Digitizing U.S. Air Force Medical Standards to Create a Decision-Support Tool

Colby C. Uptegraft, MD, MPH[1,2]
Matthew G. Barnes, MD[3]
Jonathan Bickel, MD, MS[4]
Adam Wright, PhD[5]
Jonathan D. Hron, MD[1]

[1]Boston Children's Hospital, Division of General Pediatrics, Boston, MA
[2]United States Air Force, Air Force Institute of Technology, Wright-Patterson AFB, OH
[3]711th Human Performance Wing, Human Systems Integration Directorate, Wright-Patterson AFB, OH
[4]Boston Children's Hospital, Information Services Department, Business Intelligence & Clinical Research Informatics, Boston, MA
[5]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

Introduction

Medical readiness is the ability of military members to safely execute their occupational requirements. To assess readiness in the United States Air Force, clinicians crosscheck each member's diagnosis(es) and occupation(s) with **eight separate PDF documents**, an inefficient and error-prone process. Additionally, these documents are **not linked or mapped** to any medical ontology. Linking these documents and mapping them to ICD codes within a decision-support tool could reduce the administrative burden on clinicians and improve readiness.

Study Question

Can Air Force medical standards be integrated and mapped to ICD codes to create a highly sensitive decision-support tool?
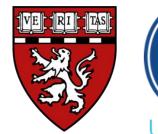
Methods

- Medical coder mapped ICD-10-CM codes to Medical Standards Directory
- Occupational groups within Medical Standards Directory mapped to individual occupations
- Mapping converted to AWS SQL database
- RShiny web application built as front-end interface
- Subject-matter experts to conduct record review to validate decision-support tool

Results

- 646 of 704 (91.8%) medical standards were successfully mapped to ICD codes
- All occupational groups mapped to individual occupations
- Subject-matter expert validation ongoing

Discussion

A validated readiness decision-support tool could decrease administrative time for clinicians, improve occupational dispositions, and ultimately increase medical readiness.

Readiness decision-support could **reduce administrative time** & keep Airmen **safer** & **healthier**.

airforcecds.com

Take a picture to **visit the decision-support tool**

Example Medical Standards

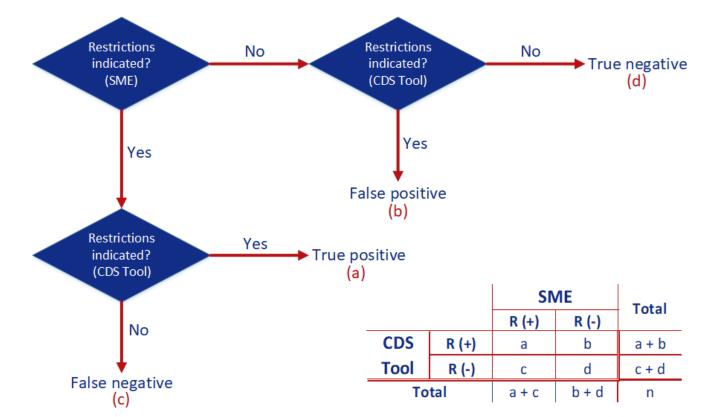## Subject-Matter Expert Review Process

Figure 1. Flow diagram for comparing the CDS tool to each subject-matter expert (SMEs) on the binary indication of restrictions (duty, fitness, and mobility) for each ICD-10-CM diagnosis within each encounter
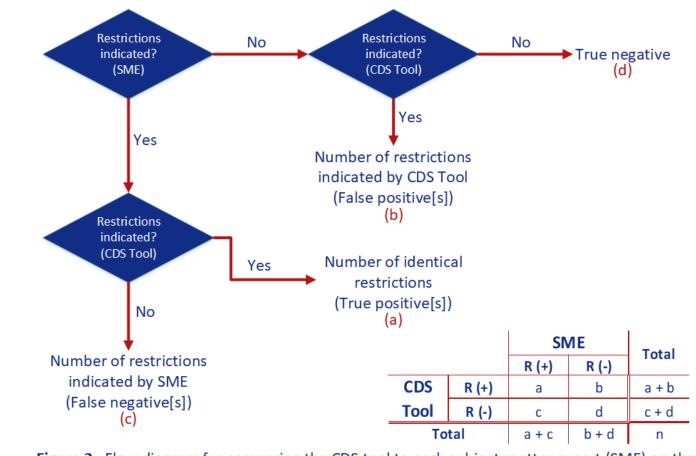

Figure 2. Flow diagram for comparing the CDS tool to each subject-matter expert (SME) on the specific restrictions (duty, fitness, and mobility) indicated for each ICD-10-CM diagnosis within each encounter

Provide Comments & Suggestions

https://forms.gle/rELkZKK6CjEsU6vw5

Connect

colbyuptegraft.com   828.851.9534   colby.uptegraft@gmail.com

Boston Children's Hospital | Clinical Informatics
Until every child is well