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US Army Medical Materiel Agency
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GENERIC EXAMPLE

Technology Assessment and Requirements Analysis

Army Community Hospital

Fort City, State

October 2014

For Official Use Only



TARA



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Generic TARA Report Example for Demonstration Purposes

This report mentions various brand and trade names. Mention of any brand or trade names is not an endorsement of the product. Medical treatment facilities (MTFs) should evaluate all products comparable to those mentioned in this report when making procurement decisions and choose the product that best meets the needs and budget of the facility.

TARA

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Executive Summary

The Technology Assessment and Requirements Analysis (TARA) team conducted a site visit at Army Community Hospital (ACH) from 6 to 10 October 2014 at the request of the Army Medical Command (USAMEDCOM). The TARA team includes the Office of the Surgeon General (OTSG) consultants for Radiology, Clinical Laboratory Sciences, Clinical Nursing, Pharmacy, Nuclear Medicine (NM) and personnel from the Integrated Clinical Systems Program Management Office (ICSPMO) of the United States Army Medical Materiel Agency (USAMMA). The purpose of the visit was to interview departmental staff, observe scheduling and patient flow patterns, evaluate the quality of service, and assess the condition and utilization of medical equipment.

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The TARA recommendations will generate a cost avoidance of \$479K and a cost savings of \$63K. Highlights from the TARA team recommendations and observations include the following:

- A separate Joint Army and Navy archival initiative (Enterprise Clinical Imaging Archive [ECIA]) is in progress. With the ECIA project, the regional PACS archives are being replaced by ECIA temporal nodes that have awareness of each other, so authorized end-users will be able to view all historic Army and Navy completed radiology studies transmitted to ECIA. The ICSPMO-Information Assurance (IA) team has completed a Defense Information Assurance Certification and Accreditation Process (DIACAP) and an Authority to Operate (ATO) was issued May 2014 for the ECIA.
- All Regional Medical Command sites, including Fort City, will be upgraded/replaced with Agfa Impax 6.5 PACS in the next 12 months. The delivery order was issued December 2012 and the replacement process is in progress; hardware was delivered to ACH August 2014. It is anticipated that ACH will Go-Live on the new Agfa PACS in March 2015.
- ACH is the Army pilot for E-prescribing workflow incorporation
- Ensure incorporation of OTSG Pharmacy Top 3 goals into operational practice
 - FY 2015 bridge funding for Patient Centered Medical Homes (PCMH) pharmacist (DHP funding request by Consultant)
 - Allergy/Adverse Drug Reaction (ADR)/First time use/Show & Tell: Internal effort
 - High risk patient/medication discharge counseling: underway

Introduction

The Strategic Technology and Clinical Policies Council (STCPC) formally adopted the TARA program in January 1995, requiring TARA to visit each Army Medical Department (AMEDD) Medical Activity (MEDDAC) every 4 to 5 years and each medical center (MEDCEN) on a 3-year basis. Since its inception, TARA has initiated process improvements, expedited modernization of equipment, and generated cost avoidance of approximately \$14 million annually.

Clinical Review for Diagnostic Imaging Equipment

RADIOLOGY

The Department of Radiology is an efficient and productive organization which supports ACH, two Troop Medical Clinics (TMCs) and one Community-Based Medical Home (CBMH). The department provides general diagnostic radiology, fluoroscopy, mammography, ultrasound (US), and computed tomography (CT), magnetic resonance imaging (MRI), minor interventional radiology (IR), and NM services. No radiation oncology services are supported at this facility. The department universally uses Picture Archive and Communication System (PACS) and teleradiology. The TARA Team last conducted a visit to ACH and the Department of Radiology in April 2011.

A variety of data sources are used to estimate the staffing requirements of the Department of Radiology. Sources for this data include the American College of Radiology (ACR), the Joint Healthcare Manpower Standards Study developed by the Joint Healthcare Management Engineering Team (JHMET) in 1994, and the Automated Staffing Assessment Model (ASAM)-III procedure-based staffing model. These performance measures are then compared with established data in determining degrees of compliance and expected goals.

The ASAM-III staffing model recommends that non-graduate medical education (GME) sites optimally perform an average of 12,316 exams per diagnostic radiologist. The Diagnostic Radiology Service performed and interpreted approximately 103,170 exams in a recent 12-month period (1 August 2013 to 31 July 2014).

The raw workload obtained from the Composite Health Care System (CHCS) was reviewed for evidence of miscoding and over- or underutilization of appropriate codes, which can occur in the use of "procedure groups" in CHCS. There was a 22.1 percent increase in calculated workload compared with the 2011 TARA report. The ASAM-III staffing model for this caseload indicates the department's current workload earns 8.4 total full-time equivalents (FTEs); 8 FTE radiologists, 0.3 FTE of NM, and 0.1 FTE of teleradiology workload is included in the calculation.

The current staffing level is 6.1 FTE of diagnostic radiology for the department. This is calculated from the presence of 4 Active Duty (AD), 2 civilians and 0.1 FTE radiologists via commercial teleradiology service. This staffing level is approximately two FTEs below adequate staffing for the current caseload and will

Recommendations for Diagnostic Imaging Equipment

be addressed by increasing AD radiologist staffing to five FTEs (meeting the current Human Capital Distribution Plan [HCDP]) and increasing teleradiology utilization. The most recent Army Stationing and Installation Plan (ASIP) Summary Report indicates reasonable stability to the beneficiary population when considering projected AD and family member losses balanced by ACH recapture initiatives.

The CBMH obtains radiology support from ACH as well as the network. The network radiology support is contingent upon the type of exam required and ACH's ability to meet access to care standards in that modality. The remaining TMCs (i.e., Soldier Health Services, Aviation Medicine, and TMC) capture diagnostic X-ray images on site, which are centrally interpreted at ACH.

The department has a quality assurance (QA) process to identify and address unread reports. The final radiology reports, generated from the on-site radiologists and the commercial teleradiologists, are entered into CHCS in an appropriate turnaround time (e.g., 1 hours STAT and 72 hours for routine imaging).

The radiologist's workload (report count) for a typical day* at ACH is shown in Table 1.

TABLE 1. ACH Radiologist/NM Physician Reports Workload of a Typical Day*

Modality	Reports (ACH)	Army Health Clinics	% Total Exams
Fluoroscopy	6	0	2%
Diagnostic X-ray	158	116	67%
Mammography	20	0	5%
CT	41	0	10%
MRI	23	0	5%
US	41		10%
NM	5		1%
Total:			100%

*Daily caseload based upon annual Report caseload divided by 250 regular workdays/yr

Table 1 demonstrates that approximately 42 percent of the diagnostic x-ray cases arrive from the TMC locations for interpretation by ACH radiologists. This number includes those examinations interpreted from Health Center. The support personnel to generate these examinations at the Health Clinics must be calculated into the total support personnel requirements.

The Joint Healthcare Manpower Standards Study, developed by the JHMET in 1994, estimates six technologists and other support personnel are required per radiologist, while the more recently developed ASAM-III model earns seven support personnel per radiologist. Calculation based upon the ASAM radiologist staffing recommendation of 8.4 (or 9) radiologists results in a requirement of 63

Recommendations for Diagnostic Imaging Equipment

support personnel. Current departmental staffing of technologists (including 3 NM technologists and 57 other support personnel) is 6 personnel below the predicted staffing model. The department's ASAM predicted staffing model deficit is partially compensated for through utilization of borrowed military manpower (BMM) at the outlying Soldier Health Service Clinics. Addition of an administrative assistant would significantly reduce the administrative burden placed upon the Department Chief and NCOIC. The efficiency gained, by adding the administrative assistant, would facilitate better supervision of the NM Department as well as free the Chief to increase participation in clinical activities.

Even in light of the reduced technologist support, appointment waiting times are very low. Following the provider's entry of the consult, most exams are available in a minimal number of days. An important caveat to wait times is the current restriction of MRI and US to AD only. However, US is also open to appropriate level obstetric patients. The limiting factor for both US and MRI is technologist availability.

Since the 2011 TARA report, there is an increased utilization of radiologist-generated voice dictation. The increased utilization of voice dictation provides an opportunity to repurpose two of the three existing radiology transcriptionists to medical support assistant positions to augment front desk staff. This move would free the radiology technologists currently performing this task to complete additional diagnostic imaging workload and improve efficiency.

The expansion of MRI services to evenings and weekends would help to reduce backlog and open services to non-AD beneficiaries. This is contingent upon the ability to hire additional MRI technologists. If hiring is successful, transitioning one senior MRI technologist into a working-supervisory position is recommended to manage this complex imaging modality. Careful analysis of the local market pay scales is also recommended to obtain high quality technologists in a competitive market.

Remaining appointment waiting times are commendably very short compared to other comparable MTFs. It is recommended that targets for routine examination or procedure appointment wait times be set at or below 2 weeks backlog, in consultation with input from the referring clinicians. Most of ACH's radiology appointments are available within one week. Clinical comfort with waiting frequently begins to fall rapidly beyond this, resulting in an increasing desire to "add-on" exams in order to not have to wait for the next "routine" appointment. While not reviewed during this visit, no-show rates should be reviewed to assure that processes are in place to minimize this impact upon the schedules.

The current civilian imaging services utilization, within the TRICARE network, was assessed. The M2 database was reviewed for all radiology imaging code claims paid for Prime and non-Prime beneficiaries that were not in-patients or related to an emergency room (ER) visit. MRI is the modality with greatest potential for recapture. The use of ACH's Right of First Refusal (ROFR) for Prime patients referred from ACH for imaging within the network, combined with technologist hiring

Recommendations for Diagnostic Imaging Equipment

initiatives in MRI and US, will assist in recapture of many of these referred exams.

Conversations with multiple clinicians from various clinical departments indicated high clinical satisfaction with ACH's Radiology services, both during regular duty hours and with provision of support during non-regular duty times. The clinicians felt that there are excellent working relationships with the Department of Radiology leadership as well as interdepartmental open lines of communication. The quality of the interpretations is felt to be very high.

The Department of Radiology has a well-run Performance Improvement (PI) program. There are appropriate and current monitoring activities as well as PI initiatives focused on important aspects of patient care; this is well documented in monthly PI Committee minutes. Quality Services and Risk Management (RM) reviews indicates very satisfactory performance of the Department of Radiology PI processes and documentation. The department has a solid ongoing monthly peer review process. There is good reporting turnaround time within the Department of Radiology, who universally utilizes an integrated speech recognition system.

Image and exam availability and accountability are again noted by the Department of Radiology as being essentially 100 percent. This is a notable accomplishment and demonstrates the accountability of digital imaging systems and databases. Examination/image search time is also notably fast for digital files; exam availability rendered within a couple of minutes of being requested. The current PACS system at ACH is felt to be providing an excellent service.

Recommendations for Diagnostic Imaging Equipment

GENERAL RADIOGRAPHY

Army Community Hospital Department of Radiology

The hours of operation for the Department of Radiology are from 0730 to 1600, Monday through Friday. Overall, the department has a consistent workload throughout the day with a Fiscal Year (FY) 2014 workload of 32,576 exams. This workload equates to a utilization factor of 2.0 for direct radiography (DR) and 4.0 for general analog. It should be noted that DR has a 2:1 efficiency gain over a general analog system.

Currently, the department has 6 rooms that have X-ray capability. Room 2 (Equipment Control Number [ECN]: 000000) is funded for replacement with a DR system utilizing FY 2014 funding (ACN: XXXX-XX-XXX), installation is projected for December 2014. The DR system in room 3 (ECN: 000000), DIS October 2014, is not experiencing any issues. The general analog systems in room 4 and room 7 (ECN: 000000 and ECN: 000000), DIS 2011 and 2008, respectively, are not experiencing any maintenance issues and the clinicians are satisfied with both system's performance.

Recommendations for Diagnostic Imaging Equipment

The TARA Team recommends that the DR systems in room 2 and room 3 not be replaced in the next 5 years. From a workload perspective, room 2 and room 3 systems have the capability to handle the majority of workload in the radiology core, due to the efficiency gains from DR technology. TARA recommends that the room 7 analog system (ECN: 000000) be replaced with a DR system in FY 2017 and the room 4 analog system (ECN: 000000) not be replaced in the next 5 years.

Health Clinic Department of Radiology

The hours of operation for Health Clinic's Department of Radiology are from 0630 to 1530, Monday through Friday. The clinic is the busiest of all the clinics at Fort City. The clinic's FY 2014 workload was 17,445 exams, with peak workload hours from 0700 to 1100 (11,368 exams or 65 percent of the annual workload). This workload translates to a utilization of 1.42 for DR or 2.84 for general analog.

Currently, the clinic has 2 general analog systems: room 1 (ECN: 000000) and room 2 (ECN: 000000). The systems are supported by 2 CR readers (ECN: 000000 and ECN 017745) located in the QC area. From discussions with the radiology technicians, both X-ray systems are experiencing maintenance issues, especially the room 1 system. Due to high volume workload, both systems are due for replacement at the clinic. The TARA Team recommends and has generated the requirements to replace the room 1 system (ECN: 000000) with a DR system in FY 2016 as well as the room 2 system (ECN: 000000) with a DR in FY 2017. With the CR to DR radiology core transition, the CR readers will not be needed and should be properly turned-in.

Health Clinic Department of Radiology

The hours of operation for Health Clinic's Department of Radiology are from 0700 to 1600, Monday through Friday. The clinic's FY 2014 workload was 5,951 exams, with peak workload hours from 0700 to 1100 (3,789 exams or 66 percent of the annual workload). This equates to a utilization factor of 0.47 for a DR system. The department's Digital Diagnostic DR system (ECN: 000000), DIS July 2011 is not experiencing any maintenance issues and clinicians are satisfied with the image quality. The TARA Team recommends not replacing the system in the next 5 years.

Troop Medical Clinic

The hours of operation for TMC's Department of Radiology are from 0700 to 1600, Monday through Friday. The clinic's FY 2014 workload was 2,292 exams, which equates to a workload utilization of 0.36 for a general analog system.

Overall, the clinicians and staff are satisfied with the quality of images produced from the department's CR reader (ECN: 000000) and general analog x-ray system (ECN: 000000). Due to low clinical workload, the TARA Team recommends life expectancy (LE) replacement of both systems in FY 2017 with similar systems.

Recommendations for Diagnostic Imaging Equipment

COMPUTED RADIOGRAPHY (CR) The radiology core's two CR readers (ECN: 000000 and ECN: 000000) support rooms 4, 6 and 7 as well as the department's two portable analog systems. Overall, the systems are functioning properly and clinicians are satisfied with the image quality. The TARA Team recommends not replacing these systems in the next 5 years. With the CR to DR radiology core transition, the CR readers will no longer be needed. Once the core completely transitions to DR, the CR readers (ECN: 000000 and ECN: 000000) should be properly turned-in.

PORTABLES

The Department of Radiology has 3 portable radiographic units: a GE Optima direct radiography system (ECN: 000000) and 2 GE AMX-4 general analog systems (ECN: 000000 and ECN 000000). The combined workload is 1,389 exams.

The GE Optima and AMX-4 systems are used throughout the wards in the facility. The operating room (OR) has a dedicated AMX-4 unit for cases, when X-ray capabilities are needed. Overall, all three systems are not experiencing any maintenance issues and clinicians are satisfied with the performance of the units.

The TARA Team recommends routine LE replacement of the GE AMX-4 (ECN: 000000) in FY 2016 and the GE AMX-4 (ECN: 000000) in FY 2018. The TARA Team recommends that the GE Optima unit not be replaced in the next 5 years.

C-ARMS

OR

To support the main facility's 6 ORs, three C-arms are utilized: a GE Flexiview 8800 (ECN: 000000) and 2 Philips BV Pulsera units (ECN: 000000 and ECN 000000). The C-arm workload for the ORs was 515 exams in FY 2014, which equates to a 0.84 utilization or 2 C-arms. All three systems have vascular capability and clinicians are satisfied with their performance. The TARA Team recommends not replacing any the systems within the next 5 years.

Pain Management

The Department of Pain Management is located on the first floor within the main hospital. The section's hours of operation are from 0730 to 1600, Monday through Friday.

The department's FY 2014 workload (744 exams) equates to a 0.4 utilization. The clinic's workload has steadily increased with the return of the clinician from deployment.

Recommendations for Diagnostic Imaging Equipment

The staff is satisfied with the department's 1 C-arm (ECN: 000000) purchased when the new pain clinic opened (DIS September 2014). The department's schedule has sufficient capacity to handle an increased workload before another C-arm is justified. Should workload increase to a point where an additional C-arm is needed, please note that the pain clinic does not have an additional treatment room for C-arm use. The TARA Team recommends the Department of Pain Management reutilize a room in the main hospital, once the pain clinic area, to perform additional pain cases to meet patient care needs.

FLUOROSCOPY

The Fluoroscopy's FY 2014 workload (1,500 exams) equates to a utilization factor of 0.9 or 2 systems. The department's 2 fluoroscopy systems are located in room 5 (ECN: 000000), DIS 2003, and room 6 (ECN: 000000), DIS 2012. The room 6 system handles 90 percent of the workload; room 5 is primarily used in a backup or overflow capacity.

Due to the large number of arthogram studies performed, the workload for fluoroscopy is unusually high. Historically, fluoroscopy exams are declining due to the use of CT, but the arthogram studies still need to be factored into the system's utilization.

The room 6 system is not experiencing any maintenance issues. The TARA Team recommends not replacing this system in the next 5 years.

The room 5 is due for LE replacement. Due to both system's high workload, TARA recommends and has generated a requirement to replace the room 5 fluoroscopy system with only fluoroscopic capability in FY 2016. Typically, the TARA replaces radiology/fluoroscopy (R/F) rooms with the same level of capability. However, due to DR technology throughout the department, this requirement should not be needed from straight X-ray capability.

ORTHOPEDICS

The hours of operation for the Department of Orthopedics are from 0700 to 1600, Monday through Friday. The annual FY 2014 workload (4,786 exams) equates to a utilization factor 0.6 or 2 general analog systems. The workload is consistent throughout the day (e.g., no peak hours).

The staff is satisfied with the performance of the department's 2 general analog systems (ECN: 000000 and ECN: 000000) supported by a CR reader (ECN: 000000). The TARA Team recommends that the general analog system (ECN: 000000) be replaced in FY 2017 as a routine LE replacement. Due to the efficiency gain achieved from DR technology, the additional room system (ECN: 000000) should be removed and not replaced when it becomes a maintenance burden. Upon removal of the analog (ECN: 000000), the CR reader (ECN: 000000) should also be turned in, as it is no longer needed.

Recommendations for Diagnostic Imaging Equipment

MRI

The MRI section's routine hours of operation are 0700 to 1900, Monday through Friday. The section has six MRI certified technologists (five civilian and one contract). Due to the 12-hour day operation of this section, two technologists work staggered schedules, during which a single technologist may staff the section for several hours a day or consecutive days. The facility has 2 MRI systems: a GE HDXT 1.5 Tesla (ECN: 000000), DIS February 2010, and a GE Discovery 750 W 3.0T (ECN: 000000), DIS March 2013.

The GE HDXT 1.5T MRI system is housed in a modular building that is shared with CT. Seamlessly integrated into the main hospital, patients do not have to travel outside for exams. The location is easily accessible to the main Department of Radiology. The system is utilized for routine MRI exams for inpatients and ambulatory patients from the Orthopedic Department. The GE HDXT 1.5 system has an approved requirement awaiting FY 2015 funding for a mid-life upgrade to include the newest available technology (i.e., replacement of gradients, R/F coil and all receiver coils). TARA recommends not replacing the GE Discovery 3.T system for the next five years.

The GE Discovery 750W (ECN: 000000), housed in a modular building next to the Intrepid Center of Excellence, is mainly utilized for outpatients and the Intrepid Center residents. The majority of exams are complex anatomy or neurology exams, specifically mild traumatic brain injury (mTBI) studies for the residents at the Intrepid Center.

The MRI workload for 12 months (CHCS data from 1 August 2013 to 30 July 2014) was approximately 5,863, which equates to a utilization factor of 0.9 or 2 systems. The MRI workload breaks down to the following procedure types: spine, 25 percent; lower extremity, 36 percent; brain and neck, 13 percent; upper extremity, 16 percent; and other body studies (e.g., abdomen, pelvis, TBI functional, etc.), 1 percent. Due to the ACH training mission, this represents a fairly typical procedure breakdown scenario. Exam times are representative of those used at other sites: generally between 20 to 45 minutes, depending on the actual procedures.

Based on the widely fluctuating workload and distance from the 3.0T system to the main Department of Radiology, it is difficult to average the number of exams conducted per day. The Department of Radiology attempts to maximize productivity by scheduling exams requiring contrast and the presence of a radiologist on select days of the week. The current patient appointment backlog for MRI exams is approximately 9 days.

