



Human Lives & Robot Money:

How to optimize your surgical procedures and maximize your bottom line

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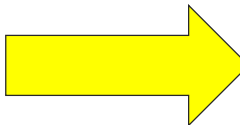
Background



Dr. Kevin M. Audlin, MD

Learning points

- Learn how your surgeons can become low cost, high value providers
- Discover the clinical and teaching benefits of utilizing advanced lower-cost technologies in lieu of robotics
- Understand the potential impact of value-based payments in your facility
- Learn how you can expand your referral base from regional to national



Show you how my facility went from...

- Having a referral base generally made up of five states to a presence across the country
- Spending \$2,754 a case prior to new technology to cutting the cost in half
- Simply understanding trends to actually positioning ahead of the curve in the ratings process with insurance providers and referrals to avoid being flagged as a “high-cost provider”

How much do we care about increased costs?

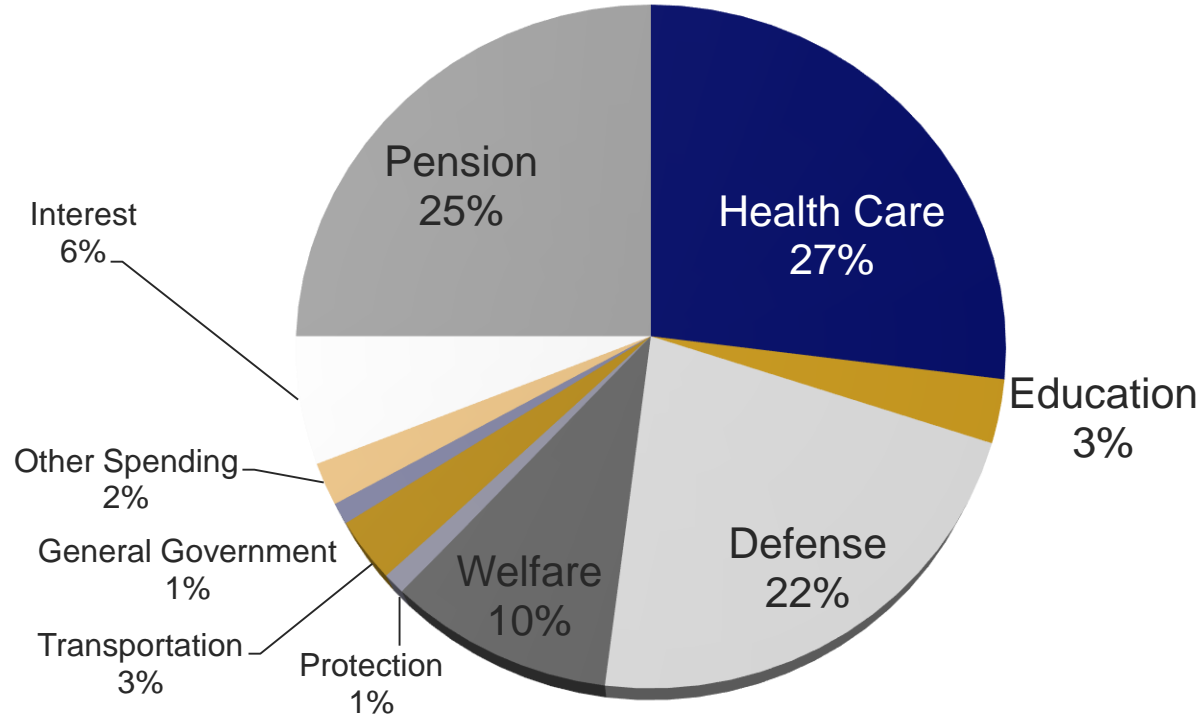


President Obama at the AMA Conference in 2009

"Today, we are spending over \$2 trillion a year on health care -- almost 50 percent more per person than the next most costly nation.....**Make no mistake: The cost of our health care is a threat to our economy.** It's an escalating burden on our families and businesses. It's a ticking time bomb for the federal budget. And it is unsustainable for the United States of America."



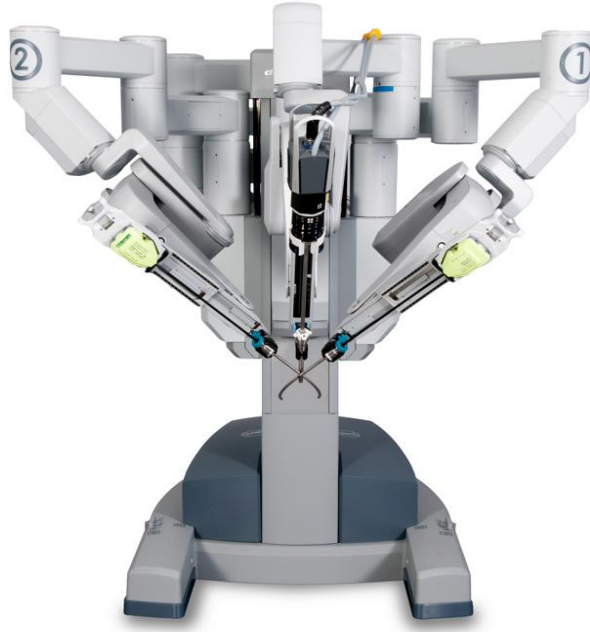
Federal Spending for Fiscal Year 2015¹



Common procedures in 2010 (Center for Disease Control and Prevention Data)

