ASPIRE

NEWSLETTER

The **Infection Prevention and Control (IPAC)** team of the Integrated Health and Social Services University Network for West-Central Montreal (CIUSSS -WCM) led by Yves Longtin, MD, FRCPC Sylvana Perna, N. M.Sc.(A), CIC, ICS-PCI, has launched the first on-line, updated and bilingual **IPAC** (English) and **PCI** (French) course to provide current knowledge and skills acquisition and overall upgrading for all Health Care Providers (HCP).

Based on current official findings and procedures, (*PIDAC, INSPQ, APIC, RB, see the references page in the manuals)*, the course content was develop by IPAC Nursing consultants Lara Maalouf, RN, and Sabine Cainer, RN in collaboration with academic information designer Barbara Reney, MA Educational Technologist, and Chantal Bastien, Conseillère-cadre en soins infirmiers - Documentation-Computerization-Education.

With new and emerging pathogens on the rise, that can lead to serious and avoidable infectious outbreaks, it is highly recommended that all CIUSSS-WCM staff: physicians, specialists, residents and students, complete this course. Appropriate application of IPAC measures helps ensure safe patient care, as well as co-worker and client health and safety by helping prevent the spread of infections. As stated in the recent communique from the head of the CIUSSS-WCM: ***"Unfortunately, CRO is continuing to make its presence felt because of the one activity where we still fall short: proper hand hygiene.*** *(L. Rosenberg, L Lemay, 02/10/17)*

We all lead busy lives between work, studies, and family so to help accommodate individual HCP schedules, the links here below provide easy access to the course on-site or remotely; accessible any where at any time, and they can be reviewed as many times as you feel are necessary in order to complete the questionnaire and earn the PDA. For easy access please ensure that whichever device you wish to use, cell, tablet, desktop, that they have an updated Adobe Reader.

The objective of this course is to train and update the knowledge base and skills of all HCP so that we as a team can collaboratively minimize and eliminate the risk of nosocomial infection transmission throughout the CIUSSS-WCM. All HCPs who successfully complete the course and questionnaire receive one (1) hour professional development accreditation (PDA)

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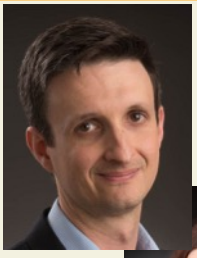
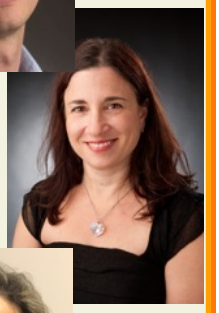
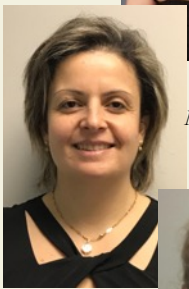


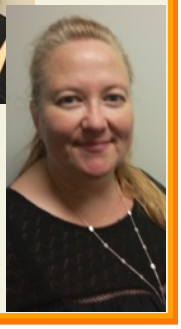
Dr. Yves Longtin



Sylvana Perna, RN.



Lara Maalouf, RN



Sabine Cainer RN

LEADERSHIP

To access the CRO video On-site: CIUSSS intra-link: http://co.intra.mtl.rtss.qc.ca/index.php?id=29816&L=1
To remotely access all of the on-line training materials (all videos and external links embedded):
https://www.docdroid.net/LAcuXcA/ipac-eng-oct2017.pdf

For any questions or difficulties accessing the course or questionnaire please contact JGH Communications Fabrice Baro at: fbaro@jgh.mcgill.ca. For questions related to course content please contact IPAC specialist Lara Maalouf: lmaalouf@jgh.mcgill.ca or Educational Technologist Barbara Reney: Barbara.Reney@mcgill.ca You will be advised of any updates as they are instituted.

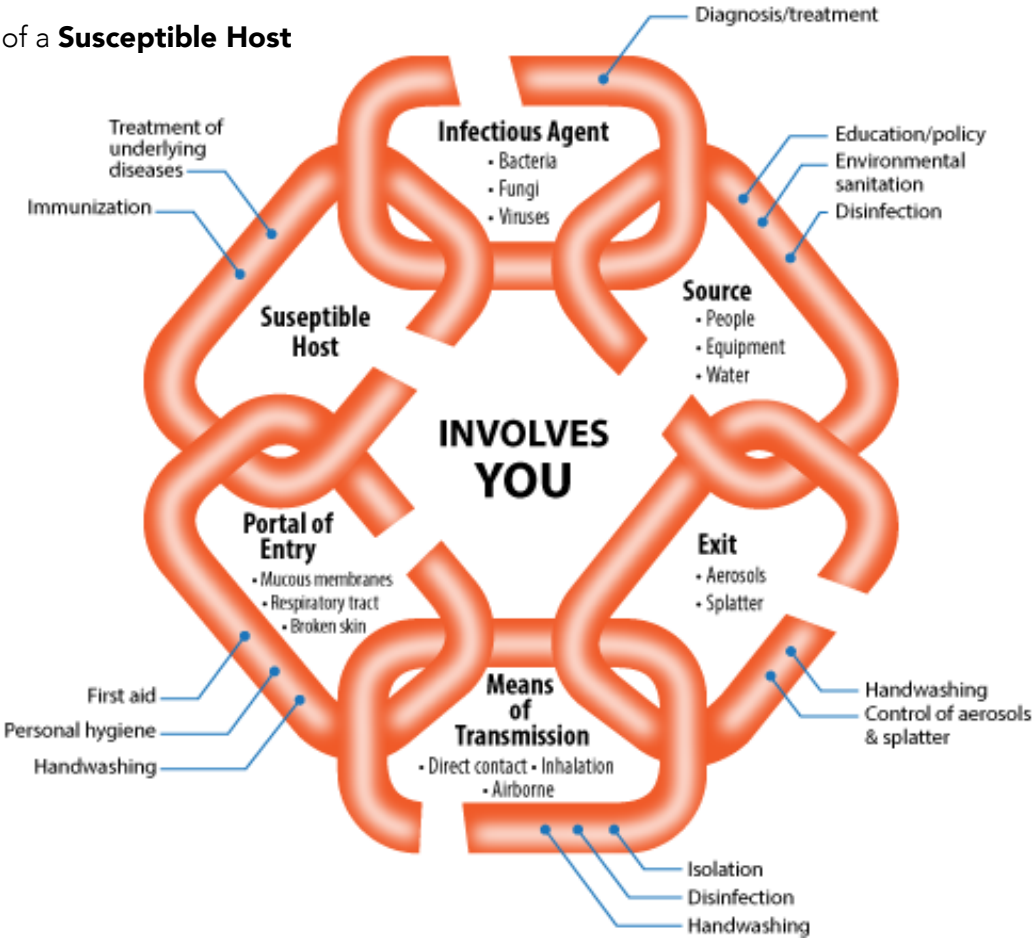
PAC measures are established to ensure the safety of all health care workers, volunteers, users (patients, residents, clients) along with visitors to all CIUSSS affiliated institutions and the community. We thank you for your concerted efforts and consistent collaboration, they are very much appreciated and will help to make the CIUSSS-WCM a safer and healthier site for all.