TARA also assessed referrals to the network for MRI services. Based on CHCS data, ACH referred 4,200 MRI exams to the network in FY 2014. A detailed review of these referrals indicated a majority of exams were performed outside ACH capture area of ACH enrollees while TDY for training or other missions. The remaining referrals were from other specialties not available at ACH.

Recommendations for Diagnostic Imaging Equipment

A review of medical maintenance reports indicated that both systems are functioning without any significant issues. The Medical Maintenance Department maintains a comprehensive service contract with the manufacturer for services and repairs.

COMPUTED TOMOGRAPHY (CT)

The CT section has a Philips Brilliance 64 (ECN: 000000), DIS February 2007. The system's gantry was upgraded in CY 2009 to a 64-slice configuration. In CY 2012, the system received the dose saving package iDose upgrade.

The section's hours of operation are from 0730 to 1630, Monday through Friday, with after hours and weekends on-call service. The AD technologists provide all on-call services for after hour emergencies and weekends.

The department has three civilian technologists dedicated to CT. In addition, the Department of Radiology provides CT training to all of their AD technologists.

Technologists can perform IV administration for CT exams, as required by providers. The section does not administer anesthesia and all pediatric CT exams are performed without sedatives.

The CHCS workload reports indicated that the section performed approximately 10,341 annual CT exams, which equates to a utilization factor of 0.7 or 1 system. The variety of the studies are as follows: head and neck, 28 percent; chest, 7 percent; abdomen, 29 percent; pelvis, 25 percent; spine, 5 percent; and other studies (e.g., extremities), 6 percent. The CT studies are scheduled during normal operation hours, however emergencies, add-ons and inpatients are seen same-day. Currently, the section has a 10-day patient appointment backlog.

The M2 data indicated that ACH had referred over 3,000 CT exams to outside facilities. A detailed review of these referrals showed the majority of exams were performed outside the ACH capture area of ACH enrollees while TDY for training or other missions. The remaining referrals were from other specialties not available at ACH.

A review of the department layout indicated that the section has adequate space and air flow for safe and efficient operations. The CT suite has a dressing room and convenient accessible to a bathroom for patients' comfort and privacy. Workflow review demonstrated how technologists are limited to the number of exams performed per day due to administrative tasks they are required to complete.

A review of medical maintenance reports indicated that the CT was experiencing extended downtimes over the past 12 months. Further investigation revealed the CT issues were a result of faulty facility wiring (a loss of ground at the CT uninterruptable power supply [UPS]) causing numerous electrical spikes damaging sensitive CT components. The facility identified the issue and hired an electrical contractor to repair the fault and return the line to the National Electrical Manufacturers Association (NEMA) code. Upon Philips replacing all effected components and completion of the facility repairs, the CT has not exhibited any further major issues to date.

Recommendations for Diagnostic Imaging Equipment

The TARA Team was informed by ACH senior leadership that a cardiologist was assigned to the MTF with a cardiology mission. Therefore, TARA recommends replacing the existing CT with a CT that has full cardiology clinical and pulmonary capabilities in FY 2015.

ULTRASOUND (US)

Radiology

Located in the main Department of Radiology, the US section's routine hours of operation are from 0730 to 1630, Monday through Friday. The section currently has four full-time technologists. The technologists are responsible for QC and archiving of all exams, as well as providing coverage for after hours and weekend calls.

At the time of the TARA visit, the department was only scanning AD and OB patients due to a technologist shortage. Authorized five technologists, the department has been operating with only three scanning technologists for several months. One technologist quit and another technologist, for several months, is unable to scan due to health reasons. The department was in the process of hiring a new technologist. The section is also acquiring a Red Cross volunteer who will scan. The Department of Radiology front desk personnel and the US technologists make patient appointments and instruct patients on exam preparations.

A review of the US workload report (01 August 2013 to 31 July 2014) reflected that the US section conducted approximately 10,352 annual exams. The workload was low due to the staffing issues described above. Except for AD and OB patients, the patient appointment backlog is about 30 days. However, emergency and urgent add-on patients are seen on the same day. Breast US follow-up exams, referred from Mammography, are usually fit in the same day. A workload of 10,352 exams yields a utilization of 3.9 or 5 systems. Approximately 40 percent of the workload was OB studies.

The Trophan Disinfecting system is utilized in the section to disinfect US probes. The department currently has five US systems in the department; all are Philips iU22's. Four systems are used for general scanning and one is used primarily for biopsies. All systems are maintained by the MTF Medical Maintenance staff. The oldest Philips iU22 (ECN: 000000), DIS February 2008, is in room 3 and is used for general scanning. This system has had numerous maintenance problems. The power supply has been replaced multiple times. The TARA Team recommends and has created a requirement to replace this system in FY 2016. However, TARA recommends that the department submit an urgent request to replace the system sooner.

The Philips iU22 (ECN: 000000), DIS January 2009, in room 4 has had some maintenance problems. This system should be replaced in FY 2016.

The systems in room 1 & 2 (ECN: 000000 and ECN: 000000), both DIS February 2010, should be replaced in FY 2017. The Philips iU22 (ECN: 000000), DIS August 2012, is used primarily for biopsies. This system should be replaced in FY 2018.

Recommendations for Diagnostic Imaging Equipment

Cardiology

The MTF's one echocardiology US, a Philips iE33 (ECN: 000000, DIS June 2011) is located in the Cardiology Department. Currently, there is one civilian cardiologist and a civilian technologist on staff.

The technologist schedules all the patients as well as performs all the scanning. ACH currently conducts the following types of scans: continuous wave (CW) Doppler studies, heart valve and chamber function studies. The department sees only AD patients and performs approximately 1,000 scans per year. The utilization for this system is 0.5 or one system. This system should be replaced in FY 2017.

Obstetrics/Gynecology (OB/GYN)

The OB/GYN Department currently has one Philips iU22 US (ECN: 000000), DIS March 2013, and several small CEEP level US. When the Philips iU22 was purchased, the OB/GYN department intended to hire an US technologist to shift the number of Department of Radiology OB US examinations back to the OB/GYN Department. At the time of the TARA visit, the OB/GYN department was unable to hire a technologist. Currently, a trained RN utilizes the Philips iU22 to perform approximately 10 AFI (Amniotic Fluid Index) calculations per day. The system is also used several times a week by the physicians. The system meets the needs of the department without any maintenance issues. The OB/GYN department should continue to pursue hiring a US technologist. The TARA Team recommends replacing the system in FY 2019.

UROLOGY

The Urology Department currently has two AD urologists and one civilian physician's assistant (PA). The department also has a civilian working in each of the following positions: licensed practical nurse (LPN), fluoroscopy technologist, medical assistant and scrub technician. The department's hours of operation are 0730 to 1600, Monday through Friday.

The department's one digital fluoroscopic urology system, a a Liebel Flarsheim Hydravison DR (ECN: 000000), DIS August 2006, is operated by a technologist. This system has had numerous maintenance problems, including failed monitors. The system's maintenance contract is with Liebel Flarsheim. A requirement to replace this system was approved and is awaiting funding for FY 2015 (ACN: XXXX-XX-XXX).

Currently, cases requiring anesthesia are not performed in Urology. When the new system is installed and the room is reconfigured, anesthesia cases may be performed in Urology. ACH contracts an ESWL mobile service, with a technologist included, to be available at ACH the third Thursday of every month. The contract cost is \$1,179 per procedure, not to exceed 45 procedures a year.

The Urology Department has two videoscopic system. When the urologist requires a videoscopic system in the operating room, the clinics' system is

Recommendations for Diagnostic Imaging Equipment

utilized, which causes scheduling issues. The TARA Team recommends and has generated a FY 2016 requirement for a new videoscopic system (includes a transportable cart and 3 urethrosopes) for use within the operating room.

Urology has scheduled OR use 2 days per week and typically performs 40 operatory cases per month. On average, the urologist performs two robotically assisted procedures in a local civilian hospital and has no difficulty scheduling these cases on the network.

The clinic's 20 watt Holium Laser (ECN: 000000) is past LE and a newer system would provide improved patient outcomes. The TARA Team recommends the procurement of a new Holium laser, which is a CEEP level item. The Holium laser procurement is a critical requirement since the clinic, on average, performs 40 stone procedures a month.

BONE DENSITOMETER

The facility's one bone density scanner is located in a room next to the Mammography Department. The section performs approximately 395 bone density scans per year, which equates to a utilization of 0.1 or 1 system. Bone density scans are performed on Thursdays and Fridays, from 1200 to 1600. The scans are schedule every 30 minutes and the section accommodates walk-ins. The patients, scheduled by Mammography Department, wait in the mammography waiting room.

The bone density scanner, a Hologic Discovery QDR (ECN: 000000), DIS December 2006, is maintained by the ACH Medical Maintenance Department. This system has several maintenance problems. The CD drive on the computer does not function properly. A replacement could not be found because the computer is too old; the technologist has a work around. The technologist also reported occasionally getting artifacts on the images that require rescanning the patient. The TARA Team recommends and has created an FY 2016 requirement to replace this system. However, TARA recommends the MTF submit for an urgent replacement so the system can be replaced in FY 2015.

MAMMOGRAPHY

The Mammography Department's hours of operation are from 0700 to 1600, Monday through Friday. The department has three civilian technologists. The department has started a hiring action to hire a clerk.

The department is Mammography Quality Standards Act (MQSA) certified and ACR accredited. The department has a waiting area for patients and dressing rooms. There is a construction project that will build a patient window in between the waiting and the technologist's areas. This will improve the check in process and patient privacy.

Recommendations for Diagnostic Imaging Equipment

The department currently schedules 30 minutes for screening exams, 30 minutes for diagnostic exams and 1-hour for biopsies. Screening and diagnostic exams are performed Monday through Friday. Stereotactic biopsies are performed in the mornings and US biopsies are performed in the afternoons. Current backlogs are as follows: less than 5 days for screening exams and 2 weeks for diagnostic exams.

In the period from August 2013 through July 2014, the section performed 3,539 screening exams, 1,435 diagnostic exams, and 98 stereotactic biopsy procedures. For direct digital mammography system utilization calculations, it is expected that patients can be scheduled at 15-minute intervals for screening studies, and at 30-minute intervals for diagnostic studies. Using this model, the digital mammography utilization for ACH is 0.43 for screening studies and 0.35 for diagnostic studies, yielding a total utilization of 0.80 or 2 systems.

The Mammography Department has two Hologic Selenia Dimensions direct digital mammography systems with R2 CAD (ECN: 000000 and ECN: 000000), both DIS November 2010. There is a maintenance contract with Hologic and first call is provided by the MTF Maintenance Department. The systems have been reliable and Hologic is responsive. The TARA Team recommends and has created a requirement to replace ECN: 000000 in FY 2018 and ECN: 000000 in FY 2019.

The Siemens Mammotest Prone Stereotactic Biopsy Table system (ECN: 000000), DIS March 2009, is located in room 2 with one of the Hologic mammography systems. This system already has a replacement requirement (ACN: XXXX-XX-XXX). Due to the unavailability of system with Windows (WIN) 7 OS to purchase, the DIRS (Diagnostic Imaging and Radiotherapy Subcommittee) decided in FY 2014 to defer replacement purchases of prone tables until FY 2016. The TARA Team and the DIRS are monitoring the situation and will notify the site of any changes.

NUCLEAR MEDICINE (NM)

Nuclear Medicine (NM) is one of the general services performed by the Department of Radiology. Although there is a NM Physician (60B) authorization position, one has not been assigned in the past due to a critical shortage in the specialty. The NM workload has increased by approximately 50 percent (approximately 1,042 imaging studies and 7 localization injections) since the previous 2011 TARA report. The NM workload is unique for a site covered by general radiologists in that there are a number of specialized nuclear studies performed.

Consistent with data from the 2011 TARA report, general bone scans only account for approximately 60 percent of studies performed. The current procedural terminology (CPT) coding for studies in CHCS is accurate and up-to-date; this is commendable. The NM studies are not performed outside regular business hours. There are currently no backlogs for studies and no ROFRs are denied for studies performed at ACH. All clinicians interviewed report excellent availability of NM services; some clinicians indicate a need for subspecialty NM physician support.

Recommendations for Diagnostic Imaging Equipment

A variety of staffing models are available. The current proposed model uses the professional component of the study RVUs to estimate physician workload with the total number of studies performed to estimate technologist and administrative workload. The total workload translates to an estimated 0.3 physician FTE, 2 technologists FTE and 0.5 administrative support FTE. The physician workload is not high enough to justify assigning a dedicated 60B to ACH; however, the expertise is needed most because of the complexity of cases performed. The 60B and radiology (61R) consultants jointly identified assigning a dual-certified radiologist to ACH to meet the subspecialty expertise need, who can also contribute to the general radiology workload. There are three technologists currently assigned to the clinic (two civilians and one AD). While the two civilian technologists meet the current technologist workload requirements, they are also attempting to perform administrative tasks that would be better suited for an NCOIC and/or departmental administrator, to include overall QA monitoring and section supervision as well as booking appointments.

The NM Department conducts many QA activities, but these activities are not rolled into the departmental's PI program. Since the 2011 TARA report, there have been two Nuclear Regulatory Commission (NRC) recordable events. Both incidents were adequately addressed, but the recordable events also signal a potential need for increased section oversight.

One SPECT/CT (low energy) was recently installed for clinical workload in addition to an existing SPECT/CT (low energy) purchased with TBI funding. The current clinical workload justifies both cameras. TBI imaging was discussed during the visit, with a way forward that does not include routine clinical brain perfusion SPECT scans obtained on all TBI patients outside of a clinical protocol; only select individual cases would warrant a clinical perfusion brain SPECT. Therefore, the TARA Team recommends life cycle replacement via the MEDCASE process for the camera originally purchased with TBI funding.

The overall configuration of the NM section, while adequate, is not ideal. Patients and radiopharmaceuticals are transported to the cardiology clinic or across a busy hallway. This creates the potential for a nuclear spill that is difficult to contain. Additionally, there is a corridor through the section that cannot be secured, which also creates spill containment challenges. TARA recommends co-locating all of the NM section (to include the cameras, hot laboratories and cardiac study treadmill) in one location. Unit doses are solely used in the NM service at ACH. Therefore, the hot laboratory is exempt from pharmacy standards for compounding radiopharmaceuticals (United States Pharmacopoeia [USP] General Chapter 797). If practices were to change, a significant renovation would be required for the hot laboratory to be 797 compliant.

Recommendations for Diagnostic Imaging Equipment

The NM study referral data was reviewed. The majority of the studies performed outside ACH are for cardiology, endocrinology, or oncology indications. Given ACH Cardiology sees only AD and the remaining subspecialists are not located within the facility, the above studies likely cannot be recaptured under current referral rules. The current equipment is adequate to assume additional workload; however, the two technologists would not be adequate. There is a local oncologist group in the Fort City area which participates in ACH tumor boards.

Approximately 93 patients obtained a PET/CT scan on the economy in the past year with TRICARE as the primary payer, at a cost of approximately \$125,000. If the Command is interested in providing PET/CT capabilities at ACH, a BCA could determine the feasibility of utilizing a mobile PET/CT. An additional area of potential expansion is to perform body composition analysis on the dual energy X-ray absorptiometry (DXA) to aid warrior fitness programs.

Certification is not a requirement for military technologists. The ACH Department of Radiology strongly supports certification and both NM technologists are certified; this is commended. Technologists report adequate support and availability of on-line continuing education (CE). No formalized peer review is conducted for the technologists.

While overall the clinician feedback of the NM section was excellent, there was a concern expressed regarding information sharing with civilian counterparts. In particular, when an imaging study is performed on the economy, the onus is on the patient to ensure images are then delivered to ACH and incorporated into the medical record. A similar problem exists in relaying appropriate imaging information from ACH for a civilian subspecialist referral. ACH is aware of this concern and in lieu of an Enterprise solution, will be working internally for a solution.

The NM Department's hours of operation are from 0730 to 1600, Monday through Friday. The department has two dual-head SPECT/CT (low energy) gamma cameras. The section performed approximately 1,042 gamma camera scans (01 August 2013 through 31 July 2014). The workload breaks down as follows: bones, 59 percent; gastroenterology, 15 percent; cardiac, 14 percent; brain, 5 percent; endocrine, 4 percent; and other, 3 percent.

A gamma camera workload of 1,042 equates to a utilization of 0.9 or two gamma cameras. The Philips Brightview XCT SPECT/CT (ECN: 000000), DIS April 2010, has a dual-head variable angle gamma camera and CT (low energy). Located across the hall from the NM Department, this system is used for brains, bone, gastric scans and others. This system is on a first call maintenance contract with Philips.

Recommendations for Diagnostic Imaging Equipment

At the time of the 2011 TARA report, this system was having frequent maintenance problems. After determining hospital power fluctuations were causing the system to fail, a UPS was installed; the maintenance problems have been minimal since then. This system should be replaced in FY 2018 with a dual-head SPECT/CT (low energy). The department's low energy GE Optima NM/CT 640 SPECT/CT gamma camera (ECN: 000000), DIS April 2013, is located in the main NM Department. The system is on a first call maintenance contract with GE. This gamma camera is used for all the cardiac scans plus bone (i.e., 3 phase, whole body, spot), lung, brain, renal, endocrine and gastric scans. This system should not be replaced in the next five years.

GASTROENTEROLOGY

The Gastroenterology Clinic is a busy clinic with two physicians (one AD and one civilian). The clinic also is staffed with four civilian registered nurses (RN's), four civilian LPNs, and two technicians (one AD and one civilian). The AD technician is also the department NCOIC.

The clinic has operational hours from 0730 to 1600, Monday through Friday. The clinic performs an average of 10 scope procedures daily and has 40 clinical encounters in 2.5 days of clinic days. Gastroenterology provides services to all AD, dependents and retirees. On average, there are 12 consults received daily with 30 patients in the queue for scope procedures. Hiring actions were submitted for a scope technician as well as a RN. The AD gastroenterologist is out of fellowship training and is starting an Endoscopic Retrograde Cholangiopancreatography (ERCP) program at ACH. The scope washer (ECN: 000000) currently meets mission; however, a second scope washer is required with the opening of a second treatment room and increased procedures. The washer is a CEEP level procurement. If the clinic does not have this additional scope washer, they will need to purchase a larger amount of scopes in order to keep up with patient load.

OTOLARYNGOLOGY (EAR, NOSE, AND THROAT [ENT])

The Otolaryngology Department has clinic hours from 0730 to 1600, Monday through Friday. The clinic is staffed with four doctors (three AD and one civilian) and four technicians (three AD and one civilian).

On average, the ENT clinic has 400 patient encounters per month for each doctor, totaling 1,600 patient encounters per month. At the time of the TARA assessment, the clinic had a minimal backlog that was increasing. The clinic provides services to all AD, dependents (e.g., adult and pediatric) and retirees. With the addition of the third AD doctor, the pediatric patient load is increasing. The doctors typically have surgical days on Mondays with some procedures scheduled on Tuesdays and Wednesdays, as the operating room schedule permits. There are four exam rooms in the clinic plus a minor treatment room.

Recommendations for Diagnostic Imaging Equipment

The clinic's microscope (ECN: 000000), DIS November of 2012, has no significant maintenance issues. The clinic has two videoscopic systems (ECN: 000000 and ECN: 000000), DIS June 2013 and October 2008 respectively. The videoscopic system (ECN: 000000), a standard definition system, does not meet the clinical needs. The TARA Team recommends replacing this system (ECN: 000000) with a high definition system including the appropriate scopes in FY 2016; a requirement has been generated.

The clinic requires multi-light wavelength laser capabilities not currently available at ACH. The TARA recommends and has generated a procurement requirement for a laser with multi-light wavelength capabilities. The laser will be utilized in both ENT and dermatology to support workload requiring the devices' capabilities.

The clinic's surgical navigation system (ECN: 000000) meets the clinical needs; however, the system is experiencing increased maintenance requirements. The TARA Team recommends a system replacement for FY 2017, but not an immediate replacement need.

Generic TARA Report Example For Demonstration Purposes

Picture Archive and Communication System (PACS)

PACS OVERVIEW

The ICSPMO-Image Management Systems (IMS) provides lifecycle management for PACS within the AMEDD. An assessment of the PACS was conducted by the Senior PACS Project Manager at the ICSPMO-IMS. This evaluation investigates how well the PACS meets the clinical needs of the radiology staff, referring physicians, and other authorized PACS end users, including recommendations for improvements. Table 2 summarizes the ACH PACS information.

