Patient Finder Case Studies

Patient Finder in AAA

Abdominal Aortic Aneurysm

~500,000 AAA pts in OM1 Cloud

~10,000 Ruptured AAA pts in OM1 Cloud

Challenges

Screening guidelines to identify Abdominal Aortic Aneurysm (AAA) patients capture a minority of cases, leading to a large number of patients left undiagnosed.
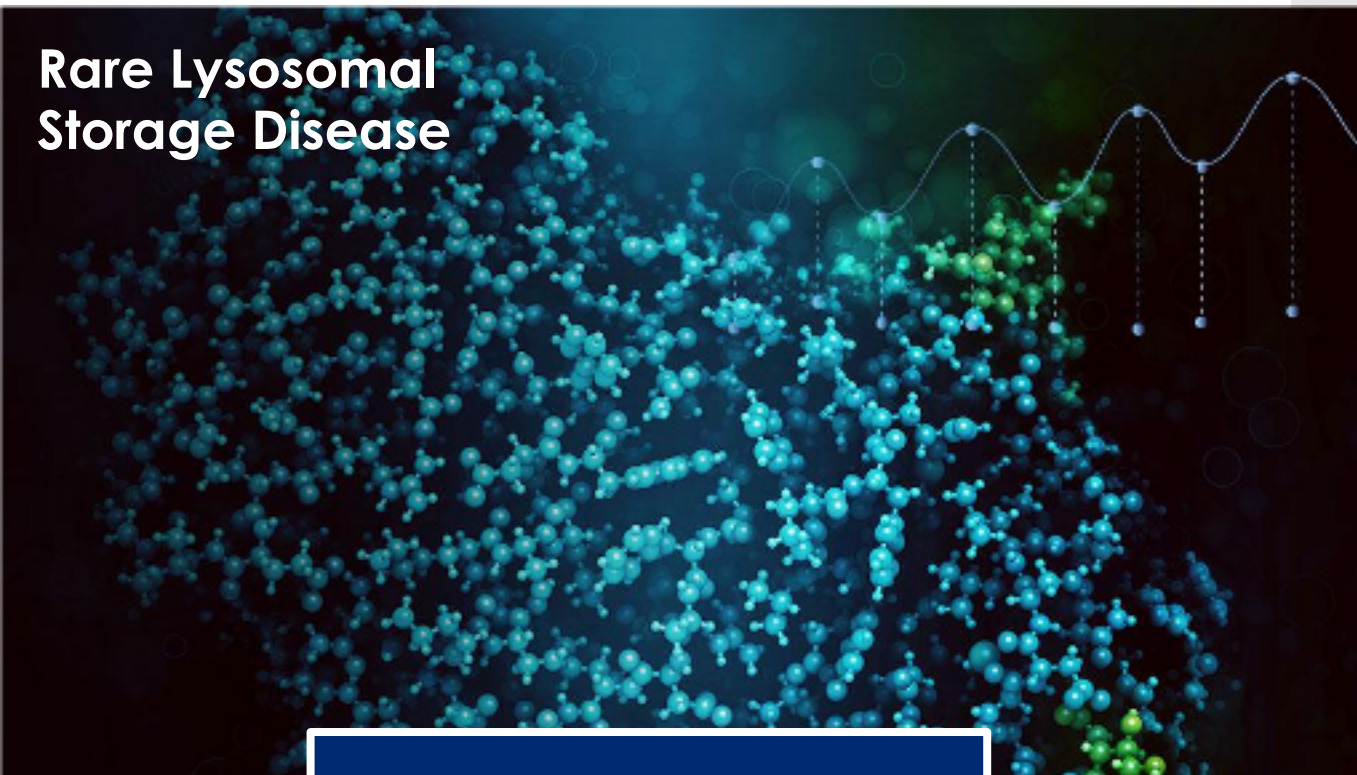
Solution

We used a targeted approach with AI modeling to identify:

- 2X increase in patients over guidelines

- AAA patients at elevated risk for referral to ultrasound screening, including those who fall outside current screening guidelines

- AAA patients at high risk for surgical re-interventions

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Patient Finder in rare disease

Rare Lysosomal Storage Disease

Predictive Model AUC: 0.82

Challenges

Identify and characterize patients who have a rare lysosomal storage disease but are undiagnosed.

AI Solution

- Strong predictive performance in identifying patients (AUC of 0.82)

- Found more than 20x patients in the riskiest 1% of people analyzed relative to the general population

- Recognized and categorized **diffuse and nonspecific signals** known in the disease, but hard to pin down as contributing to a diagnosis

- Generated new hypotheses about relationships between the patient journey and the disease state

Patient Finder in NASH

- Includes patients identified by ICD10, machine/deep learning or both
- Indicator variable for case qualification type to facilitate primary and sensitivity analyses

Patients identified by ICD:

- ICD-10: K75.81

- Excluding code-based evidence of heavy alcohol/use or abuse

- Excluding HCV and other competing forms of chronic liver disease

Patients identified by AI, briefly:

- Application of a combination of sophisticated AI algorithms to automatically learn the characteristics of NASH cases

- Characterized the likelihood that a patient who is not a confirmed NASH patient is in fact a NASH patient and applied it to sample database

- Identified high likelihood NASH patients with out-of-sample **AUC of 0.86**

Methodology presented June 2018 (podium presentation, DDW 2018, Wash DC); updated in 2019

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Patient Finder in behavioral health

Treatment resistant depression

Challenges

Identify a patient cohort with treatment resistant depression (TRD) for targeted therapies. TRD has no strict definition or standard diagnosis code, making detection difficult.

AI Solution

- Define a TRD patient cohort by parsing unstructured data and clinical notes

- Apply Patient Finder to this patient cohort to identify a unique phenotype signature in those patients' health history data

- Very strong analytic performance AUROC: 0.92

Strong analytic performance in patient finding | AUROC: 0.92

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Questions?

Richard Gliklich, MD

CEO, OM1

richg@om1.com

Joseph Zabinski, PhD

Senior Director, AI & Precision Medicine

jzabinski@om1.com

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