

ACS Practice Patterns Survey, Part II:

PRESCRIBING HABITS AMONG SURGICAL SPECIALTIES

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With the continued advances and widespread availability of safer, more effective drugs and other systemic agents, the surgeon of today is engaged in a much more holistic approach to treat the whole patient. Indeed, surgeons of all surgical specialties prescribe medications frequently as an integral component of their care for the surgical patient.

Until now, there were very little data that showed how frequently surgeons prescribe drugs and which classes of drugs were used within each of the surgical specialties. To address this issue, an electronic survey of ACS members was conducted in fall 2007. The response rate was impressive: 4,207 individuals participated, representing the broad range of practice settings and surgical specialties. Nearly 45 percent of the respondents work in a university/teaching hospital, 39 percent are in private practice, and the remainder provides care in other environments. The largest percentage of respondents (40 percent) classified themselves as general surgeons, and the other 60 percent represented the majority of surgical specialties. The breakdown of surgical subspecialties was very similar to that of the ACS membership overall.

Prescribing patterns

This study, the largest ever published on this subject, clearly indicates that surgeons in a variety of settings and specialties commonly prescribe a wide range of medications. The majority of respondents (80 percent) said that, on average, they or trainees working under their supervision pre-

scribe more than 10 drugs each week; 56 percent prescribe more than 20 drugs per week, and 45 percent prescribe more than 25 in the course of a week. Among the surgical specialties, the top three specialties prescribing 20 or more drugs each week were specialists in trauma/critical care, urology, and otolaryngology–head and neck (see Figure 1, page 13). Following is a list of the percentages of surgeons within specific surgical specialties who issue 20 or more prescriptions per week:

| | |
|----------------------------------------|-----|
| • Trauma/critical care | 90% |
| • Urology | 77 |
| • Otolaryngology–head and neck surgery | 71 |
| • Cardiovascular | 66 |
| • Colon and rectal surgery | 62 |
| • Vascular surgery | 62 |
| • Surgical oncology | 61 |
| • General surgery | 58 |
| • Pediatric surgery | 57 |
| • Plastic and maxillofacial surgery | 35 |
| • Breast surgery | 25 |

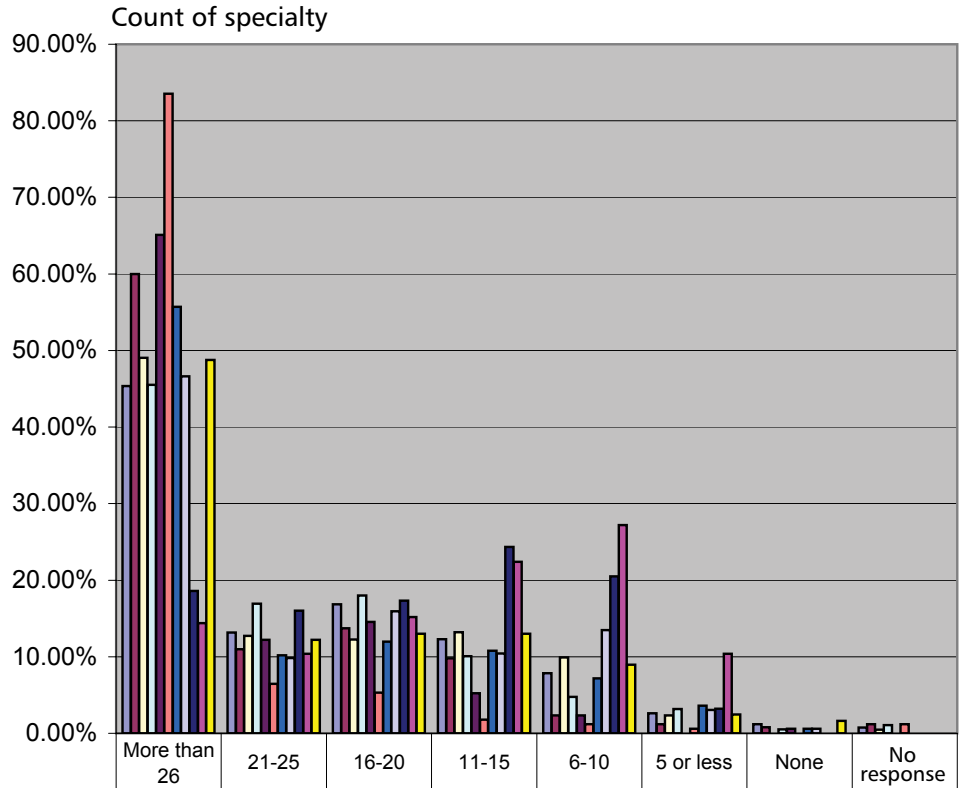
Not surprisingly, most of these prescriptions are for drugs used in perioperative care, such as analgesics, antibiotics, and antiemetics. However, it is interesting to note that surgeons report prescribing a range of medicines for respiratory, cardiovascular, gastrointestinal, critical care, and thrombosis conditions on a weekly basis (see Tables 1-3, page 14). Furthermore, half of the study participants said that, within the past year, they have ordered or prescribed a recently approved therapy or one under investigation. Following are the most common classes of drugs prescribed, on average, for five or more per week by survey respondents:

