

NAVAL HEALTH RESEARCH CENTER

ANNUAL REPORT OF INCIDENCE RATES AND TRENDS IN MEDICAL ENCOUNTERS AT CAMP PENDLETON AND SAN DIEGO MEDICAL TREATMENT FACILITIES

***S. I. Woodruff
H. Kleiner
CDR B. P. Murphy, MSC, USN***

Technical Document No. 03-7G

Approved for public release; distribution unlimited.



**NAVAL HEALTH RESEARCH CENTER
P. O. BOX 85122
SAN DIEGO, CA 92186-5122**

**BUREAU OF MEDICINE AND SURGERY (M2)
2300 E ST. NW
WASHINGTON, DC 20372-5300**



Annual Report of Incidence Rates and Trends in Medical Encounters At Camp Pendleton and San Diego Medical Treatment Facilities

Susan I. Woodruff, Ph.D.¹
Hillary Kleiner, M.P.H.¹
CDR Brian P. Murphy, Dr.PH., MSC, USN²

¹MTS Technologies, Inc., 11545 W. Bernardo Ct, #100, San Diego, CA 92127

²Naval Health Research Center, P.O. Box 85123, San Diego, CA 92186-5122

Report No. 03-7G is supported by the Office of Naval Research, Arlington, VA, under Work Unit No. 60317. The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government. Approved for public release; distribution unlimited. This research has been conducted in compliance with all applicable federal regulations governing the protection of human subjects in research.

Table of Contents

Summary	ii
1.0 Introduction and Background	1
1.1 Disease and Non-Battle Injuries (DNBI).....	1
1.2 Major ICD-9 Codes	1
1.3 Key Symptoms.....	2
1.4 Ill-Defined Conditions.....	2
1.5 Reportable Conditions	2
1.6 Chemical, Biological, and Radiological (CBR) Conditions	2
2.0 Purpose of the Report	3
3.0 Methods and Approach	4
3.1 Description of the Patient Populations: Camp Pendleton.....	5
3.2 Description of the Patient Populations: San Diego.....	5
3.3 Medical Surveillance	6
4.0 DNBI Categories	7
4.1 DNBI: Camp Pendleton.....	7
4.2 DNBI: San Diego.....	13
4.3 DNBI Diagnoses Among Recruits	17
5.0 Major ICD-9 Codes	20
5.1 Major ICD-9 Codes: Camp Pendleton.....	20
5.2 Major ICD-9 Codes: San Diego.....	26
6.0 Key Symptoms	31
6.1 Key Symptoms: Camp Pendleton	31
6.2 Key Symptoms: San Diego	37
7.0 Ill-Defined Conditions	42
7.1 Ill-Defined Conditions: Camp Pendleton	42
7.2 Ill-Defined Conditions: San Diego	47
8.0 Reportable Conditions.....	52
8.1 Reportable Conditions: Camp Pendleton	52
8.2 Reportable Conditions: San Diego.....	58
9.0 CBR Conditions.....	63
9.1 CBR Conditions: Camp Pendleton	63
9.2 CBR Conditions: San Diego.....	67
10.0 Distribution of Encounters	71
11.0 Utility of MDSS Mappings.....	74
12.0 Conclusions.....	75
13.0 Limitations and Future Directions.....	76
14.0 References.....	78

Summary

Introduction

The purpose of this annual surveillance report is to summarize incidence rates of medical conditions and trends over time from data collected by the Medical Data Surveillance System (MDSS). MDSS is a Web-based medical surveillance system that provides near-real-time medical threat assessment and ongoing surveillance using routinely collected information from patient medical encounters. Data included in this report are from two large local catchment areas –Camp Pendleton and San Diego–and their associated individual medical treatment facilities (MTFs). Because of the timing of this first annual report, presentation of a full year of data from MDSS was not possible. Rather, “annual” data are presented for a 6-month period only, from 1 March 2003 to 31 August 2003.

Methods

All outpatient medical encounters (initial and follow-up) were analyzed using both MDSS analysis functions and other statistical programs. This report presents, for each month in the surveillance period, average weekly incidence rates per 1,000 population for the overall Camp Pendleton and San Diego catchment areas. These monthly trends are presented for 6 mappings produced by MDSS: Disease and Non-Battle Injuries (DNBI), Major ICD-9 (*International Classification of Diseases, 9th Revision*) codes, Key Symptoms, Ill-Defined Conditions, Reportable Conditions, and possible Chemical, Biological, and Radiological Conditions. Weekly incidence rates are also presented for individual Camp Pendleton and San Diego MTFs, although for these analyses, weekly incidence rates were averaged across the entire 6-month period.

Results and Conclusions

This report indicates that during the 6-month surveillance period of 1 March to 31 August 2003, no unusual disease trends appeared in the Camp Pendleton and San Diego area. However, the many analyses yielded several interesting findings, a few of which are summarized as follows:

- A consistent and expected finding was the gradual decline of respiratory illness over the surveillance period (from spring to summer of 2003). This finding was consistent across mappings and for both catchment areas.
- Of all DNBI diagnoses, *Other Medical/Surgical* was the leading diagnosis in both catchment areas, and, with the exception of *Respiratory* illness, DNBI diagnoses generally showed marked stability month-to-month in both catchment areas.
- San Diego area MTFs generally showed the same pattern of diagnoses as Camp Pendleton MTFs in terms of leading diagnoses. However, San Diego area MTFs generally had higher incidence rates.

- There were a few statistically significant differences in DNBI incidence rates of certain conditions by catchment area (e.g., *Other Medical/Surgical, Gynecologic* conditions), as might be expected due to differences in the type and characteristics of patients seen. However, after controlling for differences in age structures, rates of several conditions remained different for the 2 catchment areas.
- Typically, variation occurred in patterns (i.e., leading diagnoses) and incidence rates by individual MTFs. For example, rates of most DNBI diagnoses were relatively high at Naval Hospital Twentynine Palms compared to other MTFs within the Camp Pendleton catchment area.
- Among recruits, visits for musculoskeletal problems were particularly important.

This report provides a considerable amount of potentially useful information. However, a host of artifacts can influence surveillance results. Incomplete numerator information, inaccurate denominator or population-at-risk information, unavailable sociodemographic and military status information, mapping and disease category characteristics, and nonstandardized ICD-9 coding are just a few factors that may limit the integrity of surveillance results.

1.0 Introduction and Background

Force health protection is a significant challenge that requires awareness and assessment of military personnel as they execute their mission. It is imperative that improvements in medical data accessibility, surveillance, and analysis be made to ensure such protection. In addition, visibility of medical threats is needed to provide the common operational picture for successful medical command and control. Historically, medical data systems have relied on manual procedures that do not provide timely information.

The Medical Data Surveillance System (MDSS) was designed to address this specific need by allowing early detection of illness trends, disease outbreaks, and possible biological/chemical exposure. MDSS is a web-based medical surveillance system that provides near real-time medical threat assessment using routinely collected medical data. The data MDSS processes and displays may be from one or more patient medical record collection modules, including the Composite Health Care System and the Shipboard Non-Tactical ADP Program Automated Medical System.

MDSS uses the *International Classification of Diseases, 9th Revision* (ICD-9) code information contained in patients' medical records to categorize medical events. Developed collaboratively between the World Health Organization and 10 international centers, the ICD-9 system was designed for the classification of morbidity and mortality information for statistical purposes, and for indexing hospital records by disease and operations. All health care providers are required to assign an ICD-9 code for every patient visit. In MDSS, ICD-9 codes are mapped to a number of plain language category descriptions to help identify trends occurring in the data. These mappings include Disease and Non-Battle Injuries (DNBI), Major ICD-9 Codes, Key Symptoms, Ill-Defined Conditions, Reportable Conditions, and Chemical, Biological, and Radiological (CBR) Conditions. The MDSS Reference Manual describes the ICD-9 code groupings used to form each of the mappings (Pugh, 2002).

1.1 Disease and Non-Battle Injuries (DNBI)

Historically, DNBI cost field commanders the majority of all personnel lost and are largely preventable. Timely DNBI monitoring is useful to detect disease and injury problems before they limit mission effectiveness, and it can be useful for early detection of possible exposure to biochemical agents. As mandated by the Joint Chiefs of Staff, hundreds of ICD-9 codes are categorized or mapped into a relatively small number of DNBI categories. MDSS includes 14 primary DNBI categories (e.g., *Dermatological, Gastrointestinal*), and 5 nonstandard subcategories (e.g., *Gastrointestinal Infectious, Gastrointestinal Non-Infectious*).

1.2 Major ICD-9 Codes

MDSS uses the 3-digit ICD-9 codes drawn from patient encounter records and summarizes them into 19 Major ICD-9 Codes. These codes broadly

describe conditions affecting a particular system or systems of the body (e.g., *Diseases of the Blood and Blood-Forming Organs, Diseases of the Respiratory System*).

1.3 Key Symptoms

MDSS categorizes certain ICD-9 codes from patients' initial encounter records into 49 Key Symptom groupings. These symptoms are "reverse engineered" from the assigned ICD-9 codes, and serve to "broaden the net." By grouping similar Key Symptoms together, clusters of patients with similar Key Symptoms can be identified, potentially indicating a local medical trend that otherwise might have gone undetected. Examples of Key Symptoms include *Abdominal Pain, Dizziness/Vertigo, Flu-Like Symptoms, and Rash*.

1.4 Ill-Defined Conditions

These 23 conditions are based on ICD-9 codes that do not reference a specific diagnosis of illness, disease or injury, but rather, reference a general symptom or syndrome (e.g., *Abdominal Pain, Diarrhea*). Hence, unusual patterns of Ill-Defined Conditions may indicate a large number of individuals with an unexplained disease or syndrome. Furthermore, Ill-Defined Conditions are useful to the epidemiologist and preventive health officer who wish to identify initial patient encounters where a misdiagnosis or incomplete diagnosis might have been assigned.

1.5 Reportable Conditions

MDSS maps certain ICD-9 codes into 112 Reportable Conditions. Reportable Conditions are based on 81 Bureau of Medicine and Surgery (BUMED) special categories, 13 occupational or environmental conditions, and 3 outbreak or suspected outbreak categories, as well as the Tri-Service Reportable Medical Event List. Typically, Reportable Conditions would be those that require the filing of a Medical Event Report (BUMEDINST 6220.12A, 21 Oct 1998). Examples of Reportable Conditions include Varicella, Anthrax, and Food/Water-Associated Illness.

1.6 Chemical, Biological, and Radiological (CBR) Conditions

Defined from U.S. Army groupings for CBR monitoring, MDSS clusters certain ICD-9 codes from patients' initial visits into 5 conditions that might be associated with CBR exposure. Examples of CBR Conditions include Bleeding of Unexplained Origin and Cause, and Vomiting and Diarrhea of Unknown Origin.

2.0 Purpose of the Report

To further enhance the capabilities of MDSS, the Naval Health Research Center (NHRC) established a technology and functional support facility called the EpiCenter. In addition to providing medical surveillance and epidemiological support to deployed sites, the EpiCenter staff analyzes and summarizes MDSS data to produce quarterly and annual surveillance and trending reports.