- Total number of procedures performed in USA: 51.4 million
- Number of selected procedures performed²:
 - Endoscopy of small intestine with or without biopsy: 1.1 million
 - Endoscopy of large intestine with or without biopsy: 499,000
 - Balloon angioplasty of coronary artery or coronary atherectomy: 500,000
 - **Hysterectomy: 498,000**
 - Cesarean section: 1.3 million
 - Reduction of fracture: 671,000
 - Insertion of coronary artery stent: 454,000
 - Coronary artery bypass graft: 395,000
 - Total knee replacement: 719,000
 - Total hip replacement: 332,000

Minimally Invasive Surgery — Robotic or Laparoscopic? Which do I choose ?

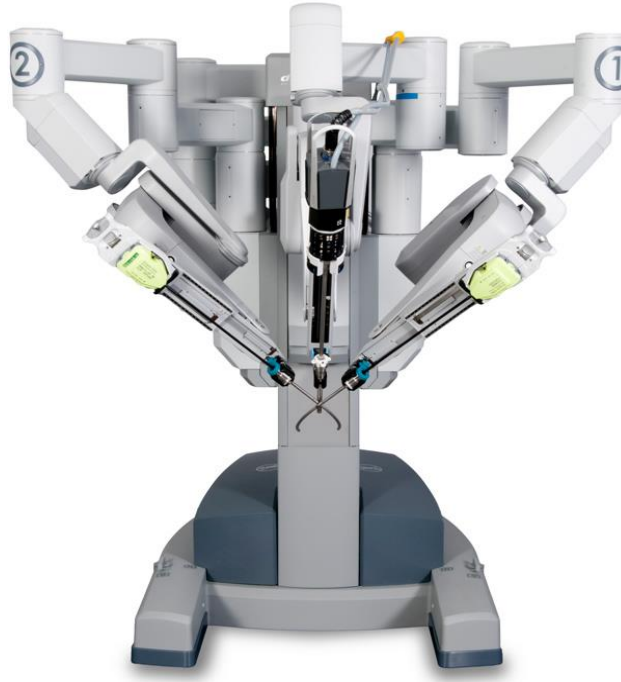


da Vinci Robotic System

- Magnified vision system gives a 3D HD view
- Ergonomically designed console for operating surgeon
- Wristed instruments
 - 7 degrees of freedom
 - 90 degrees of articulation
 - Motion scaling and tremor reduction



Robotic Surgery – Why is it so popular?



AAGL Statement on Robotic to Conventional Laparoscopic Surgery

- The available evidence indicates that robotic-assisted and conventional laparoscopic techniques for benign gynecologic surgery are comparable regarding the following³:
 - Perioperative outcomes
 - Intraoperative complications
 - Length of hospital stay
 - Rate of conversion to open surgery
- Published reports demonstrate that robotic-assisted laparoscopic surgery has:
 - Similar or longer operating times
 - Higher associated costs

Accepted indications for robotic usage:

- GYN malignancy surgery
- BMI >40
- Uteri >250 grams
- Patients with multiple previous surgeries
- Minimally invasive myomectomies
- Minimally invasive abdominosacral colpopexies

Is there a cost difference between robotic and lap?

- Study:
 - Examined data from the Healthcare Cost and Utilization Project
 - 20 types of surgery
 - Examining robotic-assisted laparoscopic surgery
- Results:
 - Additional variable cost of using a robotic surgical system was **\$1600** per procedure
 - When the amortized cost of the robotic surgical system was included, the variable cost of using a robotic surgical system rose to **\$3200** per procedure



The NEW ENGLAND
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Robotic Costs: Mercy Medical Center

- Direct supply costs of robotic case: \$1424
 - Includes Air Seal system costs
- Three Arms – \$830
- Four Arms – \$1090
- Five Arms – \$1330



Per case cost ranges from: \$2254 – \$2754

*Does not including yearly maintenance!

Total Laparoscopic Hysterectomy (TLH) 3D Costs: Mercy Medical Center

- Total product and supply cost of TLH: \$1510
 - Using 3D & THUNDERBEAT energy device



Per case cost savings: \$744 – \$1244

**Does not including yearly maintenance!*

Surgeon tier effects referral doctor's bottom line

- BC/BS of Mid-Atlantic has created a pilot program to identify if they can decrease costs by incentivizing the primary care doctors to share in cost reduction profits
- Ways to reduce cost
 - Longer office hours to decrease ER visits
 - Generic medications
 - Reduction in high cost imaging studies
 - Refer to lower cost surgeons for procedures
- The results have been better than hoped and other insurance payers have begun to roll out similar incentive programs

Health Services Cost Review Commission (HSCRC)

- [Maryland's All-Payer Model Agreement](#) was approved by the Centers for Medicare & Medicaid Services (CMS) on January 10, 2014.
- HSCRC is now in the process of implementation. The model grants Maryland broad discretion in regulating Medicare hospital revenue within a rigorous per capita expenditure limit under the existing statutory authority of the HSCRC.
- Builds on decades of innovation and equity in health care payment and delivery by modernizing our "all-payer" rate-setting system for hospital services.

