**KP Shoulder Arthroplasty Registry (SAR)**
2014 SCPMG Dale Daniel, M.D. Orthopedics Symposium
Edward Yian, MD

### Agenda
- History and Evolution of SAR
- Data/Complications
- Recent Developments
- Highlights
- Challenges
- Future Directions

### Evolution of SAR
- Registry starts 2009 in SCAL
- As of Q2 2012, all KP regions are participating (NCAL, Hawaii, Colorado, NW, Mid-Atlantic)
- Initially non-fx registry, fracture cases added in Q3 2011
- Virtually extract data from KP Administrative databases (2005) in addition to paper forms (2010)

### Registry Leads / Staff
- SCAL: Edward Yian, MD and Ronald Navarro, MD
- NCAL: Mark Dillon, MD
- Northwest: Anita Rao, MD
- Colorado: David Gladu, MD
- Mid-Atlantic: Kelly Martens, MD
- Hawaii: Mark Shaieb, MD
- San Diego Registry Staff: Liz Paxton (Director), Mary Burke (Project Manager), Tom Huon, Ursula Cardenas, Jon Javines, Ming Huang
Goals

- Determine primary and revision rates for devices
- Identify patients at risk for poor outcomes
- Identify recalled components and educate thru KP
- Reduce revision rates by informing surgeons about best practices
- Serve as foundation for quality improvement and research

Procedures

Post-2011, SAR also included fracture/sequelae, including:

- Acute hemiarthroplasty and reverse TSA for fracture
- Shoulder arthroplasty for post traumatic arthritis, malunion, nonunion, etc.

Procedures

SAR captures all elective procedures:

- Total Shoulder Arthroplasty
- Reverse Shoulder Arthroplasty
- Humeral Head Resurfacing
- Hemiarthroplasty

Procedures

<table>
<thead>
<tr>
<th>Shoulder Procedures¹</th>
<th>Number of Cases</th>
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<tr>
<td>(Total Cases =8,052)</td>
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<tr>
<td>Total Shoulder Arthroplasty</td>
<td>3,869</td>
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<tr>
<td>Reverse Total Shoulder</td>
<td>2,785</td>
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<td>Humeral Head Resurfacing</td>
<td>220</td>
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<tr>
<td>Hemiarthroplasty</td>
<td>1,178</td>
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¹. Procedures include primary fracture and non-fracture cases.

Source: SCAL Clarity & NCAL Clarity/Alexis Database from 2005-Q2 2013
Growth of SAR

Operative Table

Denom Table

Participation - Q2 2013 SCAL
Electronic Smart Form

Complications

All complications, revisions VALIDATED via chart review:

- Deep infections
- Hematoma
- DVT/PE
- Rotator cuff tear
- Arthrofibrosis
- Fracture
- Humeral component loosening
- Glenoid implant loosening
- Chronic dislocation
- Implant malposition
- Scapular notching

1. AHRQ Inpatient Quality Indicators Algorithm

Highlights

- Distribution SAR patient brochure (English and Spanish) and SmartText for after visit summary in SCAL
- Electronic Operative SmartForm in SCAL expanding to NCAL/HI
- Research presentations at national and international meetings
- 4 publications
- International collaboration initiated
- Operative participation average >90% nationwide
- Contribution to multiple recalls and advisories

Accomplishments

2012 AAOS Meeting

- The Effect of Surgical Volume on Shoulder Arthroplasty Quality Metrics. 
  A Singh, E Yian, M Dillon, M Burke, M Takayanagi, R Navarro

- Effect of Traumatic Indication and Implant Type on Symptomatic VTE Rates in Shoulder Arthroplasty. RA Navarro, M Inacio, M Burke, J Costouros, E Yian

- Shoulder Arthroplasty in Patients 59 Years of Age and Younger. M Dillon, M Burke, M Takayanagi, R Navarro, E Yian
Accomplishments

2013 ASES Open Meeting
- The Effect of Surgeon and Hospital Volume on Shoulder Arthroplasty Perioperative Quality Metrics.
  
  R Navarro, A Singh, M Takayanagi, M Dillon, M Burke, E Yian

2013 Western Orthopaedic Conference
- Incidence of Clinically Relevant Compressive Peripheral Neuropathy after TSR.
  E Yian, A Singh, R Navarro, E Dionysian, M Dillon, CF Ake, J Sodl

2014 AAOS Meeting
- Patient Specific Risk Factors Associated Infection After TSR in Large Integrated Healthcare System.
  J Richards, M Inacio, M Beckett, R Navarro, A Singh, M Dillon, J Sodl, E Yian

Publications

- MT Dillon, MF Burke, M Takayanagi, RA Navarro, EH Yian. (2013) Shoulder Arthroplasty in Pts 59 Years And Younger. JSES.

- RA Navarro, MCS Inacio, MF Burke, JG Costouros, EH Yian. (2013) Effect of Traumatic Indication and Implant Type on Symptomatic VTE Rates in Shoulder Arthroplasty. CORR


Challenges

- Raising participation of operative forms to > 90% per medical center

- Retroactive completion of missing forms

- Small number of cases restricts potential statistical analyses

- Improve Validation Steps for Accuracy

Future Directions

- Implementation of Electronic SmartForms nationwide

- Post-Operative Forms

- Future research direction

- Patient Reported Outcomes

- International collaboration
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