The purpose of this first annual surveillance report is to summarize weekly incidence rates of medical conditions and trends over time from local medical treatment facilities (MTFs). Included are MTFs in two large catchment areas—Camp Pendleton and San Diego. MTFs within these two large catchment areas include large hospitals (i.e., Naval Medical Center San Diego, Naval Hospital Camp Pendleton, and Naval Hospital Twentynine Palms) and their associated branch medical clinics. Because of the timing of this first annual report, presentation of a full year of data from MDSS was not possible. Rather, “annual” data are presented for a 6-month period only, from 1 March 2003 to 31 August 2003.

3.0 Methods and Approach

MDSS Version 3.1 was used to display and analyze medical encounter data for the 6-month period of 1 March to 31 August, 2003. Data were examined for the entire Camp Pendleton catchment area and its 14 individual MTFs, and for the entire San Diego catchment area and its 11 MTFs.

The 14 Camp Pendleton MTFs included:

- Branch Medical Clinic (BMC), Marine Corps Base (MCB), Camp Del Mar
- BMC CORCEN (Correctional Center), MCB
- BMC Edson Range Annex
- BMC MCB Camp Pendleton
- BMC Naval Air Station (NAS) Point Mugu
- BMC Naval Weapons Center (NAVWPNCEN), China Lake
- BMC MCB San Onofre
- Naval Hospital (NH) Camp Pendleton
- BMC Barstow
- NH Twentynine Palms
- BMC Seal Beach
- TRICARE Outpatient – Oceanside
- Navy Ambulatory Care Clinic (NACC) Port Hueneme
- BMC Yuma

The 11 San Diego MTFs included:

- Naval Branch Medical Activity (NBMA) Naval Auxiliary Landing Field (NALF) San Clemente
- BMC Naval Amphibious Base (NAB) Coronado
- BMC El Centro
- BMC Marine Corps Recruit Depot (MCRD) San Diego
- BMC Marine Corps Air Station (MCAS) Miramar
- BMC NAS North Island
- BMC Naval Station (NAVSTA) San Diego
- BMC Naval Training Center (NTC) San Diego
- Naval Medical Center San Diego (NMCSD)
- TRICARE Outpatient Clinic 1, San Diego
- TRICARE Outpatient Clinic 2, San Diego

All outpatient medical encounters (initial and follow-up) were selected for analysis. (Follow-up visits are estimated to comprise about 16% of all visits). Data were analyzed both within MDSS using its various Report functions and outside MDSS in other statistical programs, such as SPSS and EpiCalc. This report describes Camp Pendleton and San Diego data separately by presenting weekly incidence rates per 1,000 population at risk. Line graphs are used to show

trends in average weekly incidence rates by month for the entire catchment area (i.e., all MTFs combined). These monthly trends are presented for the 6 mappings, DNBI categories/subcategories, Major ICD-9 codes, Key Symptoms, Ill-Defined Conditions, Reportable Conditions, and CBR Conditions.

Weekly incidence rates are also presented for individual Camp Pendleton and San Diego MTFs. However, presentation of the 6 mappings for each of 6 surveillance months for every MTF was deemed excessive; therefore, a simplified approach was used. Rather than presenting trends by month, a weekly incidence rate averaged across the entire 6-month period was computed for each individual MTF. MTF-specific incidence rates are presented in table form. PAR denominator data, needed to compute incidence rates, were not available for one Camp Pendleton MTF, BMC Camp Del Mar. Therefore, this clinic is not represented in the tables, though it is represented in the figures showing trends in overall Camp Pendleton data. As with the analysis conducted for the entire catchment area, analyses at the MTF level include all 6 ICD-9 mappings.

3.1 Description of the Patient Populations: Camp Pendleton

Patients seen in hospitals and clinics associated with Camp Pendleton include active duty personnel, family members, and retirees.

Approximately 80,000 medical encounters (both initial and follow-up) were examined for the 6-month surveillance period (or approximately 13,250 encounters per month). Forty-one percent of encounters were females and 59% males. The age range represented was extremely wide, ranging from 0 (infants) to 102 years of age. The mean age was 27 ($SD = 18$) and the median age was 24. Rank information was available for about 48% of the patient visits, suggesting that 52% of visits were by very new recruits or individuals who were not and had never been active duty.

3.2 Description of the Patient Populations: San Diego

Patients seen at NMCS and clinics in the San Diego catchment area potentially include active duty personnel, family members, and retirees. Approximately 132,000 medical encounters (both initial and follow-up) were examined for the 6-month surveillance period (or approximately 22,000 encounters per month). The patient population was 42% female and 58% male, comparable to the gender distribution at Camp Pendleton. The ages of patients were variable, ranging from 0 (infants) to 103 years of age. The mean age was 34 ($SD = 19$) and the median age was 29. As a group, San Diego patients were significantly older than Camp Pendleton patients, $t(37498) = 365.6, p \leq .001$. Rank information was available for about 57% of the San Diego patient visits, suggesting that 43% of visits were by very new recruits or individuals who were not and had never been active duty.

3.3 Medical Surveillance

Medical surveillance was carried out to describe incidence rates of diagnoses and to examine changes in diagnoses for the Camp Pendleton and San Diego catchment areas. In this report, figures provide trends for a 6-month period for all Camp Pendleton MTFs combined, and for all San Diego MTFs combined, for 6 ICD-9 mappings. It should be noted that y-axis scales used in figures are used to maximize readability of incidence rates. Therefore, changes in rates might appear to be substantial, when in fact, the differences might be quite small or of minimal clinical significance. In addition to 6-month trends across MTFs within the 2 catchment areas, weekly incidence rates averaged over all months are given for individual MTFs in tables. Incidence rates in figures and tables are expressed as number of cases per 1,000 population at risk.

4.0 DNBI Categories

4.1 DNBI: Camp Pendleton

Figure 1 presents monthly trends in DNBI incidence rates for all Camp Pendleton MTFs combined. *Other Medical/Surgical* rates were by far the highest of all DNBI categories for all months, averaging about 7.6 cases per 1,000 population at risk over the 6-month surveillance period. The rate of *Other Medical/Surgical* was well over twice as high as the next most common DNBI category, *Other Injury* ($M=3.0$ across month). *Other Injury* was closely followed by *Respiratory* illness. *Ophthalmological*, *Dermatological*, and *Psychiatric Mental* showed incidence rates slightly over or close to 1 per 1,000 across the time period. *Gastrointestinal*, *Gynecologic*, and *Psychiatric Stress* were far less common, and *Unexplained Fever*, *STD* (i.e., *Sexually Transmitted Disease*), *Injury from Heat or Cold*, and *Dental* were very low or zero. (*Miscellaneous/Administrative* was never assigned as a diagnosis during this reporting period, and therefore is not presented in any DNBI figure or table.)

Also evident in Figure 1, there was remarkable monthly stability in rates for most DNBI categories. Exceptions included *Other Medical/Surgical*, which varied from a low of 7.1 (in the month of May) to a high of 8.3 (in the month of March), a slight but statistically significant difference based on a Fisher's exact test ($p < .05$). *Respiratory* diagnoses decreased slightly but steadily over time, with highest rates in the spring and lowest in late summer ($p < .001$). In general, however, the stability of the rates over time within most of the DNBI categories is noteworthy, and most fluctuations indicated only small changes in rates.

Figure 1. Trends of DNBI Categories for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

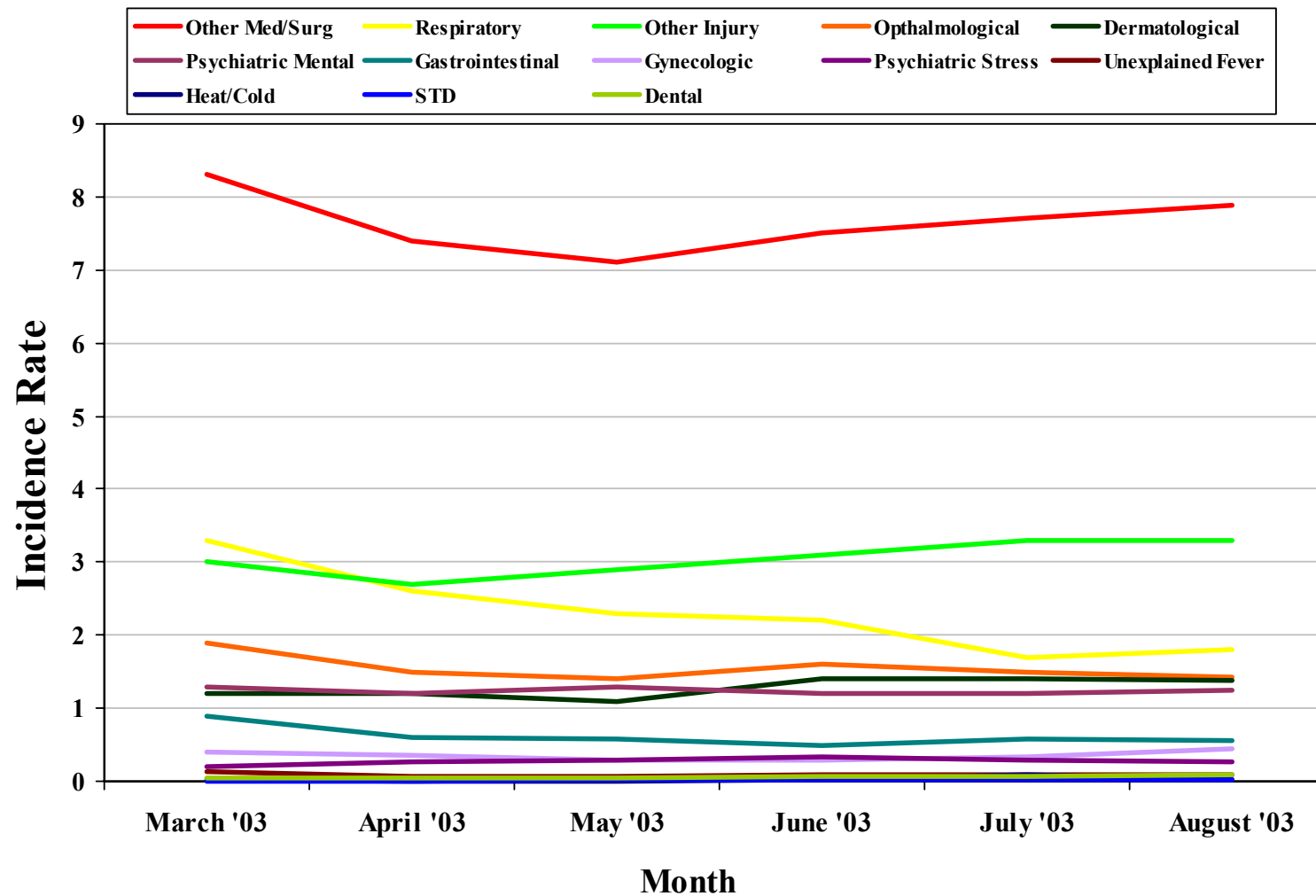
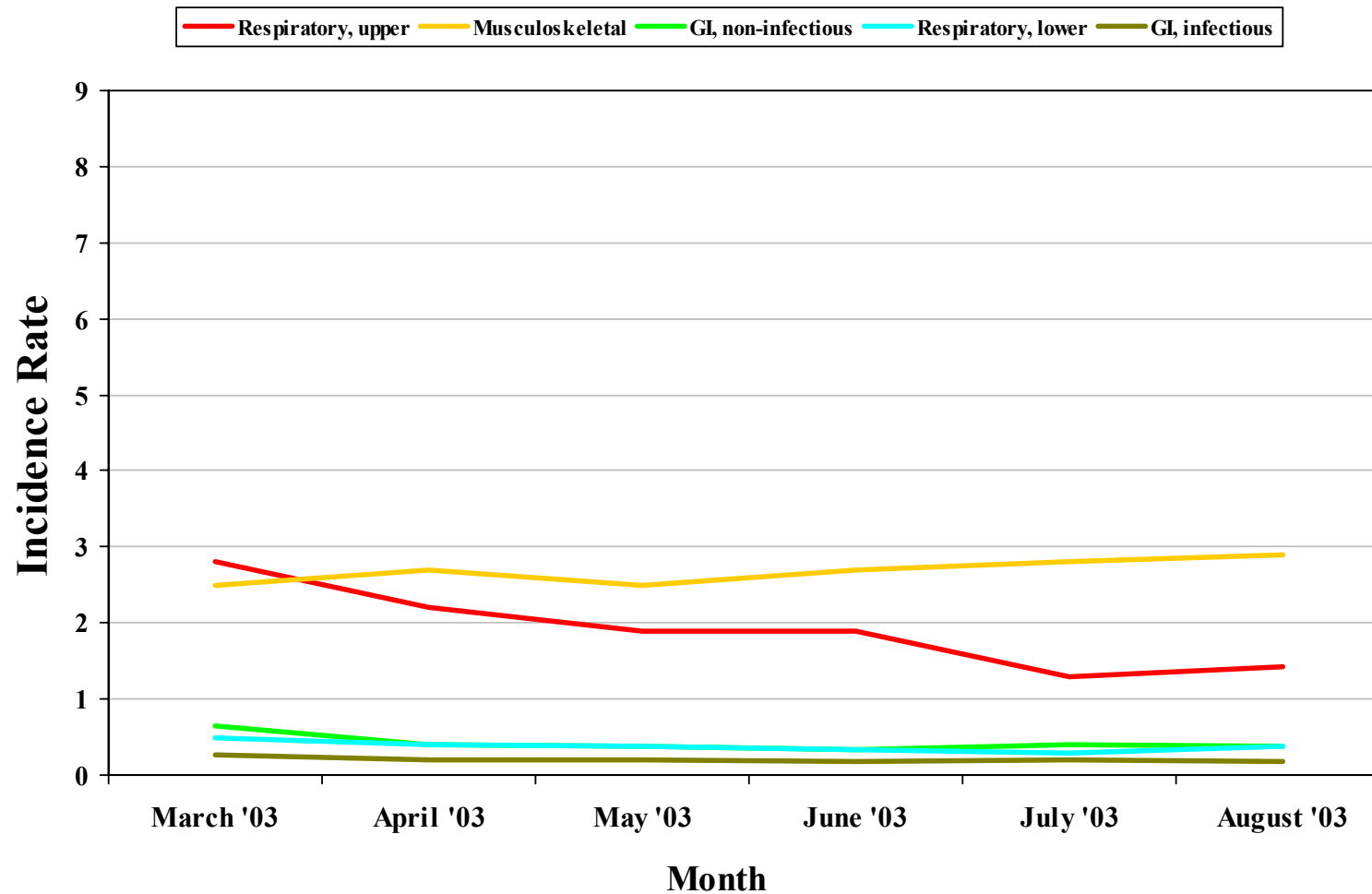


