



1
2
3
4 **NAVAL MEDICAL RESEARCH UNIT SAN ANTONIO**
5
6 **EVALUATION OF TELEDENTISTRY CASES IN ACTIVE DUTY US MILITARY**
7 **PERSONNEL ON THE GLOBAL TELECONSULTATION PORTAL FROM 2015 TO**
8 **2020**

9
10
11 Timothy Mitchener, DMD, MPH¹; Steven Moffett, PhD¹; Daniel Arens, PhD¹; Yu-Wei Chang,
12 BS²; LCDR John Roman, MD, FAAD, MC³; CDR Nicholas Hamlin, DC, USN⁴; LTC Brian
13 Kirkwood, DC, USA⁵; CDR Drew Havard, DC, USN¹; COL Paul Colthirst, DC, USA⁶; John
14 Simecek, DDS, MPH¹; Yoon Hwang, PhD¹

15 ¹NAVAL MEDICAL RESEARCH UNIT SAN ANTONIO, TX USA

16 ²INFORMATION MANAGEMENT DIVISION, TRIPLER ARMY MEDICAL CENTER, HI USA

17 ³STRATEGY AND OPERATIONS DIVISION, NAVAL MEDICAL CENTER PORTSMOUTH, VA USA

18 ⁴NAVAL MEDICAL LEADER AND PROFESSIONAL DEVELOPMENT COMMAND, MD USA

19 ⁵US ARMY INSTITUTE OF SURGICAL RESEARCH, TX USA

20 ⁶FORT HOOD DENTAL HEALTH ACTIVITY, TX USA

21
22 CRANIOFACIAL HEALTH AND RESTORATIVE MEDICINE DIRECTORATE

23 **NAMRU-SA REPORT # 2023-23-613**

24 Approved for public release; distribution is unlimited
25
26
27

28

29 ***DECLARATION OF INTEREST***

30 *The views expressed in this article are those of the authors and do not necessarily reflect the*
31 *official policy or position of the Department of the Navy, Department of Defense, nor the U.S.*
32 *Government. This work was funded by Naval Medical Research Center's Advanced Medical*
33 *Development Program using work unit number G2004. Authors are employees of the U.S.*
34 *Government. This work was prepared as part of their official duties. Title 17 USC §105 provides*
35 *that 'copyright protection under this title is not available for any work of the US Government.'*
36 *Title 17 USC §101 defines a US Government work as a work prepared by a military service*
37 *member or employee of the US Government as part of that person's official duties.*

38

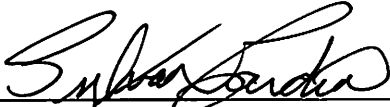
39

40

41

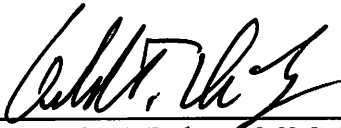
42 **REVIEWED AND APPROVED BY:**

43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66



Sylvain Cardin, PhD
Chair, Scientific Review Board
Chief Science Director
Naval Medical Research Unit San Antonio
3650 Chambers Pass, BLDG 3610
Fort Sam Houston, TX 78234-6315

06/08/2023
Date



CAPT G. T. DeLong, MSC, USN
Commanding Officer
Naval Medical Research Unit San Antonio
3650 Chambers Pass, BLDG 3610
Fort Sam Houston, TX 78234-6315

08 JUN 23
Date

67	TABLE OF CONTENTS	
68	ABBREVIATIONS	4
69	EXECUTIVE SUMMARY.....	5
70	INTRODUCTION	6
71	METHODS OR MATERIALS AND METHODS	8
72	RESULTS	9
73	DISCUSSION	11
74	MILITARY SIGNIFICANCE	14
75	REFERENCES	14
76		
77		

78 **ABBREVIATIONS**

79 AD – active duty

80 AFRICOM – U.S. Africa Command

81 CENTCOM – U.S. Central Command

82 COVID-19 – coronavirus disease 2019

83 DE – dental emergency

84 DTF – dental treatment facility

85 EUCOM – U.S. European Command

86 GTP – Global Teleconsultation Portal

87 HELP – Health Experts Online Portal

88 IDC – independent duty corpsman

89 IMR – individual medical readiness

90 INDOPACOM – U.S. Indo-Pacific Command

91 IRB- Institutional Review Board

92 LRMC – Landstuhl Regional Medical Center

93 MEDEVAC – medical evacuation

94 MTF – military treatment facility

95 NMCP – Naval Medical Center Portsmouth

96 NMCSA – Naval Medical Center San Diego

97 OMF – oral-maxillofacial

98 PATH – Pacific Asynchronous TeleHealth

99 SQL – structured query language

100 TAMC – Tripler Army Medical Cent

EXECUTIVE SUMMARY

Background: Dental emergencies (DE) occur in approximately 12% of deployed military personnel per year including issues such as third molar problems and oral pathologies. Prolonged field care during difficult combat situations is expected, and alternative measures to provide care should be taken, such as telemedicine when service members are separated from clinicians.

