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Marine Corps Operational Medicine: Determining Medical Supply Needs of the Surgical Company Ward, Lab, and Pharmacy

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SUMMARY

Problem

Combat operations in Afghanistan and Iraq have emphasized the need for a Marine Corps surgical company that is modular and adaptable to changing battle environments. Just as the surgical company operating room (OR) may be split off to work nearly independently as a sort of forward resuscitative surgery section, other parts of the hospital can now find themselves working without their customary infrastructure. Patient care areas like triage, the OR, and the ward that rely on the pharmacy in whole or in part for their drugs, may find it difficult to complete their missions if they are split off for independent duty.

Objective

Naval Health Research Center (NHRC) was tasked by the Marine Corps Systems Command to review and update the Authorized Medical Allowance Lists (AMALs) for the surgical company ward (AMAL 633 and 634), the laboratory (AMAL 618 and 619), and the pharmacy (AMAL 629 and 630). Specific aims were identified by Marine Corps Combat Development Command for each AMAL, including determining whether the pharmacy AMALs could be disestablished.

Method

The NHRC method of modeling clinical requirements was used to analyze the needs for each of the named surgical company functional areas. This included identifying which clinical tasks need to be performed in each functional area, then identifying the supplies needed to complete the tasks. Input was also solicited from medical units currently deployed to Iraq. Finally, a subject matter expert panel was held at Camp Lejeune, NC, to review the NHRC findings and recommendations.

Results and Discussion

The NHRC method of modeling clinical requirements identified the need to bolster the capabilities of the surgical company ward to provide critical care to severely wounded patients. This study resulted in doubling the number of critical care beds in the ward from 2 to 4, and providing the monitoring, ventilation, and warming capabilities to provide that care. The NHRC modeling process also proved the feasibility of disestablishing the pharmacy AMALs without reducing the clinical capabilities of the surgical company.

Research for this study also showed surgical companies are lacking a badly needed capability to quickly test donated blood for contagious diseases such as hepatitis. The Navy and the Marine Corps need to encourage the U.S. Food and Drug Administration to approve such point-of-care tests for use by American military medical facilities.

Marine Corps Operational Medicine: Determining Medical Supply Needs of the Surgical Company Ward, Lab, and Pharmacy

INTRODUCTION

Combat operations in Afghanistan and Iraq have emphasized the need for a Marine Corps surgical company that is modular and adaptable to changing battle environments. A surgical company may find itself established on a quickly changing battlefield, as in the initial or invasion phase of Operation Iraqi Freedom (OIF 1) or it may find itself broken down into smaller surgical company-minus modules on a static battlefield, as in the second phase of Iraqi Freedom (OIF 2). Both situations are within the doctrine expounded by the Marine Corps Operational Maneuver from the Sea and the Navy’s Sea Power 21 concepts.^{1,2}

However, these often divergent scenarios pose special problems to today’s Marine surgical company. Just as the surgical company operating room (OR) may be split off to work nearly independently as a sort of forward resuscitative surgery section,³ other parts of the hospital can now find themselves working without their customary infrastructure. Patient care areas like triage, the OR, and the ward that rely on the pharmacy in whole or in part for their drugs, may find it difficult to complete their missions if they are split off for independent duty.

Naval Health Research Center was tasked by the Marine Corps Systems Command to review and update the Authorized Medical Allowance Lists (AMALs) for the surgical company ward (AMAL 633 and 634), the laboratory (AMAL 618 and 619), and the pharmacy (AMAL 629 and 630). Capability requirements for the AMALs were established by the Marine Corps Combat Development Command (MCCDC). Table 1 presents the requirements MCCDC set forth for each AMAL in this study.⁴

Table 1
MCCDC Requirements for Ward, Lab, Pharmacy AMALs

AMAL	Description	Requirement
633/634	WARD	Serve a 20-bed evacuation ward.
		Provide patient warming, including blood and fluid warming.
		Provide postsurgical intensive care to stabilize patients for evacuation.
		Provide oxygen administration (possibly via O ₂ generator).
		Provide for the infusion of resuscitative fluids and blood.
		Provide consumable supplies to support 100 bed days.

AMAL	Description	Requirement
		Identify items needed for civilian casualty care.
618/619	LABORATORY	Provide hematology, microbiology, urinalysis, and chemical testing for 100 patients.
		Identify additional medical materials needed to complete the lab's mission requirements.
629/630	PHARMACY	If feasible, disestablish these AMALs and distribute the equipment and consumable supplies to other AMALs.

METHOD

Ward

NHRC had previously reviewed the ward and lab AMALs in 1998 and 1999, respectively.^{5,6} Those studies used the NHRC method of modeling medical supply requirements, which was developed to establish and/or review AMALs for various levels of care in the Navy and the Marine Corps. Its aim is to give clinicians in the field or the fleet the materiel they need to provide the best care possible, while still maintaining as small a logistical footprint as possible in concert with current Navy and Marine Corps doctrine.

It involves a four-step process that begins with the identification of likely patient types to be encountered by a particular type of medical treatment asset, including combat wounds, nonbattle injuries, and illnesses. Patient conditions (PCs) found in the Defense Medical Standardization Board (DMSB) treatment briefs are used for this purpose. The PCs are then linked to clinical tasks developed by DMSB and NHRC. Those tasks are, in turn, linked to each supply item needed to complete the task. The required type and quantity of equipment and consumable supplies can then be calculated based on the probability of those PCs occurring in a patient stream. Figure 1 provides a basic representation of the NHRC modeling process.

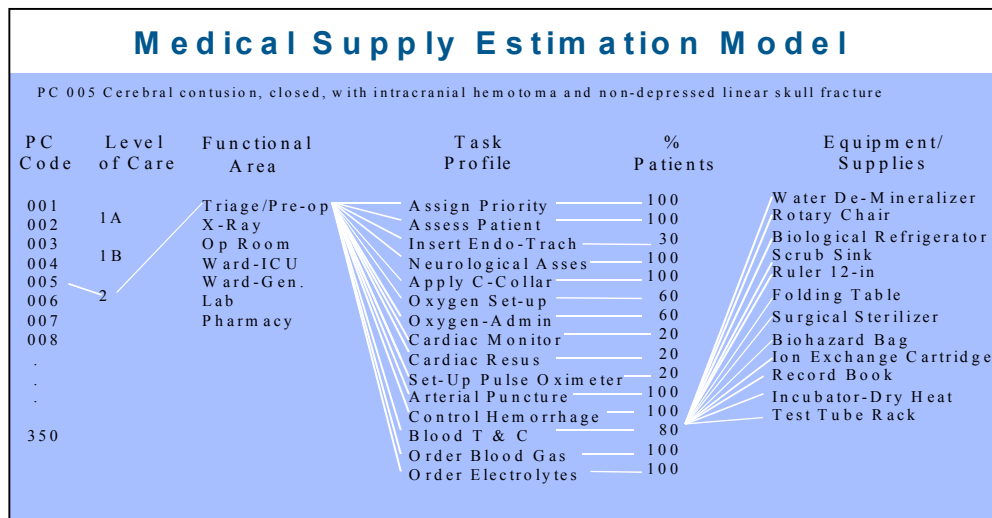


Figure 1: NHRC medical supply model

The earlier NHRC studies of the ward and lab resulted in substantial reductions in weight and cube for both equipment and consumables in both functional areas, largely from the removal of legacy supplies that had been added to the AMALs at some point but which the NHRC PC–task–supply model showed were no longer used.^{5,6} This same method was used to identify any new supply deficiencies or excesses in the ward AMAL. This modeling, however, was done with the knowledge that recent combat experience showed the ward must be prepared to handle more critically injured patients than in previous wars, largely due to the advent of frontline surgical units, such as the Forward Resuscitative Surgery System (FRSS). Surgical companies themselves are also being pushed farther forward, with their ORs sometimes acting as “jump FRSSs” or as surgical company-minuses.³ In addition to NHRC modeling efforts, input on needed changes in the ward and lab was solicited from surgical units currently deployed in Iraq. Table 2 shows the patient care tasks currently required in the ward.

