

APPENDIX D

HISTORICAL DATA**Section I. ARMY MEDICAL DEPARTMENT EXPERIENCE FACTORS**

D-1. Table D-1 depicts the total AMEDD percentages by type of casualties during the Korean Conflict. It further depicts the percentage distribution of total casualties within each corps of the AMEDD and of enlisted personnel.

Table D-1. Army Medical Department Battle Casualties, Korean Conflict

CASUALTIES	KIA	WIA	MIA	CAPTURED	TOTAL
TOTAL AMEDD	17.2	70.6	3.6	8.6	100.0
MEDICAL CORPS	20.0	51.2	4.4	24.4	100.0
DENTAL CORPS	22.2	66.7	11.1	0.0	100.0
MEDICAL SERVICE CORPS	14.3	52.3	4.8	28.6	100.0
ENLISTED PERSONNEL	17.2	71.0	3.6	8.2	100.0

D-2. Table D-2 depicts the total AMEDD WIA percentages by type of disposition within all overseas theaters during World War II. It further depicts percentage distribution of total wounded-in-action dispositions within each corps of the AMEDD and of enlisted personnel.

Table D-2. Army Medical Department Wounded in Action in all Oversea Theaters During World War II

WOUNDED	DIED OF WOUNDS	RETURNED TO DUTY WITHIN THEATER	EVACUATED TO US	TOTAL WOUNDED
TOTAL AMEDD	4.5	64.8	30.7	100.0
MEDICAL CORPS	6.7	59.6	33.7	100.0
DENTAL CORPS	8.3	58.4	33.3	100.0
MEDICAL SERVICE CORPS	2.6	55.7	41.7	100.0
ARMY NURSE CORPS	5.9	61.7	32.4	100.0
VETERINARY CORPS	0.0	0.0	100.0	100.0
ENLISTED PERSONNEL	4.5	65.0	30.5	100.0

D-3. Table D-3 depicts the total AMEDD percentage of WIA by type of disposition within the Far East. It further depicts the percentage

distribution of total wounded-in-action dispositions within each corps of the AMEDD and of enlisted personnel.

Table D-3. Army Medical Department Wounded in Action, Korean Conflict

WOUNDED	DIED OF WOUNDS	RETURNED TO DUTY WITHIN THE FAR EAST	EVACUATED TO US AND HAWAIIAN ISLANDS	TOTAL WOUNDED
TOTAL AMEDD	2.9	67.7	29.4	100.0
MEDICAL CORPS	0.0	47.8	52.2	100.0
DENTAL CORPS	0.0	50.0	50.0	100.0
MEDICAL SERVICE CORPS	0.0	63.6	36.4	100.0
ENLISTED PERSONNEL	2.9	68.1	29.0	100.0

D-4. Table D-4 depicts the total AMEDD percentage of battle casualties for all overseas theaters by each type of casualty. It further

depicts the percentage distribution of total casualties within each corps of the AMEDD and of enlisted personnel.

Table D-4. Army Medical Department Battle Casualties all Oversea Theaters, World War II

CASUALTIES	KIA	WIA	MIA	CAPTURED	TOTAL
TOTAL AMEDD	15.4	66.7	2.3	15.6	100.0
MEDICAL CORPS	14.6	55.7	1.4	28.3	100.0
DENTAL CORPS	15.4	51.2	0.9	32.5	100.0
MEDICAL SERVICE CORPS	17.5	59.4	1.5	21.6	100.0
ARMY NURSE CORPS	10.4	25.4	11.2	53.0	100.0
VETERINARY CORPS	10.0	10.0	0.0	80.0	100.0
ENLISTED PERSONNEL	15.4	67.5	2.3	14.8	100.0

D-5. Table D-5 depicts AMEDD battle casualties as percent of total US Army casualties by type of casualty during World War II and the Korean Conflict.

Table D-5. Army Medical Department Battle Casualties as Percent of Total US Army** Casualties*

THEATER	PERCENT OF ALL KIA	PERCENT OF ALL WIA	PERCENT OF ALL MIA	PERCENT OF ALL CAPTURED	PERCENT OF TOTAL BATTLE CASUALTIES
WORLD WAR II					
ALL OVERSEA THEATERS***	2.5	2.8	2.9	4.5	2.9
EUROPEAN THEATER	2.4	2.7	2.7	4.2	2.8
PACIFIC THEATERS	3.4	3.4	5.2	6.0	3.8
MEDITERRANEAN THEATER	2.0	2.6	1.9	2.9	2.5
KOREAN CONFLICT	3.0	3.0	2.7	4.3	3.0

* Includes all personnel of the AMEDD (officer plus enlisted).

