PROJECTION OF PATIENT CONDITION
CODE DISTRIBUTIONS FOR
NAVAL COMBAT DEPLOYMENTS

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Report No. 99-20

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Summary

Problem

The Medical Readiness Strategic Plan (MRSP) 2000 specifically requires the military services to address the issue of patient stream specification in terms of the Patient Condition (PC) code nomenclature. Projection of the specific types of injuries and illnesses expected during combat operations is essential to the programming of medical resources needed to support those military engagements.

Objective

To provide the composition of projected patient streams in terms of Patient Condition (PC) codes for the Atlantic and Pacific theaters of operation.

Approach

The methodologies adopted varied by the category of medical admissions, but were based on empirical data from previous naval deployments. The wounded in action (WIA) methodology first partitioned the empirical data into traumatism and anatomical location categories, and then mapped these combinations into PC codes. The non-battle injury (NBI) PC methodology was similar to the WIA methodology except that the projections were extended to two more categories of traumatism; Environmental and Miscellaneous NBI. The Disease PC methodology entailed first mapping the empirical disease distributions into PC clusters and then distributing this incidence into individual PC codes.

Results

Patient Condition code distribution projections for wounded-in-action, disease, and nonbattle injuries have been generated.

Conclusion

The use of empirical data as a baseline for estimating casualty distribution is an important step in estimating the proper medical assets for the naval battlefield needs of the future. The present investigation utilized empirical data from past naval combat operations as well as recent peacetime deployments in an effort to most accurately determine the Patient Condition code distributions expected during future naval engagements.

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Introduction

Medical readiness for military deployments requires that effective methodologies be developed to estimate the needed medical resources. In order to generate valid wartime medical requirements, logisticians must estimate in advance the rates and the types of casualties that are likely to be incurred during a specific combat operation. These projections then provide the needed inputs to medical models that calculate contingency support requirements, including the needed clinical equipment, personnel, and medical supplies.

Previous studies[1-2] have investigated the casualty and illness incidence rates of earlier naval combat engagements, and have sought to make the necessary adjustments[3-4] to the observed casualty rates to reflect likely present-day casualty incidence. A planning tool, the Shipboard Casualty forecasting system (SHIPCAS), has been developed which incorporates these empirical rates and adjustments. The SHIPCAS system[5] simulates the overall wounded in action (WIA) and disease and non-battle injury (DNBI) incidence likely to be incurred across the duration of a naval combat operation. However, the specific medical conditions constituting the projected casualty flow also need to be ascertained in order to accurately assess medical resource needs.

The Medical Readiness Strategic Plan (MRSP) 1998-2004[6] was developed to ensure that the medical logistics support structures comply with the readiness mission. An important aspect of this plan is to quantify expected combat medical admissions in terms of the Patient Condition (PC) code nomenclature. The PC codes encompass various injuries and illnesses likely to be sustained in a war, and each code is tied to the medical resources needed to treat that condition. Based on these expected PC distributions, the medical supplies, equipment, and health care personnel required to support the deployment may most accurately be estimated.

The PC distributions of WIA and DNBI admissions for ground forces have previously been projected.[7] The focus of the present study is to determine analogous projections for forces afloat. Quantification of the expected distributions of injuries and illnesses in the Patient Condition nomenclature will provide the needed input to the Medical Analysis Tool[8] (MAT) – a joint

services medical resource allocation model. The Medical Analysis Tool relies on PC code distributions and incidence rates to generate hospital bed and resource requirements. Accurate derivations of the expected PC code distributions will help ensure the accuracy of MAT output, as well as contribute to the effectiveness of the overall medical planning process.

METHOD

Wounded In Action (WIA) PC Distributions

Because of a relative paucity of recent shipboard casualty data, empirical data from the last major U.S. naval conflict (World War II) were used as the basis for projecting the types of WIA patient conditions likely to be incurred during combat. Ships that were attacked during that conflict were identified from the Summary of War Damage[9] and the United States Naval Chronology, WWII.[10] The present analysis centered on the casualty data from the major combatant ships that were attacked; these included carriers, cruisers, destroyers, and destroyer escorts.

The Medical Officer Reports and After Action Reports maintained at the Navy Operational Archives Division of the Navy Historical Center in Washington D.C. were examined and diagnoses data were extracted for casualty incidents which corresponded to those found in the War Damage Summary and the Naval Chronology. Data from these sources included both the Bureau of Medicine and Surgery (BUMED) injury code and the anatomical location code.

The WIA admissions percentages were first computed for the following major traumatism categories: amputations, concussions, sprains/strains/dislocations, fractures, burns, asphyxiation, near drowning, wounds, multiple injury wounds (MIW). These percentages are presented in Table 1, and it can be seen that 'burns' represented 23.6% of the afloat battle injuries sustained, while 'multiple wounds' represented 12.4% of the total shipboard wounded-in-action injuries.

Next, the anatomical location percentages within each type of traumatism were computed for the following anatomical locations: head, face, eye, ear, nose, jaw, neck, shoulder, spine, back, chest, abdominal regions, lumbar region, pelvic region, buttock, groin, all parts of the arm, all parts of the leg, hand, foot, and multiple locations. The percentages of battle injuries within each major trauma category for specific anatomical locations may also be seen in Table 1. Because the

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empirical data used in the present study did not provide the specific regions affected within the 'multiple wound' category, the anatomical region percentages of multiple wounds for ground troops[7] were used to fill this information gap.

The next step was to distribute the 'trauma x anatomical region' percentages into the Patient Condition code categories. The descriptions of the various WIA Patient Condition codes may be seen in Appendix A. The correspondence between individual PC codes and 'trauma by anatomic region' combinations allow for one-to-one mapping in some instances. For instance, Table 2 indicates that 'traumatic amputation of the foot' mapped to only a single PC – PC 144. Often however, the only criterion differentiating two or several PC codes is severity of the wound – a characteristic not provided with the existing empirical data. Consequently, PC codes pertaining to the same 'trauma x region' combination but differing in the severity were given equal proportions of the overall percentage expected for that combination. It can be seen in Table 2 that three PC codes corresponded to 'traumatic amputation of the leg;' consequently, each of those PC codes was assigned a proportion of 33% of that overall 'trauma x region' percentage. Table 2 delineates which PC codes correspond to which traumas, and indicates the percentages assigned to each PC falling within each 'trauma x anatomic region' combination.

The final step of the WIA methodology was to calculate the individual PC code probabilities from the products of the traumatism percentages, anatomical location percentages, and assigned percentages within the 'trauma x region' categories. The following equation denotes this process:

*P (PC) = P (traumatism) * P (anatomical location / traumatism) * P (PC code/traumatism & anatomical location)*

where,

  P = probability

The following is an example showing the method of generating WIA PC Codes from the data in Tables 1 and 2. Relevant portions of the tables are reproduced below. The injury category of Amputations has been selected for illustrative purposes. As signified by the parenthetical enumeration in Table 1, traumatic amputations represented 0.5% of the total expected WIA incidence; the accompanying anatomic region percentages follow:

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Amputations (0.5%)   Location percentages
Arm   17.2%
Foot   19.0%
Hand   27.6%
Leg   36.2%

From Table 2, the 'trauma x anatomy' combinations mapping to PC codes is shown:

Amputations (0.5%)   PC Codes (Proportions)
Arm   **PC 70** (50%)   **PC 71** (50%)
Hand   **PC 69** (100%)
Foot   **PC 144** (100%)
Leg   **PC 145** (33.3%) **PC 146** (33.3%)   **PC 147** (33.3%)

Then, based on Equation 1 the estimated probabilities for PC codes 69, 144 and 145 are:

$$P\ (PC\ 69) \quad = \quad 0.5\% * 27.6\% * 100\% \quad = 0.14\%$$
$$P\ (PC\ 144) \quad = \quad 0.5\% * 19.0\% * 100\% \quad = 0.10\%$$
$$P\ (PC\ 145) \quad = \quad 0.5\% * 36.2\% * 33.3\% \quad = 0.06\%$$

The percentages for these PC codes, as well as all other wounded-in-action PC codes are presented in Appendix A.

Disease and Non Battle Injury (DNBI) PC Distributions

The empirical data forming the basis for the shipboard DNBI Patient Condition code projections were extracted from the inpatient medical history files maintained by the Naval Health Research Center (NHRC).[12] Among other data, these files contain the diagnosis, admission date, and discharge date for all enlisted personnel admitted to Navy medical treatment facilities. From these files, hospitalization data were extracted for all admissions treated aboard aircraft carriers between 1965 and 1989; these admissions included personnel stationed aboard the carrier, as well as those aboard other ships in the task force. Prior to 1970, diagnoses were recorded in Department of Defense Disease and Injury Codes[13] (DDDIC) format; after 1970, diagnoses were recorded in the International Classification of Disease[14] (ICD) diagnostic nomenclature.

Peacetime medical records that reflected 'outpatient-type' visits were excluded from the analyses; these diagnoses included admissions for "observation – no need for further medical care" and diagnoses grouped under the ICD category "supplementary classifications and special

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conditions." Additionally, hospitalizations for diagnoses not expected to be incurred during combat operations – such as sterility, childbirth, and certain dental disorders – were also excluded.

Disease PC Distributions

The general strategy for deriving disease distribution projections was to examine recent peacetime disease incidence among forces afloat and then to adjust these distributions for any shifts expected during combat operations. As post-1989 admissions aboard carriers are no longer available, peacetime operations in the Mediterranean and Western Pacific theaters between 1976 and 1989, were selected to obtain estimates for the percentage distributions of the various disease categories. These peacetime data were used to obtain baseline distributions for deriving projections for the Atlantic and the Pacific theaters of operations. The data obtained were from 21 deployments in the Mediterranean and 25 deployments in the Western Pacific.