Our shared goal is a health care system that enhances patient care, improves health outcomes, and lower costs.

Translation:

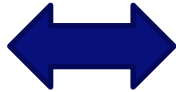
You can use the robot, but it will cost you !

How does 3D fit alongside the robot?

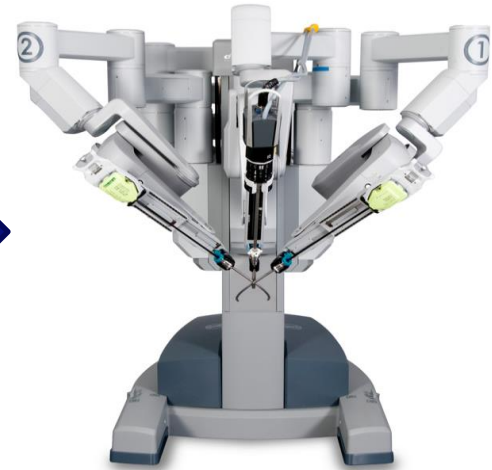
The most widely used 3D imaging platform in the United States is currently a component of a robotic system



2D Laparoscopy



**ENDOEYE FLEX 3D
Laparoscopy**



**3D + Robotic
Laparoscopy**

Olympus ENDOEYE FLEX 3D Technology

ENDOEYE FLEX Technology helps solve many technical limitations associated with other 3D imaging systems

ENDOEYE
FLEX



Dual Optics HD 3D design



- Dual optics technology for greater 3D depth perception

Infinite viewing angles



- ENDOEYE FLEX can replicate any viewing angle without loss of visual horizon or orientation

2 Chips on the Tip:

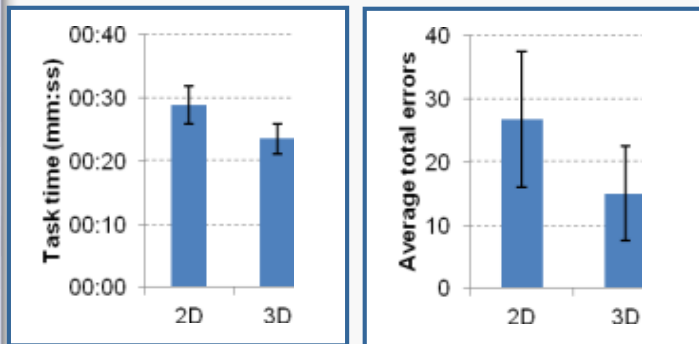


- Brighter images
- Focus free
- Reduced fogging

Is there value of the 3D system over 2D?

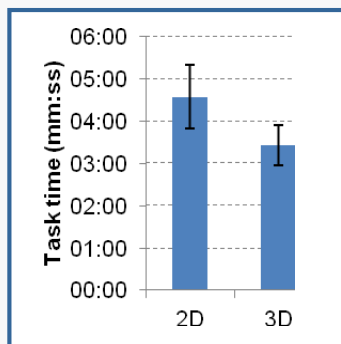
Improves speed, accuracy and precision of surgical procedures when compared with 2D surgical systems

3D Grasping



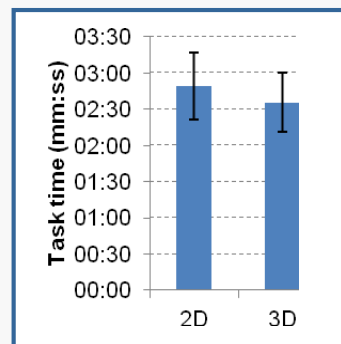
25% Faster 44% Fewer Errors

3D Suturing



35% Faster

3D Dissection



10% Faster

Identifiable gaps in surgeon training

- **Fellowship Council Research Committee** to all subspecialty fellowship program directors*
- **Respondents (n=91)** minimally invasive surgery, bariatric, colorectal, hepatobiliary, thoracic specialties:
- **Specific to laparoscopic skills⁴:**
 - 30%** could **not atraumatically manipulate** tissue
 - 26%** could **not recognize** anatomical planes
 - 56%** could not **suture**
 - 28%** not familiar with **therapeutic options**
 - 24%** unable recognize early signs of complications

How can 3D address the gap in surgical training?