Figure 2 shows monthly trends in DNBI subcategories for Camp Pendleton MTFs combined. The two most common subcategories were *Musculoskeletal* diagnoses (rate across month = 2.6) and *Upper Respiratory Illness* (rate across month = 2.2). *GI Non-Infectious*, *Lower Respiratory Illness*, and *GI Infectious* were substantially lower. Rates were relatively stable month-to-month, with the exception of a statistically significant decreasing trend for *Upper Respiratory Illness* from spring to summer months ($p \leq .001$).

Figure 2. Trends of DNBI Subcategories for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003



Rather than presenting monthly trends for each of the MTFs within the Camp Pendleton catchment area, a simplified approach was used in which a weekly incidence rate was averaged across all months. Table 1 presents average incidence rates for DNBI categories and subcategories by individual Camp Pendleton MTFs. For each MTF, the highest rate among the DNBI categories is presented in red, the next highest is presented in green, and the third highest rate is shown in blue. As can be seen on the last row of the table, PAR numbers were 1,000 for all MTFs with the exception of NH Camp Pendleton (PAR = 130,000).

There was a tendency for a relatively low number of categories to be among the top categories for all MTFs; *Other Medical/Surgical*, *Other Injury*, *Respiratory*, and *Ophthalmological* were typically the most frequent DNBI diagnoses. *Other Medical/Surgical* had the highest incidence rate at 11 of 13 MTFs; *Ophthalmological* was the most common diagnosis at 2 MTFs, being particularly high at BMC MCB Camp Pendleton (81 per 1,000). A striking finding was the wide variability of a particular DNBI category among the MTFs. For example, the rate of *Other Medical/Surgical* visits at NH Twentynine Palms was approximately 187 per 1,000, while at BMC Seal Beach, the rate was lower than 1 per 1,000. Variability also existed among the MTFs in terms of their overall pattern of incidence rates. For example, BMC Seal Beach had relatively low incidence rates (or zero incidence) for all DNBI categories, while NH Twentynine Palms and the TRICARE Outpatient–Oceanside clinic showed a relatively higher number of diagnoses at relatively high rates. However, before assuming that differences between MTFs are reliable, it will be important to confirm the denominator information (i.e., PAR).

Because NH Twentynine Palms is a relatively large hospital within the Camp Pendleton catchment area, additional attention was given to DNBI encounters at that MTF. As shown in Table 1, rates of most DNBI diagnoses were unusually high at NH Twentynine Palms relative to other MTFs. For example, the rate of *Other Medical/Surgical* was 187 per 1,000 population, far greater than any other MTF except TRICARE Outpatient–Oceanside. Average weekly rates of the DNBI subcategory *Musculoskeletal* were about 79 per 1,000, far higher than any other Camp Pendleton MTF. Examination of DNBI incidence rates by month for NH Twentynine Palms (data not shown) showed considerable stability month to month for most categories, with a few exceptions. *Respiratory* diagnoses decreased steadily over the surveillance period, from a high of 64 cases per 1,000 in March to a low of 36 cases in July. *Heat/Cold* diagnoses increased in the late summer months, although even at its highest rate (in July) the number of cases was only about 8. Consistent with other DNBI categories, the subcategories of *Upper* and *Lower Respiratory Illness* both showed declines from March to late summer. Although these monthly comparisons can be informative, the unusually high incidence rates of diagnoses across the board at NH Twentynine Palms suggest that the PAR information needs to be confirmed. It is unlikely that a NH such as NH Twentynine Palms would serve the same number of community members as a branch clinic. Efforts are underway to better estimate the PAR for all MTFs.

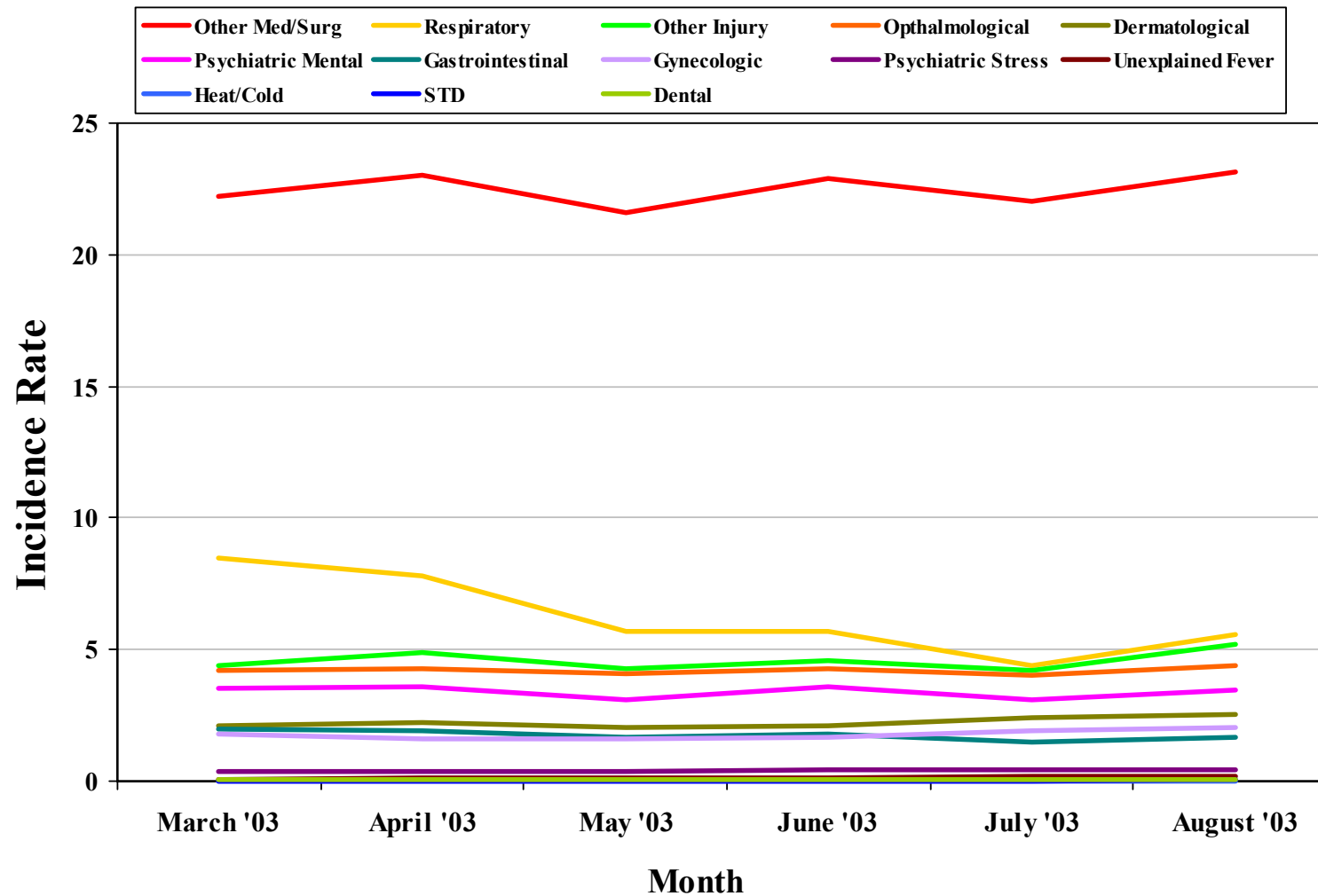
Table 1. Average Weekly Incidence Rates of DNBI Categories and Subcategories for Camp Pendleton MTFs for the Period 1 Mar to 31 Aug 2003