The first step in the analyses was to determine the estimated PC *cluster* distribution percentages for each theater of operations. The Joint Readiness Clinical Advisory Board (formerly the Defense Medical Standardization Board) has defined the PC clusters as: Infective, Gastrointestinal, Dermatological, Respiratory, Neuropsychiatry, Sexually Transmitted Diseases (STD), Eye-Ear, Genitourinary, Surgical, Cardiovascular, and Miscellaneous. Because the empirical hospitalization data were originally recorded in International Classification of Disease (ICD) codes, each ICD diagnoses first had to be assigned to the appropriate PC cluster. This was accomplished by comparing the ICD narrative descriptions with the Patient Condition code descriptions. Appendix B presents the various PC clusters and the individual PC Codes that are represented within each cluster.

As can be seen in Table 3, a one-to-one mapping between ICD categories and PC Clusters does not exist – diagnoses within the 'Infective/Parasitic' ICD category not only mapped to the infectious/parasitic PC cluster but also to the gastrointestinal, dermatological, respiratory, and sexually transmitted disease (STD) PC clusters. It can be seen from Table 3 that 58.8% of the admissions in the Infective/Parasitic ICD category mapped into the Infective PC Cluster, while 20.9% of that same ICD category mapped into the Gastrointestinal PC Cluster.

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Next, estimated PC cluster percentages were adjusted to more accurately reflect the admissions expected during combat situations. The adjustments applied were based upon the results of an analysis comparing shipboard hospitalizations occurring during Vietnam combat operations (1965-1972) with hospitalizations occurring during Pacific deployments immediately following the cessation of hostilities (1973-1975) as well as with ships deployed to the Mediterranean theater during the Vietnam combat operations.[15] Table 4 displays the ICD category percentages for ships on these deployments. Comparisons of illness distributions during combat support and noncombat deployments to the same theater indicated a significantly higher respiratory illness percentage among combat deployments than during post-hostility deployments and same-time Mediterranean deployments.[15]

Based on the results of the above analyses, the observed peacetime Pacific and Mediterranean theater respiratory disease cluster percentages were increased (approximately 7%) to reflect the expected percentage for this cluster during combat naval operations. At the same time, the infectious cluster was reduced somewhat for combat operations in the Pacific theater (less exposure to shore-based infectious agents than during peacetime deployments) and all other cluster percentages were adjusted proportionally to arrive at 100%. Table 5 presents the unadjusted and adjusted PC Cluster percentages for the Atlantic and Pacific theaters.

The final step in the Disease PC methodology was to distribute the individual PCs within each PC cluster. This distribution of the percentages of individual Patient Condition codes was done in accordance with the methodology developed for the ground forces study.[7] The ICD category-to-PC Cluster mapping discussed earlier in this paper required the determination of which ICD codes mapped to each PC Cluster. A determination was then made of which PC code(s) in that cluster best matched each of the ICD diagnosis codes that had gone into that cluster. For example, the ICD diagnosis of influenza was funneled to the Respiratory PC cluster, and then mapped to PC code 240, "acute respiratory disease, moderate." If there was not a direct one-to-one match between the ICD code and a specific PC code in the cluster, the particular ICD code was mapped across several PC codes. Where the PC codes called for distributing an ICD diagnoses into two PC codes that differed only by a severity rating, as with the previously mentioned WIA PC Codes, those similar PC percentages were distributed uniformly. Percentages corresponding to ICD diagnoses where there was no exact PC equivalent were distributed proportionally across the existing PC codes in that major disease category under the assumption

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that the required medical resources would likely be similar. Appendix B shows the percentage distributions of each individual PC within their respective PC clusters – the same within-category distributions are applied to both the Atlantic and Pacific theaters; Appendix C presents the disease PC percentages independent of its cluster.

Non-battle Injury PC Distributions

Similar to the method for deriving WIA PCs, the nonbattle injury (NBI) methodology consisted of calculating the individual PC code percentages from the products of the observed shipboard 'trauma category and anatomical location' percentages. Baseline distributions for the PC distribution projections were derived from the NBI hospitalization among forces afloat during the following deployments: 1) Vietnam naval support operations; 2) Mediterranean peacetime deployments; and 3) Western Pacific peacetime deployments.

Table 6 is a presentation of the NBI distributions observed during deployments to the Western Pacific theater of operations during three time frames. As can be seen in this table, general wounds, strains/sprains, and fractures were the most commonly occurring nonbattle injuries during all deployment periods. Also shown in Tables 6 is a weighted average of the distributions from these deployments. Table 7 presents the same information for the Mediterranean deployments. These two empirical data NBI distributions provide the basis for the individual NBI PC code distribution projections that follow.

The next step necessary to derive the PC distributions was to determine the likely anatomical regions of the NBIs expected to be incurred. All deployment data from 1965-1989 were aggregated and the body part percentages within each major trauma category were computed. Table 8 displays the anatomic region percentages for each NBI category. As can be seen from this table, 87.1% of the traumatic amputations were sustained to the 'hand,' while 16.9% of sprains/strains were to the 'knee.' These 'anatomical region' percentages were applied to NBI projections in both the Atlantic and Pacific theaters.

Once the 'trauma by anatomic region' percentages were ascertained, the same methodology used to distribute these combinations across the WIA PC codes was used to distribute across the NBI PC codes. Again, where only one PC code corresponded to a single 'trauma by anatomic region' category that PC was assigned 100% of the percentage observed for that 'trauma-region'

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combination. As can be seen in Table 9, PC 144 was designated as the only code within the Patient Condition code nomenclature to represent traumatic amputations to the foot; accordingly, 100% of the 'amputation x foot' percentage observed in the empirical data will map to PC 144. As also can be seen in Table 9, 'crush injuries to the arm' are signified by two separate PC codes – PC 61 and PC 62. The descriptions shown in Appendix D indicate that these two PCs differ only by level of severity. Because the empirical data provided no divisions by degree of severity, the observed percentage for crushed arm injuries was divided equally between these two PCs. For all 'trauma by region' combinations where there was more than a single corresponding PC, the trauma condition was distributed equally across those multiple Patient Condition codes. Also shown in Table 9 are the PC codes mapping to the 'environmental' and 'miscellaneous' NBI Patient Conditions. The individual PC Code percentages for all NBI Patient Condition codes, then, are presented in Appendix D.

Conclusion

The focus of the present investigation was to determine the distribution of Patient Conditions likely to be sustained by forces afloat during combat operations. Utilizing empirical disease and injury data, from naval deployments during both peacetime and combat conditions, estimates of the Patient Condition codes needed to support military medical models were derived. By combining these PC code distributions with the expected overall injury and illness incidence rates, medical planners may most accurately estimate the medical resources needed to support future naval combat deployments.

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Table 1. Percentage Distributions of Anatomical Locations by Traumatism for Shipboard Battle Injuries; WWII

Trauma	% of Traumatism	Trauma	% of Traumatism
Amputations (0.5%)		**Sprain/Strains/Dislocations (2.6%)**	
arm	17.2%	back	27.4%
foot	19.0%	hand/fingers/wrist/elbow	4.4%
hand	27.6%	leg	59.7%
leg	36.2%	shoulder	8.5%
Total	**100.0%**	**Total**	**100.0%**
Asphyxiations (1.5%)		**Wounds (51.2%)**	
		abdomen	4.8%
Burns (23.6%)		arm	13.8%
head	32.8%	body	19.5%
lower extremities	14.0%	buttock	2.2%
thorax	15.5%	ear	1.7%
upper extremities	37.7%	eye	1.3%
Total	**100.0%**	face/neck	4.4%
		foot/ankle/toe	5.4%
Concussions (0.5%)		hand/finger	4.7%
head moderate	18.2%	head	7.6%
head severe	9.1%	leg	24.3%
head(contusions)	72.7%	pelvis	0.9%
Total	**100.0%**	spleen	0.1%
		thorax	9.3%
Closed Fractures (3.8%)		**Total**	**100.0%**
face	1.0%		
femur	5.9%	**Multiple Wounds (12.4%)**	
foot/toe	12.9%	head/thorax	2.2%
hand/finger	4.0%	head/abdomen/colon	1.6%
humerus	6.9%	head/abdomen/kidney	1.5%
knee	4.0%	head/abdomen/bladder	1.5%
jaw	1.0%	head/abdomen/spleen	1.5%
pelvis	3.0%	head/abdomen/liver	1.5%
radius/ulna	15.8%	head/lower extremities	7.4%
ribs	7.9%	thorax/abdomen/colon	1.7%
skull/closed	2.0%	thorax/abdomen/kidney	1.7%
shoulder	5.0%	thorax/abdomen/bladder	1.7%
spine	8.9%	thorax/abdomen/spleen	1.7%
tibia/fibula	21.8%	thorax/abdomen/liver	1.7%
Total	**100.0%**	thorax extremities	12.2%
		abdomen/colon/bladder	0.6%
Near Drowning (0.3%)		abdomen/colon/spleen	0.6%
		abdomen/colon/liver	0.6%
Open Fractures (3.6%)		abdomen/colon/lower extremities	6.9%
face	1.0%	abdomen/pelvis/liver/kidney	0.5%
femur	13.3%	abdomen/pelvis/spleen/bladder	0.5%
foot/toe	7.1%	abdomen/pelvis/extremities	11.5%
hand/finger	8.2%	abdomen/pelvis/lower extremities	6.8%
humerus	13.3%	abdomen/lower extremities	6.8%
knee	5.1%	abdomen/extremities	11.5%
jaw	2.0%	thorax/upper extremities	5.8%
pelvis	0.0%	thorax/upper extremities/abdomen	6.3%
radius/ulna	11.2%	thorax/abdomen/colon/bladder	1.8%
ribs	1.0%	abdomen/thorax/organs	1.9%
skull/open	4.1%	**Total**	**100.0%**
shoulder	0.7%		
spine	0.3%		
tibia/fibula	32.6%		
Total	**100.0%**		

