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THE
TIME-DRIVEN ACTIVITY-BASED COSTING (TDABC) PROJECT STARTER KIT

FEBRUARY 2020

This document will help our partners:

- Think realistically about the requirements for a successful TDABC project
- Outline the expectations the Value-Based Healthcare (VBHC) team at the Harvard Business School (HBS) has of our partners and what our partners can expect from us, and
- Present the Project Charter that partners need to complete before project initiation

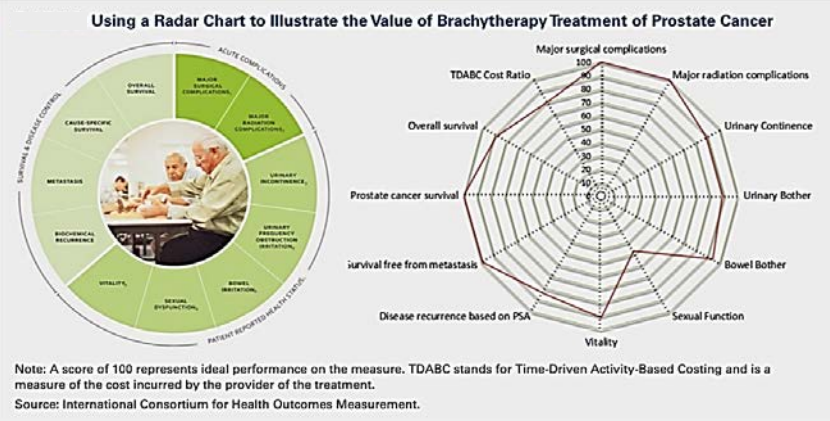
Value in health care is measured by the outcomes that matter to patients relative to the cost of achieving those outcomes.

$$\text{Value} = \frac{\text{Outcomes that matter to patients}}{\text{Cost of treating the patient's medical condition}}$$

Measuring Outcomes

The multidimensional aspect of outcome measurement is captured by the outcome measurement hierarchy, where the clinician and patient-reported outcomes are separated into three tiers.

- **Tier one** represents survival and the degree of functional status achieved.
- **Tier two** represents the process of recovery, including complications problems encountered in the treatment process.
- **Tier three** represents the long-term sustainability of health, including clinical and functional status.

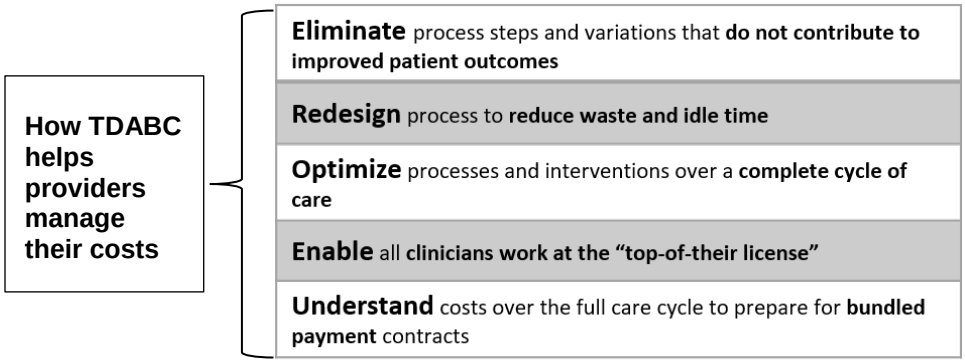


Patient-Reported Outcomes (PROs) measure the factors patients care about most, including function, pain, and mental health. PROs enable providers to benchmark treatment progress for each patient and analyze aggregate data trends about the best care pathways that lead to superior patient outcomes. Evidence shows that utilizing PRO data can improve quality of life, reduce emergency department use, and improve survival.