Objective: The objective of this study is to evaluate the feasibility of teledentistry in the United States (U.S.) Navy by examining medical records of patients who were assisted by the Global Teleconsultation Portal (GTP).

Methods: Primary military reports from the GTP describing DE occurring in active-duty US military personnel seeking treatment were evaluated. Data from case studies were collected between 2015 and 2020.

Results: The results of 155 cases of active military personnel, consisting mostly of Navy personnel, were reviewed. Approximately 93% of cases required evacuation after teledentistry, to transport patients for advanced treatment. Out of all patient movement cases, 35% were oral-maxillofacial (OMF) issues not involving third molars that required evaluation by an oral surgeon. Most cases (92%) were reported between 2017 and 2020

Conclusions: While teledentistry may serve as more of a screening device prior to patient movement in serious cases, transmission of patient data via telecommunications can still be a valuable tool to inform dental practitioners at upper echelon facilities of serious injuries in advance of the patient's arrival, to provide clinical guidance to deployed specialists for on-site triage and increase overall preparedness of the dental force.

INTRODUCTION

Austere deployment locations generally lack the medical expertise and tools found in modern military treatment facilities (MTF) due to space and cost limitations, presenting obstacles for forward-deployed dental treatments. The percentage of dental emergencies (DE) and oral-maxillofacial (OMF) casualties that can be expected in hostile environments is about 12% [1]. Dental emergencies occasionally require triage and evacuation to receive care by highly trained clinicians at better-equipped dental facilities. Often air medical evacuations (MEDEVACs) are used to transport these patients out of theater. This transfer is associated with significant cost and resource burdens and increases operation risk. For example, Navy submarine missions are jeopardized if a DE compels the submarine to surface; the submarine must disclose its location and wait for emergency evacuation, not only wasting time and resources, but more importantly having to abort its mission. Platforms that remotely screen for oral issues via remote consultation using intraoral photographs and radiographs can save time, manpower, and resources. All branches of military dental care can benefit by implementing remote telecommunications platforms.

During deployment on Naval ships at sea, oral health is relatively poor due to irregular eating patterns and excessive consumption of high carbohydrate meals that facilitate caries progression [2]. The U.S. Navy Dental Corps consists of more than 1300 dentists and oral surgeons to maintain oral health and readiness of the U.S. Navy and Marine Corps. However, around 90% of Navy ships at sea do not have an onboard dentist [3]. The dental readiness component of the Department of Defense Individual Medical Readiness (IMR) Program, updated in 2022, requires service members to undergo periodic dental examinations to assess current oral health status and their potential to develop DE during deployment [4]. Independent Duty

145 Corpsmen (IDCs) provide dental care to personnel on platforms where dental officers are not
146 available, but they are often not able to assess and care for a dental patient suffering serious
147 injury or disease without additional assistance. Telemedicine enables clinicians outside of
148 deployment areas to offer medical advice to personnel at sea via radio or satellite
149 communications [5]. Military teledentistry is the utilization of available technologies to advance
150 dental services to operating environments with limited resources enabling remote patient
151 management across the spectrum of military operations. Pacific Asynchronous TeleHealth
152 (PATH) and Health Experts Online Portal (HELP), now merged into the Global Teleconsultation
153 Portal (GTP) have provided telemedicine consultation service since 2014 [6]. These platforms
154 provide health care providers in the U.S. Navy, including IDCs, access to specialists in the
155 nearest Military Treatment Facility when difficult medical cases present themselves. Using this
156 system, the U.S. Navy can reduce unnecessary medical evacuations from ships at sea and
157 overseas. However, there are few studies focused on managing DE in deployed personnel and
158 minimal published literature that addresses utilizing a teledentistry platform in a military
159 operating environment [7].

