Evidence-based Capital Planning Processes

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Evidence-Based Health Technology Acquisition

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Objectives

• Compare and contrast clinical evidence relative to other types of clinical information
• Identify common threats that bias clinical studies
• Describe the evidence-based approach to health technology acquisition
U.S. Healthcare Costs as a Percentage of GDP

At 17.2% of GDP, U.S. health spending is one and a half times as much as any other country and nearly twice the OECD average.

Total health expenditure as share of GDP

Source: OECD Health Statistics 2017
U.S. vs Other Countries: Health Procedure Prices

U.S. prices for certain procedures are much higher than in other OECD countries.

**US prices for certain procedures are much higher than in other OECD countries**

(US dollars, 2007)

<table>
<thead>
<tr>
<th>Procedures</th>
<th>AUS</th>
<th>CAN</th>
<th>DEU</th>
<th>FIN</th>
<th>FRA</th>
<th>SWE</th>
<th>USA</th>
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</thead>
<tbody>
<tr>
<td>Appendectomy</td>
<td>5.044</td>
<td>5.004</td>
<td>2.943</td>
<td>3.739</td>
<td>4.558</td>
<td>4.961</td>
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<tr>
<td>Normal delivery</td>
<td>2.984</td>
<td>2.800</td>
<td>1.789</td>
<td>1.521</td>
<td>2.894</td>
<td>2.591</td>
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<tr>
<td>Hip replacement</td>
<td>15.918</td>
<td>11.983</td>
<td>8.699</td>
<td>10.834</td>
<td>11.162</td>
<td>11.568</td>
<td>17.408</td>
</tr>
</tbody>
</table>

Source: Koechlin et al. (2010).
### U.S. vs Other OECD Countries Volume of Healthcare Procedures

#### Where the U.S. health system does MORE than other countries

<table>
<thead>
<tr>
<th>Procedure</th>
<th>United States</th>
<th>Rank compared with OECD countries</th>
<th>OECD average</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI units</td>
<td>31.6</td>
<td>2nd</td>
<td>12.5</td>
</tr>
<tr>
<td>MRI per million population</td>
<td>97.7</td>
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<td>46.3 per million population</td>
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<tr>
<td>MRI exams</td>
<td>40.7</td>
<td>3rd</td>
<td>22.6 per million population</td>
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<tr>
<td>CT per million population</td>
<td>265.0</td>
<td></td>
<td>130.1 per 1,000 population</td>
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<tr>
<td>CT exams</td>
<td>254.4</td>
<td>3rd</td>
<td>123.8 per 1,000 population</td>
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<tr>
<td>Tonsillectomy</td>
<td>79.0</td>
<td>1st</td>
<td>47.3 per 100,000 population</td>
</tr>
<tr>
<td>Per 100,000 population</td>
<td>226.0</td>
<td></td>
<td>121.6 per 100,000 population</td>
</tr>
<tr>
<td>Knee replacements</td>
<td>32.9</td>
<td>1st</td>
<td>26.1 per 100,000 population</td>
</tr>
<tr>
<td>Cesarean sections</td>
<td>32.9</td>
<td>5th</td>
<td>26.1 per 100 live births</td>
</tr>
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</table>

Source: OECD Health Data 2012.
## Select Population Health Outcomes and Risk Factors