| | |
|----------------------------|-----|
| • Analgesics | 78% |
| • Antibiotics | 66 |
| • Antiemetics | 42 |
| • Antithrombosis agents | 33 |
| • Anti-inflammatory agents | 38 |
| • Gastrointestinal agents | 36 |
| • Anticoagulation agents | 26 |
| • Cardiovascular agents | 23 |
| • Diuretics | 16 |
| • Respiratory | 17 |
| • Hormones | 7 |



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Figure: DRUG ORDERS BY SPECIALTY



| | More than 26 | 21-25 | 16-20 | 11-15 | 6-10 | 5 or less | None | No response |
|----------------------------------------|--------------|--------|--------|--------|--------|-----------|-------|-------------|
| General Surgery | 45.34% | 13.15% | 16.83% | 12.27% | 7.85% | 2.62% | 1.21% | 0.74% |
| Otolaryngology – Head and Neck Surgery | 60.00% | 10.98% | 13.73% | 9.80% | 2.35% | 1.18% | 0.78% | 1.18% |
| Vascular Surgery | 49.06% | 12.74% | 12.26% | 13.21% | 9.91% | 2.36% | 0.00% | 0.47% |
| Colon and Rectal Surgery | 45.50% | 16.93% | 17.99% | 10.05% | 4.76% | 3.17% | 0.53% | 1.06% |
| Urology | 65.12% | 12.21% | 14.53% | 5.23% | 2.33% | 0.00% | 0.58% | 0.00% |
| Trauma/Critical Care | 83.53% | 6.47% | 5.29% | 1.76% | 1.18% | 0.59% | 0.00% | 1.18% |
| Cardiothoracic Surgery | 55.69% | 10.18% | 11.98% | 10.78% | 7.19% | 3.59% | 0.60% | 0.00% |
| Pediatric Surgery | 46.63% | 9.82% | 15.95% | 10.43% | 13.50% | 3.07% | 0.61% | 0.00% |
| Plastic and Maxillofacial Surgery | 18.59% | 16.03% | 17.31% | 24.36% | 20.51% | 3.21% | 0.00% | 0.00% |
| Breast Surgery | 14.40% | 10.40% | 15.20% | 22.40% | 27.20% | 10.40% | 0.00% | 0.00% |
| Surgical Oncology | 48.78% | 12.20% | 13.01% | 13.01% | 8.94% | 2.44% | 1.63% | 0.00% |

