

Problem statement:
 1- Currently each anesthesia cart throughout the system is not standardized with par level indicators.
 2- Anesthesiologists rotate to different facilities and spend time searching for medication and supplies, which takes time away from the patient and increases the risk for error.
 3 – Medications are not always properly scanned/checked out of the Pyxis machines, so runners print inaccurate re-stocking reports

Goals, targets and scope:
Goals: 1. Create standardized anesthesia work stations with par level indicators across the system. 2- Create customized physician preference cards ("Kits") on Pyxis. 3 - Redesign Pharmacy work flow/restocking process to ensure each cart always meets the minimum par level for each patient. 4 – Increase medication scanning compliance. By the end of CY 2011.
Target: Surgery rooms and procedure areas that uses anesthesia carts
Scope: System wide

Root cause analysis: The 5 Why's
 1. Anesthesia carts not standardized in layout, type of items and par levels. Why?
 2. No one thought to do this previously. Why?
 3. There has been no systematic approach to this issue. Why?
 4. No request or needs identified. Why?
 5. Physicians and staff are used to do the same thing and were not aware that this is possible.
Cause: This was not identified in the past as a viable project.

PDSA, tools, resources and timelines

Plan

- Conduct process walks in the OR
- Develop project team
- Determine project scope & goals
- Work with Anesthesiologists, Techs Pharmacy & Material Supply
- Develop implementation plan

Do

- Survey existing carts
- Survey physician preferences and needs
- Determine necessary supplies & layout
- Determine par levels
- Transition to Pyxis carts (Osborn)
- Determine customization by surgery case load at each location, if necessary

Study

- Evaluation at restocking time to ensure only necessary supplies are meeting accepted par levels
- Standardize supply ordering form
- Updates of status at Surgery Guidance Team Meetings

Act

- Finalize standardization of carts in each room at each surgery site, based on feedback in Study phase
- Continuous follow-up to ensure carts are stocked with necessary supplies at accepted par levels

Quantify results: Cost of intervention, % of improvements, waste reduction and type, satisfaction results (patient, staff & service partners)
 Cost: Pyxis lease = \$375/month for each machine
 % of Improvement: Increase anesthesiologist's time monitoring the patient; Carts are stocked and ready with supplies and medication for each case
 Waste reduction: Reduce searching time; Decrease expired/uncharged medication
 Satisfaction: Seek feedback from Anesthesiologists, Anesthesia Techs & Pharmacy

Audit Dates: 6/7-13/2010

Item	Osborn			Greenbaum		
	Discrepancies	Total Cost	Total Lost Charges	Discrepancies	Total Cost	Total Lost Charges
Atropine 0.4mg/ml SDV	0	\$ -	\$ -	0	\$ -	\$ -
Cefazolin 1gm SDV	37	\$ 36.63	\$ 2,812.00	12	\$ 11.88	\$ 912.00
Dexamethasone 4mg/ml 5ml MDV	5	\$ 10.95	\$ 416.00	17	\$ 37.23	\$ 1,414.40
Diphenhydramine 50mg/ml SDV	1	\$ 0.64	\$ 75.70	0	\$ -	\$ -
Droperidol 5mg/2ml SDV	0	\$ -	\$ -	4	\$ 4.68	\$ 328.80
Ephedrine 25mg/2ml syringe	27	\$ 102.60	\$ 2,419.20	11	\$ 41.80	\$ 985.60
Epinephrine 1mg/ml Amp	2	\$ 0.78	\$ 150.80	1	\$ 0.39	\$ 75.40
Esmolol 10mg/ml 10ml SDV	4	\$ 68.08	\$ 408.40	1	\$ 17.02	\$ 102.10
Flumazenil 0.5mg/5ml SDV	1	\$ 4.51	\$ 90.40	1	\$ 4.51	\$ 90.40
Glycopyrrolate 0.2mg/ml 5ml SDV	13	\$ 32.50	\$ 1,085.50	11	\$ 27.50	\$ 918.50
Heparin 1000u/ml 10ml MDV	3	\$ 2.97	\$ 228.00	0	\$ -	\$ -
Hydralazine 20mg/ml SDV	5	\$ 19.45	\$ 448.50	0	\$ -	\$ -
Hydrocortisone 100mg/2ml SDV	5	\$ 9.40	\$ 414.50	5	\$ 9.40	\$ 414.50
Ketorolac 30mg/ml SDV	14	\$ 13.58	\$ 1,064.00	7	\$ 6.79	\$ 532.00
Labetalol 5mg/ml 20ml SDV	19	\$ 28.50	\$ 1,567.50	2	\$ 3.00	\$ 165.00
Lidocaine 1% 20ml MDV	15	\$ 4.20	\$ 1,129.50	6	\$ 1.68	\$ 451.80
Lidocaine 1% 30ml Injection	0	\$ -	\$ -	-1	\$ (1.94)	\$ (83.00)
Lidocaine 2% 20ml Injection	0	\$ -	\$ -	0	\$ (0.58)	\$ (150.60)
Lidocaine 2% 100mg syringe	16	\$ 92.00	\$ 1,504.00	9	\$ 51.75	\$ 846.00
Lidocaine 2% jelly 5ml	42	\$ 163.80	\$ 373.80	8	\$ 31.20	\$ 71.20
Lidocaine 4%/4ML Solution	0	\$ -	\$ -	1	\$ 2.68	\$ 7.20
Lidocaine 4%/5ML Injection	0	\$ -	\$ -	2	\$ 4.02	\$ 8.20
Metoprolol 5mg/ml 2ml SDV	2	\$ 0.84	\$ 151.00	2	\$ 0.84	\$ 151.00
Metoprolol 5mg/5ml SDV	5	\$ 6.80	\$ 412.00	1	\$ 1.36	\$ 82.40
Nalbuphine 10mg/ml Amp	1	\$ 0.44	\$ 75.50	2	\$ 0.88	\$ 151.00
Naloxone 0.4mg/ml syringe	6	\$ 10.50	\$ 496.80	1	\$ 1.75	\$ 82.80
Neostigmine 1mg/ml 10ml SDV	6	\$ 8.22	\$ 494.40	0	\$ -	\$ -
Ondansetron 4mg/2ml SDV	29	\$ 9.28	\$ 2,186.60	21	\$ 6.72	\$ 1,583.40
Oxytocin 10u/ml SDV	0	\$ -	\$ -	0	\$ -	\$ -
Petrolatum/Mineral Oil 3.5 GM Ointment	0	\$ -	\$ -	12	\$ 112.68	\$ 166.80
Phenylephrine 10mg/ml SDV	16	\$ 6.24	\$ 1,206.40	1	\$ 0.39	\$ 75.40
Pronofol 10mg/ml 20ml SDV	67	\$ 715.07	\$ 5,969.70	77	\$ 747.17	\$ 6,860.70

