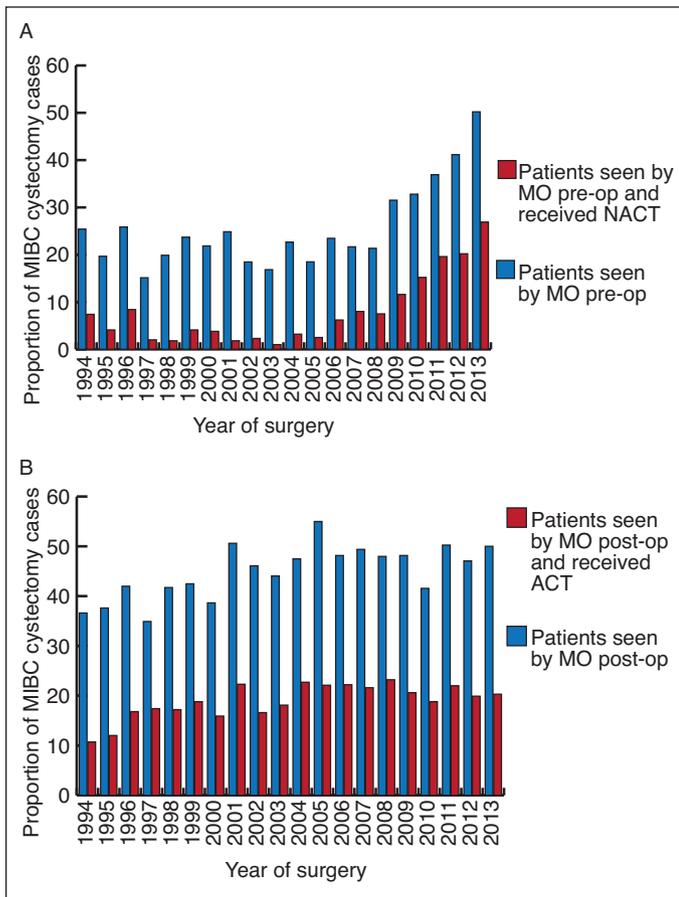


Effect of centralization on complex surgical care: A population-based case study of radical cystectomy

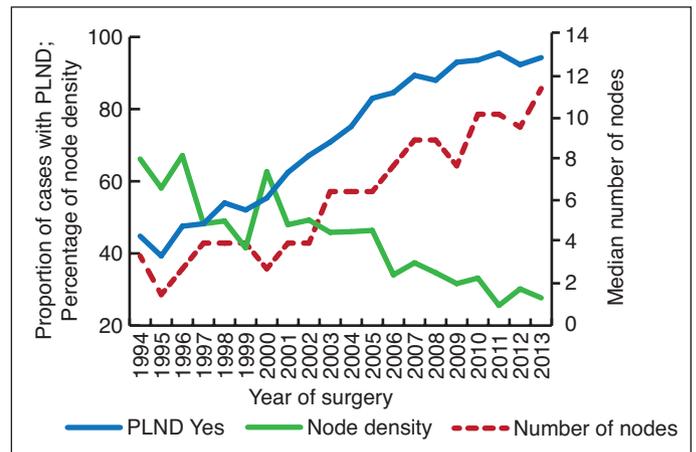
D. Robert Siemens, MD^{1,2}; Kash Visram, MD¹; Xuejiao Wei, MD³; Christopher Booth, MD^{2,3,4}

¹Department of Urology, Queen’s University, Kingston, ON, Canada; ²Department of Oncology, Queen’s University, Kingston, ON, Canada; ³Department of Public Health Sciences, Queen’s University, Kingston, ON, Canada; ⁴Division of Cancer Care and Epidemiology, Queen’s University Cancer Research Institute, Kingston, ON, Canada

Cite as: *Can Urol Assoc J* 2020;14(4):E150-1.