160 Evaluation of the effectiveness of telemedicine in the military remains scarce in literature,
161 and most existing studies interpret economic concerns in the context of civilian medical care.
162 Civilian medical and dental care have different measures of outcome effectiveness than military
163 care. The success or failure of military personnel during deployment is measured by their ability
164 to complete their mission. Unlike the civilian sector, there is no need for insurance considerations
165 or patient payment in the military.

166 Navy health services administrators may better plan for teledentistry by assessing the
167 frequency, location, and patient movement destination of DE documented by the GTP service.

168 The information provided in this study will help guide a plan for better utilization of
169 teledentistry. In this study, we examined the GTP to identify incidents of DE among the
170 population of telemedicine consultations. We identified common issues that IDCs and general
171 dentists encounter in dental care, common interventions, and outcomes related to transportation
172 readiness and needs.

174 METHODS

175 A Structured Query Language (SQL) query was created by an IT specialist of the Tripler
176 Army Medical Center (TAMC) to search for OMF and dental patient records among U.S. military
177 personnel in the GTP database from October 2014 to May 2020. The query code was as follows:

```
178  
179 USE pathv2SQL  
180 SELECT DISTINCT C.caseid+1000 [Case ID], C.DTYPE, CASE WHEN c.aetype IS NULL THEN  
181 'Consult Only' ELSE C.aetype END [PtMvmtType], c.title,C.patcat, C.datein [Submit  
182 Date], CASE WHEN C.closed=0 THEN 'OPEN' ELSE 'CLOSED' END [Status], O.organization  
183 [From], T.organization [To]  
184 FROM  
185 Cases C  
186 LEFT JOIN pathuser.Cases_Departments CS ON (CS.Cases_caseid = C.caseid AND cs.to_id IN  
187 (39,108)) OR (CS.aerovac_caseid=c.caseid AND cs.aeTo_id IN (39,108))  
188 LEFT JOIN Consults Co ON Co.caseid = c.caseid  
189 LEFT JOIN Organizations O ON O.orgid = c.orgid  
190 LEFT JOIN Organizations T ON T.orgid = C.toorgid  
191 WHERE  
192 c.active = 1 AND  
193 c.moduleid = 2 AND
```

194 c.datein BETWEEN '2014-10-1' AND GETDATE() AND
195 ((CS.aeTo_id IN (39,108) OR CS.to_id IN (39,108)) OR (co.consulttype ='Clinical' and
196 co.active = 1 AND (Co.providerDepartment = 'Oral/Maxillofacial Surgery') OR
197 Co.providerDepartment = 'Dentistry'))
198 ORDER BY
199 c.caseid+1000
200

201 The Institutional Review Board (IRB) application was completed and approved by the
202 Command at NAMRU-SA on November 17, 2021. Data were scrubbed to extract only active duty
203 DE cases. Eight cases with unknown causes of injury were also removed from the dataset. The total
204 number of cases analyzed was 155. Cases were separated and analyzed as patient movement or
205 consult-only, as well as by year, geographical location, and treatment center.
206

207 **Ethics Statement**

208 The study protocol was approved by the NAMRU-SA IRB in compliance with all
209 applicable federal regulations governing the protection of human subjects (IRB No. NAMRU-
210 SA.2021.002).
211

212 **RESULTS**

213 Out of a total of 155 Active Duty teledentistry cases extracted from HELP/PATH, 144 DE
214 and OMF casualty cases required a patient movement after teledentistry consultation. The
215 remaining eleven teledentistry cases required only consultations and did not necessitate patient
216 movement out of theater (Table 1). The reasons for seeking teledentistry consultations were
217 categorized into 15 distinct DE categories to determine a ranking of the most pressing issues

218 dental providers can anticipate in remote locations. The data are also summarized in Table 1 (after
219 separating patient movement cases and teleconsultation cases only). Of these 155 teledentistry
220 encounters, non-third molar OMF evaluations stood out as the leading reason for seeking a
221 teledentistry consultation. This accounts for 37 cases or almost one fourth of the teledentistry
222 consultations. OMF evaluations included injuries or diseases of the maxilla, mandible, other bones
223 of the face or to the soft tissue of the face. The second most common consultation concerned third
224 molar issues which accounted for 23 cases or 14.8 % of the teledentistry consultations. The third
225 leading category of teledentistry consultations included tooth fracture, defective restorations, and
226 caries which accounted for 21 cases or 13.5%. Next, oral pathology evaluations accounted for 18
227 cases or 11.6% teledentistry consultations. After oral pathology evaluations, unspecified dental
228 issues (15 cases, 9.7%), pulpal/endodontics issues (10 cases, 6.5%), non-third molar extractions (8
229 cases, 5.2%) and prosthodontic issues (7 cases, 4.5%). The remaining seven dental problems
230 addressed by teledentistry consults accounted for 16 (10%) of the total.