Table 2
Ward Patient Care Tasks

Task Description	Task Description
002 Assessment & Eval of Patient Status	126 Seizure Care/Precautions
010 Neurological Assessment	145 Administer Appropriate Medication
017 Suction (Oral/Trach/Endo)	149 Blood Drawing Venous
022 O ₂ Administration	192 Give a Urinal
024 Vital Signs	197 Patient Charting & Paperwork
025 Cardiac Monitor/Defibrillation	201 Preparation of Patient Area
030 Electronic Patient Monitoring	202 Admit New Patient to Ward
035 Arterial Puncture	242 Bladder Irrigation Continuous
049 Start/Change IV Infusion Site	245 Urine Testing
050 IV Infusion, Change Bottle (Maintain)	246 Enteric Precautions
064 Venous Cutdown	263 Partial Bath (Assisted)
065 Insert Central Venous/Arterial Lines	267 Linen Change
068 IV Infusion Terminate	268 Chucks Change
070 Bowel Sounds Assessment	270 Suture or Skin Clip Removal
071 Insert NG Tube	278 Arrange for Patient Evacuation
075 Irrigate NG Tube	296 Psychological Assessment Interview
087 Dressing Change	A30 Wet/Cold Injury Therapy
093 Extremity Elevation	Z037 BVM Setup
123 Eye Care (Dressings/Eye Patch)	ZZ18 Clean & Sterilize Instruments

Pharmacy

NHRC had previously studied the surgical company pharmacy, concluding that the medications held there could be move to other AMALs and pharmacy AMALs eliminated.⁷ Adhering to current MCCDC guidance, the NHRC model was used in this study to determine which functional areas of the surgical company used medications stored in the pharmacy. The amount of these supplies used in each functional area was

then calculated using the NHRC model, and the appropriate amount was redistributed to those functional areas. Recommendations for the few remaining equipment items in the pharmacy were either deletion or redistribution to the ward.

Laboratory

Laboratory chemistry testing capabilities in the surgical company are provided by two analyzers: the Abaxis Inc. Piccolo® blood chemistry analyzer (National Stock Number [NSN] 6630-01-415-1593) and Multistix® 10SG test strips (NSN 6550011225540) in the lab, and the Agilent Technologies IRMA® point-of-care blood analyzer (NSN 6630015008737) in triage. Table 3 shows the tests available to caregivers from these capabilities.

Table 3
Lab Tests Currently Available in Surgical Companies*

NHRC TASK No.**	BLOOD CHEMISTRY	NHRC TASK No.	HEMATOLOGY	NHRC TASK No.	URINANALYSIS	NHRC TASK No.	MISCELLANEOUS
Z107	Blood Gas Estimation (TCO ₂ , pH, PCO ₂ , pO ₂ , HCO ₃ , O ₂ Sat)	612	Complete Blood Count (CBC)	620	Urinalysis w/Specific Gravity	244	Hemacult Test-Feces/Emesis/Gastric Suction
596	Electrolyte Levels (Na, K, Cl)	614	Hematocrit Level	621	Microscopic Urinalysis	619	Spinal Fluid Cell Count & Differential
599	Serum Creatinine Level	615	White Blood Cell Count & Differential		Protein	633	Gram Stain
601	ALT (SGPT) Level	641	Blood Typing		Blood	634	RPR Test for Syphilis
603	Blood Glucose Level		Hemoglobin		Urobilinogen	636	Thick and Thin Smear for Malaria
604	BUN Level		Platelet		pH	637	Examine Feces for Ova, Cysts, and Parasites
605	Serum Bilirubin Level				Nitrite	638	Potassium Hydroxide (KOH) Preparation
608	AST (SGOT) Level				Ketones	639	Pregnancy Determination
	Alkaline Phosphatase (ALP)				Glucose	Z631	Rapid Strep Test (Throat)
	Amylase				Leukocytes		
	Cholesterol						
	Total Protein						
	Ionized Calcium (IRMA)						
	Acid Base Balance (Base Excess/Deficit) (IRMA)						Note: Blood capabilities include reefer for 30-450ML/50-270ML units and walking blood bank.

*Using Piccolo and IRMA analyzers, and Multistix 10SG test strips. **Items with NHRC task numbers are currently used in surgical companies. Those without numbers are available but not frequently used.

Surgical units deployed in Iraq were contacted to determine if current combat experience indicated a need to refine the patient streams used in modeling their supply needs. Responses indicated an increase in the number of patients requiring whole blood transfusions. Though not doctrine, surgical units in Iraq have been transfusing whole blood from the “walking blood bank” (i.e., donors) into critically injured patients who are coagulopathic due to hypothermia, acidosis, dilution from multiple transfusions of packed red blood cells, or ingestion of platelet inhibitors like aspirin prior to being wounded. Modeling this clinical task identified the need for additional transfusion donor sets and the ability to test donated blood for infectious agents such as HIV and hepatitis. Simple point-of-care tests, such as enzyme-linked immunosorbent assay (ELISA) test cards or cassettes were preferred.⁸⁻¹⁰

In addition, modeling the patient stream identified from combat experience showed a need for fast, point-of-care blood glucose testing, particularly for injured pediatric patients and patients with altered mental status. Glucose testing currently available in the surgical company is both time intensive and expensive, requiring the use of a full Piccolo rotor test disc for each test.⁹

RESULTS

On 31 August and 1 September 2004, a panel of 15 subject matter experts (SMEs) convened at Camp Lejeune, NC to review the NHRC findings. The panel consisted of nurses, lab technicians, biomedical technicians, and logistical experts from as far as Okinawa, Japan. Appendix A provides a list of those in attendance and their duty stations.

Ward AMALs

The need for increasing the ward’s critical care capabilities required the biggest changes to the ward AMALs. Two portable volume ventilators (NSN 6530-01-455-1653), which were previously deleted from the OR AMALs along with two drawover vaporizers, were added to the ward AMALs, along with the appropriate consumables.³ Four Bair Hugger™ patient warming systems (NSN 6530-01-463-6823) were also added. These, along with an upgrade in the ward’s 4 patient vital monitors and an increase in the number of blood and fluid warmers from 2 to 4, will increase the number of critical care beds in the ward from 2 to 4. Table 4 shows the differences in weight, cube, and cost between the existing ward AMALs and those proposed by this study. Appendix B shows the entire list of proposed equipment and consumable items for the ward.

Table 4
Differences in Existing and Proposed Ward AMALs

AMAL 633 (Equipment)		AMAL 634 (Consumables)	
Current Tot Weight	126.66	Current Tot Weight	525.38
Current Tot Cube	10.11	Current Tot Cube	39.69
Current Tot Cost	\$20,166.10	Current Tot Cost	\$5,033.96

Proposed Tot Weight	680.46	Proposed Tot Weight	1307.68
Proposed Tot Cube	73.19	Proposed Tot Cube	105.66
Proposed Tot Cost	\$98,531.40*	Proposed Tot Cost	\$8,587.59

The increase in weight, cube and cost is due the equipment transferred from the OR and pharmacy AMALs.

Lab AMALs

In response to NHRC modeling of the revised patient streams found in Iraq, an ELISA point-of-care test for HIV (NSN 6550-01-502-6235) was added to the lab AMAL. However, research determined that while several ELISA point-of-care hepatitis tests are marketed in other countries, none have been approved for sale in the United States and, subsequently, are not available for use by the U.S. military.^{11, 12} As a result, there is currently a gap in this needed field capability for the surgical company.

An Abbott Laboratories Precision PCX (Part No: 98714-03) glucose monitor was recommended as an addition to the lab AMAL. Research showed the only glucose monitors available through the NSN System were inexpensive devices used for home testing. The Precision PCX was chosen because of its lab-quality accuracy and its history of deployment with federal National Disaster Medical System field hospitals. At the recommendation of the SMEs, however, the monitor was moved to the Surgical Company triage equipment AMAL where it would get its greatest use. Table 5 shows the differences between the existing lab AMALs and those proposed by this study. The full contents of the lab AMALs can be seen in Appendix C.