Supplementary Fig. 1. Proportion of patients with muscle-invasive bladder cancer treated with cystectomy in Ontario from 1994–2013 seen by medical oncology (MO) in the (A) preoperative and (B) postoperative settings, and subsequent use of neoadjuvant (NACT) and adjuvant chemotherapy (ACT) among these patients.



Supplementary Fig. 2. Temporal trend in quality of pelvic lymph node dissection. PLND: pelvic lymph node dissection.

Supplementary Table 1. Interval from diagnosis to surgery and distance travelled for care by over study period

Variable	Value	1994–1998 n=927	1999–2003 n=1231	2004–2008 n=1721	2009–2013 n=1695	p
Interval from diagnosis to date of cystectomy, months	Mean ± SD	13.58±25.95	15.08±30.83	17.32±35.20	13.84±32.65	0.005
	Median (IQR)	3 (1–12)	3 (1–13)	3 (1–13)	4 (2–9)	<0.001
	1–3 months	531 (57%)	664 (54%)	884 (51%)	794 (47%)	<0.001
	4–6 months	103 (11%)	147 (12%)	218 (13%)	346 (20%)	
	7–12 months	65 (7%)	110 (9%)	176 (10%)	198 (12%)	
	13–24 months	81 (9%)	108 (9%)	134 (8%)	140 (8%)	
Distance from home to surgical hospital, km	>24 months	147 (16%)	202 (16%)	309 (18%)	217 (13%)	
	Mean ± SD	40.75±84.33	40.24±86.58	45.64±99.97	45.59±92.19	0.248
	Median (IQR)	9 (4–37)	11 (4–38)	13 (5–45)	14 (5–45)	<0.001
	0–50 km	743 (80%)	987 (80%)	1337 (78%)	1324 (78%)	0.15
	51–100 km	96 (10%)	133 (11%)	221 (13%)	204 (12%)	
	101–200 km	47 (5%)	66 (5%)	94 (5%)	93 (5%)	
	201–300 km	6 (1%)	10 (1%)	16 (1%)	29 (2%)	
>300 km	35 (4%)	35 (3%)	53 (3%)	45 (3%)		

IQR: interquartile range; SD: standard deviation.

Supplementary Table 2A. Adjusted analysis on short-term outcomes by surgeon volume from 2009–2013

	Surgeon volume OR (95% CI)				p
	Q1 n=439	Q2 n=408	Q3 n=443	Q4 n=404	
30-day mortality [^]	Ref	0.73 (0.34–1.54)	0.46 (0.20–1.07)	0.53 (0.23–1.24)	0.245
90-day mortality [^]	Ref	0.64 (0.39–1.03)	0.45 (0.27–0.76)	0.60 (0.36–0.99)	0.017
30-day re-admission ^{^*}	Ref	0.85 (0.62–1.17)	1.11 (0.82–1.50)	1.10 (0.81–1.50)	0.340
90-day re-admission ^{^*}	Ref	1.00 (0.75–1.33)	1.14 (0.86–1.51)	1.15 (0.86–1.53)	0.630

[^]Adjusted for age and comorbidity. ^{*}Numerator for hospital re-admission rate included cases discharged and re-admitted and those who died in hospital before discharge and cases never discharged at 30/90 days. Denominator included all cases. CI: confidence interval; OR: odds ratio.**Supplementary Table 2B. Adjusted analysis on survival outcome by surgeon volume from 2009–2013**

	Surgeon volume OR (95% CI)				p
	Q1 n=439	Q2 n=408	Q3 n=443	Q4 n=404	
CSS [^]	Ref	0.83 (0.67–1.04)	0.71 (0.57–0.89)	0.82 (0.65–1.02)	0.023
OS [^]	Ref	0.95 (0.79–1.13)	0.83 (0.70–1.00)	0.83 (0.69–0.99)	0.100

[^]Adjusted for age and comorbidity. CI: confidence interval; CSS: cancer-specific survival; HR: hazard ratio; OS: overall survival.