



I N S T I T U T E F O R D E F E N S E A N A L Y S E S

## **Market Assessment of Two Overseas Military Treatment Facilities (MTFs)**

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# Executive Summary

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## Background

The Military Health System (MHS) operates a large network of military hospitals and clinics known as military treatment facilities (MTFs). MTFs are located on military installations, both stateside (CONUS) and overseas (OCONUS). The MHS also purchases a large volume of health care services from the civilian health care sector through the TRICARE program (both stateside and overseas).

The breadth of services offered at overseas MTFs varies considerably, resulting in differing degrees of reliance on the host nation health system for specialty, inpatient, and emergency care. Many overseas MTFs serve a relatively small beneficiary population and offer only limited inpatient services. The volume of inpatient care delivered at such facilities is low and generally concentrated in obstetric product lines (e.g., labor and delivery). Patients requiring care beyond these facilities' capabilities are sent to host nation facilities (or sometimes to larger MTFs outside of the area). The low patient volume at small MTFs translates into high costs per unit of care. Low volume can also raise safety concerns—an established body of literature has consistently shown a positive relationship between volume and better outcomes across a wide range of procedures and conditions, including hospital obstetrical volume and maternal postpartum complications.

These factors have led Department of Defense (DoD) leadership to question whether some of these overseas facilities should be downsized to outpatient (or ambulatory care only) facilities. Downsizing requires closing inpatient care product lines in MTFs and relying on the host nation's hospital infrastructure for these services. While downsizing may offer financial savings, there are additional factors to consider, such as differences in culture, quality, and standards of care in foreign hospitals. There may also be operational concerns (e.g., whether the MTF serves a strategic wartime purpose) and quality of life concerns/recruiting concerns (e.g., whether it will be harder to attract top talent to the base).

After weighing these factors, DoD recently transitioned two overseas inpatient MTFs to ambulatory care clinics. The facilities, both located in northern Italy, included an Army hospital in Vicenza (transitioned in fiscal year (FY) 2014) and an Air Force hospital in Aviano (transitioned in FY 2018). Two Navy facilities located in southern Italy, Naval Hospital (NH) Naples and NH Sigonella, were also directed to transition. Subsequently, the Under Secretary of the Navy requested an independent assessment of host nation medical facilities surrounding NH Naples and NH Sigonella. To help make the determination, the Office of the Secretary of Defense (OSD) Cost Analysis and Program Evaluation (CAPE) asked the Institute for Defense Analyses (IDA) to examine the business

case for closing inpatient product lines at each facility and to independently assess the care quality and accessibility available in local host nation facilities. Operational concerns (e.g., whether this facility serves a strategic wartime purpose) and quality of life concerns were beyond the scope of the requested analysis.

## Approach

To conduct the business case analysis, we performed a market assessment for each market area. The market assessments had three components:

- **A Market Workload Analysis.** Each workload analysis presents data on the case volume, case intensity, and unit costs observed for care in the MTF (direct care, or DC) and in host nation facilities.
- **A Potential Savings Analysis.** Each potential savings analysis considers cost accounting data on MTF expenditures and explores which expenses would be eliminated if inpatient product lines were closed.
- **An Analysis of the Local PC Network.** Finally, for each market, we assess the quality, safety, and standard of care (including cultural differences) available in host nation facilities.

## Summary of Findings

- **NH Naples and NH Sigonella have low inpatient volumes and high unit costs.** The average daily patient load (ADPL) at NH Naples is 2.2, while the ADPL at NH Sigonella is 1.4. Both are below the OCONUS facility ADPL average of 8 (and median of 3). The average cost per admission at NH Naples is \$18,000 (or \$37,000 per relative weighted product (RWP)—an intensity-adjusted unit), while the average cost per admission at NH Sigonella is \$27,000 (or \$50,000 per RWP). These are substantially greater than the OCONUS median cost per admission of \$14,000 (or \$15,000 per RWP).
- **It would cost less to purchase the current MTF inpatient workload from host nation facilities.** It costs approximately \$6.8 million for NH Naples to deliver its current inpatient workload. We estimate the same workload could be purchased from local host nation facilities for \$1.5 million to \$4.4 million. Similarly, it costs approximately \$6.5 million for NH Sigonella to deliver its current inpatient workload. We estimate the same workload could be purchased from local host nation facilities for \$1.7 million to \$1.8 million.

- **The estimated savings from closing inpatient product lines at NH Naples and NH Sigonella are \$10–\$13 million per year.** The expected annual savings for NH Naples range from \$5.3 million to \$7.4 million, while the expected annual savings for NH Sigonella range from \$4.6 million to \$5.6 million. The vast majority of the savings come from personnel reductions. We note these are only realized cost savings if manpower is actually reduced.
- **Both market areas appear to have ample capacity and capability to absorb the inpatient workload currently delivered in MTFs.** In Naples, we identified five host nation facilities delivering inpatient care to TRICARE beneficiaries, including two tertiary care facilities (the highest level of care). In Sigonella, we identified three host nation facilities delivering inpatient care to TRICARE beneficiaries (two were tertiary care facilities). All facilities had private rooms.
- **While the overall quality of care provided by the Italian health care system is good, there are a few issues worth noting.** Italy ranks very high among European Union (EU) countries for important outcome metrics such as preventable and treatable mortality. However, cesarean sections (C-sections) remain a perennial problem. Additionally, Italian facilities rarely seek the Joint Commission International (JCI) accreditation, which means that DoD cannot expect Italian facilities to report JCI metrics and follow all American quality of care standards.
- **Host nation health care facilities in Catania (Sigonella market), score better on average than health care facilities in Campania (Naples market) for quality.** This is especially true for labor and delivery. All Naples hospitals had high C-section rates (50 percent or higher) and were rated by the Programma Nazionale Esiti, or PNE (a quality monitoring program run by the Italian Agency for Regional Healthcare Services) as low (for compliance with quality standards). In Catania, facilities had lower C-section rates and were ranked medium or high by the PNE for labor and delivery. The facilities in Catania toured by the IDA team were also newer and more modern than the facilities we toured in Campania.

## Conclusions and Recommendations

Overall, the IDA team found little risk to care quality associated with closing inpatient product lines at NH Sigonella. Local network facilities were modern and had ample capacity to absorb the MTF's current workload. Private rooms were available, visiting hours were flexible, and the International SOS (ISOS) Experience of Care pilot (and/or MTF patient liaison program) provided concierge-style care, including transportation and bilingual patient liaisons. Most importantly, care quality was in line with the quality benchmarks we created using US data and data for a northern Italian facility in Aviano

where the Air Force now sends its beneficiaries. Adjusted C-section rates, a metric of notable importance for the DoD population, ranged from 25 to 30 percent. This is above our US benchmark (21.7 percent) and our northern Italy benchmark (18.72 percent), but not significantly. The estimated savings associated with closing inpatient services ranged from \$4.6–\$5.6 million annually.

For NH Naples, the IDA team found a potentially greater risk to care quality associated with closing inpatient product lines. Network facilities in the Naples market area scored lower on average than health care facilities in Catania (Sigonella market) for compliance with quality standards. This is especially true for labor and delivery. The Naples facilities toured by the IDA team had high C-section rates (50 percent or slightly higher) and were rated by the PNE as low (for compliance with quality standards) in the area of labor and delivery (as a function of these high rates). While the high C-section rates are a cause for concern, the IDA team found reason to believe they would not be mirrored in the DoD beneficiary population. Still, we believe a more gradual and closely monitored transition could be warranted in Naples to ensure the MTF and ISOS team has enough capacity to fully mitigate these risks for all beneficiaries. The estimated savings range from \$5.3 million to \$7.4 million annually once transition is complete. A slower transition would reduce delay accruing savings, but it would allow the MTF to ensure network mechanisms are working as intended.

The IDA team also made several recommendations that apply regardless of the decisions as to whether or not to close inpatient product lines in either market. The recommendations covered (1) improvements to the ISOS Experience of Care pilot, which provides transportation services and bilingual patient liaisons, (2) improved communication to the beneficiary population about the concierge services available through ISOS/MTF liaisons, (3) the continued fostering of partnerships between the MTF and host nation facilities, and (4) improving the ability to channel patients to facilities with the best outcomes.

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# 1. Introduction

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## A. Background

The Military Health System (MHS) operates a large network of military hospitals and clinics known as military treatment facilities (MTFs). MTFs are located on military installations, both stateside (CONUS) and overseas (OCONUS). Today there are over 50 inpatient MTFs (37 in the United States) and over 400 ambulatory care clinics (373 in the United States).<sup>1</sup> Inpatient facilities range from large medical centers with over 400 beds to small community hospitals with under 20 beds. Ambulatory care clinics also range in their capabilities and product lines. Some clinics offer outpatient surgery and specialty care, while others focus on primary care and occupational health services. Collectively, these facilities form what is known as *direct care* (DC).

The MHS also purchases a large volume of health care services from the civilian health care sector through the TRICARE program. Under TRICARE, large regional managed care support contractors (MCSCs) build networks of civilian providers and facilities willing to treat Department of Defense (DoD) beneficiaries. These networks form what is known as *purchased care* (PC). The TRICARE Overseas Program (TOP) is responsible for PC outside of the United States and several US territories. They currently contract with International SOS (ISOS) to provide these services.

Overseas MTFs are often small facilities serving relatively small beneficiary populations. Serving a small beneficiary population results in a low patient volume, which translates into very high costs per unit of care. For instance, the average daily patient load (ADPL) at a CONUS facility is 49 (with an average admission cost of \$12,000) while the ADPL for OCONUS facilities is only 8 (with an average admission cost of \$19,000).<sup>2</sup> In addition, an established body of literature has consistently shown a positive relationship between volume and better outcomes across a wide range of procedures and conditions, including hospital obstetrical volume and maternal postpartum complications.<sup>3</sup>

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<sup>1</sup> Defense Health Agency, *Evaluation of the TRICARE Program: Fiscal Year 2019 Report to Congress* (Washington, DC: OASD(HA), February 28, 2019).

<sup>2</sup> The cost differential is even larger if you look at intensity-adjusted cost metrics. The average cost per Relative Weighted Product (RWP), an intensity-adjusted unit for inpatient care, for a CONUS facility is \$15,000, versus \$38,000 for an OCONUS facility.

<sup>3</sup> E. A. Halm, C. Lee, and M. R. Chassin, “Is Volume Related to Outcome in Health Care? A Systematic Review and Methodologic Critique of the Literature,” *Annals of Internal Medicine* 137, no. 6 (September 2002): 511–20, <https://doi.org/10.7326/0003-4819-137-6-200209170-00012>; Kathy L.

These factors have led leadership to question whether some of the overseas facilities should be downsized to outpatient (or ambulatory care only) facilities. Downsizing requires closing inpatient care product lines and relying on the host nation's hospital infrastructure for these services. While downsizing may offer financial savings, there are additional factors to consider, such as differences in culture, quality, and standards of care in foreign hospitals. There may also be readiness concerns (e.g., whether the MTF serves a strategic wartime purpose or readiness training benefits). Last, there could be quality of life concerns (e.g., whether the Navy will be able to attract top talent to an overseas assignment where dependents must rely on host nation facilities).

After weighing these factors, DoD recently chose to transition two overseas inpatient MTFs to ambulatory care clinics. Both facilities—an Army hospital in Vicenza (transitioned in fiscal year (FY) 2014) and an Air Force hospital in Aviano (transitioned in FY 2018)—were located in northern Italy. DoD is now considering transitioning two Navy facilities located in southern Italy: Naval Hospital (NH) Naples and NH Sigonella. To help make the determination, the Office of the Secretary of Defense, Cost Analysis and Program Evaluation (OSD(CAPE)) asked the Institute for Defense Analyses (IDA) to examine the business case for closing inpatient product lines at each facility and to independently assess the care quality and access available in local host nation facilities. Operational concerns and quality of life considerations are beyond the scope of this analysis.

## **B. Objectives of this Paper**

The objective of this paper was to independently assess the business case for closing inpatient product lines at NH Naples and NH Sigonella, considering cost, care access, care quality, and cultural differences. More specifically, for each market area, the team was to:

- **Perform a market workload assessment.** The quantitative workload assessment examined the case volume, case intensity, and unit cost for care delivered in each market's DC and PC system. To provide context, we also benchmarked each facility's workload metrics against other OCONUS MTFs.
- **Perform a cost savings assessment.** The cost savings assessment examined (1) the potential range of savings expected to materialize following a closure in inpatient product lines (i.e., which MTF costs will be eliminated), and (2) the final net savings range (i.e., savings from closing inpatient product lines less the cost of purchasing the inpatient workload from host nation facilities).

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Kyser et al., "The Association between Hospital Obstetrical Volume and Maternal Postpartum Complications," *American Journal of Obstetrics and Gynecology* 207, no. 1 (July 2012): 42.e1–42.17, <https://doi.org/10.1016/j.ajog.2012.05.010>.

- **Perform an assessment of host nation inpatient facilities.** The host nation assessment considered (1) access to care (e.g., whether local facilities have the capacity to absorb the MTF's current inpatient workload), and (2) quality and safety of care in host nation facilities (e.g., whether the facilities meet safety requirements and patient outcome standards). We also considered cultural differences that will affect the patient experience, such as language barriers, availability of private rooms, and differences in standards of care (e.g., pain management for labor and delivery).



## 2. Methodology

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This chapter describes the market assessment methodology used to perform the workload, savings, and quality/access assessments listed in Chapter 1. Each market assessment consists of four main parts: (1) a summary of the market area, (2) a market workload analysis, (3) a potential savings analysis, and (4) an analysis of the quality and access to care in the local PC network. The remainder of this chapter provides information and the data, metrics, and methodologies that will be used in each of these analyses.

### A. Summary of Market Areas

#### 1. Direct Care

As previously discussed, the MHS currently operates over 50 inpatient facilities and many more ambulatory care clinics.<sup>4</sup> All ambulatory care centers are assigned to a *parent facility* that oversees the *child* facility and may provide administrative and ancillary support services. In the summary of each market area, we describe the primary inpatient (parent) facility and note the presence of child ambulatory care centers. The primary focus will be on the inpatient facility, as this is the facility that will primarily be affected by a closure or reduction in inpatient product lines. The information reported for the inpatient facility includes its location and size (measured by bed size). We also report the number of personnel (or full-time equivalents (FTEs)) assigned to the facility. Personnel information also includes the individual's type (military/DoD civilian/contractor) and profession (e.g., physician, technician, administrator). Finally, we report information on the facility's capabilities (e.g., what product lines it offers, whether there is an intensive care unit or emergency room).

#### 2. Purchased Care

The Italian health care system is a decentralized, regionally based national health system. In the summary of each market area, we begin with a discussion of each market's regional health care system. The Naples market area is located in the Campania region, while the Sigonella market area is located in the autonomous region of Sicily. We then provide summary information on the specific host nation facilities providing care to DoD beneficiaries. The information reported for the inpatient facilities includes their name,

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<sup>4</sup> Defense Health Agency. *Evaluation of the TRICARE Program*.

location (and distance from base), and some general information on their size, type, and capability (e.g., acuity level, whether the facility is private or public, whether it is a teaching hospital). We provide further information on network facility capabilities, capacity, care quality, and safety in the analysis of the PC network.

## **B. Market Workload Analysis**

The workload analysis for each market area uses nine primary metrics to summarize and compare the inpatient workload occurring in each market’s DC and PC systems. These metrics are commonly used to understand case volume, case intensity, and unit costs. The data for all workload metrics are compiled using the Military Health System Management Analysis and Reporting Tool (M2), which queries data from the Military Health System Data Repository (MDR). Appendix A provides more detail on M2 and MDR.

### **1. Summary Workload Assessment Metrics**

Table 1 outlines the nine primary workload assessment metrics. The workload metrics are reported both for the MTF parent facility and for the care delivered in the local PC network.<sup>5</sup> More specifically, for each delivery system, we report the metrics by five product line categories used by DoD to group inpatient care episodes. Appendix B also contains benchmark workload metrics so that the Italian facilities can be compared against other CONUS and OCONUS MTFs.

The first three product lines are derived from 25 mutually exclusive Major Diagnostic Categories (MDCs). MDCs generally correspond to a single organ system or condition (etiology) and are typically associated with a specific medical specialty (e.g., nervous system, respiratory system, digestive system, pregnancy and childbirth). The three MDC-based product lines are:

- **Obstetrics (OB).** This product line corresponds with MDC 14: “Pregnancy, Childbirth, & The Puerperium”.
- **Newborn (NB).** This product line corresponds with MDC 15: “Newborns & Other Neonates W/ Condition Originating in Perinatal Period”.
- **Mental Health (MH).** This product line corresponds with MDC 19: “Mental Disease & Disorders” and MDC 20: “Alcohol/Drug Use & Alcohol/Drug Induced Organic Mental Disorder”.

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<sup>5</sup> Local civilian inpatient facilities providing care to DoD beneficiaries are identified by their Provider Tax ID.

Reporting by these product lines has become practice in the MHS due to high volume and/or specific interest in these categories of care. All remaining admissions will be classified as:

- **Medical (M).** This product line corresponds to all remaining inpatient stays in which the patient receives treatment but does not undergo a surgical procedure that requires the use of an operating room (OR).
- **Surgical (S).** This product line corresponds to all remaining inpatient stays in which the patient does undergo a surgical procedure in the OR.

It should be noted that the first two product lines may be medical or surgical in nature.

**Table 1. Summary of Workload Assessment Metrics**

<b>Metric</b>	<b>Definition</b>
Admissions/Dispositions	Captures the volume of patients receiving inpatient care. Note: PC records report admissions, while the DC system reports dispositions (discharges).
Relative Weighted Product (RWP)	Measures the relative complexity of services and resources used by acute-care inpatient facilities. It is based on Medicare Severity Diagnosis Related Group (MS-DRG) codes. We note that there appear to be minor reporting issues with this measure for Italian host nation facilities. <sup>6</sup>
Bed Days	The number of days a patient occupied a bed at the facility. Includes all beds (acute, ICU, bassinets, etc.).
Average Daily Patient Load (ADPL)	The total annual bed days divided by 365. It is a measure of occupancy. We report this metric for DC only.
Case Mix Index (CMI)	A metric used to measure case intensity. It is defined as RWPs/Admissions. A higher ratio indicates a higher case intensity.
Length of Stay (LOS)	Another metric used to measure case intensity. It captures the average number of days a patient stays in the hospital. A longer hospital stay is usually indicative of a more complex condition.
Cost per Admission/Disposition	The total cost of care divided by total admissions/dispositions. This is a non-intensity-adjusted unit cost measure for inpatient care.
Cost per RWP	The total cost of care divided by total RWPs. This is an intensity-adjusted unit cost measure for inpatient care.
Cost Per Bed Day	The total cost of care divided by the number of bed days. This is another intensity adjusted unit cost measure for inpatient care.

<sup>6</sup> In several cases, we noted observations of RWP units that were far below the expected value, given the procedure and length of stay.

## 2. Detailed Analysis of DC Workload

For ease of presentation, we present the workload analysis at the product line level of aggregation. However, it is possible to perform the same analysis at the MDC level or even the MS-DRG level.<sup>7</sup> Performing the analysis at lower levels of aggregation will allow us to determine if similar workload is being performed across both systems (i.e., if we are comparing apples to apples). It will also allow us to examine variation in unit costs across MDCs and MS-DRGs.<sup>8</sup> We will therefore explore a subset of the volume and cost metrics at the MDC level. For the MDCs related to labor and delivery and newborn care, we will look at care delivered at the MS-DRG level as well. Appendix C contains a list of the 25 MDCs and a list of all MS-DRGs in the MDCs associated with childbirth and newborn care.

## 3. Clinical Skill Maintenance

High-end surgical providers need to perform a high volume of surgical procedures to gain proficiency and maintain their clinical skills. When they are sent to small facilities with a limited case mix, their skills can atrophy. The DoD currently measures provider skill maintenance using a new analytic construct known as “Knowledge, Skills, and Abilities (KSAs).” Under the KSA system, providers receive KSA scores based on the procedures they perform. In general, more complex procedures earn higher points.

The KSA scores providers earn are benchmarked against a set KSA threshold to determine if the provider meets the clinical currency requirement. Currently, the KSA system is only fully developed for general surgery and orthopedic surgery. Other specialties are still in development. The DoD sponsors of this study asked IDA to report KSA scores for general surgeons and orthopedic surgeons assigned to each naval hospital.

For each market area, we report the total KSA points earned at each MTF, the provider threshold, and the number of providers that could be fully supported (i.e., have enough complex workload to remain clinically current) based on total KSA points.<sup>9</sup>

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<sup>7</sup> MS-DRGs are used to classify inpatient stays into various groups in order to facilitate billing. They are defined based on a set of patient attributes including the principal and secondary diagnoses, procedure performed, etc. They also indicate the presence of a complication or comorbidity (CC) or a major complication or comorbidity (MCC). Today there are approximately 1,000 MS-DRGs. All DRGs are classified as Medical (M) or Surgical (S).

<sup>8</sup> While RWPs are intensity-adjusted, the average cost per RWP can vary quite a bit by MS-DRGs within an MDC or product line.

<sup>9</sup> The KSA scoring methodology is based on a complex formula that considers the complexity of procedures a provider performs, as well as the diversity of case mix. IDA was not given the methodology. Instead, we provided the DOD with unique provider IDs and workload data, and the KSA team returned scores.

#### 4. Cost of Purchasing the MTF Inpatient Workload in the PC Network

If inpatient product lines were closed at NH Naples and/or NH Sigonella, the MHS would need to purchase this workload from host nation facilities in the TRICARE network. To estimate what this would cost, we need a methodology for valuing the current MTF workload at PC prices. Ideally, we would estimate this value by applying the average PC cost per unit of workload for each procedure to the MTF's workload for the same procedure and sum across all procedure codes, i.e.,

$$TC_{PC}^{DC} = \sum_{i=1}^n w_i^{DC} \cdot (TC_i^{PC} / w_i^{PC}),$$

where  $TC_{PC}^{DC}$  is total DC workload valued at PC rates,  $w_i^{DC}$  is the total DC workload weight for procedure  $i$ ,  $TC_i^{PC}$  is the total PC cost for procedure  $i$ , and  $w_i^{PC}$  is the total PC workload weight for procedure  $i$ .<sup>10</sup>

A challenge for this analysis is that we do not observe the average PC cost per unit of workload for many of the procedures currently performed in the DC system (because very little care is currently purchased in Naples and Sigonella).<sup>11</sup> In the absence of a fee schedule, we must rely on the unit prices observed for the subset of procedures currently provided in each market's PC network. This means that we are unable to use procedure-specific average unit costs. We must instead rely on aggregate average unit costs (e.g., the average cost of all inpatient admissions or all OB admissions versus the average cost of a cesarean). For the main analysis, we will report the estimated value of the DC workload in the local PC network using three different unit costs:

- **Average Cost per Admission.** The total amount paid for PC divided by total PC admissions. This metric is not intensity-adjusted (i.e., it does not account for the fact that some admissions are far more complex than others).
- **Average Cost per RWP.** The total amount paid for PC divided by total PC RWPs. This metric is intensity-adjusted. Generally, cost per RWP would be our preferred metric. However, a detailed examination of the Italian PC records led us to believe that RWPs are not always reported accurately. Specifically, we identified numerous cases that appear complex in terms of LOS and total cost, but where recorded RWPs were far below expected RWPs for such a case.

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<sup>10</sup> This was the methodology used for valuing MTF workload for CONUS facilities in IDA NS P-5262.

<sup>11</sup> The IDA team requested a fee schedule from the TRICARE Overseas Program Office but was told that there was no such schedule. The Overseas TRICARE contractor, ISOS, currently pays billed charges. Billed charges may be disputed if they are for unnecessary care or deemed not to fit the "usual and customary" criteria.

- **Average Cost per Bed Day.** The total amount paid for PC divided by total PC bed days. This is also an intensity-adjusted metric, as more complex care generally requires a longer hospital stay. Given the challenge with RWP reporting, cost per bed day is our preferred cost metric.

## **C. Potential Savings Analysis**

The market workload analysis will provide the unit cost of inpatient care (e.g., cost per disposition and cost per RWP) delivered in each MTF (NH Naples and NH Sigonella). The potential savings analysis uses cost accounting data from the Medical Expense and Performance Reporting System (MEPRS) to determine the full cost of providing inpatient care at these facilities and which costs could be eliminated if inpatient product lines were closed.

### **1. MEPRS Methodology**

MEPRS is a Tri-Service financial accounting system reporting DoD-standardized expenses, staffing, and summary workload data for fixed military and dental treatment facilities. MEPRS provides data by Functional Cost Code (FCC), a four-level hierarchical accounting system representing work centers or reporting facilities. The first letter of each FCC identifies the broadest level of service provided:

- A: Inpatient Care
- B: Outpatient Care
- C: Dental Care
- D: Ancillary Services
- E: Support Services
- F: Special Programs
- G: Medical Readiness

Subsequent letters identify work centers in greater detail; e.g., BC identifies Obstetrical and Gynecological Care and BCA identifies the Family Planning Clinic. The first three letters of the FCC are standardized across DoD, whereas the fourth letter is specific to each MTF.

Accounts A, B, C, F, and G are referred to as final operating accounts, whereas accounts D and E (Ancillary and Support Services) are intermediate, or “stepdown,” accounts. Expenses from the Ancillary and Support accounts are allocated (stepped down) proportionately across A, B, and C accounts based on performance factors established by DoD. At the end of the allocation process, no expenses remain in the intermediate accounts.

**a. Baseline Savings Estimate**

Because the MEPRS system allocates all intermediate expenses to the final accounts, it provides a natural baseline estimate of the total expenses associated with operating inpatient care. This is illustrated in Table 2, which shows the MEPRS expense allocation for NH Naples. The first row shows the FTEs, civilian pay, military pay, and other operations and maintenance (O&M) expenses allocated to inpatient care. The total inpatient expense of \$6.8 million is reported in the final column. The expenses associated with the intermediate D and E accounts are reported as \$0 because these costs have been allocated to final accounts (A, B, C).

**Table 2. MEPRS Cost Allocation for Naples MTFs, FY 2018**

<b>MEPRS Account</b>	<b>Avg Assigned Total FTEs</b>	<b>Civilian Pay Exp</b>	<b>Military Pay Exp</b>	<b>Other O&amp;M Exp</b>	<b>Total Exp</b>
A: Inpatient Care	26	\$634,295	\$4,307,290	\$1,878,755	\$6,842,741
B: Outpatient Care	184	\$3,286,495	\$26,985,646	\$8,809,881	\$39,169,383
C: Dental Care	52	\$731,323	\$5,595,109	\$1,599,450	\$8,047,399
D: Ancillary Services	67	\$0	\$0	\$0	\$0
E: Support Services	179	\$0	\$0	\$0	\$0
F: Special Programs	19	\$1,397,415	\$5,671,455	\$2,019,186	\$9,090,295
G: Medical Readiness	0	\$54,601	\$1,091,006	\$134,783	\$1,280,390
	<b>527</b>	<b>\$6,104,130</b>	<b>\$43,650,506</b>	<b>\$14,442,055</b>	<b>\$64,430,208</b>

*Source:* MEPRS; table includes NH Naples and its child facility, BMC Capodichino.

