UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY
Department of Surgery

SURG556
Specialty Surgery
Course Review

Academic Year 2011-2012
C2012

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Executive Summary

The Class of 2012 students were very well prepared for their Specialty Surgery course, as we kept the format of evaluation and structure of rotations as similar as possible between the third year surgical course and this fourth year course. Some specialty surgery coordinators tweaked their objectives and added some additional teaching sessions, which were well received. Our data suggests that we continue to provide a high level of learning encounters across 8 possible specialties in surgery. The following pages include a specialty-by-specialty analysis of learning encounters, as well as data we are able to compile based on our team-based assessment model of evaluation.

Data Sources

153 students completed this clerkship. Data sources employed to generate this report include:

- Clinical Encounter Log (completed by students)
- Clerkship Calendar (completed by students)
- One 45 student evaluations of teachers (completed by students)
- Multi-source feedback assessment of student (completed by faculty)

Cardiac Surgery

46 students in clerkship

In 2 weeks, the average student:

Worked with 2 cardiac surgeons (range: 1-5)

Learned in the following environments:

- 5 days in the operating room
- 0 days doing consults and rounds
- 1 day in the clinic
- 1 day on call
- 1 day in Cardiac Surgery Intensive Care

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Acute Chest Pain	2	0	5
Atrial Fibrillation	2	0	5
Supraventricular Tachycardia	1	0	5
Ventricular Tachycardia	1	0	4
Bradycardia	1	0	5
Angina	2	0	5
Congestive Heart Failure	3	0	5
Coronary Artery Bypass Operation	4	0	5

Was assessed by 2 cardiac surgeons (range 1-4)

Evaluated the teaching of 1 cardiac surgeon (44 evaluations from 46 students)

Neurosurgery

39 students in clerkship

In 2 weeks, the average student:

Worked with 5 neurosurgeons (range: 2-10)

Learned in the following environments:

- 3 days in the OR
- 2 days in outpatient clinics
- 0.5 day on call
- 0 days on consults and rounds

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Acute head injury	3	1	5
Subarachnoid haemorrhage	2	0	6
Seizure	1	0	5
Brain tumour	3	1	7
Acute cauda equina syndrome	1	0	3
Myelopathy	2	0	5
Radiculopathy	5	1	5
Acute lower back pain	3	1	5

Was assessed by 2 neurosurgeons (range: 0-3)

Evaluated the teaching of 1.9 neurosurgeons (75 evaluations from 39 students)

Orthopedic Surgery

91 students in clerkship

In 2 weeks, the average student:

Worked with 2 orthopedic surgeons (range: 1-7)

Learned in the following environments:

- 4 days in the operating room
- 3 days in the outpatient clinic
- 1 day on call
- 0 days on consults and rounds
- 0.5 days in plaster room

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Min	Max
Osteoarthritis	5	0	5
Normal physiology of fracture healing and common complications of fracture healing	4	0	5
Fracture management: reduction, immobilization, and rehabilitation	4	0	5
Compound fracture of a long bone	2	0	5
Compartment syndrome	1	0	5
Benign and malignant bone tumours	1	0	7
Acute disk prolapse and cauda equina syndrome	1	0	5
Demonstrate correct technique for examination of major joints of the body:			
1. Hip	2	0	5
2. Knee	5	1	5
3. Ankle	2	0	5
4. Back	2	0	5
5. Shoulder	2	0	5
6. Elbow	1	0	5
7. Wrist	2	0	5
Patient with acutely painful joint	2	0	5
Closed reduction of dislocated shoulder and hip	0	0	5
For injection and aspiration of fluid from shoulder and knee	1	0	5
Below elbow cast	1	0	5
Below the knee cast	1	0	5
Reduction and splinting of a long-bone fracture	1	0	5
Application of an upper limb sling	1	0	5

Was assessed by 2 orthopedic surgeons (range: 0-4)

Evaluated the teaching of 0.8 orthopedic surgeons (81 evaluations from 91 students)

Otolaryngology/Head and Neck Surgery

57 students in clerkship

In 2 weeks, the average student:
Worked with 6 surgeons (range: 2-9)

Learned in the following environments:

- 4 days in the operating room
- 4 days in the outpatient clinics
- 1 day on call
- 0 day on consults and rounds
- 0 day in Audiology clinic

