Radiology Order Form: Converting From Paper to an Online Radiology Order Application

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Purpose

- Reduce patient delays by decreasing dependency on paper documents.
- Improve patient safety by minimizing duplicate exam orders .
- Decrease use of paper.
- Reduce the inefficiencies of paper handling.
- Improve efficiencies of operations by adopting a system which incorporates accurate exam order entry and documentation.

Methods

Prior to the Improvement project, a Radiology order consisted of a 2 day preparation. The steps required for the end result included the following:

- Printing of requesting Physician's requisition, and prior radiology reports on each patient.
- Attaching requisition and reports to a generic radiology order form that included patient demographics, type of exam, selections for oral-rectal-iv contrast, a line for current lab values and a special instructions box.
- Orders then faxed or hand carried to the radiology reading room for protocol and radiology signature.

Data Collection

Base line data is retrospective and includes the following:

- The time it took to gather all paperwork needed before a technologist could begin the CT examination.
- The total time from patient arrival to exam completion.
- The time it took to fax an order from an end user to radiologist for signature.
- The time it took to replace lost orders.
- The patient safety risk that resulted from duplicate orders.

Before – Paper Trail Flow Chart
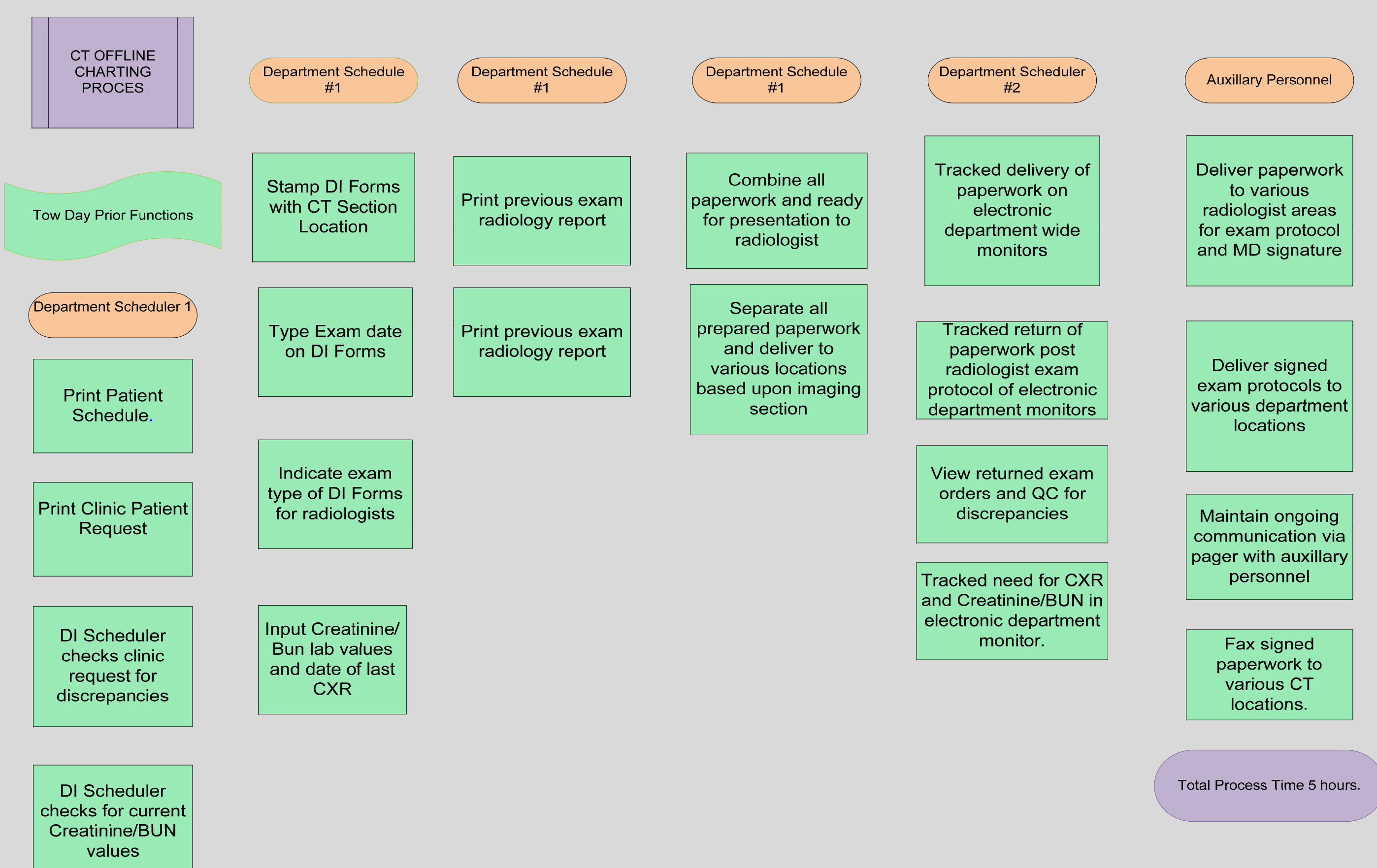
After – Online Flow Chart
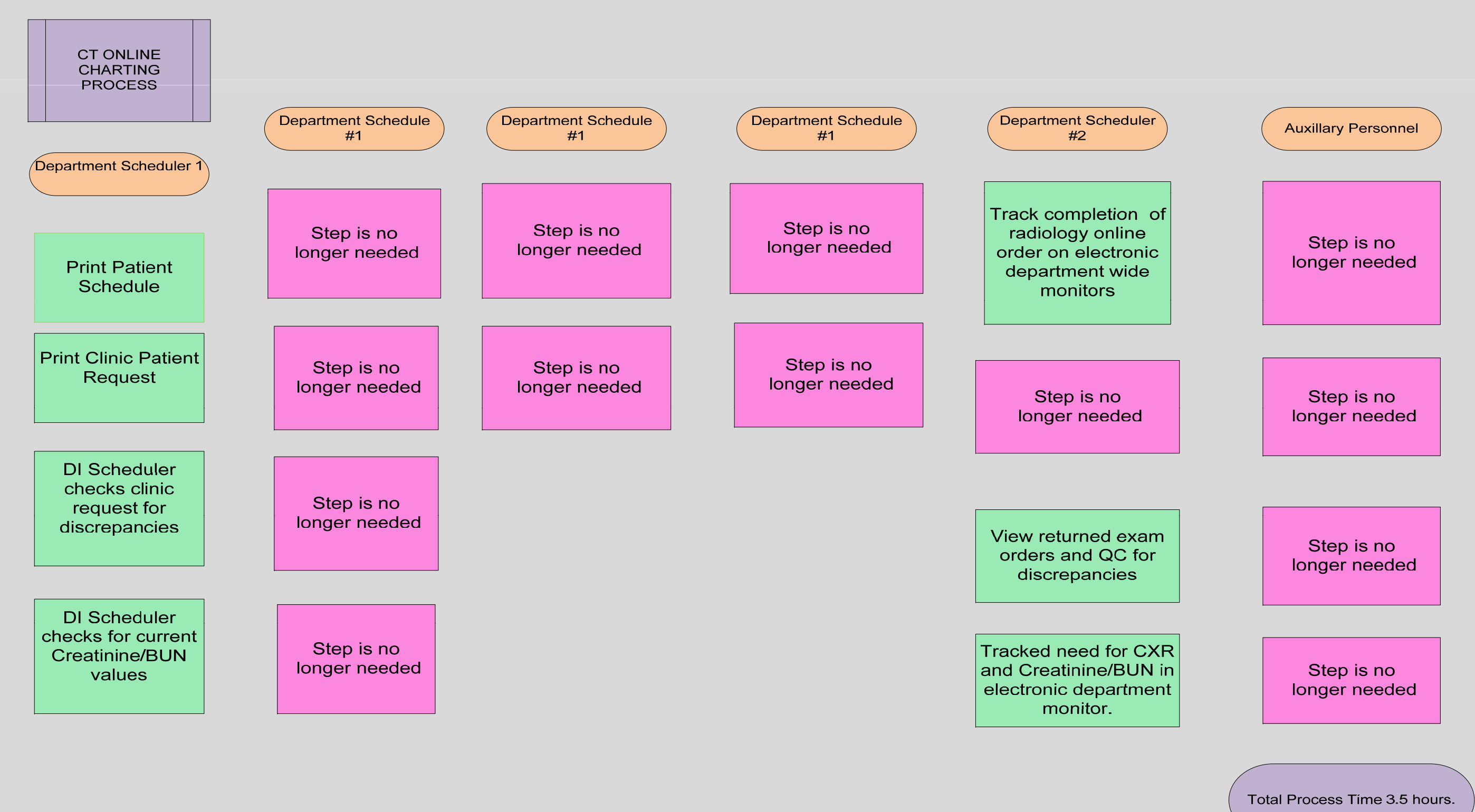
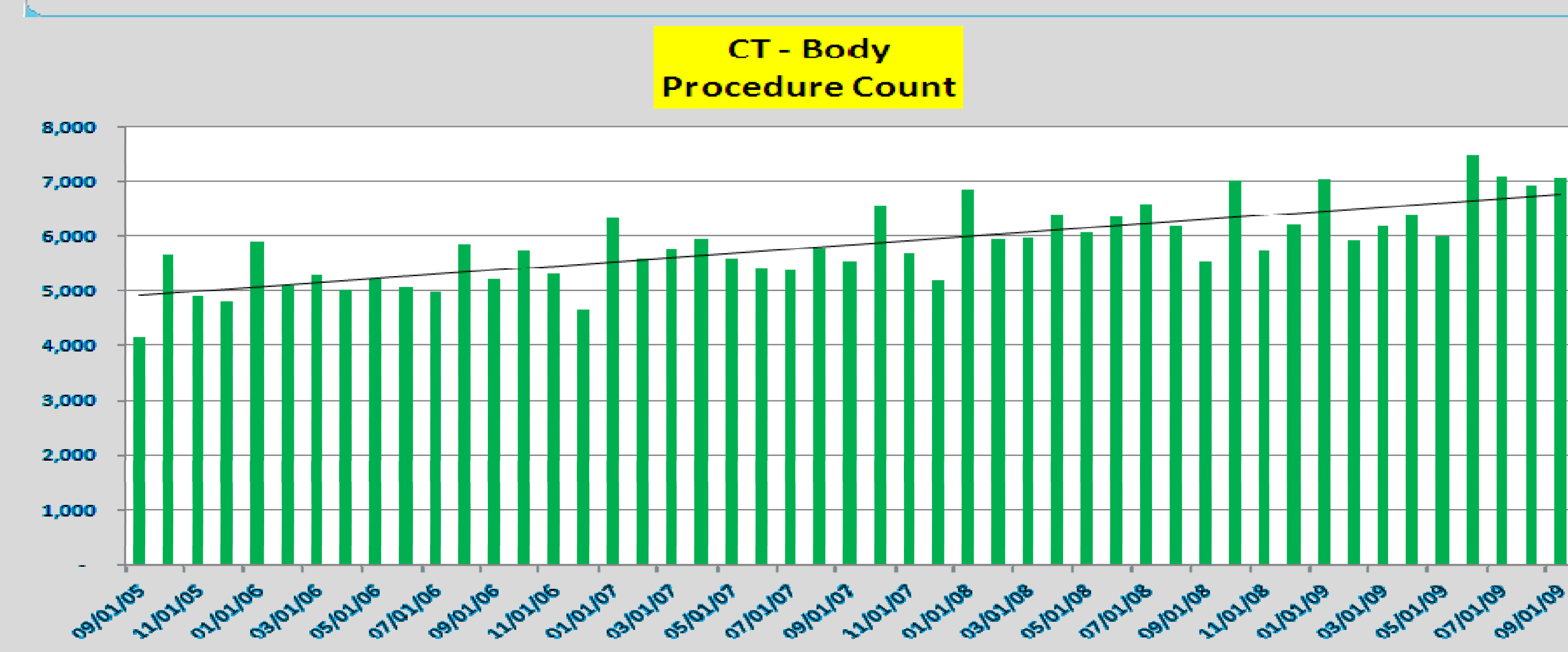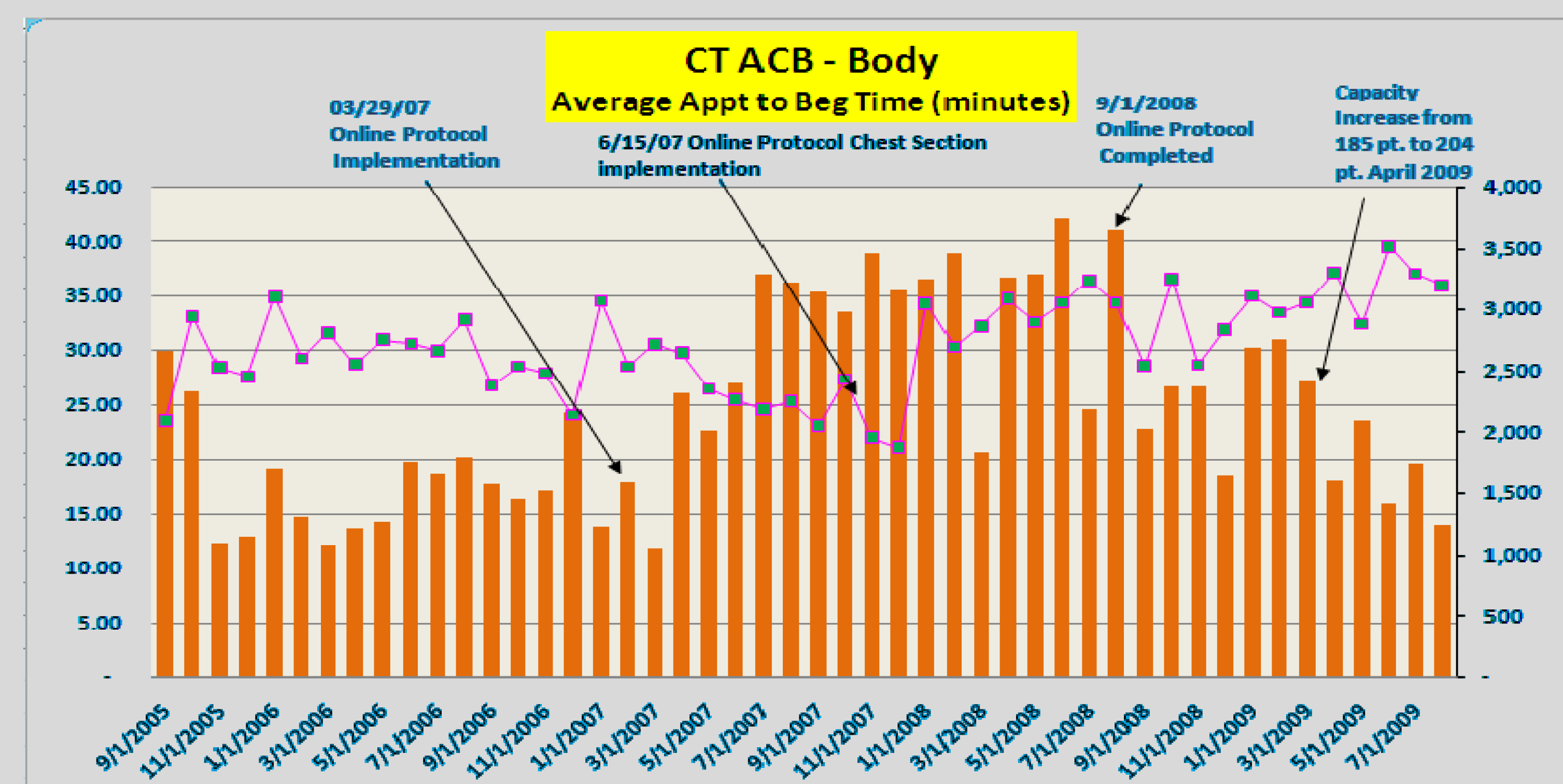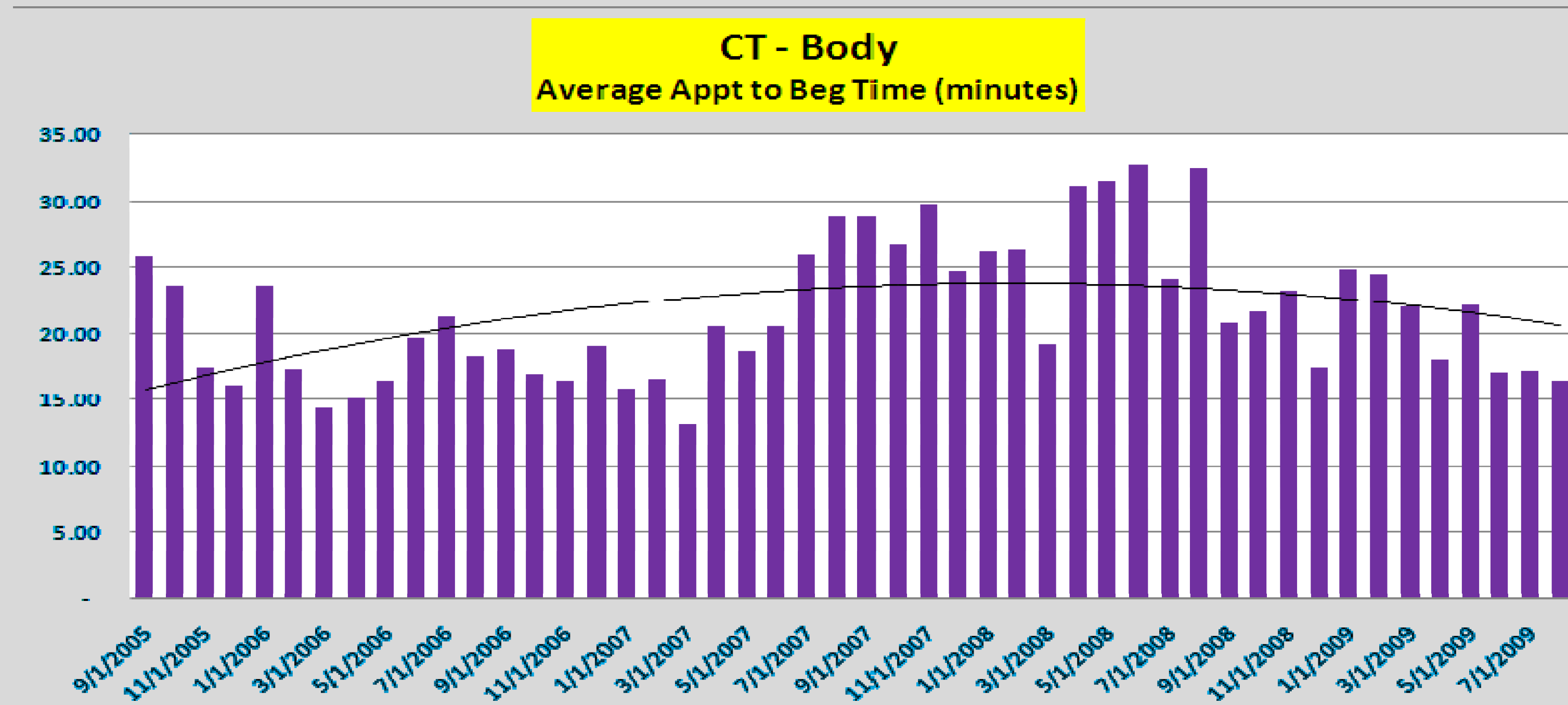## Background: Multidisciplinary Team Collaboration