Thank you, *CIUSSS-WCM IPAC Team, Fall 2017*

Identifying the Chain

Transmission occurs when:

1. An **Infection Agent**
2. in the **Reservoir**
3. leaves via a **Portal of Exit**
4. by a **Mode of Transmission**
5. then enters a **Portal of Entry** of a **Susceptible Host**



Breaking the Chain

Transmission may be broken if:

1. The **Infection Agent** is identified, eliminated, deactivated or can not exit the **Reservoir**
2. **Portals of Exit** are contained through safe practices
3. **Modes of Transmission** between objects or people does NOT occur due to barriers and, or, safe practices
4. **Portals of Entry** are protected
5. **Hosts** are **not** susceptible

Adapted from CCPMI 2012

RESEARCH

Distal stump leak following Hartmann's procedure: ACS NSQIP study of risks and outcomes.

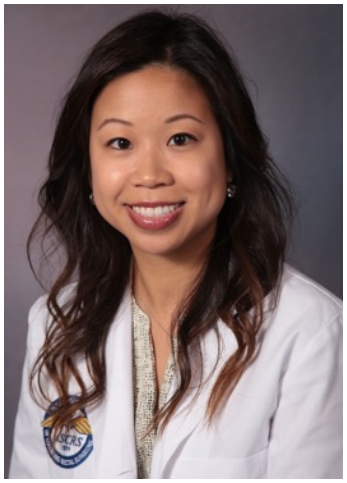
A. Dan, N. Wong-Chong, M. Boutros, et al; JGH & McGill University, Montreal, Que. *(Podium Presentation - September 14, 2017)*

Hartmann's procedure is often used when constructing a colorectal anastomosis that is unsafe. Nonetheless, the closed distal segment may be prone to leakage. Patients who under- went Hartmann's procedure were identified from the American College of Surgeons' National Surgical Quality Improvement Program (ACS NSQIP) databases from 2012 to 2015 based on CPT codes 44143 (open) and 44206 (laparoscopic). Pre- and perioperative variables were assessed using univariate analyses. Binomial models identified independent predictors of distal stump leaks. Secondary postoperative outcomes were analyzed using the same methods. Ninety-six of 2349 patients (4.1%) had distal stump leak (mean age 66 ± 15 years; 50.3% males). The most common indications were acute diverticulitis (15.5%), colon cancer with (18.1%) and without obstruction (14.4%) and diverticular disease (10%). Multivariate analysis demonstrated that longer operative time (OR 1.003; 95% CI 1.001–1.006) and contaminated wounds (OR 1.67; 95% CI 1.01–2.74) were predictive of distal stump leaks; medically treated hypertension was protective (OR 0.557; 95% CI 0.326–0.941). On univariate analyses, distal stump leaks significantly increased rates of ileus (46% v. 21%, $p < 0.001$), re-operation (37% v. 6%, $p < 0.0001$), readmission (32% v. 9%, $p < 0.0001$), failure to wean off ventilator (19% v. 5% $p < 0.0001$), systemic sepsis (30% v. 4%, $p < 0.0001$) and death (26% v. 8%, $p < 0.0001$). Multivariate analyses showed distal stump leak as a significant predictor of death within 30 days (OR 3.61; 95% CI 1.52–8.59), re-operation (OR 7.32; 95% CI 4.15–12.91), readmission (OR 5.76; 95% CI 3.42– 9.72) and postoperative ileus (OR 2.12; 95% CI 1.27–3.53). This multi-centre database showed a 4% distal stump leak rate following Hartmann's procedure. Increased operative time and contaminated wounds were independent predictors of distal stump leaks.

Right-sided colectomies for diverticulitis have worse outcomes compared with left-sided colectomies for diverticulitis: an ACS NSQIP analysis of predictors and outcomes.

N. Wong-Chong, M. Boutros., et al. *(Poster Presentation - September 15, 2017 - See Poster on next page)*

Right- and left-sided diverticulitis have similar clinical presentations. However, there are limited and conflicting data on the surgical outcomes following resection for right-sided compared with left-sided diverticulitis. The aim of this study was to compare these outcomes. All cases of right-sided colectomy (RC) and left- sided colectomy (LC) for diverticulitis were identified from the American College of Surgeons' National Surgical Quality Improvement Program database from 2005 to 2015. Demo- graphics, co-morbidities and postoperative outcomes were compared. Predictors of the pre-determined outcomes were analyzed by multivariate regression. Of 50 588 patients identified, 710 under- went RC for diverticulitis and 49 878 underwent LC. RC was associated with younger mean age (55.98 ± 14.68 v. 58.50 ± 13.00, $p < 0.01$) and Asian origin (3.66% v. 0.84%, $p < 0.01$). RC was more likely to be performed emergently (23.66% v. 15.80%, $p < 0.01$) and less likely to have a stoma (3.38% v. 24.91%, $p < 0.01$). Furthermore, RC was associated with higher rates of anastomotic leak (6.36% v. 3.16%, $p < 0.01$), re-operation (7.18% v. 4.80%, $p < 0.01$) and increased length of stay (median [IQR] 6 [4–10] v. 5 [4–8] days, $p < 0.01$), without any differences in overall 30-day major morbidity (19.44 v. 16.77, $p = 0.06$) or mortality (1.83% v. 1.30%, $p = 0.24$). On multivariate analysis, RC was a predictor of anastomotic leak (OR 2.04, 95% CI 1.13–3.68), major morbidity (OR 1.31, 95% CI 1.06–1.63) and increased length of stay (0.19 d, 95% CI 0.15–0.24). Emergency surgery was also a predictor for major morbidity (OR 1.42, 95% CI 1.53–2.66) for both RC and LC, while increased age, American Society of Anesthesiologists (ASA) score of 4 or 5, congestive heart failure, immunosuppression, contaminated/dirty wounds, and preoperative sepsis were predictors of mortality. Type of colectomy (right v. left-sided) was not a predictor of mortality. RC was more likely to be performed emergently compared with LC for diverticulitis, and it was associated with significantly greater rates of major morbidity, anastomotic leak and re-operation.



Dr. Nathalie Wong-Chong

Nathalie Wong-Chong is a general surgeon doing a two-year fellowship at the JGH in colorectal surgery. She completed medical school and general surgery at the University of Toronto and has an Honours Bachelors of Health Sciences from McMaster University. She is also working on her Masters of Experimental Surgery at McGill. Her research interests include colorectal cancer, inflammatory bowel disease, minimally invasive techniques in colorectal surgery.