Table 5
Differences in Existing and Proposed Lab AMALs

AMAL 618 (Equipment)		AMAL 619 (Consumables)	
Current Tot Weight	605.75	Current Tot Weight	142.11
Current Tot Cube	86.49	Current Tot Cube	13.74
Current Tot Cost	\$52,772.60	Current Tot Cost	\$4,861.16
Proposed Tot Weight	555.58	Proposed Tot Weight	125.47
Proposed Tot Cube	77.953	Proposed Tot Cube	12.10
Proposed Tot Cost	\$42,849.35	Proposed Tot Cost	\$4,597.54

Pharmacy AMALs

Medications in the pharmacy consumable AMAL were redistributed to those surgical company AMALs to which the NHRC modeling database showed the pharmacy regularly issued drugs. These included triage, the ward, and the OR. A field medical chest (NSN 6545-00-914-3485) and insert (NSN 6545-00-299-8649) used by the pharmacy were moved to the ward equipment AMAL, as was a refrigerator for biologicals (NSN 4110-00-115-6027). The remainder of the equipment items was simply deleted. Table 6 shows the final reductions made in the pharmacy AMALs.

Table 6
Final Reductions in Pharmacy AMALs

AMAL 629 (Equipment)		AMAL 630 (Consumables)	
Current Tot Weight	268.9	Current Tot Weight	69.43
Current Tot Cube	30.57	Current Tot Cube	8.67
Current Tot Cost	\$4,118.47	Current Tot Cost	\$1,062.80
Proposed Weight	0	Proposed Weight	0
Proposed Cube	0	Proposed Cube	0
Proposed Cost	0	Proposed Cost	0

DISCUSSION AND COMMENT

The NHRC method of modeling clinical requirements identified the need to bolster the capabilities of the surgical company ward to provide critical care to severely wounded patients. This study resulted in doubling the number of critical care beds in the ward from 2 to 4, and providing the monitoring, ventilation, and warming capabilities to provide that care. The NHRC modeling process also proved the pharmacy AMALs were no longer required in the field hospital. By identifying which functional areas of the surgical company utilized the pharmaceuticals kept in AMAL 630, and distributing those medications to the appropriate function areas, this study demonstrated the feasibility of disestablishing the pharmacy AMALs without reducing the clinical capabilities of the surgical company.

Research for this study also showed surgical companies are lacking a badly needed capability to quickly test donated blood for contagious diseases such as hepatitis. Such point-of-care tests are currently marketed internationally and available to field hospitals of foreign militaries. However, because they have not been approved by the U.S. Federal Drug Administration (FDA), these tests are not available for use by U.S. field hospitals, even though some of the tests being marketed are manufactured in the United States. The Navy and the Marine Corps need to encourage the FDA to approve such tests, at least on an experimental basis, for use by American military medical facilities so that we do not inadvertently spread potentially lethal diseases in our attempts to save the lives of wounded Marines and sailors.

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Appendix A
Ward, Lab, Pharmacy
AMAL Review
Attendees

Appendix A. Ward, Lab, Pharmacy AMAL Review Attendees

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Appendix B

Ward AMALs

Appendix B. Ward AMALs

Ward Equipment

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
633	6530007710105	Basin Wash Corrosion Resisting Steel 7 Quart	10	EA	24.5	1.88	\$307.40
633	6530007717025	Bedpan Oval Shaped Corrosion Resisting Steel	10	EA	35	6	\$507.50
633	6515013724470	Blood & Fluid Warmer 110/220v 50/60hz Ac 8.3x9.5"	4	EA	8	3	\$6,000.00
633	7920007725800	Brush Sanitary Black Crimped Nylon Bristle J1 Curved Brush Head	1	EA	0.67	0.17	\$2.78
633	6530007725935	Brush Surgical Scrub 3.375x1.625" Nylon Or Polypropylene Block	10	EA	1.3	0.1	\$20.00
633	6545009143500	Chest Miss Fld #5 30" L X 18" W X 16" D	1	EA	33	6	\$593.10
633	7520002405503	Clip Board File 9x17in	20	EA	24	3.7	\$41.00
633	6515014631764	Cuff Set Sphygmomanometer Non Invasive Reusable Sz Lg, Sm Adult And Thigh For Propaq	4	SE	12	3	\$387.60
633	6515014794272	Defibrillator/Monitor Auto External W/Physician Override Heartstream (Phillips) Fr-2	1	EA	5.2	0.28	\$3,490.00
633	6515003333600	Forceps Dressing 5.50"Lg Straight And Serrated Jaw Round Tip Crs	10	EA	1	0.1	\$109.90
633	6515003343800	Forceps Hemo Kelly 5.25-5.75" Lg Slightly Curved Jaw Str Hdl Crs	6	EA	0.9	0.06	\$27.30
633	6515003344300	Forceps Hemo Rochester-Pean 6-6.50"Lg 1.875" Jaw Lg Qtr-Crvd Crs	2	EA	0.42	0.02	\$27.98
633	6515003380300	Forceps Tissue Allis Dsgn 6"Lg Pivoted Straight & Smooth Jaw Crs	10	EA	1.3	0.1	\$398.00
633	6515012808163	Infusor Pressure Blood Intravenous Bag 14x6" 1000ml Color Coded 48s	0.5	PG	0.18	0.02	\$6.10
633	6515013448487	Injector Tube Plas Accom 1ml & 2ml Medication Needle Cart Unit	2	EA	0.22	0.13	\$8.62
633	6545002998649	Insert Cabinet Medical Instrument & Supply Set Chest 21 Drawers	1	EA	60	3.9	\$179.82
633	6515014553888	Lantern Electric Head Mount Halogen & Krypton Bulb (Note: Uses 4-Aa Batteries)	7	EA	3.85	0.84	\$161.00
633	6515014509790	Laryngoscope Handle W/Light (Note: Uses 2 Aaa Batteries/Comes W/ 1 Miller-3, 1 Mac-3)	1	EA	0.5	0.3	\$53.50
633	6540014553885	Lens Red Lantern Electric Head Mount (Note: Used W/ Head Lantern 6515014453888)	7	EA	3.85	0.84	\$14.00
633	8405008893683	Liner Wet Weather Poncho (Note: Used As Ugraded Replacement For Wool Blankets)	16	EA	8	0.24	\$519.20
633	6515014177877	Minilator Oxygen Compact Lightweight Flow Rates Up To 15 Lpm For 1-5 Pts	1	EA	0.55	0.01	\$170.30
633	6515012796450	Monitor Oxygen Battery 6.75x3.50in Alarmed	4	EA	18	1.22	\$2,800.00
633	6515015009035	Monitor Patient Vital Signs Model 206 Ekg Spo2 Nibp Temp Co2 8x5x4in Battery/Cord (P/N: 11020941)	4	EA	48	4.48	\$32,600.00