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Cmp Pndlton	BMC NAS Pt Mugu	BMC WPNCEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Cmp Pndlton	NH Twentynine Palms	TRICARE O'side
DNBI Category													
Other Med/Surg.	9.0	48.1	57.6	4.6	36.8	47.6	47.8	19.4	0.6	63.6	4.4	187.4	158.2
Respiratory	3.2	26.5	16.0	0.8	9.1	37.1	11.7	4.0	0.4	17.4	0.8	58.1	80.5
Other Injury	5.0	18.5	18.6	4.9	9.1	13.0	5.3	2.7	0.5	10.1	2.2	102.1	20.6
Ophthalmol.	0.4	4.0	81.4	11.4	4.0	4.7	11.9	0.6	0.1	32.4	0.3	60.3	10.5
Dermatology	2.5	17.7	9.2	0.4	5.1	25.2	12.1	0.9	0.1	6.2	0.6	21.7	28.4
Psych. Mental	0.9	7.6	2.1	0.2	1.9	4.2	25.7	0.8	0.0	5.1	0.9	29.9	11.4
Gastro.	1.1	5.4	6.3	0.4	3.5	8.5	3.3	0.5	0.2	4.9	0.2	22.2	14.4
GYN	0.0	3.3	1.6	0.1	1.9	1.3	4.1	0.1	0.0	5.7	0.1	19.3	12.4
Psych. Stress	0.0	1.1	0.1	0.0	0.2	0.1	8.9	0.0	0.0	0.2	0.2	5.2	0.6
Unexplained Fever	0.1	0.2	0.1	0.0	0.3	0.5	0.1	0.0	0.0	0.3	0.1	4.1	0.6
Heat/Cold Injuries	0.0	0.2	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.1	0.0	1.1	0.2
STD	0.0	0.0	0.1	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.0	1.4	0.1
Dental	0.1	0.4	0.2	0.0	0.2	0.4	0.3	0.1	0.0	0.4	0.0	1.4	1.6
Respiratory, Upper	2.9	19.1	13.0	0.6	7.5	27.8	10.0	3.1	0.4	15.3	0.7	51.3	66.1
Musculo- skeletal	3.2	13.8	28.0	2.3	11.0	2.8	7.5	2.1	0.5	13.9	1.9	79.4	25.9
GI, non-infect.	0.8	4.6	5.4	0.4	2.3	5.6	1.6	0.5	0.1	3.3	1.0	15.9	8.4
Respir., Lower	0.3	7.4	3.0	0.2	1.6	9.3	1.7	0.6	0.0	2.1	0.1	6.8	14.3
GI, infectious	0.4	0.8	0.9	0.0	1.2	2.9	1.7	0.0	0.1	1.6	0.1	6.3	6.0
Population at risk	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	130000	1000	1000

4.2 DNBI: San Diego

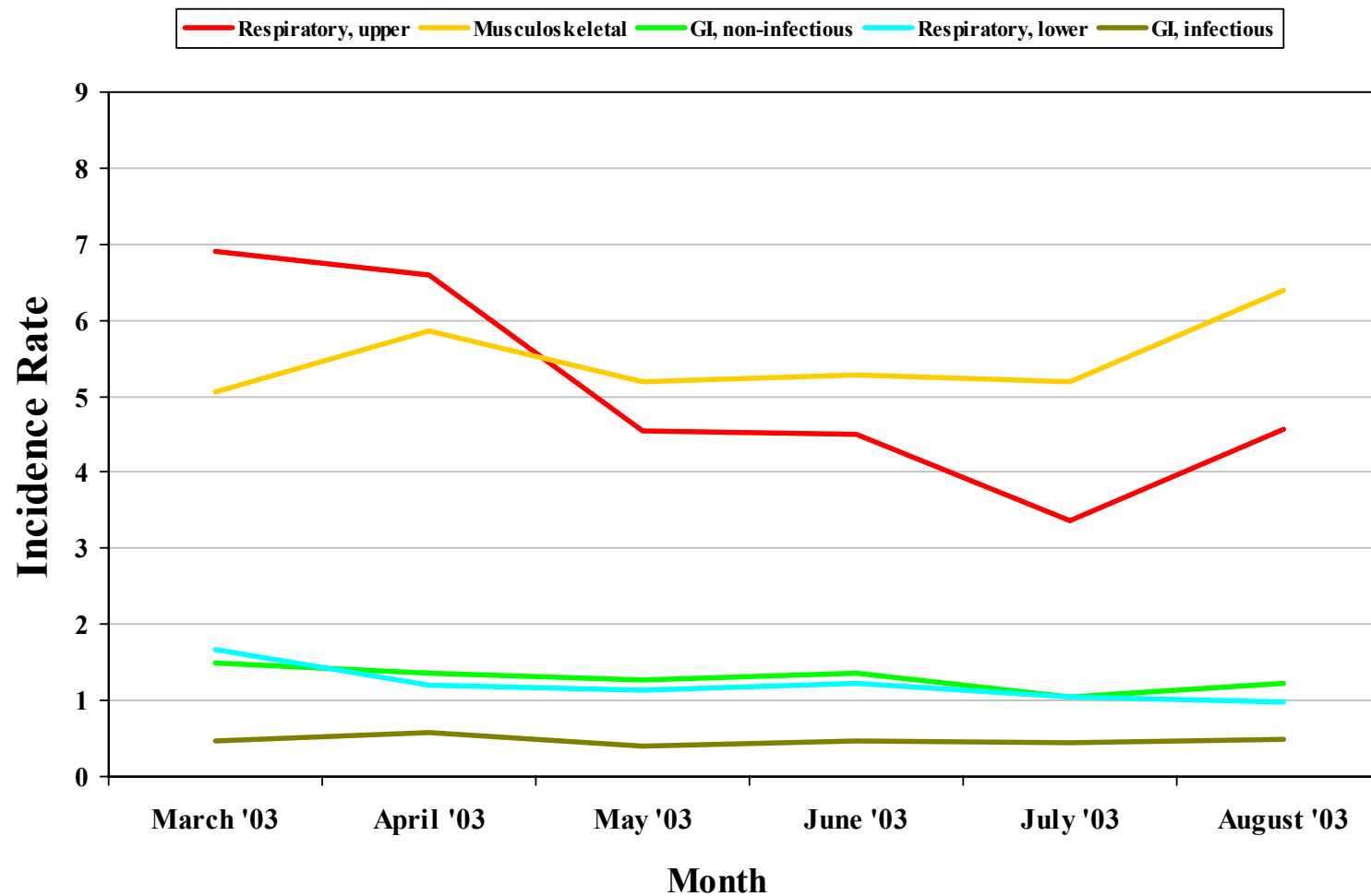
Figure 3 presents monthly trends in DNBI incidence rates for all San Diego MTFs combined. Although general patterns of incidence rates were similar for Camp Pendleton and San Diego in terms of leading causes, absolute rates were different. As with Camp Pendleton, *Other Medical/Surgical* rates were by far the highest of all DNBI categories every month, although rates of *Other Medical/Surgical* at San Diego were much higher than those seen at Camp Pendleton (approximately 22 per 1,000 vs. 7.6 per 1,000). The rate of *Other Medical/Surgical* was well over twice as high as the next most common DNBI diagnosis, *Respiratory illness* ($M = 7.4$ across month). *Other Injury*, *Ophthalmological*, *Dermatological*, and *Psychiatric Mental* showed incidence rates ranging from 4.6 to 1.6 per 1,000. Incidence of *Psychiatric Stress*, *Unexplained Fever*, *STDs*, *Injury from Heat or Cold*, and *Dental* were quite low, ranging from approximately .4 to .08 per 1,000. Rates of DNBI diagnoses were markedly stable from month to month, with the exception of *Respiratory* conditions, which showed a statistically significant decrease from March to August ($p < .001$).

Figure 3. Trends of DNBI Categories for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003



With regard to San Diego trends in DNBI subcategories, Figure 4 shows relatively high *Upper Respiratory* (rate across month = 6) and *Musculoskeletal* conditions (rate across month = 5.3) compared with the other subcategories of *GI, Non-Infectious*, *Lower Respiratory* illness, and *GI, Infectious*. *Upper Respiratory* diagnoses significantly decreased over the months of surveillance ($p < .001$), while other subcategories were relatively stable month to month. Rates of DNBI subcategories for San Diego were generally higher than those seen at Camp Pendleton.

Figure 4. Trends of DNBI Subcategories for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003



Average weekly incidence rates of DNBI categories and subcategories by individual San Diego MTFs are shown in Table 2. For each MTF, the highest rate among the DNBI categories is presented in red, the next highest is presented in green, and the third highest is in blue. PAR numbers can be seen on the bottom row of the table. As with Camp Pendleton MTFs, there was a tendency among San Diego MTFs to have a relatively low number of categories as the leading categories. *Other Medical/Surgical*, *Other Injury*, *Respiratory*, and *Ophthalmological* were typically the most common DNBI diagnoses. *Other Medical/Surgical* had the highest incidence rate at 9 of 11 MTFs; *Other Injury* and *Ophthalmological* predominated at the other 2 MTFs. A striking finding was the wide variability in incidence of a particular DNBI category by MTF. For example, the rate of *Other Medical/Surgical* visits at BMC MCRD San Diego was approximately 68 cases per 1,000, while at BMC Coronado, the rate was lower than 1 per 1,000. There was also variability among the MTFs in terms of their overall patterns of incidence rates. For example, BMC overall had low incidence rates (or zero incidence) for all DNBI categories, while the 2 outpatient clinics showed a greater number of diagnoses. However, as previously mentioned, before assuming the differences in rates between MTFs are reliable, it will be important to confirm the PAR information.

4.3 DNBI Diagnoses Among Recruits

A special interest was in medical conditions occurring among Marine Corps recruits. Therefore, more in depth analyses were conducted on DNBI visits to BMC MCRD San Diego, and Camp Pendleton's BMC Edson Range, an adjunct training facility for recruits. Unfortunately, no current element in the MDSS data can easily identify a patient's rank. Although it is difficult to estimate with certainty, we estimate that approximately 70% of patients seen at the MCRD clinic are recruits. As shown in Table 2, *Other Medical/Surgical* predominated at the MCRD clinic across the 6-month surveillance period, followed by *Other Injury*, *Respiratory*, and *Ophthalmological*. Rates by month for the MCRD clinic (data not shown) indicated that August was a particularly busy month, with substantial increases seen in *Other Medical/Surgical* (91 per 1,000), *Other Injuries* (82 per 1,000), *Respiratory Illness* (56 per 1,000), and the subcategory *Musculoskeletal* problems (82 per 1,000). Additional analysis suggests that as many as 86% of the *Other Medical/Surgical* visits among recruits at MCRD were for *Musculoskeletal* problems. With regard to recruits at Edson Range, Table 1 indicates that *Other Medical/Surgical* predominated at the Edson Range clinic across the 6-month surveillance period, followed by *Respiratory* and *Other Injury*. Rates by month for the Edson Range clinic (data not shown) indicated stability in most DNBI diagnoses with the exception of a decline in *Upper Respiratory* complaints (a rate of 30 in March vs. 11 in August). As with the MCRD clinic, the

Edson Range clinic serves various types of patients, not just recruits. To identify just recruits for estimating their rates and trends in DNBI diagnoses is difficult. A crude attempt was made to identify a representative sample of recruits and to identify their medical conditions. The crude analysis suggests that 45% of patients seen at Edson Range clinic are recruits. Among recruits, visits classified as *Other Medical/Surgical* were predominant. Further, approximately 37% of *Other/Medical Surgical* visits were for *Musculoskeletal* reasons.