Nathalie won the Best Poster Award when she presented it at the 2017 AQC.

RESEARCH

Right-sided Colectomies for Diverticulitis Have Worse Outcomes Compared to Left-Sided Colectomies for Diverticulitis: An ACS NSQIP analysis of Predictors and Outcomes

Nathalie Wong-Chong, Nancy Morin, Gabriela Ghitulescu, Carol-Ann Vasilevsky, Philip Gordon, Julio Faria, Marylise Boutros

Division of Colon and Rectal Surgery, Sir Mortimer B. Davis Jewish General Hospital, Montreal, QC, Canada

Introduction

- Right- and left-sided diverticulitis have **similar clinical presentations**
- Right-sided diverticulitis tends to affect younger patients, usually of Asian heritage
- There are **limited and conflicting data on the surgical outcomes** following resection for right-sided compared to left-sided diverticulitis.

Purpose

- The aim of this study was to **compare short-term outcomes of colectomies for right- and left-sided diverticulitis.**

Methods

- After institutional review board approval, **all cases of right- and left-sided colectomy for diverticulitis** were identified from the American College of Surgeons National Surgical Quality Improvement Program **(NSQIP)** database from **2005-2015**
- **Patients with diverticulitis were identified based on ICD-9** diagnostic codes (ICD-9 562.11, 562.13)
- Right- and left-sided colectomy were identified by **primary procedure CPT codes**
- **Demographics, comorbidities, and postoperative outcomes were identified** and **compared**
- Predictors of the pre-defined outcomes were analyzed **by multivariate regression**

Results

Table 1. Patient Characteristics (50,288 patients)

Characteristic N (%) or Mean (SD)	Right-sided colectomy (n=710)	Left-sided colectomy (n=49,878)	*p*-value
Age	55.98 (14.68)	58.4 5 (13.07)	<0.01
Race			
Asian	26 (3.66)	416 (0.85)	<0.01
BMI			<0.01
< 18	24 (3.38)	1,210 (2.46)	
18.0 - 24.9	216 (30.42)	11,340 (23.08)	
25 - 29.9	236 (33.24)	17,173 (34.94)	
30.0 - 34.9	153 (21.55)	11,321 (23.04)	
>35.0	81 (11.41)	8,100 (16.48)	
Smoker	176 (24.79)	10,632 (21.63)	0.04
CHF	10 (1.41)	333 (0.68)	0.02
Bleeding disorder	46 (6.48)	1860 (3.78)	<0.01
Preoperative blood transfusion	23 (3.24)	298 (0.81)	<0.01
Emergency surgery	168 (23.66)	7654 (15.57)	<0.01
Laparoscopy	356 (50.14)	26,837 (54.61)	0.02
Preoperative Sepsis			<0.05
None	590 (83.10)	41,999 (85.46)	
SIRS	42 (5.92)	2038 (4.15)	
Sepsis	73 (10.28)	4483 (9.12)	
Septic Shock	3 (0.42)	525 (1.07)	
Stoma	4 (0.56)	10,515 (21.40)	<0.01

Results

Table 2. 30-day Post-operative Outcomes

Outcome N (%) or Mean (SD)	Right-sided colectomy (n=710)	Left-sided colectomy (n=49,878)	*p*-value
SSI			
Superficial	48 (6.76)	3391 (6.90)	0.88
Deep	9 (1.27)	641 (1.30)	0.93
Organ/Space	41 (5.77)	2062 (4.20)	0.04
Sepsis	61 (8.59)	3586 (7.30)	0.19
Bleeding/Transfusion	47 (6.62)	2273 (4.63)	0.01
30-Day Major Morbidity	166 (23.38)	10,157 (20.67)	0.07
30-Day Mortality	13 (1,83)	624 (1.27)	0.19
Reoperation	51 (7.18)	2354 (4.79)	<0.01
Readmission	48 (11.03)	2733 (8.37)	<0.05
Length of stay (days)	8.5 (8.7)	7.4 (7.46)	<0.01

Table 3. Colectomy-specific 30-day Post-op Outcomes

Outcome N (%)	Right-sided colectomy (n=214)	Left-sided colectomy (n=15,085)	*p*-value
Anastomotic Leak	12 (9.81)	438 (2.90)	<0.01
Management of Leak			<0.01
Reoperation	6 (2.34)	245 (1.62)	
Percutaneous drain	5 (2.34)	95 (0.63)	
Non-operative	1 (0.47)	61 (0.40)	
No intervention	0	37 (0.25)	
Unknown	3 (1.40)	55 (0.36)	
Postoperative Ileus	36 (16.82)	1798(11.92)	0.07

Table 4. Multivariate analysis for right-sided colectomy*

	OR	95% CI
Anastomotic leak	2.04	1.13-3.68
Major Morbidity	1.31	1.06-1.63

*After controlling for emergency surgery, ASA, immunosuppression, and sepsis amongst other confounders

- **Stomas were protective against anastomotic leak** (OR 0.38, 95% CI 0.26- 0.55) for both right- and left-sided colectomy
- **Emergency surgery** was also **a predictor for major morbidity** (OR 1.42, 95%CI 1.53-2.66) for both right and left-sided colectomies.
- **Type of colectomy** (right vs. left-sided) **was not a predictor of mortality**

Conclusions

- **Re-operation and readmission rates were higher with right-sided colectomy**
- Even after controlling for emergency surgery, **right-sided colectomy** was still an **independent risk factor for anastomotic leak, length of stay and major morbidity.**
- **Stomas were protective** against anastomotic leak, but very **few cases of right-sided diverticulitis were diverted** with an ileostomy.
- **Further research** required to determine whether morbidity associated with **right-sided colectomies could be reduced with more frequent use of diverting stomas.**

CSF2017 VICTORIA | SEPT. 14-16

RESEARCH

Incidence rates and predictors of colectomy for ulcerative colitis in the era of biologics: Results from the provincial database in Québec

By Maria Abou Khalil (presented at the September 2017 CAGS

Background: Biologics are at the forefront of agents that have revolutionized the care of patients with ulcerative colitis (UC). However, there has been debate on their ability to reduce the long-term risk of colectomy. Moreover, because of their immunosuppressive effects, there remain concerns regarding their impact on post-operative outcomes when administered in the peri-operative era. Thus, our primary objective was to evaluate the long-term incidence rates of colectomy in the pre-biologics and biologics eras in patients with UC in Québec, Canada and to identify risk factors for colectomy. Our secondary objective was to study the post-operative risk of mortality in both eras.