Appendix B. Ward AMALs

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
633	6515014586178	Otoscope And Ophthalmoscope Set Deluxe W/Speculums, Cobalt Blue Lens & Softcase (Note: Uses 2-Aa & 2-Aaa Batteries)	1	SE	5.55	0.11	\$280.00
633	7210002998520	Pillow Pneumatic Cotton Rubber Khaki Or Olive Drab 16.5x13inches	20	EA	16.6	0.6	\$52.40
633	4110001156027	Refrigerator Mechanical Biologicals 4.5 Cubic Feet 115v 50/60hz	1	EA	110	13.41	\$724.32
633	6680011746276	Regulator Pressure Medical Gas Administration Appar Oxygen Sgl (Note: Used W/H Cylinders)	2	EA	10	1.32	\$133.34
633	6530014572239	Regulator Pressure Medical Gas Administration Lsp Rhino (Note: Used W/D Cylinders)	4	EA	6	2	\$756.80
633	6515012045394	Resuscitator Hand Operated Small & Medium Adl Face Masks W/Case	2	EA	2.4	0.03	\$303.00
633	6530007926000	Rod Intravenous-Irrigation Container Aluminum	10	EA	14.6	1.25	\$351.70
633	6515009357138	Scissors Bandage 7.25" Lg Ang To Hdl 1.50" Cut Lg Blunt Pts Crs	6	EA	1.14	0.08	\$12.00
633	6515003651820	Scissors Gen Surg 5.50" Lg One Blunt And One Sharp Blade Pt Crs	5	EA	0.65	0.03	\$25.10
633	6530014296715	Sink Unit Surgical Scrub And Utensil Hospital Field: 110v 60c Ac	1	EA	37.75	1.32	\$946.94
633	6515012891967	Sphygmomanometer & Cuff Kit W/ Thigh Lge Adl Adl Child Infant W/Case	1	EA	0.42	0.05	163.77
633	6515010394884	Sphygmomanometer Aneroid 300mm Max Calibration W/Clip For Cuff	1	EA	1.25	0.1	\$12.41
633	6530005518681	Stand Surgical Instrument Adjustable Olive Drab Enameled Field	2	EA	34	3.5	\$186.68
633	6515013146694	Stethoscope Combination Littman Classic li 28"Lg Bell-Diaphragm	6	EA	6	0.02	\$296.46
633	6515014350050	Suction Apparatus Surgical Portable	4	EA	20	2	\$7,107.96
633	8315007823520	Tape Measuring Linen Or Cotton Woven Or Fiber Synthetic 72" Cap	4	EA	1	0.02	\$40.52
633	6515013737292	Thermometer Clinical Human Oral Digital Ltw 300 Hour Use Plastic	6	EA	0.06	0.01	\$57.00
633	6530007939570	Tray Instrument Corrosion-Resisting Steel 19.25x12.75x.75 Inches	2	EA	6.5	0.3	\$57.10
633	6530007944090	Urinal Male Patient Corrosion Resisting Steel	10	EA	17.1	2.25	\$432.50
633	6530014551653	Ventilator Volume Ptbl 8.870x11.5in Uni-Vent Eagle 754 120/220v Ac (Note: Brought Over Fr Or)	4	EA	52	3	\$31,719.52
633	6530014636823	Warmer Hyperthermic Patient Bair Hugger Model 505	4	EA	46	4.6	\$6,354.20
633	5120002643794	Wrench,Adjustable	2	EA	1.01	0.8	\$92.58

Appendix B. Ward AMALs

Current Tot Weight	126.66
Current Tot Cube	10.11
Current Tot Cost	\$20,166.1
Proposed Tot Weight	680.46
Proposed Tot Cube	73.19
Proposed Tot Cost	\$98,531.4

Appendix B. Ward AMALs

Consumables

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
		MEDICATIONS					
0634	6505009857301	Acetaminophen Tablets USP 0.325gm 1000s	1.00	BT	1.330	0.07	\$7.98
0634	6505001596625	Bacitracin Ointment USP 7100 Units 0.5oz Tube 12 Tubes/Package	24.00	TU	21.120	18.96	\$0.91
0634	6505014802501	Cefazolin Sodium Sterile Equivalent To 1gm Cefazolin 1gm 25 Vials	1.00	PG	0.180	0.21	\$43.64
0634	6505012426532	Cefotetan Disodium Sterile 2gm Vial 100 Vials Per Package	0.30	PG	2.775	0.11	\$537.64
0634	6505012192760	Ceftriaxone Sodium USP 1gm Vial 10 Vials Per Package	2.00	PG	1.400	3.00	\$414.50
0634	6505013366179	Ciprofloxacin Inj D5w 2mg/MI 200ml Bag 24s	1.00	PG	4.440	0.11	\$237.48
0634	6505013334154	Ciprofloxacin Tablets USP 500mg 100 Tablets Per Bottle	2.00	BT	1.300	0.02	\$373.54
0634	6505010235011	Clotrimazole Cream USP Topical 1% 15gm	5.00	TU	0.350	0.02	\$25.20
0634	6505009635355	Dexamethasone Sodium Phosphate Injection USP 5cc	10.00	VI	0.800	0.00	\$4.60
0634	6505015053476	Diazepam Injection USP 5mg/MI 2 MI Unit 10 Per Package	3.00	PG	1.650	0.36	\$70.71
0634	6505012303130	Diazepam Tablets USP 5mg 100 Tablets Per Bottle	1.00	BT	1.500	0.15	\$0.15
0634	6505003697289	Dicloxacillin Sodium Capsules USP 250mg 100 Capsules Per Bottle	2.00	BT	0.340	0.02	\$5.10
0634	6505001168350	Diphenhydramine Hydrochloride Capsules USP 50mg 100 Caps/Bottle	1.00	BT	0.280	0.01	\$3.25
0634	6505001487177	Diphenhydramine Hydrochloride Inj USP 50mg/MI 1ml Syringe 10/Bx	1.00	BX	0.250	0.03	\$11.04
0634	6505013146681	Dopamine Hydrochloride And Dextrose Injection USP 250ml Bag 12s	1.00	PG	9.000	0.50	\$269.18
0634	6505000095063	Doxycycline Hyclate Capsules USP 100mg 500 Capsules Per Bottle	1.00	BT	28.830	0.92	\$0.06
0634	6505010932384	Epinephrine Injection USP 0.1mg Per MI Syringe-Needle Unit 1 0ml 10s	2.00	PG	3.200	0.28	\$39.66
0634	6505011575117	Furosemide Injection USP 10mg/MI 2ml Ampul 25 Per Package	0.40	PG	0.064	0.00	\$2.54
0634	6505010222646	Gentamicin Sulf Ophth Sol USP Equiv 3.0mg Gentamicin Per MI 5ml	2.00	BT	0.100	0.02	\$4.20
0634	6505012139514	Gentamicin Sulfate Injection USP 40mg Equiv/MI 2ml Vial 25/Pg	1.00	PG	0.660	0.02	\$7.09
0634	6505013480278	Guaifenesin and Pseudoephedrine Hcl Extended-Release Tablets 100s	1.00	BT	0.550	0.01	\$6.60
0634	6505002688530	Haloperidol Injection USP 5mg/MI 1ml Ampul 10 Ampules/Package	2.00	PG	0.260	0.04	\$9.88

