In today’s business environment, managing employee overhead and healthcare benefit costs necessitate that benefit managers and company executives seek out innovative opportunities to help reduce company expenditures while at the same time, positively impacting their organization. Year after year, the costs of employee benefits, and in particular medical health plan programs, are under greater scrutiny. However, these examinations often lack the latest credible economic information to uncover real cost saving opportunities – including those stemming from patient choice of surgery.

With over 50 years of surgery expertise and leading innovations in medicine, Medtronic works with organizations to provide pivotal analyses and solutions to reduce costs while supporting the needs of medical plan sponsors, many of which are employers. These customized programs facilitate adoption and delivery of minimally invasive surgery (MIS) designed to improve care and outcomes for patients while reducing the cost of care for all stakeholders.

**Exploring the True Value of Minimally Invasive Surgery**

Minimally invasive surgery is well known for its patient outcome benefits over open surgical procedures including lower costs and shorter patient hospital stays across a variety of procedures.¹ Despite being well documented in scientific evidence, employer related data that identify the true impact on employee productivity measured against health related workplace absenteeism has not been fully considered until now.

**MIS Benefit Trifecta**

To identify the total benefits of MIS, employers must consider three key data points: clinical benefits, employee productivity data, and economic analyses. As a result, Medtronic has commissioned relevant outcomes research, and developed tools and models to help further illustrate the value of these collective benefits and analyses for payers and employers.
Emerging Research Shows the Full Value of Minimally Invasive Surgery

Clinical Benefits

LOWER TOTAL COSTS for MIS procedures*

$11,698 cost savings for colectomy

$5,041 cost savings for ventral hernia repair

$12,278 cost savings for thoracic resection

$749 cost savings for hysterectomy non-cancer† (outpatient settings)

* Includes anchor procedure, plus 30 days post operation

Medtronic/Milliman Analysis: Truven Healthcare MarketScan Database: 2011-2012 data; performed 2015

• Since MIS typically involves several tiny incisions as opposed to one long incision, there are generally fewer complications, less chance of infection, and less pain post operatively.1

• The MIS patient generally has a shorter hospital stay and less occurrence of readmission.1,2 This has a direct impact on healthcare expenditures.

• Clinical benefit results vary according to the procedure.1

<table>
<thead>
<tr>
<th>Surgical Procedure</th>
<th>Mean Reduction in Hospital Length of Stay Open vs. MIS†</th>
<th>Mean Reduction in 30 day Readmissions (per 100 cases) Open vs. MIS†,2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colectomy</td>
<td>2.5 days</td>
<td>3.9</td>
</tr>
<tr>
<td>Ventral Hernia Repair</td>
<td>.9 days</td>
<td>3.4</td>
</tr>
<tr>
<td>Thoracic Resection†</td>
<td>1.9 days</td>
<td>1.9</td>
</tr>
<tr>
<td>Hysterectomy Non-Cancer†</td>
<td>NA</td>
<td>-.6</td>
</tr>
</tbody>
</table>

Productivity Data

• Employee data reveals significant differential, favors MIS procedures.1

• Analyses estimate that employees undergoing MIS procedures take less time off for actual utilization of healthcare services, or appointments, compared with those that undergo open procedures.2

• The difference in total average days of lost work time varies by surgical procedure.

<table>
<thead>
<tr>
<th>Surgical Procedure</th>
<th>Difference in Average Days of Lost Work Time Per Surgery (Open- MIS)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colectomy</td>
<td>26</td>
</tr>
<tr>
<td>Ventral Hernia Repair</td>
<td>22</td>
</tr>
<tr>
<td>Thoracic Resection†</td>
<td>14</td>
</tr>
<tr>
<td>Hysterectomy Non-Cancer†</td>
<td>15</td>
</tr>
</tbody>
</table>

FASTER AVERAGE RETURN TO WORK*

* Analyses shows fewer estimated days off due to healthcare utilization

† Factored on the suite of MIS procedures

†† Compares inpatient open procedure to outpatient MIS
The model was developed based on a retrospective claim data analysis using Truven Marketscan database of over 74.2 million commercially-insured members from approximately 100 private payer sectors. The 2011-2012 data set links paid claims and encounter data to detailed de-identified patient information across sites, and types of providers, over time.

(See appendix A for savings illustrations)
Procedural Specific Research

Medtronic has recently supported four studies with leading surgeons to examine the true impact of minimally invasive surgery over open procedures across four key areas:

- Colectomy, Conor Delaney, MD (Case Western Reserve University)
- Ventral Hernia Repair, Dean Mikami, MD (Ohio State University)
- Thoracic, Thomas Watson, MD (University of Rochester)
- Hysterectomy, Warren Huh, MD (University of Alabama)

In the colectomy, ventral hernia and thoracic procedures, switching to MIS significantly reduced healthcare costs, and also shortened post-operative recovery times, allowing employees to recover and return to work more quickly. 3,4,5

Real World Applications

Armed with the latest research and financial tools that assess the impact of surgeries on patient outcomes, healthcare expenditures and employee productivity, Medtronic can help your company assess the true value of employees’ surgical choices and potential cost savings achieved by adopting programs that facilitate MIS. Those include Treatment Decision Support Vehicles and Value Based Insurance Designs.