** Excludes Air Corps personnel and flight officers in World War II and US Air Force personnel in the Korean Conflict.

*** Includes battle casualties incurred in Africa-Middle East, Caribbean Defense Command and South Atlantic Alaskan Department, Burma-China-India, theater unknown, and those incurred while en route and not chargeable to any command. These theaters are not shown separately above.

D-6. Table D-6 depicts the AMEDD WIA as percent of total US Army WIA by type of disposition in the theater during World War II and the Korean Conflict.

*Table D-6. Army Medical Department** Wounded in Action as Percent of Total US Army** Wounded in Action*

THEATER	DIED OF WOUNDS	RETURNED TO DUTY IN THEATER	EVACUATED TO US	TOTAL WOUNDED
WORLD WAR II				
ALL OVERSEA THEATERS***	2.9	2.8	2.8	2.8
EUROPEAN THEATER	2.9	2.7	2.6	2.7
PACIFIC THEATERS	3.3	3.4	3.4	3.4
MEDITERRANEAN THEATER	2.2	2.5	2.7	2.6
KOREAN CONFLICT	3.5	2.9	3.0	3.0

* Includes all personnel of the AMEDD (officer plus enlisted).

** Excludes Air Corps personnel and flight officers in World War II and US Air Force personnel in the Korean Conflict.

*** Includes battle wounds incurred in Africa-Middle East, Caribbean Defense Command and South Atlantic Alaskan Department, Burma-China-India, theater unknown, and those incurred while en route and not chargeable to any command. These theaters are not shown separately above.

Section II. DENTAL EXPERIENCE FACTORS

D-7. General

Experience factors derived from previous US Army operations are presented in this section. The data presented here may be useful in planning for dental service in support of future US Army operations. During times of military conflict, dental service resources have been used in the treatment of maxillofacial injuries and disease, the treatment of acute dental emergencies, the maintenance of oral health and fitness of troops, the provision of combat casualty care, and the identification of deceased personnel. These services have been provided to the US Army, other US Forces, allies, indigenous populations, and EPW.

D-8. Maxillofacial Injury Work Load

Maxillofacial trauma represents a significant part of the total medical work load in an area of operations. (See Table D-7 through D-9.) In Vietnam it was estimated that 10.1 percent of admissions to hospitals for trauma were for maxillofacial injuries which were treated by maxillofacial surgeons. Of the maxillofacial injuries, 78.2 percent were injury result of hostile action (IRHA) and 21.8 percent were nonbattle injury. Hospital admissions were 84.2 percent of the total maxillofacial injuries reported.

Table D-7. Types of Facial Bones Fractured in 1,096 IRHA Patients-Vietnam

BONES FRACTURED	NUMBER OF PATIENTS	PERCENT OF ALL PATIENTS WITH MAXILLOFACIAL INJURIES IRHA
MANDIBLE	573	20.5
MAXILLA	526	18.8
MALAR	350	12.5
ORBITAL FLOOR	238	8.5
NASAL	236	8.4
ZYGOMATIC ARCH	219	7.8

Table D-8. Soft Tissue Injuries-Vietnam

SOFT TISSUE SITE	LACERATIONS	AVULSIONS	OTHER	TOTAL INJURIES
RIGHT CHEEK	865	249	266	1,380
LEFT CHEEK	861	214	249	1,324
CHIN	641	133	280	1,054
LIPS	559	124	133	816
FLOOR OF MOUTH	249	57	13	319
TONGUE	210	15	7	232
PA LATE	139	54	10	203
OTHER FACIAL TISSUES	996	270	271	1,537
TOTAL	4,520	1,116	1,229	6,865

Table D-9. Disposition of 2,795 IRHA Patients with Maxillofacial Injuries-Vietnam

DISPOSITION	PERCENT OF 157 OUTPATIENTS	PERCENT OF 2,638 INPATIENTS	PERCENT OF TOTAL MAXILLOFACIAL INJURIES IRHA
RETURNED TO DUTY	89.8	25.2	28.8
DIED	0.6	2.7	2.5
TRANSFERRED OR EVACUATED	6.4	67.9	64.5
RELEASED TO OWN CARE	1.3	2.5	2.5
OTHER DISPOSITION	1.9	1.7	1.7

D-9. Dental Emergency Work Load

The rate of dental emergencies will vary with the amount of predeployment preparation of troops, length of deployment, intensity of conflict, and amount of in-theater dental maintenance care.

The most credible report of dental emergencies from Vietnam was on Marine personnel. (See Table D-10.) The rate of dental emergencies was calculated from this report to be 184 per 1,000 troops per year. Other reports of dental emergency rates vary. (See Table D-11.)