Appendix B. Ward AMALs

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
0634	6505015153167	Heparin Sodium Injection USP 1000un/MI 10ml Vial 25 Per Package	0.20	PG	0.230	0.05	\$4.59
0634	6505011899903	Hydrocodone Bitartrate And Acetaminophen Tablets 100 Tabs/Bottle	1.00	BT	4.610	0.88	\$0.01
0634	6505012816758	Hydrocortisone Acetate And Pramoxine Hydrochloride Cream 1oz	2.00	EA	0.240	0.01	\$1.44
0634	6505009262095	Hydrocortisone Cream USP 1% 1 Oz (28.35 Gm) Tube	4.00	TU	0.440	0.02	\$44.00
0634	6505012149062	Ibuprofen Tablets USP 800mg 500 Tablets Per Bottle	1.00	BT	1.470	0.05	\$5.88
0634	6505012154825	Insulin Human Injection Modified 100un/MI 10ml Vial	2.00	VI	0.14	0.01	\$12.00
0634	6505010666568	Loperamide Hydrochloride Capsules USP 2mg 100 Capsules/Bottle	2.00	BT	14.280	0.16	\$0.01
0634	6505001538809	Lubricant Surgical 4 Oz (113.4 Gm)	6.00	TU	2.100	0.12	\$3.90
0634	6505011253253	Mannitol Injection USP 25% 50ml Single Dose Vials 25s	1.00	PG	6.750	0.18	\$26.38
0634	6505015054693	Meperidine Hcl 100mg/MI Inj,Carpuject,Luer Lock 10s	4.00	PG	2.200	0.48	\$25.44
0634	6505014626450	Metronidazole Hydrochloride For Injection 500mg 24 Per Package	1.00	PG	0.520	0.10	\$32.73
0634	6505015055813	Morphine Sulfate Injection USP 10mg/MI 1 MI Unit 10 Per Package	16.00	PG	18.400	2.40	\$198.56
0634	6505000797867	Naloxone Hydrochloride Injection USP 0.4mg/MI 1ml Ampul 10/Bx	1.00	BX	0.120	0.05	\$4.85
0634	6505010141378	Neomycin&Polymyxin B Sulfates&Hydrocortisone Otic Sol USP 10ml	1.00	PG	0.130	0.01	\$4.68
0634	6505013625340	Oxycodone And Acetaminophen Tablets USP 100s	1.00	PG	0.330	0.02	\$18.67
0634	6505001325181	Oxygen USP 99% Cylinder Type D 95gl	4.00	EA	52.000	1.20	\$483.88
0634	6505001325199	Oxygen USP 99% Cylinder Type H 1650 Gallon	2.00	EA	266.000	5.20	\$574.12
0634	6505005842338	Phenytoin Sodium Capsules Extended USP 100mg 1000 Caps/Bottle	1.00	BT	2.000	0.07	\$138.21
0634	6505006807352	Promethazine Hydrochloride Injection USP 25mg/MI 1ml Ampul 25/Bx	2.00	BX	0.620	0.04	\$19.40
0634	6505012085955	Ranitidine Injection USP 25mg/MI 2ml Single Dose Vial 10s	3.00	PG	0.630	0.06	\$34.11
0634	6505014623025	Ringer's Injection Lactated USP 1000ml Bag 12 Bags Per Package	10.00	PG	2.500	0.10	\$86.50
0634	6505014622436	Sodium Chloride Inj 1000ml Bag 12 Bags Per Package	2.00	PG	1.100	0.24	\$16.88
0634	6505013308925	Sodium Chloride Inj 0.9% 50ml Bags 84s	2.00	PG	6.300	0.16	\$117.04
0634	6505014624194	Sodium Chloride Irrigation 0.9% 1000ml Bt 12s	2.00	PG	16.700	0.24	\$23.14

Appendix B. Ward AMALs

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
0634	6505001839419	Sulfacetamide Sod Ophthalmic Ointment USP 10% 1/8 Oz (3.5 Gm)	2.00	TU	0.060	0.00	\$2.16
0634	6505005607331	Sulfadiazine Silver Cream 1% Topical 400gm Jar	4.00	JR	5.000	0.20	\$58.16
0634	6505010161470	Sulfamethoxazole And Trimethoprim Tablets USP 100 Tablets/Bottle	1.00	BT	0.370	0.02	\$5.26
0634	6505005824737	Tetracaine Hydrochloride Ophthalmic Solution 0.5% 15 MI	1.00	BT	0.100	0.01	\$3.39
0634	6505001394600	Tetrahydrozoline Hydrochloride Ophthalmic Solution USP 0.05%15ml	1.00	BT	0.070	0.00	\$3.36
0634	6505010696520	Theophylline Extended-Release Tablets 300mg 1000 Tablets/Bottle	1.00	BT	1.630	0.05	\$138.29
0634	6505010083054	Undecylenic Acid And Zinc Undecylenate Powder 45gm	4.00	CO	0.760	0.03	\$54.72
0634	6505014554230	Valacyclovir Hydrochloride 500 Mg 100's	1.00	PG	150.760	0.55	\$0.12
0634	6505012478801	Vancomycin Hydrochloride Sterile USP Equiv 1gm Of Vancomycin 10s	1.00	PG	0.570	0.03	\$61.03
		CONSUMABLES					
0634	6515010701497	Adapter Injection-Aspiration Site Male Luer Ster 200s (Note: Saline Lock Adapter)	0.50	PG	1.500	0.24	\$39.98
0634	6510009268883	Adhesive Tape Surgical Porous Woven 2 Inches By 10 Yards 6s	4.00	PG	5.120	0.24	\$32.84
0634	6510010087917	Applicator Dsip Pov-Iod 7.2ml Impreg Tip 4.5"Lg 150s	1.00	PG	2.000	0.28	\$14.02
0634	6515009051473	Applicator Plastic/Wood Rod 6" Lg 0.083" Dia Sterile Disp 2000s	0.10	PG	0.065	0.07	\$1.94
0634	6530011075798	Bag Sterilization-Biohazard Disposal 36x24" .0030" Sgl Wall 200s	0.50	PG	8.500	0.22	\$68.62
0634	6510000583047	Bandage Gauze 6-Ply Rolled White Sterile 4.5"X4yds 100s (Kerlix)	2.00	PG	2.300	0.06	\$197.10
0634	6135009857845	Battery Nonrechargeable Alk 1.5 Volt Aa 24s (Note: Used For Headlamps/Deluxe And Metal Laryngoscope)	3.00	PG	0.300	0.00	\$22.56
0634	6135008264798	Battery Nonrechargeable Alkaline 1.5 Volt Aaa Cell 24s (Note: Used For Laryngoscopes & Both Basic & Deluxe Oto/Ophthalmoscopes)	1.00	PG	0.200	0.00	\$3.25
0634	6510012787002	Benzoin Applicators Impreg 4"Lg Disp 500s	0.10	PG	0.100	0.01	\$1.43
0634	7210009356665	Blanket Casualty Plas Alum Coated 84x56inches Green Taped	20.00	EA	15.400	1.40	\$119.20
0634	6532014980599	Blanket Warming Hypothermia Plas Blue 85" X 37" Bair Hugger 10s	1.00	PG	18.000	0.03	\$66.00
0634	6515013719617	Blood & Intravenous Warming Set 8'lg 18mm Sterile Path 30s (Note: Used W/ Blood Warmer 6515013724470)	0.33	PG	3.630	0.50	\$67.98
0634	6515011281407	Blood Recipient Set Indirect Transfusion Y Type Nontoxic 48s	1.00	PG	8.000	1.40	\$156.09