Treatment Decision Support Vehicles are designed to create patient awareness in plain terms about the use and value of MIS procedures. This engagement allows a patient to have better information to dialogue with the physician. One such example is a suite of animated e-learning modules.

Medtronic and UnitedHealthcare have collaborated to develop an interactive patient experience based on nine of the most common surgical procedures. These can be utilized by plan sponsors including employers. A sample of the modules is referenced here.

A Value-Based Insurance Design is created by structuring a specific benefit so that there are reduced barriers to the most efficacious treatments. These may include a reduced cost share for a particular procedure, or use of a particular value network.

With an estimated 19 million state and local employees that represent 10 percent of the U.S. workforce, public employers like the states of Connecticut and Oregon have been at the forefront of implementing value-based insurance designs.

Specifically, the state of Connecticut helped to lower and remove financial barriers to high-value clinical procedures through their plan design and intervention with notable results including a 23 percent decrease in monthly emergency department visits. For the state of Oregon, eliminating cost-sharing for weight management and tobacco cessation resulted in reduction of tobacco use across the organization.

These success stories have been well-documented and covered in key journals like American Journal of Managed Care “Encouraging value-based insurance designs in state health insurance exchanges”, Health Affairs “Oregon’s test of value-based insurance design in coverage for state workers” and media such as The Washington Post “Value-based insurance design’s pros and cons”.

Source: UnitedHealthcare online modules
Working with Medtronic: What’s Next?

For Medtronic, we bring our deep expertise across procedural areas to population health. Using our proprietary modeling with your own member or employer data, you can realize the true impact of shifting from open to MIS.

Our three-step approach involves assessing needs and delivering insights based on data analysis to deliver custom programs based on your needs. Together, our team guides the implementation process to ensure the programs are poised for success.

Transform challenges into opportunities.


Medtronic Health Systems Advantage

The Medtronic Health Systems Advantage team delivers comprehensive solutions to identify and address a broad set of clinical, operational and economic matters that translate to improved quality of outcomes and increased value for providers, payers and employers.

Backed by deep clinical and surgical expertise and an understanding of the hospital environment, the Medtronic Health Systems Advantage team ensures credible and accurate diagnosis and implementation for sustained change management. The team is committed to collaborating with customers for long term, tangible benefits and shared results.

Medtronic is the global leader in medical technology - alleviating pain, restoring health, and extending life for millions of people around the world.

Transform challenges into opportunities.

Contact Medtronic Health Systems Advantage or visit www.medtronic.com

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US150223
### COMPANY XYZ SCENARIO 1 RESULTS

#### CHOSEN INPUTS FROM "MODEL" TAB

<table>
<thead>
<tr>
<th>Population Inputs:</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Membership</td>
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</tr>
<tr>
<td>Population PMPM</td>
<td>$448.12</td>
</tr>
<tr>
<td>Included Costs</td>
<td>All Anchor and 30 Day Post - Anchor</td>
</tr>
<tr>
<td>Cost per Lost Work Day</td>
<td>$200.00</td>
</tr>
</tbody>
</table>

#### SURGERY SPECIFIC INPUTS:

- **Starting Distribution of Surgeries**
  - Surgery Cohort %Open: Colectomy 67.5%, Ventral Hernia 74.7%, Thoracic Resection 33.4%, Hysterectomy Non-Cancer 38.5%

- **Replacing Open with MIS**
  - Surgery Cohort Target % of MIS Cases: Colectomy 47.5%, Ventral Hernia 86.6%, Thoracic Resection 66.6%, Hysterectomy Non-Cancer 81.5%

### REDUCTION IN TOTAL ALLOWED COST AS A RESULT OF SHIFTING FROM OPEN TO MIS

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Savings (in $)</th>
<th>% MIS Before Shift</th>
<th>% MIS After Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colectomy</td>
<td>$1,115,299</td>
<td>47.5%</td>
<td>67.5%</td>
</tr>
<tr>
<td>Ventral Hernia</td>
<td>$347,387</td>
<td>45.3%</td>
<td>86.6%</td>
</tr>
<tr>
<td>Thoracic Resection</td>
<td>$502,566</td>
<td>25.3%</td>
<td>61.5%</td>
</tr>
<tr>
<td>Hysterectomy Non-Cancer</td>
<td>$971,314</td>
<td>316,361</td>
<td>1,726,522</td>
</tr>
</tbody>
</table>

### REDUCTION IN TOTAL ALLOWED COST AS A RESULT OF DECREASING LOST WORKS DAYS

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Savings (in $)</th>
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<tbody>
<tr>
<td>Colectomy</td>
<td>$347,387</td>
</tr>
<tr>
<td>Ventral Hernia</td>
<td>$70,812</td>
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<tr>
<td>Thoracic Resection</td>
<td>$502,566</td>
</tr>
<tr>
<td>Hysterectomy Non-Cancer</td>
<td>$971,314</td>
</tr>
</tbody>
</table>

* Medtronic/Milliman Analysis: Truven Healthcare MarketScan Database: 2011-2012 data; performed 2015