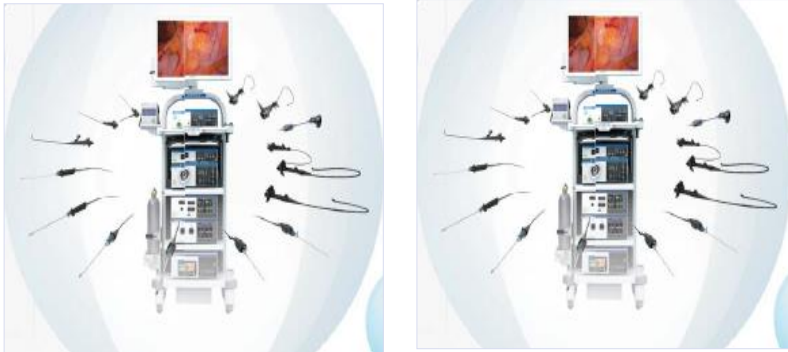
- Benchtop study conducted at 3 facilities, all under IRB approval ⁵
 - 24 subjects (12 experienced laparoscopic surgeons, 12 senior residents/fellows) enrolled
 - Each subject performed 4 surgical tasks (grasping beads, suturing a rubber membrane, dissecting along a line, pointing through eyelets), using 2D and 3D imaging with a sequence repeated 5X.
- Results:
 - 3D resulted in faster completion times for bead transfer, suturing, dissecting, and pointing.
 - 3D resulted in fewer errors for bead transfer, but not for suturing, dissecting, or pointing.
 - There were no differences in completion time or number of errors based on surgeon experience or position of the model from the camera.
- Conclusion: 3D Imaging enhanced speed while performing all 4 laparoscopic tasks.
 - **The benefits of 3D Imaging were maintained across levels of surgeon experience** over a range of operative fields.

Technology overview

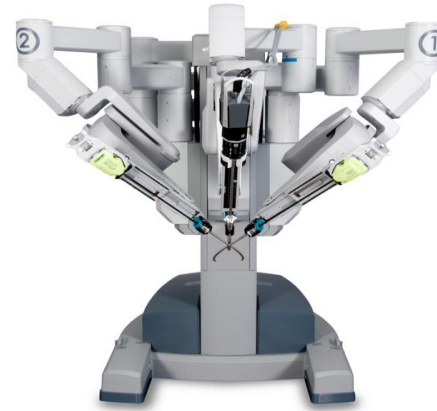
- da Vinci Surgical System
 - Large system, **minimally mobile**
 - 3D imaging and clarity
 - Wristing and movement at multiple joints
 - Ergonomic system, but surgeon is not at patient side
 - **NO** tactile feedback
 - Visual field view is limited to 0-degree and 30-degree angle
 - Monopolar energy
- ENDOEYE FLEX 3D
 - Tower based system, **mobile** throughout OR
 - 3D imaging and clarity
 - Maneuverability of the visual field
 - Tactile feedback
 - **NO** ability to improve technique with wristing

Cost discussion point

**Purchase of 2 ENDOEYE
FLEX 3D Laparoscopy
Towers**



**YEARLY Robotic
Maintenance Contract**



Two fully mobile, functional 3D towers with endoscopes for essentially the same price as the Intuitive Xi yearly maintenance contract

Some key benefits to the Olympus 3D system

- 2D to 3D Upgrade Path: Existing Olympus EVIS EXERA III Systems are “3D Ready” and can be upgraded with a 3D upgrade kit.
 - Reduces capital investment
 - Simplifies asset management
 - Simplifies training
 - Reduces the cost of obsolescence
- Universal platform supports
 - Over 100 different scopes
 - 2D or 3D video images
 - Flexible scopes, rigid scopes, articulating scopes
 - White light or NBI light







Some key benefits to the Olympus 3D system (continued)

- It is clear, robotic costs are higher
- Clinical indications for robotics are minimal
- Most of the advantages of the robotic system are mitigated by the Olympus 3D system
- Tactile feedback, which the current robotic systems does not have, is critical to complex and delicate surgical procedures.