While the MEPRS cost allocation provides a good baseline estimate for the cost of providing inpatient care (and presumably the savings from closing inpatient product lines), further investigation is required. Specifically, we want to verify whether the proportional cost allocation assumptions used by the MEPRS system make sense in the context of closing inpatient product lines.

To see this, consider the case of FTE allocation. There are currently 26 assigned FTEs allocated to inpatient care. These FTEs, however, do not represent 26 unique individuals that provide inpatient care full-time. They represent a proportional allocation of a much greater number of individuals who spread their time across different inpatient and outpatient work centers. If we assume the MEPRS inpatient total expense is equal to savings from closing inpatient care, we are assuming 26 assigned FTEs can be eliminated. While assuming this proportional reduction in FTEs seems logical, it could also be the case that fewer FTEs could truly be eliminated. Alternatively, it could be the case that more

FTEs could be eliminated if outpatient operations are affected by the closure of inpatient product lines (e.g., the facility reduces operating hours, outpatient OB care transfers to PC).

## **2. Case Study Methodology**

The challenge in determining savings is knowing which personnel and services will truly be eliminated, reduced, etc. The baseline savings estimate is based on assuming proportional reductions in personnel, ancillary services, and support services, etc. (e.g., if inpatient care used 10 percent of support services, an assumption can be made that 10 percent of the support service expense will be eliminated). An alternative methodology is to develop assumptions on how personnel, ancillary and support services, and total expenses will change based on the observed experience of other similar facilities that closed inpatient product lines. Specifically, we will create a range of potential personnel and expense reductions using data on the transition experiences of the MTFs located in Vicenza and Aviano, Italy. These facilities transitioned to outpatient care facilities in FY 2014 and FY 2019, respectively.

Table 3 shows the FTE and total expense reductions implied for these facilities by the MEPRS proportional methodology and the reduction actually observed one year after the transition. The bottom panel of the table also shows changes in outpatient expense, volume, and unit price. For both facilities, we observe a reduction in the volume of outpatient care and total outpatient expense (but a rise in the cost per unit). The reduction in outpatient volume could be driven by outpatient care that corresponds to an inpatient episode of care (e.g., if you are going to have an inpatient procedure in a host nation facility, you may want to see the same provider for your pre- and post-surgical care). It could also be driven by a reduction in outpatient services available in the MTF, changes in operating hours, or a change in the beneficiary population.

**Table 3. Observed FTE, Expense, and Outpatient Volume Reductions**

Change in:	Vicenza (FY14 to FY15 transition)		Aviano (FY18 to FY19 transition)	
	Implied	Actual	Implied	Actual
Assigned FTEs	-10	-34	-17	-54
% Change	-5%	-17%	-5%	-15%
Total Expense Change	-\$3,150,689	-\$3,712,153	-\$3,379,226	-\$6,818,432
% Change	-10%	-12%	-7%	-15%
Outpatient Expense	0	-\$627,426	0	-\$1,439,009
% Change		-2%		-7%
Outpatient Encounters	0	-12,111	0	-13,908
% Change		-17%		-28%
Cost per Encounter	0	\$64	0	\$137
%Change		18%		30%

Note: Closing inpatient product lines in Vicenza and Aviano corresponded to a reduction in outpatient services.

#### **D. Analysis of Local PC Network: Access, Quality, and Cultural Considerations**

The analysis for each market area’s PC network uses a variety of available data sources in order to characterize the local host nation facilities providing care to TRICARE beneficiaries. The goal of this analysis is to answer three questions:

- Do the local network facilities have sufficient capacity (i.e., all required specialty care and space available) to absorb the Naval Hospital’s current inpatient workload?
- Can the local network facilities provide care of sufficient clinical quality (relative to the Naval Hospital)?
- Are there significant cultural differences that would create barriers for sending all inpatient care to the network facilities?

The following sections present a brief overview of the Italian health care system, common cultural differences that patients may encounter, and definitions of metrics used to inform our analysis.

##### **1. Overview of the Italian Health Care System**

As previously discussed, the Italian health care system is a decentralized, regionally based national health system. The national government channels tax revenue for publicly funded care, sets the national benefit package of covered services, and exercises overall stewardship. All citizens and legal foreign residents are automatically and universally

covered by the National Health Service (Servizio Sanitario Nazionale). However, regional governments in the 19 distinct regions and two autonomous provinces are responsible for the organization and delivery of health services through local health departments and a combination of public and private hospitals and clinics. Regions have significant autonomy in determining the structure of their respective systems, leading to large differences between regions.

In 2017, Italy spent 8.8 percent of its GDP on health care. Public spending accounted for 74 percent of all health care expenditures that same year. The public system is financed through two primary sources: a corporate tax, which is pooled nationally and redistributed to regions in proportion to their contributions; and a fixed proportion of the national value-added tax revenue, which is allocated to regions with insufficient resources to provide the essential levels of care. Regional governments can generate their own revenue sources, and each does so differently. They can also choose to offer a richer package of services than the national standards. Local health systems are funded through capitated budgets.

The significant heterogeneity in regional financing has raised concerns about the ability of poorer or lower-performing regions to provide access to high-quality services without running into budgetary deficits or operational constraints. In the early 2000s, this was certainly the case. In general, access and care quality were believed to be higher in the northern regions (where most of the country's industry, finance, and commerce is based). However, in 2017, the number of regions in nationally supervised recovery plans has fallen to seven (Abruzzo, Apulia, Calabria, Campania, Lazio, Molise, and Sicily). In 2017, the national government expanded the national benefit package, resulting in five regions lacking the resources to meet the new standards (Campania, Valle d'Aosta, Sardinia, Calabria, and Bolzano). The perception of diminished quality has led to inter-regional care-seeking, particularly to the more prosperous northern regions. In 2016, around 8.5 percent of patients received care in a different region than their home. The proportion of patients in the south choosing to be treated in another region is almost twice as high as in the north.

Despite financing challenges between regions, hospitals provide high-quality treatment for people requiring acute or specialty care in the European Union (EU). Italy has the second lowest rate for avoidable hospital admissions (suggesting that care is effectively managed), and quality compares favorably for acute conditions such as acute myocardial infarction (below the EU average for mortality) as well as chronic conditions such as cancer (above the EU average for survival rates). Overall, Italy has among the lowest rates of preventable and treatable mortality in the EU (Italy had the second lowest

age-standardized mortality rate for preventable causes and the fourth lowest age-standardized mortality rate for treatable causes).<sup>12</sup>

The Italian Agency for Regional Healthcare Services (AGENAS) began a national quality monitoring program in 2012 called the Programma Nazionale Esiti (PNE) to track inpatient outcomes and support improvements in clinical processes. Cesarean sections (C-sections) remain a perennial problem. Italy has one of the highest national C-section rates at 35 percent. Rates among regions range from 22 percent to 54 percent of births. The Ministry of Health has targeted C-sections as a priority for reform. While C-sections are lifesaving when medically necessary, research has shown an increased prevalence of maternal mortality and morbidity after C-section. This suggests that mothers may be exposed to undue risk if a C-section is performed but not clinically indicated. It is important to note that the marginal risk of mortality or morbidity from a C-section is relatively small, but, owing to the rapid growth and widespread use of the procedure, a large fraction of the population may experience short- or long-term effects.

While the rate remains high in Italy, it is difficult to tease out the contributions to the overall rate of medically indicated C-sections (those that should have been performed) vice elective C-sections in low-risk pregnancies (those that should be encouraged to pursue natural childbirth). If the demographics of the region are driving a significant portion of the higher C-section rate, the high rate may not signal wasteful or unnecessary care, nor would the MHS beneficiary population necessarily be expected to have the same rate. In the United States, much of the debate around the procedure has centered on cost and low-value care. The market assessments will make use of PNE data as well as supplementary data provided directly by the facilities and ISOS to best capture differences in the health systems and the quality of the care they provide.

## **2. Cultural Differences**

While care delivered in Italy is accepted to be of a high clinical quality, there are significant cultural and contextual differences between the care delivered in Italy as compared to the United States. While private hospitals (*Casa di Cura*) are more similar to facilities in the United States with respect to both the facilities and amenities, public hospitals (*Ospedale*) may be a stark contrast to American expectations for care. Many Italian hospitals are housed in public buildings that were constructed hundreds of years ago. The facilities lack the modern design elements seen in many US hospitals, such as private rooms, patient-centered organization, and easily navigable wards. Some hospitals are centrally located with limited parking. There are service-related differences as well. In general, there is a greater expectation that the family will provide basic daily non-medical

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<sup>12</sup> “State of Health in the EU: Italy, Country Health Profile 2019,” OECD iLibrary, [https://read.oecd-ilibrary.org/social-issues-migration-health/italy-country-health-profile-2019\\_cef1e5cb-en#page1](https://read.oecd-ilibrary.org/social-issues-migration-health/italy-country-health-profile-2019_cef1e5cb-en#page1).

care, rather than depending on nursing or auxiliary staff. It is customary in Italy for patients to bring all that they will need with them particularly in public hospitals. This may include towels, toiletries, cutlery, linens, and pajamas. Private rooms are not the norm in Italy, nor are many additional comforts such as en suite bathrooms, in-room televisions, recliners for visitors, and air conditioning. Privacy norms are less modest in Italy and same-sex chaperones for physician exams are not required. Additionally, public hospitals may have restricted visitor hours. There are slight nuances to care as well. Although all care provided meets international standards, medications and care guidelines may differ or come in a different form than in the United States. For example, lengths of stay tend to be longer and pain management is generally not as aggressive in Italy. Use of an epidural or opioids typically requires an anesthesia consultation. Last, patients and family are responsible for the obstetric patient record, as providers do not maintain copies and use of the Electronic Health Record (EHR) is not yet the norm across facilities.

### **3. Metric Definitions and Descriptions**

For each market analysis, we will report two set of metrics: (1) descriptive metrics (e.g., hospital size, patient volume, occupancy rates), and (2) quality of care metrics (e.g., patient outcomes such as mortality rates and readmission rates for different conditions).

Table 4 outlines some of the quantifiable descriptive metrics used to characterize the PC network facilities. The primary goal of this descriptive analysis was to understand if the local network had sufficient (1) specialty mix to absorb the inpatient care from the MTFs, and (2) capacity to absorb the additional case load. To that end, we sought a variety of publicly available data sources to make an informed determination. Data on capacity and facility capabilities is generally more easily accessed for public hospitals. There is no uniform requirement to publicly report hospital performance data in Italy. These metrics are meant to help orient and contextualize the care provided in the local Italian health systems.

**Table 4. Summary of Network Facility Descriptive Metrics**

<b>Metric</b>	<b>Definition</b>
Level of Care	Captures the specialty mix of services offered at the facility. While definitions vary slightly, we use the following categories: <ul style="list-style-type: none"><li>• Specialty Care – Specialty or sub-specialty care without an emergency room</li><li>• Secondary Care – Specialist care with an emergency room</li><li>• Tertiary Care – Specialty care including oncology, cardiovascular surgery, and neurosurgery and an emergency room</li></ul>
Total Beds	Measures the total number of beds available at each facility. It is a measure of inpatient capacity.
Bed Occupancy Rate	Measures the average number of inpatient beds that are occupied over a given period of time (usually a month or a year). It is a measure of inpatient access.
Annual Inpatient Admissions	Measures the total number of inpatient admissions over a year. It is a measure of both capacity and access. This measure (as well as bed occupancy rate) can also indirectly signal quality. For example, a hospital with excess capacity surrounded by full hospitals may signal low quality.
Median Emergency Room Wait Times	Measures the median number of hours a patient must wait before receiving treatment in the emergency room for a code yellow admission. Italy operates under a triage system. Code yellow cases are the middle category, which falls between emergent and elective. Wait times can vary considerably by region and facility. It is a measure of access.

Regional quality reporting is conducted by AGENAS under the oversight of the Ministry of Health. AGENAS PNE produces a bi-annual quality report, which aggregates 175 indicators of regional health care quality (70 on outcomes, 75 on volume and access, and 30 related to hospitalization). The clinical quality metrics used in this report come from the AGENAS PNE, which has tracked inpatient outcomes to support improvements in clinical processes since 2012. The data are available through the PNE website (<https://pne.agenas.it/>). The IDA team collected, translated, and compiled these data for each facility. We also compared the Italian metrics to US quality metrics for benchmarking purposes to quantify any differences in clinical outcomes. For ease of presentation, we selected a subset of relevant outcome metrics that can best capture differences in clinical quality across hospitals for presentation in this analysis. They cover a variety of outcomes for: cardiopulmonary conditions that are resource-intensive to treat, orthopedic surgical

procedures that also capture post-surgical care, and labor and delivery, which is an important service line to the beneficiary population.<sup>13</sup>

Because an objective of this work is to establish the relative quality of network care, we report US benchmarks (based largely on Medicare’s Hospital Compare database) and PNE data for a representative northern Italian hospital in Aviano where the Air Force sends its beneficiaries, shown in Table 5. In the following chapters, we discuss how host nation facilities in the Naples and Sigonella market areas perform relative to these benchmarks.

**Table 5. Summary of Quality Outcome Metrics with Benchmarks**

	US Benchmark		Pordenone Ospedale (Aviano – Northern Italy)	
	Source	National Rate (%)	Rate (%)	Adjusted Rate (%)
<b>Cardiopulmonary (resource intense conditions)</b>				
Acute myocardial infarction: 30-day mortality	A	12.9	7	7.0
Congestive heart failure: 30-day mortality	A	11.5	11.1	9.5
Congestive heart failure: hospital readmissions at 30 days	C	21.2	17.8	18.9
Ischemic stroke: 30-day mortality	A	13.8	14.1	11.6
Ischemic stroke: hospital readmissions at 30 days	C	13.1	9.8	9.9
COPD exacerbated: 30-day mortality	A	8.5	11.1	9.2
COPD exacerbated: 30-day hospital readmissions	C	19.1	24.1	23.7
<b>Hip and Knee Surgery (surgical orthopedics)</b>				
Hip replacement surgery: 30-day readmissions	C	4.4	12.3	10.8
Hip replacement surgery: revision within 2 years of surgery	n/a	n/a	0.9	0.9
Knee replacement surgery: 30-day readmissions	B	4.4	0	-
Knee prosthesis surgery: revision within 2 years of surgery	n/a	n/a	0	-
Laparoscopic cholecystectomy: 30-day readmissions	G			
Pediatric appendectomy: 30-day readmissions	H			
<b>Labor and Delivery</b>				
Proportion of primary cesarean sections	D	21.7	20.3	18.7
Proportion of vaginal births in women with previous cesarean section	D	13.3	23.0	22.4
Natural childbirth: proportion of complications during childbirth and puerperium (hospitalization facility)	E	8.6	0.5	0.48

<sup>13</sup> Excluded metrics included additional cardiopulmonary outcomes and outcomes related to multiple cancer treatments. See the PNE website at <https://pne.agenas.it> for the complete set.

	US Benchmark		Pordenone Ospedale (Aviano – Northern Italy)	
	Source	National Rate (%)	Rate (%)	Adjusted Rate (%)
Natural childbirth: subsequent hospitalizations during the puerperium	F	0.8	1.3	1.3
Caesarean section: complications during delivery and the puerperium (hospitalization facility)	E	9.2	0.8	0.7
Cesarean delivery: subsequent hospitalizations during the puerperium	F	1.8	1.0	1

Sources: Italian Data Source in PNE. Benchmark sources are A: CMS, “Hospital Compare database” (2018); B: CMS, “Hospital Compare database – Readmission Reduction Program” (2017); C: Bambhroliya et al., “Estimates and Temporal Trend for US Nationwide,” *JAMA network open* 1, no. 4 (2018); D: CDC, “National Center for Health Statistics – Births” (2018); E: Caughey et al., “Safe Prevention of the Primary Cesarean Delivery,” *American Journal of Obstetrics and Gynecology* (2014); F: Belfort et al., “Hospital Readmission After Delivery: Evidence for an Increased Incidence of Nonurogenital Infection in the Immediate Postpartum Period,” *American Journal of Obstetrics and Gynecology* (2010); G: Rosero and Joshi, “Hospital Readmission after Ambulatory Laparoscopic Cholecystectomy: Incidence and Predictors,” *The Journal of Surgical Research* (2017); H: Rice-Townsend et al., “Hospital Readmission after Management of Appendicitis at Freestanding Children’s Hospitals: Contemporary Trends and Financial Implications,” *Journal of Pediatric Surgery* (2012).

Note: Adjusted rates account for patient-specific risks (e.g., larger, more capable facilities would likely exhibit higher mortality rates because they take the most complex cases, which have higher mortality risks.). Exercise caution when comparing rates to US benchmarks. There is considerable variation in the measurement of complications.

The PNE also rates each hospital’s performance in seven different areas of specialization—cardiovascular, labor and delivery, musculoskeletal, respiratory, neurology, general surgery, and oncology. For each area, the hospital’s performance relative to set quality standards is rated as very high, high, medium, low, or very low. The rating is based on a subset of the outcome metrics and a weighting scheme. AGENAS publishes a technical manual that transparently describes their weighting scheme, which combines volume and outcomes. Interactive Treemaps are published on the PNE website to display the quality data. In addition to reporting metrics, we will also report each facility’s PNE ratings.

In addition to reporting the metrics required by the PNE, each hospital we visited in Naples and Sigonella had their own internal quality report programs. They track various data such as sentinel events, near misses, and many outcome/process measures.<sup>14</sup> In our

<sup>14</sup> A sentinel event is “a patient safety event that results in death, permanent harm, or severe temporary harm.” Examples include unintended retained foreign objects, wrong patient/wrong site/wrong procedure surgeries, suicides, falls, and delay in treatment. A near miss (or close call) is an event that almost resulted in harm but did not, due to intervention by provider of patient’s family. “Sentinel

discussion with facilities, we learned that there is considerable heterogeneity with regard to the institutional effectiveness of internal quality programs. Effective programs are often personality-driven by motivated and experienced staff. Hospitals are also all accredited by their respective regional health agency. Some facilities seek additional accreditations from European regulatory bodies or business consortia. Last, many facilities reported that they adhered to the Joint Commission International (JCI) standards. The JCI provides standards and an international accreditation for health care quality and patient safety. While the Italian facilities stated they adhere to JCI standards, they do not seek accreditation due to the high costs. While costs are high, there is no accountability without a formal accreditation. We note that less than 20 Italian hospitals have gained JCI accreditation (less than 1 percent).

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Event,” The Joint Commission, <https://www.jointcommission.org/en/resources/patient-safety-topics/sentinel-event/>. These data are not made publicly available.

### 3. Naples, Italy Market Area

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#### A. Summary of Market Area

The city of Naples is located in southern Italy on the southwest coast of the Italian peninsula. It is the regional capital of Campania and the third-largest municipality in Italy. Naval Support Activity (NSA) Naples encompasses three locations. Only one location is actually in the city of Naples—the Capodichino location, which is very near the Naples International Airport. The second location, the Support Site, is located in the town of Gricignano di Aversa, approximately 20 kilometers (km) north of Naples. The third location, the Gaeta location, is the furthest from the city—approximately 80 km northwest of Naples. The base is home to Naval Forces Europe, Naval Forces Africa, and the US Sixth Fleet. The base population consists of approximately 2,500 active duty service members (ADSMs), 3,500 active duty family members (ADFMs), 1,200 civilian employees, 1,000 NATO personnel, and 1,200 NATO family members.<sup>15</sup>

#### 1. Direct Care

NH Naples is located on the support site in Gricignano di Aversa. The facility currently has 14 beds (4 medical/surgical beds, 4 OB beds, and 6 bassinets). Its inpatient capabilities include internal medicine, obstetrics/gynecology, general surgery, and newborn care. There is a 24-hour emergency department at the hospital but no intensive care unit (ICU). ADPL is 2.2 (or 1.5 excluding newborns). This puts NH Naples around the 25th percentile of ADPL for OCONUS facilities. Facilities with similar ADPLs include the Air Force hospitals at Yokota and Misawa, and NH Rota. The naval hospital has one child facility, Branch Medical Clinic (BMC) Capodichino. NH Naples is accredited by the JCI. There are approximately 527 FTEs assigned to these facilities. Table 6 shows assigned and available FTEs for each facility by personnel type (e.g., officer, enlisted, civilian).<sup>16</sup>

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<sup>15</sup> “In-Depth Overview,” Military Installations: Naval Support Activity Naples, <https://installations.militaryonesource.mil/in-depth-overview/naval-support-activity-naples>.

<sup>16</sup> Assigned FTEs show where people are assigned on a monthly basis. Available FTEs report the number of FTEs that were actually available on a monthly basis.

**Table 6. NH Naples Personnel by Type (in FTEs), FY 2018**

Personnel Type	NH Naples		BMC Capodichino	
	Assigned	Available	Assigned	Available
Officer	114	111	8	4
Enlisted	256	249	37	31
Civilian	24	16		
Local National	83	63	3	2
Contractor	2	2	1	1
<b>Total</b>	<b>478</b>	<b>441</b>	<b>49</b>	<b>38</b>

Source: MEPRS.

Table 7 shows assigned and available FTEs by skill type (e.g., physician, dentist, nurse). There are just over 30 physicians currently assigned to the naval hospital. Their specialties include, but are not limited to, anesthesiology, general surgery, orthopedic surgery, obstetrics/gynecology, pediatrics, family medicine, emergency medicine, and psychiatry.

**Table 7. NH Naples Personnel by Skill Type (in FTEs), FY 2018**

Skill Type	NH Naples		BMC Capodichino	
	Assigned	Available	Assigned	Available
Physician	31	29	2	2
Dentist	11	11	3	0
Physician Assistant	1	1	0	0
Nurse Anesthetist	2	2	0	0
Nurse Practitioner	1	1	1	1
Registered Nurse	39	36	2	1
Other Direct Care Professionals	13	13	2	2
Other Direct Care Para Professionals	254	245	37	31
Clerical	36	25	2	1
Administrators	22	21	1	0
Logistics	15	13	0	0
Other Admin/Clerical	53	44	0	0
<b>Total</b>	<b>478</b>	<b>441</b>	<b>49</b>	<b>38</b>

Sources: M2, MEPRS.

Note that enrollees to the naval hospital may also receive care in other DC facilities (CONUS or OCONUS). In FY 2018, 12 NH Naples enrollees were admitted to the Landstuhl Regional Medical Center in Germany and 7 each to Walter Reed National Military Medical Center (NMMC) (Maryland) and Naval Medical Center (NMC)

Portsmouth (Virginia). Patients are sent to these larger medical centers when they require a higher level of care than the MTF can provide.

## **2. Purchased Care**

Health care in Campania is managed by the regional government, Regione Campania. The General Directorate for the Protection of Health and the Coordination of the Regional Health System is responsible for managing the region's health resources. In the bi-annual PNE report, Campania has consistently ranked as a low-performing region, although the most recent data show scores at or near the national average for nearly all indicators with the notable exception of its cesarean section rate. The most recent report from 2018 shows that the regional C-section rate has fallen from over 50 percent in 2010 to around 40 percent. However, this rate still remains above national benchmark values and shows considerable heterogeneity within the region, with some facilities exhibiting rates upwards of 70 percent. Initiatives to reduce the C-section rate have focused on first-time mothers (primary C-section rate); thus, it may take significant time to see a change in overall rates. Italian officials note in the most recent report that health care in Campania exhibits greater variability than in other regions, but on average provides quality care and is rapidly closing the performance gap between north and south. EHR use by providers is still relatively uncommon in Campania, with less than 20 percent of providers using it. This means patients (or the MTF) will need to obtain copies of medical records to transfer to the MTF.

TRICARE beneficiaries had encounters in five network facilities during 2018. Out of a total of 56 admissions, Pineta Grande saw the most admissions, with 34 (61 percent), Villa dei Fiori had 9 admissions (16 percent), Clinica Reusch had 6 (11 percent), Clinica Mediterranea had 4 admissions (7 percent), and Santobono-Pausilipon had 3 admissions (5 percent). Presidio Ospedaliero San Giuseppe (P.O. S.G.) Moscati Aversa did not see any beneficiaries in 2018, but is the nearest host nation hospital with an emergency room. Table 8 provides a brief summary of the three facilities. We note that all facilities have an institutional accreditation from the Region of Campania.

**Table 8. Summary of Network Facilities – Naples**

	<b>Clinica Pineta Grande</b>	<b>Casa di Cura Villa dei Fiori</b>	<b>Clinica Reusch</b>	<b>Clinica Mediterranea</b>	<b>Santobono- Pausipilon Pediatric Hospitals</b>	<b>P.O. S.G. Moscati Aversa</b>
Ownership	Private	Private	Private	Private	Public	Public
Distance from NSA Naples	19 miles	11 miles	20 miles	21 miles	16 miles	5 miles
Level of Care	Tertiary	Secondary	Specialty	Specialty	Tertiary	Secondary
Total Beds	150	100	60	180	438	288
Bed Occupancy Rate	70%	50%	unknown	70%	unknown	77%
Annual Inpatient Admissions	17,000	10,000	5000	N/A	100,000	9,500
Median Wait Times - Emergency Room Code Yellow	143 minutes	189 minutes	N/A	N/A	85 Minutes	227 minutes
Private Rooms Available	Yes, single rooms have limited availability	Yes, private rooms and VIP rooms are available at additional cost	Yes	Yes, single rooms are available. Family Birthing Rooms are also available.	Yes, 1 or 2 bedrooms with en suite bathroom	Yes, but only for critically ill
Teaching Hospital	Yes, but only for nursing	No	Yes, surgical reference center	No	Yes	Yes
Total Annual Revenue	€64.4 million	€22.6 million	unknown	unknown	€50.3 million	€45 million

## **B. Market Workload Analysis**

### **1. Summary Workload Metrics**

Table 9 reports the workload summary metrics for NH Naples. In FY 2018, there were 379 inpatient dispositions. Over 70 percent of these were for childbirth and newborn care (OB/NB).<sup>17</sup>

<sup>17</sup> OB workload falls into MDC 14 “Pregnancy, Childbirth, and the Puerperium.” Newborn workload falls into MDC 15 “Newborns and Other Neonates with Conditions Originating in Perinatal Period.”