Table 2. Percentage Distributions of WIA PC Codes by Traumatism and Anatomical Location

Trauma/Location   *PC Codes (Proportions)*

Amputations (0.5%)

Location								
arm	70	(50%)	71	(50%)				
foot	144	(100%)						
hand	69	(100%)						
leg	145	(33.3%)	146	(33.3%)	147	(33.3%)		

Asphyxiations (1.5%)   266   (100%)

Burns (23.6%)

Location						
head	35	(16.66%)	37	(16.66%)	39	(16.66%)
	36	(16.66%)	38	(16.66%)	40	(16.66%)
lower extremities	150	(16.66%)	151	(16.66%)	152	(16.66%)
	153	(16.66%)	154	(16.66%)	155	(16.66%)
thorax	90	(16.66%)	91	(16.66%)	92	(16.66%)
	93	(16.66%)	94	(16.66%)	95	(16.66%)
upper extremities	75	(16.66%)	76	(16.66%)	77	(16.66%)
	78	(16.66%)	79	(16.66%)	80	(16.66%)

Concussions (0.5%)

Location		
head moderate	2	(100%)
head severe	1	(100%)
head(contusions)	5	(100%)

Closed Fractures (3.8%)

Location								
face	15	(50%)	16	(50%)				
femur	120	(100%)						
foot/toe	132	(50%)	133	(50%)				
hand/finger	55	(50%)	56	(50%)				
humerus	44	(100%)						
knee	N/A							
jaw	323	(100%)						
pelvis	112	(50%)	113	(50%)				
radius/ulna	49	(50%)	50	(50%)				
ribs	81	(50%)	82	(50%)				
skull/closed	3	(25%)	4	(25%)	6	(25%)	8	(25%)
shoulder	41	(100%)						
spine	25	(25%)	26	(25%)	27	(25%)	28	(25%)
tibia/fibula	127	(100%)						

Near Drowning (0.3%)   265   (100%)

Open Fractures (3.6%)

Location						
face	17	(50%)	18	(50%)		
femur	123	(50%)	124	(50%)		
foot/toe	136	(50%)	137	(50%)		
hand/finger	59	(33.3%)	60	(33.3%)	319	(33.3%)
humerus	47	(50%)	48	(50%)		
knee	125	(50%)	126	(50%)		
jaw	322	(100%)				
pelvis	114	(50%)	115	(50%)		
radius/ulna	53	(50%)	54	(50%)		
ribs	87	(50%)	88	(50%)		
skull/open	9	(50%)	10	(50%)		
shoulder	42	(50%)	43	(50%)		
spine	29	(50%)	30	(50%)		
tibia/fibula	130	(50%)	131	(50%)		

Table 2. (Cont'd.) Percentage Distributions of WIA PC Codes by Traumatism and Anatomical Location

Trauma/Location	PC Codes (Proportions)							

Sprain/Strains/Dislocations (2.6%)

back	33	(50%)	34	(50%)				
hand/fingers/wrist/elbow	65	(16.6%)	67	(16.6%)	68	(16.6%)		
	72	(16.6%)	73	(16.6%)	74	(16.6%)		
leg	141	(25%)	142	(25%)	148	(25%)	149	(25%)
shoulder	64	(100%)						

Wounds (51.2%)

abdomen	96	(50%)	97	(50%)				
arm	45	(25%)	46	(25%)	51	(25%)	52	(25%)
body	186	(100%)						
buttock	110	(50%)	111	(50%)				
ear	23	(50%)	24	(50%)				
eye	21	(33.3%)	22	(33.3%)	311	(33.3%)		
face/neck	19	(50%)	20	(50%)				
foot/ankle/toe	134	(50%)	135	(50%)				
hand/finger	57	(50%)	58	(50%)				
head	13	(50%)	14	(50%)				
leg	121	(25%)	122	(25%)	128	(25%)	129	(25%)
pelvis	108	(50%)	109	(50%)				
spleen	100	(50%)	105	(50%)				
thorax	85	(50%)	86	(50%)				

Multiple Wounds (12.4%)

head/thorax	159	(100%)
head/abdomen/colon	160	(100%)
head/abdomen/kidney	161	(100%)
head/abdomen/bladder	162	(100%)
head/abdomen/spleen	163	(100%)
head/abdomen/liver	164	(100%)
head/lower extremities	165	(100%)
thorax/abdomen/colon	166	(100%)
thorax/abdomen/kidney	167	(100%)
thorax/abdomen/bladder	168	(100%)
thorax/abdomen/spleen	169	(100%)
thorax/abdomen/liver	170	(100%)
thorax extremities	171	(100%)
abdomen/colon/bladder	172	(100%)
abdomen/colon/spleen	173	(100%)
abdomen/colon/liver	174	(100%)
abdomen/colon/lower extremities	175	(100%)
abdomen/pelvis/liver/kidney	176	(100%)
abdomen/pelvis/spleen/bladder	177	(100%)
abdomen/pelvis/extremities	178	(100%)
abdomen/pelvis/lower extremities	179	(100%)
abdomen/lower extremities	180	(100%)
abdomen/extremities	181	(100%)
thorax/upper extremities	182	(100%)
thorax/upper extremities/abdomen	183	(100%)
thorax/abdomen/colon/bladder	184	(100%)
abdomen/thorax/organs	185	(100%)

Table 3. Mapping of ICD Category Percentages into PC Code Clusters

ICD Category	PC Clusters	Percentage %
Infectious/Parasitic	Infectious/Parasitic	58.8%
	Gastointestinal	20.9%
	Respiratory	6.0%
	Dermatological	6.6%
	STD	7.7%
	NA	0.1%
	Total	**100.0%**
Neoplasm	Surgical	93.8%
	Miscellaneous	6.2%
	Total	**100.0%**
Endocrine	NA	100%
	Total	**100.0%**
Diseases of Blood	Infectious/Parasitic	3.6%
	NA	96.4%
	Total	**100.0%**
Mental Disorders	Neuropsychiatry	100%
	Total	**100.0%**
Nervous System	Eye/Ear	79.8%
	Infectious/Parasitic	1.5%
	Head (NBI)	1.3%
	Upper Limbs (NBI)	0.1%
	Lower Limbs (NBI)	0.6%
	Sprains/Strains (NBI)	4.3%
	NA	12.3%
	Total	**100.0%**
Circulatory	Surgical	40.5%
	Cardiovascular	55.5%
	Infectious/Parasitic	0.4%
	NA	3.6%
	Total	**100.0%**
Respiratory	Respiratory	100%
	Total	**100.0%**
Digestive	Surgical	51.4%
	Gastrointestinal	33.5%
	NA	15.1%
	Total	**100.0%**
Genitourinary	Genitourinary	95.2%
	NA	4.8%
	Total	**100.0%**
Skin/Subcutaneous	Surgical	10.6%
	Dermatological	87.8%
	Miscellaneous	1.6%
	Total	**100.0%**
Musculoskeletal	Sprains/Strains (NBI)	13.6%
	NA	86.4%
	Total	**100.0%**
Ill-defined Symptoms	Respiratory	7.0%
	Gastrointestinal	14.7%
	Cardiovascular	7.9%
	Genitourinary	9.9%
	NA	60.4%
	Total	**100.0%**

Table 4. Percentage Distributions of Shipboard Deployment Disease Admissions by ICD Category

ICD Major Diagnostic Category Descriptions	Vietnam Combat Support 1965-1972 (68 deployments)	Mediterranean Peacetime 1965-1972 (26 deployments)	WestPac Peacetime 1973-1975 (12 deployments)
Infectious/Parasitic Diseases	7.1%	7.1%	18.4%
Neoplasm	2.0%	3.6%	0.5%
Endocrine	0.3%	0.7%	0.0%
Diseases of Blood	0.4%	0.2%	0.3%
Mental Disorders	3.7%	4.8%	3.7%
Nervous Systems	2.3%	1.7%	2.7%
Circulatory Systems	3.2%	3.8%	3.5%
Respiratory System	19.1%	13.1%	10.5%
Digestive System	10.6%	13.8%	7.3%
Genitourinary System	15.3%	15.7%	13.1%
Diseases of the Skin	12.3%	9.2%	15.3%
Musculoskeletal	2.8%	3.4%	4.3%
Congenital Anomalies	0.1%	0.4%	0.4%
Ill-Defined Conditions	4.4%	4.1%	5.1%
Non battle injuries	16.4%	18.60%	15.2%
Total	**100.0%**	**100.0%**	**100.0%**
No. of Admissions	16805	6837	1502

Table 5. Observed and Adjusted Percentage Distributions of Disease Admissions by PC Cluster

PC Cluster	Mediterranean Peacetime 1976-1989 (21 deployments)	ATLANTIC (Adjusted)	Western Pacific Peacetime 1976-1989 (25 deployments)	PACIFIC (Adjusted)
Surgical	19.0%	19.0%	12.3%	13.0%
Dermatological	17.3%	16.1%	22.9%	23.0%
Eye/Ear	2.7%	2.5%	2.2%	2.3%
Respiratory	10.2%	17.3%	13.5%	19.0%
Gastrointestinal	13.6%	11.8%	14.1%	14.7%
Cardivascular	5.0%	4.5%	3.1%	3.0%
STD	0.7%	1.0%	1.4%	1.4%
Genitourinary	9.7%	13.8%	8.2%	10.5%
Infectious/Parasitic	8.7%	8.2%	15.6%	9.2%
Neuropsychiatric	13.3%	6.0%	6.4%	4.0%
Miscellaneous	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 6. Observed and Estimated Nonbattle Injury Admissions by Traumatism Type; Pacific Theater