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Otitis media	3	0	5
Sinusitis	4	1	11
Hearing loss	4	1	5
Deviated nasal septum	4	1	6
Allergic rhinitis	4	1	5
Vertigo	2	0	5
Epistaxis	2	0	6
Obstructive sleep apnea (peds or adult)	3	0	5
Hoarseness	2	0	11
Head and neck cancer	3	1	5
Full head and neck physical exam	3	1	5
Focused history on patient with complaint related to upper aerodigestive tract	3	1	5
Focused history on patient with head and neck cancer	2	1	5
Demonstrate proper procedures for management of epistaxis on a cadaver	1	0	5
Identify common patterns on an audiogram	3	1	5
Tonsillectomy	2	0	5
Myringotomy/tubes	1	0	10
Sinus surgery	1	0	5
Neck dissection	1	0	5
Nasal packing on patient	0	0	4
Learning Activities			
1 head and neck cancer - UAH Clinic	1	0	1
1 head and neck cancer - UAH OR	1	0	1
1 rhinology clinic	1	0	1
1 general/laryngology clinic	1	0	1
1 otology/dizziness clinic	0	0	1
1 general ENT OR day - RAH	1	0	1
1 pediatric ENT clinic - UAH	1	0	1
1 pediatric OR day	1	0	1
1 general ENT clinic	1	0	1
1 OR day - GNH	0	0	1

Was assessed by 2 surgeons (range 1-4)
Evaluated the teaching of 1.7 surgeons (99 evaluations from 57 students)

Plastic Surgery

70 students in clerkship

In 2 weeks, the average student:

Worked with 5 plastic surgeons (range: 2-7)

Learned in the following environments:

- 4 days in the operating room
- 4 days in the outpatient clinics
- 1 day on call
- 0 days on consults and rounds

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Wounds of the soft tissue	5	1	5
Hand wound/neurological and tendon injuries	5	1	6
Burns	2	0	5
Facial fracture	3	1	5
Close a simple wound	4	0	5
Skin lesions/tumours	2	0	5
Patient with infected soft tissue wound	3	0	5
Perform simple excisional biopsy of skin lesion	0	0	5

Was assessed by 2 plastic surgeons (range 0-4)

Evaluated the teaching of 1.7 plastic surgeons (118 evaluations from 70 students)

Thoracic Surgery

37 students in clerkship

In 2 weeks, the average student:

Worked with 4 thoracic surgeons (range: 3-6)

Learned in the following environments:

- 4 days in the operating room
- 2 days in outpatient clinics
- 0 days on call
- 0 days on consults and rounds
- 0 day in endoscopy suite
- 0 day in bronchoscopy suite

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Esophageal cancer	3	1	5
Lung cancer	5	3	5
Pleural effusion	5	2	5
Mediastinal tumor	3	1	5
Trauma	1	0	3
Lymphadenopathy	3	0	5
Endoscopy	3	0	5
Insert a chest tube	1	0	5

Was assessed by 2 thoracic surgeons (range 0-4)

Evaluated the teaching of 1.6 thoracic surgeons (59 evaluations from 37 students)

Urology

74 students in clerkship

In 2 weeks, the average student:

Worked with 6 urologists (range: 2-9)

Learned in the following environments:

- 3 days in the operating room
- 3.5 days in outpatient clinics
- 1 day on call
- .5 days on consults and rounds
- 1 day in cystoscopy

Recorded encounters with patients with the following conditions/procedures:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Hematuria	5	0	5
Lower urinary tract symptoms	5	1	6
Elevated PSA	5	1	5
Erectile dysfunction	3	0	5
Renal calculus	5	1	8
Urinary tract infection	2	0	5
Urinary retention	3	0	5
Scrotal swelling	2	0	5
Incontinence	5	0	5
Renal mass	2	0	5
Prostatitis	1	0	5
Urologic trauma	1	0	5
Cystoscopy	5	0	5
Pediatric clinic	0	0	5
Digital rectal examination	5	0	6
Insertion of foley catheter	1	0	5
Scrotal examination	3	0	5

Was assessed by 2 urologists (range 1-5)

Evaluated the teaching of 1.6 urologists (119 evaluations from 74 students)

Vascular Surgery

45 students in clerkship

In 2 weeks, the average student:

Worked with 2 vascular surgeons (range: 1-4)

Learned in the following environments:

- 4 days in the operating room
- 3.5 days in the outpatient clinic
- 1.0 day on call
- 0 days on consults and rounds

Recorded encounters with patients with the following conditions:

CONDITIONS/PROCEDURES	Median	Minimum	Maximum
Carotid artery disease	3	1	5
Non-critical ischemia	5	1	5
Open aortic aneurysm	1	0	5
Endovascular aortic aneurysm	1	0	5
Carotid endarterectomy	2	0	5
Peripheral bypass	2	0	5
Amputation	2	0	5
Peripheral angioplasty	1	0	5
Peripheral pulses for the upper and lower limbs	5	0	5
Examine a belly and palpate an aneurysm	3	0	5
Take history and physical exam of critical ischemia	2	0	5
Take history and physical exam of non-critical ischemia	5	0	5
Review computed tomography angiography with physician	3	0	5
Peripheral vascular surgery	2	0	5
Carotid surgery	1	0	4

Was assessed by 2 vascular surgeons (range 0-3)

Evaluated the teaching of 1 vascular surgeon (47 evaluations from 45 students)

Comparison of Learning Activities in each Specialty (days recorded)

	Operating Room	Clinic/Outpatients	Call	Consults/Rounding	Special*
Cardiac Surgery	5	1	1	0	1
Neurosurgery	3	2	0.5	0	-
Orthopedic Surgery	4	3	1	0	0.5
Otolaryngology/HNS	4	4	1	0	0.5
Plastic Surgery	4	4	1	0	-
Thoracic Surgery	4	2	0	0	0
Urology	3	3.5	0	0	1
Vascular Surgery	4	3.5	1	0	-
** eg. Cardiac Surgical Intensive Care Unit, Plaster Room, Audiology, Endoscopy, Bronchoscopy, Cystoscopy*					

Student Contact with Surgeons

Data from the Clerkship Calendar was analyzed to determine how many surgeons each student spent time with, and how long they spent with each surgeon.

	Surgeons working with each student (on average)	Average time spent with a surgeon (days)
Cardiac Surgery	2	2.5
Neurosurgery	5	1
Orthopedic Surgery	2	2.5
Otolaryngology/HNS	6	1
Plastic Surgery	5	1.5
Thoracic Surgery	4	2
Urology	6	1.5
Vascular Surgery	2	4

Student Achievement

The clerkship assessment plan comprised three components; students were required to pass all of these components in order to be issued with a passing grade:

1. Multiple choice examination
50 questions on all 8 specialities. Pass mark: 50%

2. Multi-source feedback on clinical performance
20 assessments required from physicians, residents, allied health professionals and patients. Must not exceed one deficient rating.

3. Written assignment
Development of learning object for clerkship website or reflective assignment. Pass mark 50%.

In this academic year, all students met the required standard of assessment.

Performance on the multiple choice examination was comparable to results from the previous 4 academic years. In general, the distribution of marks was as expected from previous years. Student performance remains constant as in the previous two years.

Percentile	Class of 2008	Class of 2009	Class of 2010	Class of 2011	Class of 2012
5th	58%	54%	56%	57%	58%
10th	62%	58%	60%	61%	60%
25th	66%	64%	65%	66%	64%
50th	**72%**	**70%**	**69%**	**71%**	**70%**
75th	78%	75%	74%	76%	76%
90th	82%	78%	78%	79%	80%
95th	84%	81%	80%	83%	83%

Physician Assessment of Student Performance in the Clinical Environment

All students submitted the required number of signed assessment forms on time. No students demonstrated failing performance. Although it was expected that each student would receive 2 assessments from each specialty, there was variance in the number of assessments done within each rotation:

	# of students taught	# of students assessed	# of assessments	assessments per student
Cardiac Surgery	46	46 (100%)	77	1.7
Neurosurgery	39	39 (100%)	76	1.9
Orthopedic Surgery	91	91 (100%)	156	1.7
Otolaryngology/HNS	57	57 (100%)	129	2.2
Plastic Surgery	70	69 (99%)	128	1.8
Thoracic Surgery	37	37 (100%)	83	2.2
Urology	74	74 (100%)	161	2.2
Vascular Surgery	45	45 (100%)	66	1.5
TOTAL	**459**	**458 (100%)**	**876**	

Non-physician Assessment of Student Performance in the Clinical Environment

This year was the second time that our Year 4 students were assessed by allied health professionals on the surgical team and by their own patients.

A total of 467 assessment forms were completed by a total of 260 AHPs. Students were assessed by the residents on their team, for a total of 459 forms. Each student was also assessed by 6 of their patients, for a total of 918 patients.

In all, 2720 assessment forms were completed.

	# of Assessment Forms completed
Physicians	876
Residents	459
Patients	918
Allied health professionals	467
TOTAL	**2720**

Written Comments

All assessors (physician and non-physician) were also asked to provide students with written feedback on 'Areas of Excellence' and 'Areas for Improvement'.