**Table 9. Summary Workload Metrics for NH Naples, FY 2018**

	<b>M</b>	<b>S</b>	<b>OB</b>	<b>NB</b>	<b>MH</b>	<b>Overall</b>
<b>Case Volume</b>						
Admissions	65	30	138	137	9	379
RWPs	42	45	70	23	4	183
Bed Days	128	94	296	251	36	805
ADPL	0.4	0.3	0.8	0.7	0.1	2.2
<b>Case Intensity</b>						
Average CMI	0.6	1.5	0.5	0.2	0.4	0.5
Average LOS	2.0	3.1	2.1	1.8	4.0	2.1
<b>Unit Cost</b>						
Cost per Admission	\$14,679	\$44,741	\$18,633	\$12,610	\$27,497	\$18,055
Cost per RWP	\$22,758	\$30,100	\$36,817	\$76,445	\$64,262	\$37,432
Cost per Bed Day	\$7,454	\$14,279	\$8,687	\$6,883	\$6,874	\$8,500

Source: M2 Standard Inpatient Data Record (SIDR); M=Medical; S=Surgical; OB=Labor and Delivery; NB=Newborn Care; MH=Mental Health.

Table 10 reports the summary metrics for all inpatient care provided to DoD beneficiaries by local host nation facilities. For FY 2018, we observed 56 inpatient admissions across six facilities.<sup>18</sup> The volume of care purchased in civilian facilities is much smaller than the volume delivered in the MTF. Approximately half is OB/Newborn care while the other half is medical. There were no mental health or surgical admissions in FY 2018 for the Italian Tax IDs provided for this analysis.

<sup>18</sup> These facilities were identified by the Tax IDs ITA002598, ITA005749, ITA003967, ITA004068, ITA005350, and ITA005361.

**Table 10. Summary Workload Metrics for Naples Purchased Care, FY 2018**

	<b>M</b>	<b>S</b>	<b>OB</b>	<b>NB</b>	<b>MH</b>	<b>Overall</b>
<b>Case Volume</b>						
Admissions	30	-	14	12	-	56
RWPs	26	-	8	4	-	37
Bed Days	167	-	78	97	-	342
<b>Case Intensity</b>						
Average CMI	0.9	-	0.6	0.3	-	0.7
Average LOS	5.6	-	5.6	8.1	-	6.1
<b>Unit Cost</b>						
Cost per Admission	\$10,381	-	\$11,228	\$8,921	-	\$10,280
Cost per RWP	\$11,965	-	\$20,327	\$29,428	-	\$15,392
Cost per Bed Day	\$1,865	-	\$2,015	\$1,104	-	\$1,683

Source: M2 TRICARE Encounter Data-Institutional (TED-I); M=Medical; S=Surgical; OB=Labor and Delivery; NB=Newborn Care; MH=Mental Health.

Note: We do not report ADPLs, as these data come from multiple facilities and because DoD beneficiaries are a tiny fraction of these facilities' volume.

Table 11 presents a subset of the summary metrics side by side for DC and PC. Generally speaking, a much greater volume of care was delivered in the DC system. On average, the care delivered in the PC system appears to have a higher case intensity, measured by case mix intensity and especially length of stay. Finally, cost per unit appears to be two to five times higher in the DC system, depending on the metric used.

**Table 11. DC and PC Workload Comparison, Naples FY 2018**

	<b>Direct Care</b>	<b>Purchased Care</b>	<b>(DC/PC)</b>
<b>Case Volume</b>			
Admissions	379	56	6.8
RWPs	183	37	4.9
Bed Days	805	342	2.4
<b>Case Intensity</b>			
Average CMI	0.5	0.7	0.7
Average LOS	2.1	6.1	0.3
<b>Unit Cost</b>			
Cost per Admission	\$18,055	\$10,280	1.8
Cost per RWP	\$37,432	\$15,392	2.4
Cost per Bed Day	\$8,500	\$1,683	5.1

Source: M2 TED-I and SIDR;

## **2. Detailed Workload Analysis**

Table 9 through Table 11 in the previous section compared workload volume, intensity, and unit costs at the product line level. However, there may be interest in observing these metrics at a lower level of aggregation (e.g., MDCs or MS-DRGs). The purpose of a more detailed look is to ascertain (1) whether the workload performed across the two systems is similar, and (2) the amount of variation in average unit costs (e.g., whether it is appropriate to use an overall average cost per admission, bed day, etc. to determine the value of the DC workload in the PC system).

Appendix D reports workload metrics by MDC. We also compare these metrics at the MS-DRG level for the two most common MDCs: MDC 14 (relating to childbirth) and MDC 15 (relating to newborns). As previously discussed, the majority of admissions occur in the DC system. There were 8 MDCs where workload was only observed in the DC system and 1 MDC where workload was only observed in PC (Diseases and Disorders of the Eye). There were also 4 MDCs where no workload was observed. Similarly, when we examined the MS-DRGs for childbirth and newborn care, we found eight MS-DRGs where workload was observed only in DC and three where workload was observed only in PC. We note that no surgical MS-DRGs (e.g., cesarean sections) were observed for PC. This supports the notion that DoD beneficiaries would not experience the high cesarean rates observed in the Italian population. Appendix D also provides a list of all dispositions, by MS-DRG, performed in the direct care system.

## **3. Clinical Skill Maintenance**

Table 12 shows the total general surgery KSA workload available at NH Naples. For general surgery, there were just over 25,000 KSA points—enough to support 1.8 general surgeons based on the point threshold of 14,000. However, these points were accumulated by six different providers. No one provider earned 14,000 KSA points at Naples or met the 14,000-point threshold when factoring in workload from other facilities (e.g., if they traveled to other MTFs in the region as “circuit riders” or transferred partway through the year).

**Table 12. NH Naples General Surgery KSA Workload**

<b>Type</b>	<b>Acuity</b>	<b>Procedure Group</b>	<b>Volume</b>	<b>KSA Score</b>	
Gen Surg	High	Abdominal Wall	13	871	
	High	Breast	4	388	
	High	Burn – Major	1	104	
	High	Complex Colorectal	2	396	
	High	Debridement Muscle and Fascia	3	279	
	High	Head and Neck	1	104	
	High	Intraabdominal Laparoscopic	37	4,218	
	High	Intraabdominal Open Hollow Viscus	3	438	
	High	Myocutaneous Muscle Flap	2	150	
	High	Upper GI	8	1,112	
			<b>High Acuity Total</b>	<b>74</b>	<b>8,060</b>
	Low	E&M – Abdominal Imagery	3	42	
	Low	E&M – Blood Products	1	18	
	Low	E&M – OB/GYN	8	8	
	Low	E&M – Urologic	5	120	
	Low	E&M – Wound Management	4	108	
	Low	Endoscopic	230	15,015	
	Low	Minor Excision, I&D	64	1,725	
	Low	Other	1	11	
	Low	Thoracic	1	57	
			<b>Low Acuity Total</b>	<b>317</b>	<b>17,104</b>
			<b>Total</b>	<b>391</b>	<b>25,164</b>
			<i>Gen Surg KSA Threshold</i>		<i>14,000</i>
		<b><i>Providers Supported</i></b>		<b><i>1.80</i></b>	
		<b><i>Providers Assigned</i></b>		<b><i>4</i></b>	

For orthopedic surgeons, the story was similar (see Table 13). There were just under 69,000 KSA points—enough to support about 2 providers based on the threshold of 35,000. However, the points were accumulated by three different providers. No one provider met the threshold based on points earned at Naples or based on their total points from all facilities.

**Table 13. NH Naples Orthopedic Surgery KSA Workload**

<b>Type</b>	<b>Procedure Group</b>	<b>Volume</b>	<b>KSA Score</b>
Ortho Surg	Arthroscopy	58	13,630
	Closed Treatment of Fracture Appendicular Skeleton	106	14,280
	External Fixation	3	684
	Foot	15	3,975
	Hand	45	16,900
	Hardware Removal	13	2,873
	Major Tumor Resection	3	2,169
	Open Debridement	19	3,553
	Open Treatment of Fracture Appendicular Skeleton	10	2,220
	Other	4	576
	Soft Tissue Procedure	33	7,953
	<b>Total</b>	<b>309</b>	<b>68,813</b>
	<i>Ortho Surg KSA Threshold</i>		35,000
	<b>Providers Supported</b>		<b>1.97</b>
	<b>Providers Assigned</b>		<b>3</b>

This analysis suggest that high unit costs are not the only challenge associated with operating small, low-volume facilities. Another challenge is maintaining the clinical skills of medical personnel who require sufficient case volume and acuity to stay current and ready to deliver surgical care on the battlefield.

#### **4. Purchasing Direct Care Workload in Purchased Care System**

If inpatient product lines at NH Naples were closed, the inpatient workload currently performed in the naval hospital would instead be purchased from host nation facilities in the TRICARE network. To estimate what this would cost, we price out the current DC workload at PC prices. Because we currently observe under 60 inpatient cases a year, we cannot perform this analysis at the procedure, MS-DRG, or MDC level. We do not have PC admissions in every product line (e.g., there were no surgical or mental health PC admissions in FY 2018); instead, we rely on the overall average unit costs for admissions, RWPs, and bed days.

Table 14 shows the estimated value of purchasing the current workload performed at NH Naples from the surrounding host nation facilities. Estimates range from \$1.4 million to \$3.9 million, depending on the workload unit used (e.g., admissions versus bed days). We inflate these costs by 13 percent to account for TRICARE overhead costs.<sup>19</sup>

Given that the cases sent to PC tend to be more complex, we believe the intensity-adjusted metrics (RWPs and bed days) are more appropriate. However, because there were several instances where PC RWPs do not appear to be accurate, we believe the bed day-

<sup>19</sup> Overhead factor provided in DHA facility profiles to account for non-health care costs that are also paid for PC services such as administration, award fees, and other health promotion activities.

based estimate to be the most reliable. The admission-based estimates are expected to be least reliable, as they are not intensity-adjusted.

**Table 14. Estimated Value of NH Naples Workload, FY 2018**

<b>Workload Unit</b>	<b>DC Volume</b>	<b>PC Estimated Value</b>	<b>PC Estimated Value with OH</b>
Admissions	379	\$3,896,120	\$4,402,616
RWPs	183	\$2,813,756	\$3,179,544
Bed Days*	805	\$1,354,815	\$1,530,941

*Source:* M2.

\* Bed days is the preferred unit cost. We assume an overhead (OH) factor of 1.13.

### **C. Potential Cost Savings**

In Chapter 2, we outlined two methodologies that could be used to estimate the potential savings (or cost increase) associated with closing inpatient product lines. Below we provide savings estimates using both methodologies.

#### **1. Baseline Savings Estimate**

Table 15 shows the MEPRS personnel and expenses allocations across the different MEPRS accounts. The top panel of the table contains data for the naval hospital, while the bottom panel contains the data for the child clinic, BMC Capodichino. In the table, we see that military labor accounts for the majority of total expenditures by cost category (nearly 70 percent). We also see that the vast majority of total expenditures by location (93 percent) occurs at the hospital. However, only 11 percent of total expenditures is attributed to inpatient care. Overall, a total of \$6.8 million dollars are allocated to inpatient care. This suggests that approximately \$6.8 million dollars in MTF expenses (mostly associated with military labor) could be eliminated if the MTF were to close inpatient product lines.

Table 15. MEPRS Cost Allocation for Naples MTFs, FY 2018

MEPRS Account	Avg Assigned Total FTEs	Percent FTEs	Civilian Pay Exp	Military Pay Exp	Other O&M Exp	Total Exp	Percent of Total Expense
NH Naples							
A: Inpatient Care	26	5%	\$634,295	\$4,307,290	\$1,878,755	\$6,842,741	11%
B: Outpatient Care	150	28%	\$3,180,794	\$24,043,936	\$8,301,036	\$35,613,127	55%
C: Dental Care	41	8%	\$596,245	\$5,034,717	\$1,342,888	\$7,095,367	11%
D: Ancillary Services	67	13%	\$0	\$0	\$0	\$0	0%
E: Support Services	176	33%	\$0	\$0	\$0	\$0	0%
F: Special Programs	19	4%	\$1,397,415	\$5,589,916	\$1,917,092	\$8,906,662	14%
G: Medical Readiness	0	0%	\$54,601	\$1,023,125	\$134,429	\$1,212,155	2%
	<b>478</b>	<b>91%</b>	<b>\$5,863,351</b>	<b>\$39,998,984</b>	<b>\$13,574,200</b>	<b>\$59,670,051</b>	<b>93%</b>
BMC Capodichino							
B: Outpatient Care	34	6%	\$105,701	\$2,941,710	\$508,845	\$3,556,256	6%
C: Dental Care	12	2%	\$135,078	\$560,392	\$256,562	\$952,032	1%
C: Ancillary Services	0	0%	\$0	\$0	\$0	\$0	0%
D: Support Services	3	1%	\$0	\$0	\$0	\$0	0%
E: Special Programs	0	0%	\$0	\$81,540	\$102,094	\$183,634	0%
F: Medical Readiness	0	0%	\$0	\$67,881	\$354	\$68,235	0%
	<b>49</b>	<b>9%</b>	<b>\$240,779</b>	<b>\$3,651,523</b>	<b>\$867,855</b>	<b>\$4,760,157</b>	<b>7%</b>
<b>Total</b>	<b>527</b>	<b>100%</b>	<b>\$6,104,130</b>	<b>\$43,650,506</b>	<b>\$14,442,055</b>	<b>\$64,430,208</b>	

Source: MEPRS.

Note: Depreciation expenses are not shown in the table due to space constraints.

In the previous section we estimated it would cost between \$1.5 million (bed day-based estimate) and \$4.4 million (admissions-based estimate) to purchase the same workload from the local host nation facilities. This suggests a potential net savings range of \$2.4 million to \$5.3 million. We note the bed day-based estimate for purchased care costs was the preferred estimate, suggesting savings are more likely to be around \$5 million. However, as noted in Chapter 2, savings may be larger if personnel and expenditure are reduced by larger factors than those implied by the cost accounting allocations. This might occur if some outpatient care also migrated to PC and/or hours of operation were reduced.

## 2. Case Study Estimate

Table 16 shows the FTE, outpatient, and total expense reduction implied by the MEPRS cost allocation system and the two case studies discussed in Chapter 2. In both the Vicenza and Aviano cases, personnel and expenditures were reduced by greater magnitudes than the MEPRS allocations implied. The larger savings experienced at these facilities came from reductions in outpatient care associated with inpatient admissions. These associated outpatient reductions were not factored into the MEPRS approach. In the implied net savings section of the table, savings are lowest for the MEPRS estimate and highest when we use the reduction factors from the Aviano case study. Estimates produced using the preferred PC unit cost (bed days) suggest a net savings range of \$5.3 million to \$7.4 million.

**Table 16. Expected Cost Reductions and Net Savings, Naples FY2018**

	<b>MEPRS- based</b>	<b>Vicenza Case</b>	<b>Aviano Case</b>
FTE Reduction	-5%	-17%	-15%
Expected Manpower Reductions	26	81	72
Outpatient Expense Reduction	0%	-2%	-7%
Expected Expense Reduction	\$0	\$712,263	\$2,492,919
Total Expense Reduction	-11%	-12%	-15%
Expected Expense Reductions	\$6,842,741	\$7,160,406	\$8,950,508
Net Savings (Bed Days Est.)	\$5,311,800	\$5,629,465	\$7,419,567
Net Savings (Admissions Est.)	\$2,440,125	\$2,757,790	\$4,547,892

Note: Personnel and expense reductions are applied only to the Naval Hospital. We assume the child clinic would not be affected.

## **D. Analysis of Local Purchased Care Network: Access, Quality, and Cultural Considerations**

### **1. Hospital Descriptions**

NH Naples is currently sending beneficiaries to five host nation facilities through its partnership with ISOS. We provide a short summary of each facility below and discuss their outcome quality metrics as reported to the PNE. Table 17 contains the quality metrics for the facilities. We indicate rates that are slightly worse than the benchmarks (within 2 percentage points) with an asterisk (\*) and rates that are more than 2 points worse than the benchmarks with two asterisks (\*\*).

#### **a. Pineta Grande**

Pineta Grande is a large, private hospital in Castel Volturno. The hospital is part of a larger group of six private hospitals across the Campania region. Pineta Grande owns two other hospitals in Naples: Casa di Cura Sanatrix (120 beds) and Casa di Cura Villa Bianca (74 beds). Across its six hospitals, the group treats 60,000 patients each year through 35,000 inpatient stays and 300,000 outpatient stays. Pineta Grande operates an emergency room and a specialty obesity center. It also established a nursing training program that has been in operation since 2008. Pineta Grande has also been undergoing a construction project to expand its facilities and add additional capacity. An International-style Ward with English-speaking providers and private rooms is being constructed as part of the project. In September 2019, the construction was abruptly stopped by the government for violation of permitting. As of January 2020, ongoing legal issues are still delaying the completion of the facility. At this time, it is unclear if and when the new ward will be completed.

The IDA team toured Pineta Grande and found the facility to be clean and relatively modern. Medical equipment and operating rooms were modern due to a partnership with Siemens. The facility has a proprietary cloud-based electronic medical record. A large percentage of the physicians we met with spoke English, although only a few members of the nursing staff are bilingual. Signage in English was not apparent, but it was planned to be installed for the International Ward.

As shown in Table 17, the facility's performance is generally better or only slightly worse than the benchmark (within 2 percentage points) for most metrics. The clear exception is labor and delivery. The adjusted C-section rate is approximately 50 percent, which is more than double the US benchmark (21.7 percent) and the northern Italian benchmark facility in Aviano (18.72 percent). The proportion of natural births following a previous C-section is also very low (approximately 1 percent) compared with a US benchmark (13 percent) and the northern Italian benchmark (22 percent).

According to the PNE rating system, the facility performs very high in musculoskeletal care, high in general surgery, medium in respiratory care, and low in the remaining areas (labor and delivery, neurology, oncology, and cardiovascular). The low score in labor and delivery is driven primarily by high cesarean rates.

#### **b. Casa di Cura Villa dei Fiori**

Casa di Cura Villa dei Fiori is a medium-sized specialty hospital located in Acerra, a short drive from NSA Naples. Villa dei Fiori operates primarily as a private hospital but provides select services through agreements with the National Health Service. The hospital operates an Orthopedic Trauma Center of Excellence and has a 24-hour obstetrical emergency service. This facility treats the second largest number of DoD beneficiaries from NH Naples. The most common admissions for DoD beneficiaries are for labor and delivery or sleep studies.

The IDA team toured Casa di Cura Villa dei Fiori and found the facility to meet modern standards. Medical equipment and operating rooms were both modern, although the facility trailed Pineta Grande in innovation and technology. Nevertheless, the facility was clean, modern, and appropriately organized. The parking lot and wards could, however, be difficult to navigate. Villa dei Fiori has a ward with private rooms and suites where it typically places TRICARE beneficiaries. Hospital staff noted that the physicians prefer not to use the private ward, as it is isolated from the rest of their patients. These private suites meet US aesthetic norms for hospital rooms. This ward was completely empty when IDA toured.

As shown in Table 17, the facility's performance was similar to that of Pineta Grande, although stroke and Chronic Obstructive Pulmonary Disease (COPD) mortality rates were higher. Again, labor and delivery was the area of greatest concern. The adjusted C-section rate is approximately 53 percent, which is more than double the US benchmark (21.7 percent) and the northern Italian benchmark facility in Aviano (18.72 percent). The proportion of natural births following a previous C-section is also very low (approximately 1 percent) compared with the US benchmark (13 percent) and the northern Italian benchmark (22 percent).

According to the PNE rating system, the facility rates very high in general surgery, high in cardiovascular care and oncology, low in labor and delivery and respiratory care, and very low in musculoskeletal and neurology.

#### **c. Clinica Reusch**

Clinica Reusch is a small, private specialty hospital in Naples owned by Health Care Italia, which is in turn a subsidiary of a Swiss hospital company. The hospital is a surgical reference center for Naples and southern Italy. The hospital prides itself on its

technological integration and high-quality equipment. Its five surgical theatres are equipped with live two-way video conferencing in order to enable doctors from around the region to observe the latest in clinical techniques. Clinica Reusch also has installed a Patient-Oriented Delivery Room complete with a birthing tub, a specialized birthing bed, and accommodation for spouses. Anesthesiologists are on call 24 hours a day at Clinica Reusch.

The IDA team did not visit this hospital. Quality metrics were not reported to the PNE, as the Clinic only treats cash customers or employees of contracted companies and insurers.

#### **d. Clinica Mediterranea**

Clinica Mediterranea is a medium-sized, private specialty hospital in Naples. The hospital offers surgical specialty care as well as advanced diagnostics and imaging. Most services are offered to patients covered by the National Health Service at no cost through an agreement with the government. Select specialty care,—notably plastic surgery, orthopedics, and urology—is private and accessible only through cash payment or private insurance. In response to the high C-section rate in Campania, Clinica Mediterranea has pioneered a “family” delivery room. These rooms are provided at no cost and include family-friendly features such as a water birth tank, a double delivery bed, light therapy, music therapy, and specialty air conditioning and humidifiers. The family delivery rooms are adjacent to a surgical suite in case of emergencies. The goal of the family delivery rooms is to encourage natural childbirth and improve outcomes through a family-centric approach.

The IDA team did not visit this facility. As shown in Table 17, this facility performs noticeably better than the other host nation facilities for cesarean rates (32 percent versus 50 percent or higher at the other Naples facilities). The rate is still higher than the US benchmark (21.7 percent) and the northern Italian benchmark facility in Aviano (18.72 percent). They also met the benchmark for natural births following cesarean sections.

According to the PNE rating system, the facility performs very high in oncology, low in cardiovascular care and labor and delivery, and very low in general surgery. It was not rated in other areas of specialization.

#### **e. AORN Santobono-Pausilipon**

The Santobono and Pausilipon pediatric teaching hospitals have operated under a joint partnership for many years. The hospitals are publicly owned and centrally managed in Naples, reporting to the Regional Health Service of Campania. The hospitals are on opposite sides of the city center of Naples. Pausilipon hospital focuses primarily on pediatric oncology and is the smaller of the two facilities, with 56 beds. Santobono is best

known for its pediatric emergency room, which is one of the largest in Italy, with 100,000 admissions each year. Santobono-Pausilipon is the regional hub for pediatric trauma and emergency medicine, pediatric oncology, pain therapy, and neuropsychiatric care. The hospital operates multiple specialty neonatal intensive care units (NICUs) and is part of the regional neonatal care network. It is also known for its clinical oncology research programs.

PNE data was not available for Santobono-Pausilipon. This is a pediatric hospital. Pediatric hospitals do not report the outcomes we are examining to PNE.

**f. P.O. S.G. Moscati Aversa**

Aversa is a medium-sized public hospital five miles from NSA Naples. The hospital is managed by the regional health system. It is also a public health center responsible for managing zoonotic diseases (those transmitted from animals to humans) and undertaking public health initiatives (likely due to the predominantly agricultural local economy). Aversa is the closest host nation emergency room to NSA Naples and would likely see more patients should inpatient facilities close.

The IDA team toured Aversa and found the facility to be of inferior quality. While the staff was knowledgeable and professional, the facilities lacked modernity and were generally crowded and poorly lit, and the layout of the hospital could be improved. Medical equipment and operating rooms were more dated than the facilities seen in the other Naples-area facilities. Hospital staff noted that new imaging equipment had been ordered but had yet to be delivered. While the IDA team did not witness any safety issues, the Aversa hospital generally appeared dated—with tighter budgetary constraints (as a public facility)—and lagged behind the peer facilities we toured in the area with respect to aesthetics and the state of the facilities themselves. A few clinical staff were bilingual, although this facility predominantly treats Italian patients. Signage in English was not apparent.

As shown in Table 17 the facility has good cardiovascular outcomes. Again, labor and delivery was the area of greatest concern. The adjusted C-section rate is approximately 50.1 percent which is more than double the US benchmark (21.7 percent) and the northern Italian benchmark facility in Aviano (18.72 percent). The proportion of natural births following a previous C-section is also very low (approximately 2 percent) compared with the US benchmark (13 percent) and the northern Italian benchmark (22 percent).

**Table 17. Outcome Metrics for Host Nation Facilities, Naples Market Area**

	US National Benchmark	Pineta Grande		Villa Dei Fiori		Clinica Mediterranea		Aversa	
	Rate	Volume	Adj. Rate	Volume	Adj. Rate	Volume	Adj. Rate	Volume	Adj. Rate
<b>Cardiopulmonary (resource intense conditions)</b>									
Acute myocardial infarction: 30-day mortality	12.9	454	12.2	421	4.7	172	5.4	432	10.9
Congestive heart failure: 30-day mortality	11.5	387	11.5	225	16.3**	55	6.4	84	3.3
Congestive heart failure: hospital readmissions at 30 days	21.2	387	22.3*	225	12.2	55	10.3	84	11.5
Ischemic stroke: 30-day mortality	13.8	164	14.3*	137	28.9**	10	14.3*	136	11.2
Ischemic stroke: hospital readmissions at 30 days	13.1	164	2.6	137	1.5	10	0.0	136	5.5
COPD exacerbated: 30-day mortality	8.5	90	9.8*	174	13.0**	-	-	103	26.5**
COPD exacerbated: 30-day hospital readmissions	19.1	90	14.9	174	13.3	-	-	103	13.0
<b>Surgical Quality</b>									
Hip replacement surgery: 30-day readmissions	4.4	253	0.9	59	4.7	211	1.9	110	3.0
Hip replacement surgery: revision within 2 years of surgery	N/A	253	1.2	59	2.1	211	2.4	110	3.3
Knee replacement surgery: 30-day readmissions	4.4	530	8.8**	49	0.0	135	-	31	0.0
Knee prosthesis surgery: revision within 2 years of surgery	N/A	530	9.7	49	5.6	135	-	31	0.0
Laparoscopic cholecystectomy: 30-day readmissions	2.0	343	0.8	230	2.3	44	0	329	2.3
Pediatric appendectomy: 30-day readmissions	8.7	10	0	13	0	-	-	37	0
<b>Labor and Delivery</b>									
Proportion of primary cesarean sections	21.7	1226	51.2**	1409	53.6**	1111	31.9**	830	50.1**
Proportion of vaginal births in women with previous cesarean section ( <b>lower is worse</b> )	13.3	1226	0.7**	1409	1.1**	1111	26.0	830	2.4**
Natural childbirth: proportion of complications during childbirth and puerperium (hospitalization facility)	8.6	1226	-	1409	0.1	1111	0.1	830	0.2
Natural childbirth: subsequent hospitalizations during the puerperium	0.8	1226	0.1	1409	0.1	1111	0.2	830	-
Caesarean section: complications during delivery and the puerperium (hospitalization facility)	9.2	1226	0.2	1409	0.1	1111	0.5	830	-
Cesarean delivery: subsequent hospitalizations during the puerperium	1.8	1226	0.6	1409	0.9	1111	0.9	830	0.7

Note: Aversa is not in the TRICARE network. However, it is the closest emergency department to base, so TRICARE beneficiaries may walk in or be transported there by the Italian emergency services (118). \* Indicates rates which are slightly worse the benchmark (within 2 points). \*\* Indicates rates which are 2 or more points worse than the benchmarks.

