Documentation using Discrete Fields or Free-Text in Mi-Chart: Implications for Research

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Introduction

In healthcare, the electronic medical record (EMR) has many potential benefits and uses, one of which is for widespread research purposes. Using clinical data extracted from an EMR to conduct research has the potential to decrease error rates, improve efficiency, and enhance patient care. However, in a health system that has only recently adopted an EMR system there is a learning curve in use for clinical, research, and quality improvement purposes. There is uncertainty about the consistency in approaches to documentation that raises questions about quality and completeness of data extracted from discrete fields in charts of children treated in the pediatric ED. This compromises the ability to use the data for research. Specifically, within provider notes, clinicians may "work around" standardized responses for review of systems, physical examination, and procedures by inserting free text responses. When discrete field data are extracted, these elements may appear to be missing. Studying the use of discrete field sections in ED encounters and identifying reasons providers do not use them are first steps in improving the EMR system and its accuracy in use for research.

Aim

To investigate the use of standardized discrete fields (smart forms/checklists) in the EMR (MiChart) to document care provided in the pediatric ED at the University of Michigan C.S. Mott Children's Hospital and to determine the reasons for different documentation style choices across the sections of the note.

Methods

- ED/hospital administrative data from 2011-2012 were obtained through queries of the Health System Data Warehouse.
- An explicit review of 500 ED patient notes was conducted to record physician documentation styles, focusing on specific areas including history of present illness (HPI), review of systems (ROS), physical examination, procedures, and medical decision making (MDM).
- From this data, an anonymous online survey (using Qualtrics) of medical providers who work in the Pediatric ED in C.S. Mott Children's Hospital was developed to help us better understand MiChart practices for documentation of Pediatric ED care.

Results

- In review of 500 patient files, physical exam and procedures were most commonly documented using discrete fields 64% and 73%, respectively. About half of providers documented ROS using discrete fields. In contrast, the vast majority of providers documented HPI and MDM using dictation or typed free-text (Figure 1.)
- In the survey, two-thirds of the 70 respondents stated they use discrete fields to document ROS, but only 24% stated they *always* do so.
- Medical providers stated they choose to use free-text or dictation in HPI/MDM because it is easier/faster (44%) than using discrete fields and/or felt the discrete field options were not specific enough (24%).
- It was observed in chart review and survey responses that most medical providers use available discrete fields when documenting procedures. Nearly all respondents reported it would be helpful to have additional discrete field templates for three procedures: sedation (95%), joint reduction (97%), and splinting (95%) (Figure 2.).

Figure 1.