Adapted from "Voices on Value" – Kaplan, Witkowski, and Wolberg and "What is Value in Healthcare?" – ME Porter

Measuring Costs

Time-Driven Activity-Based Costing (TDABC) gives healthcare institutions an elegant and practical option for determining accurately the cost and the capacity utilization of the resources used to treat patients over a complete care cycle. By using TDABC to produce accurate costs, institutions can set priorities for process improvements, optimize care across a patient's care cycle, identify opportunities for task downshifting, and prepare for value-based payment models.



Role of the HBS VBHC Team:

The HBS Value-Based Healthcare research team is committed to helping clinical leaders and healthcare executives improve health care outcomes, quality, and cost. By helping our partners introduce TDABC, we hope to transform the economics of delivering health care and align the incentives to deliver higher-value care.

The HBS VBHC team is prepared to serve in an advisory capacity, helping our partners:

- Design the project and its goals when introducing TDABC
- Build the project plan
- Train the project team
- Troubleshoot and provide subject matter expertise
- Analyze and present data
- Write and publish papers and perhaps a case based on the project experience

What we look for in a partner:

Elements of an Ideal Partner Organization	
Senior Leadership Support	• Senior leadership is committed to improving the value of care that it delivers and to pursuing value-based payment mechanisms • Finance organization recognizes the potential benefits from adopting TDABC for measuring costs over a complete care cycle • Clinical leadership is excited to understand cost drivers and explore performance improvement opportunities
Exceptional Project Team	• Project leader respected by both Finance and Clinical personnel • Project leader has strong project management skills • Team members have basic familiarity with the medical condition being studied • Financial analyst(s) who have the ability to access necessary data • Clinical operations and performance improvement personnel who are familiar with the medical condition being studied • Physician Advisor
Alignment of Goals	• Partner organization is willing to act on TDABC information to reduce costs, improve outcomes, re-design processes, and introduce value based (bundled) payments • Partner organization is excited to collaborate with HBS to achieve its clinical and management objectives • Partner organization is interested in collaborating with HBS to produce publications and cases

A Framework for building a successful TDABC Project

What?

What medical condition or closely grouped family of medical conditions do you want to study?

Does the chosen medical condition meet the following inclusion criteria?

1. Is this is a high dollar value medical condition for your group/ institution? Will making the treatment of this medical condition more clinically effective and more cost-efficient have a noticeable impact on your financials?
2. Do you treat a high volume of patients with this condition?
3. Does your group/ institution have visibility into the full cycle of care for this condition? e.g., for surgical interventions, does the hospital that performs the surgery also provide or oversees the post-op rehab for patients.
4. Does your group/ institution already measure patient, process, and clinical outcomes for patients with this medical condition?
5. Does your group/ institution use standardized clinical processes to treat patients with this condition?

Where?

In which site or sites do you want to implement the project?

Some characteristics of a good project site

1. A large number of patients with the chosen medical condition get treatment at this site
2. The site generally has good outcomes when treating patients with the medical condition selected
3. The site is already measuring outcomes
4. The site has participated in quality improvement or process innovation projects in the past
5. Leaders who are open to change manage the site

Who?

Who will make up the project team?

Some characteristics of successful project teams include

1. Institutional leaders sponsor the project
2. There is a point person who is responsible for the successful implementation and execution of the project
3. The team contains clinical experts, functional/ process experts, and financial experts

Typical phases of a TDABC project

	1. Preparation	2. Data definition, Access and Analysis	3. Rollout
PHASE	• Develop a game plan and a team for the TDABC study	• Gather data and conduct department interviews • Build TDABC model template and validate	• Refine maps and model • Roll out template and customize across the organization
ACTIONS	• Determine project scope • Determine the key activities necessary for project completion • Select team composition • Complete TDABC training • Communicate to all relevant departments • Estimate time commitment required from team members • Determine data requirements and availability	• Perform time studies • Estimate time equations and capacity cost ratio • Develop first pass of the model using benchmarks and data estimates • Import cost data • Finalize model	• Replace benchmarks with actual or estimated costs • Allocate indirect/ overhead costs • Refine most important process maps, time estimates, and probabilities • Validate model with finance and clinical teams to ensure buy-in • Educate other community members