## **2. Summary**

Access data collected by the IDA team suggests that the local network facilities surrounding NSA Naples would be fully able to absorb the additional patient load should inpatient facilities be closed. The local area has sufficient capacity in a wide variety of specialties and sub-specialties. Planned construction of additional facilities in the community, if realized, could drastically increase capacity and access in the coming years.

In terms of care quality and standard of care, the team noted some variations across facilities (and variations from the American standard of care). First, the public facility in Aversa was visibly dated and less modern than peers. While the facility was not considered in-network (e.g., patients would not be referred there by the MTF), DoD beneficiaries would likely be sent to Aversa's emergency department when calling emergency services (118) due to its close proximity to the base. This facility would not meet standards for executive medicine should an inpatient stay be required. The other two facilities toured by the IDA team perform well for the Campania region but lag when compared to benchmarks. While the facilities are more modern and efficient, some of their outcomes measures, particularly for labor and delivery, are a cause for concern. The facilities toured by the IDA team appear to be emblematic of the care delivered in the region. Private facilities, in general, were more receptive to cooperation and partnership with the MTF, suggesting that improved processes, coordination, or special accommodation are possible.

In terms of cultural concerns, the language barrier is probably the biggest challenge. This is mitigated by the ISOS Experience of Care pilot, which provides bilingual patient liaisons as well as transportation, toiletries, and information on what to expect so that the beneficiary is well prepared. Facilities also provide linens, housekeeping services, meals, and ample visiting hours. Private rooms are available.

## 4. Sigonella, Italy Market Area

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### A. Summary of Market Area

Sicily is the largest island in the Mediterranean, located just a few miles southwest of the Italian peninsula. Today it consists of nine provinces and is considered an autonomous region of Italy. The population of Sicily is approximately 5 million. Naval Air Station (NAS) Sigonella is located in eastern Sicily in the province of Catania (population 300,000). NAS Sigonella is divided into two bases, NAS I and NAS II (approximately 20 minutes apart). The base is home to approximately 2,200 ADSMs, 2,000 ADFMs, 350 DoD civilians, and 100 civilian dependents.

#### 1. Direct Care

NH Sigonella is located on NAS I. The facility currently has 24 beds (6 medical/surgical beds, 11 OB beds, 5 bassinets, and 2 MH beds).<sup>20</sup> Like NH Naples, NH Sigonella’s inpatient product lines include internal medicine, general surgery, obstetrics/gynecology, and newborn care. The facility does not have an ICU. The ADPL is 1.4 (or 1, excluding newborns). This puts NH Sigonella around the 10th percentile of ADPL for OCONUS facilities. Facilities with similar ADPLs include Aviano before it transitioned to an outpatient facility. The naval hospital has two child facilities, Naval Branch Health Clinic (NBHC) Bahrain (in Bahrain), and BMC Souda Bay (in Greece). Collectively, there are 523 FTEs assigned across these facilities. See Table 18.

**Table 18. NH Sigonella Personnel (in FTEs), FY 2018**

Personnel Type	NH Sigonella		NBHC Bahrain		BMC Souda Bay	
	Assigned	Available	Assigned	Available	Assigned	Available
Officer	99	94	28	30	2	2
Enlisted	202	192	59	59	6	7
Civilian	18	11	6	5	1	1
Local National	78	59	17	15	2	2
Contractor	5	3	-	-	-	-
<b>Total</b>	<b>402</b>	<b>359</b>	<b>110</b>	<b>109</b>	<b>11</b>	<b>12</b>

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<sup>20</sup> This information comes from market data contained in the DHA MTF portfolio. This can be accessed by Common Access Card (CAC) holders at: <https://info.health.mil/staff/analytics/decsupmp/SitePages/Home.aspx>.

It should be noted that enrollees to the naval hospital may also receive care in other DC facilities (CONUS or OCONUS). In FY 2018, 51 NH Sigonella enrollees were admitted to the Landstuhl Regional Medical Center in Germany while 30 were sent to NMC Portsmouth (Virginia) and 16 to Walter Reed NMMC (Maryland). Appendix D provides a summary of additional DC provided to NH Sigonella enrollees.

## **2. Purchased Care**

Sicilian health care is managed by the regional government in the Sicilian capital of Palermo. The health department has two central offices with oversight, planning, and execution responsibilities: the Regional Department for Strategic Planning (Dipartimento Regionale per la Pianificazione Strategica) and the Regional Department for Health Activities and Epidemiologic Observation (Dipartimento Regionale per le Attività Sanitarie e Osservatorio Epidemiologico). Regional quality reporting is conducted by AGENAS under the oversight of the Ministry of Health. AGENAS produces the PNE bi-annual quality report, which aggregates 175 indicators of regional health care quality (70 on outcomes, 75 on volume and access, and 30 related to hospitalization). Sicily scores at or near the national average for nearly all indicators, with the notable exception of its cesarean section rate. The most recent report from 2018 shows that the regional C-section rate has fallen considerably from over 40 percent in 2010 to around 28 percent. However, this rate still remains above national benchmark values and shows considerable heterogeneity within the region. Maternal mortality over the same time period is at or slightly below the national average. Italian officials note in the most recent report that health care in Sicily exhibits greater variability than in the north, but on average provides quality care and is rapidly closing the performance gap between north and south. EHR use by providers is still relatively uncommon in Sicily.

TRICARE beneficiaries had encounters in three network facilities during 2018. Out of a total of 26 admissions, Ospedaliero Universitaria Policlinico Vittorio Emanuele saw the most admissions, with 20 (77 percent), Policlinico G.B. Morgagni had four admissions (15 percent), and Azienda Ospedaliera di Rilievo Nazionale e di Alta Specializzazione (ARNAS) Garibaldi had two (8 percent). A brief summary of the three facilities can be found in Table 19. We note that all facilities have an institutional accreditation from the region of Sicily.

**Table 19. Summary of Network Facilities, Cantinia**

	<b>Azienda Ospedaliero Universitaria Policlinico Vittorio Emanuele di Catania</b>	<b>Centro Clinico Diagnostica – Policlinico G.B. Morgagni</b>	<b>ARNAS Garibaldi Catania</b>
Ownership	Public	Private	Public
Distance from NAS Sigonella	13 miles	18 miles	14 Miles
Level of Care	Tertiary	Specialty	Tertiary
Total Beds	772	220	623
Bed Occupancy Rate	86%	N/A	88%
Annual Inpatient Admissions	26,923	14,558	24,662
Median Wait Times - Primary Care (Priority - B)	7 days	N/A	3 days
Median Wait Times - Specialty Care (Priority - B)	12 days	N/A	10 days
Private Rooms	No, shared rooms with 2–4 beds with en suite bathroom	Yes, single and double rooms available with reservation	No, shared rooms with 2–3 beds and en suite bathroom
Average Stay Length	6.9 days	N/A	7.16 days
Teaching Hospital	Yes	No	Yes
Total Annual Revenue	€426 million	N/A	€263 million

## **B. Market Workload Analysis**

### **1. Summary Workload Metrics**

Table 20 reports the workload summary metrics for NH Sigonella. In FY 2018, there were 240 inpatient dispositions. Nearly 60 percent of these were for labor and delivery (OB) and newborn care.

**Table 20. Summary Workload Metrics for NH Sigonella, FY 2018**

	<b>M</b>	<b>S</b>	<b>OB</b>	<b>NB</b>	<b>MH</b>	<b>Overall</b>
<b>Case Volume</b>						
Admissions	64	23	69	73	11	240
RWPs	41	29	36	18	5	129
Bed Days	130	56	151	136	21	494
ADPL	0.4	0.2	0.4	0.4	0.1	1.4
<b>Case Intensity</b>						
Average CMI	0.6	1.3	0.5	0.2	0.4	0.5
Average LOS	2.0	2.4	2.2	1.9	1.9	2.1
<b>Unit Cost</b>						
Cost per Admission	\$23,523	\$51,415	\$29,264	\$19,678	\$28,418	\$26,901
Cost per RWP	\$36,586	\$41,092	\$55,845	\$80,760	\$63,174	\$50,119
Cost per Bed Day	\$11,581	\$21,117	\$13,372	\$10,562	\$14,886	\$13,069

Source: M2 SIDR

Table 21 reports the summary metrics for all inpatient care provided by local host nation facilities. For FY 2018, we observed 25 inpatient admissions across three facilities.<sup>21</sup> The volume of care purchased in civilian facilities is much smaller. Just over half is OB/Newborn care, while the other half is medical. There were no mental health or surgical admissions in FY 2018 for the Italian Tax IDs provided for this analysis.

<sup>21</sup> The three facilities were ITA00090, ITA005151, and ITA005353. Nearly 75 percent of admissions occurred at ITA005353. One observation was removed due to suspected data error. This admission had 11 RWPs and an LOS of 112 days, but a total cost of only \$1,803.

**Table 21. Summary Workload Metrics for Sigonella Purchased Care, FY 2018**

	<b>M</b>	<b>S</b>	<b>OB</b>	<b>NB</b>	<b>MH</b>	<b>Overall</b>
<b>Case Volume</b>						
Admissions	12	-	11	3	-	25
RWPs	8	-	5	1	-	14
Bed Days	15	-	28	11	-	49
<b>Case Intensity</b>						
Average CMI	0.7	-	0.4	0.3	-	0.5
Average LOS	1.3	-	2.5	3.7	-	2.0
<b>Unit Cost</b>						
Cost per Admission	\$7,993	-	\$5,295	\$7,672	-	\$6,413
Cost per RWP	\$11,678	-	\$12,016	\$26,055	-	\$11,670
Cost per Bed Day	\$6,393	-	\$2,080	\$2,092	-	\$3,272

Source: M2 TEDS-Institutional; one Medical observation was removed due to suspected data error.

Table 22 presents a subset of the summary metrics side by side for DC and PC. Generally speaking, a much greater volume of care was delivered in the DC system (approximately 10 times as much). On average, the care delivered in the PC system appears to have the same case intensity as the care delivered in the naval hospital. Finally, cost per unit appears to be approximately four times higher in the DC system.

**Table 22. DC to PC Comparison, Sigonella, FY 2018**

	<b>Direct Care</b>	<b>Purchased Care</b>	<b>(DC/PC)</b>
<b>Case Volume</b>			
Admissions	238	25	9.6
RWPs	126	14	9.4
Bed Days	491	49	10.1
<b>Case Intensity</b>			
Average CMI	0.5	0.5	1.0
Average LOS	2.1	2.0	1.0
<b>Unit Cost</b>			
Cost per Admission	\$26,745	\$6,413	4.1
Cost per RWP	\$50,453	\$11,670	4.4
Cost per Bed Day	\$12,964	\$3,272	4.0

## 2. Detailed Workload Analysis

Table 20 through Table 22 in the previous section compared workload volume, intensity, and unit costs at the product line level. However, as previously discussed, there may be interest in observing these metrics at a lower level of aggregation (e.g., MDCs or MS-DRGs).

Appendix D reports workload metrics by MDC. We also compare these metrics at the MS-DRG level for the two most common MDCs: MDC 14 (relating to childbirth) and MDC 15 (relating to newborns). As previously noted, the majority of admissions occur in the DC system. There were 12 MDCs where workload was only observed in the DC system and two MDCs where workload was only observed in PC. Similarly, when we examined the MS-DRGs for childbirth and newborn care, we found seven MS-DRGs where workload was observed only in DC and three where workload was observed only in PC. We note that no surgical MS-DRGs (e.g., cesarean sections) were observed for PC.

## 3. Clinical Skill Maintenance

Table 23 shows the total general surgery KSA points available at NH Sigonella. For general surgeons, there were just over 5,500 KSA points—enough to support .39 general surgeons based on the point threshold of 14,000. However, these points were accumulated by four different providers. No one provider earned 14,000 KSA points at Sigonella or met the 14,000-point threshold when factoring in workload from other facilities (e.g., if they traveled to other MTFs in the region as “circuit riders” or transferred partway through the year).

**Table 23. NH Sigonella General Surgery KSA Workload**

<b>Type</b>	<b>Acuity</b>	<b>Procedure Group</b>	<b>Cases</b>	<b>KSA Score</b>
Gen Surg	High	Abdominal Wall	11	737
	High	Breast	5	485
	High	Debridement Muscle and Fascia	6	558
	High	Intraabdominal Laparoscopic	8	912
	High	Myocutaneous Muscle Flap	2	150
	High	Upper GI	1	139
		<b>High Acuity Total</b>	<b>33</b>	<b>2,981</b>
	Low	E&M – Blood Products	1	18
		E&M – Cervical		
	Low	Lymphadenectomy	1	3
Low	E&M – Urologic	1	24	
Low	Endoscopic	29	1,885	
Low	Minor Excision, I&D	24	600	
	<b>Low Acuity Total</b>	<b>56</b>	<b>2,530</b>	
	<b>Total</b>	<b>89</b>	<b>5,511</b>	
	<i>Gen Surg KSA Threshold</i>		14,000	
	<b>Providers Supported</b>		<b>0.39</b>	
	<b>Providers Assigned</b>		<b>4</b>	

For orthopedic surgeons, the story was similar as Table 24 shows. There were just over 19,000 KSA points—enough to support about .5 providers based on the threshold of 35,000. However, the points were accumulated by two different providers. No one provider met the threshold based on points earned at Naples or based on their total points from all facilities.

**Table 24. NH Sigonella Orthopedic Surgery KSA Workload**

<b>Type</b>	<b>Procedure Group</b>	<b>Cases</b>	<b>KSA Score</b>
Ortho Surg	Arthroscopy	26	6,110
	Closed Treatment of Fracture Appendicular Skeleton	41	5,040
	Hand	9	3,042
	Hardware Removal	6	1,326
	Open Debridement	5	935
	Open Treatment of Fracture Appendicular Skeleton	2	444
	Soft Tissue Procedure	9	2,169
	<b>Total</b>	<b>98</b>	<b>19,066</b>
	<i>Ortho Surg KSA Threshold</i>		<i>35,000</i>
<b>Providers Supported</b>		<b>0.54</b>	
<b>Providers Assigned</b>		<b>2</b>	

This analysis suggest NH Sigonella faces a significant challenge in maintaining its provider’s clinical currency. The challenge appears greater for NH Sigonella relative to NH Naples, given the lower volume of surgical procedures.

#### **4. Purchasing Direct Care Workload in Purchased Care Network**

Table 25 shows the estimated value of purchasing the current workload performed at NH Sigonella from the surrounding host nation facilities. Estimates range from \$1.5 million to \$1.6 million, depending on the workload unit used (e.g., admissions versus bed days). Because the PC RWP’s do not appear to be accurate, we believe the bed day-based estimate to be the most reliable.

**Table 25. Estimated Value of NH Sigonella Workload, FY 2018**

<b>Workload Unit</b>	<b>DC Volume</b>	<b>PC Estimated Value</b>	<b>PC Estimated Value with OH</b>
Admissions	240	\$1,539,172	\$1,739,265
RWP’s	129	\$1,503,362	\$1,698,799
Bed Days	494	\$1,616,369	\$1,826,497

Note: Bed days is the preferred unit cost. We assume an overhead factor of 1.13. Overhead factor provided in DHA facility profiles to account for non-health care costs that are also paid for PC services such as administration, award fees, and other health promotion activities.

## **C. Potential Cost Savings**

In Chapter 2, we outlined two methodologies that could be used to estimate the potential savings (or cost increase) associated with closing inpatient product lines. We report the savings estimates from each method in the following sections.

### **1. Baseline Savings Estimate**

Table 26 show the MEPRS personnel and expense allocations across the different MEPRS accounts. The top panel of the table contains data for the naval hospital, while the bottom panels contain data for the child clinics (Souda Bay and Bahrain). In the table, we see that military labor accounts for the majority of total expenditures (approximately 67 percent). We also see that the vast majority of total expenditures (nearly 80 percent) occurs at the hospital. However, only 10 percent of total expenditures are attributed to inpatient care. Overall, a total of \$6.5 million is allocated to inpatient care. This suggests approximately \$6.5 million in MTF expenses could be eliminated if the MTF were to close inpatient product lines and remove associated personnel expenses.

Table 26. MEPRS Cost Allocation for Sigonella, FY 2018

MEPRS Account	Avg Assigned Total FTEs	Percent FTEs	Civilian Pay Exp	Military Pay Exp	Other O&M Exp	Total Exp	Percent of Total Expense
<b>NH Sigonella</b>							
A: Inpatient Care	31	6%	\$685,238	\$4,307,738	\$1,424,126	\$6,456,292	10%
B: Outpatient Care	135	26%	\$3,187,175	\$20,333,315	\$6,645,083	\$30,233,708	47%
C: Dental Care	32	6%	\$588,023	\$3,220,752	\$1,226,465	\$5,035,241	8%
D: Ancillary Services	59	11%	\$0	\$0	\$0	\$0	0%
E: Support Services	135	26%	\$0	\$0	\$0	\$0	0%
F: Special Programs	10	2%	\$809,450	\$4,623,954	\$1,203,407	\$6,637,132	10%
G: Medical Readiness	0	0%	\$128,626	\$858,966	\$44,779	\$1,032,372	2%
	<b>402</b>	<b>77%</b>	<b>5,398,513</b>	<b>33,344,725</b>	<b>10,543,862</b>	<b>49,394,744</b>	<b>77%</b>
<b>Souda Bay</b>							
B: Outpatient Care	12	2%	\$119,863	\$1,042,115	\$556,329	\$1,726,329	3%
C: Dental Care	0	0%	\$9,316	\$48,532	\$11,636	\$69,484	<1%
D: Ancillary Services	0	0%	\$0	\$0	\$0	\$0	0%
E: Support Services	0	0%	\$0	\$0	\$0	\$0	0%
F: Special Programs	0	0%	\$9,746	\$119,949	\$12,843	\$143,224	<1%
G: Medical Readiness	0	0%	\$1,082	\$37,802	\$1,190	\$40,075	<1%
	<b>12</b>	<b>2%</b>	<b>140,008</b>	<b>1,248,398</b>	<b>581,999</b>	<b>1,979,112</b>	<b>3%</b>
<b>Bahrain</b>							
B: Outpatient Care	65	12%	\$436,909	\$5,981,400	\$1,464,007	\$7,954,378	12%
C: Dental Care	20	4%	\$188,804	\$1,388,419	\$257,964	\$1,835,187	3%
D: Ancillary Services	3	1%	\$0	\$0	\$0	\$0	0%
E: Support Services	22	4%	\$0	\$0	\$0	\$0	0%
F: Special Programs	1	0%	\$473,156	\$1,238,647	\$667,274	\$2,386,611	4%
G: Medical Readiness	0	0%	\$6,432	\$176,148	\$3,846	\$186,427	<1%
	<b>111</b>	<b>21%</b>	<b>1,105,301</b>	<b>8,784,614</b>	<b>2,393,091</b>	<b>12,362,603</b>	<b>19%</b>
<b>Total</b>	<b>527</b>	<b>100%</b>	<b>\$6,104,130</b>	<b>\$43,650,506</b>	<b>\$14,442,055</b>	<b>\$64,430,208</b>	

In the previous section, we estimated it would cost between \$1.7 million (admission-based estimate) and \$1.8 million (bed day-based estimate) to purchase the same workload from the local host nation facilities. This suggests a potential net savings range of \$4.6 million to \$4.7 million. However, as noted in Chapter 2, savings may be larger if personnel and expenditures are reduced by larger factors than those implied by the cost accounting allocations.

## 2. Case Study Estimate

Table 27 shows the FTE, outpatient, and total expense reduction implied by the MEPRS cost allocation system and the two case studies discussed in Chapter 2. In both the Vicenza and Aviano cases, personnel and expenditures were reduced by greater magnitudes than the MEPRS allocations implied. The larger savings experienced at these facilities came from reductions in outpatient care associated with inpatient admissions. These associated outpatient reductions were not factored into the MEPRS approach. The bottom portion of the table reports the implied net savings range. Ranges are lowest for the MEPRS estimate and highest when we use the reduction factors from the Aviano case study. Ranges produced using the preferred PC unit cost (bed days) suggest a net savings range of \$4.1 million to \$5.6 million.

**Table 27. Expected Cost Reductions and Net Savings, Sigonella 2018**

<b>Category</b>	<b>MEPRS-based</b>	<b>Vicenza Case</b>	<b>Aviano Case</b>
FTE Reduction	-8%	-17%	-15%
Expected Manpower Reductions	31	68	60
Outpatient Expense Reduction	0%	-2%	-7%
Expected Expense Reduction		\$604,674	\$2,116,360
Total Expense Reduction	-13%	-12%	-15%
Expected Expense Reductions	\$6,456,292	\$5,927,369	\$7,409,212
Net Savings (Bed Days Est.)	\$4,629,795	\$4,100,872	\$5,582,715
Net Savings (Admissions Est.)	\$4,717,027	\$4,188,104	\$5,669,947

Note: Personnel and expense reductions are applied only to the Naval Hospital. We assume the child clinic would not be affected.

## **D. Analysis of Local Purchased Care Network: Access, Quality, and Cultural Considerations**

### **1. Access, Quality, and Cultural Considerations for Network Facilities**

#### **a. Azienda Ospedaliero Universitaria Policlinico Vittorio Emanuele di Catania**

Azienda Ospedaliero Universitaria Policlinico is a company that consists of multiple hospital facilities in Catania including Vittorio Emanuele. Over the last few years, management has closed and consolidated operations into newly built facilities outside the city center. The original hospital, Presidio Ospedaliero Vittorio Emanuele, still operates out of the city center, while the newly renovated Ospedale Gaspare Rodolico houses most of the surgical services and specialty staff. The company has also completed a brand-new facility, San Marco, and is transferring services from Vittorio Emanuele and its smaller clinics to its new hospital. Gaspare Rodolico is co-located with the Faculty of Medicine and Surgery at the University of Catania and serves as its primary teaching hospital. The hospital offers tertiary care capabilities with a full complement of advanced specialties including cardiovascular surgery, transplant surgery, neurosurgery, neonatology, and oncology. The facility currently receives the bulk of TRICARE referrals—26 in FY 2018, primarily for labor and delivery.

The IDA team visited the Gaspare Rodolico facility and found it was very modern. The emergency department and ICU were recently refurbished and offer state of the art equipment, technology, and facilities. The layout of these departments has been optimized to clinical processes and patient flow. The ICU was one of the two facilities toured by the team to offer both positive and negative pressure in the ICU. The obstetrics department and NICU were also advanced. The close collaboration with the co-located university is apparent, as clinical staff we encountered had worked abroad (in the UK or other EU countries), conducted research, or completed additional training and fellowships. Overall, clinical staff demonstrated a level of professionalism consistent with a top-performing medical facility. Gaspare Rodolico is the regional hub for cardiovascular care and can accept air ambulances. It was also a certified medical facility for the 43rd G7 Summit that was held in nearby Taormina, Sicily in 2017. A limited number of private rooms were available.

Outcome metrics for the facility are reported in Table 28. The facility performed well in the cardiopulmonary area. For labor and delivery, the adjusted cesarean rate of 30 percent is lower than the 50 percent rate observed in the Campania market area but still above the US benchmark (21.7 percent) and northern Italy benchmark (18.72 percent). The proportion of women having natural births following a cesarean is also very low (only 2

percent). The rates of complications and subsequent hospitalizations with childbirth are very low (equal or better than benchmarks).<sup>22</sup>

According to the PNE rating system, the facility performs high in neurology and pulmonary care; medium in labor and delivery, cardiovascular care, and general surgery; and low in surgical oncology.

#### **b. Centro Clinico Diagnostica – Policlinico G.B. Morgagni**

Policlinico G.B. Morgagni is a small, private specialty hospital in Catania. The hospital has an existing agreement with the National Health Service and provides some services to publicly covered patients. Services not covered by the NHS must be paid for in cash or through private insurance. This hospital focuses on surgical intervention and advanced diagnostics with 185 specialists on staff, but importantly excludes obstetrics (does not conduct labor and delivery), although it offers general gynecology and gynecologic surgery. It does not have an emergency room but does have an urgent care center. The hospital has multiple ICU units and 10 operating suites. It has a distinct cardiovascular center equipped with a cardiovascular ICU located in a separate facility. It also has a separate ophthalmology center. Private rooms are available with advanced reservation on a space-available basis. In 2018, four TRICARE patients were referred to this facility.

The IDA team visited the facility and found it was modern and high end. The surgical theatres rotate use by specialty and utilize modern technology. The facility prides itself on recruiting high-caliber surgeons and has an active research portfolio. G.B. Morgagni is particularly known for their cardiovascular care, attracting the most complex cases from the region. Currently very few TRICARE beneficiaries utilize this facility, but ISOS indicated they plan to send more patients there when specialty care is provided, due to the high quality of care. Facility outcome metrics from the PNE are reported in Table 28.

According to the PNE rating system, the facility performs very high in surgical oncology and general surgery, and low in cardiovascular care.

#### **c. ARNAS Garibaldi Catania**

ARNAS Garibaldi consists of two large teaching hospitals (Garibaldi-Centro and Garibaldi-Nesima), located roughly three miles apart from each other. Garibaldi-Centro is the original hospital located in the city center. It houses a full complement of specialists, but primarily serves as the emergency room and trauma center serving the center of Catania. Garibaldi-Nesima was constructed in 2004 and houses all of Garibaldi's sub-specialty care and the Maternal and Infant Birthing Center. It operates a 24-hour emergency

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<sup>22</sup> As orthopedic surgery is not performed at the facility, no metrics are reported for this category.

department that specializes in pediatrics. It also operates a NICU and serves as a National Reference Center for oncology.

The IDA team visited this facility and found it to be modern and well run. The facility has a very well-regarded obstetrics department with the lowest cesarean rates we observed among all the southern Italian facilities examined in this analysis. The low C-section rate is attributed by hospital staff to the Obstetrics Department Chief, who is the Ministry of Health's consultant for obstetrical care. The NICU and Pediatric Intensive Care Unit (PICU) were state of the art, offering both positive and negative pressure as well as a full complement of support services. The hospital also had a separate infectious disease building housing a specially equipped ward. A limited number of private rooms were available and visiting hours were generous. Unique to this facility was the breadth of quality improvement and patient safety initiatives undertaken by the hospital. These include sentinel event reporting, clinical protocol development, fall monitoring programs, infection control monitoring, and operative checklist monitoring.

Facility outcome metrics from the PNE are reported in Table 28. The facility performed similarly to Policlinico Gaspare Rodolico but cesarean rates were slightly lower. According to the PNE rating system, the facility performs very highly in cardiovascular care and general surgery, highly for labor and delivery, low for pulmonary care and surgical oncology, and very low for neurology.