Appendix B. Ward AMALs

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
0634	6515010726380	Cannula Laryn Yankaurer Dsgn 72in Lg 20s	1.00	PG	0.430	0.03	\$67.43
0634	6515014372532	Cannula Nasal Oxygen Curved Non-Flare Tip 7ft Disp 50s	0.40	PG	0.040	0.00	\$7.60
0634	6515013909654	Catheter & Needle Unit 18ga Green Protectocath Disp 200s	0.20	PG	4.500	0.03	\$78.73
0634	6515013909650	Catheter & Needle Unit Intravenous 20gage Crs Pink Disp Ster 200s	0.25	PG	5.775	0.04	\$123.25
0634	6515001490104	Catheterization Kit Urethral W/Bot-Outlet Drain Bag & 16fr Cath	4.00	EA	2.840	1.02	25.92
0634	6515014661195	Circuit Ventilator Vinyl Disp 6ft Lg 15s	0.30	PG	0.345	0.05	\$24.00
0634	7920011263250	Cloth Cleaning White 15x12" 900s	1.00	PG	0.050	0.00	\$82.50
0634	6515014493193	Collection Canister 1200ml Disp Plas W/Plas Lid U/W6515014350050 10s	0.20	PG	0.080	0.08	\$7.20
0634	6515009269201	Connector Tubing Straight A18 Taper Serrations 3.5"Lg .188"ld 50s	1.00	PG	0.650	0.06	\$13.04
0634	6515013738659	Cover Electronic Thermometer Probe Plastic Disposable 100s	3.00	PG	0.600	0.03	\$11.97
0634	6530000000070	Cup Medicine Plas 1 Oz 1.3x1.5"Flat Transparent Nesting Type 5000s	0.02	PG	0.500	0.03	\$0.51
0634	6515003245500	Depressor Tongue 6x0.75x0.062" Straight 100s	1.00	PG	0.690	0.04	\$2.02
0634	6840002424770	Disinfectant, Calcium Hypochlorite 45lb	0.08	BX	3.600	0.08	\$7.56
0634	6530011832863	Disposal Container Hypo Ndl & Syr 6.9qt Plas Puncture Resist 12s	0.25	PG	3.250	1.08	\$8.90
0634	6530014604782	Disposal Safety Box&Incineration Container Biohazardous Material 25s	0.20	PG	0.110	0.04	\$9.97
0634	6515015069041	Dome Kit Ibp Transducer Reusable F/U/M X 860 Mod 50s	0.20	PG	2.000	0.30	\$119.00
0634	6515014993126	Drainage Unit Pleural Cavity Chest Sahara Adult/Pediatric 6s	1.00	PG	1.800	1.00	\$279.18
0634	6530014558325	Drainage Unit Pleurevac Auto Transfusion Bag 6s	2.00	PG	2.500	0.50	\$696.84
0634	6515009269150	Drainage Valve Surg Heimlich 4.50" Lg 1" Dia Flutter Rbbr Ster 10s	1.00	PG	0.060	0.02	\$189.91
0634	6515011535627	Electrode Monitoring Adult Disp Adhesive Pad 200s	1.00	PG	10.000	0.20	\$75.22
0634	6515013750513	Filter Heat & Moisture Exchanger Anesthesia Ventilator 50s	0.10	PG	0.030	0.02	\$27.44
0634	7530002815941	Folder Set File Manila-Invalid 8.875inx11.75in 1/5 Cut 100s	1.00	HD	9.660	0.48	\$9.79
0634	7540006344124	Form Printed Clinical Record Temperature Pulse Respiration 100s	1.00	HD	0.010	0.00	\$3.36
0634	7540006344121	Form Printed Clinical Record-Doctors Orders Std Form 508	1.00	HD	0.010	0.00	\$5.18
0634	7540006344122	Form Sf 529 Chronological Record Of Clinical Care 100s	1.00	HD	0.010	0.00	\$3.29
0634	6510002020800	Gauze Petrolatum Accordion White 3x19" 12s (Note: Standardized W/Gauze In Bas & Triage)	1.00	PG	0.440	0.02	\$8.54

Appendix B. Ward AMALs

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
0634	6515013648554	Glove Patient Exam/Treat Large Sz Prepwr Snug Fitting Cuff 100s	2.00	PG	2.400	0.20	\$14.64
0634	6515013648553	Glove Patient Exam/Treat Medium Sz Prepwr Snug Fitting Cuff100s	2.00	PG	2.400	0.20	\$14.64
0634	6515011498839	Gloves Surgeons Gen Surg Sz 6.5 Rbbr Prepowdered Sterile Disp 50s	1.00	PG	4.560	0.48	\$8.09
0634	6515011498841	Gloves Surgeons Gen Surg Sz 7.5 Rbbr Prepowdered Sterile Disp 50s	1.00	PG	4.560	0.48	\$11.26
0634	6532001049895	Gown Hospital Patient Nonwoven Fabric Universal Size Disp 100s	1.00	PG	35.000	1.80	\$74.73
0634	6515011050614	Intravenous Injection Set 12 Components Nonvented Ster Disp 50s	1.00	PG	0.130	0.03	\$80.33
0634	6515014625967	Intravenous Injection Set Microdrip 60drops/MI 48s	1.50	PG	0.780	0.18	\$66.80
0634	6530014440346	Kit Catheter Central Venous Triple Lumen Ster Disp Csr	3.00	EA	3.000	0.75	\$174.00
0634	6515013716467	Mask Oronasal Hudson Dsgn Non-Rebreathing Mask W/O Safety Vent 50s	0.20	PG	1.940	0.34	11.858
0634	6515014341421	Monitoring Set Arterial Pressure Sterile 20s	0.15	PG	1.500	0.15	\$130.77
0634	6515007542834	Needle Hypo C13a Gp 18ga 1.438-1.562" Lg Luer Lock Reg Ster 100s	2.00	PG	1.320	0.09	13.26
0634	6515011738882	Needle Hypo C17 IV 18gax1.50" Luer Tip 5 Micron Filter Disp 100s	1.00	PG	0.500	0.05	24.92
0634	6515011727650	Needle Hypodermic Gp 22ga 1.50" Lg Luer Lock Plastic Hub Ster 100s	1.00	PG	0.480	0.50	\$4.36
0634	6510007755706	Pad Abdominal 7.5x8" White 3layers Ster Seal Pkg Post Op 240s	1.00	PG	15.000	3.20	\$44.48
0634	6530012775726	Pad Bed Linen Protective 70x30" Disposable Absorbent White 100s	1.00	PG	20.000	1.20	\$76.71
0634	6515014594403	Pad Defibrillator Automatic External 2-Pack (Note: Used With Aed 6515014794272)	1.00	PG	3.250	1.15	\$44.00
0634	6510007863736	Pad Isopropyl Alcohol Impregnated Nonwvn Cotton/Rayon1.5 X 2"100	6.00	PG	3.000	0.60	\$15.48
0634	6532011253269	Pillowcase Nonwoven Cloth 31.25-31.75x20.25-20.75" White Disp10s	2.00	PG	5.000	0.60	\$193.98
0634	6505004917557	Povidone-Iodine Cleansing Solution USP 7.5% 4 Fl Ounces Or 118ml	10.00	BT	4.100	0.20	\$10.00
0634	7210001446082	Sheet Bed Nonwoven Fabric White Disposable 96x60inches 100s	1.00	PG	50.000	2.17	\$164.35
0634	6510007219808	Sponge Surgical Cellulose & Cotton & Gauze 4x4" Sterile 1200s	0.25	PG	4.000	0.55	\$18.71
0634	6510007822699	Sponge Surgical Gauze Compressed 8x4" White Nonsterile 200s	1.00	PG	2.400	0.21	\$22.31
0634	PN: W-20058	Stopcock 4-Way Luer Lock Male 50s	0.50	PG	0.280	0.08	\$20.64
0634	6515007540412	Syringe Hypo Gp 10ml Cap Luer Slip W/O Ndl Concentric Tip 100s	2.00	PG	11.600	1.14	\$37.98

Appendix B. Ward AMALs

AMAL	NSN	NOMENCLATURE	QTY	UI	TOT W	TOT CUBE	TOT PRICE
0634	6515004627348	Syringe Hypodermic Gp 3ml Cap Luer Lock Tip Plas Ster Disp 100s	1.00	PG	2.000	0.19	\$6.59
0634	6515015009382	Syringe Irrigating 60ml Cap Ster Disp 160s	0.38	BX	0.285	0.02	\$79.80
0634	8540007935425	Tissue Facial White 2-Ply 24x36" Box Dispenser 100s	10.00	BX	368.000	41.80	\$70.10
0634	6515001490316	Tube Stomach Surg Salem E19 W/Funnel 16fr Dbl Lumen 48" Lg 50s	0.10	PG	0.400	0.07	\$18.43
0634	6515011742354	Tube Suct Surg Suction Dsgn 144" Lg Plas 9/32"Id Transparent 20s	1.00	PG	0.140	0.03	\$39.95

Current Tot Weight	525.38
Current Tot Cube	39.69
Current Tot Cost	\$5,033.96
Propose Tot Weight	1302.63
Proposed Tot Cube	105.62
Proposed Tot Cost	\$8,450.37