Methods: Using the Québec provincial health insurance agency, the Régie d'assurance maladie du Québec, two cohorts were defined: the pre-biologics era (1998-2004) and the biologics era (2005-2011). Patients who had a diagnosis of inflammatory bowel disease or a colectomy the year prior to first diagnosis of UC in the study period were excluded. Post-operative death was defined as death up to 90-days post-colectomy. Multivariate logistic regression model was fit to compare patient baseline characteristics. Kaplan-Meier curves were constructed to display unadjusted time to event in the two study periods and survival analyses were performed using Cox proportional hazards models.

Results: Of the 2,829 patients in the pre-biologics era, 335 patients underwent a colectomy, compared to 314 patients of the 3,313 patients in the biologics era. Median time of follow-up (first and third quartiles) was similar in both periods: 3.38 (1.56, 5.21) years for the pre-biologics era, and 3.29 (1.68, 5.14) years in the biologics era (p=0.206). The incidence rates of colectomies were 36.08/1000 and 29.99/1000 patient years in the pre-biologics and biologics era respectively. The unadjusted probability of colectomy was higher in the pre-biologics compared to the biologics era (log-rank p=0.004) and this decrease remained significant after adjusting for potential confounders (hazard ratio, HR; 95%CI= 0.81; 0.70-0.95) (Figure 1). Predictors of colectomy included presence of anemia (1.66; 1.38-2.01), history of gastrointestinal hospitalizations (1.24; 1.04-1.47), congestive heart failure (2.08; 1.27-3.40) and male gender (1.47; 1.26-1.72). Post-operative mortality was 8.06% and 3.18% in the pre-biologics and biologics eras respectively. After adjusting for potential confounders, age at index date (1.08; 1.05-1.12) and emergency surgery (5.65; 2.19-14.54) remained associated with an increased hazard of death.

Conclusion: In this study, we observed decreased incidence rates of colectomy after the introduction of biologics in Québec. Risk factors for colectomy included GI hospitalizations, anemia, male gender and congestive heart failure. Emergency surgery and age were predictors of post-operative mortality.

Maria Abou Khalil is a PhD candidate in the Department of Experimental Surgery at McGill University. She obtained her Master of Science in February 2017 in the same department and is the recipient of several grants and awards such as:

The Richard and Edith Strauss Fellowship for Clinical Scientists (2017)

ASCRS - General Surgery Resident Research Initiation Grant (2017)

Canadian Association of General Surgeons (CAGS) Research Fund (CSRF) grant (2014)

People's Choice Award LD Maclean Day (2016 AND 2017)he is currently working on and presented at the September 2017 CAGS

RESEARCH

DOULIA HAMAD

Doulia obtained a Bachelor of Science in Physiology from McGill University in 2014. She is currently pursuing her M.D., C.M. degree at McGill University, graduating in 2018.

Her research interests include colorectal surgery, global surgery, medical education and disaster response.

She served as Executive President of the Medical Students' Society of McGill University from 2015-2016 and currently serves as Junior Representative on the Committee on Accreditation of Canadian Medical Schools.

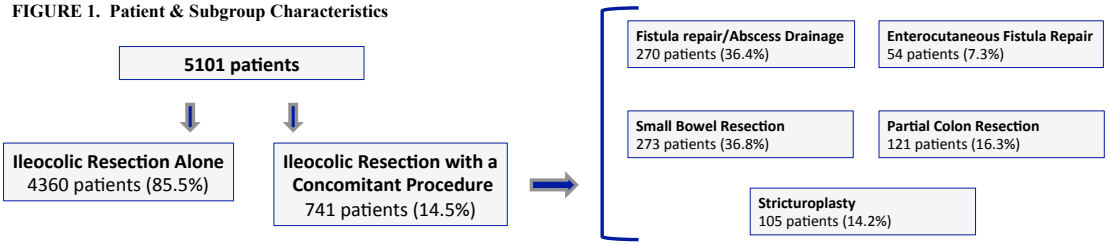
Doulia is recipient of The Marty Kelman & Gilda Tanz / McGill University CANADIAN MEDICAL HALL OF FAME AWARD in honour of Saul & Mildred Kelman.

At right is the poster she presented at the CAGS in September 2017.

Outcomes of Ileocolic Resection versus Ileocolic Resection with a Concomitant Procedure in Crohn's Disease: What is the Added Risk?

Doulia Hamad, Maria Abou Khalil, Andrea Petrucci, Gabriela Ghitulescu, Caroll-Ann Vasilevsky, Nancy Morin, Julio Faria, Marylise Boutros
Division of Colon and Rectal Surgery, Sir Mortimer B. Davis Jewish General Hospital, Montreal, QC, Canada

FIGURE 1. Patient & Subgroup Characteristics



Introduction

Despite recent advances in medical management, up to 80% of patients with Crohn's disease will require surgery in their lifetime. Ileocolic resection is the most commonly performed surgical intervention however the added risk of a concomitant procedure remains unknown.

Purpose

To compare the outcomes of patients with Crohn's disease who undergo an ileocolic resection alone compared to an ileocolic resection with a concomitant procedure.

Methods

- After institutional review board approval, we performed a retrospective cohort study using the ACS-NSQIP database.
- Patients with Crohn's disease who underwent an ileocolic resection or an ileocolic resection with a concomitant procedure between 2005-2015 were identified.
- A concomitant procedure was defined as any additional intervention on bowel related to Crohn's disease. Concomitant procedures were further subdivided into five subgroups based on the type of procedures performed.
- Univariate analysis, multivariate logistic regression and negative binomial regression were performed to identify differences in outcomes between patient groups.

TABLE 1. Patient Characteristics (Univariate Analysis)

	Ileocolic resection n = 4831	Ileocolic Resection with a Concomitant Procedure n = 741
Preoperative Characteristics (%) * p < 0.05		
Age (years)	**40.20***	38.91
Male Gender	43.67	**53.31***
Caucasian Race	**83.62***	83.13
ASA Class 1 & 2	71.39	71.72
BMI	-	-
<18	7.18	**10.93***
≥ 18 to < 25	49.29	**51.01***
≥ 25 to < 30	**24.98***	24.28
≥ 30 to < 35	**12.06***	8.77
≥ 35	**6.49***	4.99
Diabetes Mellitus	2.34	1.75
Smoker	27.82	25.51
Hypertension on medication	**15.78***	10.53
Albumin <3 mg/dL	12.65	**22.15***
Steroids	49.15	50.07
Bleeding disorder	1.58	1.75
Transfusion > 4U	0.41	**1.21***
>10% weight loss	7.71	**10.12***
Sepsis, SIRS or septic shock	5.8	7.16
Operative Characteristics (%) * p < 0.05		
Emergency procedure	4.29	4.59
Laparoscopy	54.66	**27.94***
Stoma	0.00	**9.04***
Contaminated or dirty wound	30.55	**47.91***

TABLE 2. Postoperative Outcomes (Multivariate Analysis)