**Table 28. Outcome Metrics for Host Nation Facilities, Sigonella Market Area**

	US National Benchmark	Policlinico Gaspare Rodolico		Garibaldi Nesima		G.B. Morgagni	
	Rate	Volume	Adj. Rate	Volume	Adj. Rate	Volume	Adj. Rate
<b>Cardiopulmonary</b>							
Acute myocardial infarction: 30-day mortality	12.9	6	33.3**	18	28.6**	2	0
Congestive heart failure: 30-day mortality	11.5	70	8.7	235	5.0	87	14.1**
Congestive heart failure: hospital readmissions at 30 days	21.2	70	16.7	235	19.1	87	21.4*
Ischemic stroke: 30-day mortality	13.8	112	7.4	26	27.8**	13	0
Ischemic stroke: hospital readmissions at 30 days	13.1	112	8.3	26	7.1	13	0
COPD exacerbated: 30-day mortality	8.5	229	5.5	189	13.4**	14	10
COPD exacerbated: 30-day hospital readmissions	19.1	229	9.3	189	16.1	14	11.1
<b>Surgical Quality</b>							
Hip replacement surgery: 30-day readmissions	4.4	-	-	16	0.0	84	0
Hip replacement surgery: revision within 2 years of surgery	N/A	-	-	16	2.8	84	3.1
Knee replacement surgery: 30-day readmissions	4.4	-	-	13	0.0	124	2.4
Knee prosthesis surgery: revision within 2 years of surgery	N/A	-	-	13	0.0	124	1.4
Laparoscopic cholecystectomy: 30-day readmissions	2.0	170	2.7*	222	4.35**	223	1.1
Pediatric appendectomy: 30-day readmissions	8.7	53	4.6	72	3.5	4	0
<b>Labor and Delivery</b>							
Proportion of primary cesarean sections	21.7	1986	29.5**	2138	24.9**	-	-
Proportion of vaginal births in women with previous cesarean section <b>(lower is worse)</b>	13.3	1986	1.9**	2138	8.6**	-	-
Natural childbirth: proportion of complications during childbirth and puerperium (hospitalization facility)	8.6	1986	0.2	2138	0.2	-	-
Natural childbirth: subsequent hospitalizations during the puerperium	0.8	1986	0.3	2138	0.2	-	-

	<b>US National Benchmark</b>	<b>Policlinico Gaspare Rodolico</b>		<b>Garibaldi Nesima</b>		<b>G.B. Morgagni</b>	
	<b>Rate</b>	<b>Volume</b>	<b>Adj. Rate</b>	<b>Volume</b>	<b>Adj. Rate</b>	<b>Volume</b>	<b>Adj. Rate</b>
Caesarean section: complications during delivery and the puerperium (hospitalization facility)	9.2	1986	0.7	2138	0.6	-	-
Cesarean delivery: subsequent hospitalizations during the puerperium	1.8	1986	0.8	2138	0.7	-	-

Note: \* Indicates rates which are slightly worse the benchmark (within 2 points). \*\* Indicates rates which are 2 or more points worse than the benchmarks.

## **2. Summary and Conclusion**

There is no evidence that the local network facilities surrounding NAS Sigonella would be unable to absorb the additional patient load should inpatient facilities be closed. The local area has sufficient capacity in a wide variety of specialties and sub-specialties. In terms of quality, standard of care, and other cultural and convenience factors, there is more to consider.

The facilities the IDA team toured in the Sigonella market area were clean, modern, and often brand new. The host nation facilities surrounding Sigonella offered a significantly higher standard of care than facilities in Naples. The facilities visited in Catania would not be out of place stateside.

Quality of the care delivered in the facilities generally seemed consistent with benchmarks. Differences in the standard of care for labor and delivery (primarily the cesarean rate) remain the primary concern. Host nation facilities in the Sigonella market area have significantly lower cesarean rates than the facilities in Naples. However, the adjusted rates for the two facilities reported above (25 percent and 30 percent) are still above the US benchmark (21.7 percent) and the northern Italian benchmark (18.72 percent). Facilities reported that primary C-section rates have fallen considerably and that these will continue to fall over time.

In terms of other cultural considerations, the largest issue is likely the language barrier. Many of the providers and administrators the IDA team encountered did not speak English. The bilingual patient liaisons largely mitigate this issue but, in some instances, such as when a beneficiary calls 118, it may take time for them to arrive. In addition, it may be stressful for beneficiaries to have to communicate through a translator during labor and delivery or emergency situations. Other concerns, such as those related to restricted visiting hours or family members having to provide food/change linens were dismissed. While beneficiaries may need to bring a few toiletries (e.g., shampoo or toothpaste), they can depend on the facility for meals, linens, housekeeping, etc. Visiting hours were also very accommodating—even in ICU/NICU/PICU environments.

## 5. Summary of Findings

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Below we summarize some of the key findings from each analysis.

### A. Summary of Market Workload Analysis

- **Inpatient volume is very low at NH Naples and NH Sigonella.** The ADPL at NH Naples is 2.2 while the ADPL at NH Sigonella is 1.4. Both are below the OCONUS facility ADPL average of 8 and median of 3 (as well as the CONUS average of 49).
- **The majority of inpatient admissions at NH Naples and NH Sigonella are for labor and delivery.** Over 70 percent of inpatient admissions at NH Naples and over 60 percent at NH Sigonella were labor and delivery. This means ensuring the quality of labor and delivery care in the network is a foremost consideration.
- **The limited surgical workload available at NH Naples and NH Sigonella creates challenges for providers trying to maintain clinical skills maintenance:** The DoD is developing a KSA scoring system to measure whether providers are getting enough case mix volume and complexity to maintain their clinical currency. The scoring system is currently only available for general surgeons and orthopedic surgeons. We found that general surgeons and orthopedic surgeons assigned to NH Naples and NH Sigonella did not earn enough KSA points to meet the set threshold. The problem was more severe at NH Sigonella.
- **The average cost per admission at both NH Naples and NH Sigonella is above the OCONUS facility median.** The average cost per admission at NH Naples is \$18,000, while the average cost per RWP at NH Sigonella is \$27,000. These are above the OCONUS median cost per admission of \$14,000 (and the CONUS median of \$11,000).
- **NH Naples and NH Sigonella currently provide the majority of their beneficiaries' inpatient care.** NH Naples had a total of 379 admissions in FY 2018, while only 56 patients (13 percent) were admitted to host nation facilities.<sup>23</sup> NH Sigonella had a total of 240 admissions in FY 2018, while only

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<sup>23</sup> Approximately 20 beneficiaries were also sent to Landstuhl or Portsmouth for inpatient care.

25 patients (9 percent) were admitted to host nation facilities.<sup>24</sup> If inpatient product lines were to close at these facilities, the MTFs would be sending over six times the current volume to the network in Naples and nearly 10 times the volume in Sigonella. While the network can handle this volume, the MTF or ISOS staff may require additional personnel to coordinate patient care and to provide transportation and patient liaisons/translators.

## **B. Summary of Potential Savings Analysis**

- **We estimate it would cost less to purchase the current MTF inpatient workload from host nation facilities.** It costs approximately \$6.8 million for NH Naples to deliver its current inpatient workload. We estimate the same workload could be purchased from local host nation facilities for \$1.5 million to \$4.4 million, approximately 40 to 80 percent less. Similarly, it costs approximately \$6.5 million for NH Sigonella to deliver its current inpatient workload. We estimate the same workload could be purchased from local host nation facilities for \$1.7 million to \$1.8 million, just over 70 percent less. The uncertainty in the PC savings range is driven by (1) the fact that little care is currently purchased, and (2) uncertainty in the RWP measures reported by Italian host nation facilities.
- **The combined expected annual savings from closing inpatient product lines at NH Naples and NH Sigonella range from \$10 million to \$13 million, or roughly \$50 million to \$65 million over the FYDP.** The expected annual savings for NH Naples range from \$5.3 million to \$7.4 million, while the expected annual savings for NH Sigonella range from \$4.6 million to \$5.6 million. Appendix E reports the expected savings for each facility under the three scenarios considered in the main body of the report.
- **The vast majority of the savings come from personnel reductions.** Each facility is expected to reduce its FTEs by an approximate range of 30 to 70, depending on the scenario. Appendix F reports the FTE reductions for each facility under the three scenarios.

## **C. Summary of Network Assessment**

- **Overall, the Italian health care system is quite good.** Italy has among the lowest rates of preventable and treatable mortality in the EU (Italy had the second lowest age-standardized mortality rate for preventable causes and the fourth lowest age-standardized mortality rate for treatable causes). Italy also has

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<sup>24</sup> Approximately 80 beneficiaries were also sent to Landstuhl or Portsmouth for inpatient care.

the second lowest rate for avoidable hospital admissions (suggesting that care is effectively managed), and its quality compares favorably for acute conditions such as acute myocardial infarction (below the EU average for mortality) as well as chronic conditions such as cancer (above the EU average for survival rates).

- **Historic disparities between care in northern and southern Italy are improving, but gaps remain.** In 2017, when the national health benefit was expanded, only five of the 20 regions did not comply with the national objectives and targets due to financial constraints. Campania was unable to comply, but Sicily did. In terms of outcomes and quality metrics, the most notable difference is in cesarean rates, which remain higher in the south.
- **Italy has one of the highest cesarean rates in Europe (especially in the south).** High cesarean rates are attributed to several factors. First, Italy has one of the highest rates of mothers giving birth after age 35. The risk of complication and the chance of cesarean delivery increases with age. Other cited explanations include higher reimbursement rates for cesarean births, lack of continuous availability of epidural anesthesia for vaginal delivery, and maternal requests (due to fear of pain or scheduling convenience).<sup>25</sup> Cesarean rates are typically higher in private hospitals. Cesareans were very high for the facilities in the Naples market area (among the highest in Italy). Cesarean rates were much lower in the Sigonella market area but still slightly above the US and northern Italy benchmarks.
- **The Italian hospitals (that receive public funding) must participate in the AGENAS PNE quality program.** Since 2012, Italian facilities report quality outcome data to the PNE. These metrics are used by the PNE to assess a hospital's level of compliance with quality standards in different areas (e.g., cardiovascular care or pregnancy and delivery). IDA made use of these metrics for our quality assessment. We note that while many of these metrics are similar to quality metrics reported in the United States, there are also differences. In general, clinical quality improvement is still in its infancy in Italy but is rapidly gaining traction. Currently, there is wide variation in the level of commitment to quality monitoring and improvement. Facilities in the Sigonella market area demonstrated greater institutionalization of a quality-centric culture. These wide variances in quality underscore the need to route patients to top-performing facilities.

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<sup>25</sup> Maria Regina Torloni et al., "Do Italian Women Prefer Cesarean Section? Results from a Survey on Mode of Delivery Preferences," *BMC Pregnancy and Childbirth* 13, no. 78 (March 2013), <https://doi.org/10.1186/1471-2393-13-78>.

- **Host nation facilities were accredited by each region’s Health Ministry but not JCI.** Many facilities claimed to adhere to the JCI standards, but they did not seek accreditation due to high costs. While costs are high, there is no accountability without a formal accreditation. Requiring JCI accreditation is not likely feasible at this time. Today, less than 20 inpatient facilities (<1 percent of Italian hospitals) have opted to seek accreditation.
- **Access to care does not appear to be a problem in either market.** Both market areas appeared to have sufficient capacity in their networks. In Naples, we identified five host nation facilities delivering inpatient care to TRICARE beneficiaries, including two tertiary care facilities (the highest level of care). Private rooms were available in all facilities. The most frequently utilized facility was a tertiary care facility with 150 beds, 17,000 annual admissions, and an occupancy rate of 70 percent. This facility is also in the process of building an American-style ward with private rooms and English-speaking providers.<sup>26</sup> In Sigonella, we identified three host nation facilities delivering inpatient care to TRICARE beneficiaries (two were tertiary care facilities). Private rooms were often available. The most frequently utilized facility was a tertiary care facility with 772 beds, 27,000 annual admissions, and an occupancy rate of 86 percent. A new facility is also under construction a mere seven miles away from NH Sigonella. Wait times are generally consistent with US standards for specialty care. The median emergency room wait times for a code yellow ranged from 1.4 hours to 3.2 hours.
- **Host nation health care facilities in Catania (Sigonella market) score better on average than health care facilities in Campania (Naples market) for quality.** This is especially true for labor and delivery. All Naples hospitals had very high cesarean rates (50 percent or higher) and were rated by the PNE as low (for compliance with quality standards). In Catania, facilities had lower cesarean rates and were ranked medium or high by the PNE for labor and delivery.
- **There are some differences in the Italian standard of care (relative to US standards).** The IDA team discussed differences in the American and Italian standards of care with MTF staff, ISOS, and host nation facilities. Some of the most notable differences were in LOS and post-operative care. In Italy, inpatient stays are longer, on average, relative to the United States (6.9 days versus 5.5).<sup>27</sup>

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<sup>26</sup> There is some uncertainty about the future of the new facility and the American ward due to ongoing permitting issues and a corruption investigation.

<sup>27</sup> “Length of Hospital Stay,” OECD iLibrary, accessed on January 22, 2020, <https://doi.org/10.1787/8dda6b7a-en>.

Some procedures that are typically performed as outpatient surgeries (or day surgeries) in the United States are performed in the inpatient setting in Italy. Italian providers prescribe fewer prescription opioid pain medications post-surgery. The IDA team also heard Italian providers take a more passive approach to physical therapy. It is unclear if these differences will have a meaningful impact on outcomes in the beneficiary population.

- **There is some misinformation about cultural differences in Italian care.** On several occasions, the IDA team heard concerns from beneficiaries and MTF staff about cultural differences. The most commonly cited concerns that were not true (or no longer true) were (1) hospitalized patients have to rely on family members for meals, (2) family members are responsible for changing bedding and helping patients to restroom, and (3) visiting hours are restricted to only an hour a day.
- **Other cultural differences do exist, and patients should be made aware.** The largest cultural difference by far is the language and the barrier it presents. Privacy is another issue. While private rooms were offered by all facilities, some facilities may not be able to guarantee their availability 100 percent of the time. In addition, it might not be possible for a patient to request a physician of the same sex (a common request from DoD beneficiaries for labor and delivery) and chaperones are not always provided to patients with a physician of the opposite sex. The IDA team also heard of several incidents in which patients were told to undress without being provided a hospital gown. These types of differences can be mitigated over time through the Experience of Care pilot. Through conversations with patient ombudsmen at Sigonella, it became clear that medical and cultural briefs designed to educate patients were not having the desired effect and that word of mouth was perpetuating anecdotal fears of the local health system. MTFs should improve the transmission of accurate information and clarify the roles of ISOS and MTF staff to patients who may not understand the nuances of varying beneficiary categories and the Experience of Care pilot.
- **The Experience of Care pilot is working well but has room for improvement.** Through the Experience of Care pilot, TRICARE Prime beneficiaries receive “concierge” treatment including transportation services and translation services through a patient liaison. Patient liaisons are on-call constantly and can remain with the patient throughout an inpatient stay. There are two primary challenges with the pilot. First, for emergency situations, it may take a while for the patient to be identified as a TRICARE beneficiary and for the liaison to be notified. This challenge can be mitigated through process improvement initiatives between ISOS and the network facilitates. For host nation hospital staff, a greater and consistent volume of patients will aid in the

identification and subsequent notification of the appropriate MTF or ISOS teams. Lessons learned from northern Italy are now being shared with southern facilities. Second, the ISOS pilot currently only covers Prime enrollees, leaving the MTF to cover non-Prime enrollees. This can create confusion and leads to duplicative capability and efforts across the MTF and ISOS staffs.

- **Flag Leadership Concerns.** MTFs in Naples provide medical support to the headquarters of US Naval Forces Europe, US Naval Forces Africa, and the US Sixth Fleet. With care responsibilities for a higher density of senior and allied international officers (and their dependents) provided at NH Naples, headquarters staff indicated that movement of inpatient care from the MTF to the Italian facilities could become a quality of life concern in attracting top-tier officers to headquarters. Navy staff also indicated operational considerations would preclude any change in the total theater beds available in southern Italy. As discussed with military leadership during the site visits, considerations of scenario-based medical capacity risks assessments were beyond the scope of the current IDA study.

## **D. Conclusions and Recommendations**

Based on the findings highlighted above, we draw the following conclusions.

The host nation facilities in Catania, Sicily have adequate capacity to absorb NH Sigonella's inpatient workload. The quality of care available in these host nation facilities is generally in line with the quality benchmarks we created using US data and data for a northern Italian facility in Aviano where the Air Force now sends its beneficiaries. Adjusted cesarean rates ranged from 25 to 30 percent, which were above—but not far from—our US benchmark (21.7 percent). Upon touring these facilities, the IDA team found them to be very modern. Through the Experience of Care pilot (and the MTF patient liaisons), beneficiaries would have access to transportation services, patient liaisons/translators, and private rooms.

Overall, the IDA team found little risk to quality of patient care associated with closing inpatient product lines at NH Sigonella and shifting care to the network. Local facilities provide quality care, and the ISOS Experience of Care pilot (and MTF patient liaisons) has done a great deal to mitigate cultural differences and challenges with transportation and language barriers. Emergency situations are one area we identified as needing improvement. Specifically, when beneficiaries call for emergency service (118), ISOS and the MTF do not have control over where they are taken, and it may take time for them to be notified that a patient has been admitted. Today, beneficiaries have the ability

to go to the ER at NH Sigonella. However, the ER must transfer severe cases to host nation facilities via 118.<sup>28</sup>

The host nation facilities in Campania (Naples market) have adequate capacity to absorb NH Naples inpatient workload. While capacity in the network is currently adequate, the addition of the new facility at Pineta Grande with the American-style ward would improve the situation further. To date, the facilities in Naples are less modern (but still adequate) compared to those observed in Campania. We note that there is currently uncertainty around the opening of the new facility due to delays over ongoing permitting and legal issues.

The quality of care available in these facilities lags behind the quality of care observed in Catania and in northern Italy. The greatest area of concern was for labor and delivery. Specifically, cesarean rates in the network facilities were very high—50 percent or higher—nearly triple the benchmarks we set based on the US and northern Italy experience. While this may be a cause for concern, there are reasons to expect that this high rate would not be mirrored in the DoD population. First, the DoD beneficiaries are younger, on average, than the Italian population. We are unable to construct an age-adjusted cesarean rate, but it would surely be lower for the DoD population given that cesarean rates rise with age. Second, the literature and the providers we interviewed in Italy cite maternal request (due to fear of pain and in some cases lack of epidural anesthesia) as one of the primary drivers of high cesarean rates. This is far less likely to be a concern for the DoD population, as ISOS is working closely with network facilities to ensure beneficiaries have access to epidural anesthesia. In FY 2018, none of the women referred to the network for labor and delivery due to complicated diagnoses delivered by cesarean. Last, we note that while cesarean rates are high in Naples, other maternal outcomes are otherwise good (low complication rates and readmissions).

Overall, the IDA team believes the risk associated with closing inpatient product lines at NH Naples is higher than the risk associated with closing NH Sigonella. However, the risk is still relatively low, and the IDA team felt it could be mitigated with a careful transition plan that addresses areas of concern. The biggest area of concern is the high cesarean rates.<sup>29</sup> While we believe ISOS could mitigate this issue, we cannot rule out the risk of DoD beneficiaries experiencing a marginally higher risk of cesarean deliveries in host nation facilities (relative to the status quo). This is important, given that roughly 70 percent of the inpatient workload is labor and delivery.

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<sup>28</sup> If inpatient product lines closed, the MTF could potentially retain a 24-hour emergency/urgent care clinic.

<sup>29</sup> The Navy raised additional women's health and perinatal standard of care quality metrics, which are not systematically tracked

The remaining care (with the potential exception of mental health) could be treated in the Italian facilities, which have higher capability levels than the MTF (and which already take complex cases beyond the MTF's capabilities). Mental health may present a challenge due to language barriers and differences in Italian standards of care in this area.

The risks associated with closing each MTF should be weighed against the expected benefits of doing so, such as financial savings (or the freeing of military billets). Closing NH Naples is expected to generate \$5.3 million to \$7.4 million in savings, while closing NH Sigonella is expected to generate \$4.6 million to \$5.6 million. We note that NH Sigonella is the less efficient facility in terms of cost per admission.

The IDA team also makes the following recommendations regardless of the decisions to close (or not close) inpatient product lines:

- **Improvements to the Experience of Care pilot.** Today the ISOS Experience of Care pilot, which provides transportation services and bilingual patient liaisons, is somewhat duplicative of the MTF patient liaison program. A noted exception is that the pilot does not cover non-Prime beneficiaries, which is roughly half of those utilizing inpatient services in the network. This can create confusion, particularly for patients and staff at host nation hospitals. As the pilot matures into a full-fledged program, it should cover all potential users. In addition, ISOS and the MTF should reduce duplication of capabilities and effort by determining who will ultimately be responsible for arranging these services.
- **Improve communication about concierge services available through the pilot.** Many beneficiaries cite anxiety about having to drive themselves to Italian facilities, not knowing what to expect, and the language barriers. The MTFs and ISOS have worked hard to mitigate these issues and to help beneficiaries be fully prepared for their experience in the Italian health system.
- **Continue to foster Military-Civilian partnership building with host nation facilities.** Clinical staff at Naples discussed ongoing exchanges with host nation physicians and nursing staff. Increased collaboration presents a unique opportunity to not only increase engagement between DoD personnel and their host nation counterparts, but also an opportunity for junior and mid-career officers to develop leadership skills and expertise through clinical mentoring, academic exchange, and quality improvement. Staff at both MTFs should be encouraged to create and foster these kinds of linkages with the local community to improve communication with the local network hospitals and provide formative experience.
- **Patients should be channeled to the highest performing facilities.** MTF and ISOS staff should continue to closely monitor the quality and outcomes of network facilities. Based upon this monitoring, patients should be channeled to

the facilities that will provide the best possible opportunity for good clinical outcomes. While there are local considerations, MTF and ISOS staff should send patients to high-performing providers irrespective of business equity or convenience.



## **Appendix A.**

### **MHS Data Sources**

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#### **Military Health System Data Repository (MDR)**

The Military Health System (MHS) Data Repository (MDR) is a data warehouse containing the most complete collection of data about beneficiaries of the MHS and their health care. The MDR receives data from a wide variety of sources throughout the Department of Defense and processes these data according to a set of published business rules. Information in the MDR is accessible as statistical analysis system datasets or as American Standard Code for Information Interchange (ASCII) flat files. The environment has no user interface in the traditional sense; it is intended for expert programmers and analysts only. Detailed information about the MDR, including the types of data that are included and a data dictionary, can be found at <http://tricare.mil/tma/dhcape/data/fs.aspx>.

#### **Military Health System Management Analysis and Reporting Tool (M2)**

M2 is a powerful ad hoc query tool used to manage and oversee operations from all MHS regions worldwide. It is based on software called Business Objects, which give the user the ability to query the data objects in the M2 universe and to analyze and report the results. Data objects include both summary and detailed population, clinical, and financial data. The clinical data include information on inpatient, outpatient, pharmacy, laboratory, and radiology services at Military Treatment Facilities as well as private-sector claims for inpatient, outpatient, pharmacy (including home delivery), and ancillary services. The financial data include summary expense and manpower information from the Medical Expense and Performance Reporting System. M2 offers a quick and economical way to access large amounts of data and to display results in conveniently formatted tables or to export the data to other software for more detailed analysis. Many of the data included in the MDR are available in M2 in a much more accessible form. Data from M2 are the source for most of the tables and charts in this paper. More detailed information about M2, including the types of data that are included and a data dictionary, can be found at <http://tricare.mil/tma/dhcape/data/fs.aspx>.



## Appendix B.

### Direct Care Benchmarks

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To provide better context on the volume and cost of care delivered at NH Naples and NH Sigonella, we provide metrics in Table B-1 through Table B-4. Table B-1 and Table B-2 show the workload metrics by facility (for continental United States (CONUS) and Outside the Continental United States (OCONUS), respectively), while Table B-3 and Table B-4 show the metrics by distribution (for CONUS and OCONUS, respectively).

In general, OCONUS facilities have lower costs and higher volume. There is also a fairly clear relationship between facility volume and cost per relative weighted product (RWP) (as volume increases, cost per RWP falls).

**Table B-1. Workload Metrics for CONUS Inpatient Facilities by Facility, FY 2018**

Parent Facility Name	Dispositions	CMI	ADPL	Cost per Disposition	Cost per RWP
AMC BAMC	24,610	1.3	264	\$18,099	\$13,851
NMC SAN DIEGO	16,748	0.9	145	\$13,840	\$14,602
NMC PORTSMOUTH	13,706	0.9	124	\$13,533	\$15,120
WALTER REED NATL MIL MED CNTR	13,511	1.2	161	\$21,043	\$17,287
AMC WOMACK-BRAGG	10,566	0.7	73	\$10,086	\$13,789
AMC WILLIAM BEAUMONT-BLISS	8,873	1.0	71	\$11,619	\$12,018
AMC DARNALL-HOOD	7,934	0.6	57	\$8,481	\$13,285
FT BELVOIR COMMUNITY HOSP	7,401	0.8	65	\$14,732	\$19,111
NMC CAMP LEJEUNE	7,152	0.6	47	\$8,304	\$14,016
ACH EVANS-CARSON	6,499	0.6	42	\$7,593	\$12,298
AF-MC-60th MEDGRP-TRAVIS	5,530	1.2	53	\$17,343	\$14,055
ACH BLANCHFIELD-CAMPBELL	5,228	0.5	28	\$6,602	\$12,644
NH CAMP PENDLETON	4,757	0.6	29	\$9,124	\$16,199
AMC EISENHOWER-GORDON	4,567	1.2	59	\$13,819	\$11,579
AF-MC-99th MEDGRP-NELLIS	4,293	0.8	26	\$9,641	\$11,909
ACH MARTIN-BENNING	4,026	0.7	31	\$7,926	\$11,721
AF-H-96th MEDGRP-EGLIN	3,852	0.7	21	\$10,369	\$14,837

<b>Parent Facility Name</b>	<b>Dispositions</b>	<b>CMI</b>	<b>ADPL</b>	<b>Cost per Disposition</b>	<b>Cost per RWP</b>
NH JACKSONVILLE	3,434	0.7	19	\$10,757	\$15,973
ACH WINN-STEWART	3,230	0.5	20	\$6,194	\$11,604
AF-MC-88th MEDGRP-WRIGHT-PAT	2,986	1.0	18	\$13,514	\$13,539
AF-MC-81st MEDGRP-KEESLER	2,853	1.1	19	\$14,618	\$13,230
AF-H-633rd MEDGRP JBLE-LANGLEY	2,720	0.6	16	\$11,818	\$21,101
ACH IRWIN-RILEY	2,605	0.5	17	\$7,149	\$13,648
ACH LEONARD WOOD	2,443	0.7	22	\$8,693	\$12,205
ACH BAYNE-JONES-POLK	1,192	0.5	7	\$8,667	\$16,824
NH TWENTYNINE PALMS	1,099	0.5	7	\$11,988	\$24,955
NH PENSACOLA	958	0.6	5	\$15,521	\$23,904
ACH KELLER-WEST POINT	785	1.1	4	\$14,231	\$12,826
ACH WEED-IRWIN	704	0.5	4	\$10,048	\$20,054
NH BEAUFORT	274	1.1	3	\$19,564	\$18,152

Source: M2. Excludes Madigan

Notes: CMI=Case Mix Index; ADPL=Average Daily Patient Load.

