



The Basics of Time-Driven Activity-Based Costing

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Objectives

The goals of this presentation are to:

1. Explore the basic concept of time-driven activity-based costing (TDABC) for healthcare cost calculation.
2. Explain the practical steps for performing TDABC to minimize cost and maximize productivity.
3. Review examples of TDABC implementation.

What is Value?

• Value = $\frac{\uparrow \text{Patient Outcomes}}{\downarrow \text{Cost (over the care cycle)}}$

- Focus in medicine has been on \uparrow patient outcomes.
- \downarrow Cost is just as important!

*Value as defined by Porter ME. What is value in health care?. N Engl J Med. 2010;363(26):2477-81.

How to Decrease Cost?

- To ↓ cost, one needs to calculate cost.
- Cost calculation has been difficult in medicine.
- Time-driven activity-based costing (TDABC) is a practical approach to costing.

What is Time-Driven Activity-Based Costing (TDABC)?

- Introduced by Kaplan and Anderson at HBS in 2004
- Healthcare implementation introduced by Kaplan and Porter in 2011
- Utilizes two parameters:
 1. Time required to perform certain activities in the care cycle
 2. Capacity cost rate (CCR) for equipment, personnel, etc. (\$x/hr)

Looks at cost from the provider's perspective!

Steps for TDABC

- Define the medical problem/procedure.
- Create a process map to chart all activities performed within the entire care cycle.
- Obtain time averages for each activity and resource.
- Calculate the cost of all direct and indirect resources involved.
- Estimate the capacity of each resource and calculate capacity cost rate (cost of capacity supplied/practical capacity).
- Calculate total patient care cost.

Case: TDABC for CT scans

- Anzai et al. used TDABC to calculate the true costs of abdomen and pelvis (AP) CTs.
- Compared to the cost of an outpatient CT, the costs were 13% higher for ED patients and 31% higher for inpatients (IP).
- The difference in costs was mostly attributable to the costs of non-radiologist personnel!
- The costs of non-radiologist personnel were more than double for an IP (109% higher) study than for an outpatient CT study.

Case: TDABC for CT scans

- TDABC allowed Anzai et al. to think of potential solutions:
- Having a dedicated transporter for ED patients.
- Blocking scheduled slots for inpatients.
- Having a detachable CT table to prepare the next patient.

Case: TDABC for TKRs and THRs

- DiGioia et al. applied TDABC to total knee replacements (TKR) and total hip arthroplasties (THR).
- They found that the OR segment accounted for the greatest cost for TKR and THR, 51% and 58% respectively.
- Personnel costs made up for 50% and 44% of the costs for TKR and THR respectively.

