“...identifying a patient suitable for an ambulatory procedure is a dynamic process that depends on the complex interplay between patient characteristics..., invasiveness of the procedure..., anesthetic technique..., and post-discharge factors...”

Regional Data

7 Quarters – Q1/2014-Q3/2015

Hospital Transfers

Transfer Rate

Q1 '14  Q2 '14  Q3 '14  Q4 '14  Q1 '15  Q2 '15  Q3 '15

Regional rate per 1000 cases
ASC QC rate per 1000 cases
Regional Data

Each center completed a spreadsheet providing

- Date of Transfer
- Medical Record No.
- Physician/Surgeon
- Specialty
- Anesthesia Provider
- ASA
- Age
- BMI
- Comorbidities
- Procedure
- Anesthesia complications
- Reason for Transfer
- Pre-existing Health History or Surgical or Anesthesia Complication
Is Outpatient Surgery Safe?

- Studied 244,397 surgeries coded as “outpatient” from the ASC-NQQIP data set from 2005-2010.
- Intraoperative morbidities, Postoperative occurrences, or Mortality on POD 0, 1, or 2.
- Early perioperative morbidity or mortality was 0.1% (232/244,397).
  - Mortality = 21 (within 72 h of surgery)
  - Morbidity = 234 (some cases with multiple morbidities)
    - Most common were pneumonia (46), unplanned postoperative intubation (37), wound disruption (25), postoperative bleeding (21), and sepsis (19).

Seven independent risk factors for morbidity and mortality

- COPD
- History of TIA/CVA
- Hypertension
- Previous Cardiac Surgical Intervention
- Prolonged operative time
- Overweight BMI
- Obese BMI

(Note: BMI >40 & <50 alone not predictor if comorbid conditions are optimized. However, BMI ≥ 50 may not be appropriate for ASC.)


84 Transfers in 79,259 cases (7 quarters in 11 ASCs)

Risk factors for increased perioperative morbidity

- 45.24% (38) are Obese
- 42.86% (36) have Hypertension
- 21.43% (18) have Diabetes
- 15.48% (13) have COPD
- 11.90% (10) have history of Cardiac Intervention
- 4.76% (4) have history of TIA or CVA

Overweight or Obese BMI
- History of COPD
- History of TIA/CVA
- Hypertension
- History of previous Cardiac Intervention
- Prolonged Operative Time
- * Diabetes not shown to affect morbidity risk
Transfers? We got ya transfers....

Independent predictors of unanticipated admission following surgery:
  anesthesia for more than 1 hour
  surgery ending after 3pm

Leading causes and significant predictors of unplanned admission following surgery (accounted for 36% of all unplanned admissions):
  postoperative bleeding
  pain
  nausea/vomiting
  dizziness

“75% of all unanticipated admissions...were non-life threatening and potentially preventable, because they were attributable to poor control of postoperative pain, postoperative nausea/vomiting, surgical observation, and social reasons.”

Who Gets Transferred?

- Random sample of 200 adult patients who required admission and 200 patients who did not from 20,657 procedures in 3 Canadian hospitals from 6/1/2008 to 6/1/2010.

- Incidence of unanticipated admission following ambulatory surgery was 2.67%.

- Most common reasons for admission were:
  - Surgical (40%)
  - Anesthetic (20%)
  - Medical (19%)

- Looked at 32 comorbid medical conditions.
  Diabetes, hypertension, ischemic heart disease, psychiatric illness, sleep apnea, and thyroid disease were found at a higher incidence in those admitted but were not associated with unanticipated admission.

Our Stats

Reasons for Transfer (Q1/2014-Q3/2015)

84 Transfers in 79,259 cases = 0.106%

- 36.90% (31) = Surgical Related
  - 32.26% (10) = Perforation
  - 29.03% (9) = Pain
  - 16.13% (5) = Bleeding

- 7.14% (6) = Anesthesia Related
  - All Respiratory Issues

- 55.95% (47) = Medical Related
  (Exacerbation of a known or unknown previously existing health condition)
  - 28.57% (23) – Cardiac/Cardiovascular
    - 15 with HTN; 13 with HTN + at least one other comorbidity
  - 21.28% (10) – Respiratory
    - 4 with COPD
  - 4.25% (2) – Blood Glucose (1 high, 1 low)

Most common reasons for admission were:
  - Surgical (40%)
  - Anesthetic (20%)
  - Medical (19%)
Predictors of unplanned hospital admission

- Length of surgery 1-3 hrs (odds ratio 16.70)
- Length of surgery >3 hrs (odds ratio 4.26)
- ASA 3 (odds ratio 4.60)
- ASA 4 (odds ratio 6.51)
- Advanced age (> 80) (odds ratio 5.41)
- Increased BMI (odds ratio 2.81)

The Stats

• Age
  – ≥ 80 = 8.33% (7)
  – 70-79 = 23.81% (20)
  – 60-69 = 27.38% (23)
  – 50-59 = 14.29% (12)
  – 40-49 = 10.71% (9)
  – 30-39 = 9.52% (8)
  – 20-29 = 3.57% (3)
  – < 20 = 2.38% (2)

  Oldest: 88; Youngest: 17
  Average: 59.3; Median: 62.5

• ASA
  – 3 or 4 = 44.05% (37)
  – 1 or 2 = 46.43% (39)
What is a safe BMI?