**Table B-2. Workload Metrics for OCONUS Inpatient Facilities by Facility, FY 2018**

<b>Parent Facility Name</b>	<b>Dispositions</b>	<b>CMI</b>	<b>ADPL</b>	<b>Cost per Disposition</b>	<b>Cost per RWP</b>
LANDSTUHL REGIONAL MEDCEN	4,514	0.9	36	\$14,701	\$16,855
NH OKINAWA	3,294	0.7	25	\$10,191	\$15,608
NH GUAM-AGANA	1,733	0.8	13	\$15,781	\$20,921
NH YOKOSUKA	1,418	0.5	9	\$12,410	\$26,791
ACH BRIAN D ALLGOOD-PYONGTAEK	1,273	0.6	9	\$13,585	\$22,657
AF-H-48th MEDGRP-LAKENHEATH	1,061	0.4	6	\$10,529	\$23,664
AF-H-374th MEDGRP-YOKOTA	487	0.4	3	\$12,341	\$30,362
AF-H-35th MEDGRP-MISAWA	437	0.5	2	\$13,691	\$29,718
<b>NH NAPLES</b>	<b>379</b>	<b>0.5</b>	<b>2</b>	<b>\$18,055</b>	<b>\$37,432</b>
NH ROTA	328	0.5	3	\$23,413	\$50,558
AF-ASU-31st MED GRP-AVIANO	275	0.4	2	\$12,288	\$31,831
<b>NH SIGONELLA</b>	<b>240</b>	<b>0.5</b>	<b>1</b>	<b>\$26,901</b>	<b>\$50,119</b>
NH GUANTANAMO BAY	98	0.5	0	\$34,882	\$75,658
AF-H-51st MEDGRP-OSAN	46	0.6	0	\$54,176	\$95,977

Source: M2. Does not include facilities located in Hawaii or Alaska

**Table B-3. Workload Metrics for CONUS Inpatient Facilities by Distribution, FY 2018**

	<b>Admissions</b>	<b>CMI</b>	<b>ADPL</b>	<b>Cost per Admission</b>	<b>Cost per RWP</b>
Mean	5,818	0.8	49	\$11,831	\$15,211
Std. Dev	5,347	0.3	57	\$3,843	\$3,513
Min	274	0.5	3	\$6,194	\$11,579
P10	941	0.5	5	\$7,548	\$11,890
P25	2,634	0.6	17	\$8,673	\$12,689
Median	4,160	0.7	27	\$11,188	\$13,934
P75	7,339	1.0	59	\$14,134	\$16,668
P90	13,531	1.2	126	\$17,418	\$20,159
Max	24,610	1.3	264	\$21,043	\$24,955

**Table B-4. Workload Metrics for OCONUS Inpatient Facilities by Distribution, FY 2018**

	<u>Admissions</u>	<u>CMI</u>	<u>ADPL</u>	<u>Cost per Admission</u>	<u>Cost per RWP</u>
Mean	1,113	0.5	8	\$19,496	\$37,725
Std. Dev	1,267	0.1	10	\$11,764	\$22,448
Min	46	0.4	0	\$10,191	\$15,608
P10	141	0.4	1	\$11,056	\$18,075
P25	288	0.5	2	\$12,359	\$22,909
Median	462	0.5	3	\$14,196	\$30,040
P75	1,382	0.6	9	\$22,074	\$46,947
P90	2,826	0.7	21	\$32,488	\$68,128
Max	4,514	0.9	36	\$54,176	\$95,977

## Appendix C.

### Major Diagnostic Categories and MS-DRGs for Childbirth and Newborn Care

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Table C-1 provides a list of the 25 Major Diagnostic Categories (MDCs). It also indicates the number of unique Diagnosis Related Groups (DRGs) in the MDC, average length of stay (LOS), and the average DRG weight (in relative weighted products (RWPs)).

**Table C-1. List of Major Diagnostic Categories**

MDC	Major Diagnostic Category	No. of DRGs	Average LOS	Average DRG Weight
	Not Associated with Any Specific MDC	9	4.7	1.7
01	D&D of The Nervous System	79	5.3	2.1
02	D&D of The Eye	12	3.5	1.1
03	D&D of The Ear, Nose, Mouth, Throat	30	3.2	1.2
04	D&D of The Respiratory System	45	4.9	1.4
05	D&D of The Circulatory System	95	5.2	3.1
06	D&D of The Digestive System	65	4.8	1.7
07	D&D of The Hepatobiliary System & Pancreas	36	5.5	2.0
08	D&D of The Musculoskeletal System & Conn Tissue	102	4.5	2.2
09	D&D of The Skin, Subcutaneous Tissue, & Breast	34	4.9	1.8
10	Endocrine, Nutritional, Metabolic D&D	27	4.5	1.7
11	D&D of The Kidney & Urinary Tract	48	4.3	1.6
12	D&D of The Male Reproductive System	22	3.5	1.4
13	D&D of The Female Reproductive System	25	3.8	1.5
14	Pregnancy, Childbirth, & The Puerperium	15	2.6	0.6
15	Newborns & Neonates W/ Condtm Originating in Perinatal Period	31	22.6	5.8
16	D&D of Blood, Blood Forming Organs	17	5.3	1.9
17	Myeloproliferative D&D, Poorly Diff Neoplasm	28	8.6	3.1
18	Infectious & Parasitic Diseases	19	6.0	1.9
19	Mental Disease & Disorders	9	7.1	1.0
20	Alcohol/Drug Use & Alcohol/Drug Induced Mental Disorder	5	6.1	0.6
21	Injury, Poisonings, & Toxic Effects of Drugs	23	4.5	1.5
22	Burns	6	8.1	2.9
23	Factors Influencing Health Status	12	8.1	1.8
24	Multiple Significant Trauma	8	7.9	4.4
25	Human Immunodeficiency Virus Infections	6	8.8	2.8

Note: D&D = Diseases and Disorders

As previously mentioned, we will not report all workload metrics at the MS-DRG level, as there are nearly 1,000 unique categories. However, we will look at MS-DRG level data for the two MDCs relating to childbirth and newborn care (MDCs 14 and 15). Table C-2 lists the DRGs falling into these categories. The DRG weight and indicator for whether the DRG is medical (M) or surgical (S), and the average LOS are also reported.

**Table C-2. List of MS-DRGs for Pregnancy, Childbirth and Newborn Care (MDCs 14 and 15)**

<b>DRG</b>	<b>MS-DRG Description</b>	<b>DRG Weight</b>	<b>M/S</b>	<b>Average LOS</b>
<b>MDC=14 (Pregnancy, Childbirth, &amp; the Puerperium)</b>				
765	Cesarean Section W CC/MCC	0.9	S	4.2
766	Cesarean Section W/O CC/MCC	0.7	S	3
767	Vaginal Delivery W Sterilization &/OR D&C	0.7	S	2.4
768	Vaginal Delivery W O.R. Proc Except Steril &/OR D&C	1.0	S	3.7
769	Postpartum & Post Abortion Diagnoses W O.R. Procedure	1.3	S	3.2
770	Abortion W D&C, Aspiration Curettage or Hysterectomy	0.7	S	1.5
774	Vaginal Delivery W Complicating Diagnoses	0.5	M	2.6
775	Vaginal Delivery W/O Complicating Diagnoses	0.4	M	2.1
776	Postpartum & Post Abortion Diagnoses W/O O.R. Procedure	0.5	M	2.5
777	Ectopic Pregnancy	0.9	M	1.7
778	Threatened Abortion	0.5	M	3.2
779	Abortion W/O D&C	0.4	M	1.5
780	False Labor	0.3	M	1.7
781	Other Antepartum Diagnoses W Medical Complications	0.5	M	3
<b>MDC=15 (Newborns &amp; Neonates w/ Condt n Originating in Perinatal Period)</b>				
782	Other Antepartum Diagnoses W/O Medical Complications	0.4	M	2.6
610	Neonate, Died W/In One Day of Birth	0.3	M	1
611	Neonate, Transferred <5 Days Old	0.2	M	1.2
612	Neonate, Birthwt <750G, Discharged Alive	22.8	M	90
613	Neonate, Birthwt <750G, Died	7.2	M	16.1
631	Neonate, Birthwt 750-999G, Discharged Alive	19.8	M	75
632	Neonate, Birthwt 750-999G, Died	6.0	M	12.2
633	Neonate, Birthwt 1000-1499G, W Signif O.R. Proc, Discharged Alive	16.5	S	67.5
634	Neonate, Birthwt 1000-1499G, W/O Signif O.R. Proc, Discharged Alive	9.0	M	46.6
635	Neonate, Birthwt 1000-1499G, Died	7.5	M	15.7
636	Neonate, Birthwt 1500-1999G, W Signif O.R. Proc, W Mult Major Prob	14.3	S	50.7
646	Neonate, Birthwt 1500-1999G, W Signif O.R. Proc, W/O Mult Major Prob	7.6	S	31.3

<b>DRG</b>	<b>MS-DRG Description</b>	<b>DRG Weight</b>	<b>M/S</b>	<b>Average LOS</b>
647	Neonate, Birthwt 1500-1999G, W/O Signif O.R. Proc, W Mult Major Prob	6.1	M	31.6
648	Neonate, Birthwt 1500-1999G, W/O Signif O.R. Proc, W Major Prob	4.0	M	23.9
649	Neonate, Birthwt 1500-1999G, W/O Signif O.R. Proc, W Minor Prob	3.1	M	18.9
650	Neonate, Birthwt 1500-1999G, W/O Signif O.R. Proc, W Other Prob	2.2	M	13.9
651	Neonate, Birthwt 2000-2499G, W Signif O.R. Proc, W Mult Major Prob	16.0	S	46.8
676	Neonate, Birthwt 2000-2499G, W Signif O.R. Proc, W/O Mult Major Prob	4.2	S	19.4
677	Neonate, Birthwt 2000-2499G, W/O Signif O.R. Proc, W Mult Major Prob	4.3	M	20.1
678	Neonate, Birthwt 2000-2499G, W/O Signif O.R. Proc, W Major Prob	2.4	M	13.8
679	Neonate, Birthwt 2000-2499G, W/O Signif O.R. Proc, W Minor Prob	1.2	M	9
680	Neonate, Birthwt 2000-2499G, W/O Signif O.R. Proc, W Other Prob	1.0	M	6.4
681	Neonate, Birthwt >2499G, W Signif O.R. Proc, W Mult Major Prob	11.1	S	28.9
787	Neonate, Birthwt >2499G, W Signif O.R. Proc, W/O Mult Major Prob	1.4	S	5.6
788	Neonate, Birthwt >2499G, W Minor Abdom Procedure	2.2	S	9.7
789	Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Mult Major Prob	2.2	M	9.1
790	Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Major Prob	0.8	M	4.8
791	Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Minor Prob	0.3	M	2.9
792	Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Other Prob	0.2	M	2.3
793	Neonatal Aftercare for Weight Gain	1.7	M	6.8
794	Neonatal Diagnosis, Age > 28 Days	4.2	M	17.6
795	Normal Newborn	0.1	M	1.9

Note: O.R.= operating room.



## **Appendix D. Detailed Analysis**

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### **Naples**

Table D-1 and Table D-2 present the workload metrics for direct care (DC) and purchased care (PC) by Major Diagnostic Category (MDC). Table D-3 and Table D-4 provide workload metrics for DC and PC by Medicare Severity-Diagnosis Related Groups (MS-DRGs) for MDC 14 and 15. Finally, Table D-5 list all other MS-DRGs treated in the DC system (case count only).

### **Sigonella**

Table D-6 and Table D-7 present the workload metrics for DC and PC by MDC. Table D-8 and Table D-9 provide workload metrics for DC and PC by MS-DRGs for MDC 14 and 15. Finally, Table D-10, lists all other MS-DRGs treated in the DC system (case count only).

### **Naples and Sigonella Enrolled Beneficiaries Receiving Care in Other MTFs**

Sometimes beneficiaries in overseas market areas are sent back to CONUS or to larger overseas MTFs such as Landstuhl in Germany for care (generally complex surgical care). Table D-11 and Table D-12 present the workload metrics for Naples and Sigonella beneficiaries treated in other MTFs.

**Table D-1. Direct Care Workload Metrics by MDC, Naples FY 2018**

MDC	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Diseases & Disorders of The Nervous System	1	1	1	0.5	1.0	\$8,280	\$16,047	\$8,280
Diseases & Disorders of The Ear, Nose, Mouth, Throat	1	1	2	1.3	2.0	\$35,636	\$28,131	\$17,818
Diseases & Disorders of The Respiratory System	18	10	32	0.6	1.8	\$13,278	\$22,920	\$7,469
Diseases & Disorders of The Circulatory System	9	6	9	0.7	1.0	\$8,306	\$12,541	\$8,306
Diseases & Disorders of The Digestive System	13	17	44	1.3	3.4	\$39,020	\$29,026	\$11,529
Diseases & Disorders of The Hepatobiliary System & Pancreas	7	6	15	0.8	2.1	\$22,494	\$26,665	\$10,497
Diseases & Disorders of The Musculoskeletal System & Conn Tissue	4	5	23	1.3	5.8	\$52,800	\$42,002	\$9,183
Diseases & Disorders of The Skin, Subcutaneous Tissue, & Breast	2	1	4	0.6	2.0	\$14,848	\$24,381	\$7,424
Endocrine, Nutritional, Metabolic Diseases & Disorders	2	2	3	0.8	1.5	\$19,188	\$24,522	\$12,792
Diseases & Disorders of The Kidney & Urinary Tract	5	4	8	0.7	1.6	\$16,203	\$21,695	\$10,127
Diseases & Disorders of The Male Reproductive System	1	1	1	0.6	1.0	\$7,733	\$13,106	\$7,733
Diseases & Disorders of The Female Reproductive System	10	12	19	1.2	1.9	\$33,627	\$27,528	\$17,699
Pregnancy, Childbirth, & The Puerperium	138	70	296	0.5	2.1	\$18,633	\$36,817	\$8,687
Newborns & Oth Neonates W/ Condtion Originating In Perinatal Period	137	23	251	0.2	1.8	\$12,610	\$76,445	\$6,883
Diseases & Disorders of Blood, Blood Formng Orgns, Immunology Ds	1	2	2	1.6	2.0	\$39,143	\$24,101	\$19,571
Infectious & Parasitic Diseases	5	5	22	1.0	4.4	\$32,709	\$31,204	\$7,434
Mental Disease & Disorders	5	2	20	0.5	4.0	\$27,564	\$56,252	\$6,891
Alcohol/Drug Use & Alcohol/Drug Induced Organic Mental Disorder	4	1	16	0.4	4.0	\$27,414	\$78,270	\$6,853
Injury, Poisonings, & Toxic Effects of Drugs	10	11	26	1.1	2.6	\$28,574	\$26,419	\$10,990
Factors Influencing Health Status & Oth Contacts W/ Health Svcs	6	3	11	0.5	1.8	\$13,538	\$27,715	\$7,384
<b>Overall</b>	<b>379</b>	<b>183</b>	<b>805</b>	<b>0.5</b>	<b>2.1</b>	<b>\$18,055</b>	<b>\$37,432</b>	<b>\$8,500</b>

D-2

**Table D-2. Purchased Care Workload Metrics by MDC, Naples FY 2018**

MDC	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Diseases & Disorders of The Nervous System	2	1	3	0.7	1.5	\$3,969	\$5,309	\$2,645
Diseases & Disorders of The Eye	1	1	1	0.5	1.0	\$3,310	\$6,031	\$3,310
Diseases & Disorders of The Respiratory System	1	1	2	0.7	2.0	\$3,735	\$5,460	\$1,868
Diseases & Disorders of The Circulatory System	12	11	69	0.9	5.7	\$12,173	\$12,905	\$2,117
Diseases & Disorders of The Digestive System	2	1	6	0.7	3.0	\$4,893	\$7,054	\$1,632
Diseases & Disorders of The Musculoskeletal System & Conn Tissue	3	5	44	1.6	14.7	\$23,011	\$14,195	\$1,568
Diseases & Disorders of The Skin, Subcutaneous Tissue, & Breast	2	1	2	0.4	1.0	\$3,971	\$8,918	\$3,971
Diseases & Disorders of The Kidney & Urinary Tract	1	1	7	0.7	7.0	\$9,888	\$13,841	\$1,413
Diseases & Disorders of The Male Reproductive System	1	1	2	0.7	2.0	\$8,966	\$12,655	\$4,483
Pregnancy, Childbirth, & The Puerperium	14	8	78	0.6	5.6	\$11,229	\$20,327	\$2,015
Newborns & Oth Neonates W/ Condt n Orginating In Perinatal Period	12	4	97	0.3	8.1	\$8,921	\$29,427	\$1,104
Diseases & Disorders of Blood, Blood Formng Orgns, Immunology Ds	1	1	5	0.7	5.0	\$5,115	\$7,027	\$1,023
Injury, Poisonings, & Toxic Effects of Drugs	4	3	26	0.7	6.5	\$9,913	\$14,735	\$1,526
<b>Overall</b>	<b>56</b>	<b>37</b>	<b>342</b>	<b>0.7</b>	<b>6.1</b>	<b>\$10,280</b>	<b>\$15,392</b>	<b>\$1,683</b>

**Table D-3. Direct Care Workload Metrics by MS-DRG for MDC 14 and MDC 15, Naples FY 2018**

MS-DRG	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Neonate, Transferred <5 Days Old <b>(M)</b>	9	2	9	0.2	1.0	\$7,315	\$33,960	\$7,315
Cesarean Section W CC/MCC <b>(S)</b>	8	6	20	0.8	2.5	\$32,998	\$43,205	\$13,199
Cesarean Section W/O CC/MCC <b>(S)</b>	21	14	42	0.7	2.0	\$26,742	\$38,833	\$13,371
Vaginal Delivery W Sterilization &/Or D&C <b>(S)</b>	1	1	2	0.7	2.0	\$26,530	\$36,847	\$13,265
Vaginal Delivery W O.R. Proc Except Steril &/Or D&C <b>(S)</b>	1	1	2	1.0	2.0	\$31,547	\$32,678	\$15,774
Abortion W D&C, Aspiration Curettage or Hysterotomy <b>(S)</b>	1	1	2	0.7	2.0	\$25,153	\$37,846	\$12,576
Vaginal Delivery W Complicating Diagnoses <b>(M)</b>	22	11	54	0.5	2.5	\$17,827	\$35,799	\$7,263
Vaginal Delivery W/O Complicating Diagnoses <b>(M)</b>	75	32	152	0.4	2.0	\$14,792	\$34,929	\$7,299
Postpartum & Post Abortion Diagnoses W/O O.R. Procedure <b>(M)</b>	3	1	6	0.5	2.0	\$14,803	\$31,265	\$7,401
False Labor <b>(M)</b>	1	0	1	0.3	1.0	\$7,165	\$28,045	\$7,165
Other Antepartum Diagnoses W Medical Complications <b>(M)</b>	5	3	15	0.5	3.0	\$21,873	\$43,302	\$7,291
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Major Prob <b>(M)</b>	4	3	12	0.8	3.0	\$22,180	\$27,574	\$7,393
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Minor Prob <b>(M)</b>	1	0	7	0.3	7.0	\$47,098	\$148,294	\$6,728
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Other Prob <b>(M)</b>	25	5	59	0.2	2.4	\$16,339	\$80,394	\$6,923
Normal Newborn <b>(M)</b>	98	12	164	0.1	1.7	\$11,402	\$92,778	\$6,814
<b>Overall</b>	<b>275</b>	<b>92</b>	<b>547</b>	<b>0.3</b>	<b>2.0</b>	<b>\$15,632</b>	<b>\$46,505</b>	<b>\$7,859</b>

D-4

**Table D-4. Purchased Care Workload Metrics by MS-DRG for MDC 14 and MDC 15, Naples FY 2018**

MS-DRG	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Vaginal Delivery W Complicating Diagnoses <b>(M)</b>	1	1	8	0.5	8.0	\$18,597	\$36,242	\$2,325
Vaginal Delivery W/O Complicating Diagnoses <b>(M)</b>	8	4	38	0.4	4.8	\$9,617	\$21,809	\$2,024
Postpartum & Post Abortion Diagnoses W/O O.R. Procedure <b>(M)</b>	1	0	2	0.5	2.0	\$8,422	\$17,506	\$4,211
Threatened Abortion <b>(M)</b>	1	0	3	0.5	3.0	\$3,731	\$8,282	\$1,244
Abortion W/O D&C <b>(M)</b>	1	2	19	1.8	19.0	\$25,946	\$14,120	\$1,365
Other Antepartum Diagnoses W Medical Complications <b>(M)</b>	1	1	3	0.5	3.0	\$9,918	\$19,074	\$3,306
Other Antepartum Diagnoses W/O Medical Complications <b>(M)</b>	1	0	5	0.4	5.0	\$13,652	\$33,867	\$2,730
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Major Prob <b>(M)</b>	1	1	16	0.8	16.0	\$16,539	\$20,560	\$1,034
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Other Prob <b>(M)</b>	9	3	76	0.3	8.4	\$9,123	\$31,728	\$1,080
Normal Newborn <b>(M)</b>	2	0	5	0.1	2.5	\$4,206	\$34,244	\$1,685
<b>Overall</b>	<b>26</b>	<b>11</b>	<b>175</b>	<b>0.4</b>	<b>6.7</b>	<b>\$10,163</b>	<b>\$23,238</b>	<b>\$1,510</b>

**Table D-5. List of all MS-DRGs performed in the MTF, Naples FY 2018**

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
01	VIRAL MENINGITIS W/O CC/MCC	1
03	SALIVARY GLAND PROCEDURES	1
04	SIMPLE PNEUMONIA & PLEURISY AGE 0-17	4
	BRONCHITIS & ASTHMA AGE 0-17	4
	PULMONARY EMBOLISM W/O MCC	1
	RESPIRATORY NEOPLASMS W/O CC/MCC	1
	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	1
	SIMPLE PNEUMONIA & PLEURISY AGE >17 W CC	1
	SIMPLE PNEUMONIA & PLEURISY AGE >17 W/O CC/MCC	1
	BRONCHITIS & ASTHMA AGE >17 W CC/MCC	2
	BRONCHITIS & ASTHMA AGE >17 W/O CC/MCC	1
	OTHER RESPIRATORY SYSTEM DIAGNOSES W MCC	1
	OTHER RESPIRATORY SYSTEM DIAGNOSES W/O MCC	1
05	HYPERTENSION W/O MCC	1
	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W CC	1
	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC/MCC	2
	SYNCOPE & COLLAPSE	2
	CHEST PAIN	2
	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC/MCC	1
06	STOMACH, ESOPHAGEAL & DUODENAL PROC AGE >17 W/O CC/MCC	1
	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC	2
	PERITONEAL ADHESIOLYSIS W MCC	1
	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC/MCC	2
	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC/MCC	1

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
	MINOR SMALL & LARGE BOWEL PROCEDURES W CC	1
	G.I. HEMORRHAGE W/O CC/MCC	1
	G.I. OBSTRUCTION W/O CC/MCC	2
	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W/O MCC	1
	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE >17 W MCC	1
07	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W MCC	1
	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC/MCC	1
	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W CC	1
	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W/O CC/MCC	4
08	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE 0-17	1
	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE >17 W CC	1
	TENDONITIS, MYOSITIS & BURSITIS W/O MCC	1
	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC	1
09	CELLULITIS AGE >17 W/O MCC	2
10	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W/O CC/MCC	1
	DIABETES W/O CC/MCC	1
11	KIDNEY & URINARY TRACT INFECTIONS AGE 0-17	1
	RENAL FAILURE W/O CC/MCC	1
	KIDNEY & URINARY TRACT INFECTIONS AGE >17 W/O MCC	1
	URINARY STONES W/O ESW LITHOTRIPSY W/O MCC	1
	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC	1
12	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES W CC/MCC	1
13	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC/MCC	1
	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC/MCC	1
	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC/MCC	8

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
14	CESAREAN SECTION W CC/MCC	8
	CESAREAN SECTION W/O CC/MCC	21
	VAGINAL DELIVERY W STERILIZATION &/OR D&C	1
	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C	1
	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY	1
	VAGINAL DELIVERY W COMPLICATING DIAGNOSES	22
	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES	75
	POSTPARTUM & POST ABORTION DIAGNOSES W/O O.R. PROCEDURE	3
	FALSE LABOR	1
OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS	5	
15	NEONATE, TRANSFERRED <5 DAYS OLD	9
	NEONATE, BIRTHWT >2499G, W/O SIGNIF O.R. PROC, W MAJOR PROB	4
	NEONATE, BIRTHWT >2499G, W/O SIGNIF O.R. PROC, W MINOR PROB	1
	NEONATE, BIRTHWT >2499G, W/O SIGNIF O.R. PROC, W OTHER PROB	25
	NORMAL NEWBORN	98
16	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W CC	1
18	SEPTICEMIA OR SEVERE SEPSIS AGE 0-17	1
	VIRAL ILLNESS AGE >17 W/O MCC	2
	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W MCC	1
	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W CC	1
19	ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION	1
	DEPRESSIVE NEUROSES	1
	NEUROSES EXCEPT DEPRESSIVE	1
	PSYCHOSES	2
20	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY AGE >21 W/O MCC	3

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY AGE <=21 W/O MCC	1
21	TRAUMATIC INJURY AGE 0-17	1
	WOUND DEBRIDEMENTS FOR INJURIES W/O CC/MCC	1
	OTHER O.R. PROCEDURES FOR INJURIES W CC	3
	TRAUMATIC INJURY AGE >17 W/O MCC	1
	COMPLICATIONS OF TREATMENT W CC	2
	COMPLICATIONS OF TREATMENT W/O CC/MCC	1
	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W/O MCC	1
23	SIGNS & SYMPTOMS W/O MCC	1
	OTHER FACTORS INFLUENCING HEALTH STATUS	5
	<b>Sum</b>	<b>379</b>