2.1 Logistic Regression - Organ Space Surgical Site Infection

Variable	OR (95% CI)
Male gender	1.33 (1.02 – 1.74)
BMI ≥ 35 (vs BMI 30-35)	2.22 (1.07 - 4.60)
Albumin < 3 mg/dL	1.55 (1.10 – 2.17)
Contaminated or dirty wound	1.78 (1.36 – 2.33)
Steroid immunosuppression	1.52 (1.16 – 1.99)
Smoker	1.48 (1.12 – 1.95)
Concomitant procedure	**1.46 (1.04 – 2.06)**

TABLE 2 (cont'd). Postoperative Outcomes (Multivariate Analysis)

2.2 Negative Binomial Regression – Length of Hospitalization

Variable	IRR (95%CI)
Male gender	1.08 (1.12 – 1.03)
BMI < 18	1.14 (1.02 – 1.27)
Medically treated hypertension	1.07 (1.01 – 1.14)
Preoperative transfusion	1.64 (1.35 – 2.08)
Open approach	1.27 (1.22 – 1.33)
Albumin <3 mg/dL	1.54 (1.45 – 1.64)
Contaminated or dirty wounds	1.11 (1.08 – 1.16)
Steroid immunosuppression	1.05 (1.01 – 1.10)
Diabetes	1.52 (1.07 – 2.13)
Smoker	1.11 (1.16 – 1.06)
Concomitant procedure	**1.06 (1.001 – 1.15)**

TABLE 3. Postoperative Outcomes by Subgroups (Univariate Analysis)

	Ileocolic Resection n = 4360	Ileocolic Resection with Concomitant Procedure n = 741	Fistula repair/ abscess drainage n = 270	Entero-cutaneous fistula repair n = 54	Small bowel resection n = 273	Partial colon resection n = 121	Stricturo-plasty n = 105
30-day outcomes – Univariate Analysis (%) * P < 0.05							
Surgical site infection (all)	12.06	15.92	15.56	14.81	**16.12***	**28.93***	11.43
Deep incisional	1.15	**2.02***	**2.59***	3.70	0.73	3.31	2.86
Organ space	5.34	**8.64***	7.78	7.41	**9.89***	**18.18***	5.71
Composite infectious complications	15.30	**19.84***	**21.11***	18.52	19.41	**30.58***	13.33
Sepsis/Septic shock	5.23	**8.91***	**10.00***	11.11	**8.79***	**14.88***	4.76
Re-operation	4.39	7.14	4.00	16.67	7.41	12.50	22.22
Anastomotic leak	4.40	5.36	5.51	3.70	4.92	12.50	5.00
Major morbidity	12.80	**18.49***	**19.63***	20.37	**17.58***	**25.62***	14.29
Length of stay (days)	7.13	**8.74***	**8.94***	**8.48***	**8.99***	**9.48***	**7.70***
Mortality	0.11	0.27	0.37	0.00	0.37	0.00	0.00

Discussion

- To date, this is the largest study investigating the added risk of a concomitant procedure in ileocolic resection for Crohn's disease.
- Patients undergoing fistula repair/abscess drainage, small bowel resection or partial colon resection present a higher rate of complications. Stricturoplasty and enterocutaneous fistula repair did not lead to a higher rate of complications.
- A concomitant procedure was a significant predictor of organ space surgical site infection and predicted a significant increase in length of hospitalization.
- The addition of a concomitant procedure did not increase the odds of sepsis/septic shock, composite infectious complications, re-operation, anastomotic leak, major morbidity or mortality.
- Limitations: 1) Retrospective study design, 2) Restricted cohort size for procedure subgroups, 3) Lack of details regarding causes of reoperation and anastomotic leaks, 4) Generalizability to institutions not participating in ACS-NSQIP

Conclusion

A concomitant procedure was a significant predictor of organ space surgical site infection and predicted a slight increase in length of hospitalization.

RESEARCH

Eni Nano *is a PhD candidate in the McGill University, Department of Experimental Surgery and is supervised by Dr. Lawrence Rosenberg; her background is in basic biomedical research. She came to the Diabetes Research Lab, first at the Montreal General Hospital and then at the LDI, where she has dedicated her attention to finding a cure. Eni is currently completing her PhD and as she approaches the end of this chapter in her medical research career she has graciously offered to take this opportunity to talk a bit about what she has accomplished so far.*

My doctoral research basically distills to agents, potential therapeutic drugs, to protect the pancreatic beta-cells against cytokine mediated death which is one of the factors in the development of diabetes.

The first is INGAP, Islet Neogenesis Associated Protein, which is also the main focus of our lab. Dr. Rosenberg co-pioneered the discovery of this protein from a hamster model of beta-cell regeneration in the early 1980s. Since then, a lot of effort has been dedicated to characterize and understand just how INGAP can stimulate the regeneration of endogenous, functional beta-cells. Studies using diabetic animals showed that INGAP could reverse their diabetes, improving glycemia and increasing beta-cell mass. One of the biggest milestones was the identification of the bio-active fragment (peptide) of INGAP. INGAP peptide is currently in clinical trials showing promising results for both Type I & II diabetic patients. What fascinates me personally about INGAP is its molecular role. INGAP can transform (or transdifferentiation) non-beta cells of the pancreas into new beta cells via duct-like intermediate (hence the "neogenesis" in the name) but also it can facilitate the remaining beta-cells to replicate. But is that all? This is where my very own serendipitous findings make INGAP even more appealing as a potential therapy – this is a biased opinion I know J. While troubleshooting to establish a beta-cell model of cell death using cytokines, I decided to test out and see what INGAP would do if added to the cells. It turns out that if you administer INGAP before the cytokines, it can protect against this cytotoxic "attack". So basically, INGAP can induce the generation of novel beta-cells and also protect the remaining and the neogenic beta-cells against the cytotoxic environment of a diabetic pancreas.

The second molecule of interest is a novel protein (patented by McGill) that is specifically engineered to deliver a short inhibitory peptide to the beta cells of the pancreas. This peptide blocks a critical cellular pathway (NF-kB) that's involved in beta cell death and progression of diabetes. Targeting this pathway is very tricky because it's ubiquitous and implicated in numerous cellular functions. To date, the attempts to block this pathway have little if any clinical application because they require invasive transgenic models or non-specific delivery of the inhibitors, thus challenging to translate to the clinic. This protein is the first therapeutic agent to be able to selectively deliver a NF-kB inhibitor to beta-cells non-invasively! Very cool if I do say so myself. While I'm extremely appreciative for being entrusted this project – because troubleshooting for this project lead to the discovery of INGAP's function as a protective agent – it was marred by a significant pitfall. The protein had to be regenerated and purified all over again, from only a protein sequence. This was quite an arduous task, but imperative for future experiments. I confirmed that functional protein was generated and that it specifically inhibited the targeted pathway (NF-kB) in beta-cells. Lastly and most importantly, our protein protected beta-cells against cytokine induced cell death.

