials and methods: Our proposed nodes are self-contained units that digest data through an extract-transform-load framework that pseudonymizes and links data with privacy-preserving record linkage and harmonizes into a common data model (OMOP CDM). To support collaborative analyses a multi-level feature store is also implemented. A feasibility experiment was conducted to test the infrastructures potential for machine learning operations and deployment of other apps (e.g., visualization). Nodes can be operated in a network at different levels of sharing according to the level of trust within the network.

Results: In a proof-of-concept study, a privacy-preserving registry for heart failure patients has been implemented as a real-world showcase for Health Data Space nodes at the highest trust level, linking multiple data sources including (a) electronical medical records from hospitals, (b) patient data from a telemonitoring system, and (c) data from Austria's national register of deaths. The registry is deployed at the tirol kliniken, a hospital carrier in the Austrian state of Tyrol, and currently includes 5,004 patients, with over 2.9 million measurements, over 574,000 observations, more than 63,000 clinical free text notes, and in total over 5.2 million data points. Data curation and harmonization processes are executed semi-automatically at each individual node according to data sharing policies to ensure data sovereignty, scalability, and privacy. As a feasibility test, a natural language processing model for classification of clinical notes was deployed and tested.

Discussion: The presented Health Data Space node infrastructure has proven to be practicable in a real-world implementation in a live and productive registry for heart failure. The present work was inspired by the European Health Data Space initiative and its spirit to interconnect health data silos for versatile secondary use of health data.

要旨

はじめに: ヘルスケアを改善するための健康データの二次利用の可能性は、現在のところ十分に活用されていない。健康データは大部分が孤立したデータサイロに保管されており、これらのサイロを標準化された知識体系に集約するための主要なインフラは未開発である。我々は、**Health Data Space**ノードに基づく、健康データの汎用的な二次利用を促進するための連携インフラの開発、実装、評価について述べる。

材料と方法: 我々の提案するノードは、抽出-変換-ロードのフレームワークを通してデータを消化する自己完結型のユニットであり、プライバシーを保持したレコードリンケージでデータを仮名化し、共通データモデル（OMOP CDM）に調和させる。共同分析をサポートするために、マルチレベル特徴ストアも実装されている。機械学習操作や他のアプリケーション（視覚化など）の展開のためのインフラの可能性をテストするために、フィージビリティ実験が実施された。ノードは、ネットワーク内の信頼レベルに応じて、異なる共有レベルでネットワーク内で動作させることができる。

結果: (a)病院からの電子カルテ、(b)遠隔モニタリングシステムからの患者データ、(c)オーストリアの全国死亡登録からのデータを含む複数のデータソースをリンクする。このレジストリは、オーストリアのチロル州の病院であるtirol klinikenで展開されており、現在5,004人の患者、290万以上の測定値、574,000以上の観察値、63,000以上の臨床フリーテキストメモ、合計520万以上のデータポイントを含んでいる。データキュレーションとハーモナイゼーションプロセスは、データ主権、スケーラビリティ、プライバシーを確保するために、データ共有ポリシーに従って個々のノードで半自動的に実行される。フィージビリティ・テストとして、クリニカル・ノートを分類するための自然言語処理モデルが導入され、テストされた。

考察: 発表されたHealth Data Spaceのノード・インフラは、実際の心不全レジストリにおいて実用可能であることが証明された。本研究は、欧州のHealth Data Spaceイニシアチブと、健康データを多目的に二次利用するために健康データのサイロを相互接続するというその精神に触発された。

■Discussionの最初のパラグラフ
私たちは、Health Data Space ノードを柔軟なシステム アーキテクチャ ユニットとして提示し、D4Health Heart Failure Registry と呼ばれる実際のアプリケーションで評価しました。このケース スタディから得られた結果により、インフラストラクチャの有用性が裏付けられました。データのリンク、調和、分析のプロセスは機能することが証明されました。特徴エンジニアリングとモデリングは実験的に検討され、概念実証の自然言語処理ユース ケースで有望な予備的な結果が示されました。MLHOps の機能 (特にモデル展開) を業界レベルの準備に拡張することは、今後の研究開発の対象です。

OHDSI論文 新規10

ブルガリア糖尿病レジストリのOMOP変換

Stud Health Technol Inform. 2024 Apr 26:313:28-33. doi: 10.3233/SHTI240007.

Mapping the Bulgarian Diabetes Register to OMOP CDM: Application Results

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Abstract

Background: The Bulgaria Diabetes Register (BDR) contains more than 380 millions of pseudonymized outpatient records with proprietary data structures and format.

Objectives: This paper presents the application results and experience acquired during the process of mapping such observational health data to OMOP CDM with the objective of publishing it in the European Health Data and Evidence Network (EHDEN) Portal.

Methods: The data mapping follows the activities of the well-structured Extract-Transform-Load process. Unlike other publications, we focus on the need for preprocessing the data structures of raw data, cleaning data and procedures for assuring quality of data.

Results: This paper provides quantitative and statistical measures for the records in the CDM database as published in the EHDEN Portal.

Conclusion: The mapping of data from the BDR to OMOP CDM provides the EHDEN community with opportunities for including these data in large-scale project for evidence generation by applying standard analytical tools.