Case: TDABC for TKRs and THRs

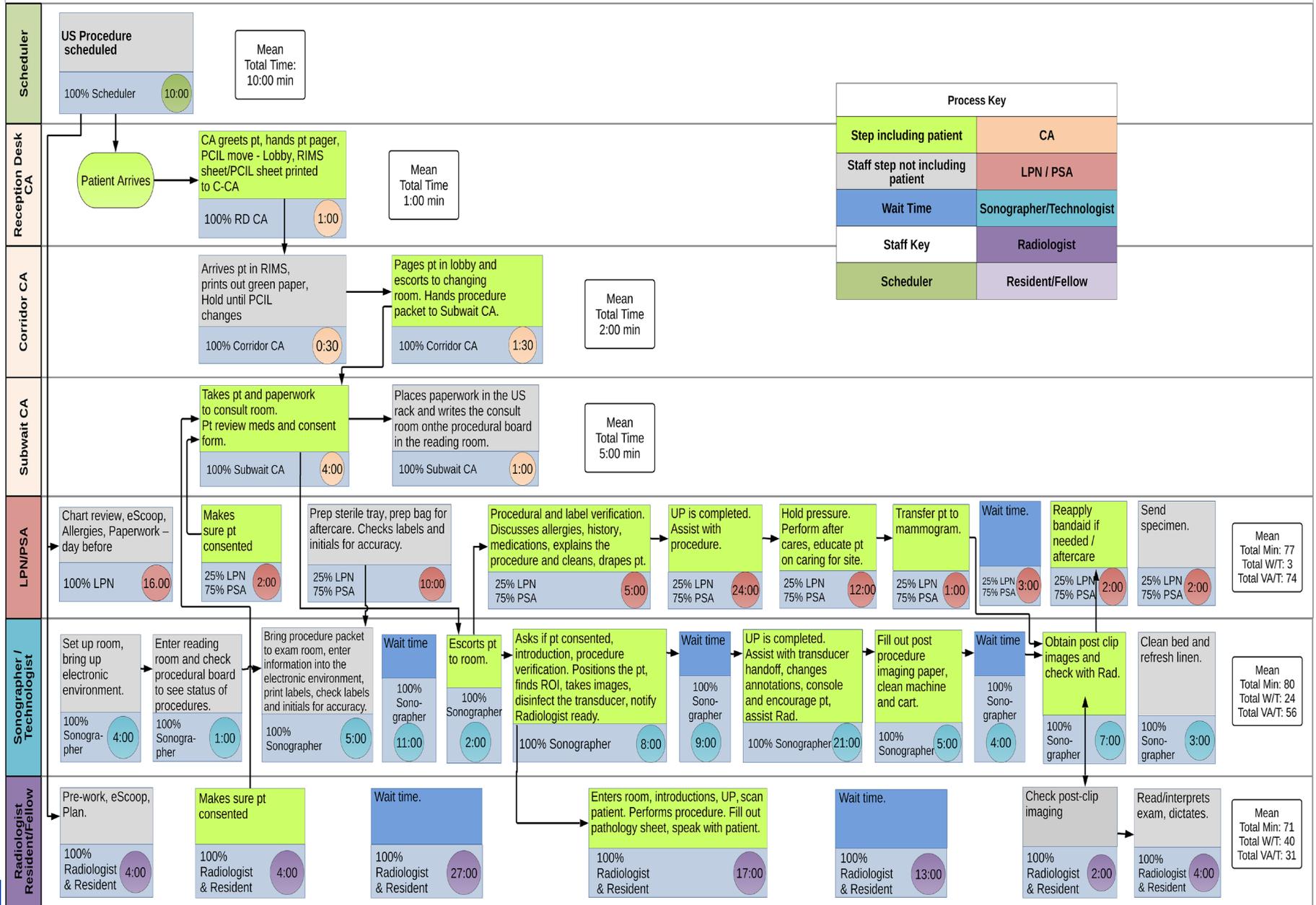
- TDABC allowed for identification of true costs and areas for cost savings.
- This allowed the surgeons to understand the contribution of the cost of the implant to the true cost of the entire procedure.
- This provided the potential to enter bundled pricing negotiations with less risk.