Adapted from "Time Driven Activity Based Costing" by Kaplan an d Anderson, Harvard Business School Press

Typical project timeline

1-2 months to prepare for the project

- Set objectives, scope, and timeline; ensure relevant parties have bought in
- Staff project team

3-4 months to execute on the project

- Aim for about one week per process map
- Schedule check-ins and final meetings in advance

Elements of an Ideal Project Team

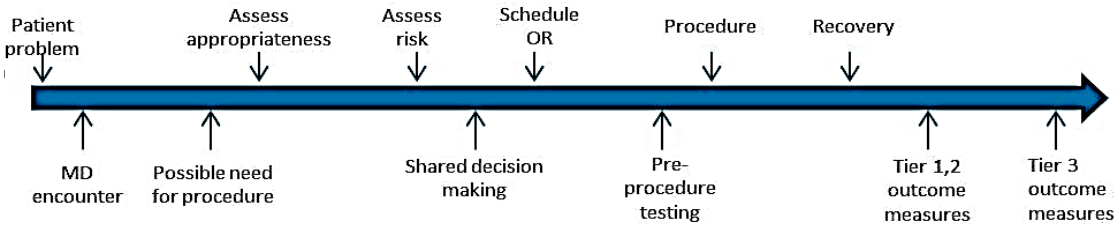
Team Member	Background	Role	Effort
Executive Sponsor	• Management or Finance • Member from senior leadership with oversight of the project	• Gain executive support • Set vision • Implement action based on model	• Infrequent • Present at key meetings
Team Leader	• Has understanding of TDABC • Project management	• Define model • Manage schedule • Lead meetings	• Active member • Multiple days during the week • Primary contact for the HBS team
Physician Leader(s) (if different from the Team Leader)	• Subject matter expert	• Serve in an advisory capacity • Get support from clinicians	
Systems Support	• Familiar with the treatment paradigm for the chosen medical condition • Process Engineer • Information Technology • Financial Analyst	• Build process maps • Collect and clean data	• Infrequent
Model Building	• Accounting, Operations preferable but no required	• Build time equations • Validate model	• Active member • Multiple days during the week

Adapted from "Time Driven Activity Based Costing" by Kaplan an d Anderson, Harvard Business School Press

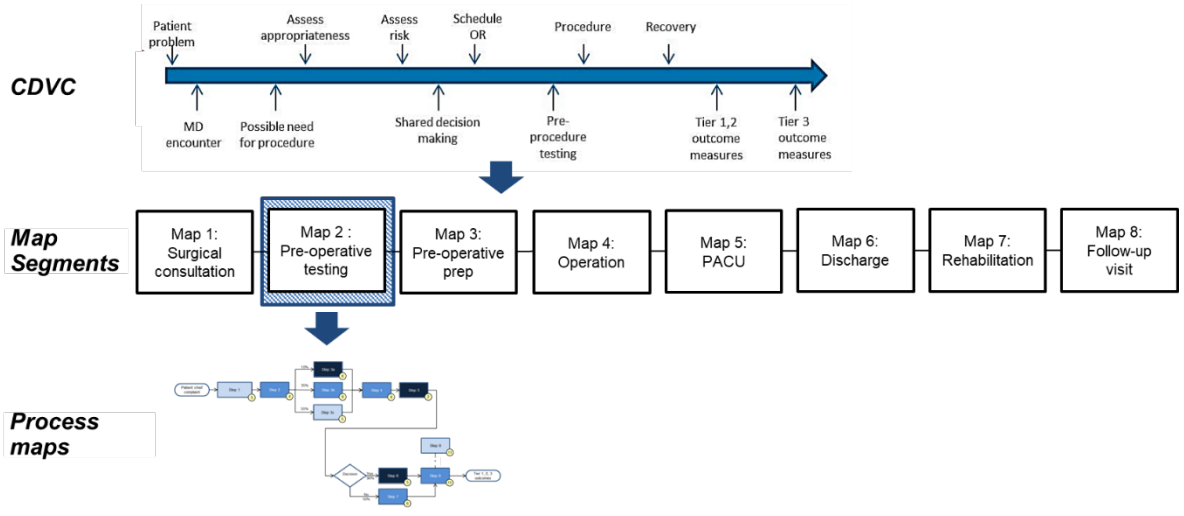
Overview of the Cost Measurement Process *Kaplan, Porter 2011:*