Traumatism	Vietnam Combat 1965-72 (68 deployments)	Western Pacific 1973-75 (12 deployments)	Western Pacific 1976-89 (21 deployments)	PACIFIC (Adjusted)
Amputations	1.7%	4.4%	4.9%	**2.1%**
Bites and Stings	0.0%	0.0%	1.2%	**0.1%**
Blisters	0.0%	0.0%	0.0%	**0.0%**
Burns	8.9%	6.6%	10.4%	**8.8%**
Cold Injuries	0.0%	0.0%	0.0%	**0.0%**
Concussions	3.0%	2.8%	5.5%	**3.1%**
Crush	0.0%	0.0%	1.2%	**0.1%**
Dislocations	3.2%	3.3%	3.1%	**3.2%**
Fractures	21.5%	20.3%	17.8%	**21.2%**
Heat Injuries	2.8%	3.8%	5.5%	**3.0%**
Sprains/Strains	22.2%	26.9%	14.1%	**22.0%**
Toxic Effects	1.1%	0.0%	2.5%	**1.1%**
Wounds	35.5%	31.9%	33.8%	**35.2%**
Total	**100%**	**100%**	**100%**	**100.0%**
No. of Admissions	2462	182	159	

Table 7. Observed and Estimated Nonbattle Injury Admissions by Traumatism Type; Atlantic Theater

Traumatism	Mediterranean 1965-72 (26 deployments)	Mediterranean 1973-75 (12 deployments)	Mediterranean 1976-89 (21 deployments)	ATLANTIC (Adjusted)
Amputations	2.6%	3.5%	1.8%	2.5%
Bites and Stings	0.1%	0.0%	0.1%	0.1%
Blisters	0.0%	0.0%	0.1%	0.0%
Burns	7.5%	5.0%	6.0%	6.6%
Cold Injuries	0.0%	0.3%	0.0%	0.0%
Concussions	3.9%	3.0%	6.1%	4.6%
Crush	0.0%	0.0%	1.3%	0.5%
Dislocations	4.6%	3.8%	5.2%	4.7%
Fractures	21.8%	24.3%	24.1%	23.0%
Heat Injuries	0.1%	0.0%	0.8%	0.3%
Sprains/Strains	26.0%	30.2%	22.1%	25.2%
Toxic Effects	1.2%	1.2%	2.1%	1.5%
Wounds	32.3%	28.7%	30.2%	31.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**
No. of Admissions	1175	338	845	

Table 8. Percentage Distributions of Anatomical Locations by Traumatism for Nonbattle Injury Admissions

Trauma	% of Traumatism	Trauma	% of Traumatism
Amputations		**Open fractures**	
arm	1.7%	ankle/foot	8.8%
foot	6.0%	face	17.2%
hand	87.1%	femur	1.2%
leg	5.2%	hand/finger	15.4%
Total	**100.0%**	humerus	1.9%
		knee	2.3%
Burns		multiple	2.0%
eye	15.8%	unspecified	0.5%
head	9.0%	pelvis	1.4%
lower extremities	37.2%	radius/ulna	5.6%
thorax	9.1%	ribs	1.7%
upper extremities	28.8%	shoulder	1.1%
Total	**100.0%**	skull	3.4%
		spine	4.0%
Concussions		tibia/fibula	11.3%
hematoma	9.3%	toes	22.1%
concussions	90.7%	**Total**	**100.0%**
Total	**100.0%**		
		Sprains/Strains	
Crush injuries		ankle	28.7%
foot	62.5%	back	35.0%
hand	25.0%	elbow	0.3%
leg	12.5%	hip/thigh	1.1%
Total	**100.0%**	knee	16.9%
		sacroiliac	10.1%
Dislocations		shoulder	0.9%
ankle	2.0%	vertebral	6.1%
elbow	1.5%	wrist	0.8%
finger	2.0%	**Total**	**100.0%**
foot	2.5%		
hip	1.0%	**Wounds**	
jaw	0.5%	abdomen	1.8%
knee	70.5%	arm	6.2%
multiple	2.5%	buttocks	0.1%
shoulder	17.0%	eye	7.3%
wrist	0.5%	face	11.2%
Total	**100.0%**	finger	8.5%
		foot	11.0%
Closed fractures		genitals	0.6%
ankle/foot	8.8%	hand	6.3%
face	17.2%	head	4.3%
femur	1.2%	kidney	1.1%
hand/finger	15.4%	knee	6.2%
humerus	1.9%	leg	23.6%
knee	2.3%	liver	0.1%
multiple	2.0%	thorax	11.5%
unspecified	0.5%	spleen	0.3%
pelvis	1.4%	**Total**	**100.0%**
radius/ulna	5.6%		
ribs	1.7%		
shoulder	1.1%		
skull	3.4%		
spine	4.0%		
tibia/fibula	11.3%		
toes	22.1%		
Total	**100.0%**		

Table 9. Percentage Distributions of Nonbattle Injury PC Codes by Traumatism and Anatomical Location

Trauma/Location	PC Codes (Proportions)						
Amputations							
above knee	147	(100%)					
forearm	70	(100%)					
full arm	71	(100%)					
below knee	145	(100%)					
foot	144	(100%)					
hand	69	(100%)					
pelvis	146	(100%)					
Burns							
head	35	(16.6%)	37	(16.6%)	39	(16.6%)	
	36	(16.6%)	38	(16.6%)	40	(16.6%)	
lower extremities	150	(16.6%)	151	(16.6%)	152	(16.6%)	
	153	(16.6%)	154	(16.6%)	155	(16.6%)	
thorax	90	(16.6%)	91	(16.6%)	92	(16.6%)	
	93	(16.6%)	94	(16.6%)	95	(16.6%)	
upper extremities	75	(16.6%)	76	(16.6%)	77	(16.6%)	
	78	(16.6%)	79	(16.6%)	80	(16.6%)	
Concussions							
Concussions	2	(50%)	1	(50%)			
hematoma	5	(33%)	7	(33%)	11	(33%)	
Crush injuries							
arm	61	(50%)	62	(50%)			
leg	138	(50%)	139	(50%)			
thorax	84	(100%)					
Dislocations							
hand/wrist	67	(100%)					
shoulder	64	(100%)					
elbow	65	(100%)					
finger	68	(100%)					
hip	140	(100%)					
toes	143	(100%)					
Closed fractures							
face	15	(50%)	16	(50%)			
femur	120	(100%)					
foot/toe	132	(50%)	133	(50%)			
hand/finger	55	(50%)	56	(50%)			
humerus	44	(100%)					
knee	N/A						
pelvis	112	(50%)	113	(50%)			
radius/ulna	49	(50%)	50	(50%)			
ribs	81	(50%)	82	(50%)			
skull/closed	3	(25%)	4	(25%)	6	(25%)	8	(25%)
shoulder	41	(100%)					
spine	25	(25%)	26	(25%)	27	(25%)	28	(25%)
tibia/fibula	127	(100%)					

Table 9. (Cont'd.) Percentage Distributions of Nonbattle Injury PC Codes by Traumatism and Anatomical Location

Anatomical Locations	PC Codes (Proportions)							
Open fractures								
face	17	(50%)	18	(50%)				
femur	123	(50%)	124	(50%)				
foot/toe	136	(50%)	137	(50%)				
hand/finger	59	(33%)	60	(33%)	319	(33%)		
humerus	47	(50%)	48	(50%)				
knee	125	(50%)	126	(50%)				
pelvis	114	(50%)	115	(50%)				
radius/ulna	53	(50%)	54	(50%)				
ribs	87	(50%)	88	(50%)				
skull/open	9	(50%)	10	(50%)				
shoulder	42	(50%)	43	(50%)				
spine	29	(50%)	30	(50%)				
tibia/fibula	130	(50%)	131	(50%)				
Sprains/Strains								
sacroiliac	33	(50%)	34	(50%)				
wrist	72	(100%)						
thumb	73	(100%)						
fingers	74	(100%)						
ankle	148	(50%)	149	(50%)				
knee	141	(33%)	142	(33%)	200	(33%)		
vertebral	31	(50%)	32	(50%)				
lumbosacral	201	(100%)						
tenosynovitis	262	(100%)						
Wounds								
abdomen	96	(50%)	97	(50%)				
arm	45	(25%)	46	(25%)	51	(25%)	52	(25%)
buttocks	111	(100%)						
eye	22	(33%)	224	(33%)	311	(33%)		
face/neck	19	(50%)	20	(50%)				
foot/ankle/toe	134	(50%)	135	(50%)				
genitals	116	(50%)	117	(50%)				
hand/finger	57	(50%)	58	(50%)				
head	13	(50%)	14	(50%)				
kidney	106	(33%)	107	(33%)	313	(33%)		
knee	126	(50%)	312	(50%)				
leg	121	(25%)	122	(25%)	128	(25%)	129	(25%)
liver	98	(25%)	99	(25%)	103	(25%)	104	(25%)
thorax	85	(50%)	86	(50%)				
body	186	(100%)						
spleen	100	(50%)	105	(50%)				
Environmental NBI								
Heat-related injuries	193	(33%)	194	(33%)	195	(33%)		
Cold-related injuries	187	(20%)	188	(20%)	190	(20%)	191	(20%) 192 (20%)
Miscellaneous NBI								
Bites and Stings	157	(25%)	158	(25%)	328	(25%)	335	(25%)
Other injuries	156	(33%)	266	(33%)	268	(33%)		