Table 2. Average Weekly Incidence Rates of DNBI Categories and Subcategories for San Diego MTFs for the Period 1 Mar to 31 Aug 2003

	NBMA NALF San Clemente	BMC NAB Coronado	BMC El Centro	BMC MCRD San Diego	BMC MCAS Miramar	BMC NAS North Island	BMC NAVSTA San Diego	BMC NTC San Diego	NMCSD	TRICARE Outpt Clinic 1	TRICARE Outpt Clinic 2
DNBI Category											
Other Medical/Surgical	20.6	0.6	11.6	68.2	10.2	16.4	48.8	2.0	30.2	17.4	22.2
Other Injury	9.6	0.7	4.7	42.6	5.3	8.5	15.4	1.3	1.5	2.6	2.7
Respiratory	6.9	0.5	3.7	28.1	3.1	4.1	8.1	6.7	3.1	7.1	15.2
Ophthalmological	1.8	0.0	0.8	26.1	3.8	6.4	5.9	11.8	3.2	0.8	1.5
Psychiatric Mental	0.5	0.1	0.5	2.5	1.8	1.6	11.8	0.0	6.2	1.8	1.8
Dermatological	6.4	0.2	1.9	6.6	1.8	2.4	5.4	1.1	1.0	2.4	5.3
Gastrointestinal	1.4	0.2	1.7	1.7	1.1	1.9	4.4	0.1	2.5	1.3	2.5
Gynecologic	0.9	0.0	0.4	0.2	1.4	1.0	6.8	1.1	2.4	1.2	1.1
Psychiatric Stress	0.0	0.0	0.1	1.8	0.0	0.1	2.9	0.0	0.6	0.0	0.1
Unexplained Fever	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.4	0.5
STD	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0
Heat/Cold Injuries	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dental	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.2
Musculoskeletal	5.9	0.1	2.5	58.3	3.7	5.9	10.7	0.9	3.4	2.6	3.9
Respiratory, Upper	6.9	0.5	3.4	23.8	2.7	3.7	7.4	4.8	2.5	5.8	11.5
GI, non-infectious	1.4	0.2	1.4	0.9	0.7	1.3	3.5	0.1	1.8	1.1	1.6
Respiratory, Lower	0.0	0.0	0.3	4.3	0.3	0.4	0.7	1.9	0.6	1.3	3.6
GI, infectious	0.0	0.0	0.3	0.8	0.4	0.6	0.9	0.0	0.8	0.2	0.3
Population at risk	85	6484	811	4076	9612	6085	5000	7095	36546	16126	14590

5.0 Major ICD-9 Codes

5.1 Major ICD-9 Codes: Camp Pendleton

Figure 5 is a two-page graph that presents incidence rates of the most common Major ICD-9 Codes by month for all Camp Pendleton MTFs combined. Across months, the most common diagnoses were *Diseases of the Respiratory System*, *Diseases of the Nervous System*, *Injury and Poisoning*, and *Diseases of the Musculoskeletal System*, with overall rates of 2.7, 2.6, 2.9, and 2.6 per 1,000 respectively. There was considerable stability over time within a given diagnosis, with few exceptions. *Diseases of the Respiratory System* decreased in a linear fashion from a high of 3.2 per 1,000 in March to 1.8 in August, a statistically significant decrease ($p < .001$).

Figure 5. Trends of Major ICD-9 Codes for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

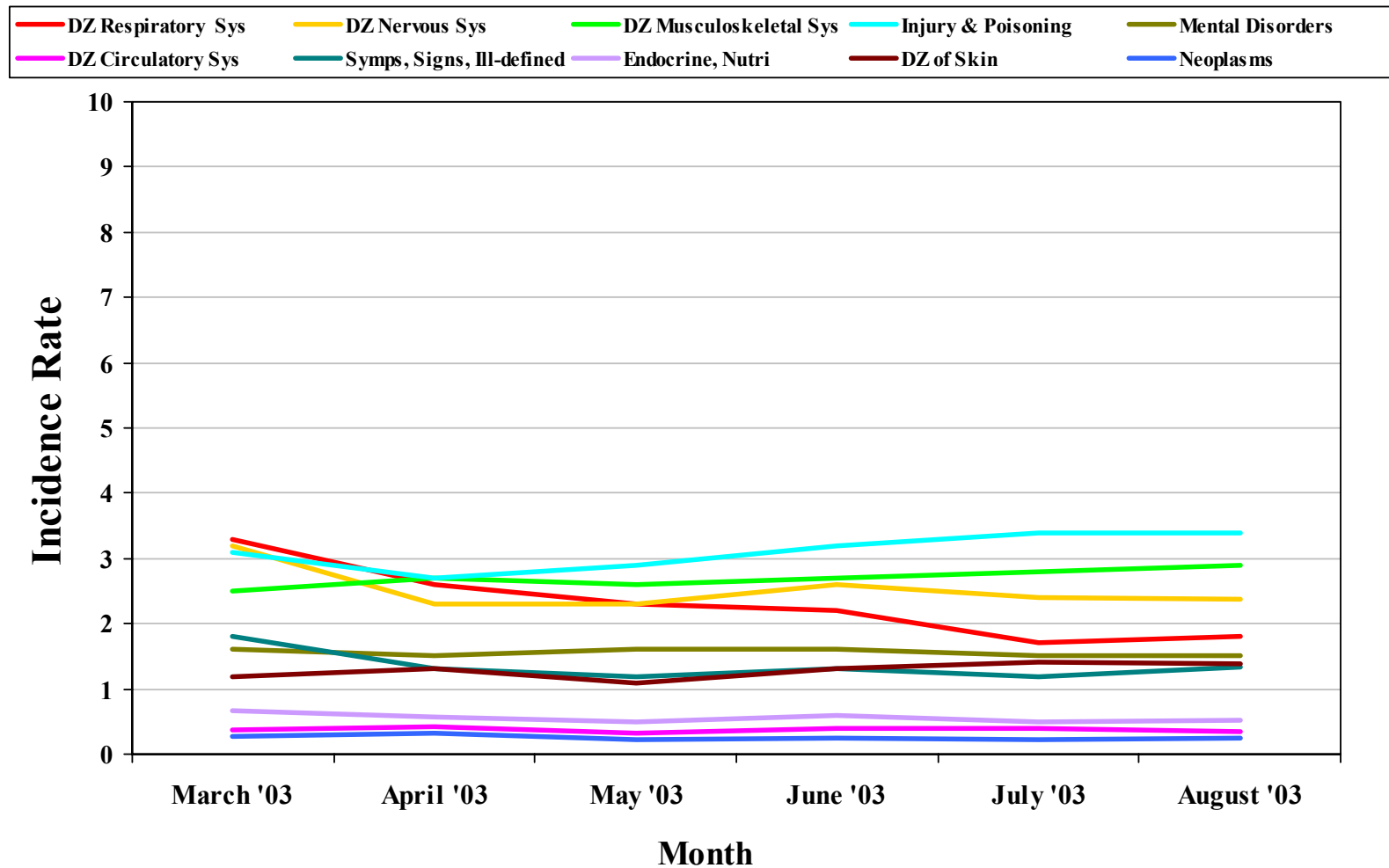


Figure 5 (cont'd). Trends of Major ICD-9 Codes for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

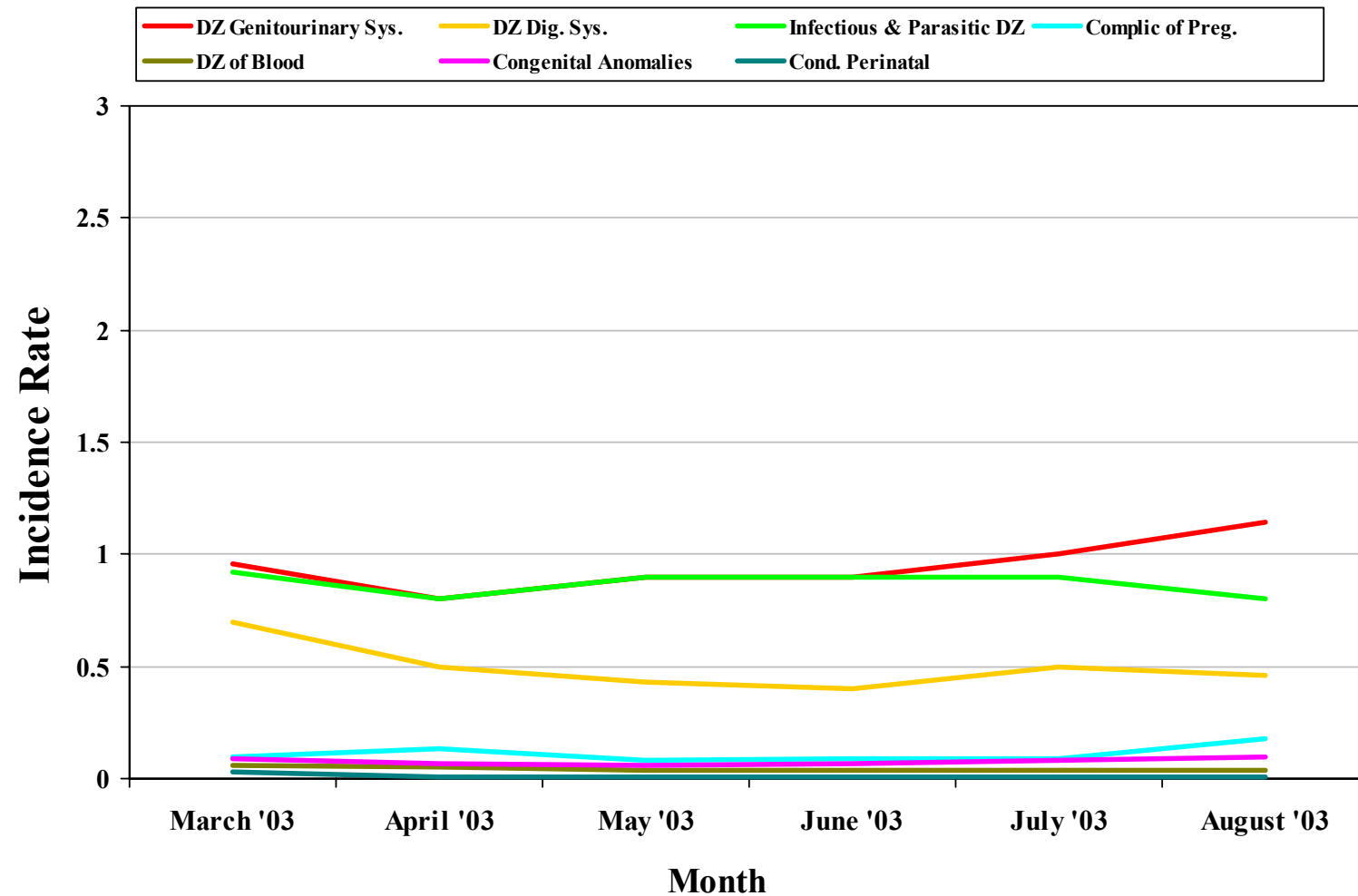


Table 3 shows average weekly rates for Major ICD-9 Codes for individual Camp Pendleton MTFs. Rates of some ICD-9 diagnoses varied considerably, both within an MTF and between MTFs. MTFs were far from consistent in their most common diagnoses. For example, for BMC MCB Camp Pendleton, *Diseases of the Nervous System*, *Diseases of the Musculoskeletal System*, and *Injury and Poisoning* were predominant; while at BMC MCB San Onofre, *Diseases of the Respiratory System*, *Diseases of the Skin*, and *Infectious/Parasitic Diseases* predominated. Noteworthy is the wide variability in the number and incidence of diagnoses among MTFs. BMC Seal Beach had relatively few diagnoses, and those that did occur were at relatively low rates, while TRICARE Outpatient–Oceanside had a greater number of diagnoses and at relatively high rates. Differences are likely due in part to different characteristics of patient populations (e.g., active duty preparing to deploy, children).