1. **Select a specific medical condition**
    - For primary or chronic care, segment by patient population and/ or by disease severity

2. **Define the care delivery value chain**
    - Outline the principal activities involved in a patient's care for a medical condition



3. **Develop process maps of each activity inpatient care delivery**
    - Encompass the paths patients may follow through the full care cycle



4. **Obtain time estimates for each process.**
    - Time estimates may include
        - Time in the OR
        - Time spent on getting an imaging study

Usually done through direct observations, interviews with content experts, focus groups with individuals familiar with the CDVC, surveys, shadowing and using EMR timestamps

Process Maps	Content Experts
Office visits	Clinic supervisor
Surgical scheduling / billing	Surgical scheduler
Physical therapy	Physical therapist
Office support	Medical secretary, Physician Assistant
Day of surgery Pre Op	Nurse Director PACU, Pre Op nurse
Surgery, OR prep, clean up	Nursing director OR
Central processing	OR Business manager, OR Technician
PACU	Nurse Director PACU
Billing	Director of Revenue Cycle Management
Hospital registration	Director of admissions

5. **Estimate the cost of supplying patient care resources**.
    - The direct cost of patient care may include
        - Compensation for employees
        - Depreciation or leasing of equipment
        - Consumables
        - Operating expenses

For a successful TDABC project it is necessary to capture the costs from the top two tiers.

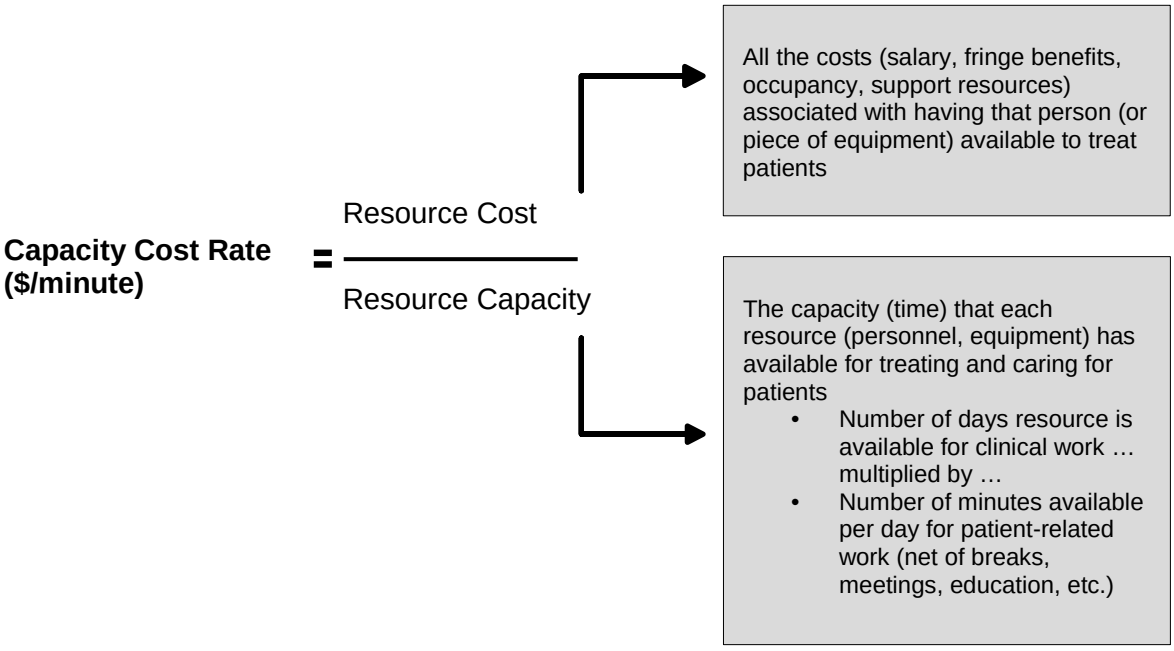
Capturing Tier 1 costs is the highest priority