Appendix A. Estimated Wounded-in-Action Patient Condition Code Percentages

PC Code	PC Code Description	Estimated WIA %
1	Cerebral / concussion / and / or / fracture / severe	0.04%
2	Cerebral / concussion / and / or / fracture / moderate	0.09%
3	Cerebral / contusion / and / or / fracture / loss	0.02%
4	Cerebral / contusion / and / or / fracture / moderate	0.02%
5	Cerebral / contusion / and / or / fracture / hematoma	0.35%
6	Cerebral / contusion / fracture / severe / loss	0.02%
7	Cerebral / contusion / fracture / severe	0.00%
8	Cerebral / contusion / fracture / moderate	0.02%
9	Cerebral / contusion / fracture / open / severe	0.07%
10	Cerebral / contusion / fracture / open	0.07%
13	Wound / scalp / open / severe	1.94%
14	Wound / scalp / open / moderate	1.94%
15	Fracture / facial / exclusive / mandible / severe	0.02%
16	Fracture / facial / exclusive / mandible / moderate	0.02%
17	Wound / face / jaw / neck / open / fracture	0.02%
18	Wound / face / jaw / neck / open / fracture	0.02%
19	Wound / face / neck / open / airway	1.14%
20	Wound / face / neck / open	1.14%
21	Eye / wound / severe	0.23%
22	Eye / wound / lacerated / moderate	0.23%
23	Hearing impairment / severe	0.44%
24	Hearing impairment / moderate	0.44%
25	Fracture / spine / closed / unstable lesion	0.09%
26	Fracture / spine / closed	0.09%
27	Fracture / spine / closed / cord / respiratory	0.09%
28	Fracture / spine / closed / cord / below / cervical	0.09%
29	Fracture / spine / open / cord / cervical / respiratory	0.01%
30	Fracture / spine / open / cord / below cervical	0.01%
33	Strain / sprain / sacroiliac / severe	0.35%
34	Strain / sprain / sacroiliac / moderate	0.35%
35	Burn / superficial / head / neck / 5-10% / eye	1.29%
36	Burn / superficial / head / neck / 0-5%	1.29%
37	Burn / partial / head / neck / 5-10% / eye	1.29%
38	Burn / partial / head / neck / 0-5%	1.29%
39	Burn / full / head / neck / 5-10% / eye	1.29%
40	Burn / full / head / neck / 0-5%	1.29%
41	Fracture / clavicle	0.19%
42	Wound / shoulder girdle / open / bone	0.01%
43	Wound / shoulder girdle / open	0.01%
44	Fracture / humerus	0.27%
45	Wound / upper arm / open / severe / nerve	1.77%
46	Wound / upper arm / open	1.77%
47	Wound / upper arm / open / fracture / nerve / vascular	0.24%
48	Wound / upper arm / open / fracture / nerve	0.24%
49	Fracture / radius / ulna / closed / severe	0.31%
50	Fracture / radius / ulna / closed / moderate	0.31%
51	Wound / forearm / open / severe	1.77%
52	Wound / forearm / open	1.77%
53	Wound / forearm / open / Fracture / nerve / vascular /	0.20%
54	Wound / forearm / open / Fracture / nerve / vascular	0.20%
55	Fracture / hand or fingers / closed / sever	0.08%
56	Fracture / hand / and/or / fingers / closed / moderate	0.08%
57	Wound / hand / and/or / fingers / open / severe	1.20%
58	Wound / hand / and/or / fingers / open / moderate	1.20%
59	Wound / hand / open / crushed	0.10%
60	Wound / fingers / open / crushed	0.10%
61	Crush / upper extremities / severe / limb	0.00%
62	Crush / upper extremities / moderate	0.00%
64	Dislocation / shoulder	0.22%
65	Dislocation / fracture / elbow	0.02%
67	Dislocation / hand or wrist	0.02%
68	Dislocation / hand / wrist / fingers / closed	0.02%
69	Amputation hand / fingers	0.14%
70	Amputation forearm	0.05%

Appendix A. Estimated Wounded-in-Action Patient Condition Code Percentages

PC Code	PC Code Description	Estimated WIA %
71	Amputation full arm	0.05%
72	Sprain / wrist	0.02%
73	Sprain / thumb / closed	0.02%
74	Sprain / fingers / closed / no thumb	0.02%
75	Burn / superficial / upper / 10-20%	1.49%
76	Burn / superficial / upper / 0-10%	1.49%
77	Burn / partial / upper / 10-20%	1.49%
78	Burn / partial / upper / 0-10%	1.49%
79	Burn / full / upper / 10-20%	1.49%
80	Burn / full / upper / 0-10%	1.49%
81	Fracture / ribs / closed / multiple	0.15%
82	Fracture / ribs / closed	0.15%
83	Injury / lung / closed / pneumohemothorax / severe	0.00%
84	Injury / lung / closed / pneumohemothorax / moderate	0.00%
85	Wound / thorax / open	2.40%
86	Wound / thorax / open	2.40%
87	Wound / thorax / open / rib / Fracture	0.02%
88	Wound / thorax / open / rib / Fracture	0.02%
90	Burn / trunk / superficial / 30-20%	0.61%
91	Burn / superficial / trunk / 10-20%	0.61%
92	Burn / trunk / partial / 30-20%	0.61%
93	Burn / partial / trunk / 10-20%	0.61%
94	Burn / trunk / full thickness / 30-20%	0.61%
95	Burn / full / trunk / 10-20%	0.61%
96	Wound / abdominal wall / severe	1.24%
97	Wound / abdominal wall / moderate	1.24%
98	Wound / liver / closed / major damage	0.00%
99	Wound / liver / closed / minor	0.00%
100	Wound / spleen	0.02%
101	Wound /abdomen / large bowel	0.00%
102	Wound /abdomen / small bowel	0.00%
103	Wound /abdomen / liver / major damage	0.00%
104	Wound /abdomen / liver	0.00%
105	Wound /abdomen / spleen	0.02%
106	Wound /abdomen / shattered kidney	0.00%
107	Wound /abdomen / kidney / nephrectomy	0.00%
108	Wound /abdomen / shattered bladder	0.24%
109	Wound /abdomen / bladder	0.24%
110	Wound / buttocks / open / severe	0.56%
111	Wound / buttocks / moderate	0.56%
112	Displaced / fracture / pelvis	0.06%
113	Fracture / pelvis	0.06%
114	Wound /abdomen / open / pelvic / fracture	0.00%
115	Wound /abdomen / open / pelvic / fracture	0.00%
116	Wound / extremities / genitalia / male / severe	0.00%
117	Wound / extremities / genitalia / male / moderate	0.00%
118	Wound / extremities / genitalia / female / severe	0.00%
119	Wound / extremities / genitalia / female / moderate	0.00%
120	Fracture / femur	0.23%
121	Wound / thigh / open / debridement	3.11%
122	Wound / thigh / open	3.11%
123	Wound / thigh / open / fracture / unsalvageable	0.24%
124	Wound / thigh / open / fracture / nerve	0.24%
125	Wound / knee / open / shattered	0.09%
126	Wound / knee / open / penetration / cart	0.09%
127	Fracture / closed / tibia / fibula	0.84%
128	Wound / low / leg / open / debridement	3.11%
129	Wound / low / leg / open	3.11%
130	Wound / low / leg / fracture / unsalvageable	0.58%
131	Wound / low / leg / fracture / nerve	0.58%
132	Fracture / ankle / foot / closed / reduction	0.25%
133	Fracture / ankle / foot / closed /	0.25%
134	Wound / ankle / foot / toes / debridement	1.38%
135	Wound / ankle / foot / toes	1.38%

Appendix A. Estimated Wounded-in-Action Patient Condition Code Percentages

PC Code	PC Code Description	Estimated WIA %
136	Wound / ankle / foot / toes / unsalvageable	0.13%
137	Wound / ankle / foot / toes / fracture / nerve	0.13%
138	Crush injury / low / limb unsalvageable	0.00%
139	Crush injury / lower limb	0.00%
141	Tear / ligament / knee / complete / rupture	0.39%
142	Tear / ligament / knee / incomplete	0.39%
144	Amputation foot	0.10%
145	Amputation below knee	0.06%
146	Amputation / hip disarticulation	0.06%
147	Amputation above knee	0.06%
148	Sprain / ankle / complete rupture	0.39%
149	Sprain / ankle / incomplete rupture	0.39%
150	Burn / superficial / low / genitalia / 40-30%	0.55%
151	Burn / superficial / low / genitalia / 15-30%	0.55%
152	Burn / partial thickness / low / genitalia / 40%	0.55%
153	Burn / partial / low / genitalia / 15-30%	0.55%
154	Burn / low / genitalia / full / 40-30%	0.55%
155	Burn / full / low / genitalia / 15-30%	0.55%
159	Multiple Injury Wound (MIW) brain / chest / pneumohemothorax	0.27%
160	MIW brain / abdomen / colon	0.20%
161	MIW brain / abdomen / kidney	0.19%
162	MIW brain / abdomen / bladder	0.19%
163	MIW brain / abdomen / spleen	0.19%
164	MIW brain / abdomen / liver	0.19%
165	MIW brain / limbs / amputation	0.92%
166	MIW chest / pneumohemothorax / abdomen / colon	0.21%
167	MIW chest / pneumohemothorax / abdomen / kidney	0.21%
168	MIW chest / pneumohemothorax / abdomen / bladder	0.21%
169	MIW chest / pneumohemothorax / abdomen / spleen	0.21%
170	MIW chest / pneumohemothorax / abdomen / liver	0.21%
171	MIW chest / pneumohemothorax / limbs / fracture	1.51%
172	MIW abdomen / colon / bladder	0.07%
173	MIW abdomen / colon / spleen	0.07%
174	MIW abdomen / colon / liver	0.07%
175	MIW abdomen / limbs / colon / fracture	0.85%
176	MIW abdomen / pelvis / liver / kidney	0.06%
177	MIW abdomen / pelvis / spleen / bladder	0.06%
178	MIW abdomen / pelvis / limbs / fracture	1.42%
179	MIW abdomen / pelvis / limbs / penetrating	0.84%
180	MIW abdomen / limbs / fracture / nerve / penetrating	0.84%
181	MIW abdomen / limbs / penetrating	1.42%
182	MIW chest / pneumohemothorax / upper limbs	0.72%
183	MIW chest / pneumohemothorax / upper limbs / abdomen	0.78%
184	MIW chest / pneumohemothorax / pelvis / abdomen / colon	0.22%
185	MIW abdomen / chest / multiple organs	0.24%
186	Multiple nonperforating wounds	9.98%
265	Near Drowning	0.34%
266	Toxic Inhalation	1.52%
311	Eye / wound / penetrated / eye salvage	0.23%
312	Wound / knee / open / penetration	0.00%
313	Wound / abdomen / kidney	0.00%
319	Wound / fingers / open / crushed	0.10%
322	Fracture / mandible / unstable	0.07%
323	Fracture / mandible / stable	0.04%
346	Eye / wound / laser / severe / macular / optic	0.00%
347	Eye / wound / laser / RFR / moderate / posterior	0.00%
348	Eye / wound / laser / moderate / nonmacular	0.00%
349	Eye / wound / laser / RFR / mild / anterior	0.00%
350	Eye / wound / laser / mild / flashblind	0.00%
		100.00%