<table>
<thead>
<tr>
<th>Country</th>
<th>Life exp. at birth, 2016*</th>
<th>Infant mortality per 1,000 live birth, 2016*</th>
<th>Obesity rate (BMI &gt;30), 2016*</th>
<th>% of pop. (age 15+) who are daily smokers, 2016*</th>
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<tbody>
<tr>
<td>Australia</td>
<td>82.5</td>
<td>3.2</td>
<td>27.9</td>
<td>13.0</td>
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<tr>
<td>Canada</td>
<td>81.5</td>
<td>4.8</td>
<td>25.8</td>
<td>14.0</td>
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<tr>
<td>Denmark</td>
<td>80.8</td>
<td>3.7</td>
<td>-</td>
<td>17.0</td>
</tr>
<tr>
<td>France</td>
<td>82.4</td>
<td>3.8</td>
<td>16.9</td>
<td>22.4</td>
</tr>
<tr>
<td>Germany</td>
<td>80.7</td>
<td>3.3</td>
<td>23.6</td>
<td>20.9</td>
</tr>
<tr>
<td>Japan</td>
<td>83.9</td>
<td>2.1</td>
<td>3.7</td>
<td>18.2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>81.6</td>
<td>3.3</td>
<td>-</td>
<td>19.0</td>
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<tr>
<td>New Zealand</td>
<td>81.7</td>
<td>5.0</td>
<td>31.6</td>
<td>15.0</td>
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<tr>
<td>Norway</td>
<td>82.4</td>
<td>2.3</td>
<td>-</td>
<td>13.0</td>
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<tr>
<td>Sweden</td>
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<td>-</td>
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<tr>
<td>Switzerland</td>
<td>83</td>
<td>3.9</td>
<td>-</td>
<td>20.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>81</td>
<td>3.9</td>
<td>26.9</td>
<td>19.0</td>
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<tr>
<td>United States</td>
<td>78.8</td>
<td>5.8</td>
<td>38.2</td>
<td>11.4</td>
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<tr>
<td>OECD median</td>
<td>80.5</td>
<td>3.9</td>
<td>22.6</td>
<td>18.9</td>
</tr>
</tbody>
</table>

*2016 or nearest year reported
Source: OECD Health Statistics 2017
Healthcare Cost Drivers

• New medical technologies
• Excess and medically unnecessary use of healthcare products
• Financial incentives that reward overutilization
• Clinical variation and inefficiencies
• Opinion and preference-based healthcare decisions
• Medical errors and poor transitions of care
Why New, Emerging, and/or Controversial Health Technologies?

- Physician requests and preference
- Direct-to-consumer advertising/promotion
- Patient request
- Desire to innovate and provide “leading edge” diagnostics, procedures, and therapeutics
- Competitive positioning
- Physician recruitment considerations
- Hope for a cure
Growing Problems

• Significant variation in patient outcomes
• Spiraling healthcare costs
Problems Are Barriers to Triple-Aim Initiatives
The Affordable Care Act (ACA)—moving from fee-for-service or “volume” to value-based purchasing—requires health systems to consider patient outcomes as well as strategic marketing objectives and physician preferences when acquiring and utilizing health technologies.

Do you want marketing hype and physician preference to be the determinants of technology acquisition and deployment?
Health technology acquisition, standardization, and utilization decisions are becoming ever more important as the costs associated with making wrong decisions continue to escalate.

Utilizing evidence is the foundation for meaningful decisions.
UNLOCKING THE KEY TO EVIDENCE

“By the year 2020, 90% of clinical decisions will be supported by accurate, timely, and up-to-date clinical information, and will reflect the best available evidence.”

— Institute of Medicine
What Is Evidence-Based Technology Acquisition?

Systematic use of objective evidence to:

1. Acquire the best available technology
2. Avoid acquiring ineffective or unsafe technology

Goal: Improved patient care and financial viability
Evidence-Based Decision Making

- Defining evidence
- Differentiating evidence vs data vs expert opinion
- Decision considerations
- Locating evidence
- Analyzing evidence
- Applying evidence
What Is (Clinical) Evidence?

A. Expert consensus
B. EMR, spend and claims data
C. White papers with references to the peer-reviewed literature
D. Findings from formal research studies and trials
E. Google and MEDLINE/PubMed searches
Identify Clinically Meaningful Key Questions to Be Addressed

• What is the efficacy of technology under ideal conditions?
• What is the effectiveness of technology in real-world practice?
• How does X compare with Y?
• Is technology safe?
• Does effectiveness vary according to:
  • Patient characteristics?
  • Treatment parameters?
Clinical Evidence Sources

- PubMed
- Embase
- Cochrane
- FDA (MAUDE, labeled indications, etc.)
- NCI (PDQ)

- NIH
- NCCN
- Professional Associations
- National Guidelines Clearinghouse
- Etc.
Evidence Design

- Randomized controlled trial and meta-analysis
- Nonrandomized trial, concurrent and historical controls
- Cohort study, prospective and retrospective
- Case-control study
- Cross-sectional study
- Case study
- Case report
Key Factors

