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The Ottawa Hospital RADiologist Activity Reporting (RADAR) Productivity Metric: Effects on Radiologist Productivity

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Productivity is challenging to measure in a complex radiology organization. This is particularly true in an academic department where radiologists have a broad portfolio of scholarship and obligations, including clinical service, education, administration, and research. We developed the Ottawa RADiologist Activity Reporting (RADAR) score, which is a radiologist productivity measurement system designed to recognize both clinical and academic productivity and to express that productivity with a simple metric. This was implemented in our Canadian, academic radiology department with wide-ranging, complex clinical work; large teaching programs including residents and fellows; dedicated research time; and administrative tasks. In this article, we report data analysis of how implementation of the RADAR score affected radiologist productivity.

Background and Rationale for Developing the Ottawa RADAR score

The Ottawa RADAR score was designed to enable department leaders to estimate clinical and academic productivity. Our goal was to credit radiologists based on the estimated time to perform a task, rather than on income generated. RADAR differs from other pre-existing systems in that point allocations are not based on currently published reactive value unit (RVU) data [1], but rather on values agreed on by our department's governing bodies. As such,

the Ottawa RADAR score reflects our department's own efficiencies and culture. A unique aspect of this system is that allocated points are easily modified to reflect priorities or culture in different departments.

Hypotheses

RADAR data enabled several anecdotal observations regarding the impact of the system on radiologist productivity. From these observations, we developed and tested the following hypotheses:

Hypothesis 1: The implementation of RADAR did not change overall radiologist productivity.

Hypothesis 2: Productivity change was not different between 3 groups of radiologists: higher-, middle-, and lower-productivity groups.

Methods and Materials

Assignment of RADAR Points

RADAR points were adjudicated for every procedure in our department (>2400 procedure codes). Points were agreed on by a committee in our department, with representatives from each section and additional elected representatives. The same committee also agreed on an "hourly" rate for nonclinical work. As such, RADAR points were locally vetted and reflect our department's local culture and efficiencies. The RADAR system in our department was based on an expected 8-hour workday. Radiologists are expected to be at work for 9 hours, with 1 hour presumed allocated to lunch and breaks.

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The first way to earn RADAR points is to report imaging studies. Recognizing that the time to complete some procedures varies widely (eg, cerebral aneurysm coiling), there is a subset of procedures meeting those criteria that are awarded points for the time it takes to complete the procedure. Radiologists performing those procedures dictate the time to complete the study in the final radiology report, which is mined by the RADAR software and reflected in that radiologist's total score.

The second way to earn RADAR points is to perform an educational activity approved by the department. Examples include resident, fellow, and medical student teaching sessions and multidisciplinary rounds. These tasks are entered in the radiologist's daily assignments in QGenda (discussed in more detail subsequently) and automatically awarded the agreed on number of points per scheduled hour. In addition, the department head has the authority to credit a radiologist with RADAR points for performing other duties within the department.

Creation and Implementation of RADAR

RADAR infrastructure

The infrastructure (Figure 1) was established for an urban, academic radiology department with high clinical volumes of varied complexities, educational programs, radiology residents and fellows, a research infrastructure, and many radiologists who have assigned administrative duties.

RADAR development (custom-built application using aicrosoft Access)

RADAR was developed as an application using the Microsoft Access (Microsoft Corporation, Redmond, WA) platform. Extensive custom Visual Basic (Microsoft Corporation, xxx) code was written to aggregate, calculate, and report RADAR points. This includes coding to capture the number of the reported cases for each procedure code, and also to enable adjudication for the number of RADAR points assigned to each procedure. RADAR integrates the following systems:

- QGenda Scheduling system (QGenda, Atlanta, GA): Data are downloaded from QGenda into a text file. The text file is loaded into the RADAR system.
- PowerScribe 360 (Nuance, Burlington, MA): Power-Scribe is the repository for dictated reports and the associated report metadata. RADAR has direct access to the data through a Microsoft SQL Server database.
- Admit Discharge Transfer System: Protocol data are extracted from the hospital discharge system.
- Data Entry: Some clinical data are not available from PowerScribe. These data are captured from non-interfaced systems and loaded into RADAR. Examples of noninterfaced systems are other hospitals for which the radiologists report imaging studies. These hospitals are outside of our academic practice, our hospital infrastructure, and use systems not interfaced with RADAR.

RADAR Implementation Features

The first of 2 key implementation features is a dynamic system to RADAR point assignments. This enables the clinical section heads to propose upward or downward changes to point allocations. Continuous monitoring of each clinical assignment helps to normalize productivity and to more accurately represent the time required for a specific radiologist task.
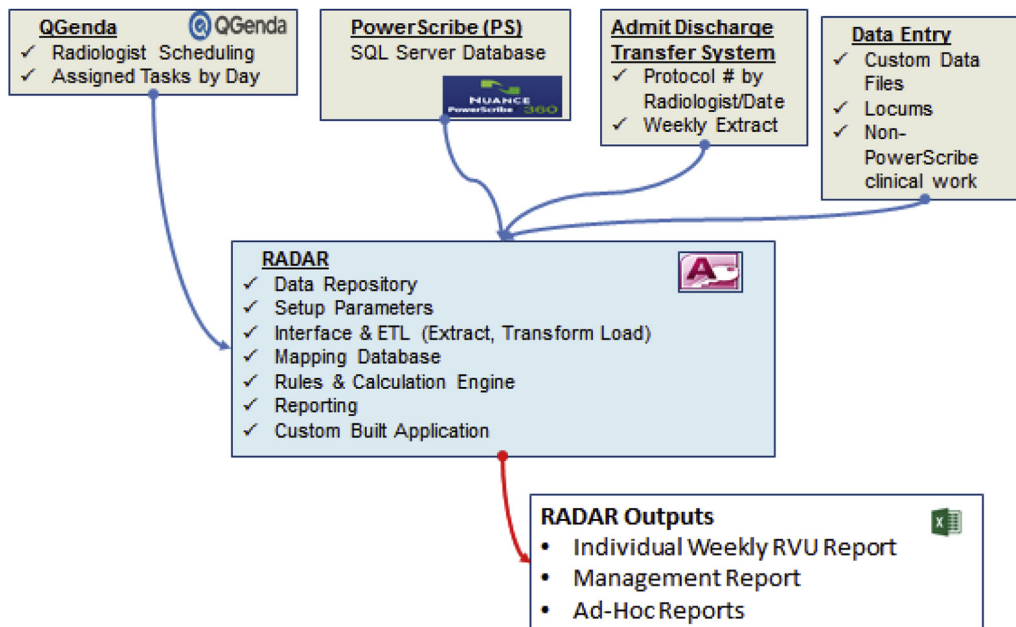

Figure 1. RADiologist Activity Reporting (RADAR) infrastructure. RVU = reactive value unit.