要旨

背景: Bulgaria Diabetes Register（BDR）には3億8,000万件以上の仮名化された外来患者記録が含まれており、独自のデータ構造と形式が用いられている。

目的: 本論文では、このような観察医療データをOMOP CDMにマッピングし、European Health Data and Evidence Network（EHDEN）ポータルで公開することを目的としたアプリケーションの結果と経験を紹介する。

方法: データマッピングは、よく構造化されたExtract-Transform-Loadプロセスの活動に従っている。他の出版物とは異なり、生データのデータ構造の前処理の必要性、データのクリーニング、データの質を保証するための手順に焦点を当てている。

結果: 本論文では、EHDENポータルで公開されているCDMデータベースのレコードの定量的・統計的指標を提供する。

結論: BDRのデータをOMOP CDMにマッピングすることで、EHDENコミュニティは、標準的な分析ツールを適用することで、これらのデータをエビデンス生成のための大規模プロジェクトに含める機会を得ることができる。

４月５月のOHDSI Global

●Global Community Call テーマ

Mar. 26	Recent OHDSI Publications
Apr. 2	April Olympians #1/Perseus ETL Tool
Apr. 9	Vocabulary Techniques for ETL/April Olympians
Apr. 16	Tools to Evaluate ETL
Apr. 23	CDM and Themis Process Overview
Apr. 30	April Olympians Wrap-Up
May 7	DevCon 2024 Review
May 14	10-Minute Tutorials
May 21	Open Network Studies
May 28	Collaborator Showcase Insights & Brainstorm

４月５月のOHDSI APAC

●APAC Call テーマ

Apr. 4　　Scientific Forum
　　Genotyping Data Mapping by Singapore

Apr. 18　Community Call
　　Newcomers Session

May 2　　Scientific Forum
　　CaRROT-Mapper, Re-executing an Outdated OHDSI R Package

May 16　Community Call
　　Recaps/Reflections of April OHDSI/OMOP Events

● ４月17日　Japan F2F イベント

　　講演　　Prof. Daniel Prieto-Alhambra

　　ハンズオン　Prof. Sen Chan You

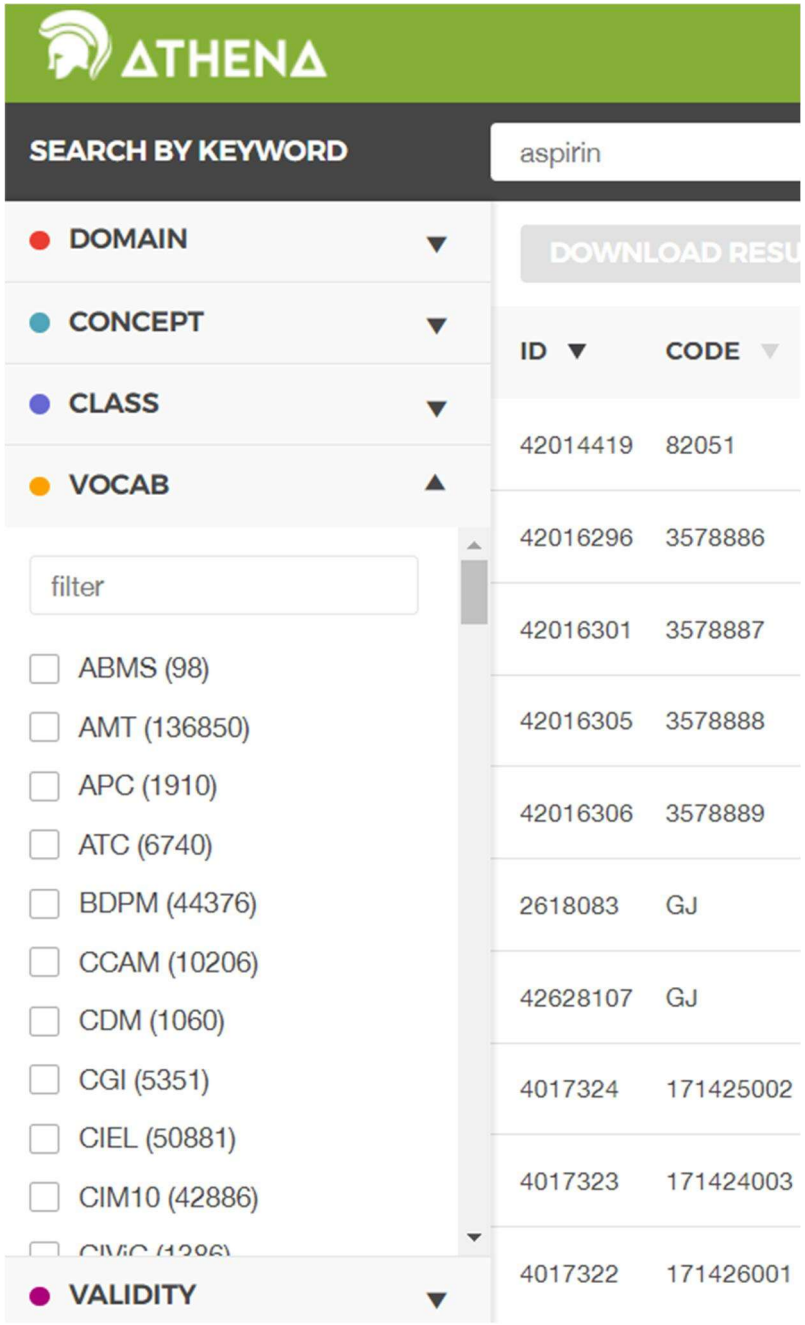
今後のOHDSI イベント

● OHDSI Europe
The 5th European OHDSI Symposium
"Scaling up reliable evidence across Europe“
会期 6/1-3 (Mainは6/3)

● OHDSI US/Global
The 10th 2024 OHDSI Global Symposium
会期 10/22-24 @ニュージャージー

● OHDSI APAC
2024 OHDSI APAC Symposium
会期 12/4-8 (Main 5-6) @シンガポール
2日間はマリーナベイ・サンズで開催されます。