Table D-10. Relative Frequency of Categories of Dental Emergencies Among Navy-Marine Personnel in Vietnam and CONUS, 1970

CATEGORY	VIETNAM (PERCENT)	CONUS (PERCENT)
CARIES	48.8	46.0
PERICORONITIS	18.3	14.0
PERIODONTAL	9.2	11.0
TRAUMATIC	7.6	6.0
PROSTHETIC	3.1	8.5
OTHER	13.0	14.5

Table D-11. Summary of Dental Emergency Rates

	RATE PER 1,000 PER YEAR	
VIETNAM	1968	142
	1969-70	184
FIELD EXERCISES	1964	152
	1978	167
	1980-81	234

D-10. Dental Services Capability

a. *World War II.*

(1) The average number of the five principal dental operations completed per dental officer per year from 1 January 1943 to 31 August 1945 was as follows:

- Permanent filling—1,067.
- Extractions—232.
- Dentures—42.
- Dentures repaired—26.
- Fixed bridges—3.

Table D-12 depicts dental operations completed for each 1,000 men oversea.

(2) At the larger dental laboratories in the CONUS, each dental laboratory

specialist completed an average of:

- 58.6 cases per month in 1943.
- 51.0 cases per month in 1944.

The decrease in 1944 was probably due to a slackening in demand and because a considerable amount of overtime operation of dental laboratories was carried out during 1943. Cases included dentures, repairs, and bridges.

(3) The dental laboratory specialist who functions in the field with field-type laboratory equipment is not able to complete many prosthodontic appliances. However, on the average, the dental laboratory specialist in the field is usually able to fabricate 30 cases per month. This includes full and partial dentures, denture repairs, and bridges. Table D-13 depicts prosthodontic operations completed for each 1,000 men oversea.

Table D-12. Dental Operations Completed 1 January 1942 through 31 August 1945 (Oversea)

DENTAL OPERATIONS	NUMBER	ARMY	OTHERS
		MEAN STRENGTH PER YEAR	NUMBER
PERMANENT FILLINGS	12,698,735	1,290	187,771
EXTRACTIONS	2,562,643	262	335,428
FULL DENTURES	101,561	10	1,256
PARTIAL DENTURES	360,405	36	10,275
DENTURES REPAIRED	278,562	28	5,755
FIXED BRIDGES	36,504	3.7	406
TEETH REPLACED*	3,245,822	332	25,110
DENTAL PROPHYLAXIS	2,188,841	224	41,694

* By bridges and partial dentures only.

(4) Authentic theater reports during World War II show that the proportion of oversea personnel wearing prosthodontic appliances was about 10 percent. On a worldwide basis, however, it is estimated that 15 percent of all military personnel wore dentures.

b. Korean Conflict. Figures are not available covering the Army dental service for the entire Korean Conflict; however, the annual report of the Dental Surgeon, Eighth United States Army, 1952, includes the data in Table D-14. Dental officers in Korea in the year 1952 averaged about 115 to 120 permanent fillings per month.

c. Vietnam Conflict. Important dental treatments are depicted in Table D-15.

d. Other Experience.

(1) A mobilization exercise at an Army reception station in 1982 indicated that under time of great demand on the reception station 50 inductees could be processed per hour using five panoramic x-ray machines, one high-speed automatic film processor, five enlisted dental specialists, one NCOIC and one dental officer to

read films. The rate of x-ray film retakes and wastage required 1,140 films per 1,000 troops. When x-ray machines were not available, each dental officer with one enlisted dental specialist to record could in-process patients at the rate of one patient per 3.5 minutes (17 patients per hour).

(2) The total treatment capability of the Army Dental Care System for all beneficiaries in FY 1980 is depicted in Table D-16.

Table D-13. Prosthodontic Operations Completed 1943—1945 per 1,000 Men (Overseas)

YEAR	FULL DENTURES	PARTIAL DENTURES	REPAIRS	TOTAL
1943	10.0	28.1	19.9	58.0
1944	12.3	37.9	29.4	79.6
1945	9.2	40.3	33.6	83.1
YEARLY AVERAGE	10.5	35.4	27.6	73.6

Table D-14. Important Dental Treatments, Eighth US Army, 1952

DENTAL TREATMENTS	NUMBER
TOTAL RESTORATIONS (FILLINGS, CROWNS)	253,652
TOTAL TEETH REPLACED BY BRIDGES AND PARTIAL DENTURES	36,258
SURGICAL TREATMENTS (INCLUDE EXTRACTIONS AND FRACTURE REDUCTIONS)	302,465
GENERAL	
INPATIENT ADMISSIONS	8,508
OUTPATIENT ADMISSIONS	133,720
SITTINGS	493,441
EXAMINATIONS	334,712