Appendix B. Estimated Percentage Distributions of PC Codes by Disease Cluster and Geographical Theaters

Surgical Disease Cluster (Cluster Percentages)		18.97%	13.03%
PC	**Diagnoses**	**Atlantic**	**Pacific**
196	Appendicitis/perforation/rupture/peritonitis	12.0%	12.0%
197	Appendicitis/rupture/peritonitis	12.0%	12.0%
198	Inguinal hernia/complicated/incarceration	12.0%	12.0%
199	Inguinal/hernia/no incarceration of bowel	12.0%	12.0%
212	Pilonidal/cyst/abscess/requiring excision	1.0%	1.0%
213	Pilonidal/cyst/abscess/incision	1.0%	1.0%
249	Peptic ulcer/gastric/duodenal/perforated	0.5%	0.5%
256	Hemorrhoidal disease	22.0%	22.0%
277	Ureteral calculus/obstruct/impacted	5.0%	5.0%
285	Cholecystitis/cholelithiasis	0.5%	0.5%
290	Neoplasms/benign	22.0%	22.0%
		100%	100%

Dermatological Disease Cluster (Cluster Percentages)		16.1%	22.96%
PC	**Diagnoses**	**Atlantic**	**Pacific**
202	Eczema/derma/seborrheic/affecting	14.5%	14.5%
203	Eczema/derma/seborrheic/not affect	14.5%	14.5%
204	Boils/furuncles/pyoderma/surgery	2.0%	2.0%
205	Boils/furuncles/pyoderma/no surgery	2.0%	2.0%
206	Cellulitis/face/weight bearing areas	26.5%	26.5%
207	Cellulitis/other than face or weight	26.5%	26.5%
208	Dermatophytosis/severe/feet	3.3%	3.3%
209	Dermatophytosis/all other cases	3.3%	3.3%
210	Pediculosis/lice	0.5%	0.5%
211	Scabies	0.5%	0.5%
216	Herpes simplex	1.0%	1.0%
219	Hyperhidrosis	5.5%	5.5%
		100%	100%

Eye/Ear Disease Cluster (Cluster Percentages)		2.46%	2.30%
PC	**Diagnoses**	**Atlantic**	**Pacific**
220	Blepharitis/inflammation/eyelid	3.0%	3.0%
221	Conjunctivitis/severe/eyelid lining	11.0%	11.0%
222	Conjunctivitis/moderate	11.0%	11.0%
223	Corneal ulcer	3.5%	3.5%
225	Iridocyclitis/acute/visual impairment	4.8%	4.8%
226	Iridocyclitis/acute/min impairment	4.8%	4.8%
227	Refraction/accommodation/refraction required	12.0%	12.0%
228	Refraction/accommodation/spectacles required	12.0%	12.0%
229	Otitis/external	10.0%	10.0%
230	Otitis/media/acute/suppurative	10.0%	10.0%
231	Mastoiditis/chronic	18.0%	18.0%
		100%	100%

Respiratory Disease Cluster (Cluster Percentages)		17.26%	18.98%
PC	**Diagnoses**	**Atlantic**	**Pacific**
232	Allergic/rhinitis	3.0%	3.0%
233	Upper/respiratory/infection	52.0%	52.0%
234	Bronchitis	19.0%	19.0%
235	Asthma/disabling/repeated attacks	0.5%	0.5%
236	Asthma	0.5%	0.5%
239	Respiratory/distress/syndrome/severe	12.5%	12.5%
240	Respiratory/distress/syndrome/moderate	12.5%	12.5%
		100%	100%

Gastrointestinal Disease Cluster (Cluster Percentages)		11.80%	14.66%
PC	**Diagnoses**	**Atlantic**	**Pacific**
243	Food poisoning/severe/disabling	17.3%	17.3%
244	Food poisoning/moderate	17.3%	17.3%
245	Diarrheal/severe	16.0%	16.0%
246	Diarrheal/moderate	16.0%	16.0%
248	Gastritis/dyspepsia	4.0%	4.0%
250	Peptic Ulcer/gastro or duodenal/moderate	9.7%	9.7%
251	Regional ileitis/disabling/unresponsive	6.1%	6.1%
252	Regional ileitis/responding to treatment	6.1%	6.1%
253	Helminthiasis	3.8%	3.8%
286	Pancreatitis	0.8%	0.8%
287	Cirrhosis	3.2%	3.2%
		100%	100%

Appendix B. Estimated Percentage Distributions of PC Codes by Disease Cluster and Geographical Theaters

Cardiovascular Disease Cluster (Cluster Percentages)		4.51%	2.99%
PC	**Diagnoses**	**Atlantic**	**Pacific**
258	Hypertension/essential	56.0%	56.0%
259	Ischemic heart/disease	34.0%	34.0%
260	Phlebitis/deep vein involvement	10.0%	10.0%
		100%	**100%**

Sexually Transmitted Disease Cluster (Cluster Percentages)		1.00%	1.37%
PC	**Diagnoses**	**Atlantic**	**Pacific**
269	STD/urethritis	86.0%	86.0%
270	STD/genital ulcers/adenopathy	12.0%	12.0%
271	STD/complicated	2.0%	2.0%
		100%	**100%**

Genitourinary Disease Cluster (Cluster Percentages)		13.75%	10.51%
PC	**Diagnoses**	**Atlantic**	**Pacific**
272	Glomerulonephritis/acute	3.5%	3.5%
273	Glomerulonephritis/chronic	3.5%	3.5%
274	Pyelonephritis/secondary to obstruction	3.5%	3.5%
275	Pyelonephritits/bacterial/infection	4.3%	5.0%
276	Nephrotic/syndrome	4.3%	5.0%
278	Ureteral calculus/not causing obstruction	18.5%	18.5%
279	Epididymitis/cystitis/prostatitis	42.0%	42.0%
280	Balanoposthitis	19.0%	19.0%
		100%	**100%**

Infectious/Parasitic Cluster (Cluster Percentages)		8.15%	9.20%
PC	**Diagnoses**	**Atlantic**	**Pacific**
263	Menigo/encephalitis/complicated	2.0%	2.0%
264	Menigo/encephalitis/uncomplicated	2.0%	2.0%
282	Infectious/mononucleosis	4.5%	4.5%
283	Hepatitis/infectious/viral	4.3%	4.3%
329	Trachoma	1.0%	1.0%
330	Schistosomiasis	0.0%	0.0%
331	Malaria/severe	0.0%	0.0%
332	Malaria/moderate	0.0%	0.0%
333	Febrile illness/acute/severe	43.1%	43.1%
334	Febrile illness/acute/moderate	43.1%	43.1%
339	Cutaneous ulcers/leishmaniasis	0.0%	0.0%
		100.0%	**100.0%**

Neuropsychiatric Disease Cluster (Cluster Percentages)		6.00%	4.00%
PC	**Diagnoses**	**Atlantic**	**Pacific**
301	Psychosis	9.4%	9.4%
302	Conduct Disorders	45.1%	45.1%
303	Non-psychotic mental disorders	39.2%	39.2%
306	Alcohol dependency/moderate	1.2%	1.2%
307	Alcohol misuse/simple intoxication	1.5%	1.5%
308	Drug dependency/severe	0.0%	0.0%
309	Drug misuse/moderate	2.2%	2.2%
316	Alcohol dependency/severe	1.2%	1.2%
317	Drug misuse/severe	0.3%	0.3%
		100.0%	**100.0%**

Miscellaneous Disease Cluster (Cluster Percentages)		0.00%	0.00%
PC	**Diagnoses**	**Atlantic**	**Pacific**
255	Migraine	80.0%	80.0%
289	Neoplasms/malignant	20.0%	20.0%
		100%	**100%**