**Table 3. Average Weekly Incidence Rates of Major ICD-9 Codes for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pendleton	BMC NAS Pt Mugu	BMC NAVWPN CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Camp Pendleton	NH Twenty- nine Palms	TRICARE O'side
ICD-9 Code													
Dz. of Resp. Sys.	3.2	26.5	16.0	1.6	9.1	37.1	11.7	3.7	0.4	17.3	0.8	58.1	80.4
Dz. of Nervous System	0.7	10.1	84.8	11.7	7.4	12.1	18.7	1.6	0.0	40.0	0.9	75.9	33.6
Dz. of Musc. System	3.1	13.8	25.0	2.3	11.0	2.8	7.5	2.0	0.5	13.9	1.9	79.4	25.9
Injury/ Poisoning	5.0	18.8	18.7	4.9	9.2	16.8	5.4	2.7	0.5	10.2	2.2	105.4	22.1
Mental Disorders	0.9	8.7	2.2	0.2	2.1	4.3	34.7	0.5	0.0	5.3	1.2	35.0	11.9
Dz. of Circ. System	0.0	2.8	2.7	0.1	2.9	1.4	3.1	1.5	0.0	9.1	0.1	4.9	20.0
Symp/Sign/ Ill Defined	2.3	8.0	7.6	1.4	7.8	14.7	7.8	9.6	0.2	9.8	0.7	41.5	22.8
Endocrine/ Nutritional	0.0	3.0	1.8	0.4	6.8	1.4	14.1	3.3	0.0	7.2	0.1	18.9	25.3
Dz. of the Skin	2.5	17.7	9.2	0.4	5.1	25.2	12.2	0.9	0.1	6.2	0.6	21.7	28.4
Neoplasms	0.0	0.3	0.2	0.0	0.4	0.8	2.7	0.2	0.0	1.0	0.2	3.6	3.2
Dz. of Genito. System	0.0	7.2	3.6	0.1	3.6	4.7	4.5	0.5	0.0	9.2	0.6	18.8	26.4
Dz. of Digestive Sys.	0.9	5.0	4.7	0.4	2.5	6.0	1.9	0.6	0.0	3.6	0.2	17.3	10.0
Infect/Parasitic	3.5	9.8	12.1	0.2	3.8	17.8	4.6	1.6	0.0	11.4	0.2	17.3	25.6
Comp. of Pregnancy	0.0	0.2	0.3	0.0	0.2	0.1	0.4	0.0	0.0	0.7	0.0	13.0	0.7
Dz. of Blood/Organs	0.0	0.4	0.1	0.0	0.4	0.2	0.8	0.0	0.0	0.8	0.0	1.2	2.3
Congenital Anomalies	0.2	0.4	0.4	0.0	0.1	0.4	2.1	0.0	0.0	0.5	0.1	1.1	0.7

**Table 3 (cont'd). Average Weekly Incidence Rates of Major ICD-9 Codes for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pendltn	BMC NAS Pt Mugu	BMC NAVWP CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Cmp Pndltn	NH Twenty- nine Palms	TRICARE O'side
ICD-9 Code													
Cond of Perinatal Period	0.0	0.2	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.9	0.1
Pop. at Risk	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	130,000	1,000	1,000

5.2 Major ICD-9 Codes: San Diego

Figure 6 is a 2-page figure that shows rates of the most common Major ICD-9 categories by month for all San Diego MTFs combined. Across months, the most common diagnoses in San Diego were *Diseases of the Respiratory System*, *Diseases of the Nervous System*, *Diseases of the Musculoskeletal System*, and *Injury and Poisoning*, with overall rates of 7.3, 6.3, 5.3, and 4.7 per 1,000, respectively. There was considerable stability over time within a given diagnosis, with the exception of a statistically significant decrease in *Diseases of the Respiratory System* from March to late summer ($p < .001$). Certain patterns of ICD-9 rates were similar between San Diego and Camp Pendleton (i.e., most common diagnoses, stability over time), but the differences in absolute rates are noteworthy. In general, San Diego had higher rates of most Major ICD-9 diagnoses than Camp Pendleton, and greater variability in rates of diagnoses. For example, for April, Camp Pendleton's rates of ICD-9 diagnoses were somewhat concentrated, with all rates under 3 per 1,000, whereas San Diego rates for April ranged widely from 7.8 (*Diseases of the Respiratory System*) to .02 (*Conditions Originating in the Perinatal Period*).

Figure 6. Trends of Major ICD-9 Codes for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

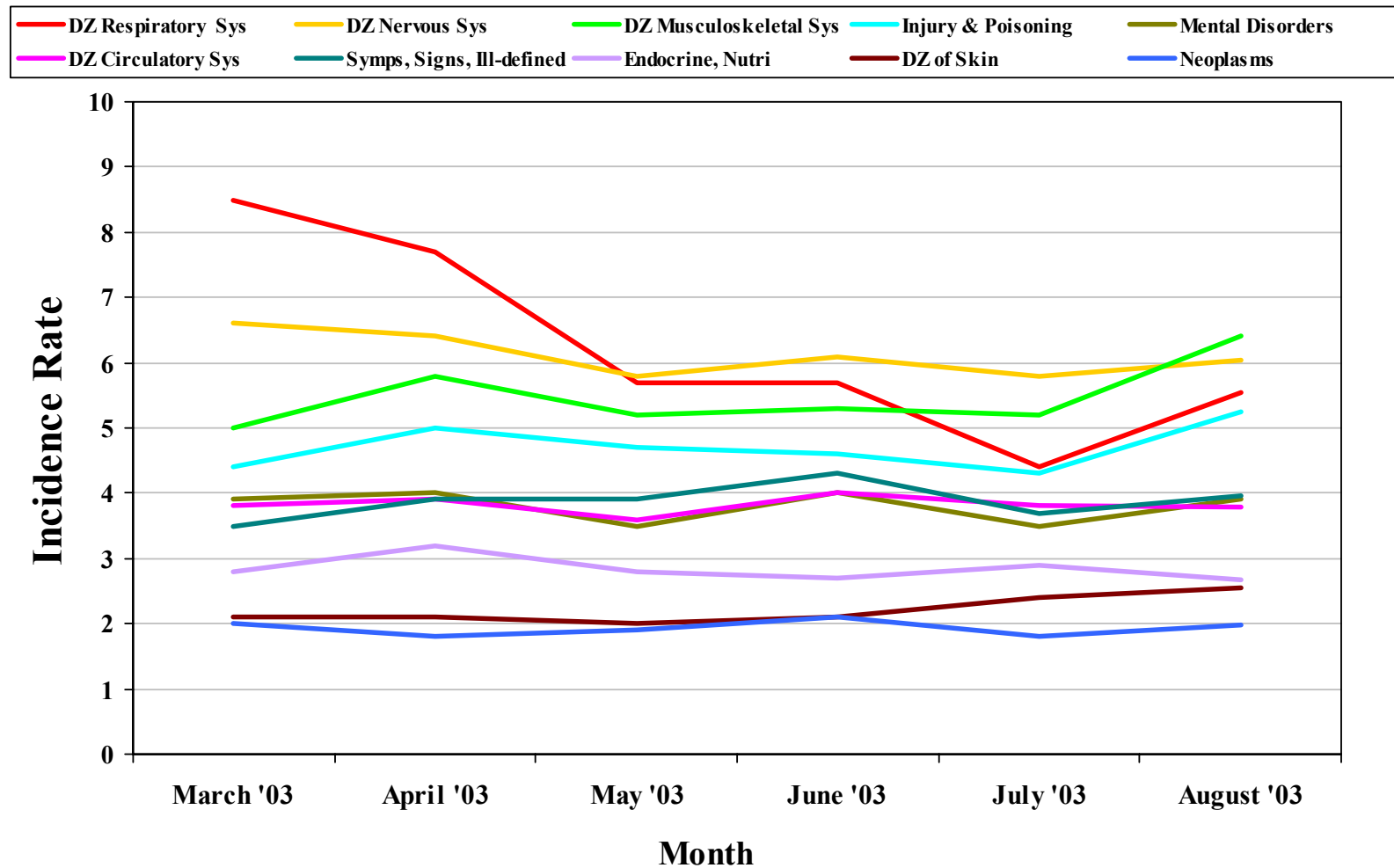


Figure 6 (cont'd). Trends of Major ICD-9 Codes for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