- Research design
- Number of subjects
- Recruitment strategy
- Controls
- Dropouts
- Outcomes
- Adequacy of study duration
- Statistical outcomes
Quality of Evidence Analysis

- Search strategy
- Database
- Inclusion criteria
- Abstract vs full text
- Funding sources
- Findings reproducible
- Disclosures
Form Evidence-Based Conclusions

• Provide evidence-based answer to research question(s)
• Summarize quality of the evidence
• Provide magnitude of effect (benefit/harm)
• Highlight differences in varying patient groups
• Discuss treatment characteristics that impact effect
• Emphasize gaps in literature and need for future research
Provisions in the ACA encourage comparative effectiveness research (CER) and development and application of patient registries. Data from patient registries and CER studies will provide evidence of the clinical value of varying treatments and interventions, making patient outcomes a key component in determining the value of health technologies.
Policy Considerations

• Practice guidelines
• Regulatory information (Food and Drug Administration)
• Centers for Medicare & Medicaid Services (CMS) decisions
• Payer policies
• Clinical impact
• Patient impact
• Cost information and economic evaluations
• Likelihood of better evidence in future
Additional Considerations in Evidence-Based Technology Acquisition

• Does the new technology replace, complement, or compete with existing technology?
• Role of the clinical equipment replacement plan
• Must-have versus nice-to-have acquisitions
• Clinical strategic priorities and “early adopter” position
Evidence-Based Technology Acquisition

• To improve patient safety and clinical outcomes
• To promote efficient utilization of resources and achieve a positive return on investment
• To support strategic technology planning
• To reduce conflict over health technology decisions
• To guide appropriate implementation of health technologies

Better Information = Better Decisions
Capitalizing Capital Funding: Balancing Wants and Needs

Georgia Cochrane, Manager, Supply Chain Contracting, Fairview Health Services
All too many hospitals lack effective capital equipment replacement processes, which causes them to leave hundreds of thousands of capital dollars on the table for vendors.

Healthcare Financial Management Association (HFMA) article – John-Paul Guimond
Capital Equipment Acquisition Process

*a riddle wrapped up in an enigma*

(idiomatic) Something very mysterious and hidden.

"It is a riddle, wrapped in a mystery, inside an enigma; but perhaps there is a key." – Winston Churchill, October 1939
Fairview Health Services

• 32,000+ employees
• 2,400 aligned physicians
• 11 hospitals/medical centers
• 2,530 licensed beds
• 2,177 staffed beds
• 56-plus primary care clinics
• 55-plus specialty clinics
• 60-plus senior housing locations
• 30-plus retail pharmacies

• 848,075 outpatient registrations
• 1.6+ million clinic visits
• 67,609 inpatient admissions
• 78,157 surgeries
• 8,854 births
• 207,227 ED registrations
• 8,584 behavioral inpatients served
• 261 blood and marrow transplants
• 428 organ transplants
Fairview Supply Chain

• Improve quality and patient safety

• Meet savings and cost avoidance targets

Site Base Services/Inventory
CSSD
Project/Value Analysis
Data Analytics
Contracting
Purchasing
Accounts Payable
Supply Chain Contracting Team

Accurate and Timely Facilitation of Contracts

Supplies, Equipment, Equipment Maintenance and Services

2,600+ Active Contracts
Combined Contact Value of over $360,000,000

• Supply and Equipment
  • 4 Contract Specialists & 2 Contract Specialist Associates
  • 467 Capital Requisitions (2016)

• Purchased Services
  • 2 Lead Coordinators & 1 Contract Specialist

• Information Technology
  • 3+ Contract Specialists
What is Capital?

Cost is equal to or greater than $5,000* and Useful Life of greater than 1 Year

*Senior Leaders & Accounting may capitalize items less than $5,000 at their discretion
Equipment Acquisition Process

Ha ha! What a marvelous piece of riddling genius that was! But I've only started with the Caped Crusaders. I'm going to confound them with conundrums, unnerve them with enigmas, perplex them with puzzles... until they wish they were dead.