Vocabulary 探検2



1	SNOMED	Systematic Nomenclature of Medicine - Clinical Terms (IHTSDO)		27-Sep-23
2	ICD9CM	International Classification of Diseases, Ninth Revision, Clinical Modification, Volume 1 and 2 (NCHS)		1-Oct-14
3	ICD9Proc	International Classification of Diseases, Ninth Revision, Clinical Modification, Volume 3 (NCHS)		1-Oct-14
4	CPT4	Current Procedural Terminology version 4 (AMA)	EULA required	1-May-23
5	HCPCS	Healthcare Common Procedure Coding System (CMS)		1-Jan-24
6	LOINC	Logical Observation Identifiers Names and Codes (Regenstrief Institute)		18-Sep-23
7	NDFRT	National Drug File - Reference Terminology (VA)		6-Aug-18
8	RxNorm	RxNorm (NLM)		2-Jan-24
9	NDC	National Drug Code (FDA and manufacturers)		25-Feb-24
10	GPI	Medi-Span Generic Product Identifier (Wolters Kluwer Health)	License required	14-Dec-17
12	Gender	OMOP Gender		
13	Race	Race and Ethnicity Code Set (USBC)		
14	CMS Place of Service	Place of Service Codes for Professional Claims (CMS)		
15	MedDRA	Medical Dictionary for Regulatory Activities (MSSO)	EULA required	1-Sep-23
16	Multum	Cerner Multum (Cerner)		
17	Read	NHS UK Read Codes Version 2 (HSCIC)		3-Apr-18
18	OXMIS	Oxford Medical Information System (OCHP)		27-Apr-15
19	Indication	Indications and Contraindications (FDB)	License required	19-Nov-15
20	ETC	Enhanced Therapeutic Classification (FDB)	License required	19-Nov-15
21	ATC	WHO Anatomic Therapeutic Chemical Classification		7-Sep-21
22	Multilex	Multilex (FDB)	License required	
28	VANDF	Veterans Health Administration National Drug File (VA))		7-Aug-23
31	SMQ	Standardised MedDRA Queries (MSSO)		
32	VA Class	VA National Drug File Class (VA)		7-Aug-23
33	Cohort	Legacy OMOP HOI or DOI cohort		
34	ICD10	International Classification of Diseases, Tenth Revision (WHO)		6-Apr-21
35	ICD10PCS	ICD-10 Procedure Coding System (CMS)		1-Oct-23
40	DRG	Diagnosis-related group (CMS)		
41	MDC	Major Diagnostic Categories (CMS)		
42	APC	Ambulatory Payment Classification (CMS)		1-Jan-18

43	Revenue Code	UB04/CMS1450 Revenue Codes (CMS)		
44	Ethnicity	OMOP Ethnicity		
46	MeSH	Medical Subject Headings (NLM)		6-Nov-23
47	NUCC	National Uniform Claim Committee Health Care Provider Taxonomy Code Set (NUCC)		26-Jun-18
48	Medicare Specialty	Medicare provider/supplier specialty codes (CMS)		26-Jun-18
50	SPL	Structured Product Labeling (FDA)		25-Feb-24
53	GCN_SEQNO	Clinical Formulation ID (FDB)		19-Nov-15
54	CCS	Clinical Classifications Software for ICD-9-CM (HCUP)	Currently not available	
55	OPCS4	OPCS Classification of Interventions and Procedures version 4 (NHS)		28-Jan-21
56	Gemscript	Gemscript (Resip)	License required	1-Nov-23
57	HES Specialty	Hospital Episode Statistics Specialty (NHS)		26-Jun-18
60	PCORNet	National Patient-Centered Clinical Research Network (PCORI)		
65	Currency	International Currency Symbol (ISO 4217)		
70	ICD10CM	International Classification of Diseases, Tenth Revision, Clinical Modification (NCHS)		1-Oct-23
71	ABMS	Provider Specialty (American Board of Medical Specialties)		26-Jun-18
72	CIEL	Columbia International eHealth Laboratory (Columbia University)		27-Feb-15
73	DA_France	Disease Analyzer France (IQVIA)	License required	3-Aug-22
74	DPD	Drug Product Database (Health Canada)		25-Jun-17
75	dm+d	Dictionary of Medicines and Devices (NHS)		22-May-23
76	BDPM	Public Database of Medications (Social-Sante)		6-Oct-19
77	AMIS	Medicinal Products Information System (DIMDI)	Currently not available	
78	AMT	Australian Medicines Terminology (NEHTA)		30-Jun-21
79	EU Product	Community Register of Medicinal Products for Human Use (European Commission)	Currently not available	
80	EphMRA ATC	Anatomical Classification of Pharmaceutical Products (EphMRA)		4-Jul-16
81	NFC	New Form Code (EphMRA)		4-Jul-16
82	RxNorm Extension	OMOP RxNorm Extension		25-Jan-24
84	LPD_Australia	Longitudinal Patient Data Australia (IQVIA)	License required	31-May-22
85	GRR	Global Reference Repository (IQVIA)	License required	4-Feb-22
86	MMI	Modernizing Medicine (MMI)		28-Apr-17
87	Specimen Type	OMOP Specimen Type		