Appendix C
Laboratory AMALs

Appendix C. Laboratory AMALs

Equipment

AMAL	NSN	NOMEN	QTY	UI	TOTAL WEIGHT	TOTAL CUBE	TOTAL COST
618	6630014151593	Analyzer Clinical Blood Chemistry (Note: Piccolo)	1	EA	15	2.34	\$12,756.75
618	6640009821290	Beaker Laboratory Polypropylene 400 MI Capacity Rating B1 Low	1	EA	0.29	0.058	\$1.31
618	6640006841345	Box Microscope Slide Plastic 25 Slide Hinged/Friction Fit Cover	3	EA	1.05	0.066	\$43.65
618	6640012831435	Centrifuge Laboratory 11500 Rpm Electric Dc 9v 8.2x3.4x2.3"	1	EA	60	0.0369	\$1,511.01
618	6640014825490	Centrifuge Laboratory Trunnion 120v 50/60hz Ac Sgl Phase	2	EA	25.5	2.03	\$3,240.00
618	7110001941611	Chair Rotary Revolving	2	EA	60	37.5	\$173.24
618	6515011405268	Clip Sealing Blood Collection Tubing Aluminum 1000s	1	PG	0.01	0.001	\$15.30
618	6640004188010	Counter Blood Cells Differential Rest Device Key Quantity 8	1	EA	5.83	0.25	\$301.56
618	6515003343800	Forceps Hemo Kelly 5.25-5.75" Lg Slightly Curved Jaw Str Hdl Crs	1	EA	0.15	0.01	\$4.55
618	6640008897023	Funnel Common Lab Polypropylene Ribbed 100 Mm Inside Diameter	1	EA	0.13	0.032	\$13.71
618	6630004277000	Hemocytometer Set Component Quantity 9	2	SE	1.4	1	\$357.04
618	6640012870642	Incubator Dry Heat 25-115 Deg C Ac 115/120v 50/60hz 38x10cm	1	EA	5	1	\$563.27
618	6640011549914	Jar Biolog Stain Coplin W/Foil Lnd Screw Cap Sq Base 10sld Capct	1	EA	1	0.011	\$9.35
618	6650015012807	Microscope Optical Lab Gp Binocular&Trinocular Adjustable Focus	1	EA	20	0.6	\$6,130.00
618	6515015137010	Monitor Blood Draw Hemoflow 200 Collection Portable	1	EA	18	2.2	\$631.49
618	6150011768446	Outlet Power Strip Electrical 6 Place 13.125x2.375in 120 Volts	2	EA	0.2	0.002	\$39.78
618	6130014971363	Power Supply Apc Smart-Ups 1440va/980w Input 120v Output 120v	1	EA	1.55	0.15	\$599.00
618	6640002998490	Rack Test Tube Lab Hemoglutination Crs 90 Tube	3	EA	3.12	0.345	\$37.05
618	6650009333218	Refractometer Hand Immersion Type Aluminum 3scale Direct Reading	1	EA	1	0.217	\$715.13
618	4110001156027	Refrigerator Mechanical Biologicals 4.5 Cubic Feet 115v 50/60hz (Reagents)	1	EA	110	13.4071	\$724.32
	4110014512356	Refrigerator Solid State Bio: Blood	1	EA	125	8	\$9,697.78
618	6640013261590	Rotator Lab Variable Speed 12 X 13 X 6 In 120/230 V 50/60 Hz Ac	1	EA	17	0.431	\$1,813.21
618	6640014824743	Rotor Centrifuge Plas Swinging Bucket 6head F/Use W/Ice426	2	EA	6.5	1.5	\$960.00

Appendix C. Laboratory AMALs

AMAL	NSN	NOMEN	QTY	UI	TOTAL WEIGHT	TOTAL CUBE	TOTAL COST
618	7510001616215	Ruler Wood Metal-Edged Polished Maple 12 Inches	1	EA	0.04	0.001	\$0.24
618	5110002933444	Shears Straight	1	EA	0.12	0.012	\$7.32
618	6650009354247	Shield Optical Microscope Vinyl 16x20" Collapsible	1	EA	0.18	0.02	\$6.97
618	6515014828703	Shield Tube Stainless Stl 10 MI Holds Tube Thru Trunnion Ring (Note: Used With Centrifuge)	6	PG	0.12	0.12	\$354.66
618	6530014296715	Sink Unit Surgical Scrub And Utensil Hospital Field: 110v 60c Ac	1	EA	37.75	1.315	\$946.94
618	7520002815895	Stapler Paper Fastening Office Desk .5"W .25"Lg Gray	1	EA	1.5	0.06	\$5.60
618	6515011405267	Stripper-Sealer-Cutter Bld Coll Tu Hand Held Metal/Chrome/Plas	1	EA	0.01	0.001	\$74.44
618	7105007271091	Table Folding Legs	2	EA	34	5.044	\$437.54
618	6640012839308	Viewer Agglutination Test Tube	1	EA	3.5	0.1	\$664.82
618	6640002998493	Wash Bottle Laboratory 250 MI Plastic Polyethylene 2.5" Dia	3	EA	0.63	0.093	\$12.36

Current Tot Weight	605.75
Current Tot Cube	86.49
Current Tot Cost	\$52,772.60
Proposed Tot Weight	555.58
Proposed Tot Cube	77.953
Proposed Tot Cost	\$42,849.35

Appendix C. Laboratory AMALs

Consumables

AMAL	NSN	NOMEN	QTY	UI	TOTAL WEIGHT	TOTAL CUBE	TOTAL COST
0619	6515012346838	Applicator Wood Or Plastic 6" Lg Squared Off Disposable 100s	2	PG	0.28	0.026	\$1.06
0619	6515014802307	Bag Blood Sterile 450 MI Cap Single Bag	1	PG	0.18	0.15	\$153.6
0619	6530011075798	Bag Sterilization-Biohazard Disposal 36x24" .0030" Sgl Wall200	0.5	PG	8.5	0.2175	\$68.61
0619	0102LF0159800	Blood Donor Card, Dd-572, 100s	1	PG	1	0.1	\$11.00
0619	6550013170288	Blood Gp Serum Anti-A Liq 10ml Vi F/Slide/Tube/Microplate 15's	0.1	PG	0.1	0.0003	\$5.76
0619	6550013438993	Blood Grouping Serum Anti-A & B Liquid W/Dropper 10 MI Bt 15's	1	PG	1	0.003	\$69.17
0619	6550013170289	Blood Grouping Serum Anti-B 10ml Vi F/Slide/Tube/Microplate 15's	0.2	PG	0.2	0.0006	\$13.83
0619	6550010572575	Blood Grouping Serum Anti-D Usp 10ml	1	BT	0.23	0.011	\$4.75
0619	7530002223525	Book Memorandum	3	EA	5.04	1.8	\$7.80
0619	6630012337594	Capillary Centrifugal Hematologh Tube	2	PG	2	0.257	\$656.60
0619	6640006180066	Cover Glass Microscope Slide 22 Mm Square 1 Oz	1	PG	0.13	0.003	\$1.88
0619	6550014976414	Test Disc Panel Metlyte 8 Panel Reagent	3	EA	0.27	0.3	\$555.00
0619	6530011832863	Disposal Container Hypo Ndl & Syr 6.9qt Plas Puncture Resist 12s	0.15	PG	1.95	0.645	\$5.33
0619	6550010754011	Fecal Specimen Collection & Preparation Kit 9 Components 20s	1	PG	2	0.5	\$90.30
0619	7540001818354	Form Printed Laboratory Report Hematology 3part 100s	3	HD	27	0.06	\$10.26
0619	7540001818344	Form Printed Laboratory Report Miscellaneous 3part 100s	2	HD	2	0.04	\$6.84
0619	7540001818355	Form Printed Laboratory Report Urinalysis 3part 100s	2	HD	2	2	\$6.84
619	6515013648554	Glove Patient Exam/Treat Large Sz Prepwr Snug Fitting Cuff 100s	2	PG	2.4	0.2	\$14.64
0619	6515013648553	Glove Patient Exam/Treat Medium Sz Prepwr Snug Fitting Cuff100s	2	PG	2.4	0.2	\$14.64
0619	6550015147347	Gram Staining Kt Crystal Violet Decolorized/Iodine Safranin250ml	1	KT	2.25	0.55	\$42.00
0619	6630012309964	Holder Blood Collecting Tube Plas Polyprop 2.438"Lg .750"ld 10's	1	PG	0.13	0.012	\$3.48
0619	6640002999807	Immersion Oil Microscopy 1 Oz Bottle	2	BT	0.4	0.014	\$6.02
0619	7530010617772	Label Plastic A2 Rect 19mm W 492.125mm Lg Psa Red Roll 12s	1	PG	3	0.091	\$23.99
0619	6515004312890	Lancet Finger Bleeding 1.25x0.375" 5/32"Maximum Blade Length100s	1	PG	0.22	0.016	\$2.23