TABLE 3. PACS Information

Current System:	Agfa Impax Version 6.3
Initial PACS Installed:	January 2005
Latest PACS Installed:	August 2009 (update)
Replacement In:	May 2015
Archive Vendor:	Agfa Impax 6.5
Defense Information Assurance Certification and Accreditation Process (DIACAP) Status:	Interim Authority to Operate (IATO) completed June 2014. ATO pending December 2014. ICSPMO completing DIACAP.
Certificate of Networkiness (CoN) Status	Pending. Will submit with new DIACAP.
Local Image Cache:	3.5 terabytes (TB) usable. Currently stores approximately 1 to 2 year of the most recent radiology studies acquired.
Local Image Cache:	Primary Archive: Local archive is an EMC Centera with 60TB usable (37TB used).
Regional Disaster Recovery (DR) Archive:	All completed studies are forwarded (second copy) to the San Antonio Military Medical Center (SAMC): Philips IVault.
Primary Archive:	Local archive: EMC Centera with 60TB usable (37TB used).

PACS RECOMMENDATIONS

All Southern Regional Medical Command (SRMC) sites, including Fort City, will be upgraded/replaced with Agfa Impax 6.5 PACS in the next 12 months. The delivery order was issued in December 2012 and the replacement process is already in progress; hardware was delivered to ACH in October 2014. It is anticipated that ACH will Go-Live on the new Agfa PACS in May 2015. As part of the replacement, all historical radiology images in Agfa 6.3 will be migrated and accessible by the new PACS. The new PACS will be a fully accredited system (completed DIACAP) and have an ATO prior to Go-Live.

The current Agfa PACS hardware and software will continue to meet the radiology reading workflow requirements until the transition to the new PACS. The PACS servers are located in a physically secured, climate controlled data center with adequate power, heating, ventilation and air conditioning (HVAC). The PACS core equipment is protected by a central UPS. There is adequate physical space for equipment expansion.

Picture Archive and Communication System (PACS)

In addition to the new PACS installation, there is also a separate Joint Army and Navy archival initiative in progress known as the Enterprise Clinical Imaging Archive (ECIA). The ECIA contract was awarded to BRIT Systems, Incorporated (Inc.). Currently, AMEDD regional PACS archives do not have visibility of other regional PACS archives. With the ECIA project, the regional PACS archives are replaced by ECIA temporal nodes that have awareness of each other, so authorized end-users will be able to view all historic Army and Navy completed radiology studies transmitted to ECIA. In the new radiology workflow, ACH will have its own local archive (temporal storage node). Moving forward, the ECIA will become the long-term PACS archive for radiology studies acquired in the Army and Navy. The ICSPMO-Information Assurance (IA) team has completed a DIACAP and an ATO was issued May 2014 for the ECIA.

The ACH PACS archive applies 2:1 DICOM lossless compression to radiology image data archived on spinning disc media. For DR, radiology studies acquired at ACH are backed up at a central location.

PACS WORKSTATIONS

ICSPMO centrally manages the procurement, deployment, and sustainment of all PACS workstations, including mammography, radiologist, and clinical review workstations. All current ACH dedicated PACS workstations were replaced in November 2012. Table 3 provides a description as well as the anticipated quantities of each that were replaced. The current ACH PACS workstations include a 5-year, spare-in-the air hardware warranty on the central processing unit (CPU) and on the Barco Liquid Crystal Displays (LCD).

TABLE 4. Dedicated ACH PACS Workstation Replacements in FY 2012

Quantity	Workstation Type	Workstation Configuration
1	Radiologist Mammography	1 each: 10 megapixel (MP) 30-inch grayscale LCD 1 each: 2 MP 20-inch color LCD 1 each: CPU
6	Radiologist	1 each: 6 MP 30-inch grayscale LCD 1 each: 2 MP 20-inch color LCD 1 each: CPU
5	Clinical Review	1 each: 4 MP 30-inch color LCD 1 each: CPU

Dedicated PACS workstations need to be listed as "maintenance required" in the Defense Medical Logistics Standard Support (DMLSS) system, which triggers a preset "preventive maintenance due" notification for annual, manual LCD calibration verification checks. An annual manual LCD calibration verification check is REQUIRED to be performed by the Equipment Maintenance Branch (EMB) using a photometer/puck.

Picture Archive and Communication System (PACS)

The TARA Team strongly recommends configuring the Windows power option, for all dedicated PACS displays, to turn off after 20 minutes of idle time. This configuration action will prolong the life of the display backlights. The setting should be set initially on installation, and verified annually by either the EMD, the Information Management Department (IMD), or the PACS System Administrators (SAs).

CLINICAL ENVIRONMENT

ICSPMO centrally manages the procurement, deployment, and sustainment of radiology voice dictation systems. The ACH radiologists currently provide primary interpretation for approximately 100,000 radiology studies annually using the Nuance PowerScribe 5.0 Voice Dictation system. This is the latest version standardized throughout the AMEDD. Upon successful DIACAP completion, an upgrade to PowerScribe Version 360 in the Department of Radiology is planned in CY 2015.

One PACSGear MediaWriter CD burner for the Department of Radiology is installed and functioning as designed. If desired, associated reports may be included on the CDs along with radiology studies. The Department of Radiology also uses PACSGear PacsSCAN document scanners and software to scan and attach paper documents to specific radiology study accession numbers. Annual service maintenance agreements for the PACSGear products and associated licenses are centrally funded by ICSPMO.

PACS OUTLYING CLINICS AND TELERADIOLOGY

The following four community-based TMCs forward radiology studies (only X-ray studies) to ACH from primary interpretation: Health Clinic; Health Clinic 2; Aviation Health Clinic; and Health Center. All the TMCs appear as a local node on the ACH PACS network. The radiology exams performed in these TMCs are acquired using a CR and forwarded to ACH for interpretation by the radiologists. Images and reports are made available to the referring and consulting physicians on their PCs via the Agfa Impax and Philips iSite Enterprise applications. The TMCs have the capability to make CDs of exams. This process saves the patient a trip to ACH Department of Radiology to obtain exams for outside referrals.

The radiologists perform preliminary interpretations from home using Government-Furnished Equipment (GFE) and a secure Government-Approved Virtual Private Network (VPN). ACH utilizes a night-hawk service, US Radiology On Call, Inc., for reading after-hour ER radiology exams.

MAINTENANCE, SUSTAINMENT, QC, QA

There are written ACH Continuity of Operations Planning Procedures (COOP) and downtime procedures on file for PACS. The PACS devices are properly accounted for on the Property Book.

The Agfa Impax PACS is currently supported by an "A2" Service Level Agreement (SLA) as described in the Defense Logistics Agency-Troop Support (DLA-TS) Digital

Clinical Support Equipment

Imaging Network Picture Archiving Communications System (DIN-PACS) III solicitation. With this "A2" SLA, the Government is responsible for the maintenance of the peripheral PACS hardware and the vendor is responsible for the PACS application software as well as the core devices. A Government SA performs the daily administrative and technical duties associated with maintaining the PACS.

Clinical Support Equipment

PHARMACY

ACH Main Outpatient Pharmacy

The Department of Pharmacy continues to support a fluctuating demand for service due to a steady rotation of deployments and related transient beneficiary population. A downward trend in outpatient prescriptions in the last year is reflective in part to the deployment operations tempo (OPTEMPO) with two of four brigades and multiple support units. In the future, an upward trend in inpatient bed days is anticipated given the Command's intent to open inpatient behavioral health beds and recapture inpatient workload through a Veterans Affairs (VA) sharing agreement. Table 4 below reflects outpatient workload and inpatient bed days for the last three FYs.

TABLE 5. ACH Outpatient and Inpatient Pharmacy Workload: FY 2012 to FY 2014

	FY 2012	FY 2013	FY 2014	Average
Main Pharmacy:	644,102	634,680	592,713	623,832
Health Clinic:	62,993	62,789	50,649	58,810
Health Clinic 2:	95,137	94,394	97,932	95,821
CBMH:	38,553	45,820	43,488	42,620
Total Outpatient Workload:	840,785	837,683	784,782	821,083
Inpatient Bed Days:	No data	11,268	11,359	11,314
Fort City Pharmacy (all locations):	1,053,049	989,787	940,359	994,398

The current staff on hand (91 FTEs) closely matches the MEDCOM staffing model (2012 Model Application) requirements (90) and is well above 0414/FY 2015 Table of Distribution and Allowances (TDA) authorizations (78) as provided from MEDCOM Manpower. The Pharmacy is currently tracking 77 authorizations per the local TDA. Of note, there are seven overhire clinical pharmacist positions that support MEDCOM directed expanded missions, including Warrior Treatment Readiness, Patient Centered Medical Homes (PCMH) and Soldier Centered Medical Homes (SCMH). There are no critical personnel shortages. The Pharmacy

Clinical Support Equipment

staff is projected to grow an additional 4 clinical pharmacists in keeping with TSG staffing priorities (1 clinical pharmacist: 6,500 enrolled beneficiaries) and as supported by FY 2016 to 2020 Program Objective Memorandum (POM) funding.

The working FY 2015 TDA does not reflect the growth in workload that has taken place since it was last updated, nor does it reflect additional staff hired to support new mission requirements (specifically in the area of polypharmacy). At the present time, the Fort City Pharmacy leadership does not have formal responsibility of the pharmacy staff at the CBMH Pharmacy staff.

The department has a wide-range of pharmacy automation and equipment. The hospital and the outlying clinics received Parata Mini Counting units and Workstations to process prescription workload in FY 2012. Fill rates, using the mini devices, range from 31 to 57 percent of tablet/capsule prescriptions. Several pharmacy locations use GSL cabinets to facilitate storage of prescriptions. Purchased in FY 2013, the GSL cabinets have a return rate of 2.6 percent of all prescriptions and 2.96 percent by basket, which is below the target return-to-stock of less than 3 percent. The Omnicell Automated Dispensing Cabinets (ADCs) are used throughout the facility and provided approximately 73 percent of the inpatient nursing medication needs. A refresh of the Omnicell server and component software was just completed at the time of this assessment. An organization-wide WIN 7 upgrade is planned in FY 2015. The Q-Flow system is in place at most locations to assist in patient queuing. The Q-Flow internet functionality allows the Chief of Pharmacy to centrally monitor patient waiting times. This capability is a significant value in adjusting personnel staffing to support workload fluctuations and improve the customer experience.

ACH Outpatient Pharmacy

The ACH Outpatient Pharmacy 3-year (FY 2012 to 2014) workload average of 623,832 prescriptions per year and is a shared value with the Post Exchange Pharmacy, as noted in Table 4 above. The Pharmacy operational details are reported below.

Except for Thursdays, the ACH Outpatient Pharmacy, utilizing a bank teller workflow, is open from 0800 to 1600, Monday through Friday. On Thursdays, the Pharmacy is open from 0900 to 1600. The Pharmacy is responsible for the review and processing of all non-formulary medication requests, averaging 11 new requests per day.

The 7 Parata Workstations and 6 Mini Counting units, installed in 2012, support approximately 39 percent of "high-mover" prescription fill requirements. The Pharmacy's 2 GSL storage cabinets, DIS 2013, have 11 percent of cells in use and a 10 day return-to-stock policy in place. The Q-Flow queuing system manages patient workflow and provides four selection categories. Remote temperature monitoring systems and security cameras are in place. Recapture opportunities

Clinical Support Equipment

were discussed with the staff, with an emphasis on the expansion of formulary items to facilitate availability. Of special note, the Q-Flow kiosk was used to incorporate safety checks and policy requirements into the workflow process. To identify high-risk patients, a leading question inquiring about recent deployment location and subjective/objective symptoms were included in the ticket script.

Hospital Inpatient Pharmacy

The ACH Main Inpatient Pharmacy provides 24 hours per day, 7 days a week (24/7) coverage to support an average census of 35 patients, with approximately 5 critical care beds and 19 same-day surgery patients. The pharmacists provide centralized distributive services. Unit dose replenishment of the Omnicell cabinets is provided by the pharmacy. The ADCs provide 73 percent of the medication needs, with other medications delivered from the central pharmacy. Unit dose medications are prepackaged for approximately 45 percent of the requirements; the majority are purchased in ready-to-use packaging.

The Inpatient Pharmacy's Omnicell cabinets, with control panels, were installed in 2007; the server was recently replaced. The scientific refrigerators are located throughout the pharmacy and monitored remotely. The Inpatient Pharmacy has a modified 797 clean room for intravenous (IV) dose production. Two positive pressure glove box hoods and one negative pressure glove box hood (all DIS 2005) provide a sterile area for production.

During the TARA visit, the pharmacy staff described the department's decentralized approach to providing direct patient care; the pharmacists round with medical providers and work directly with nursing staff and patients to facilitate discharge medication education. This integrated approach to pharmacy support is a best practice and the pharmacy staff plans on taking additional steps to make patients aware of their presence.

FORT CITY POST PHARMACIES

Pharmacy

The Pharmacy's 3-year (FY 2012 to 2014) workload average of 623,832 prescriptions per year is a shared workload value with the ACH Outpatient Pharmacy, as noted above in Table 4. The Pharmacy primary supports patients with refills and hardcopy prescriptions using a bank teller workflow.

The Pharmacy is open the following hours: from 0800 to 1800, Monday through Friday; from 0900 to 1800, on Thursdays; and from 0800 to 1600, on Saturdays. The 10 Parata Workstations, 6 Mini Counting units and 1 Parata Max Robot were installed in 2012. The Parata Max and Mini Counting units fill 62 percent and 48 percent, respectively, of the "high-mover" prescription requirements.

Clinical Support Equipment

The Pharmacy's 14 GSL storage cabinets (DIS 2013) have 51 percent of cells in use and a 10 day return-to-stock policy in place. One to two GSL cabinets will be repurposed for use at another Army MTF, given the lack of expanding workload plans and changing workflow.

The Q-Flow system manages patient workflow and provides three categories of queuing. Remote temperature monitoring systems and security cameras are in place. The Pharmacy staff reported infrequent automation system downtime and timely support by the vendor. This pharmacy will be the future site for E-prescribing prescription receipt. TeamSTEPPS is an embedded practice within the Fort City Pharmacy. As the busiest pharmacy, visibility of patient wait times is valuable in managing workflow and the customer experience. During the TARA visit, the TARA Team had the opportunity to see the impact of centralized wait time monitoring and subsequent staffing adjustments, through the use of Q-Flow technology.

Health Clinic Pharmacy

The Health Clinic Pharmacy's 3-year (FY 2012 to 2014) workload average included the fill of 58,810 prescriptions using a bank teller workflow. Except for Thursdays, the Pharmacy is open from 0700 to 1600, Monday through Friday. On Thursdays the Pharmacy is open from 0900 to 1600. The Pharmacy primarily fills new prescriptions from the clinic supporting an SCMH and PCMH practice. To share clinical and distributive duties, the Integrated Pharmacists are in place at this clinic to support polypharmacy and patients education efforts.

The 4 Parata Workstations and 3 Mini Counting units were installed in 2012. The Parata Mini Counting units support approximately 47 percent of the prescription fill.

The Pharmacy's 2 GSL storage cabinets (DIS 2013) have 8 percent of cells in use and a 10-day return-to-stock policy in place. One of these GSL cabinets will be repurposed for use at another Army MTF, due to the lack of expanding workload plans and changing workflow.

The Q-Flow system manages patient workflow and provides three categories of queuing. Remote temperature monitoring systems and security cameras are in place. The Pharmacy staff has no automation system concerns or recommendations at this time.

Health Clinic Pharmacy

The Health Clinic Pharmacy's 3-year (FY 2012 to 2014) workload average included the fill of 95,821 prescriptions using a bank teller workflow in support of 3 SCMH practices. Except Thursdays, the Pharmacy is open from 0700 to 1600,

Clinical Support Equipment

Monday through Friday; the Pharmacy is open from 0900 to 1600, on Thursdays. The Pharmacy primarily fills clinic provider prescriptions.

The Pharmacy's 4 Para Workstations and 3 Mini Counting units (DIS 2012) support 57 percent of tablet/capsule prescription filling. The Pharmacy's 2 GSL storage cabinets units (DIS 2013) are currently not in use. One of the GSL cabinets will be repurposed for use at another Army MTF, due to the lack of expanding workload plans and changing workflow.

Remote temperature monitoring systems and security cameras are in place. The Pharmacy staff reported recent CHCS connectivity issues over the last 1 to 2 months, causing disruptions in operations. The disruption in connectivity is occurring up to 30 times per week and appears to be related to a network scanning protocol. The MTF and Pharmacy IT staff are aware and working to resolve this issue.

OFF POST PHARMACY OPERATIONS

CBMH Pharmacy

To support a CBMH practice, the CBMH Pharmacy's 3 year (FY 2012 to 2014) bank teller workload average filled 42,620 prescriptions. Except for Thursdays, pharmacy services are provided from 0800 to 1700, Monday through Friday; the Pharmacy is open from 0900 to 1600, on Thursdays. The Pharmacy's 2 Parata Workstations and 2 Mini Counting units (DIS 2012) support 57 percent of the tablet/capsule prescription filling. This Pharmacy does not have GSL storage cabinets or the Q-Flow system in place.

Remote temperature monitoring and security cameras are in place. No additional automation requirements were identified. Integrated Pharmacists share clinical and distributive duties to support polypharmacy and patients education efforts. The TARA Team provided feedback on the recommended actions to document extended patient interactions at the window that go beyond the usual brief interchange of information and standard safety and quality checks.

PHARMACY SUMMARY COMMENTS

The ACH Department of Pharmacy mission continues to expand as a result of increased access, retail recapture, expansion of PCMH practice model and future efforts to provide inpatient and outpatient care to VA patients. The Polypharmacy Policy execution across this organization and its use of clinical technicians is a best practice that will be shared across the enterprise as other MTFs expand their efforts in this regard. Prescription volume over the last three years continues to fluctuate with inpatient care workload anticipated to increase based upon growth in behavioral health capabilities and work sharing agreements with the VA.

Figure 1 below compares workload to staff based on the MEDCOM staffing model, TDA and on hand personnel. In most cases, the Pharmacy staff is working at the

Clinical Support Equipment

recommended prescription workload, as suggested within the profession and standardized in commercial practice.

ACH, Fort City, State																
		MEDCOM Model					TDA (Required/Authorized)					On Hand				
		Year Avg WKLD (12-14)	Rph FTE/ Model	Rxs/Rph/ day	Tech FTE/ Model	Rxs/ Tech/ day	3 Year Avg WKLD (12-14)	Rph FTE/ TDA	Rxs/ Rph/ day	Tech FTE/ TDA	Rxs/ Tech/ day	3 Year Avg WKLD (12-14)	On Hand Rph FTE**	Rxs/ Rph/ day	On hand FTE**	Rxs/ Tech/ day
Hospital	ACH, Fort City, State	843,708	17.5	222	35.0	111	843,708	17.0	228	36.0	108	843,708	18.5	210	38.0	102
Main		643,833	13.4	222	26.7	111	643,833	13.0	228	28.0	106	643,833	13.0	228	29.0	102
Clinic	Health Clinic	98,045	2.0	222	4.1	111	98,045	1.0	451	3.0	150	98,045	2.5 *	180	4.0	113
Clinic	Health Clinic2	58,338	1.2	222	2.4	111	58,338	2.0	134	4.0	67	58,338	1.5 *	179	3.0	89
CBMH	CBMH	43,312	0.9	222	1.8	111	43,312	1.0	199	1.0	199	43,312	1.5 *	133	2.0	100
				Rph Target (208 Rxs/day)												
				Up to 10% above target (NMT 229 Rxs/day)												
				> 10% above target range (>229 Rxs/day)												

FIGURE 1. ACH Pharmacy Workload Comparative Based on MEDCOM Staffing Model

The TARA Team visit primarily focused on the use of high cost automation to carry out the pharmacy mission. Opportunity exists to optimize the use of existing robotics, specifically optimizing fill and capacity rates of the mini counting devices at several clinics and the main outpatient pharmacy. Future automation upgrades in electronic prescribing and inventory management offer opportunities for increased savings and efficiency. Overall, the Pharmacy staff was very satisfied with response time in addressing automation problems associated with the Parata Workflow system. It was noted that the vendor was compliant with its 6 month scheduled maintenance contract requirement. Specific recommendations related to this visit follow.