Appendix C. Estimated Disease Patient Condition Codes by Geographical Region

PC Code	PC Description	Atlantic	Pacific
196	Appendicitis/perforation/rupture/peritonitis	2.28%	1.56%
197	Appendicitis/rupture/peritonitis	2.28%	1.56%
198	Inguinal hernia/complicated/incarceration	2.28%	1.56%
199	Inguinal/hernia/no incarceration of bowel	2.28%	1.56%
202	Eczema/derma/seborrheic/affecting	2.33%	3.33%
203	Eczema/derma/seborrheic/not affect	2.33%	3.33%
204	Boils/furuncles/pyoderma/surgery	0.32%	0.46%
205	Boils/furuncles/pyoderma/no surgery	0.32%	0.46%
206	Cellulitis/face/weight bearing areas	4.27%	6.08%
207	Cellulitis/other than face or weight	4.27%	6.08%
208	Dermatophytosis/severe/feet	0.52%	0.75%
209	Dermatophytosis/all other cases	0.52%	0.75%
210	Pediculosis/lice	0.08%	0.11%
211	Scabies	0.08%	0.11%
212	Pilonidal/cyst/abscess/requiring excision	0.19%	0.13%
213	Pilonidal/cyst/abscess/incision	0.19%	0.13%
216	Herpes simplex	0.16%	0.23%
219	Hyperhidrosis	0.89%	1.26%
220	Blepharitis/inflammation/eyelid	0.07%	0.07%
221	Conjunctivitis/severe/eyelid lining	0.27%	0.25%
222	Conjunctivitis/moderate	0.27%	0.25%
223	Corneal ulcer	0.09%	0.08%
225	Iridocyclitis/acute/visual impairment	0.12%	0.11%
226	Iridocyclitis/acute/minimal impairment	0.12%	0.11%
227	Refraction/accommodation/refraction required	0.30%	0.28%
228	Refract/accommodation/spectacles required	0.30%	0.28%
229	Otitis/external	0.25%	0.23%
230	Otitis/media/acute/suppurative	0.25%	0.23%
231	Mastoiditis/chronic	0.44%	0.41%
232	Allergic/rhinitis	0.52%	0.57%
233	Upper/respiratory/infection	8.98%	9.87%
234	Bronchitis	3.28%	3.61%
235	Asthma/disabling/repeated attacks	0.09%	0.09%
236	Asthma	0.09%	0.09%
239	Respiratory/distress/syndrome/severe	2.16%	2.37%
240	Respiratory/distress/syndrome/moderate	2.16%	2.37%
243	Food poisoning/severe/disabling	2.04%	2.54%
244	Food poisoning/moderate	2.04%	2.54%
245	Diarrheal/severe	1.88%	2.34%
246	Diarrheal/moderate	1.88%	2.34%
248	Gastritis/dyspepsia	0.48%	0.59%
249	Peptic ulcer/gastric/duodenal/perforated	0.09%	0.07%
250	Peptic ulcer/gastro or duodenal/moderate	1.14%	1.42%
251	Regional ileitis/disabling/unresponsive	0.71%	0.89%
252	Regional ileitis/responding to treatment	0.71%	0.89%
253	Helminthiasis	0.44%	0.55%
255	Migraine	0.00%	0.00%
256	Hemorrhoidal disease	4.17%	2.87%
258	Hypertension/essential	2.53%	1.67%
259	Ischemic heart/disease	1.53%	1.02%
260	Phlebitis/deep vein involvement	0.45%	0.30%
263	Menigo/encephalitis/complicated	0.16%	0.18%
264	Menigo/encephalitis/uncomplicated	0.16%	0.18%
269	STD/urethritis	0.86%	1.18%
270	STD/genital ulcers/adenopathy	0.12%	0.16%
271	STD/complicated	0.02%	0.03%
272	Glomerulonephritis/acute	0.48%	0.37%
273	Glomerulonephritis/chronic	0.48%	0.37%
274	Pyelonephritis/secondary to obstruction	0.48%	0.37%
275	Pyelonephritis/bacterial/infection	0.58%	0.53%
276	Nephrotic/syndrome	0.58%	0.53%
277	Ureteral calculus/obstruct/impacted	0.95%	0.65%
278	Ureteral calculus/not causing obstruction	2.54%	1.94%
279	Epididymitis/cystitis/prostatitis	5.78%	4.41%

Appendix C. Estimated Disease Patient Condition Codes by Geographical Region

PC Code	PC Description	Atlantic	Pacific
280	Balanoposthitis	2.61%	2.00%
282	Infectious/mononucleosis	0.37%	0.42%
283	Hepatitis/infectious/viral	0.35%	0.40%
285	Cholecystitis/cholelithiasis	0.09%	0.07%
286	Pancreatitis	0.10%	0.12%
287	Cirrhosis	0.38%	0.47%
289	Neoplasms/malignant	0.00%	0.00%
290	Neoplasms/benign	4.17%	2.87%
291	Abnormal uterine bleeding	0.00%	0.00%
292	Dysmenorrhea/amenorrhea	0.00%	0.00%
293	Pelvic inflammatory disease (PID)	0.00%	0.00%
294	Cervicitis/endocervicitis/leukorrhea	0.00%	0.00%
295	Vulvovaginitis	0.00%	0.00%
297	Tubal pregnancy	0.00%	0.00%
299	Abortion spontaneous	0.00%	0.00%
301	Psychosis	0.56%	0.38%
302	Conduct Disorders	2.71%	1.80%
303	Non-psychotic mental disorders	2.35%	1.57%
306	Alcohol dependency/moderate	0.07%	0.05%
307	Alcohol misuse/simple intoxication	0.09%	0.06%
308	Drug dependency/severe	0.00%	0.00%
309	Drug misuse/moderate	0.13%	0.09%
316	Alcohol dependency/severe	0.07%	0.05%
317	Drug misuse/severe	0.02%	0.01%
329	Trachoma	0.08%	0.09%
330	Schistosomiasis	0.00%	0.00%
331	Malaria/severe	0.00%	0.00%
332	Malaria/moderate	0.00%	0.00%
333	Febrile illness/acute/severe	3.51%	3.97%
334	Febrile illness/acute/moderate	3.51%	3.97%
339	Cutaneous ulcers/leishmaniasis	0.00%	0.00%
		100.0%	100.0%

Appendix D. Estimated NBI Patient Condition Code Percentages by Geographical Region

PC Code	PC Description	Atlantic	Pacific
1	Cerebral/concussion/and/or/fracture/severe	2.07%	1.41%
2	Cerebral/concussion/and/or/fracture/mod	2.07%	1.41%
3	Cerebral/contusion/and/or/fracture/loss	0.10%	0.09%
4	Cerebral/contusion/and/or/fracture/moderate	0.10%	0.09%
5	Cerebral/contusion/and/or/fracture/hematoma	0.14%	0.10%
6	Cerebral/contusion/fracture/severe/loss	0.10%	0.09%
7	Cerebral/contusion/fracture/severe	0.14%	0.10%
8	Cerebral/contusion/fracture/moderate	0.10%	0.09%
9	Cerebral/contusion/fracture/open/severe	0.36%	0.33%
10	Cerebral/contusion/fracture/open	0.36%	0.33%
11	Intracranial hemorrhage/all	0.14%	0.10%
13	Wound/scalp/open/severe	0.66%	0.75%
14	Wound/scalp/open/mod	0.66%	0.75%
15	Fracture/facial/exclusive/mandible/severe	1.11%	1.03%
16	Fracture/facial/exclusive/mandible/mod	1.11%	1.03%
17	Wound/face/jaw/neck/open/fracture	0.72%	0.67%
18	Wound/face/jaw/neck/open/fracture	0.72%	0.67%
19	Wound/face/neck/open/airway	1.73%	1.97%
20	Wound/face/neck/open	1.73%	1.97%
21	Eye/wound/severe	0.00%	0.00%
22	Eye/wound/lacerated/mod	0.76%	0.86%
23	Hearing impairment/severe	0.00%	0.00%
24	Hearing impairment/mod	0.00%	0.00%
25	Fracture/spine/closed/unstable lesion	0.13%	0.12%
26	Fracture/spine/closed	0.13%	0.12%
27	Fracture/spine/closed/cord/respiratory	0.13%	0.12%
28	Fracture/spine/closed/cord/below/cervical	0.13%	0.12%
29	Fracture/spine/open/cord/cervical/respiratory	0.10%	0.10%
30	Fracture/spine/open/cord/below cervical	0.10%	0.10%
31	Intevertebral disc disorders/resistant	0.46%	0.40%
32	Intevertebral disc disorders/responding	1.77%	1.55%
33	Strain/sprain/sacroiliac/severe	0.75%	0.65%
34	Strain/sprain/sacroiliac/mod	6.57%	5.74%
35	Burn/superficial/head/neck/5-10%/eye	0.35%	0.47%
36	Burn/superficial/head/neck/0-5%	0.20%	0.27%
37	Burn/partial/head/neck/5-10%/eye	0.35%	0.47%
38	Burn/partial/head/neck/0-5%	0.20%	0.27%
39	Burn/full/head/neck/5-10%/eye	0.35%	0.47%
40	Burn/full/head/neck/0-5%	0.20%	0.27%
41	Fracture/clavicle	0.13%	0.12%
42	Wound/shoulder girdle/open/bone	0.05%	0.05%
43	Wound/shoulder girdle/open	0.05%	0.05%
44	Fracture/humerus	0.24%	0.23%
45	Wound/upper arm/open/severe/nerve	0.48%	0.55%
46	Wound/upper arm/open	0.48%	0.55%
47	Wound/upper arm/open/fracture/nerve	0.05%	0.05%
48	Wound/upper arm/open/fracture/nerve	0.05%	0.05%
49	Fracture/radius/ulna/closed/severe	0.37%	0.34%
50	Fracture/radius/ulna/closed/mod	0.37%	0.34%
51	Wound/forearm/open/severe	0.48%	0.55%
52	Wound/forearm/open	0.48%	0.55%
53	Wound/forearm/open/fracture/nerve/vas	0.21%	0.19%
54	Wound/forearm/open/fracture/nerve/vas	0.21%	0.19%
55	Fracture/hand or fingers/closed/sever	0.82%	0.76%
56	Fracture/hand/and/or/fingers/closed/moderate	0.82%	0.76%
57	Wound/hand/and/or/fingers/open/severe	2.28%	2.59%
58	Wound/hand/and/or/fingers/open/mod	2.28%	2.59%
59	Wound/hand/open/crushed	1.41%	1.30%
60	Wound/fingers/open/crushed	1.41%	1.30%
61	Crush/upper extremities/severe/limb	0.19%	0.03%
62	Crush/upper extremities/mod	0.19%	0.03%
64	Dislocation/shoulder	3.02%	2.03%
65	Dislocation/fracture/elbow	0.27%	0.18%
67	Dislocation/hand or wrist	0.09%	0.06%

