Spine ICD-10: Designing a Mobile App for Neurosurgeons

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Introduction

"Spine ICD-10" is a new mobile app for rapid determination of ICD-10 codes for spine disorders. In designing this app for neurosurgeons the primary considerations were speed, clinical coherence, and longevity of the codes. The design that met these objectives is described below. The app is free and can be downloaded for iOS devices at https://itunes.apple.com/us/app/spine-icd-10/id1363635314?mt=8. At the present time the app is not available for the Android platform.

Methods

The app was programmed by the author in Swift 4.0 programming language on the Xcode 9.2 development environment for the iOS platform. ICD-10 codes pertaining to spine disorders were organized and grouped into clinical categories presented on the app's home page. Clicking on a category opens a new view that presents a multi-component data reel.

Aligning the clinical items on the reels results in construction of an ICD-10 code. When a final billable code is reached, the ICD-10 code turns green and the app communicates through an application programming interface (API) with a database maintained by the National Library of Medicine (NLM) to provide a formal description for the code.

Results

The home page, which fulfills the clinical coherence objective, is shown in Figure 1. The user clicks on the appropriate clinical category and is transported to a page with data reels, examples of which are shown in Figures 2 - 4. Proceeding from left to right, the user picks the relevant component on each reel until a final green ICD-10 code is constructed. The speed objective is achieved by eliminating typing, traveling down the complex ICD-10 hierarchy, and text-based searches that would lead to multiple answers. The app then communicates with the NLM ICD-10 database in real time to provide code descriptions that are always up to date, thus fulfilling the longevity objective.

Conclusions

A mobile app for iOS devices entitled "Spine ICD-10" is presented. The app organizes ICD-10 codes into clinically recognizable categories for neurosurgeons and adopts a novel design that eliminates text entry and text-based searches, thus saving time.

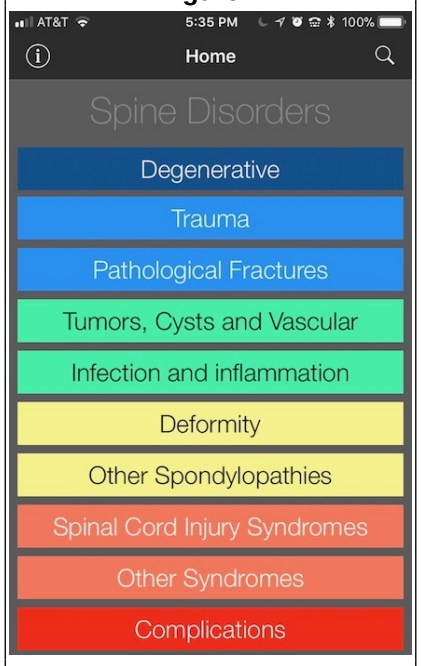
Learning Objectives

By the conclusion of this session, participants should be able to: 1) Use the mobile app presented here to arrive at ICD-10 codes for spine disorders, 2) Identify the design objectives in making an app for neurosurgeons, and 3) Understand the process by which those design objectives were achieved.

References

Pakzaban, P. ICD-10 Demystified for Neurosurgeons. AANS Neurosurgeon [Internet]. 2014; 23(2). Available from: http://v1archives.aansneurosurgeon.org/201014/7/4737

Figure 1

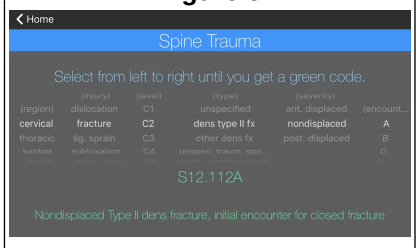


Home page of the Spine ICD-10 app. ICD-10 codes pertaining to spine disorders are grouped into clinically meaningful categories on the home page.

Figure 2

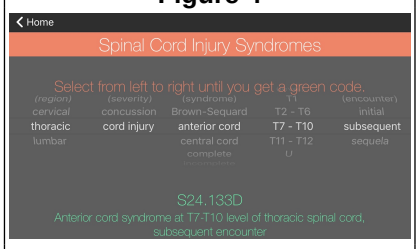
Example of ICD-10 code construction on the Degenerative page of the app.

Figure 3



Example of ICD-10 code construction on the trauma page of the app.

Figure 4



Example of ICD-10 code construction on the Spinal Cord Injury Syndromes page.