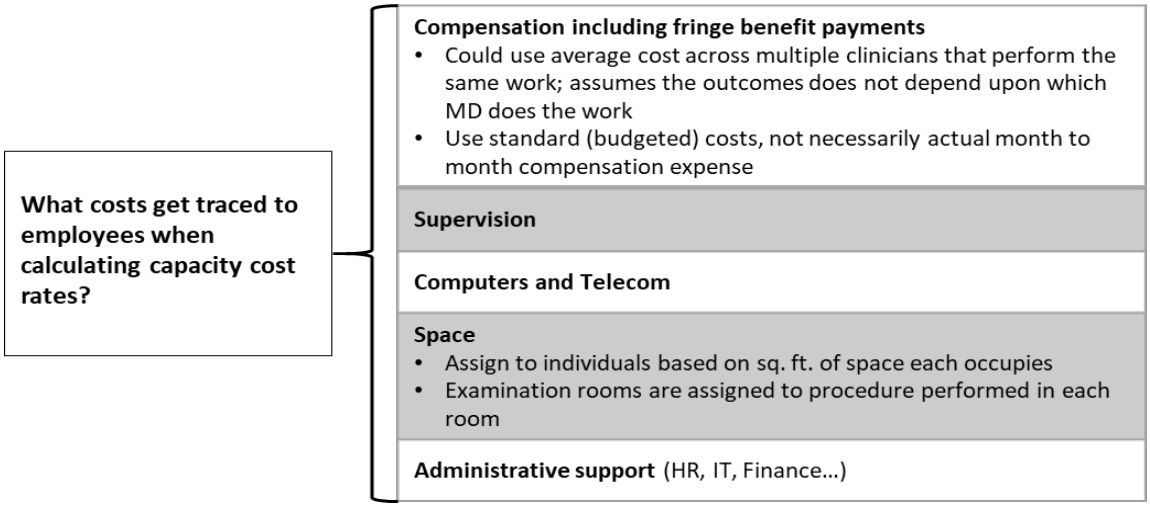
Hierarchy of costs to analyze as part of TDABC

Tier 1	Cost of direct patient care
Tier 2	Ancillary clinical services (e.g. lab, radiology)
Tier 3	Patient support departments (e.g. housekeeping)
Tier 4	Departments that support front line staff (e.g. HR and IT)
Tier 5	Indirect costs (e.g. Senior Administration)

Tier 1 Costs:
- Clinician salaries
- Medical equipment
- Medical supplies
- Pharmacy cost
- Capital costs

6. **Estimate the capacity of each resource and calculate the capacity cost rate.**
   - Data gathered from HR records and other sources





7. **Calculate the total cost of patient care**

Cost of Activity **1** =
(Capacity Cost Rate of Resource **A** x Time patient spends with resource **A**) +
(Capacity Cost Rate of Resource **B** x Time patient spends with resource **B**)**…**

Cost of Treating Medical Condition **=**
Cost of Activity **1** + Cost of Activity **2** + Cost of Activity **3 …**

Additional Resources:

To learn more about TDABC, Value-Based Healthcare, and prior and ongoing research please follow the links below.