- Review of 23 studies (13 prospective and 10 retrospective) published between 1948 and May 2012.
- 106,119 patients included in analysis (39,548 were for bariatric surgery – BMI > 40)
- Several studies report higher incidence of complications in obese patients, but these did not influence unplanned admissions. (hypoxemia, need for supplemental oxygen, laryngospasm, bronchospasm)
- Ambulatory Surgery appears to be safe for patient with BMI ≤ 40 when comorbid conditions are well controlled.
- Patients with obese-related comorbid conditions may not be suitable for ambulatory surgery because of the condition, not the actual BMI.

All BMIs are NOT Created Equal
BMI alone not predictor.

“The literature lacks adequate information to make strong recommendations regarding appropriate selection of the obese patients scheduled for ambulatory surgery. The literature does indicate that the super obese (BMI >50 kg/m²) do present an increased risk for perioperative complications, while patient with lower BMIs do not seem to present any increased risk as long as any comorbidities are minimal or optimized before surgery.”

The Stats continued

- BMI
  - $\geq 50 = 1.19\%$ (1)
  - $40.0-49.9 = 10.71\%$ (9)
  - $30.0-30.9 = 33.33\%$ (28)
  - $25.0-29.9 = 30.95$ (26)
  - $< 25.0 = 19.05\%$ (16)

Highest: 62.5; Lowest: 17.5
Average: 30.6
"To some, it's CHAOS.
To others, it's Art.
(To most, they aren't that interested.)

© Seh Hui '09
So....... How **DO** we select patients appropriate for the ambulatory setting?
• A Retrospective study of 1.1 million outpatient surgery cases in New York in 1997

• 783,539 patients were included in the study; 95% at HOPD Surgical procedures only (excluded cardiac catheterizations, cataract procedures, and endoscopies)

• Rate of admission is 0.6% (1 in 180) (unsure if admissions were planned or unplanned)

• Single factors with elevated odds for admission
  Duration of operative procedure
  Anesthesia type (general or regional)
  Certain medical conditions:
  MI, PVD, cerebrovascular disease, Malignancy, HIV positive status

Strong predictors for the risk of admission

- Surgical time longer than 120 minutes
- General Anesthesia
- Postoperative nausea and vomiting

Developed a Risk Index in which increasing scores are associated with increasing odds of direct hospital admission following ambulatory surgery.

**Determining a patient’s risk score preoperatively may help clinicians (and patients) decide the most appropriate setting for a particular patient and/or procedure.**

Outpatient Surgery Admission Index

Assign 1 point for each:

- Age 65 or older
- OR time > 120 minutes
- Any Cardiac Diagnosis
- Peripheral Vascular Disease
- Cerebrovascular Disease
- Malignancy
- HIV-positive status
- Using Regional Anesthesia

Assign 2 points for:

- General Anesthesia

Table 3. Odds Ratios for Short-term Hospitalization Based on the OSAI, Comparing the Analysis and Holdout Data Sets*

<table>
<thead>
<tr>
<th>OSAI</th>
<th>Sample, No. (%)</th>
<th>Short-term Hospitalization, No. (%)</th>
<th>OR (95% CI)</th>
<th>Sample, No. (%)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 and 1</td>
<td>217 377 (55.4)</td>
<td>196 (0.9)</td>
<td></td>
<td>216 712 (55.4)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>131 355 (33.5)</td>
<td>1116 (8.5)</td>
<td>9.50 (8.16-11.05)</td>
<td>131 297 (33.5)</td>
<td>9.46 (8.12-11.03)</td>
</tr>
<tr>
<td>3</td>
<td>35 770 (9.1)</td>
<td>653 (18.3)</td>
<td>20.60 (17.56-24.18)</td>
<td>35 819 (9.2)</td>
<td>20.50 (17.45-24.08)</td>
</tr>
<tr>
<td>4, 5, and 6</td>
<td>7597 (1.9)</td>
<td>213 (2.8)</td>
<td>31.96 (26.29-38.86)</td>
<td>7612 (1.9)</td>
<td>34.62 (28.55-41.97)</td>
</tr>
<tr>
<td>All scores</td>
<td>392 099† (100.0)</td>
<td>2178 (0.6)</td>
<td></td>
<td>391 440 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: CI, confidence interval; OR, odds ratio; OSAI, outpatient surgery admission index.