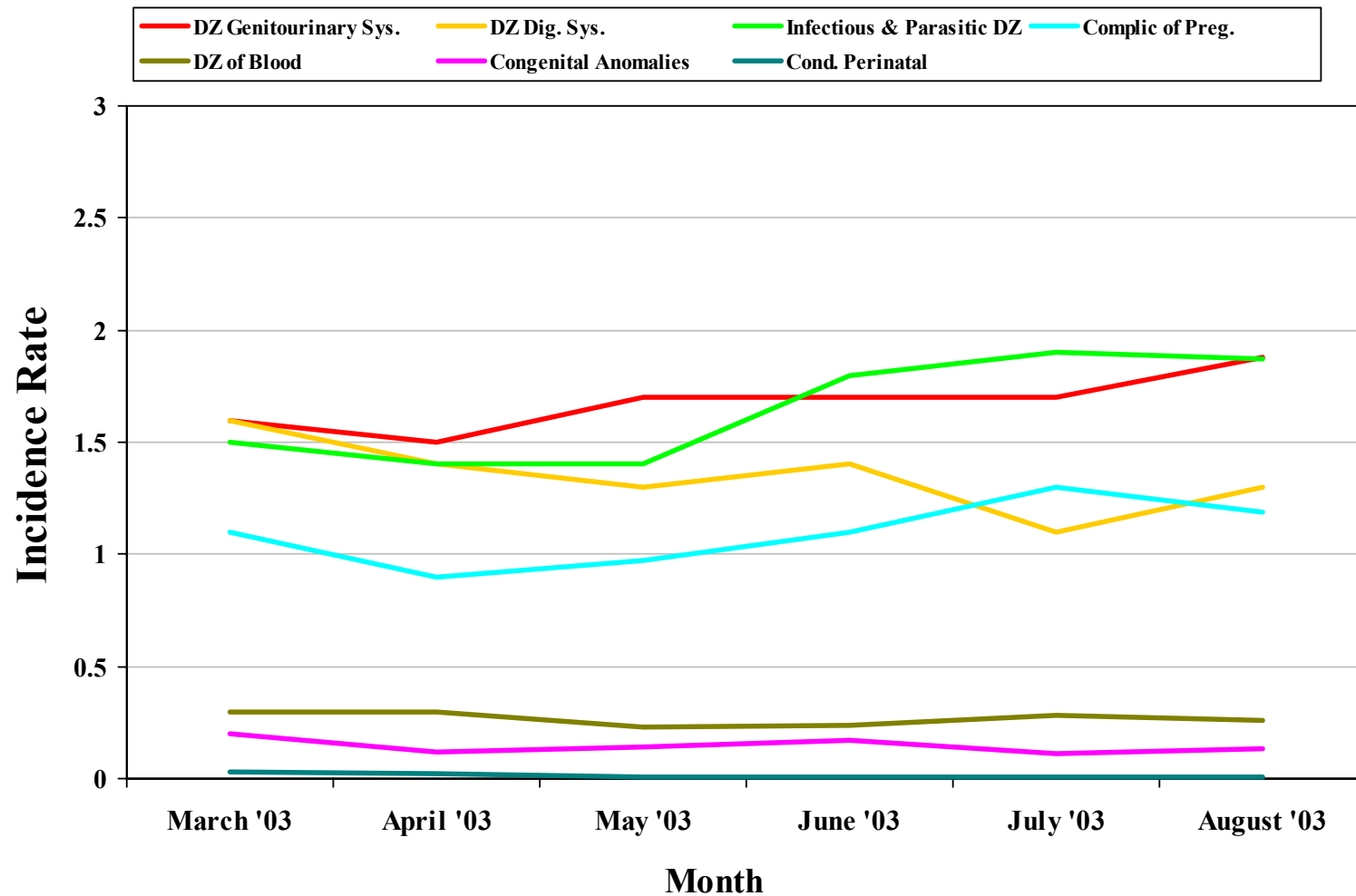


Table 4 shows average weekly Major ICD-9 rates for individual San Diego MTFs. Rates of some ICD-9 diagnoses varied both within an MTF and between MTFs, though not to the extent seen among Camp Pendleton MTFs. MTFs were not consistent in their most common diagnoses. For example, at TRICARE Outpatient Clinic 2, *Diseases of the Respiratory System*, *Diseases of the Skin*, and *Diseases of the Nervous System* were predominant. At BMC NAVSTA San Diego, *Symptoms, Signs, and Ill-Defined Conditions*, *Injury and Poisonings*, and *Mental Disorders* predominated. San Diego area MTFs tended to have cases in most Major ICD-9 categories.

**Table 4. Average Weekly Incidence Rates of Major ICD-9 Codes for San Diego MTFs for the Period
1 Mar to 31 Aug 2003**

	NBMA NALF San Clemente	BMC NAB Coronado	BMC El Centro	BMC MCRD San Diego	BMC NAS Miramar	BMC NAS North Island	BMC NAVSTA San Diego	BMC NTC San Diego	NMCS	TRICARE Outpt Clinic 1	TRICARE Outpt Clinic 2
ICD-9 Code											
DZ of Respiratory System	6.9	0.5	3.6	27.9	3.1	4.1	9.0	6.7	0.9	9.4	15.3
DZ of Nervous System	2.7	0.1	1.7	30.9	5.0	7.3	9.6	11.8	4.5	4.1	4.8
DZ of Musculoskeletal Sys	5.9	0.1	2.4	57.9	3.7	5.9	10.7	0.9	3.0	3.0	3.9
Injury/Poisoning	9.6	0.6	4.7	42.9	5.3	8.4	15.4	1.3	1.1	3.2	2.7
Mental Disorders	0.5	0.0	0.5	4.2	0.6	1.7	14.7	0.0	6.4	2.2	1.9
DZ of Circulatory System	0.9	0.1	2.1	0.5	0.5	1.6	2.8	0.1	7.5	2.8	3.8
Symp/Signs/Ill-Defined	5.5	0.2	1.4	2.6	1.8	3.3	18.9	0.5	4.2	4.0	3.6
Endocrine/Nutritional	0.5	0.0	2.2	0.5	0.5	1.9	5.1	0.3	3.7	3.8	4.3
DZ of the Skin	6.4	0.2	1.8	6.6	1.9	2.4	5.3	1.1	0.5	2.9	5.3
Neoplasms	1.4	0.0	0.1	0.2	0.2	0.4	1.0	0.1	5.3	0.1	0.2
DZ of Genitourinary Sys	2.7	0.0	1.0	1.0	0.8	0.9	4.0	1.6	1.6	2.8	1.9
DZ of Digestive System	1.4	0.2	1.5	1.0	0.8	1.3	3.5	0.1	1.5	1.6	1.8
Infectious/Parasitic	2.7	0.1	1.5	2.2	2.3	2.2	4.8	0.1	0.6	2.5	2.9
Complication of Pregnancy	0.9	0.0	0.0	0.0	1.2	0.8	5.5	0.5	1.9	0.1	0.0
DZ of Blood/Organs	0.0	0.0	0.5	0.1	0.0	0.1	0.4	0.0	0.5	0.2	0.2
Congenital Anomalies	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.2	0.1	0.2
Cond. of Perinatal Period	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Population at Risk	85	6484	811	4076	9612	6085	5000	7095	36546	16126	14590

6.0 Key Symptoms

6.1 Key Symptoms: Camp Pendleton

Figure 7 is a 2-page figure showing trends in the 17 most common Key Symptoms for all Camp Pendleton MTFs combined. *Cold or Influenza*, *Joint Pain*, and *Pupillary Disturbances* were the most common, with overall rates (i.e., across months) of 1.7, 1.1, and 1.0 respectively. In general, rates of most Key Symptoms were low and stable over time. Only *Cold or Influenza* symptoms showed much variation, ranging from a high of 2.2 in March to a low of .93 in August ($p < .001$).

Figure 7. Trends of Key Symptoms for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

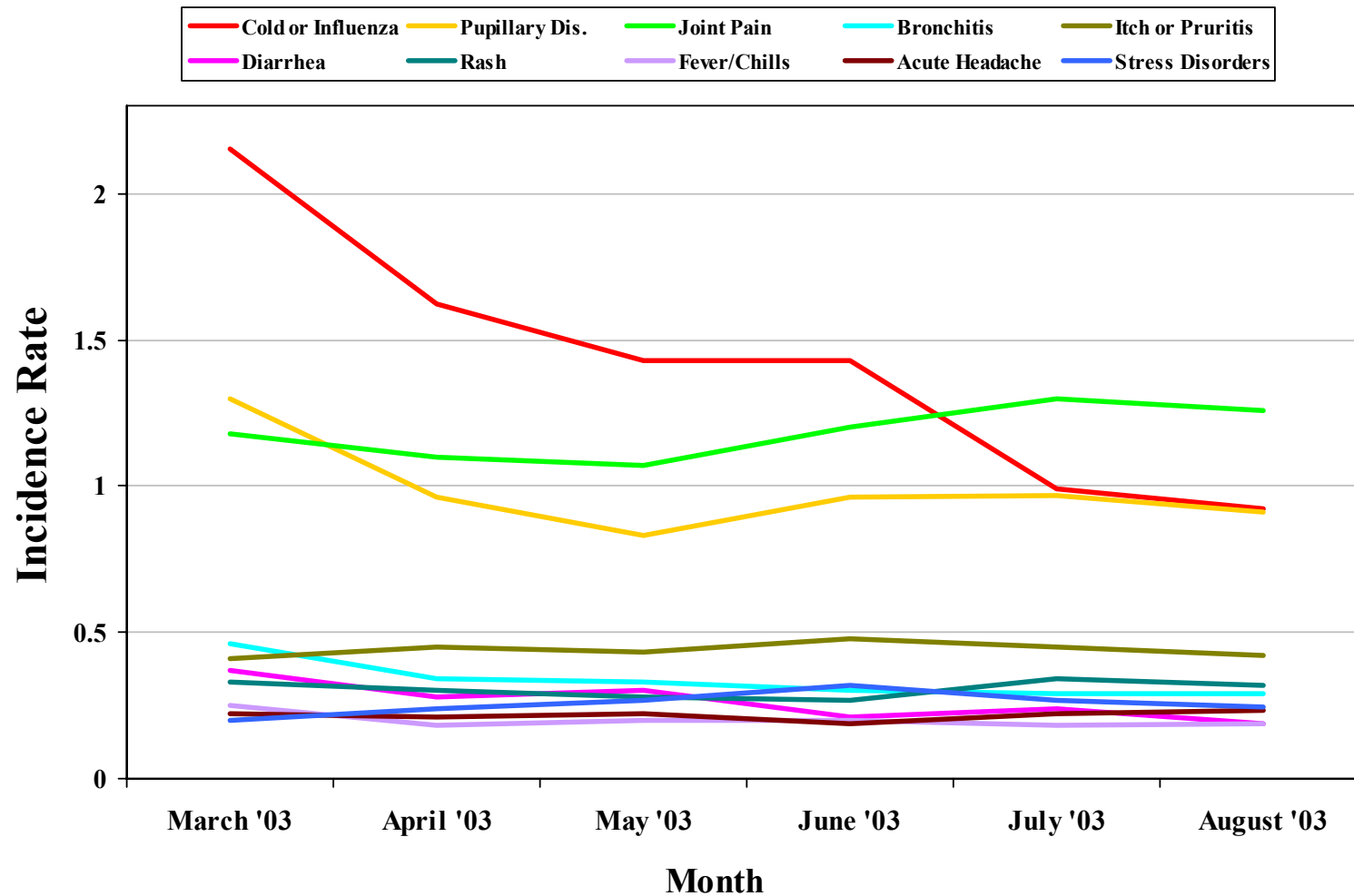


Figure 7 (cont'd). Trends of Key Symptoms for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