The project was a multidisciplinary collaboration between faculty , radiologists, information technology , management , nursing, administrative and technical staff. The focus was on replacing a paper process with an online exam order entry application , to improve operational efficiencies and decrease patient delays.

The online application was developed to afford the operation more operational options while still maintaining some of the flexibility which was needed with the paper process.

Initiation of the project began in June 2005 with implementation in August 2006.

The online exam protocol application features :

- Radiologist work –list with "color-coded" priority alerts.
- BUN/Creatinine trends with red font alert for abnormal values.
- Easy accesses to radiologists from home and /or any computer within the institution.
- Pre-populated exam protocol drop-down list with automatic defaults for ease and speed of use.
- Flexibility to modify or specialize exam protocols with free text input.
- Online order systems and guidelines were established.
- Interactive 'Notes' box for the radiologist to include *patient care* or *pre-exam* instructions to the nursing staff.
- Ability for technical and nursing staff to interact with the radiologist.
- "Hold" function to suspend care or CT procedure if concerns arise until resolution of issue.

CT - Body
Average Appt to Beg Time (minutes)

CT ACB - Body
Average Appt to Beg Time (minutes)

CT - Body
Procedure Count

Results: Online Exam protocols have resulted in :

- Timely, accurate and consistent performance of CT procedures.
- Reduction in patient delays.
- Elimination of lost orders, and reduced the need to fax.
- Improved communication between radiologists, nursing and technical staff.
- Improved patient safety by eliminating duplication of radiology orders.
- Improved patient safety by eliminating the possibility of duplicate and conflicting radiology orders.
- Joint Commission compliance for minimization of "verbal " orders.
- Provides a smooth transition in the training of radiology residents / fellows.

Cost Savings Estimate

Cost Savings Estimate	
Patient Service Coordinators	$105,000.00
Auxiliary Personnel	$ 60,000.00
Paper	4,000.00
Total:	$169, 000.00

Old Paper Forms
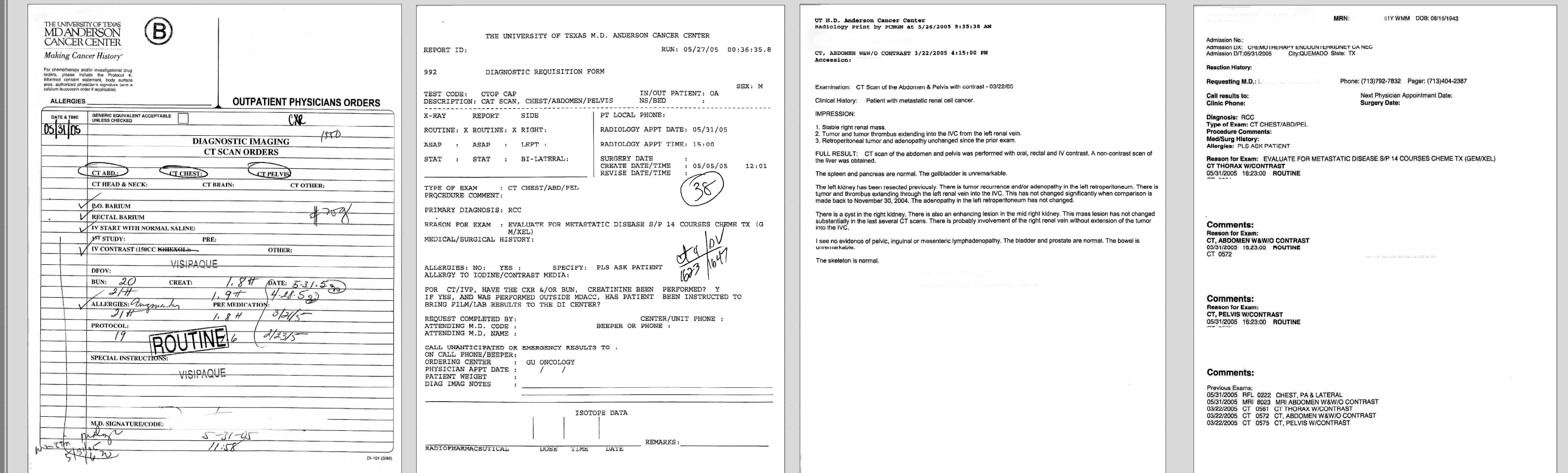
Pre-populated exam protocol drop-down list with automatic defaults for ease and speed of use.

Radiologist work –list with "color-coded" priority alerts

Whiteboard Communication Tool

As a direct result of the efficiencies achieved, we have been able to reduce the staffing from four FTEs to One FTE.

Conclusions

The CT Online Protocol Application has replaced a labor intensive paper order preparation process. This has resulted in reduced staffing, decreased patient delays, improved patient safety and increased productivity.