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Clinical Evaluation of a Lay-Language Radiology Glossary Integrated into an EHR System

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Introduction

- Patient portals
 - Personalized EHR access
 - Most patients wish to view their radiology report + do so online
- Health literacy
 - Average U.S. adult reads at the 8th grade level (~ age 13)
 - Radiology reports typically at 13th grade level or higher
 - Only 4% of radiology reports readable at 8th grade level (Martin-Carreras T, et al. Clin Imaging 2019)

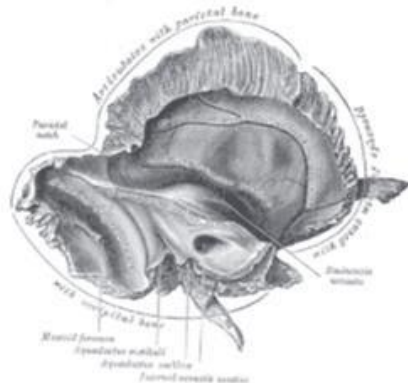


Methods

- PORTER
 - Lay-language glossary of radiology vocabulary
 - Annotates radiology reports with “tool-tip” pop-up windows
 - Definitions
 - Images
- *myPennMedicine* EHR portal
 - Epic EHR @ Penn Medicine (U. Penn. Health System)
 - 8 hospitals, 10 clinic sites, 1.5 M radiology exams/year

internal auditory canal

A hole in the temporal bone of the skull that nerves and blood vessels pass through.



History: known left vestibular

Comparison: 9/24/2015.

Technique: MRI of the brain performed on a conventional scanner in axial, sagittal T1 weighted, axial T2 weighted FSE, images, with thin-section axial and coronal images of the internal auditory canals. 20 mL Dotarem was administered intravenously.

Findings:



Results

1. Glossary content
2. System use
3. Patient evaluation



Glossary

- 4,664 defined concepts
 - 1,377 (30%) included an illustration
- 14,423 terms
(concepts plus lexical variants)
 - plural forms
 - adjectival forms
 - synonyms
 - abbreviations

femur

lexical variants

- *femurs*
- *femora*
- *femoral*

definition

"The thigh bone"



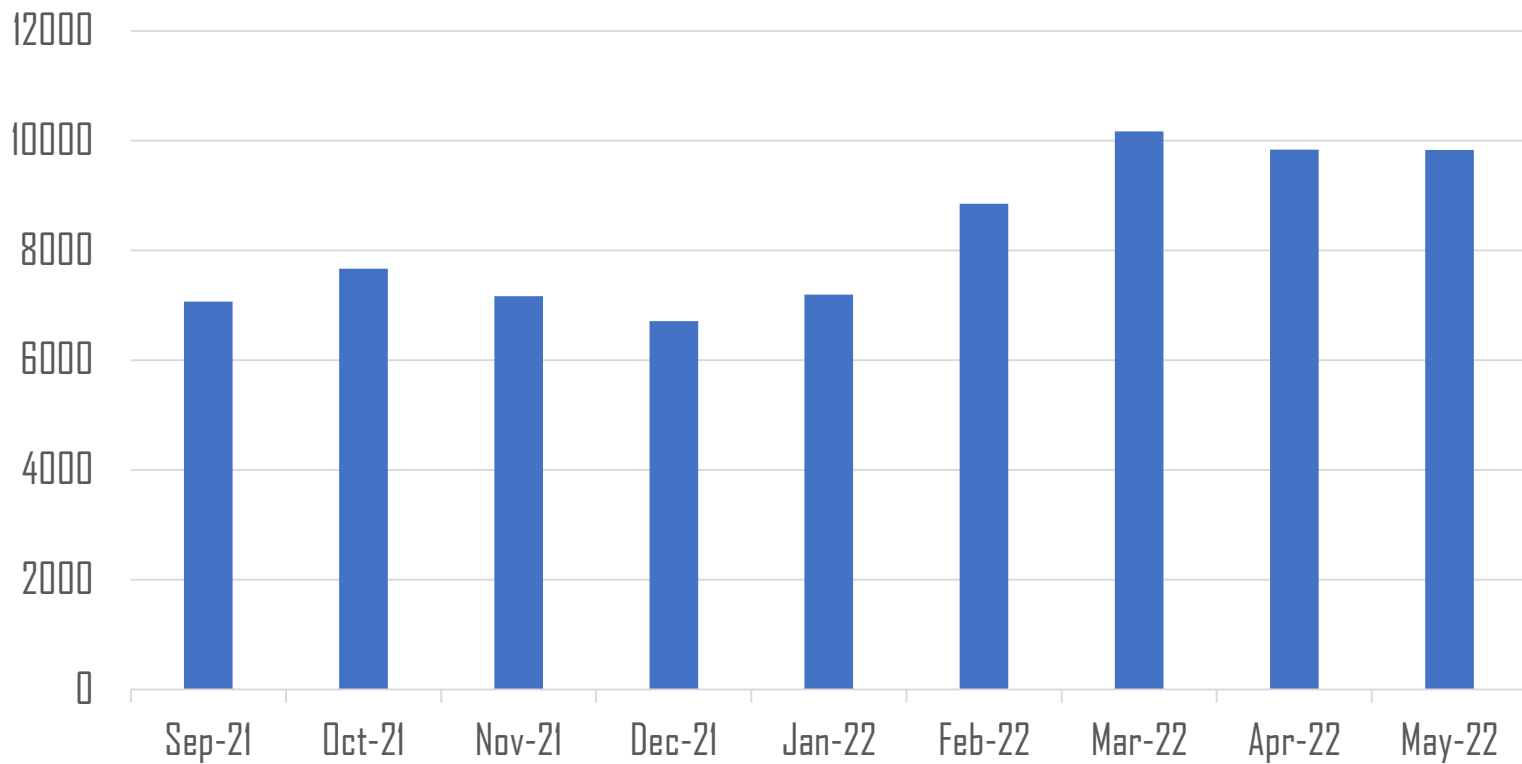
Grade Level	No. of Concepts (%)	No. of Terms (%)
4	2,408 (52%)	7,342 (51%)
5	2,993 (64%)	9,067 (63%)
6	3,425 (73%)	10,334 (72%)
7	3,839 (82%)	11,656 (81%)
8	4,607 (98%)	14,251 (99%)