Our experience with Olympus ENDOEYE FLEX 3D at Mercy Medical Center

Mercy Medical Center- Top Maryland Hospital

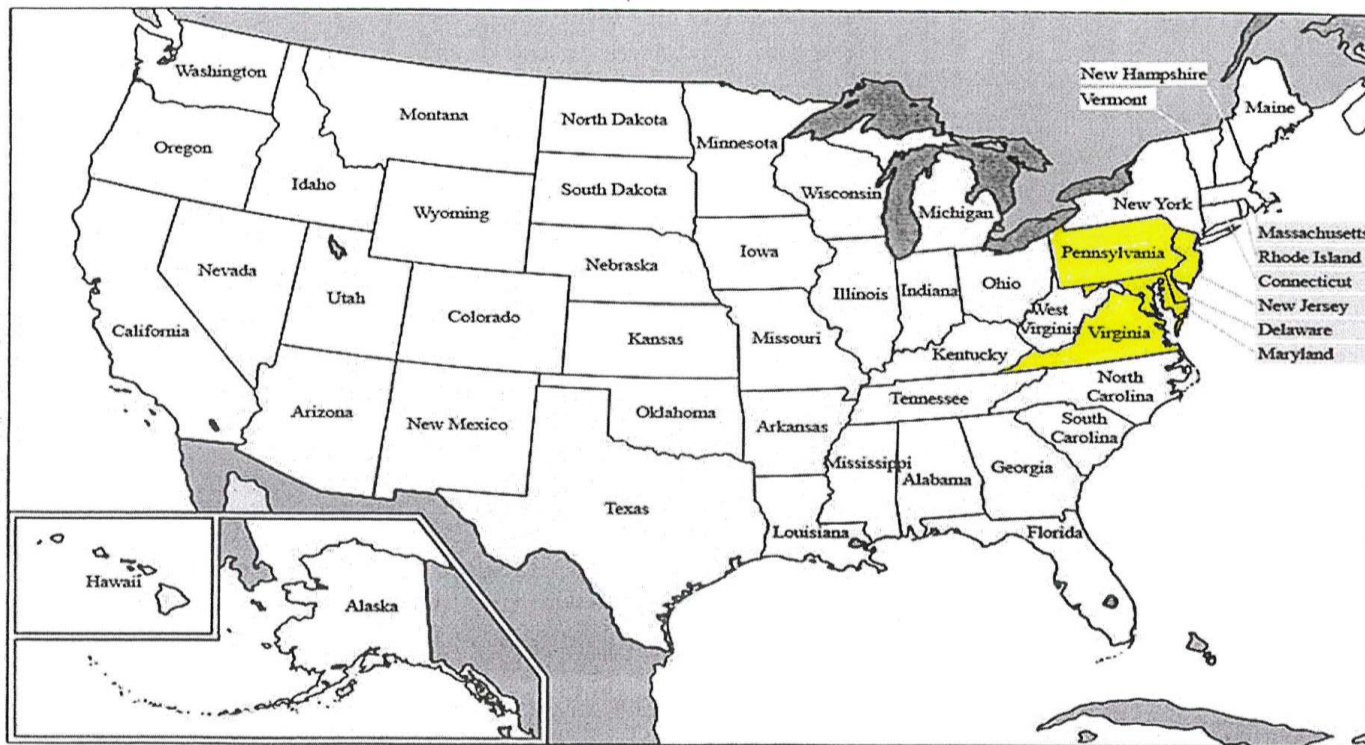


-  Baltimore, MD
-  General Medical and Surgical Hospital
-  363 Affiliated doctors
-  7,366 annual inpatient surgeries

Who we were in April 2013

- Mercy Medical Center
 - High volume GYN ONC multistate referral practice
 - Highest volume GYN robotic surgeon in the USA
 - First GYN ONC epicenter for robotics in the country
 - Regional referral practice for benign surgery
 - Created The Endometriosis Center at Mercy center of excellence

Patient location in April 2013



Purchase decision

- Mercy Medical Center in Baltimore was the first hospital to purchase the ENDOEYE FLEX 3D system in North America
- Purchased in Spring 2013
- Purchased 2 towers and 6 scopes

Direct to consumer marketing

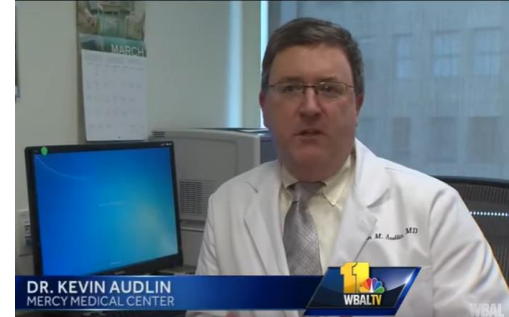
- Google Ad words
- Olympus provided Media Kit Materials