**Table D-6. Direct Care Workload Metrics by MDC, Sigonella FY 2018**

MDC	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Diseases & Disorders of The Nervous System	3	3	5	1.0	1.7	\$20,932	\$20,404	\$12,559
Diseases & Disorders of The Eye	1	1	5	0.5	5.0	\$54,406	\$99,155	\$10,881
Diseases & Disorders of The Ear, Nose, Mouth, Throat	4	3	7	0.7	1.8	\$25,081	\$37,383	\$14,332
Diseases & Disorders of The Respiratory System	12	6	20	0.5	1.7	\$19,209	\$39,731	\$11,526
Diseases & Disorders of The Digestive System	28	24	48	0.9	1.7	\$30,208	\$35,473	\$17,621
Diseases & Disorders of The Hepatobiliary System & Pancreas	2	2	4	0.9	2.0	\$35,998	\$40,051	\$17,999
Diseases & Disorders of The Musculoskeletal System & Conn Tissue	5	8	25	1.5	5.0	\$69,648	\$45,553	\$13,930
Diseases & Disorders of The Skin, Subcutaneous Tissue, & Breast	8	5	25	0.6	3.1	\$35,376	\$56,343	\$11,320
Endocrine, Nutritional, Metabolic Diseases & Disorders	1	1	1	0.6	1.0	\$13,272	\$23,457	\$13,272
Diseases & Disorders of The Kidney & Urinary Tract	8	6	15	0.8	1.9	\$22,752	\$28,859	\$12,134
Diseases & Disorders of The Female Reproductive System	5	5	5	1.0	1.0	\$29,997	\$29,611	\$29,997
Pregnancy, Childbirth, & The Puerperium	69	36	151	0.5	2.2	\$29,264	\$55,845	\$13,372
Newborns & Oth Neonates W/ Condtm Originating In Perinatal Period	73	18	136	0.2	1.9	\$19,678	\$80,760	\$10,562
Diseases & Disorders of Blood, Blood Formng Orgns, Immunology Ds	1	1	2	1.3	2.0	\$52,036	\$39,157	\$26,018
Infectious & Parasitic Diseases	4	3	18	0.7	4.5	\$50,734	\$69,997	\$11,274
Mental Disease & Disorders	9	4	15	0.5	1.7	\$27,424	\$59,078	\$16,454
Alcohol/Drug Use & Alcohol/Drug Induced Organic Mental Disorder	2	1	6	0.4	3.0	\$32,892	\$85,389	\$10,964
Injury, Poisonings, & Toxic Effects of Drugs	3	2	4	0.8	1.3	\$22,673	\$29,895	\$17,005
Factors Influencing Health Status & Oth Contacts W/ Health Svcs	2	1	2	0.5	1.0	\$11,321	\$21,279	\$11,321
<b>Overall</b>	<b>240</b>	<b>129</b>	<b>494</b>	<b>0.5</b>	<b>2.1</b>	<b>\$26,901</b>	<b>\$50,119</b>	<b>\$13,069</b>

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**Table D-7. Purchased Care Workload Metrics by MDC, Sigonella FY 2018**

MDC	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Diseases & Disorders of The Nervous System*	1	11	112	10.8	112.0	\$1,083	\$100	\$10
Diseases & Disorders of The Ear, Nose, Mouth, Throat	2	1	3	0.5	1.5	\$7,670	\$14,943	\$5,110
Diseases & Disorders of The Circulatory System	2	1	4	0.6	2.0	\$3,184	\$5,775	\$1,592
Diseases & Disorders of The Disgestive System	1	1	1	0.7	1.0	\$2,318	\$3,508	\$2,321
Diseases & Disorders of The Musculoskeletal System & Conn Tissue	5	3	4	0.6	0.8	\$10,912	\$17,099	\$13,640
Diseases & Disorders of The Kidney & Urinary Tract	1	1	2	0.7	2.0	\$6,814	\$9,537	\$3,407
Pregnancy, Childbirth, & The Puerperium	11	5	28	0.4	2.5	\$5,295	\$12,017	\$2,080
Newborns & Oth Neonates W/ Condt n Orginating In Perinatal Period	2	1	6	0.3	3.0	\$3,085	\$9,097	\$1,028
Myeloproliferative Diseases & Disorders, Poorly Diff Neoplasm	1	2	2	1.5	2.0	\$10,519	\$6,931	\$5,259
<b>Overall</b>	<b>26</b>	<b>25</b>	<b>161</b>	<b>0.9</b>	<b>6.2</b>	<b>\$6,208</b>	<b>\$6,571</b>	<b>\$1,002</b>

\*This observation was removed due to suspected data error.

**Table D-8. Direct Care Workload Metrics by MS-DRG for MDC 14 and MDC 15, Sigonella FY 2018**

MS-DRG	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Neonate, Transferred <5 Days Old (M)	1	0	1	0.2	4.6	\$10,967	\$50,915	\$10,967
Cesarean Section W Cc/Mcc (S)	4	4	11	0.9	3.0	\$51,578	\$56,679	\$18,755
Cesarean Section W/O Cc/Mcc (S)	11	8	22	0.7	2.9	\$39,341	\$56,160	\$19,671
Vaginal Delivery W Sterilization &/OR D&C (S)	4	3	12	0.7	4.2	\$49,636	\$68,939	\$16,545
Vaginal Delivery W Complicating Diagnoses (M)	8	4	20	0.5	5.0	\$27,898	\$55,262	\$11,159
Vaginal Delivery W/O Complicating Diagnoses (M)	40	17	84	0.4	5.0	\$23,357	\$55,152	\$11,122
Postpartum & Post Abortion Diagnoses W/O O.R. Procedure (M)	1	0	1	0.5	2.2	\$11,698	\$25,531	\$11,698
Other Antepartum Diagnoses W Medical Complications (M)	1	0	1	0.5	2.0	\$12,461	\$25,164	\$12,461
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Mult Major Prob (M)	1	1	2	1.3	1.6	\$27,415	\$21,713	\$13,708
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Major Prob (M)	10	7	19	0.7	2.7	\$22,164	\$31,437	\$11,665
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Other Prob (M)	22	4	52	0.2	11.6	\$24,513	\$120,771	\$10,371
Normal Newborn (M)	39	5	62	0.1	12.9	\$16,337	\$132,931	\$10,277
<b>Overall</b>	<b>142</b>	<b>54</b>	<b>287</b>	<b>0.4</b>	<b>5.3</b>	<b>\$24,336</b>	<b>\$64,060</b>	<b>\$12,041</b>

**Table D-9. Purchased Care Workload Metrics by MS-DRG for MDC 14 and MDC 15, Sigonella FY 2018**

MS-DRG	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
Vaginal Delivery W Complicating Diagnoses	1	0	0	0.4	1.0	\$3,624	\$8,123	\$3,630*
Vaginal Delivery W/O Complicating Diagnoses	2	1	6	0.4	3.0	\$6,530	\$15,421	\$2,177
Threatened Abortion	2	1	8	0.5	4.0	\$6,719	\$14,913	\$1,680
Abortion W/O D&C	1	0	3	0.4	3.0	\$5,934	\$14,707	\$1,978
Other Antepartum Diagnoses W Medical Complications	2	1	5	0.5	2.5	\$7,571	\$14,561	\$3,029
Other Antepartum Diagnoses W/O Medical Complications	3	1	6	0.4	2.0	\$2,349	\$5,827	\$1,175
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Major Prob	1	0	0	0.5	1.0	\$4,610	\$9,745	\$4,613*
Neonate, Birthwt >2499G, W/O Signif O.R. Proc, W Other Prob	1	0	6	0.2	6.0	\$1,559	\$7,602	\$260
<b>Overall</b>	<b>13</b>	<b>6</b>	<b>34</b>	<b>0.4</b>	<b>2.6</b>	<b>\$4,955</b>	<b>\$11,658</b>	<b>\$1,895</b>

\*Zero bed days were recorded for these observations. We set cost per bed day equal to the total admission cost.

**Table D-10. List of all MS-DRGs performed in the MTF, Sigonella FY 2018**

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
01	CONCUSSION AGE >17 W/O CC/MCC	1
	NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W/O CC/MCC	2
02	OTHER DISORDERS OF THE EYE AGE 0-17	1
03	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES AGE 0-17	2
	MOUTH PROCEDURES W CC/MCC	1
	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES AGE >17 W CC	1
04	SIMPLE PNEUMONIA & PLEURISY AGE 0-17	2
	BRONCHITIS & ASTHMA AGE 0-17	5
	RESPIRATORY INFECTIONS & INFLAMMATIONS AGE >17 W/O CC/MCC	1
	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W/O CC/MCC	1
	SIMPLE PNEUMONIA & PLEURISY AGE >17 W/O CC/MCC	2
	BRONCHITIS & ASTHMA AGE >17 W/O CC/MCC	1
06	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE 0-17	1
	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE 0-17	2
	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC	1
	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC/MCC	5
	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC/MCC	4
	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL AGE >17 W/O CC/MCC	1
	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W/O CC/MCC	2
	UNCOMPLICATED PEPTIC ULCER W/O MCC	1
	INFLAMMATORY BOWEL DISEASE W CC	2
	G.I. OBSTRUCTION W MCC	1
	G.I. OBSTRUCTION W/O CC/MCC	1
	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W/O MCC	5

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE >17 W/O CC/MCC	1
	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC	1
07	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC/MCC	1
	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W/O CC/MCC	1
08	LOWER EXTREM & HUMER PROC EXCEPT HIP, FOOT, FEMUR AGE >17 W/O CC/MCC	1
	SOFT TISSUE PROCEDURES W/O CC/MCC	1
	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W/O CC/MCC	1
	OSTEOMYELITIS W/O CC/MCC	1
	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH AGE >17 W/O MCC	1
09	SKIN ULCERS W CC	1
	CELLULITIS AGE >17 W/O MCC	7
10	MISC DISORDERS OF NUTRITION, METABOLISM, FLUIDS/ELECTROLYTES >17 W/O MCC	1
11	RENAL FAILURE W/O CC/MCC	1
	KIDNEY & URINARY TRACT INFECTIONS AGE >17 W MCC	1
	KIDNEY & URINARY TRACT INFECTIONS AGE >17 W/O MCC	2
	URINARY STONES W/O ESW LITHOTRIPSY W MCC	2
	URINARY STONES W/O ESW LITHOTRIPSY W/O MCC	2
13	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC/MCC	4
	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W/O CC/MCC	1
14	CESAREAN SECTION W CC/MCC	4
	CESAREAN SECTION W/O CC/MCC	11
	VAGINAL DELIVERY W STERILIZATION &/OR D&C	4
	VAGINAL DELIVERY W COMPLICATING DIAGNOSES	8
	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES	40
	POSTPARTUM & POST ABORTION DIAGNOSES W/O O.R. PROCEDURE	1

<b>MDC</b>	<b>MS-DRG Description</b>	<b>Dispositions</b>
	OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS	1
15	NEONATE, TRANSFERRED <5 DAYS OLD	1
	NEONATE, BIRTHWT >2499G, W/O SIGNIF O.R. PROC, W MULT MAJOR PROB	1
	NEONATE, BIRTHWT >2499G, W/O SIGNIF O.R. PROC, W MAJOR PROB	10
	NEONATE, BIRTHWT >2499G, W/O SIGNIF O.R. PROC, W OTHER PROB	22
	NORMAL NEWBORN	39
16	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC	1
18	VIRAL ILLNESS AGE >17 W/O MCC	4
19	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS	1
	ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION	1
	DEPRESSIVE NEUROSES	2
	NEUROSES EXCEPT DEPRESSIVE	2
	PSYCHOSES	3
20	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY AGE >21 W/O MCC	1
	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY AGE <=21 W/O MCC	1
21	WOUND DEBRIDEMENTS FOR INJURIES W/O CC/MCC	1
	COMPLICATIONS OF TREATMENT W/O CC/MCC	2
23	SIGNS & SYMPTOMS W/O MCC	1
	AFTERCARE W/O CC/MCC	1
	<b>Sum</b>	<b>240</b>

**Table D-11. Direct Care Inpatient Care Provided to NH Naples Enrollees, FY 2018**

Facility	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
NH NAPLES	178	104	397	0.6	2.2	\$19,944	\$34,012	\$8,942
LANDSTUHL REGIONAL MEDCEN	12	11	30	0.9	2.5	\$13,981	\$14,849	\$5,592
NMC PORTSMOUTH	7	6	23	0.9	3.3	\$13,774	\$15,344	\$4,192
WALTER REED NATL MIL MED CNTR	7	8	28	1.1	4.0	\$23,300	\$20,843	\$5,825
ACH IRWIN-RILEY*	1	0	3	0.5	3.0	\$8,257	\$16,687	\$2,752
AMC BAMC-FSH*	1	1	2	1.3	2.0	\$9,314	\$6,902	\$4,657
AMC EISENHOWER-GORDON*	1	1	27	0.6	27.0	\$25,207	\$38,959	\$934
FT BELVOIR COMMUNITY HOSP-FBCH*	1	0	13	0.5	13.0	\$36,082	\$72,923	\$2,776
NMC SAN DIEGO	1	1	4	1.0	4.0	\$23,769	\$24,621	\$5,942
<b>Grand Total or Average</b>	<b>209</b>	<b>134</b>	<b>527</b>	<b>0.6</b>	<b>2.5</b>	<b>\$19,521</b>	<b>\$30,508</b>	<b>\$7,742</b>

Source: M2 SIDR; NH Naples admissions are lower than reported in main text because they are restricted to enrolled population.

**Table D-12. Direct Care Inpatient Care Provided to NH Sigonella Enrollees, FY 2018**

Facility	Volume			Intensity		Unit Cost		
	Admissions	RWPs	Bed Days	CMI	LOS	per Admission	per RWP	per Bed Day
NH SIGONELLA	130	79	265	0.6	3.4	\$27,545	\$45,549	\$13,513
LANDSTUHL REGIONAL MEDCEN	51	45	147	0.9	3.3	\$13,218	\$15,140	\$4,586
NMC PORTSMOUTH	30	23	197	0.8	8.4	\$16,023	\$20,507	\$2,440
WALTER REED NATL MIL MED CNTR	16	24	152	1.5	6.4	\$27,332	\$18,457	\$2,877
AMC WILLIAM BEAUMONT-BLISS	9	9	33	1.0	3.8	\$11,504	\$11,934	\$3,138
NMC CAMP LEJEUNE	7	4	25	0.6	5.9	\$10,436	\$17,234	\$2,922
NMC SAN DIEGO	6	5	20	0.8	4.0	\$11,386	\$13,822	\$3,416
ACH MARTIN-BENNING	1	1	2	0.8	2.4	\$4,560	\$5,409	\$2,280
AF-MC-99th MEDGRP-NELLIS	1	1	3	0.8	3.6	\$22,102	\$26,156	\$7,367
AMC BAMC-FSH	1	34	80	33.7	2.4	\$669,111	\$19,879	\$8,364
AMC EISENHOWER-GORDON	1	1	1	1.4	0.7	\$8,315	\$5,746	\$8,315
AMC WOMACK-BRAGG	1	1	1	1.1	0.9	\$17,861	\$16,749	\$17,861
NH NAPLES	1	1	2	1.3	1.6	\$35,636	\$28,131	\$17,818
NH ROTA	1	1	1	0.6	1.7	\$9,533	\$16,453	\$9,533
<b>Grand Total or Average</b>	<b>256</b>	<b>228</b>	<b>929</b>	<b>0.9</b>	<b>4.1</b>	<b>\$24,160</b>	<b>\$27,146</b>	<b>\$6,658</b>

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## **Appendix E.**

### **Expect Annual FTE Reductions and Net Savings**

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Table E-1 shows the estimated annual full-time equivalents (FTE) reductions and net savings ranges for transitioning NH Naples and NH Sigonella to ambulatory care centers.

**Table E-1. Potential Annual FTE Reductions and Net Savings**

	<b>MEPRS</b>	<b>Vincenza Case</b>	<b>Aviano Case</b>
Naples FTE Reduction	26	81	72
Sigonella FTE Reduction	31	68	60
Total FTEs Reduction	57	149	132
Naples Net Savings	\$5,311,800	\$5,629,465	\$7,419,567
Sigonella Net Savings	\$4,629,795	\$4,100,872	\$5,582,715
Total Net Savings	\$9,941,595	\$9,730,337	\$13,002,282



## Appendix F. Workload Trends

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### Trends in DC and PC Workload Volume – Naples

Figure F-1 and Figure F-2 show the DC and PC inpatient workload volume and unit costs for FY 2014–FY 2018. The data indicate the DC workload volume has decreased slightly over this period while the PC workload has remained stable. Unit costs measured in bed days also remained stable for both DC and PC over the period.

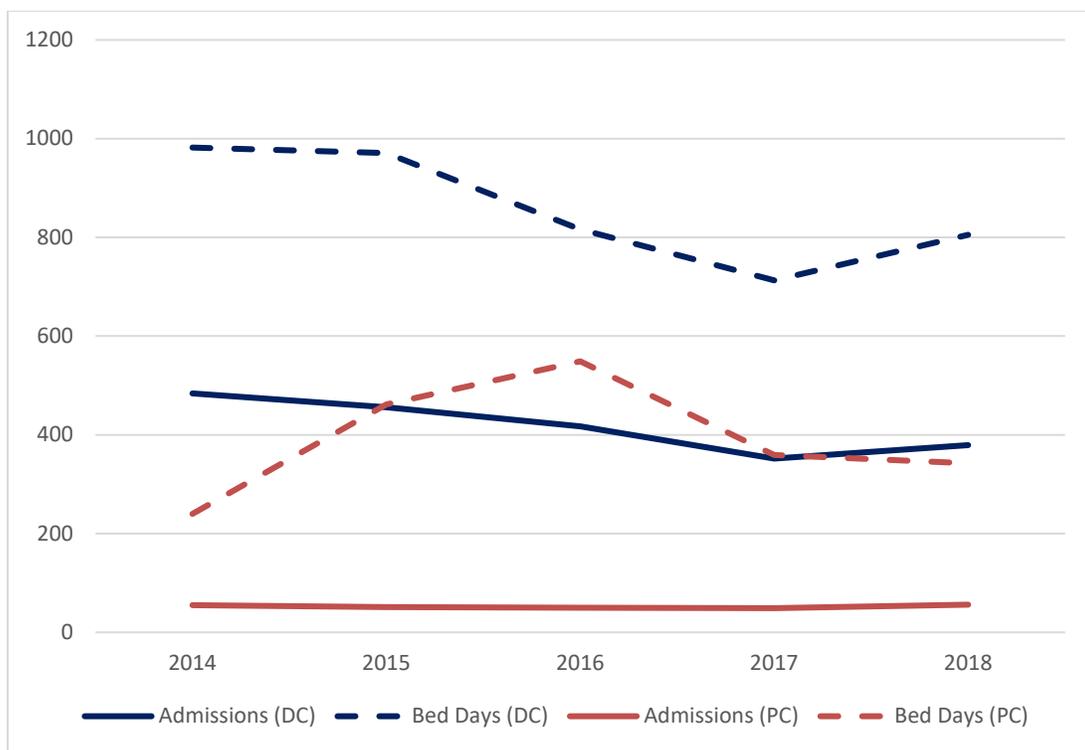
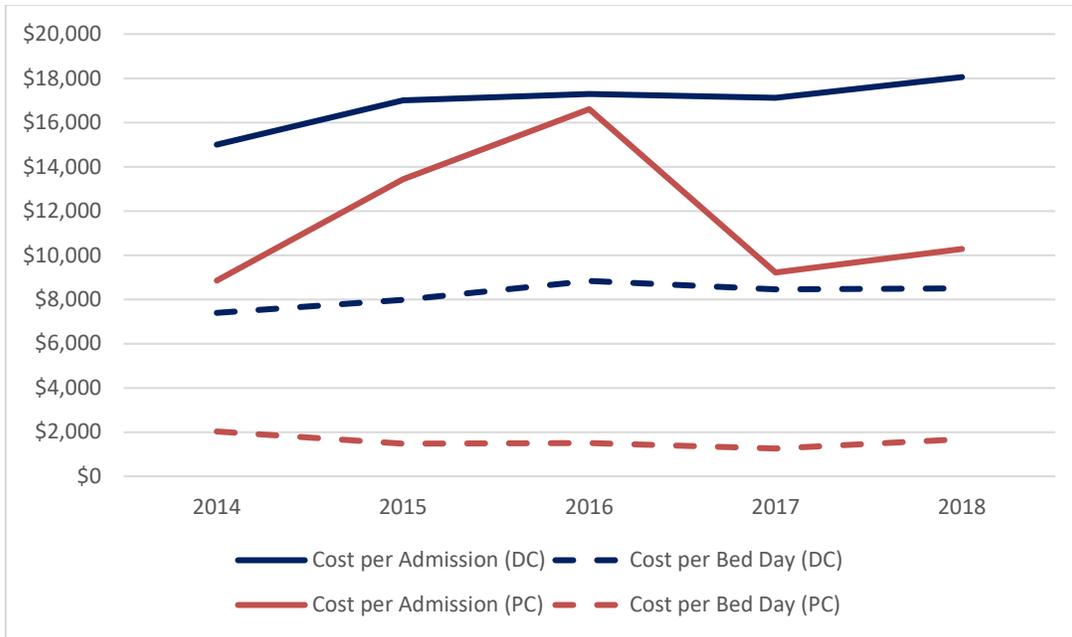


Figure F-1. Trends in DC and PC Workload Volume for Naples, FY 2014 to FY 2018

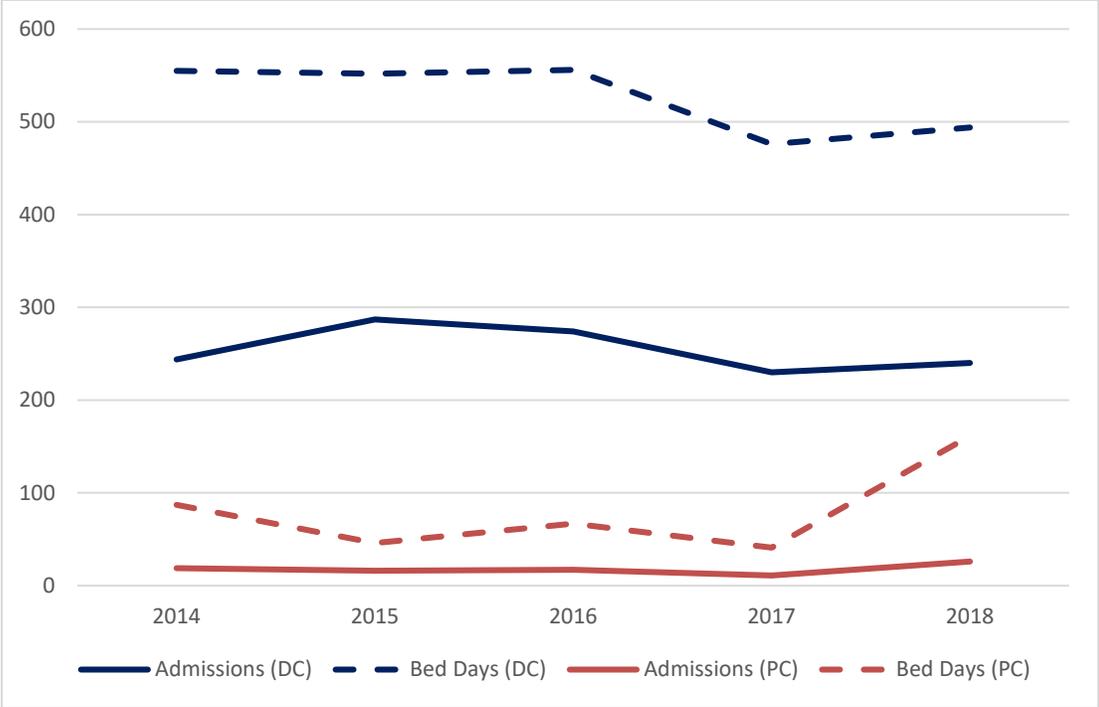


Note: Costs were converted to FY 2018 dollars using the DoD-Wide Deflator from the 2018 Greenbook.

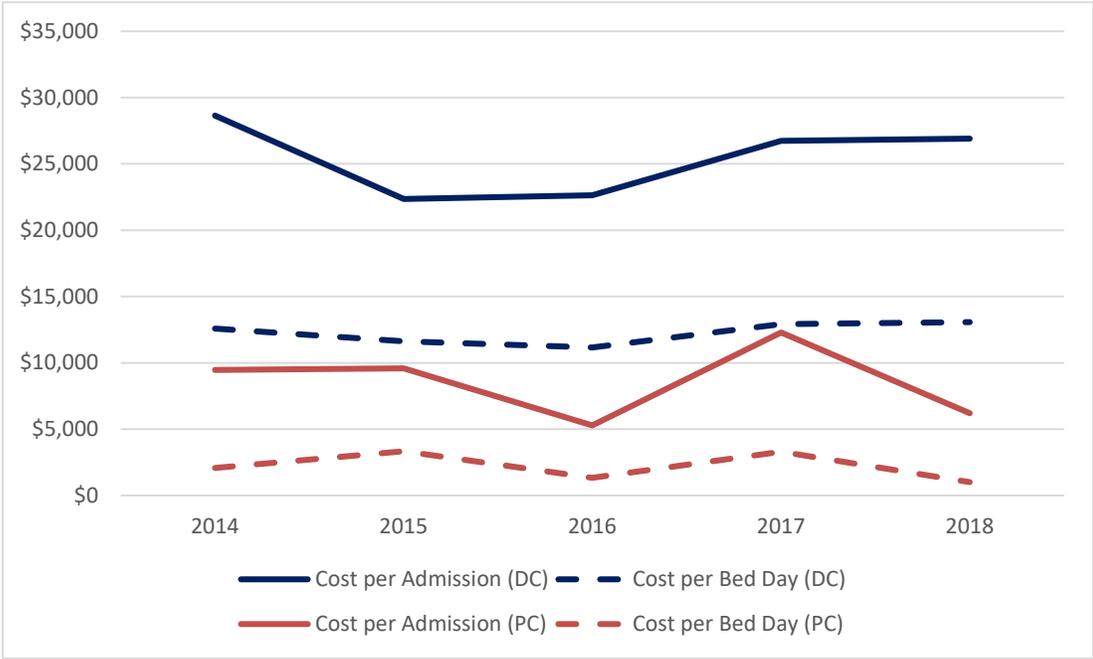
**Figure F-2. Trends in DC and PC Unit Costs for Naples, FY 2018 Dollars**

### **Trends in DC and PC Workload Volume – Sigonella**

Figure F-3 and Figure F-4 show the DC and PC inpatient workload volume and unit costs for FY 2014–FY 2018. The data indicate the DC workload volume has decreased slightly over this period while the PC workload has remained stable. Unit costs measured in bed days also remained stable for both DC and PC over the period.