**PHARMACY
RECOMMENDATIONS**

MEDCOM and DHA support in budget growth and staff augmentation is essential in light of changes in point-of-service benefits to a growing segment of the beneficiary population and increased emphasis on polypharmacy oversight and medication reconciliation. The following bullets summarize specific suggestions to maximize the use of available automation and personnel to meet OTSG priorities, the AMEDD 2020 Campaign plan, and the Army Pharmacy Strategic Plan guidance:

- Hardware/Software
 - Parata Win 7 quote for processing
 - Radio frequency identification device (RFID) cabinet repurposing coordination
 - Alaris Pump Library requirements
- CBMH Clinical/Distributive Integrated Pharmacist model: Lessons learned
- Forward momentum in passive and active recapture efforts: Pharmacy budget requirements
- Incorporation of OTSG Pharmacy Top 3 goals into operational practice
 - FY 2015 bridge funding for PCMH pharmacist (DHP funding request by Consultant)
 - Allergy/Adverse Drug Reaction (ADR)/First time use/Show & Tell: Internal effort
 - High risk patient/medication discharge counseling: underway
- Pharmacy staff access to AHLTA (Armed Forces Health Longitudinal Technology Application) for allergy/ADR entry
- Army pilot for E-prescribing workflow incorporation
- MEDCOM POM funding to support 1:6500 pharmacist: enrollee staffing model and clinical technician support for Polypharmacy program

SURGICAL CLINIC

The Surgical Clinic's hours of operation are from 0730 to 1600, Monday through Friday. The 8 assigned AD surgeons see over 1,000 patients in the clinic each month. The surgeons' surgical caseload is very high. Due to operating room unavailability, surgical cases are scheduled greater than 30 days, which requires the patient to obtain a second pre-operative screening. The clinic could use a PA and a nurse practitioner to assist with the pre-operative appointments.

The procedure room's single overhead surgical light does not provide adequate light for procedures. The TARA Team recommends the section procure an additional surgical light, which is a CEEP level procurement.

OR

The ACH's operating rooms, located on the second floor of the hospital, provide a multitude of surgical specialty services. Comprised of six operatory suites, the section underwent a Congressional funded Integrated-Operating Room renovation project in late CY 2013. Until 1700, Monday through Friday, the OR typically utilizes between 4 and 5 rooms. The staff indicated that all six rooms could not be opened simultaneously due to a lack in staffing for RNs, technicians and anesthesia providers. Staffing in the operating rooms consists of 9 RNs (4 AD [shared with the SPD] and 5 civilian), and 26 OR technicians (21 AD and 5 civilian). Currently, one AD technician is deployed and one to two AD technicians are out

Clinical Support Equipment

due to other military obligations. Due to the OR RN staffing shortage, only one nurse is authorized leave or to be out at a time.

The I-OR project replaced surgical lights, endoscopic video systems, installed equipment and anesthesia boom systems and provided device control that is centrally located at the nursing station within each room. Additionally, the ability to verbally communicate between rooms as well as share live images from any of the three medical cameras in the room allows for collaboration amongst surgeons in separate rooms. In FY 2014, the main operating rooms' caseload has decreased slightly (3,884 total cases) in comparison to FY 2013 (4,086 total cases). Figure 2 and Figure 3 present the FY 2013 and 2014 OR Specialty and Monthly Count, respectively.

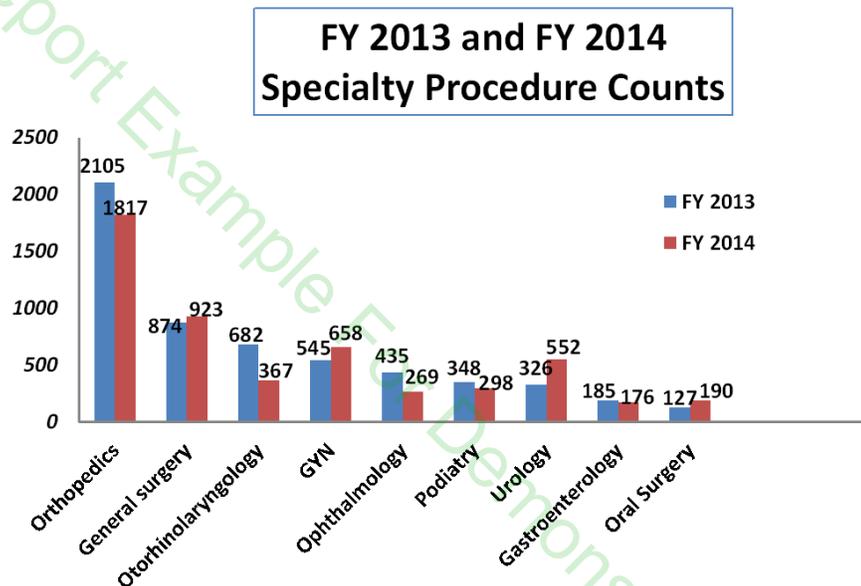


FIGURE 2. ACH OR Specialty Procedure Counts: FY 2013 and 2014

FY 2013 and FY 2014 Monthly BACH OR Case Count

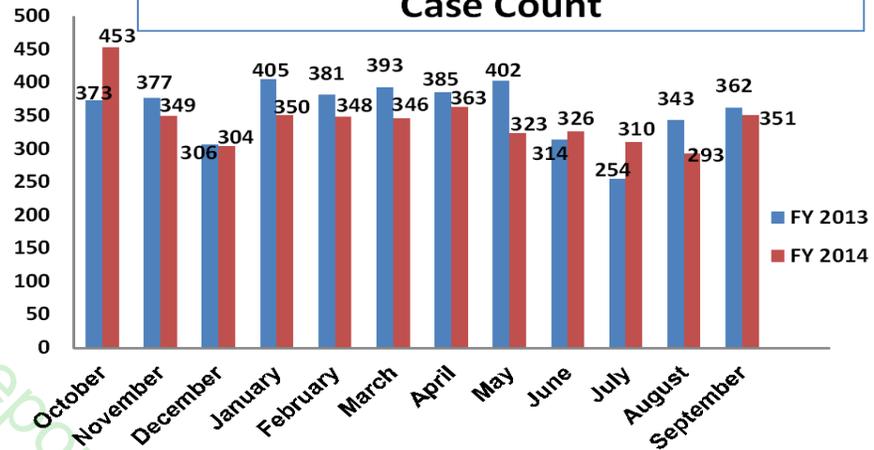


FIGURE 3. ACH OR Specialty Procedure Counts: FY 2013 and 2014

The MEDCOM-wide I-OR project installation was completed at ACH in August 2014. The I-OR is under a 3-year full coverage warranty that began on 18 August 2014. To date, there are no major maintenance issues with the I-OR equipment. Appendix D, *ACH OR Integrated Operating Room Equipment Breakdown*, provides a breakdown of each system.

At mid-life, the surgical tables are incapable of holding a bariatric patient with a weight greater than 350 pounds. TARA recommends the replacement of the surgical tables at the time of the OR renovation project and be designated as LOGCAT "C" for the project.

The orthopedic/spine table (ECN: 000000), DIS October 2012, has no significant maintenance issues. The TARA Team recommends not replacing the orthopedic/spine table in the next five years.

The OR requires one additional endoscopic video system (on a mobile cart) for use when two videoscopic systems are required simultaneously during surgical procedures. The TARA Team has generated a requirement for FY 2016 for this additional technology.

The OR also requires a medication point-of-use system for each operatory room. The TARA has generated a requirement for a point-of-use system for FY 2016.

Clinical Support Equipment

The phacoemulsification unit (ECN: 000000), DIS December 2006, was replaced with two CEEP level systems utilizing FY 2014 funds. At the time of the TARA, both procured phacoemulsification units were in the medical warehouse awaiting technical inspection. Medical maintenance will perform the inspection and replace the old unit with the two new systems.

Approaching LE, the ENT surgical navigation system (ECN: 000000), DIS April 2009, exhibits increased maintenance issues as well as increased cost to repair parts. TARA recommends and has generated a requirement to replace the system in FY 2017.

Three OR surgical microscopes are used by specialty services: Urology (ECN: 000000), DIS November 2009; ENT (ECN: 000000), DIS October 2009; and Ophthalmology (ECN: 000000), DIS November 2009.

The Urology surgical microscope's casing, at the scope head, is broken and requires replacement due to infection control issue. TARA recommends and has generated a requirement to replace the Urology surgical microscope (ECN: 000000) in FY 2016.

The ENT surgical microscope is exhibiting increased maintenance issues. The microscope is also drifting slightly, which causes patient safety concerns. TARA recommends and has generated a requirement to replace the microscope (ECN: 000000) in FY 2016. If FY 2015 funding becomes available, the TARA Team would fully support the replacement of the ENT microscope earlier than FY 2016.

The Ophthalmology surgical microscope is programmed for replacement in FY 2017. The TARA team concurs and has generated the requirement to replace the microscope (ECN: 000000).

STERILE PROCESSING DEPARTMENT (SPD)

The SPD is located on the main floor of the hospital, directly below the OR. Staffing for the SPD is shared with the operating rooms on a rotational basis to ensure that all staff is crossed trained for both sterile processing and operating room procedures.

The SPD runs four shifts Monday through Friday. The first shift is from 0700 to 1500 with optimal staffing of 5 personnel, which includes the OIC and NCOIC. The second shift is an overlap shift from 0900 to 1700 with optimal staff of 4 personnel, but is typically staffed with 2 or 3 staff members due to leave and sick time. The third and fourth shifts run from 1500 to 2300 and 2300 to 0700 respectively, with one person covering each shift. Holidays and weekends are staffed with one person on the premises for a 24 hour period to cover emergency cases in both the OR and labor and delivery (L&D) as well as building instrument packs and preparing case carts for the surgical schedule for Mondays.

The TARA Team conducted a teleconference with the ACH staff and the current sterilization equipment vendor to schedule a water and steam quality test. The testing for water and steam will be conducted in August 2014. Pending the results, the TARA Team recommends the hospital install a system-wide reverse osmosis di-ionizing system.

To continue supporting the MTF's sterilization process, the Government Health Facilities Planning Agency Project Manager indicated that the renovation would include the use of a double-wide trailer. The contractor will remove/reinstall the existing SPD's steam sterilizers and cart washer in the trailer. The ACH Medical Maintenance team will continue to support the reinstalled equipment maintenance. During the renovation project, TARA recommends the rental of a complete mobile sterilization trailer to support the workload for the operating rooms and the clinics. If the facility rents a complete mobile trailer, the sterilization trailer vendor is responsible for the maintenance of the equipment as well as ensuring the surgical instrument packs are within prescribed standards.

The SPD currently has a single cart washer (ECN: 000000), DIS January 2006. The current workload is 3,500 carts processed in FY 2014, for a utilization factor of 1.2 machines. The SPD has inadequate space to add a second cart washer. The system has numerous maintenance issues during the life cycle. At the time of the TARA, the cart washer was inoperable and awaiting parts, which are becoming more difficult to obtain. The system has 62 unscheduled work orders and has surpassed the maintenance expenditure limit by 180 percent. The TARA Team recommends adding a steam hood for venting of exhausted steam with the opening of the cart washer in the renovation project. Additionally, the replacement of the cart washer will be a LOGCAT "A" and TARA recommends the cart washer have a reverse osmosis di-ionizing system as part of the equipment requirement. The TARA Team recommends replacing the cart washer in FY 2016 or sooner depending on the final renovation schedule.

The SPD also runs three large capacity steam sterilizers, with varying acquisition dates. All three sterilizers have significant maintenance issues. The workloads for all three units (3,145 total loads) provides for a utilization of 3.5 systems. Due to space constraints, the SPD is unable to add a fourth steam sterilizer to the department either now or with the renovation project. Steam sterilizers 1 and 2 (ECN: 000000 and ECN: 000000), both DIS September 2008, have 46 and 43 unscheduled work orders with the Maintenance Expenditure Limit (MEL) at 64 percent and 78 percent, respectively. The third steam sterilizer (ECN: 000000), DIS June 2011, is having accelerated maintenance issues, with 22 unscheduled work orders and 36 percent of the MEL already expended in maintaining the unit. During the renovation of the SPD, these three sterilizers will be replaced as part of LOGCAT "A" furnished equipment. The TARA Team recommends a reverse osmosis di-ionizing system be included with each of the systems to ensure best possible water and steam quality. TARA recommends replacement in FY 2016 or sooner depending on the final renovation schedule.

The two washer disinfectant units (ECN: 000000 and ECN: 000000), both DIS March 2005, have a combined FY 2014 load count of 4,000 loads, for a utilization factor of 1.33. The utilization factor confirms the necessity for an additional washer disinfectant (e.g., three total units). With over 70 unscheduled work orders each, the two units have significant maintenance issues as well surpassing their MEL by 200 percent. Both units are scheduled for replacement as LOGCAT "A" items with the renovation and a third multi-chamber unit added to the SPD. The TARA Team recommends the inclusion of the reverse osmosis di-ionizing system for each unit with the renovation project. TARA recommends replacing both units in FY 2016 or sooner depending on the final renovation schedule.

The department currently operates two low temperature plasma sterilizers. The large capacity system (ECN: 000000), DIS October 2007, has a workload of 884 loads, resulting in a utilization factor of 0.74 for FY 2014. This system is no longer manufactured and is no longer supportable after CY 2016. The medium capacity plasma sterilizer (ECN: 000000), DIS April 2008, has a FY 2014 workload of 1,031 loads, resulting in a utilization factor of 0.70. The TARA recommends the replacement of both the large and medium capacity low temperature plasma sterilizers with three systems in FY 2016. Replacement is recommended before the LE on the medium capacity sterilizer. This will facilitate cost savings to ACH through not supporting two different sterilization platforms. The TARA Team recommends both sterilizer replacements concurrently with the SPD renovation.

The instrument assembly area has four work benches that are not large enough to accommodate the instrument packing for larger sets. As part the part of the renovation project, the TARA Team recommends installation of larger work benches to facilitate the packing of the larger instrument sets. These work benches would be a CEEP level procurement. Additionally, the current scope dryer is a front loading dryer, and the TARA team would recommend a pass through style scope dryer to promote a more efficient workflow.

ANESTHESIA

At the time of the TARA visit, ACH was undergoing a facility Innovian Anesthesia Information Management system upgrade, also known as the Anesthesia Recording and Monitoring Device (ARMD). The upgrade converts Innovian 2.4 to version 5.1. All 11 clinical workstation hard drives were replaced with a new, solid-state drive. The upgraded workstations have a larger capacity and run on a WIN 7 platform; the servers were upgraded to Server 2008 R2. The clinical and non-clinical workstations were loaded with Essentris and Adobe Acrobat Portable Document Format (PDF) Creator. These installments allow attaching the printed Anesthesia electronic medical record as a PDF form into Essentris.

The department has 6 Draeger Apollo anesthesia machines and 2 Draeger Fabius anesthesia machines, all DIS December 2011. These CEEP units will meet LE in FY 2022 and should be replaced with similar systems, assuming the surgical capabilities of ACH are unchanged.

The department also has a GE Datex-Ohmeda MRI-compatible Aestiva 5 (ECN: 000000), DIS June 2004. When maintenance costs reach the maximum expenditure limit, this CEEP MRI-Compatible anesthesia machine, with a 10-year LE, should be replaced.

**OPHTHALMOLOGY/
WARRIOR REFRACTIVE
SURGERY (WRESP)**

Located on the main hospital's second floor, the combined Ophthalmology and WRESP Department has clinical hours of operations from 07300 to 1600, Monday through Friday. The current staffing for the clinic is two AD ophthalmologist, one civilian optometrist, two civilian ophthalmology technicians and three refractive eye surgery technicians.

The ophthalmologist also performs photorefractive keratectomy (PRK) and Laser-Assisted Sub-Epithelial Keratectomy (or Laser Epithelial Keratomileusis) LASIK surgery. The ophthalmology clinic has six eye lanes. On an average there are 480 monthly patient encounters for the Ophthalmology clinic. Ophthalmology-related surgical procedures are scheduled in the operating room typically every other Tuesday and every Thursday. The staff indicated that surgical time is decreasing due to the lack of anesthesia providers, which is causing an increase in the backlog.

The clinic purchased two new CEEP-level phacoemulsification units, to replace the current phaco unit (ECN: 000000). There is a microscope (ECN: 000000), DIS June 1992, in the clinical treatment room that is having increased issues with the optical head drifting. The TARA Team recommends replacing the clinic microscope with the operating room microscope (ECN: 000000), when that microscope is replaced in FY 2017. The clinic does not currently have an Orb Scan and the TARA recommends the procurement of this CEEP item to provide clinicians with enhanced testing in determining if a patient is a candidate for LASIK procedures.

The Femto Second laser (ECN: 000000), DIS June 2008, has exceeded MEL. It is not economically feasible to place the unit on a maintenance contract.

Clinical Support Equipment

The Excimer laser (ECN: 000000), DIS January 2008, has also exceed MEL. As stated above, it is not economically feasible to maintain on a maintenance contract.

Through collaboration with the ACH MEDCASE Manager, the TARA Team was able to generate a FY 2015 medical device funding package for both the Femto Second and the Excimer laser. The STCPC has approved the requirements and funding is currently pending release of FY 2015 budget.

Refractive surgery performed corrective surgery on 1,106 eyes in FY 2014. The WRESP program had excellent outcomes with no retreatments required in FY 2014. The Penta Camera (ECN: 000000), DIS September 2008, has a very high utilization. The TARA Team recommends the section replace this CEEP-level item in FY 2017. Also, TARA recommends the section procure a second CEEP-level Penta Camera in FY 2016.

OPTOMETRY

The Optometry clinic, located outside the main hospital at the LaPointe Troop Medical Clinic (TMC), is staffed with two optometrist (one AD and one civilian) and one AD technician (NCOIC). The patient encounters vary month-to-month based on troop schedules. The Optical Coherence Tomography System (ECN: 000000), DIS September 2011, meets clinical needs. The system has a CoN, but a nonfunctional network connectivity prohibits test results sharing. The TARA Team recommends contacting the manufacturer as well as IMD section to assist with the system's connectivity issues. The Corneal Topography System (ECN: 000000), DIS November 2009, has no significant maintenance issues and meets clinical needs.

DERMATOLOGY

Located on the main hospital's second floor, the Dermatology clinic's hours of operations are from 0730 until 1600, Monday through Friday. The staffing consists of two AD dermatologists and two civilian RNs. One of the RNs assists with clinical procedures while the other RN performs the laser procedures. At the time of the TARA assessment, the clinic averaged 550 patient encounters per month.

The tattoo laser (ECN: 000000), DIS August 2007, does not meet clinical needs since it does not break down all the colors within the tattoos. The TARA recommends replacing the laser in FY 2017. The clinic's Pulse Dye laser (ECN: 000000), DIS June 2014, meets clinical needs and has no significant maintenance issues. A new laser was purchased but at the time of the TARA remains undelivered. Upon arrival of the new laser, TARA recommends turning in the laser (ECN: 000000) for proper disposal. The clinic's hair removal laser (ECN: 000000), DIS August of 2012 meets clinical needs.

Physiological Monitoring

**PHYSIOLOGICAL MONITOR
(NETWORKED) -
EMERGENCY DEPARTMENT
(ED)**

The 17-bed ER is composed of 6 fast-track bays, 5 acute bays and 6 rooms. The bay and room areas are centrally monitored with a GE Clinical Information Center networked to GE B650's, DIS August 2013. These monitors capture electrocardiograph (ECG), temperature, respiration, pulse oximetry (SpO2), non-invasive blood pressure (NIBP), and invasive blood pressure (IBP) data. Expanding to a 35-bed department, the ER is still however only staffed for 17-beds. The TARA Team created and executed procurement funding (ACN: XXXX-XX-XXX) for the additional B650's and central station capabilities. Of note, the additional equipment was not installed as of the TARA visit; the DIS projected date is January 2015. There will be no need to replace this system in the next 5 years.

**PHYSIOLOGICAL MONITOR
(NETWORKED) - INTENSIVE
CARE UNIT (ICU)**

The ICU is outfitted with 7 GE B650 bedside monitors, networked to a GE Clinical Information Center. The parameters captured by the bedside monitors include ECG, respiration, NIBP, IBP, SpO2, temperature, cardiac output (CO) and capnography (etCO2).

The unit also has 7 ApexPro telemetry transmitters, DIS June 2006, that will be replaced as part of a FY 2014 CEEP upgrade. This upgrade will also configure the central station to monitor telemetry-monitored patients on 4AB.

The TARA recommends not replacing the central station and bedside monitors (DIS August 2013) in the next 5 years. ACH is in pursuit of integrating an electronic ICU (eICU) within their ICU. A BCA was initiated and personnel are establishing requirements, while the system undergoes the MEDCOM IT Governance process. The eICU would place a camera, microphone, computer workstation, display and an activation button in each ICU room. If ACH staff needed an Intensivist, they would hit the red button, which would notify the vendor. A vendor associate would provide assistance over the display. The vendor will have physiological monitoring data available to them through an interface to the unit's central station.