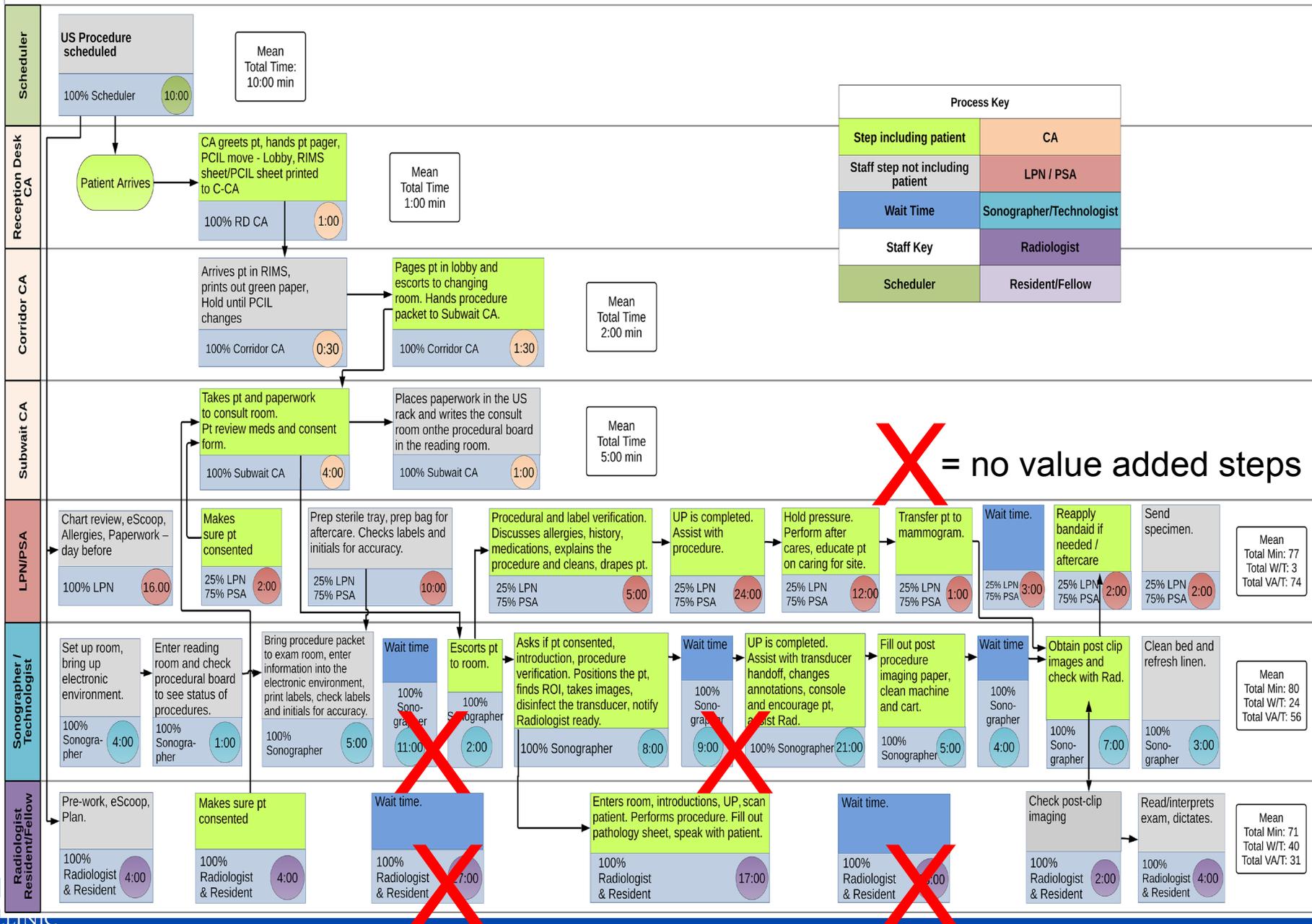
Case: Our Ultrasound-Guided Breast Biopsy Practice

- Our biopsy volumes are increasing.
- We needed to accommodate more patients and create new biopsy slots.
- We used TDABC to gather objective data about biopsy times and costs.
- We identified several no-value added steps.
- We derived several solutions to eliminate or minimize the no-value added steps.

No-value added steps

- Radiologists wait time to enter the biopsy room was the most significant no-value added step.
- Root cause analysis showed that our procedure scheduling, which had overlapping appointment times, was not allowing for a smooth transition between procedures.
- We re-organized our schedule to stagger our procedure times.





Impact of staggering our procedures

- We have noticed a decrease in radiologist wait times to enter the procedure room.
- We are currently collecting data to study the impact.
- This strategy has allowed us to create an additional biopsy slot each afternoon.

Conclusions

- TDABC allows for objective cost calculations over a care cycle.
- It identifies costly steps that add no value.
- It can help radiology practices improve efficiency and minimize waste in this era of evolving reimbursement models.

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