**Figure F-3 Trends in DC and PC workload for Sigonella, FY 2014 to FY 2018**



**Figure F-4. Trends in DC and PC Unit Costs for Sigonella, FY 2018 Dollars**



## **Appendix G.**

### **Italian PNE Treemaps**

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The treemaps below were queried from the PNE quality indicator database. The size of the boxes represents the hospital's relative volume in a given specialty, and the color represents how the hospital performs in panel of indicators unique to each specialty. The treemaps provide a simple visual indication of a hospital's quality. The sections below provide the PNE treemap for each network hospital profiled by the IDA team.

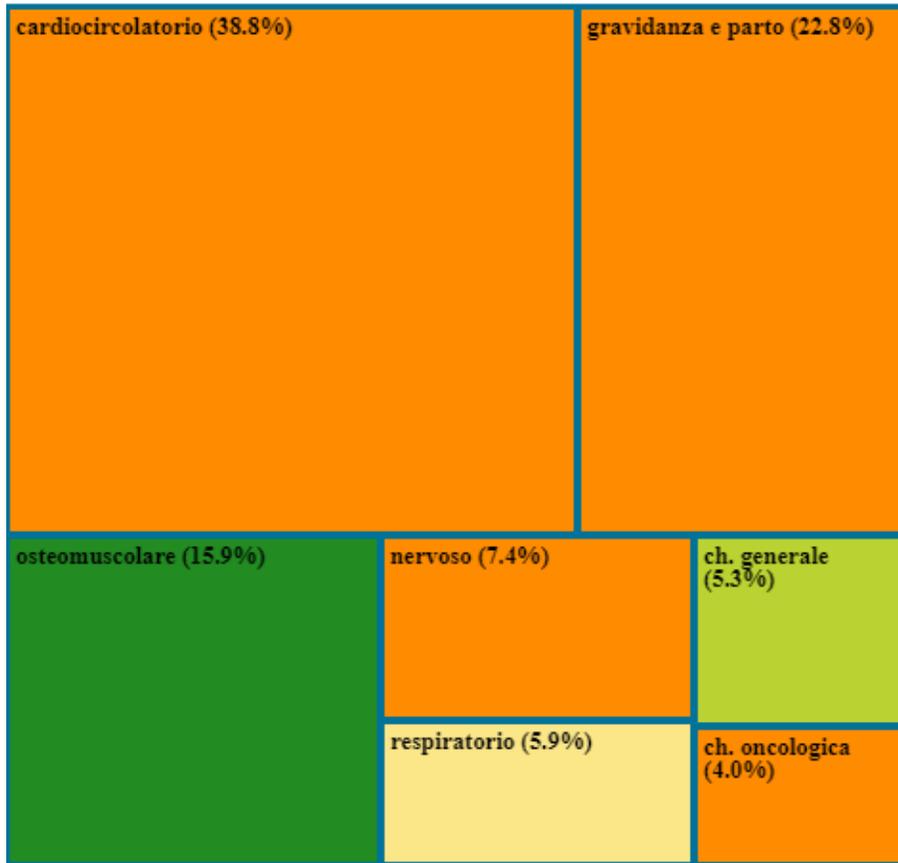
## Trends in DC and PC Workload Volume – Naples

### Pineta Grande

Livello di aderenza a standard di qualità

■ Molto alto ■ Alto ■ Medio ■ Basso ■ Molto basso ■ ND

In parentesi viene riportata la % di attività svolta nell'area specifica

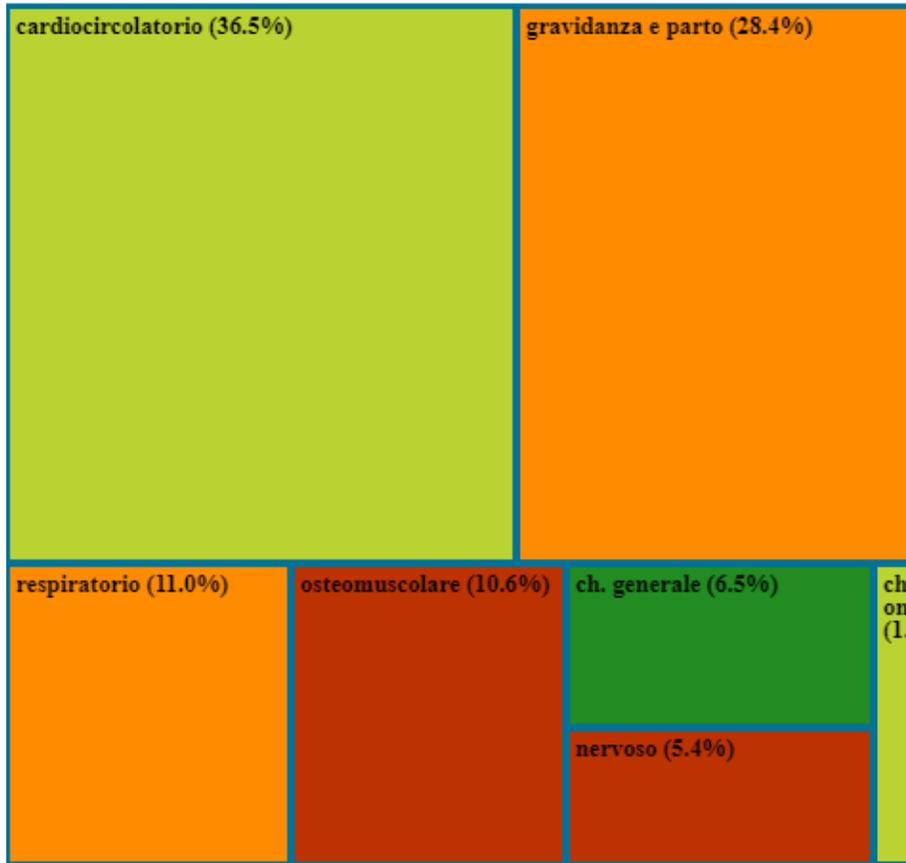


## Villa dei Fiori

Livello di aderenza a standard di qualità

■ Molto alto ■ Alto ■ Medio ■ Basso ■ Molto basso ■ ND

In parentesi viene riportata la % di attività svolta nell'area specifica

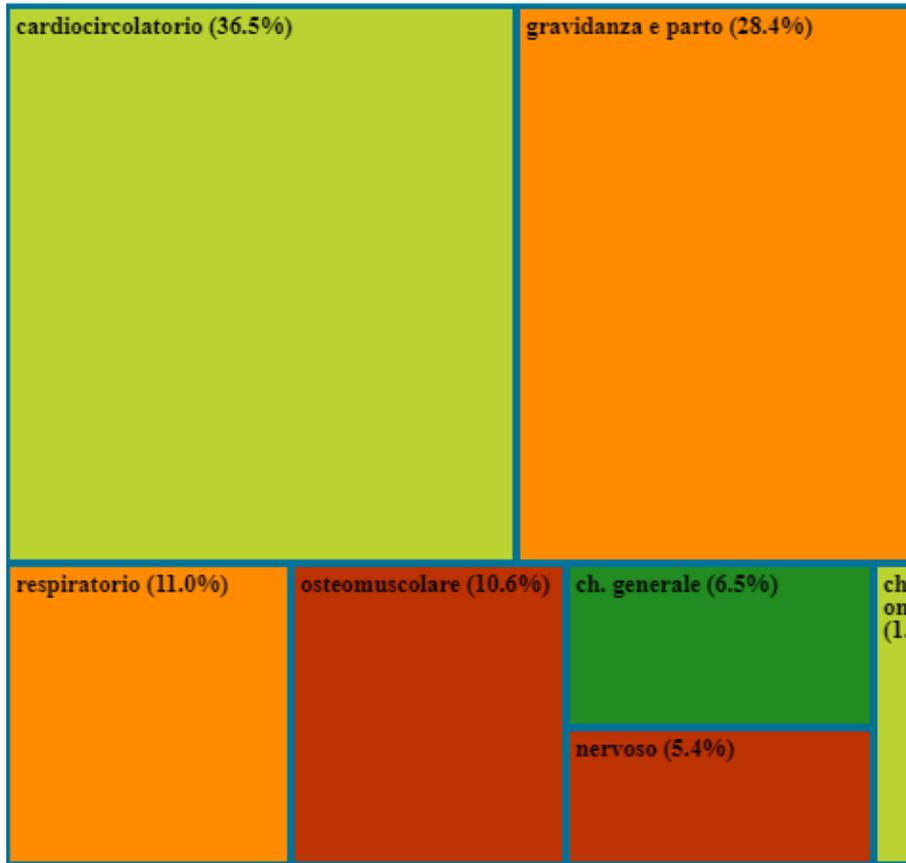


## Clinica Mediterranea

Livello di aderenza a standard di qualità

■ Molto alto ■ Alto ■ Medio ■ Basso ■ Molto basso ■ ND

In parentesi viene riportata la % di attività svolta nell'area specifica

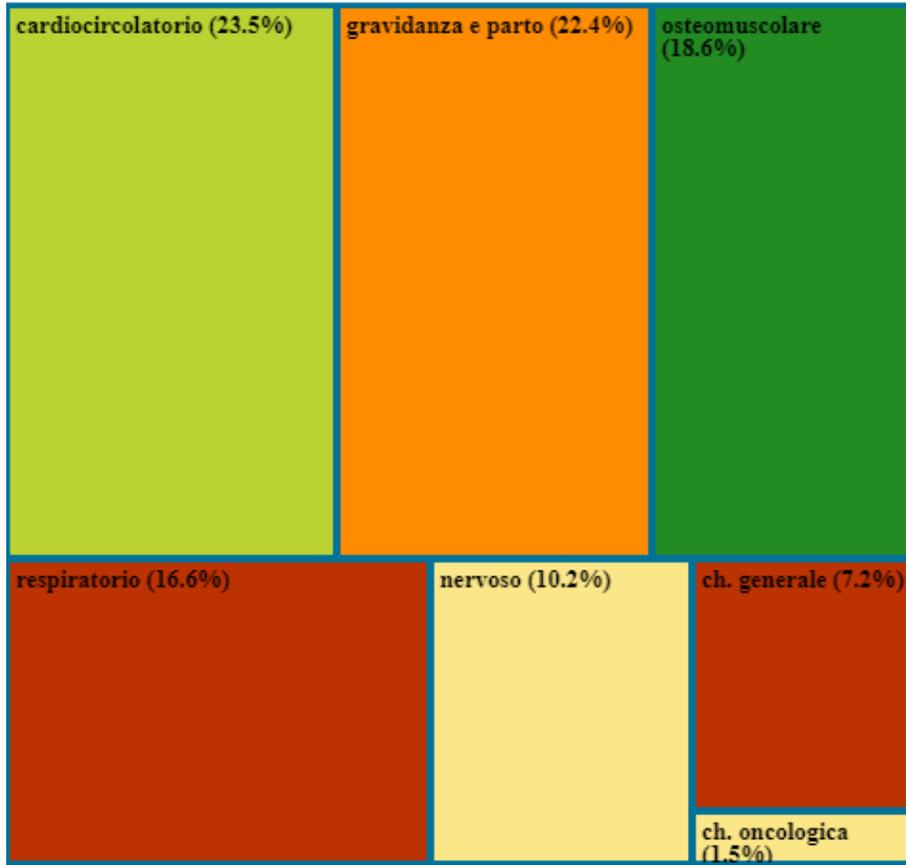


## Aversa

Livello di aderenza a standard di qualità

■ Molto alto ■ Alto ■ Medio ■ Basso ■ Molto basso ■ ND

In parentesi viene riportata la % di attività svolta nell'area specifica



## Trends in DC and PC Workload Volume – Sigonella

Gaspere Rodolico

Livello di aderenza a standard di qualità

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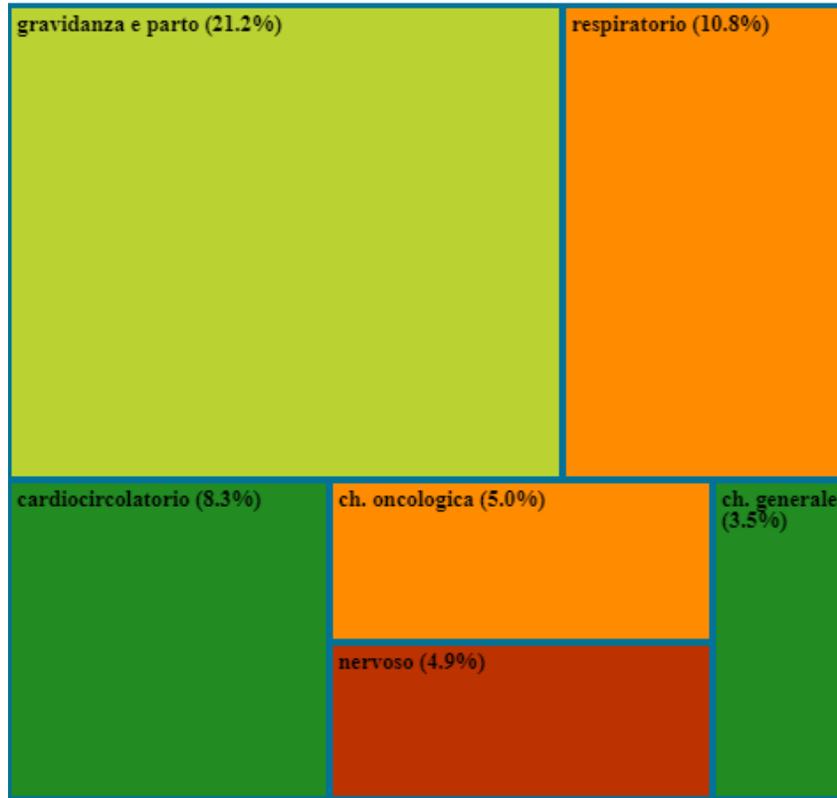


## Garibaldi Nesima

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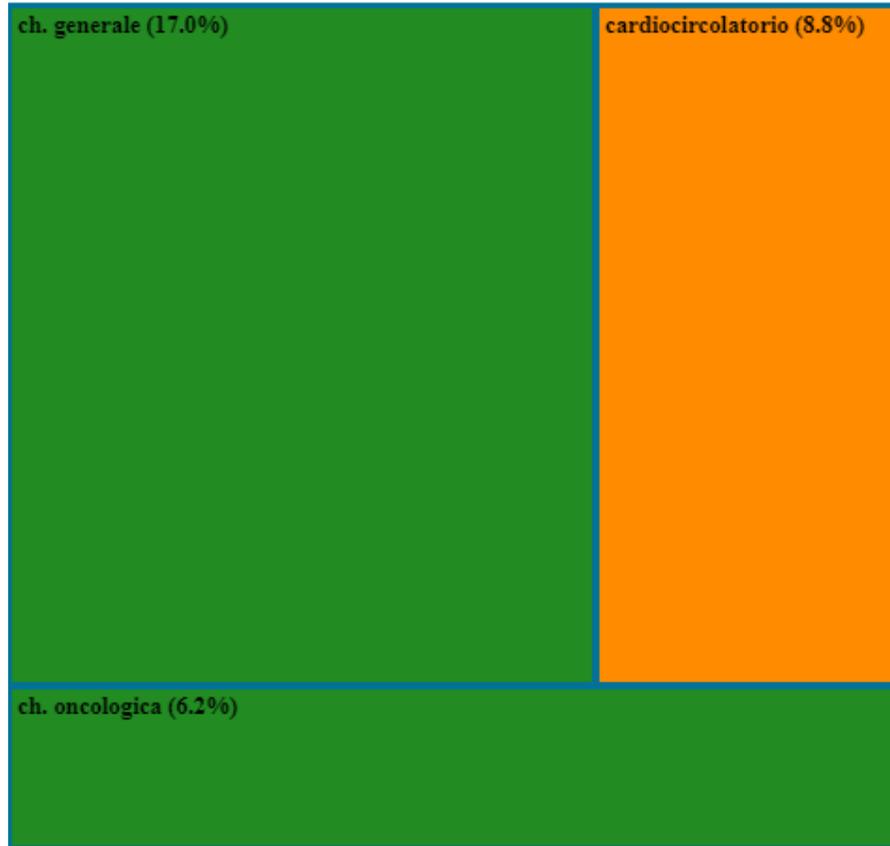


## G.B. Morgagni

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## References

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- A.O. Santobono Pausilipon Napoli. “Carta Dei Servizi E Standard Di Qualita.” <http://www.santobonopausilipon.it/content/carta-dei-servizi-e-standard-di-qualit%C3%A0>.
- A.O. Santobono Pausilipon Napoli. “Relzazione Sulla Performance.” 2019.
- ABC Salute. “Arnas Garibdaldi Di Catania.” [http://www.abcsalute.it/ospedali/sicilia/catania/catania/arnas-garibaldi-1180.html?refresh\\_cens](http://www.abcsalute.it/ospedali/sicilia/catania/catania/arnas-garibaldi-1180.html?refresh_cens).
- Agenzia Nazionale per i Servizi Sanitori Regionali. “Pne 2018 Presentazione.” Ministero della Salute, 2019.
- Agenzia Nazionale per i Servizi Sanitori Regionali. “Programma Nazionale Esiti - Edizione 2018.” Ministero della Salute 2019.
- ARNAS Garibaldi. “Attivita' Sanitaria Anno 2017.” 2018.
- ARNAS Garibaldi. “Azienda Ospedaliera.” <http://www.ao-garibaldi.catania.it/la-struttura/>.
- Bambhroliya, Arvind B., John P. Donnelly, Eric J. Thomas, Jon E. Tyson, Charles C. Miller, Louise D. McCullough, Sean I. Savitz, and Farhaan S. Vahidy. “Estimates and Temporal Trend for US Nationwide 30-Day Hospital Readmission among Patients with Ischemic and Hemorrhagic Stroke.” [In eng]. *JAMA Network Open* 1, no. 4 (2018): e181190-e90.
- Belfort, Michael A., Steven L. Clark, George R. Saade, Kacie Kleja, Gary A. Dildy, III, Teelkien R. Van Veen, Efe Akhigbe, *et al.* “Hospital Readmission after Delivery: Evidence for an Increased Incidence of Nonurogenital Infection in the Immediate Postpartum Period.” *American Journal of Obstetrics & Gynecology* 202, no. 1 (2010): 35.e1–35.e7.
- Casa di Cura Villa dei Fiori. “Chi Siamo.” <http://www.hcitalia.it/gruppohci/>.
- Casa di Cura Villa dei Fiori. “Fatturato 2018.” <http://www.hcitalia.it/gruppohci/i-numeri/fatturato/>.
- Caughey, Aaron B., Alison G. Cahill, Jeanne-Marie Guise, and Dwight J. Rouse. “Safe Prevention of the Primary Cesarean Delivery.” *American Journal of Obstetrics and Gynecology* 210, no. 3 (2014/03/01/ 2014): 179–93.
- Centers for Disease Control and Prevention (CDC). “National Center for Health Statistics – Births.” 2018. <https://www.cdc.gov/nchs/fastats/delivery.htm>.
- Centers for Medicare and Medicaid Services (CMS). “Hospital Compare Database – Hospital Readmission Reduction Program.” 2018. <https://www.medicare.gov/hospitalcompare/search.html>.

- Clinica Mediterranea. “Chi Siamo.” <http://www.clinicamediterranea.it/chi-siamo/>.
- Clinica Mediterranea. “Nido Per Tre Ssn.” <http://www.clinicamediterranea.it/nido-per-tre-parto-in-acqua/>.
- Clinica Reusch. “Chi Siamo.” <https://www.clinicaruesch.it/about/>.
- Clinica Reusch. “Sala Parto Umanizzata.” <https://www.clinicaruesch.it/chirurgia/ostetricia-nascere-in-ruesch/sala-parto-umanizzata/>.
- Defense Health Agency (DHA). “TRICARE Inpatient Network Capabilities – Naples and Sigonella, Italy.” Washington, DC: DHA, 2018.
- DHA. *Evaluation of the TRICARE Program: Fiscal Year 2019 Report to Congress*. Washington, DC: DHA, February 28, 2019.
- Halm, E. A., C. Lee, and M. R. Chassin. “Is Volume Related to Outcome in Health Care? A Systematic Review and Methodologic Critique of the Literature.” *Annals of Internal Medicine* 137, no. 6 (September 2002): 511–20. <https://doi.org/10.7326/0003-4819-137-6-200209170-00012>.
- The Joint Commission. “Sentinel Event.” <https://www.jointcommission.org/en/resources/patient-safety-topics/sentinel-event/>.
- Kyser, Kathy L., Xin Lu, Donna A. Santillan, Mark K. Santillan, Stephen K. Hunter, Alison G. Cahill, and Peter Cram. “The Association between Hospital Obstetrical Volume and Maternal Postpartum Complications.” *American Journal of Obstetrics and Gynecology* 207, no. 1 (July 2012): 42.e1–42.17. <https://doi.org/10.1016/j.ajog.2012.05.010>.
- Lurie, Philip. “Comparing the Cost of Military Treatment Facilities with Private Sector Care.” IDA Paper NS P-5262. Alexandria VA: Institute for Defense Analyses, February 2016.
- Military Installations: Naval Support Activity Naples. “In-Depth Overview.” <https://installations.militaryonesource.mil/in-depth-overview/naval-support-activity-naples>.
- Musto, Marilu. “Caserta, Sequestrato Il Cantiere Della Clinica Di Pineta Grande.” *Il Mattino*, 09/18/2019 2019.
- OECD, European Observatory on Health Systems, and Policies. *Italy: Country Health Profile 2019*. 2019. <https://doi.org/10.1787/cef1e5cb-en>.
- OECD iLibrary. “Length of Hospital Stay.” Accessed on January 22, 2020. <https://doi.org/10.1787/8dda6b7a-en>.
- OECD iLibrary. “State of Health in the EU: Italy, Country Health Profile 2019.” [https://read.oecd-ilibrary.org/social-issues-migration-health/italy-country-health-profile-2019\\_cef1e5cb-en#page1](https://read.oecd-ilibrary.org/social-issues-migration-health/italy-country-health-profile-2019_cef1e5cb-en#page1).
- Pineta Grande. “Bilancio Sociale.” Pineta Grande Ospedale, 2019.
- Policlinico Morgagni Case di Cura. “Chi Siamo.” <https://www.policlinicomorgagni.it/it/info/chi-siamo>.

- Qualita Sicilia SSR. “Dipartimento Per Le Attivita Sanitarie E Osservatorio Epidemiologico.” <https://www.qualitasiciliassr.it/>.
- Regione Siciliana. “Salutem Dati Agenas Premiano La Sicilia.” [http://pti.regione.sicilia.it/portal/page/portal/PIR\\_PORTALE/PIR\\_IIPresidente/PIR\\_Archivio/PIR\\_Salutedatiagenas](http://pti.regione.sicilia.it/portal/page/portal/PIR_PORTALE/PIR_IIPresidente/PIR_Archivio/PIR_Salutedatiagenas).
- Rice-Townsend, Samuel, Matthew Hall, Jeff N. Barnes, Jessica K. Baxter, and Shawn J. Rangel. “Hospital Readmission after Management of Appendicitis at Freestanding Children's Hospitals: Contemporary Trends and Financial Implications.” [In eng]. *Journal of pediatric surgery* 47, no. 6 (2012): 1170–76.
- Rosero, Eric B., and Girish P. Joshi. “Hospital Readmission after Ambulatory Laparoscopic Cholecystectomy: Incidence and Predictors.” [In eng]. *The Journal of surgical research* 219 (2017): 108–15.
- Torloni, Maria Regina, Ana Pilar Betrán, Pilar Montilla, Elisa Scolaro, Armando Seuc, Agustina Mazzoni, Fernando Althabe, Francesca Merzagora, Gian Paolo Donzelli, and Mario Merialdi. “Do Italian Women Prefer Cesarean Section? Results from a Survey on Mode of Delivery Preferences.” *BMC Pregnancy and Childbirth* 13, no. 78 (March 2013). <https://doi.org/10.1186/1471-2393-13-78>.



## Abbreviations

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ACH	Army Community Hospital
ADFM	Active Duty Family Member
ADPL	Average Daily Patient Load
ADSM	Active Duty Service Member
AF	Air Force
AGENAS	Italian Agency for Regional Healthcare Services
AMC	Army Medical Center
ARNAS	Azienda Ospedaliera di Rilievo Nazionale e di Alta Specializzazione (National and High Specialization Hospital Company)
ASCII	American Standard Code for Information Interchange
BAMC	Brooke Army Medical Center
BMC	Branch Medical Clinic
CAC	Common Access Card
CAPE	Cost Analysis and Program Evaluation
CC	Complication or Comorbidity
CMI	Case Mix Index
CONUS	Continental United States
COPD	Chronic Obstructive Pulmonary Disease
C-section	Cesarean Section
D&C	Dilatation and Curettage
D&D	Diseases and Disorders
DC	Direct Care
DHA	Defense Health Agency
DoD	Department of Defense
DRG	Diagnosis Related Group
EHR	Electronic Health Record
ER	Emergency Room
EU	European Union
FCC	Functional Cost Code
FTE	Full-Time Equivalents

FY	Fiscal Year
FYDP	Future Years Defense Program
GDP	Gross Domestic Product
ICU	Intensive Care Unit
ID	Identification
IDA	Institute for Defense Analyses
ISOS	International SOS
ITA	Interactive Tax Assistant
JCI	Joint Commission International
LOS	Length of Stay
M	Medical
M2	Military Health System Management Analysis and Reporting Tool
MC	Medical Center
MCC	Major Complication or Comorbidity
MCSC	Managed Care Support Contractor
MDC	Major Diagnostic Category
MDR	Military Health System Data Repository
MEPRS	Medical Expense and Performance Reporting System
MH	Mental Health
MHS	Military Health System
MS-DRG	Medicare Severity Diagnosis Related Group
MTF	Military Treatment Facility
NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NB	Newborn
NBHC	Naval Branch Health Clinic
NH	Naval Hospital
NICU	Neonatal Intensive Care Unit
NMC	Naval Medical Center
NMMC	National Military Medical Center
NSA	Naval Support Activity
O&M	Operations and Maintenance
OB	Obstetrics (Labor and Delivery)
OCONUS	Outside the Continental United States
OECD	Organisation for Economic Cooperation and Development

OH	Overhead
OR	Operating Room
OSD	Office of the Secretary of Defense
P.O. S.G.	Presidio Ospedaliero San Giuseppe Moscati Aversa
PC	Purchased Care
PICU	Pediatric Intensive Care Unit
PNE	Programma Nazionale Esiti
RWP	Relative Weighted Product
S	Surgical
SIDR	Standard Inpatient Data Record
TED	TRICARE Encounter Data
TOP	TRICARE Overseas Program
UK	United Kingdom
US	United States



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