**PHYSIOLOGICAL MONITOR
(NETWORKED) -
MEDICAL/SURGICAL (MED/
SURG) WARD**

The Med/Surg Ward is centrally monitored with a GE Clinical Information Center networked to 5 ApexPro telemetry transmitters. These transmitters acquire pulse rate and SPO2. The TARA Team recommends not replacing the system, DIS August 2013, in the next 5 years. A FY 2014 CEEP upgrade will network the Med/Surg central station to the ICU central station, allowing ICU personnel to additionally monitor 4AB's telemetry patients.

**PHYSIOLOGICAL MONITOR
(NETWORKED) - MOTHER/
BABY & LABOR AND
DELIVERY (L&D)**

The fetal monitoring is performed with 13 GE 259CX-B Corometrics bedside monitors, networked to a GE Clinical Information Center. This central station also has mirrored displays in the midwife room and in the breakroom. These units

Physiological Monitoring

capture maternal ECG, NIBP, SPO2, intrauterine pressure data, and fetal heart rate (FHR) for two fetuses. The TARA Team recommends not replacing this fetal monitoring system (DIS November 2011) in the next 5 years.

There are also 3 GE Model 341 telemetry packs systems (DIS March 2005) used in L&D that permits monitoring of patients ambulating. Since the telemetry packs are CEEP-level components of the fetal monitoring system, the department can replace them at user discretion.

The Mother/Baby section will be undergoing a renovation project in CY 2015. The six double-occupancy rooms will be renovated to six single-occupancy rooms.

The Stanley Healthcare HALO Infant Abduction Prevention system (DIS FY 2007) will not be supported by the manufacturer after 31 December 2015. The MTF has selected and funded the Stanley Healthcare Solutions HUGS system as a replacement infant abduction system. The ACH IMD is currently processing the system's CoN. Once CoN is awarded, the new system will be installed.

HOLTER MONITORING

Holter monitoring is captured with Mortara H3+ recorders. The data is transferred to a Mortara Hscribe 5 Cardiology Information Management System. All holter monitors, along with the information management system, were acquired in November 2013. The TARA Team recommends not replacing these medical devices within the next 5 years.

Stress testing is performed on one of three Mortara Xscribe 5 treadmill systems. TARA recommends not replacing all 3 systems, acquired October 2013, within the next 5 years. All of these units are CEEP-level items

POLYSOMNOGRAPHY (SLEEP LAB)

Currently, 2 Respironics Alice 6 systems (DIS May 2014) comprise ACH's Sleep Lab. These 2 systems are located in the ICU. TBI funds were used to expand the service from a 2-bed to an 8-bed lab. This new lab, projected to open January 2015, will be located in Building XYZ. After office furniture is removed and minor modifications are made to Building XYZ, the vendor will install the complete system (already acquired additional Alice 6 systems plus the 2 systems from ICU) for a modern 8-bed lab. There will be no need to replace this system in the next 5 years.

Department of Pathology

GENERAL FINDINGS

The Department of Pathology provides full-service clinical and anatomical pathology support for the Fort City TRICARE beneficiary area. It is a referral laboratory for the Health Clinics and the CBMH. Anatomical pathology services include histopathology, cytopathology (e.g., non-gynecological specimens), and the morgue, which has the capacity to store four human remains. Clinical pathology services include chemistry, hematology, microbiology, urinalysis, immunology, and transfusion services. The laboratory provides 24/7 critical and STAT testing and blood transfusion services, with outpatient phlebotomy services provided from 0730 to 1630, Monday through Friday.

The Laboratory is inspected by the American Association of Blood Banks (AABB) (last inspected in 2012), College of American Pathologists (CAP) (last inspected in 2013) and Food and Drug Administration (FDA) (last inspected in 2013).

A TARA review of the January 2015 TDA found that management has done a good job in slotting personnel correctly. The department is authorized 64 total personnel with 58 assigned. Figure 4 below displays the ACH Pathology Authorized Manpower review.



ACH Pathology Authorized Manpower Review

Pathology	Authorized	Assigned	% Filled
Officers	5	4	80%
Enlisted	13	11	85%
Civilian	46	43	94%
Overall	64	58	90%

FIGURE 4. Pathology Authorized Manpower Review (TDA E: 10/15)

The TARA Team recommends that the laboratory management and supervisory personnel take an active role in validating reports from CHCS, Workload Assignment Module (WAM), Defense Blood Standard System (DBSS), Collaborative Medical Systems Anatomic Pathology (CoPath), Medical Expense and Performance Reporting System (MEPRS), and Defense Medical Human Resources System-internet (DMHRSi). This data is critical and must be monitored monthly. Workload validation is achieved by comparing five reports collected during a designated period: a manual record of all the tests performed, a CHCS specimen master log, a CHCS statistical detail report, monthly WAM report, and a CHCS Laboratory MEPRS (LMM) report. An Expense Accounting System (EAS)-IV report should also be reviewed to ensure all MEPRS data is being transferred to EAS-IV. Frequent audits are initially required to identify problems. Audits should then be conducted periodically once the system appears to be functioning properly. Discrepancies should be brought to the attention of the laboratory's CHCS administrator.

In addition to workload validation, it is necessary to review workload reports for proper coding under the CPT system. The seven-digit CPT code includes a five-digit base code and a two-digit suffix modifier. The five-digit base code determines the procedure's corresponding weighted value. The current year's codebook should be reviewed to learn about code additions, code deletions, and changes. In addition, CHCS CPT updates are typically performed bi-annually. The release/installation notes should be reviewed to determine changes and required actions (e.g., run specific CHCS Ad-Hocs and Reports). An audit of the Statistical Detailed Report (SDR) found coding errors for approximately 20,000 reported tests in FY 2014. During the TARA visit, the CHCS tables/files were corrected to eliminate these errors in coding. The TARA Team recommends converting a vacant position to a Laboratory Information System (LIS) position. The LIS selection will monitor the above systems and metrics as well as maintain the files and tables within CHCS for accurate workload reporting and capture.

Workload information for this report was provided from CPT coding on CHCS and EAS-IV data. The captured workload is for the last 5 years (FY 2009 to FY 2014). As indicated in Figure 5 and Figure 6 (page 41), the overall workload in clinical pathology (DBAA) and in anatomic pathology (DBBA) have both decreased from FY 2013 to FY 2014, approximately 7 percent and 34 percent respectively. The number in the parentheses is the estimated total based on the average workload

for the previous 11 months, since the workload data for the last month of the FY 2014 was not available at the time.

FIGURE 5. ACH Annual Clinical Pathology Workload 2010-2014, Source: EAS IV.

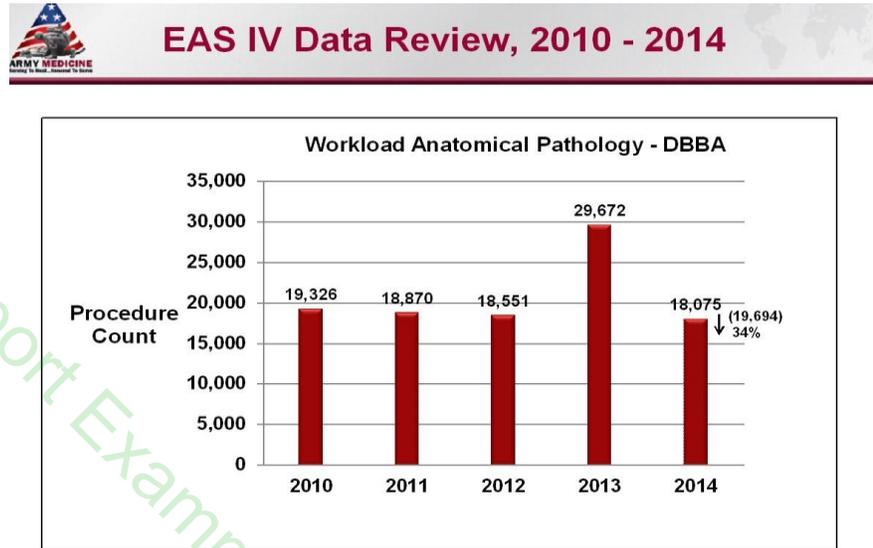


FIGURE 6. ACH Anatomic Pathology Procedures Cost Comparison. Source: EAS IV.

Figure 7 and Figure 8 show the cost per reportable test (total costs to run the laboratory divided by the total workload). As indicated, the ACH Laboratory is running efficiently, when compared to similar sized labs. Also, the ACH Laboratory is running average of all Army labs.

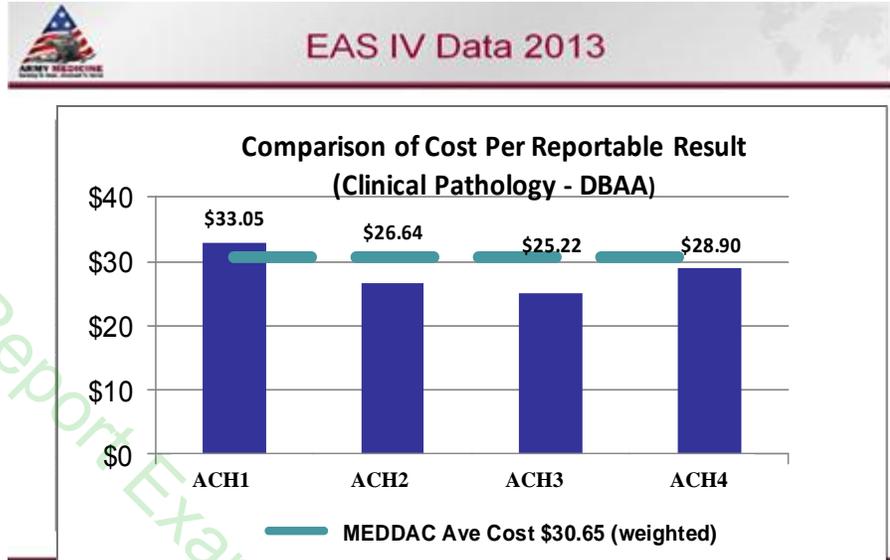


FIGURE 7. Cost Comparison of Clinical Pathology Procedures. Source: 2013 EAS IV.

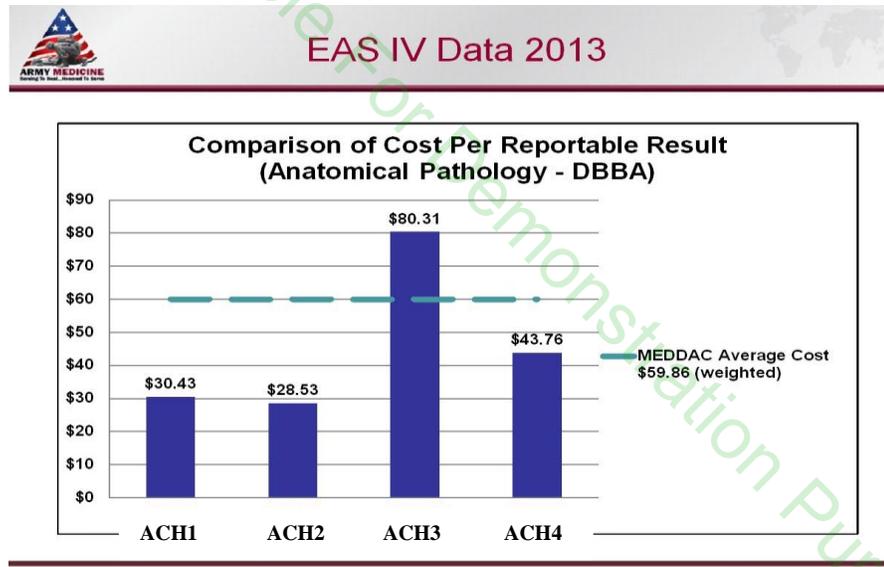


FIGURE 8. Productivity Comparison of Anatomic Pathology. Source: 2013 EAS IV.

Below, Figure 9 and Figure 10 show the productivity per full time employee (the number of test results per person, per day). Likewise, ACH has a good productivity rate when compared to like sized facilities and exceeds the average Army laboratory productivity.

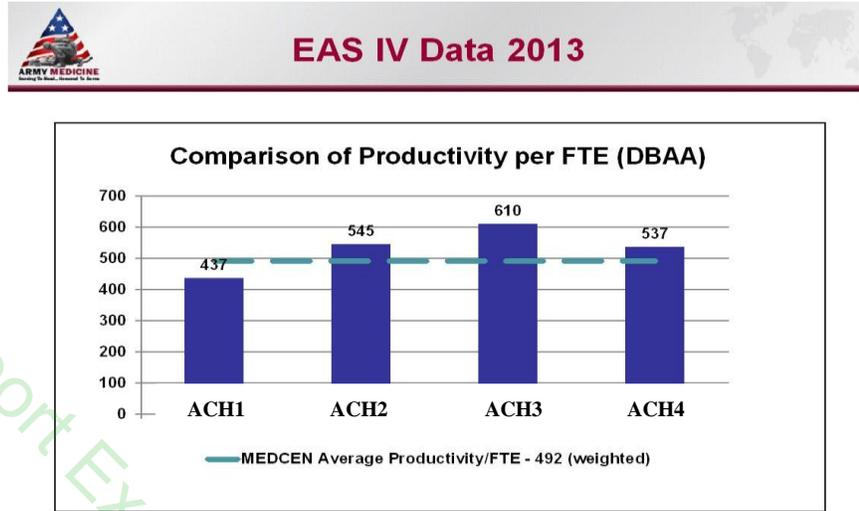


FIGURE 9. Productivity Comparison per FTE (DBAA)

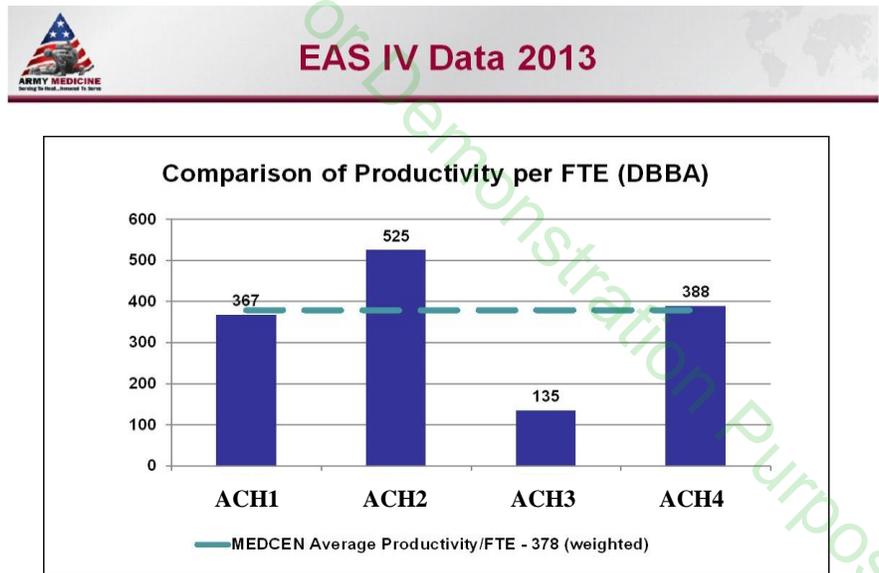


FIGURE 10. Productivity Comparison per FTE (DBBA)

The department provides phase II 68K training. The department receives students approximately every 12 weeks, with 2 to 3 students per rotation. Students are completing the required training and are exposed to all elements of the clinical laboratory, to include phlebotomy and shift work.

The physical layout of the department does not support efficiencies in workflow or the stationing of new state-of-the-art automated equipment. TARA recommends moving the processing/shipping section to the current Hematology area. This will reduce the overall distance where most specimens are dropped off and streamline processes. In turn, Hematology and Coagulation should shift closer to the Chemistry section in the Core laboratory. This will not only improve communication between sections, but will reduce the spacing between sections and steps needed to move specimens through the laboratory. By creating a smaller footprint where the majority of productivity occurs this will help workflow during the day shift, but more importantly during non-normal work hours on the evening, night and weekend shifts with a minimal workforce. The laboratory, with only a couple of exceptions in Anatomical Pathology (AP) and the Morgue, desperately needs a new furniture package for replacement of the benchtop, cabinetry, desks, etc., (DIS 1983). The entire laboratory looks cluttered and new storage would free up even more benchtop to more effectively utilize wall space along the outer walls of the core laboratory. Upper cabinetry should also be removed in the core laboratory to improve line of sight and communication. The furniture should be sturdy enough to support the weight of the larger clinical analyzers, and also solid/secure enough so that excessive vibrations do not effect testing. Care should be taken in not buying furniture more appropriate for use in an office rather than a clinical laboratory.

The laboratory management has utilized the good business practice of leasing versus owning equipment in order to readily upgrade testing platforms as testing technologies change or are enhanced. There are 8 major platforms of leased equipment in the laboratory at a contractual cost of nearly \$1.4M annually (with an additional \$600K to the reference laboratory - LabCorp). Of the equipment that is owned, 32 items, at the 2-year mark on the Equipment Replacement Report, have a value of \$108K. Of those items, all are past LE and several have exceeded their MEL. Of note, six of these are centrifuges and four are barcode printers. Downtime for these items, especially when more than one is down, will hinder processing time, and therefore increase turnaround times for results. The TARA Team recommends that these items, especially those exceeding their MEL, be added to the CEEP list for replacement. See *Appendix H, Recommendations for Laboratory Equipment*, for the complete recommendations list for the laboratory equipment.

The contracts for the laboratory were reviewed. Although several were generalized in the wording of the requirements, GSA pricing is utilized and appropriate costs-of-services are provided for the workload. TARA recommends the contracts for the laboratory equipment be set up as cost-per-reportable

contracts whenever it is fiscally responsible. Cost-per-reportable contracting provides the true cost to perform a test.

According to *DA PAM 385-69, Safety Standards for Microbiological and Biomedical Laboratories and the College of American Pathologists*, access to the laboratory needs to be controlled. Unauthorized personnel should be unable to enter the laboratory. The door that opens into the laboratory administration area is not secure; anyone can enter that room as well as the laboratory from the waiting area. The TARA Team recommends installation of magnetic locks (with employee ID access) at all patient accessible doors to establish a controlled entry to the laboratory.

Several Competency Assessment Folders were selected for review. These randomly selected folders were in good order, with solid documentation of training and competency.

CLINICAL PATHOLOGY SERVICE

The Clinical Pathology Laboratory is comprised of a phlebotomy area, a specimen processing area, and the shipping area. Specimen processing and shipping staff input the test information, sorts the specimens for each section of the laboratory, and prepares any specimens that need to go to other laboratories. Turnaround times for routine specimens are within 4 hours of receiving the specimens in the laboratory, with the exception of those tests that are batched and only run on certain days of the week.

FRONT DESK/PHLEBOTOMY/ PROCESSING/SHIPPING

Patient Services is located in the main laboratory. The staff includes a GS-6 supervisor and six GS-5 (with an additional 1 vacancy) health technicians. This section collects and processes all of the samples for the laboratory. Patient wait times are monitored using the Q-Flow system. In FY 2013, the average wait time was less than 15 minutes only 75 percent of the time, with improvement in FY 2014 to 83 percent. The MEDCOM standard for patient wait time is less than 15 minutes, 90 percent of the time. TARA recommends the phlebotomy room remove some unneeded countertop and add an additional one to two chairs with the new furniture package. Additional personnel could be shifted to the area as needed to reduce the wait times.

CHEMISTRY/SPECIAL CHEMISTRY

The Chemistry and Special Chemistry sections are supervised by a GS-10 medical technologist. Additional support is provided by AD and civilian floaters. The evening and night shifts are staffed by both AD and civilian personnel. The core laboratory is well maintained. Equipment being incorporated accommodates optimum efficiencies in pre-analytic, analytic, and post-analytic clinical laboratory testing management. The TARA Team recommends these sections continue with a cost-per-reportable contract with state-of-the-art technology. This would include a primary piece of equipment and a secondary piece of equipment to serve as a backup instrument for all shifts.