Hospital website links to informational stories



Local TV spots and YouTube videos



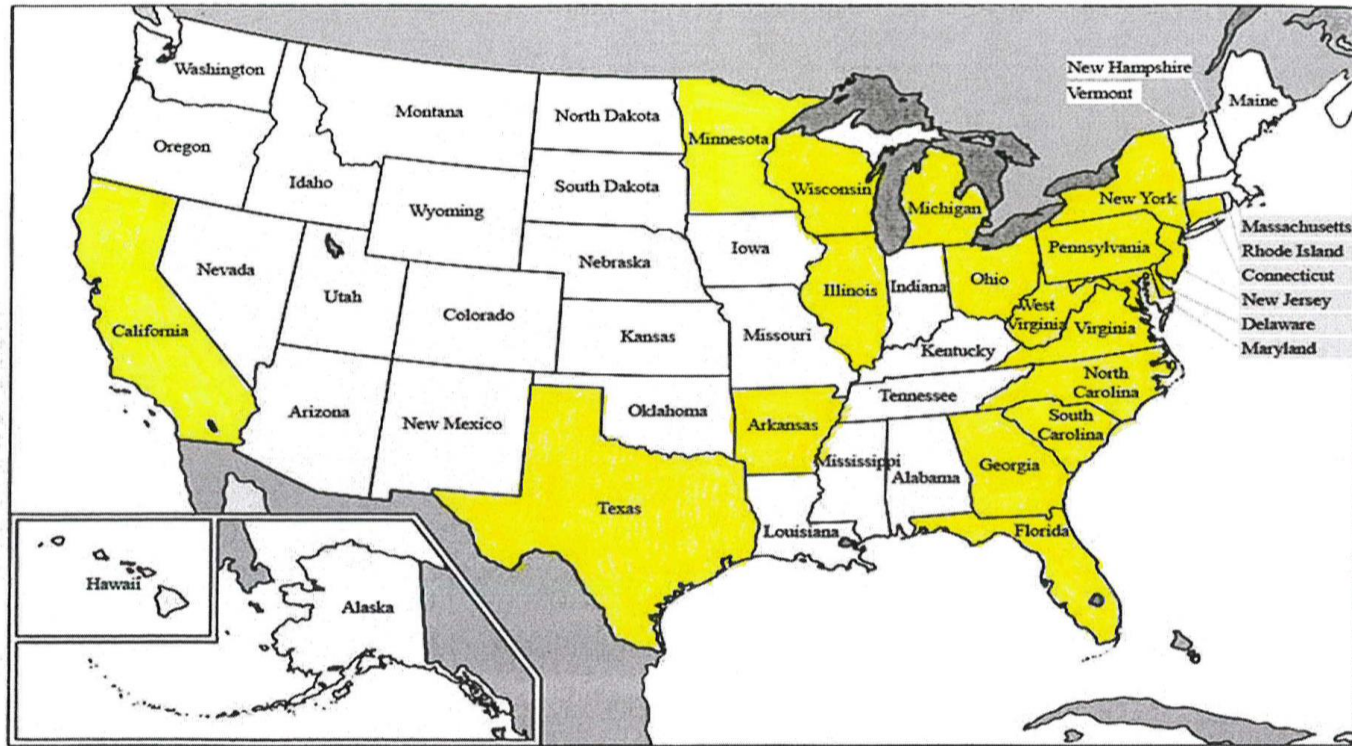
The Results

Growth after 3D acquisition

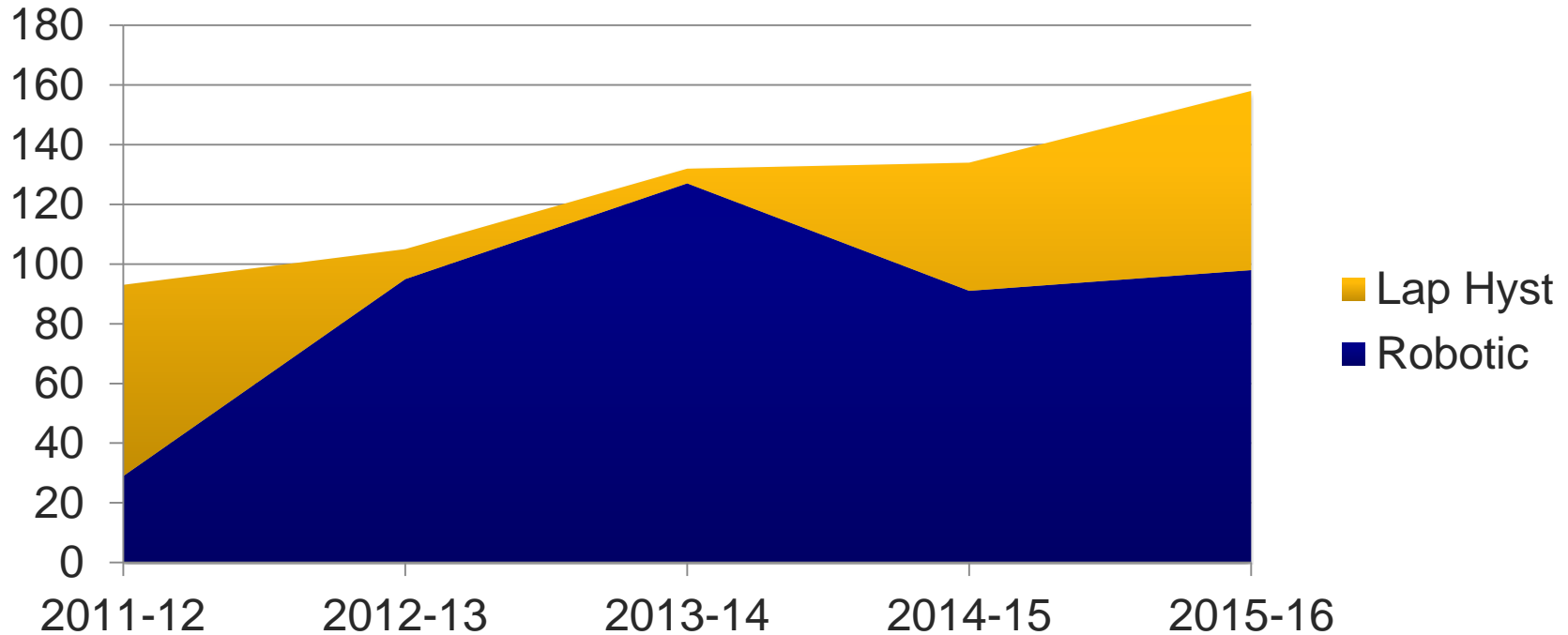
- Referrals through local physicians and patients
 - Advocation on Facebook pages and blogs
- Traditional laparoscopic cases grew
 - Complexity of cases increased
 - Time requirements decreased
- Requirement for robotic usage decreased with the familiarity of the equipment



