Activity-Based Costing: *Leveraging SCM to Examine Cost and Outcomes at a Clinical Pathway Level*

Brett Simms, Stafford Dean, Graham Thompson, Mary Brindle & David Johnson

Background:

Quality healthcare means maximizing patient care (positive outcomes) and minimizing costs if applicable, and where able. Traditional costing approaches at AHS function in a top-down manner and although of value for macroscopic planning and modelling, are unable to capture the nuance and variability of patients and physician practice. Activity-Based Costing leverages the data streams of clinical information systems (i.e. Connect Care or Sunrise Clinical Manager) to accurately sum (bottom-up) the component activities of patient visits (i.e. labs, DI, meds, consults, OR supplies, etc.) to better understand variability in resource consumption and cost from patient-to-patient. When individualized patient costs are then compared to outcomes, clear opportunities for quality improvement emerge. A pilot project at Alberta Children's Hospital (query appendicitis population) has been completed and demonstrates the utility of Activity-Based Costing to front-line staff, and what Connect Care should endeavour to provide across the Province.

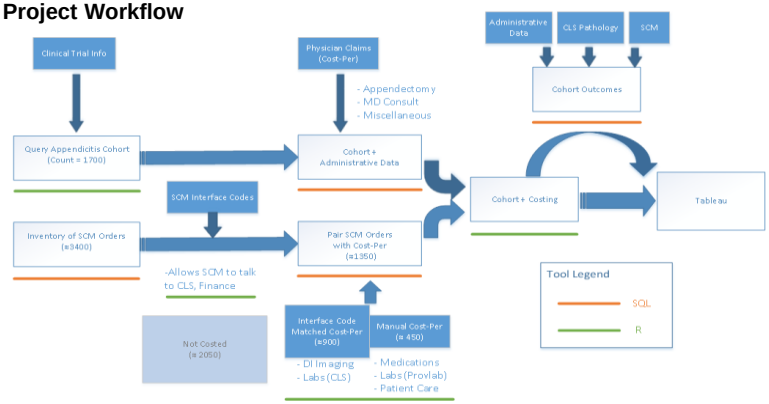
Costing Types at AHS:

1) Top-Down Resource Allocation:
   a) Allocates $10B back to record level.
   b) Helps illustrate relative cost of disease and variation in spending per capita.

2) Case Costing :
   a) More granular (middle layer) – useful in funding models
   b) Submitted to CIHI for RIW development
   c) Used by AH in public reports
   d) Not granular enough to be meaningful to clinicians
   e) Not granular enough to evaluate value for money

3) Activity-Based Costing (ABC):
   a) Most granular – highlights variability in patients and resources
   b) Is a by-product of delivering care
   c) Can be provided in real-time
   d) Much more meaningful to clinicians
   e) Aligns costs with who is accountable (i.e. clinicians own orders, others' the unit cost to deliver those orders)

Project Workflow



Activity-Based Costing Methods:

Clinical Activities

Unit Cost

ORDER_ID	REQUEST_DT	ORDER_CATEGORY	ORDER_NAME	ORDER_UNITS	COST_PER
9210790801200780	01-OCT-2017 07:38:00	medications and iv's	tetracaine 4% gel	application	2.0075
9210795892100780	01-OCT-2017 08:45:00	patient care	weigh patient	activity	8.77
9210797720200780	01-OCT-2017 08:57:00	patient care	monitor cardiorespiratory - peds	activity	0
9210794854000780	01-OCT-2017 10:00:00	laboratory	ck	test	5.04
9210794850400780	01-OCT-2017 10:00:00	laboratory	urea	test	7.84
9210822185100780	01-OCT-2017 13:48:00	medications and iv's	ibuprofen liquid	mg	0.000704
9210824227100780	01-OCT-2017 14:14:00	medications and iv's	aquaphor oint	application	0.1
9210853720400780	01-OCT-2017 21:00:00	laboratory	creatinine level	test	7.2
9210853720700780	01-OCT-2017 21:00:00	laboratory	urea	test	7.84
9210853720300780	01-OCT-2017 21:00:00	diagnostic imaging	us appendix	test	114.97
9210908078100780	02-OCT-2017 09:55:00	medications and iv's	acetaminophen liquid	mg	0.000859
9210908397100780	02-OCT-2017 10:01:00	medications and iv's	morphine inj	microgram	0.000117
9210933037100780	02-OCT-2017 13:18:00	laboratory	throat group a beta strep	test	10.32
9211047918100780	03-OCT-2017 09:43:00	medications and iv's	ketorolac inj	mg	0.059333
9211047778100780	03-OCT-2017 09:47:00	patient care	nasogastric drainage tube	activity	127
9211047778200780	03-OCT-2017 09:49:00	laboratory	urinalysis random	test	27.03
9211058705100780	03-OCT-2017 11:30:00	md consults	md consult	referral	102.22
9211088587100780	03-OCT-2017 15:49:00	nutrition	progressive diet: clear fluids to dat	diet orders	37.47
9211077100700780	04-OCT-2017 00:00:00	respiratory care	blood gas venous mixed request	test	47.3

Patient Cost = ∑(Units x Unit Cost)

Comparing Costs With Outcomes (Appendicitis)