Expansion of teaching capacity

The adoption of a team-based educational model allowed students to access teaching from faculty members, fellows, physician assistants and from a range of other members of the surgical team in learning environments which had not been utilized before.

The following table summarizes the physicians listed by students as providing teaching in each specialty. For all Divisions, the number of "functional teachers" encountered by learners exceeds the number of "official teaching faculty".

Students also used the One45 system to provide program evaluation data on the quality of the teaching received in 642 instances, a figure slightly higher to previous academic years.

	Individual physicians identified as teaching or assessing	**One45 evaluations of physicians (total)**
Cardiac Surgery	24	44
Neurosurgery	13	75
Orthopedic Surgery	44	81
Otolaryngology/HNS	15	99
Plastic Surgery	14	118
Thoracic Surgery	8	59
Urology	19	119
Vascular Surgery	8	47
Other/Off-service	8	0
TOTAL	**153**	**642**

Teaching by Individual Faculty Members

The following data is presented from the point of view of teaching faculty, and describes contact with faculty members recorded by students. Data is presented to answer the question "what does the average teacher in this specialty do?"

Figures are presented as median (minimum-maximum). As anticipated, there was considerable variation between and within specialties.

	Number of students taught by a surgeon per year	Days a surgeon spent with students per year	Student assessment forms completed per year by a surgeon	One 45 evaluations a surgeon received from students per year
Cardiac Surgery	**3** (1 - 14)	**8** (1 – 46)	**2.5** (1 – 10)	**1** (0 - 8)
Neurosurgery	**13** (1 - 24)	**25** (1 - 44)	**5** (1 - 17)	**4** (0 - 15)
Orthopedic Surgery	**5** (1 - 13	**14** (1 - 58)	**3** (1 – 10)	**1** (0 - 5)
Otolaryngology/HNS	**21** (1 - 39)	**29** (1 - 56)	**7** (1 - 22)	**4** (0 - 24)
Plastic Surgery	**22** (1 - 34)	**38** (2 - 59)	**10** (3 - 21)	**7.5** (0 - 21)
Thoracic Surgery	**17** (1 - 32)	**39** (4 - 84)	**11** (1 - 21)	**5.5** (0 - 20)
Urology	**27** (1 - 35)	**37** (2 - 58)	**9** (1 - 18)	**6** (0 - 14)
Vascular Surgery	**14** (1 - 17)	**54** (1 - 69)	**11** (1 - 13)	**6.5** (0 - 12)

Involvement of residents in student teaching and assessment

Students recorded receiving teaching from a significant number of on-service and off-service residents in most Divisions. Residents completed assessment forms on students, and students provided program evaluation data on the teaching received.

	Individual residents identified as teaching or assessing	One45 evaluations of residents (total)	Student assessment forms completed by residents
Cardiac Surgery	17	22	46
Neurosurgery	13	49	37
Orthopedic Surgery	24	50	65
Otolaryngology/HNS	18	48	49
Plastic Surgery	27	84	85
Thoracic Surgery	-	-	-
Urology	24	72	93
Vascular Surgery	-	-	-
Other/Off-service	14	-	84*
TOTAL	137	325	375
* includes residents rotating through Thoracic Surgery & Vascular Surgery			

Changes planned for 2012-2013

Meetings were held with each specialty coordinator to review course comments and decide on any changes needed and innovations for the future year. This was a very well received initiative and as a result, constructive decisions were an outcome. Learning objectives were updated and a total of 73 multiple choice questions were edited or added to the exam bank. A decision was made at the Dept of Surgery UME Committee level to restore Academic Half Days to a consistent day, which was found to be a Monday, or Tuesday in light of holidays on Mondays. This has been implemented.

SURG556 has also entered the age of social media. The Undergraduate Office of Surgical Education had a Planning and Development Retreat in the summer of 2012. One of the suggestions that resulted from the workgroup was to consider social media as a way of connecting with students. Twitter accounts were created for both SURG546 and SURG556 and have been gaining popularity as the school year has progressed.

The Faculty of Medicine and Dentistry has changed online learning platform for its dissemination of learning material, scheduling and reporting. SURG556 was the first 4th year clerkship that was able to move to this new platform for the second rotation of the academic school year. SURG546 was also started on the new platform at the beginning of the school year. We are working closely with the developers and the Faculty to assist them in streamlining some processes and will be assisting other clerkships with their transition based on our experience and expertise.