We are very enthusiastic with these findings because we are closer to piecing together the complete INGAP puzzle and to ultimately REVERSE diabetes. We are studying two proteins that have tremendous therapeutic potential and future work will focus on effects of using both molecules (in combination or sequential). I'm very proud to have laid the groundwork and have contributed to such trailblazing research.

Rachel Szwimer *first came to the Rosenberg LDI Diabetes Research Lab in the summer of 2016 when she had just finished her first year undergraduate in Physiology at McGill. She came to learn basic research techniques, to gain wet-lab experience and to find out more about diabetes. After enjoying another tour of duty this past summer she is now completing her 3rd and final year of a 3-year program. In spite of her busy academic schedule she is currently applying to various Medical programs because her career ambition is to become a physician - the type of which is still to be determined, however, the main goal for the time being is to hopefully make it into Medical school.*

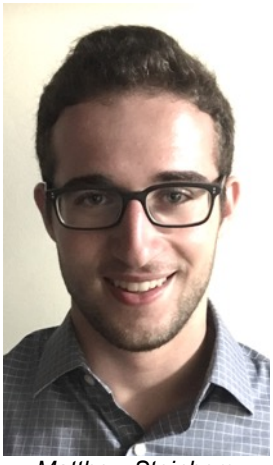
This summer, I was fortunate enough to be welcomed back into Dr. Rosenberg's lab in order to carry out an undergraduate research project that combined the skills that I learned in both Dr. Rosenberg's and Dr. Maysinger's laboratories. From performing immunohistochemistry last summer to taking on the more independent role of running my own project this summer, I recognize how far my theory-based foundation has grown as each practical laboratory experience solidifies the value that these techniques hold in terms of contributing to research and furthering therapy treatments.

I performed the techniques of mRNA extraction, reverse transcription, Polymerase Chain and Northern blots in order to assess the varying expression levels of genes associated with Type II Diabetes both in high-fat and/or high-sugar conditions, as well as following treatment with two chemicals that have shown potential to restore these levels back to their baseline values.

Although I started this assignment with a sincere appreciation for the length of time and effort that a research project requires, I ended the summer with a much deeper connection to the project after learning about the diabetes diagnosis of my grandmother and a good friend of mine. As the summer comes to a close and my family and I continue to take turns administering my grandmother's insulin, I am even more thankful to Dr. Rosenberg, Dr. Maysinger, Dr. Petropavlovskaya and Jeff Ji for their kindness in guiding me through my diabetes-based project and allowing me to make even a small mark on what I hope will become a lifelong journey of contributing to the scientific community and the therapies upon which patients like my grandmother depend.

REFLECTIONS

Research, DNA Gels and Lab Ghosts: My Amazing Summer 2017 at The LDI. *by Matthew Steinberg*


Matthew Steinberg

This summer, I had the privilege of working as a research intern in Dr. Lawrence Rosenberg's Diabetes Research Lab at the Lady Davis Institute. As a rising bioengineering sophomore at the University of Pennsylvania, it was my first experience in a lab outside the classroom, so I wasn't quite sure what to expect at first. I knew I would be doing bench work and I knew it would pertain to diabetes research, but that is about all I knew when I took the job. Having grown up in Montreal, I wanted to be home over the summer, and as someone interested in going to medical school, I wanted to be in a hospital setting. I also hoped to be involved with work connected to Type 1 Diabetes, a disease my younger brother suffers from. So when Dr. Rosenberg offered me the summer position, I knew I had found exactly what I wanted to be doing, even though I had no idea what I would be doing at all! I also had no idea how much I was going to learn about restriction digests, retroviral plasmids, and of course, Steve the laboratory ghost.

I don't remember every day on the job with exact detail, but I remember my first day pretty vividly. I arrived in the LDI lobby and was greeted by Shaun, a Masters Student in the lab. He welcomed me and brought me upstairs where I met Maria and Jessica, both full time researchers in the lab. The four of us chatted for a while; listening to Shaun, Maria, and Jessica talk, it was obvious to me how passionate they were about their work. I found this both motivating and inspiring. It was also obvious to me how little experience I had compared to them, which was intimidating at first, but I guess that was to be expected. After all, I was there to learn.

For the rest of the day, I watched Shaun finish up the experiment he was working on, which happened to be a Western Blot. Shaun was very thorough in his explanation of every step, even though it was mostly waiting for milk to block the primary antibody. But even so, he taught me how to do the preliminary steps of a Western while we waited, which he had done in the days prior to my arrival to the lab. He showed me how to run a protein gel, make transfer sandwiches, and taught me why antibody incubation and blocking are necessary.

The next morning, we imaged his membranes, and we did not see the results we were hoping for. At the time, I naively assumed lab research was the most perfect of sciences, so I asked Shaun how it was possible that his Western Blot, which takes almost a week from start to finish, ended up not working. His response was something like "research is an art", and he explained to me how even the slightest slip up at any point in the procedure could have prevented him from obtaining accurate results. And then he said something along the lines of "and Steve doesn't ever let any experiment go perfectly."

Blaming "Steve", the laboratory ghost, was the lab's way of explaining why an experiment didn't go as planned when it should have worked ……in theory. Obviously, there are a tremendous number of factors to consider when analyzing why an experiment might have failed, and this analysis is important. But when something went wrong in the lab, Shaun's initial reaction was always to blame Steve. In hindsight, I think it was a light-hearted way of keeping everyone sane in a profession where it is extremely easy to overthink things. Whatever the case may be, I found it funny.

Shaun was an unbelievable mentor and really taught me a lot during my first few weeks at the lab. There was a big change coming though: Shaun had been recently accepted to vet school in Scotland and was leaving the lab at the end of June. Of course, I still had Jessica and Maria around for the rest of the summer to guide me and answer all my questions, but when Shaun left, I was given my own project and began working on my own. This opportunity is something I am very thankful for.

My task was to finish what Shaun had started: using Dr. Rosenberg's previous findings, he had created a plasmid that was designed to re-stimulate insulin production and would be tested in diabetic mice. However, this plasmid could not be fluorescently imaged in live mice, so I needed to insert the active portion of Shaun's DNA into another plasmid backbone that could be imaged in vivo. This would be extremely helpful to the lab's future work.