231 Table 2 shows the number of patient movement and teleconsultation only cases by year of
232 occurrence to determine if any time trends exist. There was very little utilization of teledentistry in
233 2015 and 2016 with only a total of 11 documented patient movement cases. Usage in 2017
234 increased to 31 cases (all patient movements) and peaked in 2018 (46 patient movements and 3
235 teleconsultations only). Total usage in 2020 (20 patient movements and five teleconsultations only)
236 dropped to below 2017 levels, perhaps because of the COVID-19 pandemic.

237 Next, teleconsultation only and patient movement case data were separated and categorized
238 by location of teleconsultation host in Table 3 and location of final treatment in Table 4. As far as
239 the region utilization of teleconsultations, seven teleconsultation cases reached out to the Tripler
240 Army Medical Center (TAMC) in Hawaii. Of these seven teleconsultations to TAMC, four of them

241 originated from military dental treatment facilities (DTFs) in Japan, two originated from military
242 DTFs in Guam, and one originated from a military DTF in South Korea. The other four
243 teleconsultations were equally split between the Landstuhl Regional Medical Center (LRMC) in
244 Germany and Naval Medical Center San Diego (NMC-SD). For the two teleconsultations to
245 LRMC, one originated from the U.S. Africa Command (AFRICOM) and one originated from the
246 U.S. European Command (EUCOM). For the two teleconsultations to the NMC-SD, both
247 originated from the Naval Hospital Lemoore in central California. LRMC received 103 cases
248 (71.5%) and the TAMC received 29 cases (20.1%) out of all patient movement cases. Naval
249 Medical Center Portsmouth (NMCP) received six cases (4.2%) of teledentistry patient movements,
250 and all other medical centers accounted for six cases or 4.2% of the remaining teledentistry patient
251 movements (Table 4). A breakdown of points of origin of patient movements to LRMC and TAMC
252 can be found in Table 5 and Table 6, respectively.

253 The data revealed that the most common causes of injury involving patient movements were
254 OMF issues requiring evaluation by an OMF surgeon, followed by third molar problems, and cases
255 involving tooth fracture, broken restorations, or caries (Table 1). The number of DE cases logged in
256 2015 and 2016 was quite low (Table 2), with the first two years of teledentistry consultations
257 totaling only 11. The number of teleconsultations only without patient movements was very low
258 compared to all cases (Table 2) with post-surgical complications and oral pathology evaluations
259 being the most common DE that were treated via teleconsultation only (Table 3).

260

261

DISCUSSION

262

263

There is potential for teledentistry to prevent a greater number of DE and OMF patient movements. For some of the borderline serious cases, the teledentistry host DTF or MTF could

264 train the outlying DTF providers (either in-person or remotely) in handling these types of common
265 DE or OMF issues. More training on the part of dental providers can increase the number of
266 teleconsultations and lower the number of cases that require an unnecessary patient movement.

267 Between 2015 and 2020, there were only 155 total teledentistry consultations. This could
268 be seen as evidence of the effectiveness of the Dental Readiness element of the DoD Individual
269 Medical Readiness (IMR) system. Additionally, this could be seen as a testament of providers on
270 the ground that have adequate knowledge of dentistry and appropriate dental specialties to handle
271 most cases without needing to seek outside consultative services. Of the 155 teledentistry
272 encounters, 144 required patient movements and only 11 had consultative services and remained
273 in theater. This demonstrates that teledentistry is primarily utilized when it is difficult to diagnose
274 and/or treat dental patients locally. The local providers may lack either the necessary equipment or
275 the expertise to effectively diagnose and treat the patient. Another possibility is that the provider
276 at the distant site is risk-averse or unqualified (trained or experienced) to telementor or teleconsult
277 with the provider at the originating location. Transmission of patient data via telecommunications
278 can still be a valuable tool to inform dental practitioners at upper echelon facilities of serious
279 injuries in advance of the patient's arrival, provide clinical guidance to deployed specialists, and
280 increase overall preparedness of the dental force.