88	CVX	CDC Vaccine Administered CVX (NCIRD)		14-Dec-23
89	PPI	AllOfUs_PPI (Columbia)		21-Feb-24
90	ICDO3	International Classification of Diseases for Oncology, Third Edition (WHO)		30-Jun-20
91	CDT	Current Dental Terminology (ADA)	License required	2-May-22
92	ISBT	Information Standard for Blood and Transplant 128 Product (ICCBBA)	License required	3-Dec-21
93	ISBT Attribute	Information Standard for Blood and Transplant 128 Product Attribute (ICCBBA)	License required	3-Dec-21
94	GGR	Commented Drug Directory (BCFI)		1-Sep-21
95	LPD_Belgium	Longitudinal Patient Data Belgium (IQVIA)	License required	1-Aug-21
101	KDC	Korean Drug Code (HIRA)		31-Jul-20
102	SUS	Table of Procedures, Drugs, Orthoses, Protheses and Special Materials (Brazilian Unified Health System)		1-Feb-18
109	MEDRT	Medication Reference Terminology MED-RT (VA)		
111	Episode Type	OMOP Episode Type		
112	SNOMED Veterinary	SNOMED Veterinary Extension (VTSL)		1-Apr-19
113	JMDC	Japan Medical Data Center Drug Code (JMDC)		21-Jan-21
115	Provider	OMOP Provider		
116	Supplier	OMOP Supplier		
117	HemOnc	HemOnc		29-Nov-22
118	NAACCR	Data Standards & Data Dictionary Volume II (NAACCR)		2-Mar-18
120	KCD7	Korean Standard Classfication of Diseases and Causes of Death, 7th Revision (STATISTICS KOREA)		1-Jul-17
121	KNHIS	Korean Payer (KNHIS)		
123	CTD	Comparative Toxicogenomic Database (NCSU)		19-Feb-20
124	EDI	Korean Electronic Data Interchange code system (HIRA)		1-Oct-19
125	ICD10CN	International Classification of Diseases, Tenth Revision, Chinese Edition (CAMS)		1-Jan-16
126	ICD9ProcCN	International Classification of Diseases, Ninth Revision, Chinese Edition, Procedures (CAMS)		1-Jan-17
127	Nebraska Lexicon	Nebraska Lexicon (UNMC)		16-Aug-19
128	OMOP Extension	OMOP Extension (OHDSI)		28-Feb-24
129	CAP	CAP electronic Cancer Checklists (College of American Pathologists)	License required	1-Apr-20
130	CIM10	International Classification of Diseases, Tenth Revision, French Edition (ATIH)		4-Oct-22
131	NCCD	Normalized Chinese Clinical Drug knowledge base (UTHealth)		20-Dec-20
134	CIViC	Clinical Interpretation of Variants in Cancer (civicdb.org)		1-Oct-22

135	CGI	Cancer Genome Interpreter (Pompeu Fabra University)		16-Feb-18
136	ClinVar	ClinVar (NCBI)		1-Sep-20
137	JAX	The Clinical Knowledgebase (The Jackson Laboratory)		24-Aug-20
138	NCIt	NCI Thesaurus (National Cancer Institute)		9-May-22
139	HGNC	Human Gene Nomenclature (European Bioinformatics Institute)		1-Jan-20
140	ICD10GM	International Classification of Diseases, Tenth Revision, German Edition		1-Jan-24
141	Cancer Modifier	Diagnostic Modifiers of Cancer (OMOP)		9-Sep-22
142	OPS	Operations and Procedures Classification (OPS)		1-Jan-22
143	CCAM	Common Classification of Medical Acts (ATIH)		1-Jul-20
144	UK Biobank	UK Biobank (UK Biobank)		18-Mar-21
145	OncoKB	Oncology Knowledge Base (MSK)		2-May-21
146	OMOP Genomic	OMOP Genomic vocabulary of known variants involved in disease		16-Feb-24
147	OncoTree	OncoTree (MSK)		2-Nov-21
148	OMOP Invest Drug	OMOP Investigational Drugs		12-May-22
150	COSMIC	Catalogue Of Somatic Mutations In Cancer	Currently not available	31-May-22
151	CO-CONNECT	CO-CONNECT (University of Nottingham)		31-May-23
152	CO-CONNECT MIABIS	CO-CONNECT MIABIS (University of Nottingham)		31-May-23
153	CO-CONNECT TWINS	CO-CONNECT TWINS (University of Nottingham)		31-May-23
154	NHS Ethnic Category	NHS Ethnic Category		24-Aug-23
155	NHS Place of Service	NHS Admission Source and Discharge Destination		24-Aug-23