During my first week working on the project, Steve made sure to give me a warm welcome. I was familiar with restriction digests, so finding which enzymes cut at the desired locations in Shaun's plasmid was relatively straightforward. However, getting them to actually cut at these locations in practice was a different story. I ran about three DNA gels that week trying to cut my plasmid at the desired locations, but none seemed to work properly. I tried mixing different volumes of enzyme with different volumes of DNA and different volumes of buffer, and even tried different incubation times, but Steve wouldn't let me get by this seemingly simple step so easily. Eventually I tried using a different

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EVENTS

aliquot of the exact same DNA with the same restriction enzymes, and behold, my plasmid was cut properly. Why my original aliquot of DNA was faulty, I'll never know. Maybe it was left out of the fridge for too long, or maybe it was diluted incorrectly. Nevertheless, I finally had my insert cut out, now I just needed the backbone

But of course, I had troubles with that too. This time, the enzymes cut at their desired locations perfectly, but one of them also cut the plasmid elsewhere. As we did not have the full sequence of the backbone, we had no idea where else the enzyme was cutting, so I had to find another solution. Jessica and I discussed it, and we decided to use a different enzyme that would create a sticky end but that we would have to blunt in order to ligate with the insert. This added yet another step to the cloning process and also increased the probability of the backbone re-ligating with itself, however it was something we needed to do in order to successfully create my plasmid.

In the end, this actually worked, and after excising the bands of DNA from the gel, purifying them, ligating them, transforming competent cells with my newly created plasmid, plating the cells into dishes, picking colonies, and doing mini-preps (and LOTS of waiting in between), I finally was able to create my plasmid, lovingly referred to as MS1 (Matthew Steinberg's 1st plasmid).

Let me tell you though, this all took several weeks and is a huge over simplification of my path to success after my initial troubles. Quite honestly, my troubles may have even gotten worse as I went along. From seemingly complex problems such as my bands of DNA being too faint to excise properly and my colonies not growing at all the first time, to blunders such as pipetting incorrectly and even dropping my gel on the ground on one occasion, I think only those in research can understand the slow, tedious process it can be. But in the end, I succeeded in creating my plasmid and I could not be prouder of the work I put into achieving the final product.

Ultimately, I think it's safe to say I had a pretty unbelievable experience this summer and learned more than I could have imagined. I learned a tremendous amount about different molecular biology techniques from Jessica, Maria, and Shaun, and I am extremely grateful for the time they dedicated to teaching me. I learned that a chicken shawarma platter from Restaurant Boustan for lunch is an outstanding way to remain fuelled and focused throughout a busy afternoon in the lab. And finally, I learned two very valuable lessons from Steve, namely patience and persistence. In life, there will always be experiments you try that fail, for one reason or another. This can be frustrating and exasperating, but having the patience to evaluate the situation properly, make the necessary adjustments, and try again will almost certainly lead to eventual success. And on top of all I learned, I was actually able to contribute something tangible to the lab this summer.

I can't wait for Maria and Jessica to start using my plasmid in their mouse studies. Hopefully, Steve won't give them too much of a hard time.

SAGES ENHANCED RECOVERY CANADA

SAGES / ENHANCED RECOVERY CANADA
ERAS 2017: PROMOTING ENHANCED RECOVERY
Co-Directors: Gabriele Baldini; Franco Carli; Liane Feldman; Sender Liberman
Saturday, November 18th, 2017
The Montreal General Hospital
1650 Cedar Avenue, Montréal, Québec
To register online: https://muhc-cme.mcgill.ca/ERAS2017
Information: cme@muhc.mcgill.ca

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EDUCATION & TRAINING

* * * Save the Date! * * *

Injury, Repair, Recovery – Experimental Surgery Joint Research Day

January 18, 2018






Centre universitaire de santé McGill
Institut de recherche

McGill University Health Centre
Research Institute

During this full-day event investigators and trainees from the Experimental Surgery Program as well as the IRR program will be invited to present their research either as an oral or poster presentation.

A world class keynote speaker will be invited and the day will be organized in such a way that program members, guests, and sponsors have ample time to network and get to know one another.

For more information, feel free to contact our Administrative Assistants: Nathan Green (IRR) & Christine Mutter (Exp. Surgery) at by e-mail at nathan.green@mail.mcgill.ca or gradstudies.surgery2@mcgill.ca

EDUCATION & TRAINING

Simulation Summit 2017

2017 theme: **"Simulation for Health Systems, Care and Quality".**

Simulation Summit invites health professional and simulation educators, program directors and researchers from across the globe to collaborate with colleagues on simulation knowledge, research and innovation.

Now celebrating its 10th anniversary, the Simulation Summit offers a scholarly program with a strong emphasis on research and education, and a unique SimTrek event.

The Simulation Summit is a unique and practical, inter-professional medical simulation education conference, which attracts hundreds of international simulation educators, researchers, health care professionals and other individuals engaged in the field of simulation.

Participants at the 2017 Simulation Summit will have the opportunity to collaborate with international colleagues on knowledge translation as it relates to simulation in healthcare; examine new technologies in medical simulation; investigate advances in medical simulation and much more.

Learning objectives - Participants at the 2017 Summit will:

- Explore strategies to use simulation as a tool for system improvement;
- Apply simulation methods to enhance the delivery and quality of team based care;
- Discuss opportunities to advance assessment in post graduate medicine.

Target audience: This two day conference is open to all individuals engaged in the field of simulation, from all healthcare disciplines.

This includes:

- Health professional educators with an interest in simulation
- Simulation educators
- Health profession education researchers
- Simulation centre/program directors
- Continuing professional development educators
- Continuing medical education planners
- Specialist physicians
- Nurses
- Canadian Forces personnel

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EDUCATION & TRAINING

Post Conference Programs: Principles of Assessment in Simulation Supplement (PASS)

Friday, November 3, 2017. Fee: Physician $985 | Non-Physician $425

This one-day program provides participants with foundational knowledge, experience and tools to support simulation-based assessment of clinical competence. Presented as a face-to-face workshop, PASS looks to support clinical educators hoping to find a balance between workplace and simulation based assessment in their curriculum.

This session is designed for participants with a passion for clinical education with some experience with simulation based education. Previous completion of the Simulation Educators Training (SET) Course is not mandatory, but strongly recommended.

Upon completion of this session, participants will be able to apply a validity framework to simulation based assessment design implementation and evaluation; identify and mitigate threats to validity in simulation-based assessments of clinical competence through design; and, critically appraise assessment tools, methodologies and current simulation based assessment research using a validity framework..

A Primer for Simulation Accreditation

Friday, November 3, 2017
Fee: $150

This one-day program is for participants at all levels. Upon completion of this session, participants will be able to describe the process for simulation accreditation through the Royal College; describe the expectations for the standards for simulation program accreditation; develop local strategies to meet the accreditation standards.

PROGRAM: http://www.royalcollege.ca/rcsite/events/simulation-summit/simulation-summit-program-e

SPEAKERS: http://www.royalcollege.ca/rcsite/events/simulation-summit/simulation-summit-featured-speakers-e

Meeting Location

Le Centre Sheraton Montreal Hotel
1201 Boulevard Rene-Levesque West
Montreal, Quebec H3B 2L7 Canada
Telephone (514) 878-2000

Contact

The Royal College of Physicians and Surgeons of Canada
Telephone: 613-730-8177 ext. 422 / 1-800-668-3740 ext. 422
Email: simsummit@royalcollege.ca

CME

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of the Royal College of Physicians and Surgeons of Canada for 12.0 hours. This program has been reviewed and approved by the University of Ottawa, Office of Continuing Professional Development.