The Riddler

Batman (1966 TV Series)
Episode: Batman's Anniversary (1967)
Equipment Acquisition Phases

- Identify Needs
- Estimate Cost

Budget

Source
- Define Specifications
- Negotiate Cost

Procure
- Request Final Approval
- Finalize Cost
Equipment Acquisition Phase Issues

- Over or under estimating cost can impact available funds
- Unclear equipment specifications can impact leverage
- Ability to negotiate additional value is often lost

Budget

Source

Procure
Equipment Acquisition Supply Chain Value

- **Budget**
  - Cost based on current list of contract price

- **Source**
  - Discounts based on volume

- **Procure**
  - Cost Avoidance based on final negotiations
Equipment Budgeting & Planning Improvement

• Capital Equipment Budget Team
  Developed Equipment Planning Work Team Charter

• Supply Chain Steering Committee
  Approved Charter and empowered Team to find solutions

• Equipment Budgeting & Planning Work Team
  Developed Project Plan with specific sub-projects, activities, and tasks to meet the objectives of the Charter
Equipment Budgeting & Planning Work Team

Chairs
• VP of Finance, North Region
• System Director Clinical Engineering
• System Director Supply Chain

Team Members
• Region Finance and Accounting
• Site Finance and Accounting
• Corporate Finance and Accounting
• Treasury
• Clinical Engineering
• Supply Chain
• Information Technology
Equipment Planning Work Team Charter

Goals and Objectives

• Reduce Costs and Risks
• Improve Communications and Decision Making
• Assure Compliance with Required Regulations
• Enhance Safety and Efficiency
• Increase Equipment Service Response
Equipment Planning Work Team Project Plan

Project Plan Actions

• Team Logistics
• Standard Process
• Coordinate 2017 Budgets
• Develop RACI
• Review Definitions, Policies, Guide
• Review Requisition Process
Fairview does not have a system Equipment Plan for the purchase of new and replacement equipment (capital and non-capital). Lack of a coordinated plan leads to missed strategic opportunities for savings & cost avoidance and improving quality & patient safety.

Background

Each Region plans and budgets for equipment individually on an annual basis. There is not a consistent model for capital equipment acquisition. Lack of coordination of activities leads to lost opportunities for savings/avoidance through group buys and other contractual strategies. This can also lead to over/under budgeting available funds, lack of standardization across entities, and lost financial leverage.

Target State:

Current equipment inventory is not well documented
Fix/Replace need often is not taking in consideration at budgeting time
No coordination of budgeting for capital equipment between regions
No standard approach to budgeting for capital equipment for all regions
Lost opportunities for leveraging better pricing
IT and Biomed do not have opportunities for providing recommendation on the equipment prior to purchasing

Current State

Current equipment inventory is not well documented
Fix/Replace need often is not taking in consideration at budgeting time
No coordination of budgeting for capital equipment between regions
No standard approach to budgeting for capital equipment for all regions
Lost opportunities for leveraging better pricing
IT and Biomed do not have opportunities for providing recommendation on the equipment prior to purchasing

Target State:

Goals and Objectives

- Coordinated Annual Equipment Plan
- Enhanced Communication of Equipment Plan
- Reduce costs and risks
- Improve communication and decision making
- Assure compliance with required regulations
- Enhance safety and efficiency
- Increase equipment service response

End Results

- Equipment Tracking System
- Standard Equipment List

Analysis

Driving

- System Equip Standardization
- Visibility into Equip Inventory
- Cost Containment
- Innovation
- Acceleration of Growth Strategies

Restraining

- Local decision making
- Data not up to date or in one system
- Continuous Margin Pressure
- Silo Culture
- Multiple Competing Priorities

Objectives

- Establish Equipment Tracking System by implementing TMS tool
- Create equipment inventory and replacement schedules
- Evaluate opportunities for reducing non capital equipment spend
- Develop and implement standard process for capital equipment planning and budgeting
- Coordinate 2017 Capital Budget for North and South Region
- Coordinate 2018 Capital Budget across FHS
- Develop allocation of capital methodology based on need
- Create methodology for calculating total cost of equipment
- Establish Standard Equipment List
- Develop a “RACI” chart for each of the groups
- Evaluate budgeted and requested capital for group buys and other cost savings opportunities (i.e. Optumis Buying Power)
- Update capital equipment requisition process