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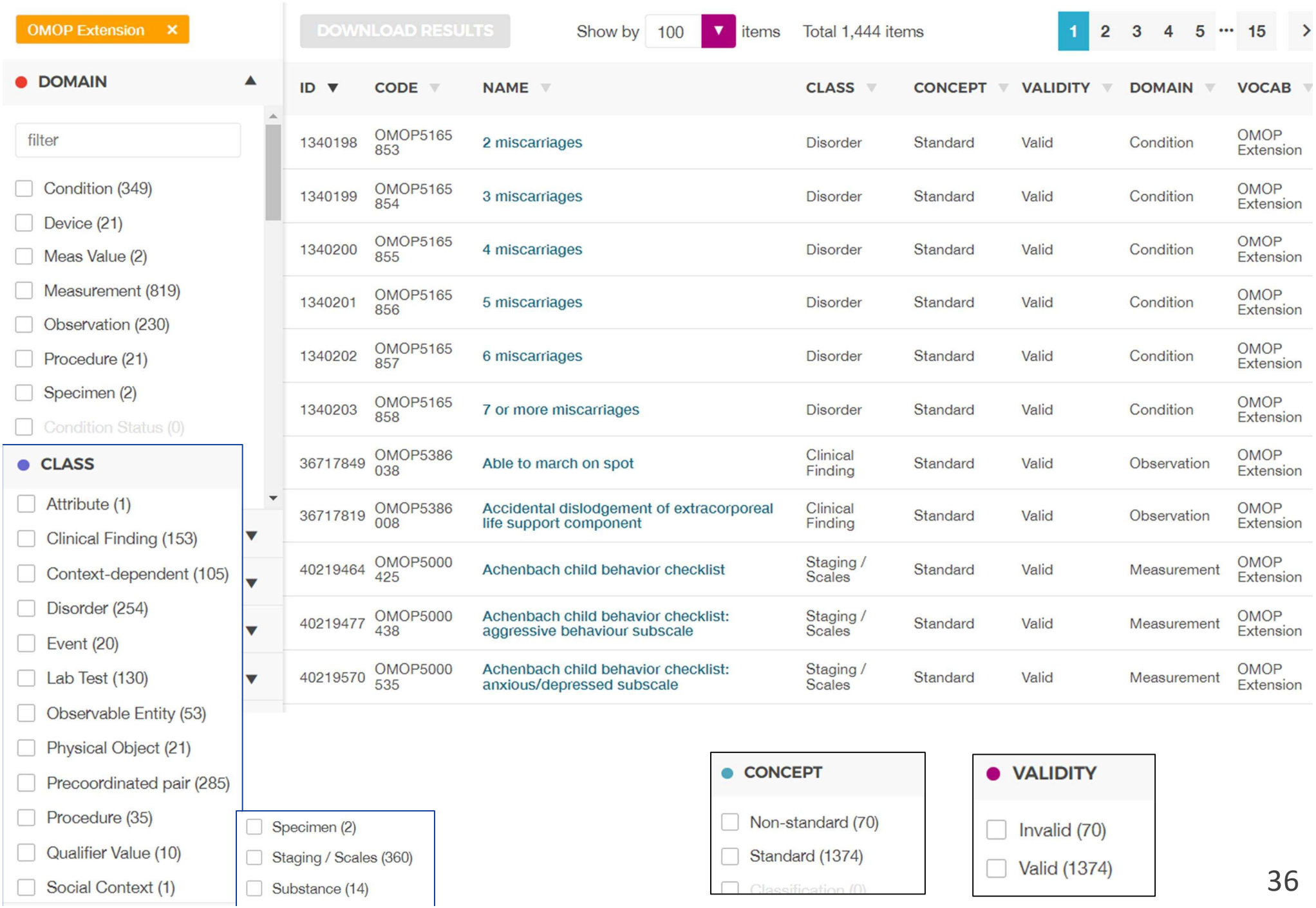
128	CDM 5	OMOP Extension	OMOP Extension (OHDSI)
113	CDM 5	JMDC	Japan Medical Data Center Drug Code (JMDC)
82	CDM 5	RxNorm Extension	OMOP RxNorm Extension
34	CDM 5	ICD10	International Classification of Diseases, Tenth Revision (WHO)
13	CDM 5	Race	Race and Ethnicity Code Set (USBC)
12	CDM 5	Gender	OMOP Gender
8	CDM 5	RxNorm	RxNorm (NLM)
6	CDM 5	LOINC	Logical Observation Identifiers Names and Codes (Regenstrief Institute)
1	CDM 5	SNOMED	Systematic Nomenclature of Medicine - Clinical Terms (IHTSDO)