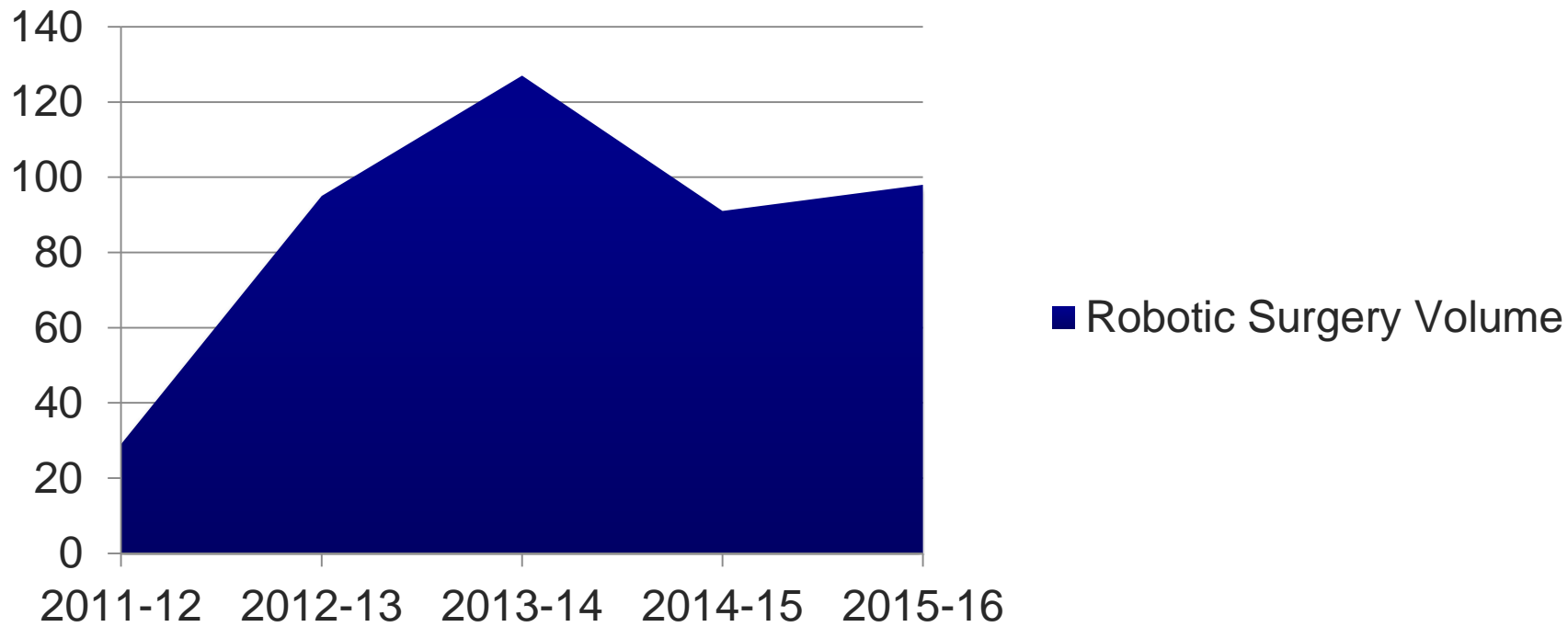
Current patient referral locations



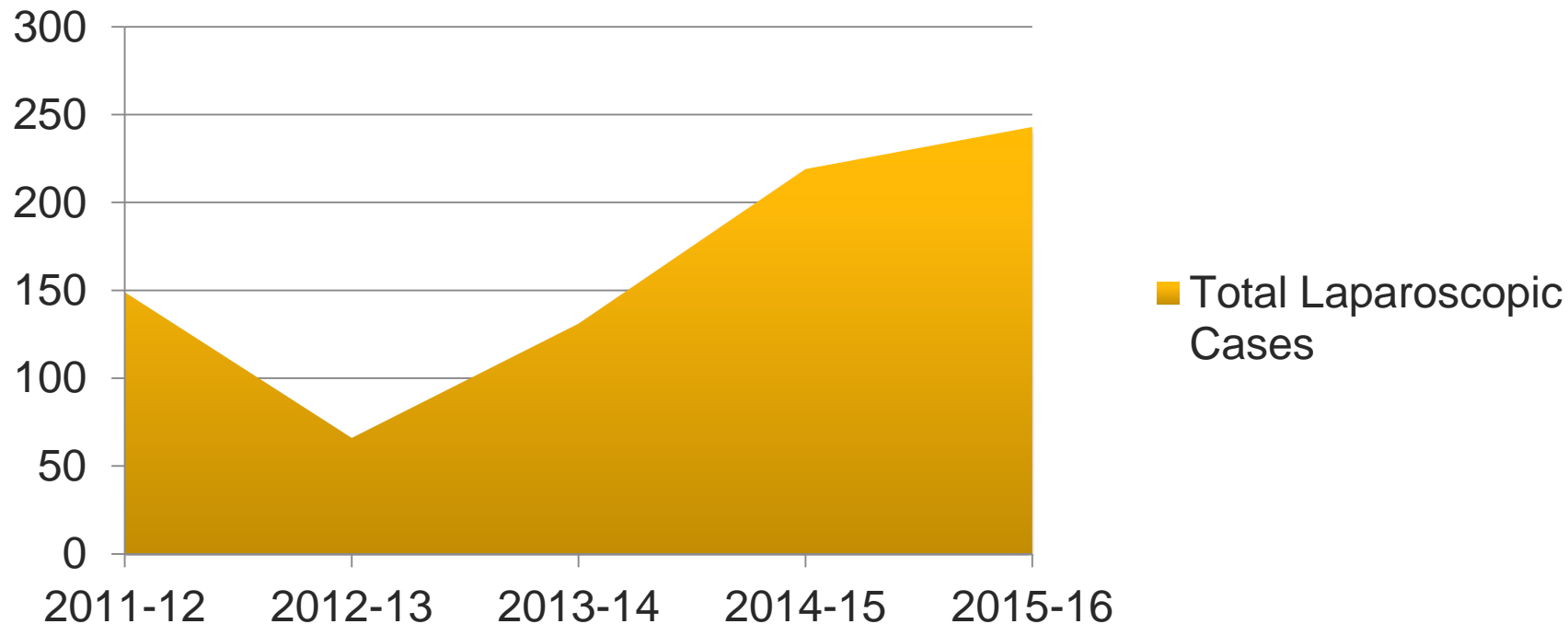
Robotic vs Laparoscopic Hysterectomy



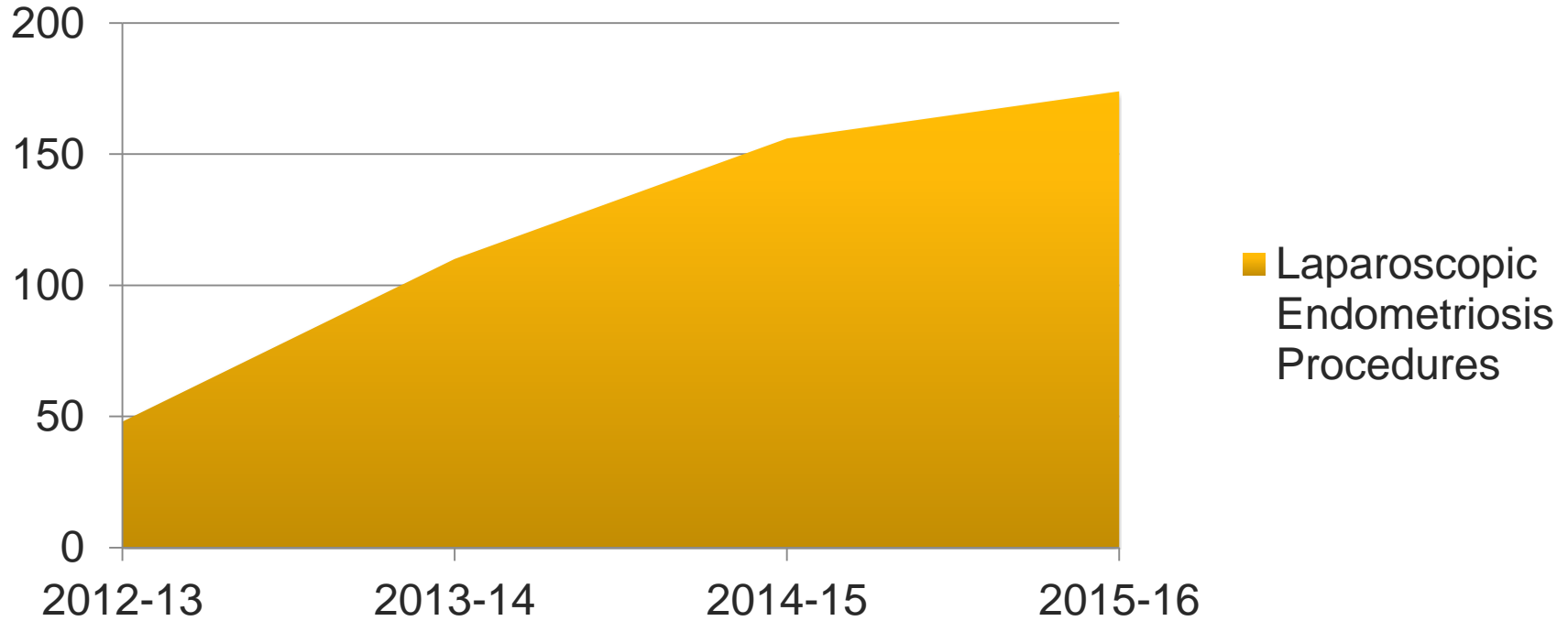
Robotic Surgery Volume



Total Laparoscopic Surgery Volume



Laparoscopic Endometriosis Procedures



Raw data since purchase of 3D system

- Robotic hysterectomy: -23%
- Traditional laparoscopic hysterectomy: +1200%
- Total laparoscopic surgeries: +85%
- Endometriosis surgeries: +58%

Summary: Benefits of Shift to Olympus 3D Laparoscopy

- Increased volume & referral base via Marketing
- Savings of \$744 – \$1244* per case
- 3D resulted in faster completion times for bead transfer, suturing, dissecting, and pointing
- Potential to increase fellowship training

Questions?

Thank you!

OLYMPUS[®]

The logo features the word "OLYMPUS" in a bold, dark blue, sans-serif typeface. A small registered trademark symbol (®) is positioned at the top right of the letter "S". Directly beneath the text is a horizontal orange line that has a slight upward curve in its center.