Table 1: ANALGESICS BY SPECIALTY

| | >20 | 11-20 | 6-10 | 1-5 | Never | No response |
|--------------------------------------|--------|--------|--------|--------|-------|-------------|
| Breast Surgery | 8.00% | 22.40% | 37.60% | 30.40% | 1.60% | 0.00% |
| Cardiothoracic Surgery | 31.74% | 27.54% | 25.15% | 13.17% | 1.20% | 1.20% |
| Colon and Rectal Surgery | 24.34% | 34.39% | 29.10% | 11.11% | 1.06% | 0.00% |
| General Surgery | 32.93% | 33.74% | 23.34% | 8.58% | 1.14% | 0.27% |
| Otolaryngology–Head and Neck Surgery | 10.20% | 20.39% | 40.78% | 27.06% | 1.18% | 0.39% |
| Pediatric Surgery | 33.74% | 25.15% | 26.99% | 13.50% | 0.61% | 0.00% |
| Plastic and Maxillofacial Surgery | 21.15% | 23.08% | 39.10% | 16.03% | 0.64% | 0.00% |
| Surgical Oncology | 31.71% | 26.02% | 25.20% | 14.63% | 2.44% | 0.00% |
| Trauma/Critical Care | 80.59% | 10.59% | 6.47% | 2.35% | 0.00% | 0.00% |
| Urology | 17.44% | 26.16% | 36.63% | 18.60% | 1.16% | 0.00% |
| Vascular Surgery | 27.83% | 26.89% | 30.19% | 14.62% | 0.47% | 0.00% |

TABLE 2: ANTIBIOTICS BY SPECIALTY

| | >20 | 11-20 | 6-10 | 1-5 | Never | No response |
|--------------------------------------|--------|--------|---------------------|--------|-------|-------------|
| Breast Surgery | 3.20% | 6.40% | 24.00% | 64.00% | 0.80% | 1.60% |
| Cardiothoracic Surgery | 16.77% | 22.75% | 30.54% | 28.14% | 1.80% | 0.00% |
| Colon and Rectal Surgery | 8.99% | 17.99% | 32.80% | 38.10% | 1.06% | 1.06% |
| General Surgery | 12.94% | 25.96% | 33.87% | 25.82% | 1.01% | 0.40% |
| Otolaryngology–Head and Neck Surgery | 25.88% | 27.45% | 34.51% ¹ | 1.76% | 0.00% | 0.39% |
| Pediatric Surgery | 15.95% | 23.31% | 34.97% | 23.31% | 0.00% | 2.45% |
| Plastic and Maxillofacial Surgery | 10.26% | 21.15% | 38.46% | 30.13% | 0.00% | 0.00% |
| Surgical Oncology | 6.50% | 21.14% | 38.21% | 30.08% | 3.25% | 0.81% |
| Trauma/Critical Care | 38.82% | 38.24% | 15.88% | 6.47% | 0.00% | 0.59% |
| Urology | 36.63% | 34.88% | 21.51% | 6.98% | 0.00% | 0.00% |
| Vascular Surgery | 8.96% | 21.23% | 36.32% | 32.55% | 0.47% | 0.47% |

Table 3: ANTIEMETICS BY SPECIALTY

| | >20 | 11-20 | 6-10 | 1-5 | Never | No response |
|--------------------------------------|--------|--------|--------|---------------------|--------|-------------|
| Surgery | 1.60% | 3.20% | 11.20% | 54.40% | 28.80% | 0.80% |
| Cardiothoracic Surgery | 10.78% | 13.77% | 23.95% | 44.31% | 5.99% | 1.20% |
| Colon and Rectal Surgery | 3.70% | 16.93% | 20.63% | 46.03% | 11.11% | 1.59% |
| General Surgery | 11.94% | 19.25% | 26.56% | 37.29% | 3.76% | 1.21% |
| Otolaryngology–Head and Neck Surgery | 1.57% | 3.53% | 13.33% | 60.78% ¹ | 8.82% | 1.96% |
| Pediatric Surgery | 5.52% | 7.98% | 18.40% | 53.99% | 13.50% | 0.61% |
| Plastic and Maxillofacial Surgery | 5.13% | 8.97% | 19.87% | 53.21% | 9.62% | 3.21% |
| Surgical Oncology | 8.94% | 12.20% | 27.64% | 41.46% | 8.94% | 0.81% |
| Trauma/Critical Care | 21.18% | 27.65% | 21.18% | 26.47% | 2.35% | 1.18% |
| Urology | 3.49% | 4.65% | 9.30% | 63.37% | 17.44% | 1.74% |
| Vascular Surgery | 3.30% | 10.38% | 18.87% | 48.11% | 17.45% | 1.89% |