OMOP Extension （は3月に少し紹介）



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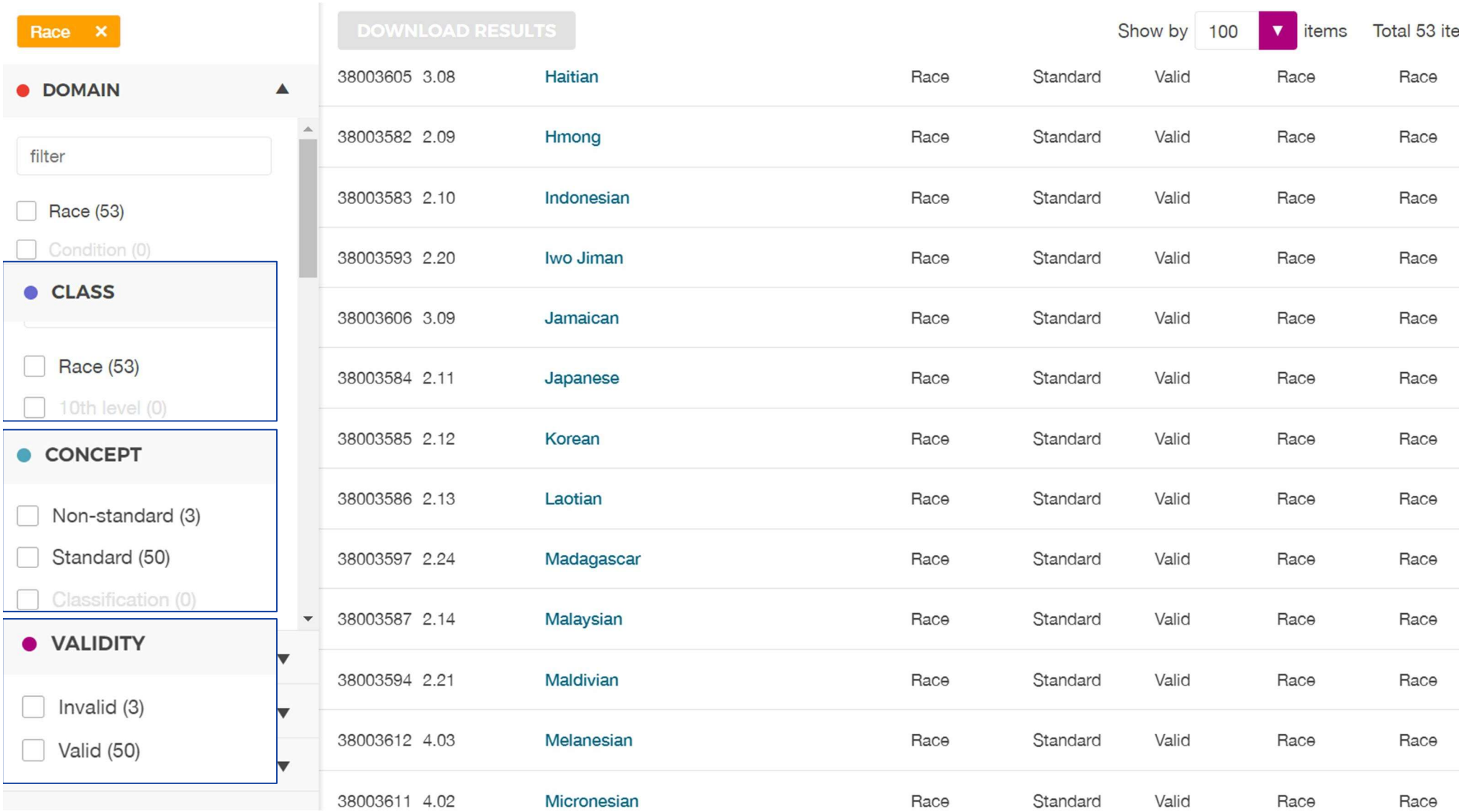
1340200	OMOP5165855	4 miscarriages	Disorder	Standard	Valid	Condition	OMOP Extension
1340201	OMOP5165856	5 miscarriages	Disorder	Standard	Valid	Condition	OMOP Extension
1340202	OMOP5165857	6 miscarriages	Disorder	Standard	Valid	Condition	OMOP Extension
1340203	OMOP5165858	7 or more miscarriages	Disorder	Standard	Valid	Condition	OMOP Extension
36717849	OMOP5386038	Able to march on spot	Clinical Finding	Standard	Valid	Observation	OMOP Extension
36717819	OMOP5386008	Accidental dislodgement of extracorporeal life support component	Clinical Finding	Standard	Valid	Observation	OMOP Extension
40219464	OMOP5000425	Achenbach child behavior checklist	Staging / Scales	Standard	Valid	Measurement	OMOP Extension
40219477	OMOP5000438	Achenbach child behavior checklist: aggressive behaviour subscale	Staging / Scales	Standard	Valid	Measurement	OMOP Extension
40219570	OMOP5000535	Achenbach child behavior checklist: anxious/depressed subscale	Staging / Scales	Standard	Valid	Measurement	OMOP Extension