Appendix C. Laboratory AMALs

AMAL	NSN	NOMEN	QTY	UI	TOTAL WEIGHT	TOTAL CUBE	TOTAL COST
0619	6515010032368	Needle Hypo C5a Bld Coll 20gx1.50" Reg Thd Multiple Smpl 1000s	1	PG	5.2	0.6	\$93.81
0619	6510007863736	Pad Isopropyl Alcohol Impregnated Nonwvn Cotton/Rayon White 200s	3	PG	1.5	0.3	\$7.74
0619	6640004361500	Paper Filter Qualitative 380mm Diameter Pharmaceutical 100s	1	PG	2.08	0.113	\$20.03
0619	6640004365000	Paper Lens 1 Ream Tissue 11in Long 7.5in Wide	1	PG	1.17	0.037	\$17.88
0619	7520009357136	Pen Ball-Point Pocket Med Retract Black Cartridge Is Replaceable	1	DZ	0.36	0.144	\$5.00
0619	7510001743205	Pencil Red Extra Thick Glazed 6.25 Inches Long Colored Lead 12s	1	DZ	0.02	0.001	\$2.51
0619	6630001267503	Pipet Diluent Blood Lab Disp White Corp&Platelet W/O Tubing 200s	1	PG	1.8	0.1546	\$317.76
0619	6640010887108	Pipet Dropping Plastic Disposable 4 Inches Long 1.5 ML 500s	1	PG	5.5	0.395	\$14.55
0619	6630011917238	Pipet-Diluent Blood Lab Red Cell Count 10 Microliter Cap 200s	1	PG	1.4	0.04	\$281.09
0619	6550012789858	Potassium Hydroxide Sol Difco Labs .750ml 50dispensers P/Pkg	1	PG	0.19	0.001	\$44.57
0619	6505004917557	Povidone-Iodine Cleansing Solution Usp 7.5% 4 Fl Ounces Or 118ml	6	BT	2.46	0.096	\$6.00
0619	7510002050842	Rubber Band No.33 Rubber Natural And Rubber Synthetic .25lb Box	1	BG	0.1	0.0001	\$0.40
0619	6640010104122	Sealer-Holder Capillary Tube Plastic Disposable 6s	1	PG	0.33	0.015	\$5.3
0619	6640000744191	Slide Microscope Plain Frosted End 75.4 X 25 Mm 72s	3	PG	2.25	0.021	\$13.11
0619	6530000756636	Specimen Kit Urine 5pg/100ea 500s	0.2	PG	2.6	0.245	\$16.95
0619	6510007822700	Sponge Surg Gauze Compressed 2x2" White In Sterilz Paper Bag 200	6	PG	1.86	0.156	\$12.30
0619	7510002729662	Staples Paper Fastening Office Type .5"W .25"Lg 5000s	1	BX	0.43	0.02	\$0.59
0619	6550001464875	Sulfosalicylic Acid Dihydrate Analyzed Reagent 4 Oz (113.4gm)	1	BT	0.8	0.022	\$5.71
0619	6550015027253	Test Controls Hiv-1 Use W/ 6550015026235 1s	1	EA	1.15	0.15	\$29.54
0619	6550014340316	Test Disc Blood Analyzer F/Use With Piccolo Bld Analyzer (Lfg)	2	PG	2.5	0.02	\$296.46
0619	6550014866146	Test Disc Chem Plas Reagent Disc Panel 8cm Dia Sgl Use (Abg)	3	PG	3.75	0.75	\$460.50
0619	6550013766541	Test Kit Human Chorionic Gonadotrophin Determination 40 Tests	1	EA	1.35	0.018	\$88.59
0619	6550015026235	Test Kit Human Immunodeficiency Virus Type I Enzyme Hiv-1 100s	0.4	PG	0.9	0.1	\$322.816
0619	6550001656538	Test Kit Occult Blood Determination 100 Tests	1	PG	1.5	0.07	\$21.91

Appendix C. Laboratory AMALs

AMAL	NSN	NOMEN	QTY	UI	TOTAL WEIGHT	TOTAL CUBE	TOTAL COST
0619	6550012724054	Test Kit Streptococci Group A Detection 60 Tests	1	PG	0.25	0.055	\$127.00
0619	6550001595011	Test Kit Syphilis Detection Brewer Type 500 Tests	1	PG	1.8	0.12	\$54.63
0619	6550011225540	Test Strips&Color Chart Bilirubin Bld Glu Ket Nitrite Ph Prot100	1	BT	0.5	0.0208	\$57.48
0619	6640011190013	Test Tube 12 By 75 Mm Disposable Glass Borosilicate 1000s	1	PG	2.04	0.29	\$21.46
0619	6630011081444	Tube Blood Collecting Glass 5 Ml Green Cap Lithium Heparin 100s	1	PG	0.47	0.002	\$40.96
0619	6630011198575	Tube Blood Collecting Glass 7ml 15% Sol Edta Purple Top Ster 100s	1	PG	2.7	0.16	\$27.82
0619	6630001451137	Tube Blood Collecting Vacuum 7ml W/O Anticoagulant Nonsterile 100s	2	PG	4.96	0.4	\$15.00
0619	6640010689613	Tube Capillary Micro-Hematocrit Glass Heparinized 32 Mm Lg 500s	1	PG	0.1	0.001	\$19.22
0619	6515013851697	Tube Drainage Surg Penrose Dsgn 12x7/8x0.011" Amber Rubber 200s	0.1	PG	0.52	0.14	\$14.99
0619	6630012337592	Venous Microhematocrit Tube Kit 100 Tubes Floats And Closures (Note: Qbc Analyzer)	1	PG	1	0.1285	\$322.78
0619	6550013625327	Wright Geimsa Staining Kit Sufficient For 1000s Tests	1	EA	1.65	0.014	\$42.82

Current Tot Weight	142.11
Current Tot Cube	13.74
Current Tot Cost	\$4,861.16
Proposed Tot Weight	127.87
Proposed Tot Cube	12.30
Proposed Tot Cost	\$4,612.18

REPORT DOCUMENTATION PAGE

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13. SUPPLEMENTARY NOTES

14. ABSTRACT (maximum 200 words)
 Combat operations in Afghanistan and Iraq have emphasized the need for a Marine Corps surgical company that is modular and adaptable to changing battle environments. Just as the surgical company operating room may be split off to work nearly independently as a sort of forward resuscitative surgery section, other parts of the hospital can now find themselves working without their customary infrastructure.

Naval Health Research Center (NHRC) was tasked by the Marine Corps Systems Command to review and update the Authorized Medical Allowance Lists (AMALs) for the surgical company ward, the laboratory, and the pharmacy. Specific aims were identified by Marine Corps Combat Development Command for each AMAL, including determining whether the pharmacy AMALs could be disestablished. The NHRC method of modeling clinical requirements was used to analyze the needs for each of the named surgical company functional areas. This includes identifying which clinical tasks need to be performed in each functional area, then identifying the supplies needed to complete the tasks. Input was also solicited from medical units currently deployed to Iraq. Finally, a subject matter expert panel was held at Camp Lejeune, NC, to review the NHRC findings and recommendations.

This study resulted in doubling the number of critical care beds in the ward from 2 to 4, and providing the monitoring, ventilation, and warming capabilities to provide that care. The NHRC modeling process also demonstrated the feasibility of disestablishing the pharmacy AMALs without reducing the clinical capabilities of the surgical company. Research for this study also showed surgical companies are lacking a badly needed capability to quickly test donated blood for contagious diseases such as hepatitis. The Navy and the Marine Corps need to encourage the U.S. Food and Drug Administration to approve such point-of-care tests for use by American military medical facilities.

15. SUBJECT TERMS
surgical company, field medicine, ward, laboratory, pharmacy

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