The different classes of drugs were prescribed with different frequency among the surgical specialties. Following is a list of subspecialties with the most common class of drugs prescribed (for average use of more than 10 per week):

- *Analgesics*
 - Trauma/critical care 91%
 - General surgery 66
 - Pediatric surgery 59
 - Colon and rectal surgery 59
 - Cardiothoracic surgery 59
 - Surgical oncology 58
 - Vascular surgery 54
- *Antibiotics*
 - Trauma/critical care 78%
 - Urology 72
 - Otolaryngology 53
 - Cardiovascular 40
 - General surgery 39
 - Pediatric surgery 39
- *Antiemetics*
 - Trauma/critical care 49%
 - General surgery 31
 - Colon and rectal surgery 21
 - Surgical oncology 21
- *Antithrombosis agents*
 - Trauma/critical care 49%
 - Vascular surgery 32
- *Anti-inflammatory agents*
 - Trauma/critical care 37%
 - Otolaryngology 21
 - Cardiothoracic 19
 - Urology 17
 - Pediatric surgery 17
 - Surgical oncology 14
 - General surgery 14
- *Gastrointestinal agents*
 - Trauma/critical care 43%
 - Colon and rectal surgery 24

continued on next page

| | |
|--------------------------------|-----|
| Cardiothoracic | 21 |
| General surgery | 20 |
| Otolaryngology | 20 |
| Surgical oncology | 15 |
| • <i>Cardiovascular agents</i> | |
| Cardiothoracic | 51% |
| Trauma/critical care | 42 |
| Vascular | 30 |
| General surgery | 12 |
| • <i>Diuretics</i> | |
| Cardiothoracic | 39% |
| Trauma/critical care | 20 |
| • <i>Respiratory</i> | |
| Trauma/critical care | 38% |
| Cardiothoracic | 23 |
| • <i>Hormones</i> | |
| Urology | 20% |
| Breast surgery | 6 |

Within surgical specialties, there were varying prescribing patterns as well. For example, trauma/critical care specialists prescribed the entire range of drugs classes, but the nature of their patient care caused them to most frequently prescribe analgesics (91 percent prescribe 10 or more/week), antibiotics (78 percent), antiemetics (49 percent), and antithrombosis agents (49 percent). General surgeons most frequently prescribed analgesics (66 percent), antibiotics (39 percent), antiemetics (31 percent), and gastrointestinal agents (20 percent). Urologists most frequently prescribed antibiotics and hormones.

The data in this survey did not present a sufficient sample size to assess the use of systemic cancer agents. However, a similar survey was conducted in 2006 among members of the Society of Surgical Oncology. Within this specialty, the use of systemic agents for cancer management would be prescribed more frequently as a component of the multidisciplinary cancer management. Thus, among the 532 surgical oncology respondents, two-thirds each week ei-

*Balch CM. Prescribing patterns of surgical oncologists: Are we surgeons, oncologists, or both? Results of a society of surgical oncology survey. *Ann Surg Oncol.* 2007;14:2685-2686.

ther prescribed, recommended, or administered oncology-related hormone agents. In addition, 30 percent did so for chemotherapeutic agents and growth factors, and 21 percent prescribed monoclonal antibodies.*

Conclusion

These data provide new insights into the practice habits of surgeons caring for their patients. There were differences in both the types of drugs used and the frequency of prescribing them among the various surgical specialties. Most notable was the high frequency with which all surgeons prescribed various drugs and systemic agents in the daily care of their patients. Q

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