*The ORs compare each level to 0 or 1. One point is given for each of the following risk factors: operating time longer than 120 minutes, each of the medical comorbidities (cardiac, peripheral vascular disease, cerebrovascular disease, malignancy, and seropositive human immunodeficiency virus status), regional anesthesia, and 65 years or older. Two points are given for general anesthesia.

†Total sample includes 19 deaths; final total N = 783 539.

Likelihood of Admission after Ambulatory Surgery compared to those with a score of 0 or 1:

- 3 = 21 times more likely
- 4, 5, or 6 = 32 times more likely

(6 was highest score in data set)

## Ambulatory Surgery Admission Screening Index

<table>
<thead>
<tr>
<th>Assign 1 point for each of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 65 or older</td>
</tr>
<tr>
<td>OR time &gt; 120 minutes</td>
</tr>
<tr>
<td>Any Cardiac Diagnosis/History</td>
</tr>
<tr>
<td>Hypertension</td>
</tr>
<tr>
<td>Peripheral Vascular Disease</td>
</tr>
<tr>
<td>Cerebrovascular or Neurologic Disease (TIA, Stroke, Seizure)</td>
</tr>
<tr>
<td>Malignancy</td>
</tr>
<tr>
<td>HIV-positive status</td>
</tr>
<tr>
<td>Regional Anesthesia planned</td>
</tr>
<tr>
<td>Moderate Sedation planned</td>
</tr>
<tr>
<td>Respiratory System Disease (COPD, Sleep Apnea, Asthma, Smoker)</td>
</tr>
<tr>
<td>BMI &gt; 40 but &lt; 50</td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
</tbody>
</table>
Assign 2 points for each of the following:

<table>
<thead>
<tr>
<th>Assign 2 points for each of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Anesthesia planned</td>
</tr>
<tr>
<td>BMI ≥ 50</td>
</tr>
</tbody>
</table>

Preadmission RN will total the Index score.

Based on the Index score, the preadmission RN will escalate the case.

3 or > = Preadmission RN will notify DON/Administrator to evaluate case.
5 or > = DON/Administrator will obtain Medical Director Approval; Medical Director may confer with scheduling physician on appropriateness of plan of care.

8 or > = Case is most likely inappropriate for ambulatory setting and should be deferred to a higher level of care.
Ambulatory Surgery Admission Index

Preadmission Nurse: Evaluate the patient’s past medical history and surgical plan. Assign points and total the index score. If indicated, escalate the case as directed below.

Assign one point for each of the following that are appropriate:

<table>
<thead>
<tr>
<th>Condition</th>
<th>1 point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 65 or older</td>
<td></td>
</tr>
<tr>
<td>OR time &gt; 120 minutes</td>
<td></td>
</tr>
<tr>
<td>Any Cardiac Diagnosis/History</td>
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<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
</tbody>
</table>

Assign two points for each of the following:

<table>
<thead>
<tr>
<th>Condition</th>
<th>2 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Anesthesia planned</td>
<td></td>
</tr>
<tr>
<td>BMI &gt; 50</td>
<td></td>
</tr>
</tbody>
</table>

**Total Index Points**

If index is:

<table>
<thead>
<tr>
<th>Index</th>
<th>Action</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, 1, 2, or 3</td>
<td>No further action required; case appropriate for ASC</td>
<td>Case remains as scheduled date</td>
</tr>
<tr>
<td>4 or more</td>
<td>Administrator/Director of Nursing to evaluate case</td>
<td>Case remains as scheduled date</td>
</tr>
<tr>
<td>6 or more</td>
<td>Obtain Medical Director Approval</td>
<td>Case remains as scheduled date</td>
</tr>
<tr>
<td>8 or more</td>
<td>Case is most likely NOT appropriate for the ambulatory setting and should be deferred to a higher level of care.</td>
<td>Case remains as scheduled date</td>
</tr>
</tbody>
</table>

Administrator/Director of Nursing Review

I have:

☐ Reviewed the H&P.
☐ Reviewed the Surgical/Procedure plan.
☐ Conferred with the scheduling physician.
Comments:

I advise that the
☐ case remains as scheduled.
☐ case be cancelled.

signature date

Medical Director Review

I have:

☐ Reviewed the H&P.
☐ Reviewed the Surgical/Procedure plan.
☐ Conferred with the scheduling physician.
Comments:

I advise that the
☐ case remains as scheduled.
☐ case be cancelled.

signature date

Anesthesia Director Review

I have:

☐ Reviewed the H&P.
☐ Reviewed the Surgical/Procedure plan.
☐ Conferred with the scheduling physician.
Comments:

I advise that the
☐ case remains as scheduled.
☐ case be cancelled.

signature date

Patient label
WHERE ARE WE NOW?

YOU ARE HERE

To 11 Street
Regional Data

Hospital Transfers

- Regional rate per 1000 cases
- ASC QC rate per 1000 cases
Thank you

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214.914.8379