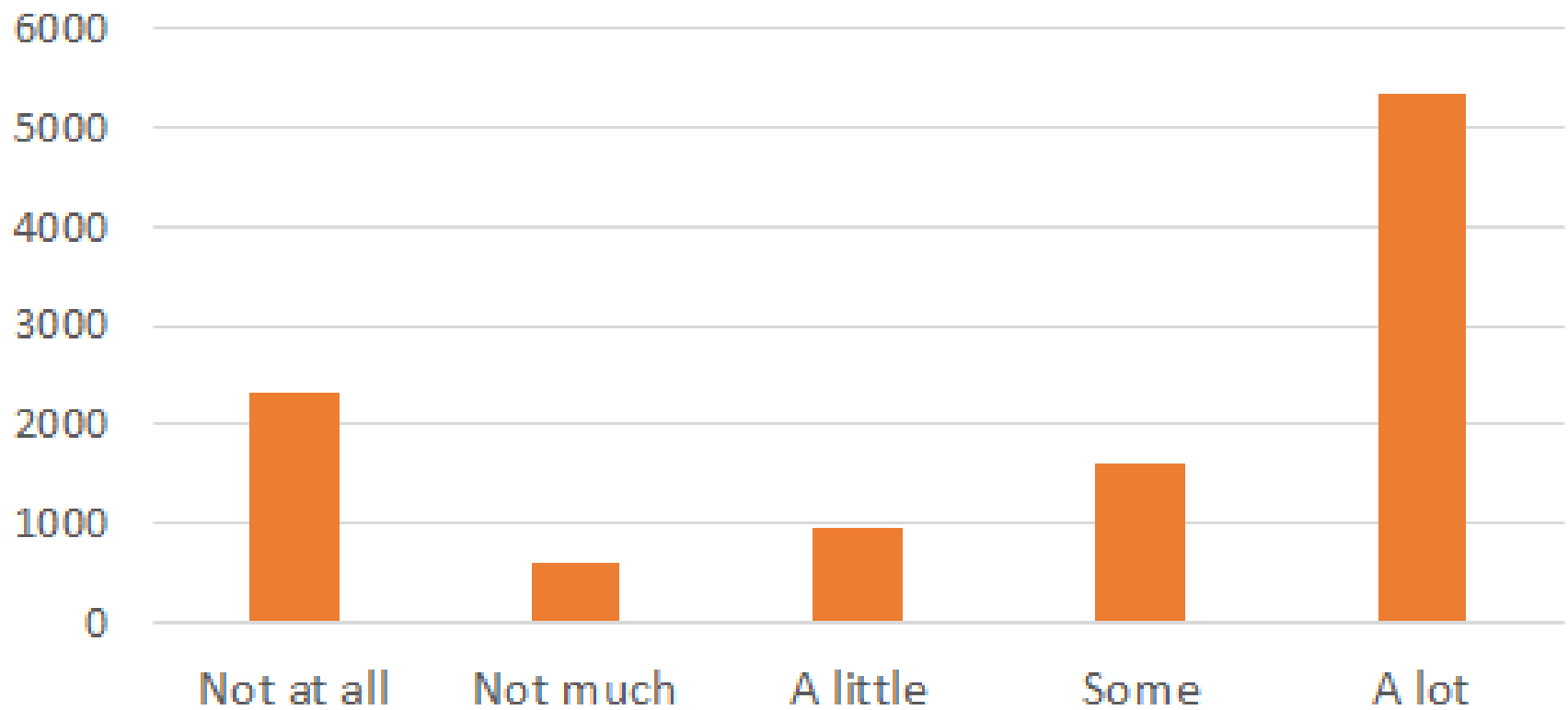


Patient Evaluation

- 69,494 patients used PORTER in 7 months
 - slight month-over-month growth
- 10,859 survey responses
 - 6947 (64.0%) positive or strongly positive

No. of Patients using PORTER







Conclusions

- Patient-centered radiology reports
 - Health literacy
 - Equitable and effective healthcare
- Limitations
 - Not default display
- Illustrations and lay-language definitions
 - One approach to improve patients' understanding
- Future: LLMs



Thank you !

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