Providers were asked how they typically document each section of MiChart and these are the responses from 70 providers. HPI and MDM are overwhelmingly documented using dictation and/or free text. Conversely, the vast majority of ROS, Physical Exams and Procedures are documented using smart forms/checklists.
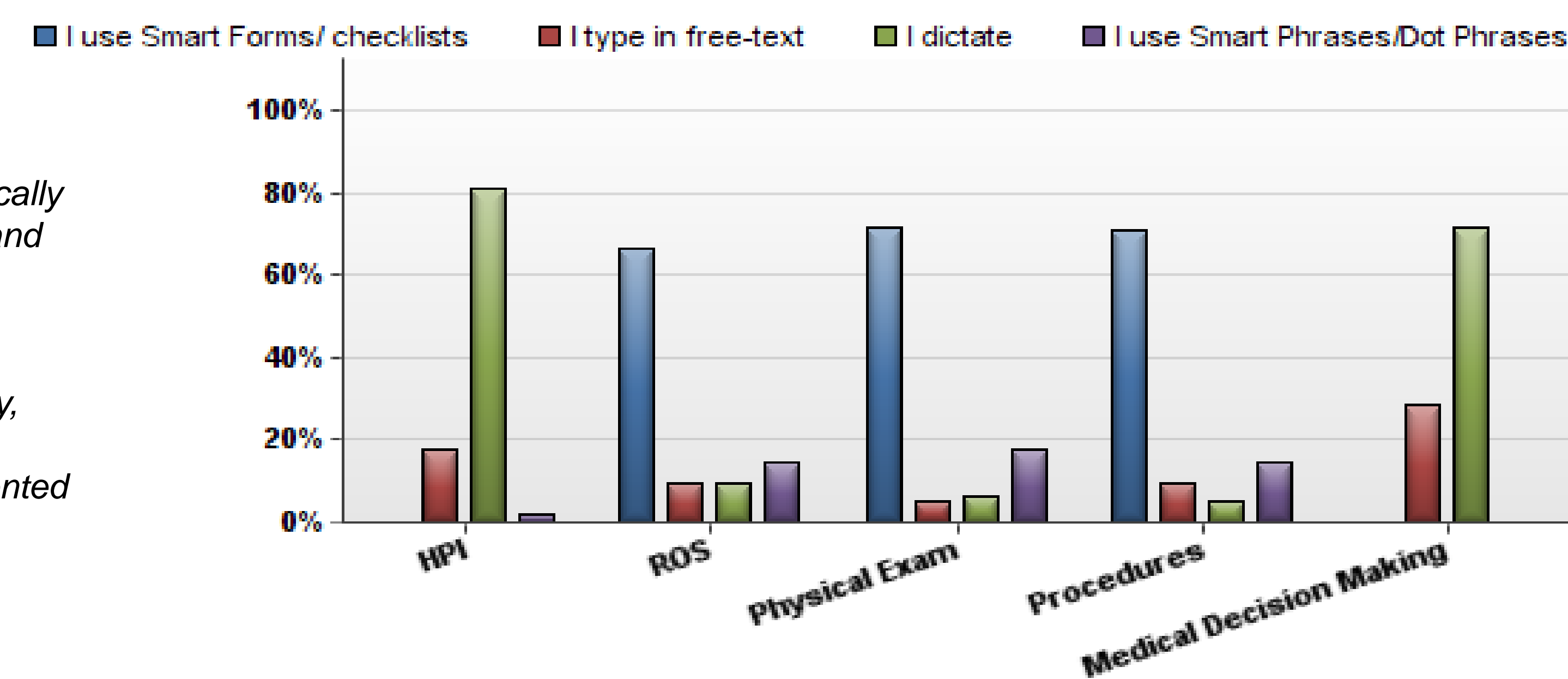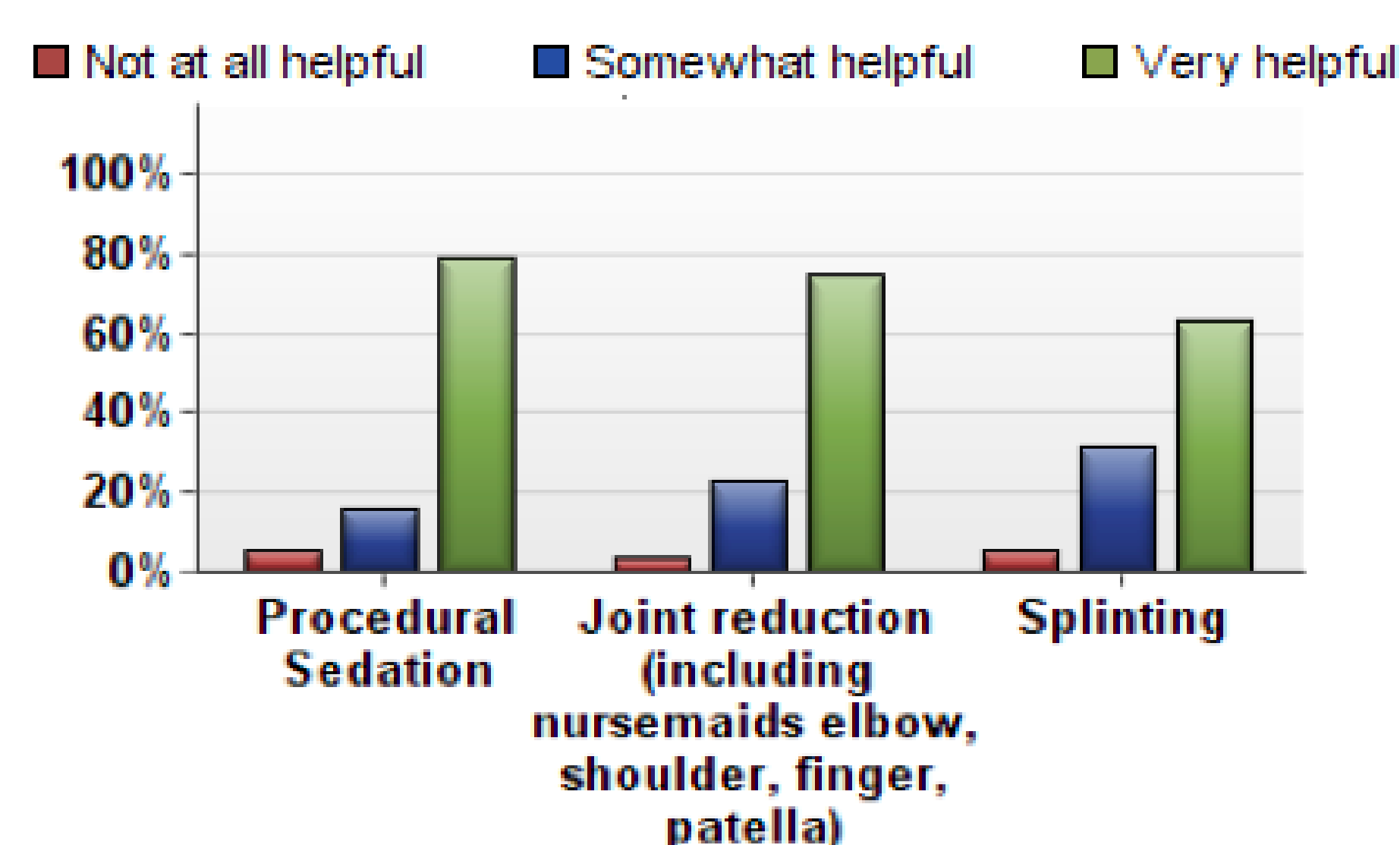