Race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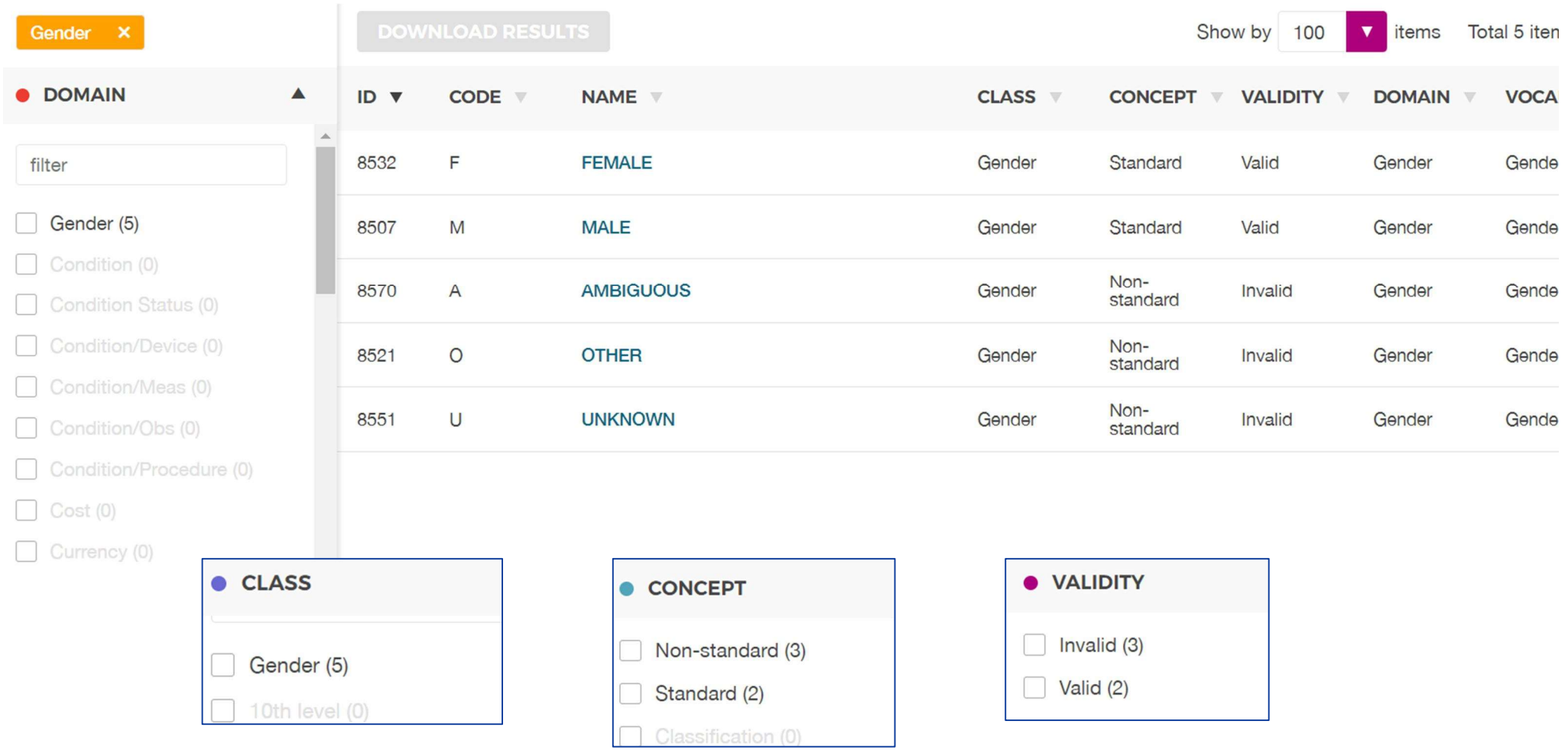
Gender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DOMAIN
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8521 O OTHER Gender Non-standard Invalid Gender Gende
8551 U UNKNOWN Gender Non-standard Invalid Gender Gende
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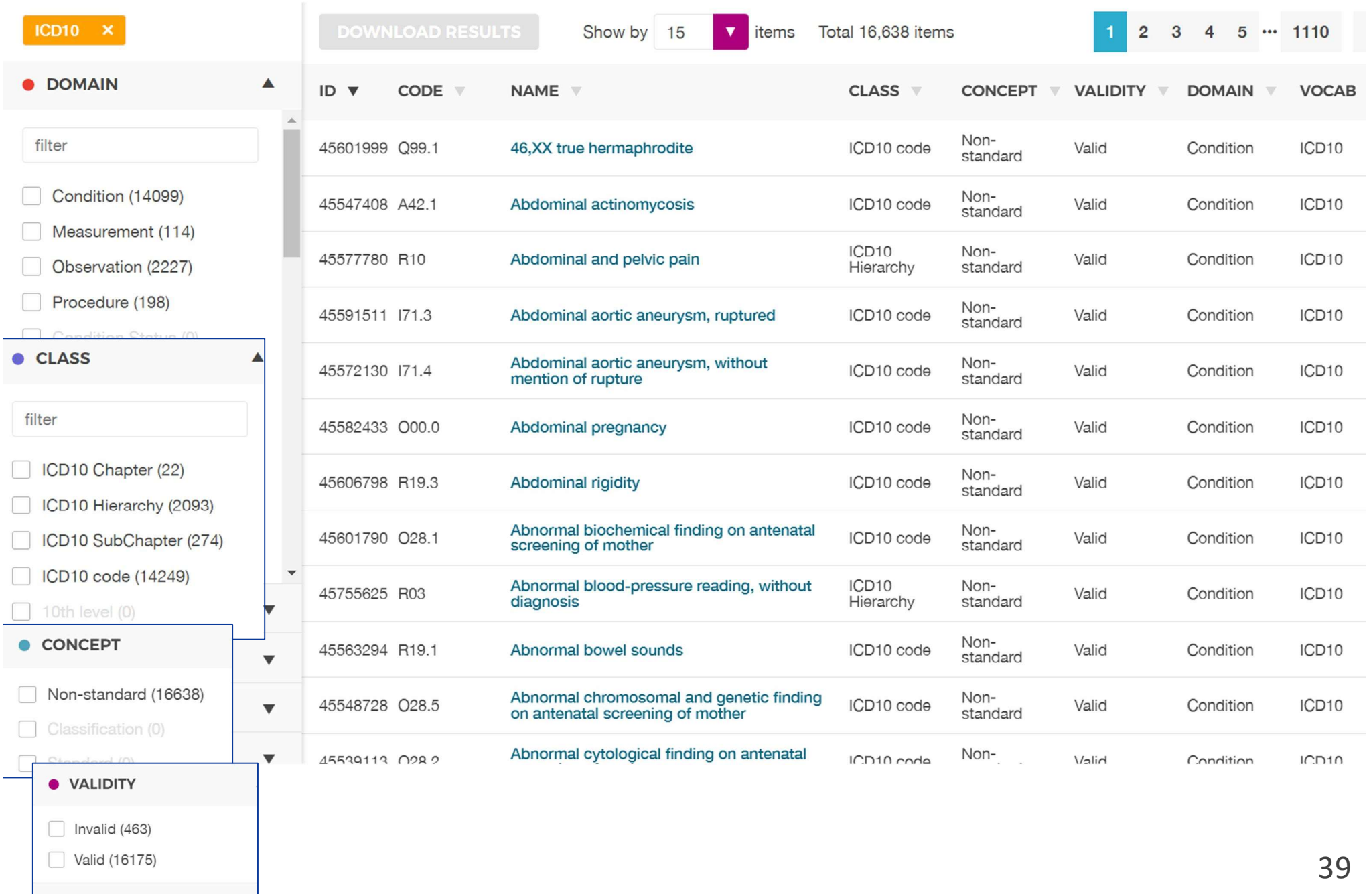
ICD10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Classification (0)
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45547408 A42.1 Abdominal actinomycosis ICD10 code Non-standard Valid Condition ICD10
45577780 R10 Abdominal and pelvic pain ICD10 Hierarchy Non-standard Valid Condition ICD10
45591511 I71.3 Abdominal aortic aneurysm, ruptured ICD10 code Non-standard Valid Condition ICD10
45572130 I71.4 Abdominal aortic aneurysm, without mention of rupture ICD10 code Non-standard Valid Condition ICD10
45582433 O00.0 Abdominal pregnancy ICD10 code Non-standard Valid Condition ICD10
45606798 R19.3 Abdominal rigidity ICD10 code Non-standard Valid Condition ICD10