Department of Pathology

HEMATOLOGY/URINALYSIS	The Hematology and Coagulation sections are supervised by a GS-10 medical technologist. Additional support is provided by AD and civilian floaters. The evening and night shifts are staffed by both AD and civilian personnel. The equipment is adequate and supports the needs of the section.
MICROBIOLOGY/ PARASITOLOGY/VIROLOGY/ SEROLOGY	The Microbiology laboratory is adequately organized and staffed to meet workload. A GS-10 supervises this section. The equipment is incorporated and space availability accommodates optimum efficiencies in workflow and pre-analytic, analytic, and post-analytic clinical laboratory testing management. Support equipment (i.e., incubators, biosafety cabinets, refrigerators) are well maintained and adequate to support the microbiology mission. If a piece of microbiology equipment has reached LE, the TARA Team recommends the medical device be placed on CEEP for procurement.
TRANSFUSION SERVICES/ IMMUNOLOGY	The Transfusion service, open 24/7, has a GS-10 medical technologist supervising the section. The service uses CHCS, DBSS, and paper to record and maintain patient information and testing records. The equipment requirement is minimal for this section as most tests are manual. TARA recommends continuing monitoring all equipment and replace when maintenance costs exceed expenditure limits.
ANATOMICAL PATHOLOGY (AP) SERVICES	AP includes 3 pathologists (two O-5s and one GS-15 pathologist). The support staff includes two GS-7 histotechnologists and two GS-5 transcriptionists. The Histology section is well equipped with tissue processors, embedding centers, automated stainers, and an automated cover slipper. Cytology turnaround times meet the MEDCOM metric averaging less than 5 days. Due to changes in the PAP and HPV testing requirements, the workload in the Cytology section has decreased. The TARA Team recommends a BCA to reestablish in-house cytology testing, increase the workload, reduce the turnaround time and provide greater flexibility in reflex testing at ACH. The Morgue section was renovated since the 2011 TARA report and is adequate for the mission and workload.
PATHOLOGY SUPPORT SERVICES	The Pathology Support services provide support to the entire department for computer assistance, QA, CAP proficiency tests, audits, inspections, error reporting, PI, Point-of-Care Testing (POCT), and decentralized laboratory monitoring. The office has a GS-11 medical technologist responsible for QA, POCT, and information systems. The laboratory uses CHCS, DBSS, and COPATH systems that need daily care, training, etc. The incorporation of laboratory interoperability has increased workload.
FORT CITY POST LABORATORIES	<i>Health Clinic Laboratory</i> The Health Clinic Laboratory has hours of operation are from 0730 to 1630, Monday through Friday. The laboratory staffing consists of two GS-5

technicians. Testing in this TMC is limited to urinalysis, rapid strep, and urine pregnancy tests.

The TARA Team recommends installing an emergency pull cord in the draw room for patient safety, especially when there is only one staff member present. Additional recommendations include replacing the very aged centrifuge and rocker, and installing a thermometer in the refrigerator that will alarm if the temperature goes outside the set range after hours. Adding questions to the Q-Flow system or handing out slips of paper to the patient (inquiring purpose of the laboratory visit), if orders are not entered in CHCS, may reduce the potential for HIPAA violations.

**FORT CITY OFF POST
LABORATORY**

CBMH Laboratory

The CBMH Laboratory has the same standard equipment and personnel (two authorized) as the other MHs established by MEDCOM a few years ago. Testing at the CBMH includes basic chemistries, hematology, urinalysis with microscopic, rapid serology testing for pregnancy, Strep A, RSV, etc. The TARA Team has no equipment recommendations for this CBMH. TARA, however, recommends against hiring another full-time laboratory technician to work at the clinic. The MEDCOM CBMH model has two technicians authorized for each clinic, however, the workload at this clinic is so low (40 tests on average, per day, compared to 400+ per FTE at the main laboratory) that the expense could be better served in possibly hiring another LPN or courier. The RNs are trained in POCT and are already providing coverage, when the laboratory technician is out. Also, this CBMH Laboratory, as another option, can increase the number of courier runs from the CBMH to the main ACH Laboratory.

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Generic TARA Report Example For Demonstration Purposes

Appendix A: Generic Example of Equipment Utilization Calculations for Diagnostic Imaging Equipment

Equipment	MTF Hours Per Year	Ideal Studies Per Hour	Ideal Studies Per Year	MTF Studies Per Year	Equipment Utilization ¹
<i>(For actual workload data refer to Appendix C)</i>					
General Radiography (analog) - Peak (4 hours)	1,000	4	4,000	24,000	6
General Radiography (direct digital) - Peak (4 hours)	1,000	8	8,000	24,000	3
General Radiography (analog) (8 hours)	2,000	4	8,000	4,000	0.5
General Radiography (direct digital) (8 hours)	2,000	8	16,000	8,000	0.5
Fluoroscopy	1,250	1.33	1,663	2,000	1.2
Full-sized C-arms (OR)	1,250	0.5	625	1,250	2
Mammography (direct digital)					
Screening	2,000	4	8,000	8,000	1
Diagnostic	2,000	2	4,000	2,000	0.5
Combined					1.5
Mammography (CR digital)	2,000	2	4,000	2,000	0.5
Ultrasound (General Purpose)	2,000	1.33	2,660	8,000	3
Ultrasound (OB/GYN)	2,000	0.75	1,500	3,000	2
Ultrasound (Echocardiology)	2,000	0.5	1,000	4,000	4
Nuclear Medicine			1,150	2,300	2
CT	4,800	3	14,400	28,800	2
MRI	4,996	1.33	6,645	13,000	2
Cardiac Catheterization Laboratory	2,000	0.5	1,000	1,000	1
Angiography/IR	2,000	0.5	1,000	1,000	1
GI Clinic	1,250	1.33	1,663	1,600	1

¹Utilization factors have been based on management engineering time studies; each procedure has been assigned room productivity times based on industry information tempered by unique aspects of the DOD medical operations and the operation of the facility. The following example shows how this method was used to derive the equipment utilization factor for general purpose ultrasound.

Equipment	Ultrasound (General Purpose)
Hours available per year	8 hours/day × 5 days/week × 50 weeks = 2,000 hours/year
Productive time	1.33 studies/hour (45 minutes/study) for MEDDAC/MEDCEN
Ideal studies per year	1.33 studies/hour × 2,000 hours/year = 2,660 ideal studies/year
Specific MTF studies per year	8,000 studies/year
Percentage utilization	8,000 ÷ 2,660 studies/year = 3.0 systems

²The OTSG Nuclear Medicine consultant developed this estimate in 2001 based on 225 working days per year multiplied by 5 scans a day per camera which equals 1,125 scans per system per year. To account for short scan times (bones) and long scan times (cardiac) the scans per system annually is rounded to 1,150. The working days per year allows for maintenance.

Generic TARA Report Example For Demonstration Purposes

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**Appendix B: Generic Example of Equipment Utilization
Calculations for Sterilizers**

Shift Length Per Day (Determines Usage)	Loads Per Day	Workdays Per Year (5days/wk x 50 wks/yr)	Ideal Loads Per Year	MTF Loads Per Year	Equipment Utilization
(For actual workload data refer to Appendix C)					
Large Capacity Plasma Sterilizers (75 minute cycle)					
12-hour shift (10 hours peak)	8	250	2,000	1,500	0.75
8-hour shift (6 hours peak)	4.8	250	1,200	1,500	1.25
Medium Capacity Plasma Sterilizers (50 minute cycle)					
12-hour shift (10 hours peak)	10	250	2,500	1,250	0.5
8-hour shift (6 hours peak)	6	250	1,500	1,500	1
Tabletop Plasma Sterilizers (30 minute cycle)					
8-hour shift (6 hours peak)	10	250	2,500	1,250	0.5
Steam Sterilizers (1 hour sterilize and 40 minute dry time)					
12-hour shift (10 hours peak)	6.06	250	1,515	1,500	1
8-hour shift (6 hours peak)	3.63	250	908	1,500	1.65
Washer Sterilizers/Disinfectors (30 minute cycle)					
12-hour shift (10 hours peak)	20	250	5,000	2,500	0.5
8-hour shift (6 hours peak)	12	250	3,000	3,000	1

Generic TARA Report Example For Demonstration Purposes

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Appendix C: Equipment Workload and Recommended Number of Systems

Modality	Location	Workload	Current Utilization	Required	On Hand
	Clinic	5,951	0.47	1	1
Ultrasound (Echocardiology)	Cardiology	1,000	0.5	1	1
General Radiography (Health Clinic #2)	Clinic	17,445	1.42	2	2
Gamma Camera	NM	1,042	0.9	2	2
C-Arm (OR)	OR	515	0.84	2	3
General Radiography (Ortho)	Orthopedic Clinic	4,786	0.6	2	2
C-Arm (PM)	Pain Management	744	0.4	1	1
Bone Density	Radiology	395	0.1	1	1
Mammography	Radiology	4,974	0.8	2	2
Stereotactic Biopsy	Radiology	98	NA	1	1
Ultrasound (Radiology)	Radiology	10,352	3.9	5	5
Fluoroscopy	Radiology	1,500	0.9	2	2
Portable Radiography	Radiology	1,389	N/A	3	3
CT	Radiology	10,341	0.7	1	1
General Radiography	Radiology Core	32,576	2	3	5
MRI	Radiology/Intrepid Center	5,863	0.9	2	2
Washer / Disinfector	SPD	4,000	1.33	3	2
Sterilization (Steam)	SPD	3,145	3.5	3	3
Sterilization (Plasma - LC)	SPD	884	0.74	0	1
Sterilization (Plasma - MC)	SPD	1,031	0.7	3	1
Cart Washer	SPD	3,500	1.2	1	1
General Radiography (TMC)	TMC	2,292	0.36	1	1
Urology (Rad/Fluoro)	Urology	3,600	NA	1	1

Generic TARA Report Example For Demonstration Purposes

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Appendix D: ACH OR Intergrated Operating Room Equipment Breakdown

RM2System ECN 000000	RM2 System ECN 000000	RM3 System ECN 000000	Equipment Nomenclature	RM4 System ECN 000000	RM5 System ECN 000000	RM6 System ECN 000000	Equipment Nomenclature
Component	Component	Component		Component	Component	Component	
System	System	System		System	System	System	
			ARTHROSCOPIC SHAVER SYSTEM				ARTHROSCOPIC SHAVER SYSTEM
			ASPIRATOR/IRRIGATOR, SURGICAL				ASPIRATOR/IRRIGATOR, SURGICAL
			FACILITY BOOM, CEILING-MOUNTED				FACILITY BOOM, CEILING-MOUNTED
			FACILITY BOOM, CEILING-MOUNTED				FACILITY BOOM, CEILING-MOUNTED
			IMAGE PROCESSOR, VIDEO, ENDOSCOPY				IMAGE PROCESSOR, VIDEO, ENDOSCOPY
			INSUFFLATOR, LAPAROSCOPIC				INSUFFLATOR, LAPAROSCOPIC
			LIGHT SOURCE, FIBEROPTIC				LIGHT SOURCE, FIBEROPTIC
			LIGHT, SURGICAL, CEILING-MOUNTED				LIGHT, SURGICAL, CEILING-MOUNTED
			LIGHT, SURGICAL, CEILING-MOUNTED				LIGHT, SURGICAL, CEILING-MOUNTED
			MONITOR VIDEO COLOR 26IN HIGH DEFINITION				MONITOR VIDEO COLOR 26IN HIGH DEFINITION
			MONITOR VIDEO COLOR 26IN HIGH DEFINITION				MONITOR VIDEO COLOR 26IN HIGH DEFINITION
			MONITOR, VIDEO, HIGH DEFINITION				MONITOR, VIDEO, HIGH DEFINITION
			POWER SYSTEM, UNINTERRUPTIBLE				POWER SYSTEM, UNINTERRUPTIBLE
			PRINTER, VIDEO, COLOR				PRINTER, VIDEO, COLOR
			RECORDER, MAGNETIC/OPTICAL DISK, VIDEO				RECORDER, MAGNETIC/OPTICAL DISK, VIDEO
			VIDEO IMAGE PROCESSOR, FORMAT CONVERSION				VIDEO IMAGE PROCESSOR, FORMAT CONVERSION
			VIDEO SYSTEM, OPERATING ROOM				VIDEO SYSTEM, OPERATING ROOM

Generic TARA Report Example For Demonstration Purposes

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Appendix E: Recommendations for Diagnostic Imaging and Clinical Support Equipment

Equipment	Location	Manufacturer	Model	ECN	Date in Service	Recommendations
Monitor, Central Station	Patient Care Unit	GE Healthcare	Cic Pro	000000	AUG-13	Do not replace in next 5 years
Camera, Photographic, Ophthalmic, Fundus	Alore	Carl Zeiss Meditec Inc.	Visucam Pro Nm	000000	OCT-11	Do not replace in next 5 years
Anesthesia Unit	Anesthesia	Datex-ohmeda	Aestiva 5	000000	JUN-04	Replace when becomes a maintenance burden
Anesthesia Unit	Anesthesia	Draeger Medical Inc.	8606500-45	000000	DEC-11	Do not replace in next 5 years
Anesthesia Unit	Anesthesia	Draeger Medical Inc.	8606500-45	000000	DEC-11	Do not replace in next 5 years
Anesthesia Unit	Anesthesia	Draeger Medical Inc.	8606500-45	000000	DEC-11	Do not replace in next 5 years
Anesthesia Unit	Anesthesia	Draeger Medical Inc.	8606500-45	000000	DEC-11	Do not replace in next 5 years
Anesthesia Unit	Anesthesia	Draeger Medical Inc.	8606500-45	000000	DEC-11	Do not replace in next 5 years
Anesthesia Unit	Anesthesia	Draeger Medical Inc.	8606500-45	000000	DEC-11	Do not replace in next 5 years
Point of Use (RFID)	Byrd and LaPointe	GSL	IntelliCab	Many	APR-14	Do not replace in next 5 years
Radiographic System, Digital	Clinic	Philips Medical Systems	Digitfull cardiology		JUL-11	Do not replace in next 5 years
Automation System, Medication Dispensing, Outpatient Pharmacy	Clinic	Parata Systems	Minis	000000	AUG-11	Do not replace in next 5 years
Scanning System, Ultrasonic, Cardiac	Cardiology	Philips Medical Systems	iE33	000000	JUL-11	Replace in FY 2017 with similar system
Laser, ND:YAG, Frequency-doubled, Dermatologic	Dermatology	Candela Corp.	Gentlemax Pro	000000	AUG-12	Do not replace in next 5 years
Laser, Dye, Dermatologic	Dermatology	Candela Corp.	9914-0300	000000	SEP-06	System Locally Funded FY 2014
Laser, Dye, Dermatologic	Dermatology	Candela Corp.	9914-08-0300	000000	JUN-14	Do not replace in next 5 years
Laser, Carbon Dioxide, Surgical/ Dermatologic	Dermatology	Alma Lasers	Harmony	000000	AUG-07	Replace in FY 2017
Video System, Endoscopic	Emergency Center	Karl Storz Endoscopy	8402 Zx	000000	JUN-14	Do not replace in next 5 years
Monitor, Central Station	Emergency Center	GE Healthcare	Cic Pro	000000	AUG-13	Do not replace in next 5 years
Laser, Multi Light Wavelengths	ENT	Sciton	New	New	N/A	Procure in FY 2016
Microscope, Light, Otorhinolaryngology	ENT Clinic / Audiology	Carl Zeiss	Opmi Sensera	000000	NOV-12	Do not replace in next 5 years
Video System, Endoscopic	ENT Clinic / Audiology	Karl Storz Endoscopy	9803T	000000	JUN-13	Do not replace in next 5 years
Video System, Endoscopic	ENT Clinic / Audiology	Karl Storz Endoscopy	22200011U102	000000	OCT-08	Replace in FY 2016
Point of Use (Pharmacy)	Inpatient Wards	OmniCell	G4	Many	APR-14	Do not replace in next 5 year
Telemetry	ICU	GE Healthcare	Apprexpro Svr	000000	JUN-06	Already replaced w/ EOY 2014 CEEP funds. Installed soon.

Appendix E: Recommendations for Diagnostic Imaging and Clinical Support Equipment

Equipment	Location	Manufacturer	Model	ECN	Date in Service	Recommendations
Monitoring System, Physiologic, Acute Care	ICU	GE Healthcare	2035598-203	000000	AUG-10	Do not replace in next 5 years
Monitor, Central Station	ICU	GE Healthcare	Cic Pro	000000	AUG-13	Do not replace in next 5 years
Anesthesia Unit	L&D	Draeger Medical Inc.	8607000-42	000000	DEC-11	Do not replace in next 5 years
Anesthesia Unit	L&D	Draeger Medical Inc.	8607000-42	000000	DEC-11	Do not replace in next 5 years
Telemetry Monitoring System	L&D	GE Healthcare	341	000000	MAR-05	Already replaced w/ EOY 2014 CEEP funds. Installed soon.
Telemetry Monitoring System	L&D	GE Healthcare	341	000000	MAR-05	Replace in FY 2015. CEEP item
Telemetry Monitoring System	L&D	GE Healthcare	341	000000	MAR-05	Replace in FY 2015:CEEP item
Table, Operating	L&D	Steris Corp.	3085 SP	000000	JAN-05	Replace in FY 2015 as part of I-OR project
Table, Operating	L&D	Steris Corp.	3085 SP	000000	JAN-05	Replace in FY 2015 as part of I-OR project
CR Reader	Health Clinic	Agfa Healthcare (USA)	CR 85-X	000000	OCT-11	Remove when no longer needed
CR Reader	Health Clinic	Agfa Healthcare (USA)	CR 85-X	000000	DEC-06	Remove when no longer needed
Radiographic Unit	Health Clinic Room X	GE Medical Systems	Proteus	000000	OCT-08	Replace in FY 2016
Radiographic Unit	Health Clinic Room X	GE Medical Systems	Proteus	000000	NOV-08	Replace in FY 2017
Automation System, Medication Dispensing, Outpatient Pharmacy Point of Use	Pharmacy	Parata Systems	Minis	000000	MAY-12	Do not replace in next 5 years
Point of Use (RFID)	Logistics	OmniCell	G4	Many	OCT-11	Do not replace in next 5 years
Point of Use (RFID)	Main and Town Center	GSL	IntelliCab	Many	APR-14	Do not replace in next 5 years
Automation System, Medication Dispensing, Outpatient Pharmacy Monitor, Central Station	Main Pharmacy	Parata Systems	Minis	000000	APR-12	Do not replace in next 5 years
	Mother/Baby Unit	GE Healthcare	CIC Pro		AUG-13	Do not replace in next 5 years
Infant Abduction Prevention System	Mother/Baby and L&D	Stanley Healthcare	HALO	MANY	FY 2007	Funded w/ Mother/Baby expansion project Initial Outfitting dollars
Scanning System, Ultrasonic, Obstetric/Gynecologic	OB/GYN Clinic	Philips Medical Systems	iU22	000000	MAR-13	Replace in FY 2019 with similar system
Corneal Topography System	Optometry	Oculus Inc.	Type 70900	000000	NOV-09	Do not replace in next 5 years
Scanning System, Laser, Optical Tomography	Optometry	Carl Zeiss Meditec Inc.	3000	000000	OCT-03	Do not replace in next 5 years
Camera, Photographic, Ophthalmic, Fundus	Optometry	Carl Zeiss Meditec Inc.	1851-796	000000	AUG-13	Do not replace in next 5 years

Appendix E: Recommendations for Diagnostic Imaging and Clinical Support Equipment