281 Of the 155 teledentistry consultations, 144 of these consultations required patient
282 movement to areas of higher care. This should not be considered a failure of teledentistry in
283 general, or of the dental readiness portion of the IMR. Using Table 1 as a reference, nearly two-
284 thirds of the oral problems requiring patient movements would not been predicted on a dental
285 readiness examination prior to arrival to station. Providers performing prior dental readiness
286 examinations would not anticipate such subsequent dental emergencies as OMF fractures, tooth

287 fractures, broken restorations, oral pathologies, unspecified dental issues, prosthodontic issues,
288 cellulitis, trauma, and broken palatal obturators.

289 Patient movement destinations are largely linked to geographic proximity of the origins of
290 dental cases to treatment centers. In the near future, geographic proximity could perhaps be
291 leveraged to establish stable lines of network connectivity between field sites and regional medical
292 centers for remote treatments of dental cases using telecommunications.

293 Several factors may lead to a patient movement or MEDEVAC situation: 1) lack of
294 medical and dental specialists needed to treat a particular dental illness or injury in the area of
295 operation, 2) limited resources, supplies, and equipment available to properly treat dental illness
296 or injury, 3) insufficient clinical expertise of existing dental personnel to properly treat a particular
297 illness or injury in the area [6] or 4) improper or inadequate pre-deployment readiness screenings
298 prior to arrival at station

299 Limitations of the data used in this study include (1) unknown accuracy of transcribed
300 information regarding diagnoses of DE and OMF illnesses or injuries, (2) whether diagnoses were
301 transcribed and entered by dental specialists and OMF surgeons or simply IDCs, and (3) the level
302 of dental training of the non-dental providers and IDCs entering patient data. Deficiencies in
303 dental knowledge could lead to incorrect diagnoses and classifications or a lack of specificity
304 required for high-quality data. An additional limitation was having a relatively small number of
305 DE teleconsultations, reducing the statistical power to confidently identify any significant results
306 [6]. Nonetheless, this study supports the development of improved dental record-keeping in
307 theater towards implementation of an effective teledentistry platform.

308 In this study, teledentistry served as a screening device prior to patient movement in
309 serious cases, such as OMF issues (including third molars). Teledentistry consultations via

810 synchronous (live-video or telephone) can aid in the development of effective treatment plans
811 compared to consultations via email, and it can save time that would be lost waiting for the
812 patient's arrival to formulate a treatment plan. Treatment plans can be developed more accurately
813 and precisely utilizing visual markers and real-time images of patients prior to their arrival. It can
814 also positively affect the results of treatment and patient recovery having utilized a live video
815 consultation. In a health record database, live video is much more valuable than a telephone call,
816 an email, or a notation in a health record. Moreover, our data showing limited use of
817 teleconsultations up to 2020 indicate that there is still room for expansion of the military
818 teledentistry platform.

819 820 **MILITARY SIGNIFICANCE**

821 Teledentistry can be utilized 1) to inform dental practitioners at upper echelon facilities of serious
822 injuries in advance of the patient's arrival, 2) to provide clinical guidance to deployed specialists
823 for on-site triage and 3) to increase overall preparedness of the dental staff. This enhances dental
824 readiness and overall medical readiness of the military force to carry out and complete the mission.

825 **Conflicts of Interest:** The authors have no conflicts to declare.

826 **Acknowledgements:** The authors would like to thank the Global Teleconsultation Portal and LTC
827 Charles Nguyen for providing teledentistry data and Dr. Al Tiba for his support with the analysis.

828 829 **REFERENCES**

- 830 1. Lee, L., et al., *The burden of dental emergencies, oral-maxillofacial, and cranio-*
831 *maxillofacial injuries in US military personnel*. *Military medicine*, 2019. **184**(7-8): p. e247-
832 e252.
- 833 2. Deutsch, W.M., *Dental events during periods of isolation in the US submarine force*.
834 *Military medicine*, 2008. **173**(suppl_1): p. 29-37.