Figure 2.

Through chart review it was noted that in the pediatric ED at the University of Michigan C.S. Mott Children's Hospital certain procedures were consistently documented using free text and/or dictation. Most notably the procedures of procedural sedation, joint reduction, and splinting, which did not have a preexisting smart form/template. Providers were then asked in the survey how helpful it would be to have smart forms/templates available for these three procedures.

Figure 3.

These charts reflect provider responses to the following question: how well do each of the following section of the basic exam smart form/checklist allow you to accurately and completely document important details of your physical exam findings?
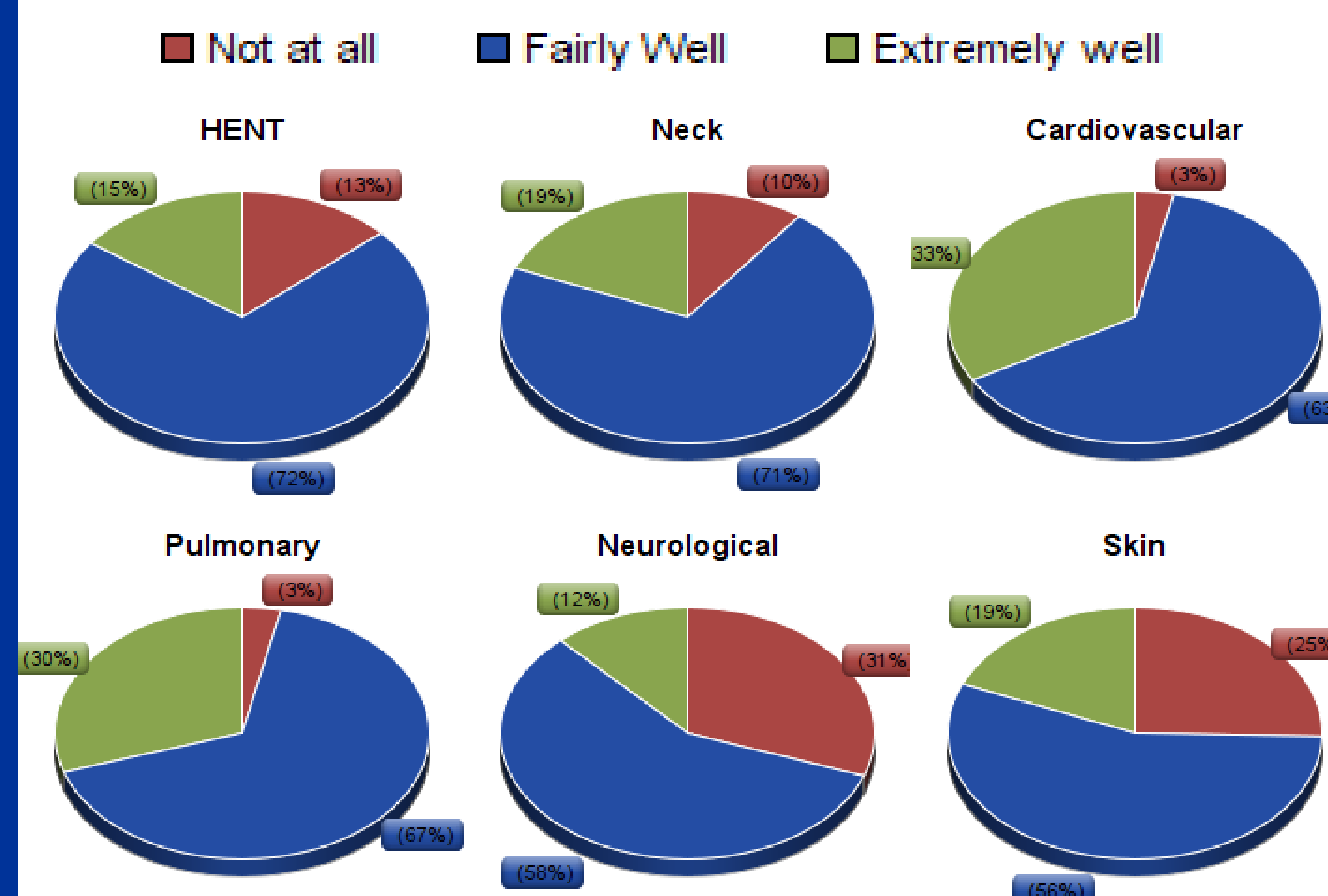
Results

- Through chart review it was noted that certain categories within the physical exam section were more likely to have free text associated with them within the smart form/checklist. When providers were asked how accurately and completely each category in the basic exam smart form/checklist allowed them to document important details of the physical exam the results reflected what was found in chart review.
- The percentage of providers who stated that the category allowed them to document fairly well/extremely well were as follows: cardiovascular 97%, pulmonary 97%, neck 90%, HENT 87%, skin 75%, and neurological 70% (Figure 3).

Conclusions

Most medical providers in C.S. Mott Children's Hospital Pediatric ED document in the HPI and MDM sections using free-text/dictation, which makes it difficult to extract reliable data using high throughput methods. Most physicians use discrete fields to document physical exam and procedures allowing these data to be more easily extracted electronically from the medical record for research purposes; However, these sections need improvements as well if all the information within them is to be easily extractable. The procedure section should have more smart forms/checklists available for commonly documented procedures. Also, it is not only the HPI/MDM sections that providers felt options within the smart form/checklists were not specific enough, but also particular categories of the basic exam smart form/checklists. These categories of the physical exam smart forms/checklists (particularly skin and neurological) should be re-evaluated to reflect more accurate and complete available responses.

This research helps to inform barriers to use of discrete fields for documentation of clinical care in the Pediatric ED. Discrete field templates that are available and easy to use are needed to increase the efficient extraction of data from medical records for research.

Acknowledgements