Track medication usage against anesthesia record for better revenue capture

Using historical data, track utilization of medication to stock appropriate par levels

Item ID	Medication Name	Total Quantity Used	Avg. Daily Usage	Par Level
7566	Albuterol HFA	79	0.4341	
338	Bupivacaine PF	413	2.2882	
3056	Lidocaine PF	157	0.8626	
22	Acetylcholine Chloride	0	0.0000	
3068	Lidocaine MDV	5	0.0275	
2059	Epinephrine HCL	25	0.1374	
7728	Epinephrine	0	0.0000	
341	Bupivacaine PF	147	0.8077	
1095	Lidocaine Lergojel	682	3.5824	
2095	Epinephrine (2.5% Needles)	0	0.0000	
2687	Dextrose Syringe	2	0.0100	
225	BSS Ophth Solution	10	0.0549	
7618	Sodium Chloride (Inj)	129	0.7088	
2427	Sodium Bicarbonate Vial	26	0.1538	
345	Bupiv Vial (5%)	88	0.4835	
2926	Sodium Bicarbonate Syrin	47	0.2582	
6804	Propofol	210	1.1539	
3067	Lido Injection (5%)	188	1.0330	
345	Bupiv Vial (2.5%)	797	4.2791	
7368	Lido Injection (2%)	341	1.8736	
1850	Flush IV Cath...Syringe	0	0.0000	
1911	Flush Syringe...Syringe	0	0.0000	
5554	Adenosine Vial	0	0.0000	
2395	Furazolidone Injection	0	0.0000	
5735	Vasopressin Injection	57	0.3132	
5361	Etomidate Vial	220	1.2088	
189	Amiodarone Injection	0	0.0000	
5286	Magnesium Sulf Injection	0	0.0000	
2343	Diazepam Zinc Contment	0	0.0000	
3532	Tobramycin 5ML	0	0.0000	
5427	Famotidine Injection	123	0.6788	
3250	Methyline Blue Vial	10	0.0549	
3070	Lidocaine 2% Injection	81	0.4451	
1743	Propofol HCL Injctil	258	1.4176	
3802	Propofol Sulfate Injctio	41	0.2253	
2768	Tobramycin 3.5GM Contm	0	0.0000	
586	Propofol HCL Injctil	0	0.0000	
5420	Enalapril Inj	0	0.0000	



Follow-up and sustainability methods, tools and results:

- Implementation was completed on all 5 surgical sites June 2011.
- Monthly visits to receive physician feedback on cart layout & preference cards ("kits")
- Bi-Weekly evaluation of restocking time (supplies & medication)
- Bi-Weekly medication usage report from Pharmacy to follow-up on under and over-utilized medications (evaluate par levels)
- Bi-Weekly supply usage report to follow-up on under and over-utilized supplies (evaluate par levels)