45601790 O28.1 Abnormal biochemical finding on antenatal screening of mother ICD10 code Non-standard Valid Condition ICD10
45755625 R03 Abnormal blood-pressure reading, without diagnosis ICD10 Hierarchy Non-standard Valid Condition ICD10
45563294 R19.1 Abnormal bowel sounds ICD10 code Non-standard Valid Condition ICD10
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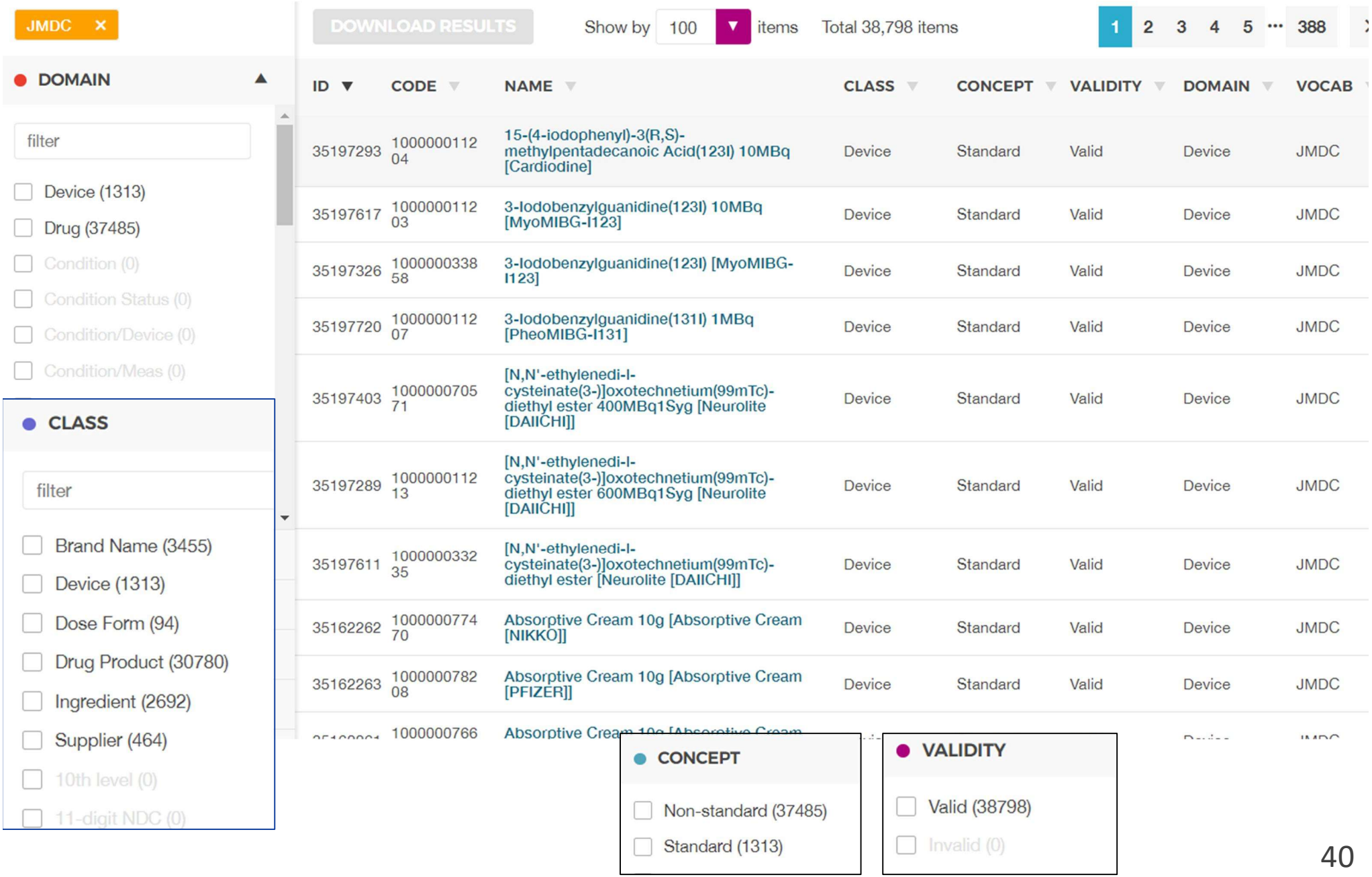
Abnormal cytological finding on antenatal

JMDC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35197326 1000000033858 3-Iodobenzylguanidine(123I) [MyoMIBG-I123] Device Standard Valid Device JMDC
35197720 1000000011207 3-Iodobenzylguanidine(131I) 1MBq [PheoMIBG-I131] Device Standard Valid Device JMDC
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35197289 1000000011213 [N,N'-ethylenedi-l-cysteinate(3-)]oxotechnetium(99mTc)-diethyl ester 600MBq1Syg [Neurolite [DAIICHI]] Device Standard Valid Device JMDC
35197611 1000000033235 [N,N'-ethylenedi-l-cysteinate(3-)]oxotechnetium(99mTc)-diethyl ester [Neurolite [DAIICHI]] Device Standard Valid Device JMDC
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Standard (1313)
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