Appendix D. Estimated NBI Patient Condition Code Percentages by Geographical Region

PC Code	PC Description	Atlantic	Pacific
68	Dislocation/hand/wrist/fingers/closed	0.35%	0.24%
69	Amputation hand	2.14%	1.79%
70	Amputation forearm	0.02%	0.02%
71	Amputation full arm	0.02%	0.02%
72	Sprain/wrist	0.15%	0.13%
73	Sprain/thumb/closed	0.00%	0.00%
74	Sprain/fingers/closed/no thumb	0.00%	0.00%
75	Burn/superficial/upp/10-20%	0.32%	0.42%
76	Burn/superficial/upp/0-10%	0.32%	0.42%
77	Burn/partial/upp/10-20%	0.32%	0.42%
78	Burn/partial/upp/0-10%	0.32%	0.42%
79	Burn/full/upp/10-20%	0.32%	0.42%
80	Burn/full/upp/0-10%	0.32%	0.42%
81	Fracture/ribs/closed/multiple	0.11%	0.10%
82	Fracture/ribs/closed	0.11%	0.10%
83	Injury/lung/closed/pneumohemothorax/severe	0.00%	0.00%
84	Injury/lung/closed/pneumohemothorax/mod	0.00%	0.00%
85	Wound/thorax/open	1.79%	2.03%
86	Wound/thorax/open	1.79%	2.03%
87	Wound/thorax/open/rib/fracture	0.05%	0.05%
88	Wound/thorax/open/rib/fracture	0.05%	0.05%
90	Burn/trunk/superficial/30-20%	0.10%	0.13%
91	Burn/superficial/trunk/10-20%	0.10%	0.13%
92	Burn/trunk/partial/30-20%	0.10%	0.13%
93	Burn/partial/trunk/10-20%	0.10%	0.13%
94	Burn/trunk/full thickness/30-20%	0.10%	0.13%
95	Burn/full/trunk/10-20%	0.10%	0.13%
96	Wound/abdominal wall/severe	0.14%	0.16%
97	Wound/abdominal wall/mod	0.14%	0.16%
98	Wound/liver/closed/major damage	0.01%	0.01%
99	Wound/liver/closed/minor	0.01%	0.01%
100	Wound/spleen	0.04%	0.05%
101	Wound/abdomen/large bowel	0.14%	0.16%
102	Wound/abdomen/small bowel	0.14%	0.16%
103	Wound/abdomen/liver/major damage	0.01%	0.01%
104	Wound/abdomen/liver	0.01%	0.01%
105	Wound/abdomen/spleen	0.04%	0.05%
106	Wound/abdomen/shattered kidney	0.00%	0.00%
107	Wound/abdomen/kidney/nephrectomy	0.00%	0.00%
108	Wound/abdomen/shattered bladder	0.00%	0.00%
109	Wound/abdomen/bladder	0.00%	0.00%
110	Wound/buttocks/open/severe	0.00%	0.00%
111	Wound/buttocks/moderate	0.04%	0.05%
112	Displaced/fracture/pelvis	0.09%	0.08%
113	Fracture/pelvis	0.09%	0.08%
114	Wound/abdomen/open/pelvic/fracture	0.10%	0.10%
115	Wound/abdomen/open/pelvic/fracture	0.10%	0.10%
116	Wound/extremities/genitalia/male/severe	0.09%	0.10%
117	Wound/extremities/genitalia/male/mod	0.09%	0.10%
118	Wound/extremities/genitalia/female/severe	0.00%	0.00%
119	Wound/extremities/genitalia/female/mod	0.00%	0.00%
120	Fracture/femur	0.15%	0.14%
121	Wound/thigh/open/debridement	1.83%	2.08%
122	Wound/thigh/open	1.83%	2.08%
123	Wound/thigh/open/fracture/unsalvageable	0.10%	0.10%
124	Wound/thigh/open/fracture/nerve	0.10%	0.10%
125	Wound/knee/open/shattered	0.10%	0.10%
126	Wound/knee/open/penetration/cart	0.96%	1.09%
127	Fracture/closed/tibia/fibula	1.45%	1.34%
128	Wound/low/leg/open/debridement	1.83%	2.08%
129	Wound/low/leg/open	1.83%	2.08%
130	Wound/low/leg/fracture/unsalvageable	0.51%	0.48%
131	Wound/low/leg/fracture/nerve	0.51%	0.48%
132	Fracture/ankle/foot/closed/reduction	2.02%	1.87%

Appendix D. Estimated NBI Patient Condition Code Percentages by Geographical Region

PC Code	PC Description	Atlantic	Pacific
133	Fracture/ankle/foot/closed/	2.02%	1.87%
134	Wound/ankle/foot/toes/debridement	1.70%	1.93%
135	Wound/ankle/foot/toes	1.70%	1.93%
136	Wound/ankle/foot/toes/unsalvageable	1.08%	1.00%
137	Wound/ankle/foot/toes/fracture/nerve	1.08%	1.00%
138	Crush injury/low/limb unsalvageable	0.05%	0.01%
139	Crush injury/lower limb	0.05%	0.01%
140	Dislocation/hip	0.18%	0.12%
141	Tear/ligament/knee/complete/rupture	3.66%	3.20%
142	Tear/ligament/knee/incomplete	0.65%	0.57%
143	Dislocation/toes/closed	0.80%	0.54%
144	Amputation foot	0.15%	0.12%
145	Amputation below knee	0.06%	0.05%
146	Amputation/hip disarticulation	0.00%	0.00%
147	Amputation above knee	0.06%	0.05%
148	Sprain/ankle/complete rupture	0.54%	0.47%
149	Sprain/ankle/incomplete rupture	4.89%	4.28%
150	Burn/superficial/low/genitalia/40-30%	0.41%	0.55%
151	Burn/superficial/low/genitalia/15-30%	0.41%	0.55%
152	Burn/partial thickness/low/gent/40%	0.41%	0.55%
153	Burn/partial/low/genitalia/15-30%	0.41%	0.55%
154	Burn/low/genitalia/full/40-30%	0.41%	0.55%
155	Burn/full/low/genitalia/15-30%	0.41%	0.55%
156	Blisters, hand, fingers,foot/friction	0.52%	0.38%
157	Insect bites and stings/respiratory	0.02%	0.03%
158	Insect bites and stings/moderate	0.02%	0.03%
186	Multiple nonperforating wounds	0.00%	0.00%
187	Trench foot/immersion foot/vesicle/severe	0.01%	0.01%
188	Trench foot/immersion foot/vesicle/mod	0.01%	0.01%
190	Frostbite/full skin thickness	0.01%	0.01%
191	Frostbite/less than full thickness	0.01%	0.01%
192	Hypothermia	0.01%	0.01%
193	Heat stroke	0.11%	1.01%
194	Heat exhaustion	0.11%	1.01%
195	Heat cramps	0.11%	1.01%
200	Internal derangement/knee	1.19%	1.04%
201	Strain/lumbosacral	0.16%	0.14%
224	Corneal abrasion	0.76%	0.86%
262	Tenosynovitis	4.37%	3.82%
265	Near Drowning	0.00%	0.00%
266	Toxic Inhalation/respiratory burn	0.52%	0.38%
268	White phosphorus burns/all	0.52%	0.38%
311	Eye/wound/penetrated/eye salvage	0.76%	0.86%
312	Wound/knee	0.96%	1.09%
313	Wound/abdomen/kidney	0.31%	0.35%
319	Wound/fingers/open/crushed	1.41%	1.30%
328	Animal bites and rabies exposure	0.02%	0.03%
335	Snake bites	0.02%	0.03%
		100%	**100%**

REPORT DOCUMENTATION PAGE

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1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE 6 September 1999	3. REPORT TYPE AND DATE COVERED Final Oct 98-Sept 99

4. TITLE AND SUBTITLE
PROJECTION OF PATIENT CONDITION CODE DISTRIBUTIONS FOR NAVAL COMBAT DEPLOYMENTS

5. FUNDING NUMBERS
63706N M0095.005-6704

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NHRC Report No. 99- 20

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Naval Medical Research and Development Command
National Naval Medical Center
Building 1, Tower 2
Bethesda, MD 20889-5044

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE
A

13. ABSTRACT *(Maximum 200 words)*

Projection of the wounded-in-action and disease/nonbattle injury incidence in terms of patient condition (PC) codes is essential to the programming of medical resources needed to support military engagements. Utilizing empirical disease and injury data from naval deployments during both peacetime and combat conditions, estimates of the PC codes were derived. The wounded in action (WIA) methodology first partitioned the empirical data into traumatism and anatomical location categories, and then mapped these combinations into PC codes. The non-battle injury (NBI) PC methodology was similar to the WIA methodology except that the projections were extended to two more categories of traumatism; Environmental and Miscellaneous NBI. The Disease PC methodology entailed first mapping the empirical disease distributions into PC clusters and then distributing this incidence into individual PC codes.

14. SUBJECT TERMS
Patient conditions, wounded in action, disease and nonbattle injury incidence.

15. NUMBER OF PAGES
34

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI std. Z-39-18
298-102