Execution and Sustainment Plan

<table>
<thead>
<tr>
<th>Activity/susceptible</th>
<th>Owner</th>
<th>Sustain method and Frequency</th>
<th>Report to</th>
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</thead>
<tbody>
<tr>
<td>Biomed inventory management Development</td>
<td>Eric Ross</td>
<td>TMS tool, annual reports to operation areas</td>
<td>Team</td>
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<tr>
<td>Annual Budget Coordination</td>
<td>Kim Erickson</td>
<td>Monthly review of 2017 capital budget and implications</td>
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<tr>
<td>Coordination of purchasing activities</td>
<td>Sofya Mikhelson</td>
<td>On – going review of budgeted and requested capital for group buys and other cost savings opportunities</td>
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</tbody>
</table>

Driving Strategies:

1. Methodology:
   1. Early tests / PDCA
   2. Multiple PDCA
   3. Early implementation
   4. Working well in operation

Maturity Bars:

0: Untested idea
1: Early tests / PDCA
2: Multiple PDCA
3: Early implementation
4: Working well in operation

Abandoned
Target State vs Current State

**Target State**

**Goals and Objectives**
- Reduce costs and risks
- Improve communication
- Assure compliance
- Enhance safety and efficiency
- Increase equipment service response

**End Results**
- Equipment Tracking System
- Standard Equipment List
- Coordinated Annual Equipment Plan
- Enhanced Communication of Equipment Plan

**Current State**
- Current equipment inventory is not well documented
- Fix/Replace need often is not taking in consideration at budgeting time
- No coordination of budgeting for capital equipment between regions
- No standard approach to budgeting for capital equipment for all regions
- Lost opportunities for leveraging better pricing
- IT and Biomed do not have opportunities for providing recommendation on the equipment prior to purchasing
Gap Analysis

Driving
- System Equip Standardization
- Visibility into Equip Inventory
- Cost Containment
- Innovation
- Acceleration of Growth Strategies

Restraining
- Local decision making
- Data not up to date or in one system
- Continuous Margin Pressure
- Silo Culture
- Multiple Competing Priorities
Objectives and Key Activities

Objectives

• Equipment Inventory Management
• Annual Budget Coordination
• Coordination of Services

Key Activities

• Implement Tracking System
• Create Inventory & Replacement Schedules
• Evaluate Non-Capital Opportunities
• Implement Standard Process for Planning & Budgeting
• Coordinate 2017 North & South Region
• Coordinate 2018 Across System
• Develop Allocation & Total Cost Methodology
• Establish Standard Equipment List
• Develop RACI
• Optimize Buying Power
• Update Requisition Process
Recent & Upcoming Acquisitions

• Patient Beds
• Stretchers
• IV Pumps
• Anesthesia Equipment
Where We Were

Source -> Budget -> Source -> Procure

finance

Business Owners Wants/Needs

Supply Chain

BioMed
Where We Are Going

Plan

Budget

Procure

Source

Business Owner

Finance

IT

Supply Chain

BioMed

Procure

Source

Plan

Budget

Business Owner

Finance

IT

Supply Chain

BioMed

ACE SUMMIT AND REVERSE EXPO
Resources – Cost Containment

**GPO Agreements**
- Terms & Conditions
  - Local Negotiation
  - Warranty
  - Returns
- Pricing
  - Equipment
  - Service
  - Consumables
- Large Volume Discounts
- Value Adds
- Group Buys
Resources – Subscription Services

Service Offerings

- Equipment Budget and Planning
- Equipment Impact Analysis
- Equipment Quotation Analysis

- Equipment Overviews
- Price Benchmarking
- Market Analysis
Summary

Outcomes

• Reduced Costs and Risks
• Improved Communication and Decision Making
• Coordinated Plan for Continued Process Improvements

Success Factors

• Engaged stakeholder and leaders
• Willingness to see value in process improvement
• Acceptance that the process may take time to evolve
• Acknowledgement of the complexity of the process