Equipment	Location	Manufacturer	Model	ECN	Date in Service	Recommendations
Optical Coherence Tomography	Optometry	Carl Zeiss Meditec Inc.	4000	000000	SEP-11	Do not replace in next 5 years
Microscope, Light, Operating	OR	Leica Microsystems Inc.	MS3	000000	NOV-09	Replace in FY 2016
C-arm	OR	Philips Medical Systems	Bv Pulsera 9	000000	AUG-10	Do not replace in next 5 years
Video System, Endoscopic	OR	Stryker Endoscopy	240-099-011	000000	JUN-14	Do not replace in next 5 years
Mini C-arm	OR	Hologic Inc.	Insight li	000000	FEB-09	Do not replace in next 5 years
Table, Operating	OR	Steris Corp.	Cmax110	000000	OCT-06	Replace in FY 2016 as part of I-OR Project Bariatric Table
Phacoemulsification Unit, Cataract Extraction	OR	Alcon Laboratories Inc.	Infinti Ozil	000000	DEC-06	Replace with CEEP funds
Radiographic Unit, Mobile	OR	GE Medical Systems	Amx4+	000000	FEB-07	Replace in FY 2018
C-arm	OR	Philips Medical Systems	BV Pulsera 9	000000	SEP-14	Do not replace in next 5 years
Sterilizing Unit, Steam	OR	Steris Corp.	V-116	000000	NOV-09	Replace in FY 2018. CEEP item.
Sterilizing Unit, Steam	OR	Steris Corp.	V-116	000000	NOV-09	Replace in FY 2018. CEEP item.
Sterilizing Unit, Steam	OR	Steris Corp.	V-116	000000	NOV-09	Replace in FY 2018. CEEP item
Table, Operating	OR	Steris Corp.	3085SP	000000	OCT-09	Replace in FY 2019. Replace as part of I-OR Project.
Table, Operating	OR	Steris Corp.	3085SP	000000	OCT-09	Replace in FY 2019 as part of I-OR Project
Table, Operating	OR	Steris Corp.	3085SP	000000	OCT-09	Replace in FY 2019 as part of I-OR Project
Table, Operating	OR	Steris Corp.	3085SP	000000	OCT-09	Replace in FY 2019 as part of I-OR Project
Table, Operating	OR	Steris Corp.	3085SP	000000	OCT-09	Replace in FY 2019 as part of I-OR Project
C-arm	OR	GE Medical System	Flexiview 8800	000000	MAR-12	Do not replace in next 5 years
Table, Operating	OR	Steris Corp.	3085SP	000000	OCT-09	Replace in FY 2019 as part of I-OR Project
Video System, OR	OR	Stryker Endoscopy	0678-001-000	000000	AUG-13	Do not replace in next 5 years
Microscope, Light, Hand/Plastic Surgery	OR	Leica Microsystems Inc.	M525	000000	OCT-09	Replace in FY 2016
Video System, OR	OR	Stryker Endoscopy	0678-001-000	000000	JUL-13	Do not replace in next 5 years
Video System, OR	OR	Stryker Endoscopy	0678-001-000	000000	AUG-13	Do not replace in next 5 years
Video System, OR	OR	Stryker Endoscopy	0678-001-000	000000	JUL-13	Do not replace in next 5 years
Video System, OR	OR	Stryker Endoscopy	0678-001-000	000000	JUN-13	Do not replace in next 5 years
Video System, OR	OR	Stryker Endoscopy	0678-001-000	000000	JUN-13	Do not replace in next 5 years
Table, Surgical, Ortho/Spine	OR	Mizuho America Inc.	5803	000000	OCT-12	Do not replace in next 5 years

Appendix E: Recommendations for Diagnostic Imaging and Clinical Support Equipment

Equipment	Location	Manufacturer	Model	ECN	Date in Service	Recommendations
Navigation System,	OR	Medtronic Navigation	Fusion	000000	APR-09	Replace in FY 2017
Otorhinolaryngology	OR	Leica Microsystems Inc.	M844	000000	NOV-09	Replace in FY 2017
Microscope, Light, Operating,	OR	Stryker	New	New	N/A	Procure in FY 2016
Ophthalmology	ORs	New	New	New	N/A	Procure in FY 2016
Video System, Endoscopic	ORs	New	New	New	N/A	Procure in FY 2016
Point of Use (Pharmacy-OR)	ORs	New	New	New	N/A	Procure in FY 2016
Mini C-arm	Orthopedic Clinic	Hologic Inc.	Insight II	000000	NOV-08	Do not replace in next 5 years
CR Reader	Orthopedic Clinic	Agfa Healthcare (USA)	Cr 85-X	000000	APR-09	Remove when no longer needed
Radiographic Unit	Orthopedic Clinic	GE Medical Systems	Proteus	000000	MAY-08	Replace in FY 2017
Radiographic Unit	Orthopedic Clinic	GE Medical Systems	Proteus	000000	FEB-09	Remove and do not replace when it becomes a maintenance burden
C-arm	Pain Management Clinic	Philips Medical Systems	Bv Pulsera 9	000000	SEP-14	Do not replace in next 5 years
Scanning System, MRI, Full-body	Radiology	GE Medical Systems	5352293	000000	MAR-13	Do not replace in next 5 years
Scanning System, MRI, Full-body	Radiology	GE Medical Systems	2377062-10	000000	FEB-10	Upgrade in FY 2015
Dual Head Gamma Camera (SPECT/CT)	Radiology	GE Healthcare USA	Optima NM/CT 640	000000	APR-13	Do not replace in next 5 years
Scanning System, Computed Tomography, Axial	Radiology	Philips Medical Systems	4535670Z7192	000000	FEB-07	Replace in FY 2015
Dual Head Gamma Camera (SPECT/CT)	Radiology	Philips Medical Systems	Brightview XCT	000000	APR-10	Replace in FY 2018 with similar system
Densitometer, Bone, X-ray	Radiology	Hologic Inc.	Discovery QDR	000000	DEC-06	Replace in FY 2016 with similar system
Scanning System, Ultrasonic, General-purpose	Radiology	Philips Medical Systems	iU22	000000	FEB-10	Replace in FY 2017 with similar system
Radiographic System, Digital, Mammographic	Radiology	Hologic Inc.	Selenia Dimensions	000000	NOV-10	Replace in FY 2018 with similar system
Radiographic System, Digital, Mammographic	Radiology	Hologic Inc.	Selenia Dimensions	000000	NOV-10	Replace in FY 2019 with similar system
Scanning System, Ultrasonic, General-purpose	Radiology	Philips Medical Systems	iU22	000000	JAN-09	Replace in FY 2016 with similar system
Scanning System, Ultrasonic, General-purpose	Radiology	Philips Medical Systems	iU22	000000	AUG-12	Replace in FY 2018 with similar system
Scanning System, Ultrasonic, General-purpose	Radiology	Philips Medical Systems	iU22	000000	FEB-10	Replace in FY 2017 with similar system
Scanning System, Ultrasonic, General-purpose	Radiology	Philips Medical Systems	iU22	000000	FEB-08	Replace in FY 2016 with similar system

Appendix E: Recommendations for Diagnostic Imaging and Clinical Support Equipment

Equipment	Location	Manufacturer	Model	ECN	Date in Service	Recommendations
Prone Stereotactic Biopsy System	Radiology	Siemens Medical	Mammotest	000000	MAR-09	Replace in FY 2016. ACN: XXXX-XX-XXX. Awaiting Win7 OS availability.
Radiographic Unit, Mobile	Radiology Core	GE Medical Systems	AMX-4	000000	FEB-04	Replace in FY 2016. CEEP item.
CR Reader	Radiology Core	Agfa Healthcare (USA)	CR 85-X	000000	DEC-08	Do not replace in next 5 years
CR Reader	Radiology Core	Agfa Healthcare (USA)	CR 85-X	000000	DEC-08	Do not replace in next 5 years
Radiography Unit Mobile	Radiology Core	GE Medical System USA	Optima	000000	MAY-12	Do not replace in next 5 years
Radiographic Unit	Radiology Core Room X	GE Medical Systems	Proteus	000000	MAY-06	Funded for replacement in FY 2014. ACN: XXXX-XX-XXX
Radiographic System, Digital	Radiology Core Room X	GE Medical Systems	Discovery XR56	000000	OCT-14	Do not replace in next 5 years
Radiographic Unit	Radiology Core Room X	Philips Medical Systems	Bucky Diagnost	000000	SEP-11	Do not replace in next 5 years
R/F System, General-purpose	Radiology Core Room X	GE Medical System	500	000000	DEC-03	Replace in FY 2016
R/F System, General-purpose	Radiology Core Room X	Philips Medical Systems	EasyDiagnost DRF	000000	AUG-12	Do not replace in next 5 years
Radiographic Unit	Radiology Core Room X	GE Medical Systems	Proteus	000000	OCT-08	Replace in FY 2017
Corneal Topography System	Refractive Eye Center	Oculus Inc.	Pentacam HR	000000	SEP-08	Replace in FY 2017. CEEP item.
Microscope, Light, Operating, Hand/ Plastic Surgery	Refractive Eye Center	Leica Microsystems Inc.	M691	000000	JUN-92	Replace in FY 2017 with microscope (ECN 000000) from OR: in house move
Scanning System, Ultrasonic, Ophthalmic	Refractive Eye Center	Sonomed Inc.	Vumax li	000000	JUN-13	Do not replace in next 5 years
Scanning System, Ultrasonic, Ophthalmic	Refractive Eye Center	Carl Zeiss Meditec Ag	Iolmaster	000000	OCT-12	Do not replace in next 5 years
Laser, Excimer, Ophthalmic	Refractive Eye Center	Alcon Refractive	Allegretto Eye Q	000000	JAN-08	Replace in FY 2015
Laser, Ophthalmic, Intralase Fx	Refractive Eye Center	Intralase Corp.	2	000000	JUN-08	Replace in FY 2015
Optical Coherence Tomography	Refractive Eye Center	Heidelberg Engineering	Hra+oct	000000	SEP-12	Do not replace in next 5 years
Monitoring System, Physiologic, Acute Care	Same Day Surgery	GE Healthcare	2035598-303	000000	JUN-09	Replace FY 2017 with similar system. CEEP item.
Monitor, Bedside, Physiologic	Same Day Surgery	GE Healthcare	2025738-004	000000	JUN-09	Replace FY 2017 with similar system. CEEP item
Automation System, Medication Dispensing, Outpatient Pharmacy	SIHB	Parata Systems	Minis	000000	NOV-10	Do not replace in next 5 years
Polysomnography System	Sleep Lab (ICU)	Philips	Alice 6	MANY	MAR-14	Do not replace in next 5 years
Sterilizer, Low Temp	SPD	New	New	New	N/A	Procure FY 2016 with renovation funding
Washer, Cart	SPD	Steris Corp.	120	000000	JAN-06	Replace FY 2016 with renovation funding

Appendix E: Recommendations for Diagnostic Imaging and Clinical Support Equipment

Equipment	Location	Manufacturer	Model	ECN	Date in Service	Recommendations
Washer/Sterilizing Unit	SPD	Steris Corp.	Synergy	000000	MAR-05	Replace FY 2016 with renovation funding
Washer/Sterilizing Unit	SPD	Steris Corp.	Synergy	000000	MAR-05	Replace FY 2016 with renovation funding
Sterilizing Unit, Steam, Bulk	SPD	Steris Corp.	V-148h	000000	SEP-08	Replace FY 2016 with renovation funding
Washer, Labware/Surgical Instrument, Ultrasonic	SPD	Steris Corp.	Caviwave Pro 17-WRD-e	000000	SEP-09	Replace FY 2016 with renovation funding
Sterilizing Unit, Steam, Bulk	SPD	Steris Corp.	V-148h	000000	JUN-11	Replace in FY 2016 with renovation funding
Sterilizing Unit, Steam, Bulk	SPD	Steris Corp.	V-148h	000000	SEP-08	Replace in FY 2016 with renovation funding
Video System, Endoscopic	SPD	Stryker Endoscopy	240-099-011	000000	MAR-14	Do not replace in next 5 years.
Sterilizing Unit, Plasma	SPD	Advanced Sterilization	SY211	000000	OCT-07	Replace in FY 2016 with renovation funding
Sterilizing Unit, Plasma	SPD	Advanced Sterilization	10104	000000	APR-08	Replace in FY 2016 with renovation funding
Video System, Endoscopic	Surgical Clinic	Medtronic Inc.	9043A0063AA	000000	JUN-06	Replace in FY 2016. CEEP item.
Video System, Endoscopic	Surgical Clinic	Olympus America Inc.	Wm-dp1	000000	NOV-11	Do not replace in next 5 years
Video System, Endoscopic	Surgical Clinic	Olympus America Inc.	Wm-dp1	000000	NOV-11	Do not replace in next 5 years
CR Reader	TMC	Agfa Healthcare (USA)	CR 85-X	000000	MAR-08	Replace in FY 2017 with similar system
Radiographic Unit	TMC	GE Medical Systems	Proteus	000000	APR-07	Replace in FY 2017 with similar system
Automation System, Medication Dispensing, Outpatient Pharmacy	Pharmacy	Parata Systems	P2000	000000	APR-12	Do not replace in next 5 years
Automation System, Medication Dispensing, Outpatient Pharmacy	Pharmacy	Parata Systems	Minis	000000	APR-12	Do not replace in next 5 years
Simulator, Virtual Driving	TBI Clinic	Raydon Corporation	NDX306	000000	FEB-09	Do not replace in next 5 years
Neurocom Balance Simulator	TBI Clinic	Neurocom International	MS14082	000000	SEP-08	Do not replace in next 5 years
Video System, Endoscopic	Urology Clinic	Olympus America Inc.	WM-NP1	000000	OCT-11	Do not replace in next 5 years
Video System, Endoscopic	Urology Clinic	Olympus America Inc.	WM-NP1	000000	OCT-11	Do not replace in next 5 years
Laser, Holium, Surgical	Urology Clinic	Lumenis Inc.	Powersuite20	000000	JUN-02	Replace in FY 2016: CEEP item
R/F Urology System	Urology Clinic	Liebel-Flarsheim	Hydravision DR	000000	AUG-06	Replace in FY 2015: (ACN: XXXX-XX-XXX)
Video System, Endoscopic	Urology/OR	Olympus	New	New	N/A	Procure in FY 2016

Appendix F: Five Year Equipment Requirements Plan (MEDCASE and SuperCEEP)

FY	Replace or New Requirement	Equipment	Location	Manufacturer	Model	ECN	ACN
MEDCASE (Requirements greater than \$250,000)							
2015	Upgrade in FY 2015. Approved/funded.	Scanning System, MRI, Full-body	Radiology	GE Medical Systems	2377062-10	000000	XXXX-XX-XXX
2015	Replace in FY 2015	Scanning System, Computed	Radiology	Philips Medical Systems, North America	4535670z7192	000000	XXXX-XX-XXX
2015	Replace in FY 2015	Laser, Excimer, Ophthalmic	Refractive Eye Center	Alcon Refractive	Allegretto Eye Q	000000	XXXX-XX-XXX
2015	Replace in FY 2015	Laser, Ophthalmic, Intralase Fx	Refractive Eye Center	Intralase Corp.	2	000000	XXXX-XX-XXX
2015	Replace in FY 2015	R/F Urology System	Urology Clinic	Liebel-Flarsheim	Hydravision DR	000000	XXXX-XX-XXX
2016	Replace in FY 2016	Radiographic Unit	Health Clinic Room X	GE Medical Systems	Proteus	000000	XXXX-XX-XXX
2016	Replace in FY 2016	Video System, Endoscopic	Ent Clinic/Audiology	Karl Storz Endoscopy-America, Inc.	22200011u102	000000	XXXX-XX-XXX
2016	Procure in FY 2016	Point of Use (Pharmacy-OR)	OR	New	New	New	XXXX-XX-XXX
2017	Replace in FY 2017	Radiographic Unit	Orthopedic Clinic	GE Medical Systems	Proteus	000000	XXXX-XX-XXX
2017	Replace in FY 2017	Radiographic Unit	Radiology Core Rm. 7	GE Medical Systems	Proteus	000000	XXXX-XX-XXX
2017	Replace in FY 2017	Radiographic Unit	Health Clinic Room X	GE Medical Systems	Proteus	000000	XXXX-XX-XXX
2018	Replace in FY 2018 with similar system	Dual Head Gamma Camera	Radiology	Philips Medical Systems, North America	Brightview XCT	000000	XXXX-XX-XXX
2018	Replace in FY 2018 with similar system	Radiographic System, Digital	Radiology	Hologic Inc.	Selenia Dimensions	000000	XXXX-XX-XXX
2019	Replace in FY 2019 with similar system	Radiographic System, Digital	Radiology	Hologic Inc.	Selenia Dimensions	000000	XXXX-XX-XXX

Appendix F: Five Year Equipment Requirements Plan (MEDCASE and SuperCEEP)

FY	Replace or New Requirement	Equipment	Location	Manufacturer	Model	ECN	ACN (Continued)
SuperCEEP (Requirements greater than \$100,000 less than \$250,000)							
2016	Procure in FY 2016	Laser, Multi Light Wavelengths	ENT	Sciton	New	New	XXXX-XX-XXX
2016	Replace in FY 2016	Microscope, Light	OR	Leica Microsystems Inc.	MS3	000000	XXXX-XX-XXX
2016	Replace in FY 2016	Microscope, Light	OR	Leica Microsystems Inc.	M525	000000	XXXX-XX-XXX
2016	Procure in FY 2016	Video System, Endoscopic	OR	Stryker	New	New	XXXX-XX-XXX
2016	Replace in FY 2016 with similar system	Densitometer, Bone, X-ray	Radiology	Hologic Inc.	Discovery QDR	000000	XXXX-XX-XXX
2016	Replace in FY 2016 with similar system	Scanning System, Ultrasonic	Radiology	Philips Medical Systems, North America	iU22	000000	XXXX-XX-XXX
2016	Replace in FY 2016 with similar system	Scanning System, Ultrasonic	Radiology	Philips Medical Systems, North America	iU22	000000	XXXX-XX-XXX
2016	Replace in FY 2016 w/ fluoro unit only	R/F System	Radiology Core Rm. X	GE Medical System	500	000000	XXXX-XX-XXX
2016	Procure in FY 2016	Video System, Endoscopic	Urology/OR	Olympus	New	New	XXXX-XX-XXX
2016	Replace in FY 2016. Awaiting Win7 OS availability.	Prone Stereotactic Biopsy System	Radiology	Siemens Medical	Mammotest	000000	XXXX-XX-XXX
2017	Replace in FY 2017 with similar system	Scanning System, Ultrasonic,	Cardiology	Philips Medical Systems, North America	iE33	000000	XXXX-XX-XXX
2017	Replace in FY 2017	Laser, Carbon Dioxide	Dermatology	Alma Lasers	Harmony	000000	XXXX-XX-XXX
2017	Replace in FY 2017	Microscope, Light, Operating	OR	Leica Microsystems Inc.	M844	000000	XXXX-XX-XXX
2017	Replace in FY 2017	Navigation System	OR	Medtronic Navigation Inc.	Fusion	000000	XXXX-XX-XXX
2017	Replace in FY 2017 with similar system	Scanning System, Ultrasonic	Radiology	Philips Medical Systems, North America	iU22	000000	XXXX-XX-XXX
2017	Replace in FY 2017 with similar system	Scanning System, Ultrasonic	Radiology	Philips Medical Systems, North America	iU22	000000	XXXX-XX-XXX
2017	Replace in FY 2017 with similar system	CR Reader	TMC	Agfa Healthcare (USA)	CR 85-x	000000	XXXX-XX-XXX
2017	Replace in FY 2017 with similar system	Radiographic Unit	TMC	GE Medical Systems	Proteus	000000	XXXX-XX-XXX
2018	Replace in FY 2018	Radiographic Unit, Mobile	OR	GE Medical Systems	Amx4+	000000	XXXX-XX-XXX
2018	Replace in FY 2018 with similar system	Scanning System, Ultrasonic	Radiology	Philips Medical Systems, North America	iU22	000000	XXXX-XX-XXX
2019	Replace in FY 2019 with similar system	Scanning System, Ultrasonic	OB/GYN Clinic	Philips Medical Systems, North America	iU22	000000	XXXX-XX-XXX

Appendix G: Estimated Cost Avoidance and Cost Savings

Equipment	Location	Manufacturer	Model	ECN	DIS	Type of Recommended Savings	Cost Avoidance
	Orthopedic Clinic	GE Medical Systems	Proteus	000000	FEB-09	Remove and do not replace when it becomes a maintenance burden	\$101,000.00
CR Reader	Orthopedic Clinic	Agfa Healthcare (USA)	Cr 85-x	000000	APR-09	Remove when no longer needed	\$141,000.00
CR Reader	Health Clinic	Agfa Healthcare (USA)	CR 85-X	000000	OCT-11	Remove when no longer needed	\$108,000.00
CR Reader	Health Clinic	Agfa Healthcare (USA)	CR 85-X	000000	DEC-06	Remove when no longer needed	\$129,000.00

Total Estimated Cost Avoidance: \$479,000.00

Equipment	Location	Manufacturer	Model	ECN	DIS	Type of Recommended Savings	Cost Avoidance
	Refractive Eye Center	Leica Microsystems Inc.	M691	000000	JUN-92	Replace in FY 2017 with microscope (ECN 013429) from OR: in house move	\$63,000.00

Total Estimated Cost Savings: \$63,000.00

NOTE: TARA generated cost avoidance through several means: by recommending removing and not replacing unneeded equipment, by recommending reusing equipment at other medical facilities, by replacing current equipment with a less expensive technology/equipment, by replacing equipment with newer, more efficient technologies, through recommending closing a service, or by reducing unnecessary accessories.