Table D-15. United States Army Dental Patient Visits in Vietnam, 1968-1973

	FY 1968*	FY 1969	FY 1970	FY 1971	FY 1972	FY1973**
RESTORATIVE	167,057	273,045	249,249	156,259	54,431	8,715
FIXED PROSTHETICS	3,869	9,710	12,064	8,139	4,110	1,054
REMOVABLE PROSTHETICS	31,193	55,928	39,342	26,957	8,786	1,453
ORAL SURGERY	113,348	174,935	145,868	96,632	31,637	4,583
PERIODONTICS	13,206	16,766	13,653	5,569	1,563	619
ENDODONTICS	8,221	13,501	12,321	8,815	4,287	704
ORAL HYGIENE (PROPHYLAXIS)	64,243	112,332	119,548	63,667	33,808	8,648
ORAL DIAGNOSIS (EXAMINATIONS)	192,763	281,637	278,213	179,472	56,235	13,355
TOTAL DENTALPATIENTS TREATED	593,952	944,974	870,321	565,554	195,365	39,131
VIETNAMESE EXAMINATIONS (CIVIL ACTION}	44,470	59,474	NR	NR	NR	NR

* Last three quarters only.
 ** First three quarters only.

LEGEND

NR Not recorded
 FY Fiscal Year

Table D-16. Total Patients Treated in US Army Dental Care System, FY 1980

	1ST QUARTER	2D QUARTER	3D QUARTER	4TH QUARTER
HSC	720,383	760,674	766,491	764,132
Europe	198,205	277,154	237,671	222,983
Korea	24,666	30,827	18,997	16,292

D-11. Dental Care Requirements

Dental care needs include all treatment to put the individual in optimal oral health.

a. *Recruits* (see Table D-17).

b. *Active duty* (see Tables D-18 and D-19).

Table D-17. Dental Needs of Army Recruits—1981 Survey Mean Treatment Time Requirements by Total Sample and by Army Component in Hours

	REGULAR ARMY	RESERVE	NATIONAL GUARD	TOTAL SAMPLE
RESTORATIVE*	3.38	3.33	4.06	3.51
ENDODONTIA	.64	.49	.46	.52
FIXED PROSTHODONTIA	1.28	1.21	1.38	1.29
REMOVABLE PROSTHODONTIA	.21	.23	.24	.22
EXODONTIA—ERUPTED	.19	.18	.22	.20
IMPACTION	1.64	1.62	1.84	1.67
PERIODONTIA	.24	.30	.31	.26
PROPHYLAXIS	.35	.34	.35	.35
CALCULUS REMOVAL	.16	.17	.17	.16
EXAMINATION	.33	.33	.33	.33
TOTAL HOURS	8.32	8.20	9.36	8.51

* Includes only those recruits having bitewing radiographs, 1,773—Regular Army; 405—Reserve; and 537—National Guard.

*Table D-18. Distribution of Treatment of Active Duty Army—1978 Survey Time Requirements for Each Treatment Category by Rank Group**

TREATMENT CATEGORY	RANK GROUP					
	E1—E4	E5—E6	E-7—E9	W1—W4	O1—O3	O4—O6
RESTORATIONS*	2.74	2.32	1.77	1.24	1.23	0.72
EXTRACTIONS	0.28	0.18	0.11	0.08	0.14	0.05
ENDODONTICS	0.19	0.15	0.17	0.15	0.10	0.02
CROWN AND BRIDGE	0.44	0.65	0.52	0.34	0.38	0.53
FULL DENTURES	0.01	0.08	0.15	0.09	0.00	0.07
PARTIAL DENTURES	0.12	0.22	0.38	0.17	0.06	0.08
PROPHYLAXIS/SCALING	0.53	0.52	0.53	0.51	0.49	0.49
SUBGINGIVAL CURETTAGE	0.21	0.31	0.62	0.36	0.09	0.20
GINGIVECTOMY	0.10	0.20	0.57	0.10	0.11	0.09

* Figures presented are in hours and represent the time needed to deliver the particular needed care to the “average” individual in that group.

*Table D-19. Distribution of Treatment of Active Duty Army—1978 Survey Time Requirements for Each Treatment Category by Basic Branch/Career Management Field**

TREATMENT CATEGORY	COMBAT	COMBAT SUPPORT/ SERVICE SUPPORT
RESTORATIONS	2.57	2.06
EXTRACTIONS	0.23	0.19
ENDODONTICS	0.18	0.15
CROWN AND BRIDGE	0.44	0.57
FULL DENTURES	0.05	0.04
PARTIAL DENTURES	0.17	0.17
PROPHYLAXIS/SCALING	0.53	0.51
SUBGINGIVAL CURETTAGE	0.30	0.23
GINGIVECTOMY	0.16	0.19

* Figures are in hours and represent the time needed to deliver the particular needed care to the “average” individual in that group. It does not mean that every individual requires that much treatment time to satisfy his or her dental needs.