- *Professor Kaplan presents **"Applying TDABC in Healthcare"** at HBS (video)*
- *TDABC specific publications:*
  - *"Time-Driven Activity-Based Cost Analysis for Outpatient Anticoagulation Therapy: Direct Costs in a Primary Care Setting with Optimal Performance"* Kaplan et.al.
  - *"A Time-Driven Activity-Based Costing Analysis of Emergency Department Scribes"* Kaplan et.al.
  - *"Using Time-Driven Activity-Based Costing to Model the Costs of Various Process-Improvement Strategies in Acute Pain Management"* Feeley et.al.
  - *"TDABC Cost Analysis of Ocular Disorders in an Ophthalmology Emergency Department versus Urgent Care: Clinical Experience at Massachusetts Eye and Ear"* Loewenstein et.al.
- ***Other VBHC Publications***
- ***Presentations***
- ***Cases and Teaching Notes***

Instructions on how to fill out the Project Charter:

PROJECT CHARTER	
Background	What are the background events that lead you to pursue a TDABC project?
The Subject of Study	**The unit of analysis is usually a medical condition or an Integrated Practice Unit (IPU).**
ProblemStatement	What is the opportunity? What is the project trying to accomplish? How will this project be making an impact?
Project Design	Please describe your project idea? Will you be comparing multiple sites or different treatment pathways? **Comparisons help create a case for change**
Project Setting	What are the treatment setting and time-period over which data collection will take place?
Care Cycle	How much of the care cycle is within scope? e.g., Following patients for 90 days post-acute intervention or following patients with a chronic condition for one year. **Ideally, we want to cover the full care cycle**
Types of Costs	Which types of costs are in scope? Personnel costs are typically higher than consumable costs, which generally are larger than facility costs.
Project Timeline	How long will this project take? Please break down the project into individual tasks and attach a timeframe to each task Please be specific and realistic about your timeline **Please see the table below for further instructions**
Project Team	Who is responsible for the execution of the project? (Usually, it is the Project Manager) Who are the other members of the Project Team?
Role of HBS	How can the HBS VBHC Research Group be useful to you? What are your expectations of the VBHC Research Group?
Communication	How will the Project Manager communicate with the rest of the Project Team and with HBS? Will there be bi-weekly emails, monthly phone calls, etc.
Process Maps	How do you plan to build the process maps? EMR timestamps, interviews, focus groups, shadowing the patient? **We recommend that you use at least two of the above methods as it allows for cross-validation of the map**
Cost Data	**How will you be acquiring your institution-specific cost data?**

Output/ Publication	Will the data be published or presented to an audience outside your institution? Have you identified possible outlets for publication?
Stake Holders	Who are the various stakeholders in this project? Are all stakeholders, including your institutional leadership, aligned on the need for this project? If not, how do you plan to get all stakeholders to the table?
Challenges	What will be the most significant challenges to the completion of this project? How do you plan to address these challenges?
Sustainability	How will you ensure that outcomes are maintained or improved upon after project completion? How will you ensure the sustainability of your project?

Timeline:

Timeline is estimated by looking at historical institutional data, looking at similar projects that have been conducted at your institution or by summing up the approximate times for each task

Start date:	**End date:**
Milestone:	**Target date of completion:**
Project scope defined	
Project design finalized	
Project team staffed	
Project team trained (HBS responsible for training)	
Project kick-off	
First drafts of all process map completed	
Process maps sent for validation	
Cost data acquired (direct and indirect costs)	
The first draft of TDABC model completed by	
TDABC model sent for validation	
Project completion	

Please add other Milestones as you see fit

Please consider using this table to break down the milestones above into individual tasks

Milestone 1:		
Task 1:	**Time Frame:**	**Person responsible:**
	Measureable Results:	
Task 2:	**Time Frame:**	**Person responsible:**
	Measureable Results:	

Please fill out the Project Charter below

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