Generic TARA Report Example For Demonstration Purposes

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Appendix H: Recommendations for Laboratory Equipment

Equipment	Manufacturer/Model	ECN	Years in Service	Lease/ Own	Recommendation
Chemistry					
Immunoassay System	Roche Diagnostics Corp.	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Immunoassay System	Roche Diagnostics Corp.	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Immunoassay System	Roche Diagnostics Corp.	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Immunoassay System	Roche Diagnostics Corp.	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Immunoassay System	Roche Diagnostics Corp.	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Immunoassay System	Roche Diagnostics Corp.	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Osmometer	Advanced Instruments Inc.	000000	4	Own	Replace when maintenance costs exceed expenditure
Osmometer	Advanced Instruments Inc.	000000	4	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Fisher Scientific	000000	3	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Iris International	000000	8	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Iris International	000000	8	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Electron Corp.	000000	7	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Fisher Scientific Co.	000000	5	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Beckman Coulter Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Blood Gas Analyzer	Radiometer America Inc.	000000	5	Lease	Continue lease and upgrade as technology is enhanced
Blood Gas Analyzer	Radiometer America Inc.	000000	5	Lease	Continue lease and upgrade as technology is enhanced
Incubator, Cold Block	VWR Scientific Products Corp.	000000	3	Own	Replace when maintenance costs exceed expenditure
Incubator, Cold Block	VWR Scientific Products Corp.	000000	3	Own	Replace when maintenance costs exceed expenditure

Appendix H: Recommendations for Laboratory Equipment

Equipment	Manufacturer/Model	ECN	Years in Service	Lease/ Own	Recommendation
Hematology					
Cytometer	Modulus Data Systems Inc.	000000	4	Own	Replace when maintenance costs exceed expenditure
Cytometer	Modulus Data Systems Inc.	000000	4	Own	Replace when maintenance costs exceed expenditure
Cytometer	Modulus Data Systems Inc.	000000	4	Own	Replace when maintenance costs exceed expenditure
Cytometer	Modulus Data Systems Inc.	000000	4	Own	Replace when maintenance costs exceed expenditure
Cell Counting Analyzer	Siemens Medical Solutions	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Cell Counting Analyzer	Siemens Medical Solutions	000000	3	Lease	Continue lease and upgrade as technology is enhanced
Slide Strainer	Wescor Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Mixer, Blood	Fisher Scientific Co.	000000	31	Own	Replace w/ CEEP
Platelet Incubator	Helmer	000000	2	Own	Replace when maintenance costs exceed expenditure
Platelet Analyzer	Dade Behring Inc.	000000	9	Own	Replace when maintenance costs exceed expenditure
Coagulation Analyzer	Sysmex Corp. of America	000000	4	Own	Replace when maintenance costs exceed expenditure
Coagulation Analyzer	Sysmex Corp. of America	000000	4	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Sakura Finetek USA Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Sakura Finetek USA Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Iris International	000000	4	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Iris International	000000	2	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Iris International	000000	15	Own	Replace w/ CEEP
Microcentrifuge	Thermo Scientific Lab	000000	2	Own	Replace when maintenance costs exceed expenditure
Microcentrifuge	Thermo Scientific Lab	000000	2	Own	Replace when maintenance costs exceed expenditure

Appendix H: Recommendations for Laboratory Equipment

Equipment	Manufacturer/Model	ECN	Years in Service	Lease/ Own	Recommendation
Urinalysis					
Urine Analyzer	Iris International	000000	1	Lease	Continue lease and upgrade as technology is enhanced
Urine Analyzer	Iris International	000000	5	Lease	Continue lease and upgrade as technology is enhanced
Urine Analyzer	Siemens Medical Solutions	000000	4	Own	Replace when maintenance costs exceed expenditure
Urine Analyzer	Siemens Medical Solutions	000000	4	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Electron Corp.	000000	5	Own	Replace when maintenance costs exceed expenditure
Automatic Stainer	Gemini/Varistain	000000	1	Own	Replace when maintenance costs exceed expenditure
Bacteriology/Parasitology/Mycobacteriology					
Blood Culture System	Bio Merieux/BacT/ALERT 3D	000000	8	Own	Replace w/ CEEP
Susceptibility Analyzer	Siemens Medical Solutions	000000	6	Lease	Continue lease and upgrade as technology is enhanced
MicroScan Analyzer	Siemens Medical Solutions	000000	2	Lease	Continue lease and upgrade as technology is enhanced
Incubator, Anaerobic	Thermo Fisher Scientifics Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Incubator, Anaerobic	Thermo Fisher Scientifics Inc.	000000	1	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Electron Corp.	000000	9	Own	Replace w/ CEEP
Incubator, Thermocycling	Barnstead/Thermolyne	000000	6	Own	Replace when maintenance costs exceed expenditure
Incubator, Thermocycling	Precision, Div Jouan Inc.	000000	6	Own	Replace when maintenance costs exceed expenditure
Immunology					
Immunoassay Analyzer	Grifols-Quest Inc.	000000	6	Lease	Continue lease and upgrade as technology is enhanced
Mixer, Blood	VWR Scientific Products Corp.	000000	5	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Andreas Hettich GMBH	000000	2	Own	Replace when maintenance costs exceed expenditure

Appendix H: Recommendations for Laboratory Equipment

Equipment	Manufacturer/Model	ECN	Years in Service	Lease/ Own	Recommendation
Blood Bank					
Incubator Test tube	Micro Typing Systems Inc.	000000	11	Own	Replace w/ CEEP
Incubator Test tube	Micro Typing Systems Inc.	000000	10	Own	Replace w/ CEEP
FFN, Immunoassay Analyzer	Adeza Biomedical Corp.	000000	6	Own	Replace when maintenance costs exceed expenditure
Plasma Thawing	Helmer	000000	5	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Electron Corp.	000000	4	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Hettich	000000	4	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Ortho Clinical Diagnostic Inc.	000000	3	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Ortho Clinical Diagnostic Inc.	000000	1	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Fisher Scientifics Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Thermo Fisher Scientifics Inc.	000000	2	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Iris International	000000	16	Own	Replace w/ CEEP
Heating Block	Thermo Scientific	000000	4	Own	Replace when maintenance costs exceed expenditure
Anatomic Pathology – Cytology					
Slide Preparer	Cytec	000000	12	Lease	Continue lease and upgrade as technology is enhanced
Slide Preparer	Cytec	000000	9	Lease	Continue lease and upgrade as technology is enhanced
Automatic Stainer	Leica Microsystems	000000	2	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Baxter	000000	19	Own	Replace w/ CEEP

Appendix H: Recommendations for Laboratory Equipment

Equipment	Manufacturer/Model	ECN	Years in Service	Lease/ Own	Recommendation
Anatomic Pathology – Histology					
Auto Stainer	Leica Microsystems	000000	6	Own	Replace when maintenance costs exceed expenditure
Auto Stainer	Ventana Medical Systems	000000	3	Own	Replace when maintenance costs exceed expenditure
Microtome, Cryostat	Leica Microsystems	000000	12	Own	Replace w/ CEEP
Microtome	Leica Microsystems	000000	7	Own	Replace when maintenance costs exceed expenditure
Microtome	Leica Microsystems	000000	12	Own	Replace w/ CEEP
Microtome, Cryostat	Leica Microsystems	000000	7	Own	Replace when maintenance costs exceed expenditure
Tissue Processor	Leica Microsystems	000000	1	Own	Replace when maintenance costs exceed expenditure
Tissue Embedder	Sakura Finetek USA Inc.	000000	12	Own	Replace w/ CEEP
Autopsy Station	Mopec	000000	10	Own	Replace when maintenance costs exceed expenditure
Hydraulic Lift	Mopec	000000	12	Own	Replace when maintenance costs exceed expenditure
BDA					
Centrifuge, Tabletop	Thermo Electron Corp.	000000	10	Own	Replace w/ CEEP
Centrifuge, Tabletop	Fisher Scientific Co.	000000	5	Own	Replace when maintenance costs exceed expenditure

Appendix H: Recommendations for Laboratory Equipment

Equipment	Manufacturer/Model	ECN	Years in Service	Lease/ Own	Recommendation
Outlying Clinic: LaPoint Health Clinic Laboratory					
Urine Analyzer	Clinical	000000	5	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	No info	000000	No info	Own	Replace w/ CEEP
Mixer, Blood	No info	000000	No info	Own	Replace w/ CEEP
Outlying Clinic: Byrd Health Clinic Laboratory					
Chemistry Analyzer	Piccolo	000000	3	Own	Replace when maintenance costs exceed expenditure
Chemistry Analyzer	Piccolo	000000	3	Own	Replace when maintenance costs exceed expenditure
Mixer, Blood	Fisher Scientific Co	000000	3	Own	Replace when maintenance costs exceed expenditure
Mixer, Blood	Fisher Scientific Co	000000	3	Own	Replace when maintenance costs exceed expenditure
Urine Analyzer	Clinitek	000000	3	Own	Replace when maintenance costs exceed expenditure
Microscope	Olympus	000000	3	Own	Replace when maintenance costs exceed expenditure
Centrifuge, Tabletop	Hettich	000000	3	Own	Replace when maintenance costs exceed expenditure

Appendix I: MEDCASE and SuperCEEP Acquisition Requirements

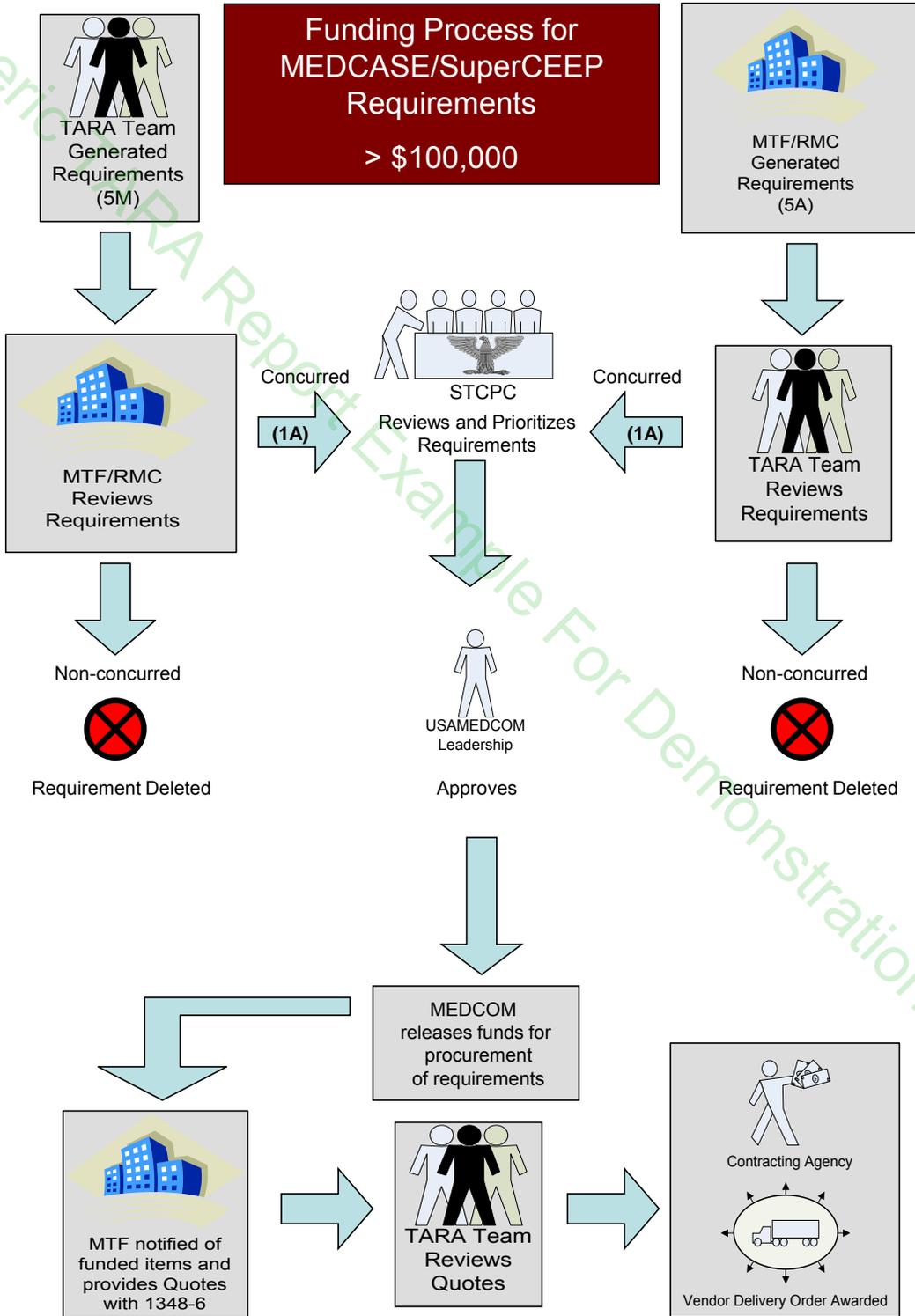
As a result of a TARA site visit, USAMMA may generate Medical Care Support Equipment (MEDCASE) or Super Capital Equipment Expense Program (SuperCEEP) requirements. The medical treatment facility (MTF) also may generate requirements to reflect a changed mission, expanded business opportunities, or to address equipment that was not reviewed by TARA (see the Figure below for the process flowchart).

For a centrally generated requirement, USAMMA will assign an asset control number (ACN). If the MTF identifies a requirement, they must complete a MEDCASE Program Requirement (MPR) package.

USAMEDCOM is responsible for prioritizing requirements. The site may use their vendor of choice with proper justification. Refer to the Supply Bulletin 8-75-MEDCASE for guidelines on acquisition procedures for AMEDD facilities using MEDCASE or SuperCEEP funding.

INFORMATION ASSURANCE

Information assurance (IA) certification and accreditation (C&A) for any equipment purchased from TARA recommendations is the responsibility of the organization. ICS has C&A responsibility for group buy and centrally managed enterprise initiatives, e.g., the Digital Imaging Network-Picture Archiving and Communication Systems (DIN-PACS). For all equipment approved or purchased, ICS will provide the required contract C&A language specifying the manufacturer's responsibility and obligations to achieve certification. Manufacturer agreement to the prescribed IA contractual language is a requirement prior to any award or acquisition action. Achieving C&A compliance through Certificate of Networthiness (CoN) or DOD Information Assurance Certification and Accreditation Process (DIACAP) can be accomplished as a parallel effort to the acquisition process. Unless otherwise indicted by ICS, it is the organization's responsibility to initiate and track the C&A process for any equipment purchased as a result of this TARA visit.



Appendix J: Acronyms

24/7	24 hours per day, 7 days a week
ASIP	Army Stationing and Installation Plan
AABB	American Association of Blood Banks
ACR	American College of Radiology
ACH	Army Community Hospital
AD	Active Duty
ADC	Automated Dispensing Cabinet
ADM	automated dispensing machine
ADR	Adverse Drug Reaction
AFI	amniotic fluid index
AHLTA	Armed Forces Health Longitudinal Technology Application
AMA	America Medical Association
AMEDD	Army Medical Department
AP	Anatomical Pathology
ARMD	Anesthesia Recording and Monitoring Device
ASAM	Automated Staffing Assessment Model
ASIP	Army Stationing and Installation Plan
ATO	Authority to Operate
BCA	Business Case Analysis
BCMA	barcode medication administration
BCT	Brigade Combat Team
BMM	borrowed military manpower
CAP	College of American Pathologists
CBMH	Community-Based Medical Home
CE	continuing education
CEEP	capital equipment expense program
CHCS	Composite Health Care System
CLSI	Clinical Laboratory Standards Institute
CO	cardiac output
CO2	carbon dioxide
CoN	Certificate of Networkiness
COOP	Continuity of Operations Planning Procedures
CoPath	Collaborative Medical Systems Anatomic Pathology
CPT	current procedural terminology
CPUs	central processing units
CR	computed radiography

CT	computed tomography
CTMC	Consolidated Troop Medical Clinic
CW	continuous wave
DBSS	Defense Blood Standard System
DCCS	Deputy Commander of Clinical Services
DIACAP	Department of Defense Information Assurance Certification and Accreditation Proce
DICOM	Digital Imaging and Communications in Medicine
DIN-PACS	Digital Imaging Network - Picture Archiving Communications System
DIRS	Diagnostic Imaging and Radiotherapy Subcommittee
DIS	date of installation
DLA-TS	Defense Logistics Agency-Troop Support
DMHRSi	Defense Medical Human Resources System - internet
DMLSS	Defense Medical Logistics Standard Support
DR	digital radiography or Disaster Recovery
DRMO	Defense Reutilization and Marketing Office
DXA	dual energy x-ray absorptiometry
EAS	Expense Accounting System
ECG	electrocardiogram
ECIA	Enterprise Clinical Imaging Archive
ECN	Equipment Control Number
ED	Emergency Department
eICU	electronic intensive care unit
ER	emergency room
ERCP	Endoscopic Retrograde Cholangiopancreatography
ESWL	extracorporeal shock wave lithotripter
etCO2	end-tidal capnography
FDA	Food and Drug Administration
FFDM	full-field digital mammography
FHR	fetal heart rate
FTE	full-time equivalent
FY	Fiscal Year
GFE	Government-Furnished Equipment
GLWACH	General Leonard Wood Army Community Hospital
GME	graduate medical education
GS	General Schedule
HCDP	Human Capital Distribution Plan

HIPPA	Health Insurance Portability and Accountability Act
HVAC	heating, ventilation, and air conditioning
IA	Information Assurance
IATO	Interim Authority to Operate
IBP	invasive blood pressure
ICSPMO	Integrated Clinical Systems Program Management Office
ICU	Intensive Care Unit
IM	Information Management
IMD	Information Management Department
IMS	Image Management Systems
IMRT	intensity-modulated radiation therapy
I-OR	integrated operating room
IR	interventional radiology
IT	information technology
IV	intravenous
JHMET	Joint Healthcare Management Engineering Team
LASIK	Laser-Assisted Sub-Epithelial Keratectomy or Laser Epithelial Keratomileusis
LCD	Liquid Crystal Displays
L & D	Labor and Delivery
LDR	low dose rate
LE	life expectancy
LIS	Laboratory Information System
LMM	laboratory MEPRS report
LPN	licensed practical nurse
LRN	Laboratory Response Network
LVN	licensed vocational nurse
mbps	megabits per second
MEDCEN	medical center
MEDDAC	Medical Activity
MED/SURG	medical/surgical
MEL	Maintenance Expenditure Limit
MEPRS	Medical Expense and Performance Reporting System
MILCON	military construction
MP	megapixel
MPR	MEDCASE Program Requirement
MRI	magnetic resonance imaging
MSQA	Mammography Quality Standards Act

mTBI	mild traumatic brain injury
MTF	medical treatment facility
NCOIC	Non-Commissioned Officer in Charge
NEMA	National Electrical Manufacturers Association
NIBP	non-invasive blood pressure
NICU	Neonatal Intensive Care Unit
NM	Nuclear Medicine
NRC	Nuclear Regulatory Commission
OB/GYN	obstetrics and gynecology
OEM	Original Equipment Manufacturer
OIC	officer-in-charge
OPTEMPO	operations tempo
OR	Operating Room
OSHA	Occupational Safety and Health Administration
OTSG	Office of the Surgeon General
PA	physician assistant
PACS	Picture Archive and Communication System
PCMH	Patient Centered Medical Homes
PDF	Portable Document Format
PET	positron emission tomography
PI	Performance Improvement
POCT	point-of-care testing
POM	Program Objective Memorandum
POU	point-of-use
PRK	photorefractive keratectomy
PRP	photorefractive keratectomy
PT	proficiency testing
QA	Quality Assurance
QC	quality control
QM	Quality Management
R/F	radiology/fluoroscopy
RCA	root cause analysis
RFID	radio frequency identification device
RM	risk management
RN	registered nurse
ROFR	Right of First Refusal
RUW	remote unit of work

RVUs	relative value units
SA	system administrator
SCMH	Soldier Centered Medical Homes
SCR	system change request
SDR	statistical detail report
SFMC	Soldier-Family Medical Clinic
SLA	Service Level Agreement
SLG	specimen master log
SMA	service maintenance agreement
SPD	Sterile Processing Department
SPECT	single photon emission computerized tomography
SpO2	pulse oximeter oxygen saturation
SRMC	Southern Regional Medical Command
STCPC	Strategic Technology and Clinical Policies Council
TARA	Technology Assessment and Requirements Analysis
TAT	test turnaround time
TB	terabytes
TBI	traumatic brain injury
TDA	Table of Distribution and Allowances
TEE	Tran-esophageal echocardiogram
TMC	Troop Medical Clinic
TPOC	Total Payment Obligation to Claimant
UF	utilization factor
UM	utilization management
UPS	uninterruptable power supply
US	ultrasound
USAMEDCOM	Army Medical Command
USAMMA	United States Army Medical Materiel Agency
USP	US Pharmacopoeia
VA	Veterans Affairs
VLAN	virtual local area network
VPN	virtual private network

WAM	Workload Assignment Module
WIN7	Windows 7
WRESP	Warrior Refractive Surgery Program

Generic TARA Report Example For Demonstration Purposes

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