- 835 3. Wick, J.L., *Dental Corps readies Sailors, Marines for more than a century*, in *The*
836 *Flagship*. 2013, U.S. Navy Bureau of Medicine and Surgery Public Affairs: FALLS
837 CHURCH, Va.
- 838 4. Department of Defense, *Individual Medical Readiness (IMR)*. Instruction [Issuance] 2014
839 2020 [cited 2022 May 6]; Available from:
840 <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/602519p.pdf>.
- 841 5. Nettesheim, N., et al., *Telemedical support for military medicine*. *Military medicine*, 2018.
842 **183**(11-12): p. e462-e470.
- 843 6. Lin, A.H., et al., *The health experts onLine at Portsmouth (HELP) system: one-year review*
844 *of adult and pediatric asynchronous Telehealth consultations*. *SAGE Open Medicine*, 2016.
845 **4**: p. 2050312115626433.
- 846 7. Kirkwood B. Development of Military Teledentistry. *Med J (Ft Sam Houst Tex)* 2021;Oct-
847 Dec: (PB 8-21-10/11/12):33-39. <https://pubmed.ncbi.nlm.nih.gov/34714920/>
848

TABLES

Table 1. Summary of data collected from analysis of primary dental emergencies data in the U.S. military from GTP databases.

Category of dental emergency	Patient Movement	Consult Only	Total	Relative Occurrence
OMF Evaluation (non-third molar)	35	2	37	24%
Third molar	22	1	23	15%
Tooth fracture, broken restoration, caries	21	0	21	13%
Oral Pathology Evaluation	15	3	18	12%
Unspecified Dental Issues	15	0	15	10%
Pulpal/Endodontic Treatment	10	0	10	6%
Needed extractions other than third molar	8	0	8	5%
Prosthodontic Issues	6	1	7	5%
Surgical postoperative complication	0	3	3	2%
Temporomandibular Joint Disorders	3	0	3	2%
Periodontal Treatment	3	0	3	2%
Palatal Obturator/OMF Evaluation	1	1	2	1%
Infection/Cellulitis	2	0	2	1%
Dental Examination	2	0	2	1%
Loss of Tooth/Trauma	1	0	1	<1%
Total	144	11	155	100%

Table 2. Summary of data categorized by year collected from analysis of primary dental emergency data in the U.S. military from GTP databases.

Year	Patient Movement	Consult Only	Grand Total	Relative Occurrence
2015	4	0	4	3%
2016	7	0	7	4%
2017	31	0	31	20%
2018	46	3	49	32%
2019	36	3	39	25%
2020	20	5	25	16%
Grand Total	144	11	155	100%

Table 3. Teledentistry consult cases categorized by destination of transported patients.

Location	OMF Evaluation (non-third molar)	Oral Pathology Evaluation	Palatal Obturator/OMF Evaluation	Prosthodontic Issues	Surgical Postoperative Complication	Third Molar	Total
Tripler Army Medical Center	1	1	1	1	3	0	7
Landstuhl Regional Medical Center	1	0	0	0	0	1	2
Naval Medical Center San Diego	0	2	0	0	0	0	2
Subtotal	2	3	1	1	3	1	11

Table 4. Patient movement cases categorized by destination of transported patients.

Movement Destination	Count	Relative Occurrence
Landstuhl Regional Medical Center	103	71.50%
Tripler Army Medical Center	29	20.10%
Naval Medical Center Portsmouth	6	4.20%
Naval Medical Center San Diego	2	1.40%
Naval Hospital Okinawa	1	0.70%
Naval Hospital Yokosuka	1	0.70%
Naval Medical Center Camp Lejeune	1	0.70%
Walter Reed National Military Medical Center	1	0.70%
Total	144	100%

Table 5. Point of origin of patient movement cases taken to Landstuhl Regional Medical Center, (the most common destination).

Movement to Landstuhl RMC from:	Count	Relative Occurrence
Afghanistan	19	18.40%
Romania	14	13.60%
EUCOM	12	11.70%
AFRICOM	11	10.70%
Poland	9	8.70%
Kuwait	8	7.80%
Kosovo	7	6.80%
Iraq	5	4.90%
Qatar	3	2.90%
Ukraine	2	1.90%
Remote clinics under Landstuhl Regional Medical Center	2	1.90%
Bavaria, Germany	2	1.90%
CENTCOM	2	1.90%
Italy	2	1.90%
Niger	1	1.00%
Djibouti	1	1.00%
Jordan	1	1.00%
Naval Surface Force Atlantic	1	1.00%
Theater Patient Movement Requirement Center-Europe	1	1.00%
Total	103	100%

Table 6. Point of origin of patient movement cases taken to Tripler Army Medical Center, (second most common destination).

Movement to TAMC from:	Count	Relative Occurrence
Japan	14	48.30%
Guam	6	20.70%
Marshall Islands	2	6.90%
South Korea	2	6.90%
Okinawa	2	6.90%
US Fleet Pacific	2	6.90%
Pacific Submarine Force	1	3.40%
TOTAL	29	100%