Develop a Computational Phenotyping Algorithm to Identify Patients with Hypertension

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2023

Data Types – Testing for aneurysmal SAH

- ICD-9 Diagnosis Codes
  - 430 alone
  - 430 + 852.0 + 852.1

- Training Data:

  - Gold standard data from manual record review is available on Google BigQuery in the "course3_data.hypertension_goldstandard" table

Clinical Criteria Alone

		Manual Review Hypertension	
		+	-
BP Events	+	14	8
	-	49	28

Sensitivity: 22.0%

Specificity: 78.0%

PPV: 63.0 %

NPV: 36.3%

ICD 9 codes

		Manual Review Hypertension	
		+	-
ICD 401	+	35	3
	-	28	33

Sensitivity: 57.0%
Specificity: 91.0%
PPV: 92.1%
NPV: 54.6%

Combination – ICD and Prescriptions

ICD

		Manual Review Hypertension	
		+	-
Algorithm	+	37	4
Algorithm	-	26	32

Sensitivity: 58.7%; Specificity: 88.9%
PPV: 92.0%; NPV: 54.7%

Prescriptions

		Manual Review Hypertension	
		+	-
Algorithm	+	54	24
Algorithm	-	9	12

Sensitivity: 85.9%; Specificity: 33.0%
PPV: 69.1%; NPV: 57.6%

The Best™ Algorithm is….

- Clinical and Prescription

- Because …

- **Performance**: The performance of an algorithm is a crucial factor to consider. It is important to choose an algorithm that has been tested and validated on a large dataset. The positive predictive value (PPV) and false-negative rate (FNR) are two important metrics to consider when evaluating the performance of an algorithm.

- **Complexity**: The complexity of an algorithm is another important factor to consider. A complex algorithm may be difficult to implement and maintain. It is important to choose an algorithm that is simple and easy to use .

- **Portability**: The portability of an algorithm is another important factor to consider. A portable algorithm can be used across different EHR systems and datasets. It is important to choose an algorithm that is portable and can be easily adapted to different datasets.