The following AMA designation statement must be included on all disseminated promotional materials and all certificates given to physicians for their participation in the above described categories.

"Through an agreement between the Royal College of Physicians and Surgeons of Canada and the American Medical Association, physicians may convert Royal College MOC credits to AMA PRA Category 1 Credits™. Information on the process to convert Royal College MOC credit to AMA credit can be found at www.ama- assn.org/go/internationalcme ."

POINT TO PONDER

Creating a Global Acute Care Surgery Fellowship to Meet International Need

Amina I. Merchant, MD, Camila B. Walters, MD,† Julie Valenzuela, MD,* Kelly A. McQueen, MD, MPH,† and Addison K. May, MD**

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INTRODUCTION: Existing Acute Care Surgery (ACS) fellowships are positioned to develop well-trained surgeons with specific skills to facilitate improvements in care delivery in Global ACS. Many resident and fellowship programs offer clinical electives that expose trainees to operative experiences, exposing trainees to the needs in resource-challenged settings. However, most lack a focus on long-term development and research designed to enhance the country's local skills, capability, and capacity. The Global Acute Care Surgery (Global ACS) fellowship produces a surgeon who focuses on capacity building and systems development across the world.

METHODS: At Vanderbilt University, the current American Association for the Surgery of Trauma-Acute Care Surgery (AAST-ACS) fellowship was adapted to create an academic Global Acute Care Surgery (Global ACS) fellowship. This fellowship specifically enhances fellowship trainee's skills in needs assessment and performing research to facilitate the development and implementation of trauma and acute care surgery systems in low- and middle income countries. This research will foster context-appropriate data, collected and based in low- and middle-income countries, to guide practice and policy.

RESULTS AND CONCLUSION: Two fellows have completed the Global ACS fellowship at Vanderbilt University. The fellowship requirements, clinical skills, project development and overall goals are outlined within the article. Challenges, funding, and mentorship must also be addressed to develop a comprehensive fellowship. A sample two-year timeline is provided to complete the fellowship track and meet the defined goals. A structured global acute care surgery fellowship enables fellows to reduce the surgical burden of disease and contribute to surgical systems development at both local and international levels by creating meaningful research and developing sustainable change in LMIC countries. (J Surg Ed 74:780-786. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: global surgery, education, trauma, capacity building

COMPETENCIES: Systems-Based Practice, Interpersonal and Communication Skills, Practice-Based Learning and Improvement

INTRODUCTION

Noncommunicable diseases including trauma and emergency surgery accounts for up to nearly one-third of the entire global burden of disease, whereas the communicable disease burden is declining.[1] According to Disease Control Priorities 3 (DCP-3) released by the World Bank, 5 billion people in the world do not have access to safe surgical and anesthesia care, with a disproportionate 9 of 10 people in low- and middle-income countries (LMICs). Injury remains a leading cause of death and disability, with 5 million deaths yearly, nearly 1.7 times the number resulting from human immunodeficiency virus, tuberculosis, and malaria combined. This results in 77.2 million disability-adjusted life years per year, with 77% of the surgical deaths due to injury.[2]

The recognition that underdeveloped systems and limited access to safe surgical interventions are major barriers for the critically ill and injured patient led the World Health Organization (WHO), World Bank, and Lancet Commission on Global Surgery to call for prioritization of safe surgery across the world.[3] The Lancet Commission included collaborators from 110 countries and called for a minimum of 80% coverage of essential surgery and anesthesia per country by 2030.[4] In 2015, a WHO resolution was unanimously approved at the 68th World Health Assembly that called for "strengthening emergency and

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For the full article see Journal of Surgical educationhttp://www.jsurged.org/article/S1931-7204(16)30373-7/fulltext

POINT TO PONDER

ORIGINAL REPORTS

Program Director Perceptions of the General Surgery Milestones Project

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OBJECTIVE: As a result of the Milestones Project, all Accreditation Council for Graduate Medical Education accredited training programs now use an evaluation framework based on outcomes in 6 core competencies. Despite their widespread use, the Milestones have not been broadly evaluated. This study sought to examine program director (PD) perceptions of the Milestones Project.

DESIGN, SETTING, AND PARTICIPANTS: A national survey of general surgery PDs distributed between January and March of 2016.

RESULTS: A total of 132 surgical PDs responded to the survey (60% response rate). Positive perceptions included value for education (55%) and evaluation of resident performance (58%), as well as ability of Milestones to provide unbiased feedback (55%) and to identify areas of resident deficiency (58%). Meanwhile, time input and the ability of Milestones to discriminate underperforming programs were less likely to be rated positively (25% and 21%, respectively). Half of PDs felt that the Milestones were an improvement over their previous evaluation system (55%).

CONCLUSIONS: Using the Milestones as competency-based, developmental outcomes measures, surgical PDs reported perceived benefits for education and objectivity in the evaluation of resident performance. The overall response to the Milestones was generally favorable, and most PDs would not return to their previous evaluation systems. To improve future iterations of the Milestones, many PDs expressed a desire for customization of the Milestones' content and structure to allow for programmatic differences. (J Surg Ed 74:769-772. Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery).

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KEY WORDS: milestones, assessment, evaluation, surgery, graduate medical education

COMPETENCIES: Practice-Based Learning and Improvement, Patient Care, Systems-Based Practice, Medical Knowledge, Interpersonal and Communication Skills, Professionalism

INTRODUCTION

Since the implementation of the Accreditation Council for Graduate Medical Education (ACGME) Outcomes Project in 1999, outcomes-based education and assessment has become a cornerstone of graduate medical education.[1-3] Nearly a decade later, the Next Accreditation System was implemented to further promote this outcomes focus.[4] A central feature of Next Accreditation System is the specialty-specific Milestones, which are competency-based developmental outcomes that form the basis for evaluative metrics within the framework of the core competencies.[5,6]

Although the Milestones are now used for resident and fellow evaluations at all ACGME-accredited training programs, their use in practice has not been broadly studied and some concerns have been raised. An earlier study of the 1999 Outcome Project demonstrated significant barriers to successful utilization, specifically including lack of time, funding, and faculty support as well as resistance to the ACGME mandate.[7] Authors of another study, which examined similar competency-based evaluations outside of medicine (K-12 education and the department of defense), found several concerning features of the Milestones that may lead to failure, including differences in learner styles as well as evaluators' assessment constructs and the time needed for direct observation to perform these evaluations.[8]

In this study, we sought to evaluate program directors' (PD) experience with and perceptions of the Milestones in general surgery.