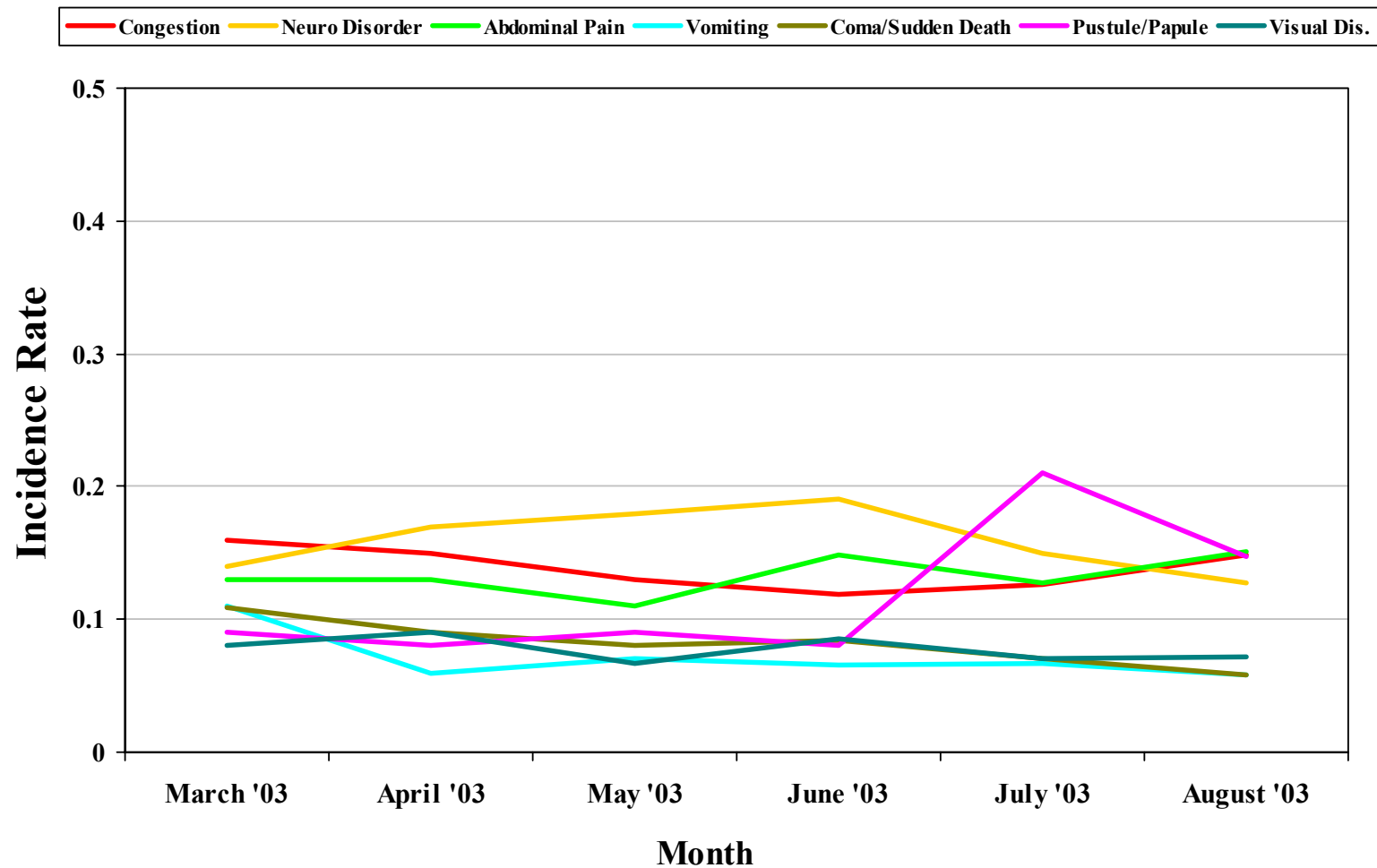


Table 5 shows average weekly rates of Key Symptoms for individual Camp Pendleton MTFs. Incidences of *Cold or Influenza* symptoms were quite common, and particularly high at BMC Edson Range, San Onofre, TRICARE Outpatient–Oceanside, and NH Twentynine Palms. (Rates among these MTFs ranged from about 16 to 53 per 1,000). In fact, *Cold* symptoms were among the top three symptoms at all but one MTF. *Joint Pain* was a common symptom, with rates varying widely from zero (BMC Barstow) to 73 (BMC MCB Camp Pendleton). *Pupillary Disturbances* were also quite high at several MTFs, including BMC MCB Camp Pendleton, NH Twentynine Palms, and BMC Yuma (rates of 73, 33, and 29, respectively). The wide variability of the incidence of symptoms within an MTF and between MTFs is noteworthy. For example, BMC Seal Beach had few reported symptoms, and those that did occur were consistently low. On the other hand, TRICARE Outpatient–Oceanside had many types of symptoms represented at relatively high rates.

**Table 5. Average Weekly Incidence Rates of Key Symptoms for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Cmp Pndltn	BMC NAS Pt Mugu	BMC NAVWPN CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Cmp Pndltn	NH Twenty- nine Palms	TRICARE O'side
Key Symptom													
Cold/Influenza	1.7	15.6	9.6	0.5	5.8	18.6	6.8	2.8	0.3	1.2	0.5	36.7	53.2
Joint Pain	1.3	3.7	16.1	0.6	5.0	0.7	2.9	0.0	0.1	5.5	0.8	34.2	10.6
Pupillary Disturbances	0.0	0.0	72.9	11.3	2.5	0.0	9.4	0.0	0.0	29.2	0.0	33.5	0.0
Itch or Pruritis	2.5	3.6	4.2	0.1	1.5	14.3	2.3	1.0	0.0	2.0	0.1	8.7	12.4
Bronchitis	0.2	6.2	3.0	0.1	1.1	9.9	0.8	0.5	0.0	2.0	0.1	6.6	11.0
Diarrhea	0.5	2.2	3.7	0.2	1.5	4.9	0.9	0.2	0.2	1.8	0.1	8.8	5.3
Rash	1.2	1.8	2.1	0.2	1.6	3.4	3.7	0.2	0.1	2.5	0.2	6.1	5.1
Fever/Chills	1.2	1.2	1.3	0.0	1.9	3.2	1.1	0.1	0.0	1.2	0.1	7.4	3.9
Stress Disorder	0.0	1.1	0.1	0.0	0.2	0.2	7.5	0.0	0.0	0.1	0.2	4.0	0.5
Acute Headache	0.2	1.7	2.3	0.1	1.1	5.6	0.5	0.8	0.0	2.6	0.1	6.3	5.1
Abdominal Pain	0.1	1.0	0.8	0.0	0.8	0.2	0.5	0.2	0.0	1.4	0.0	6.3	3.4
Congestion	0.1	2.6	0.4	0.1	0.0	3.9	0.8	0.0	0.0	1.2	0.0	4.3	4.4
Neurological Disorder	0.0	0.5	0.6	0.2	0.3	0.2	0.2	0.1	0.0	0.4	0.2	2.6	1.3
Vomiting	0.0	0.3	0.1	0.0	0.9	1.2	0.6	0.0	0.0	0.6	0.0	3.9	0.8

**Table 5 (cont'd). Average Weekly Incidence Rates of Key Symptoms for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pndltn	BMC NAS Pt Mugu	BMC NAVWP CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Camp Pndltn	NH Twenty- nine Palms	TRICARE O'side
Key Symptom													
Visual Disturb.	0.1	0.2	1.1	0.0	0.1	0.7	0.2	0.0	0.0	0.2	0.0	8.4	0.6
Pustule/ Papule	0.3	0.8	0.9	0.0	0.4	4.1	0.2	0.1	0.0	0.4	0.0	2.5	3.0
Coma or Death	0.2	0.9	0.6	0.0	0.7	0.7	0.3	0.1	0.0	1.2	0.0	2.4	3.0
Population at Risk	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	130,000	1,000	1,000

6.2 Key Symptoms: San Diego

Figure 8 is a 2-page figure showing trends in 20 of the most common Key Symptoms for all San Diego MTFs combined. *Cold or Influenza*, *Pupillary Disease*, and *Joint Pain* were the most common, with overall rates (i.e., across months) of 4.6, 3.2, and 1.9 respectively. Of the symptoms shown on the first page of Figure 8, only *Cold or Influenza* symptoms showed much variation, showing a general decrease ranging from a high of 5.2 in March to a low of 2.5 in July ($p < .01$). In general, the rates of most Key Symptoms were low and fairly stable over time, although some Key Symptoms of relatively low incidence appeared to fluctuate somewhat over time. For example, on the second page of Figure 8, *Neurological Disorders* and *Abdominal Pain* showed some variability by month. *Hallucination* showed a linearly decreasing trend that was statistically significant ($p < .01$), from 86 to 11 cases from March to August. *Stress Disorders* and *Fever/Chills* significantly increased from March to August ($p < .01$). As with other mappings, San Diego showed generally higher rates of Key Symptoms and more variability in rates of various Key Symptoms than did Camp Pendleton.

Figure 8. Trends of Key Symptoms for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

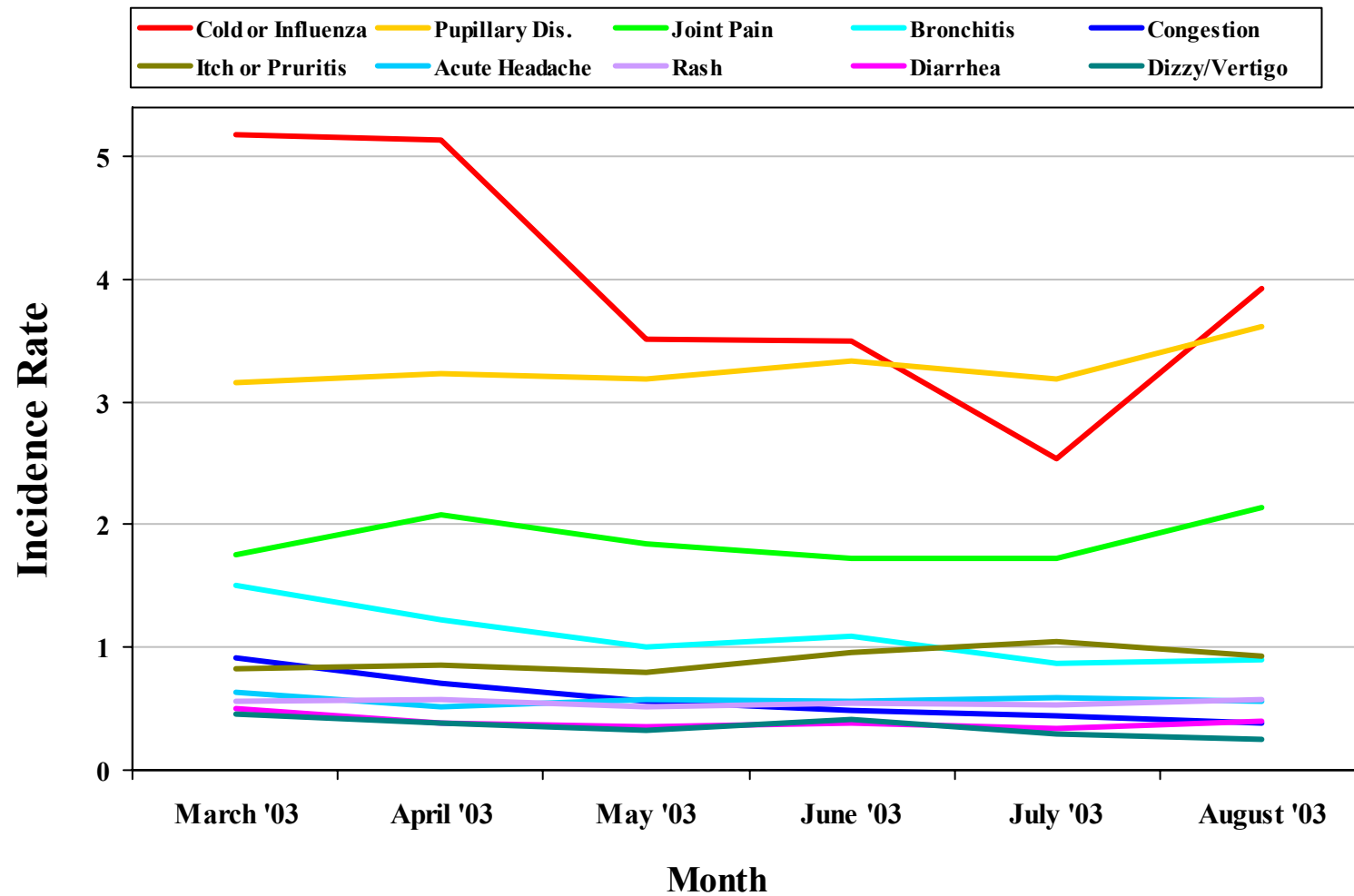


Figure 8 (cont'd). Trends of Key Symptoms for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

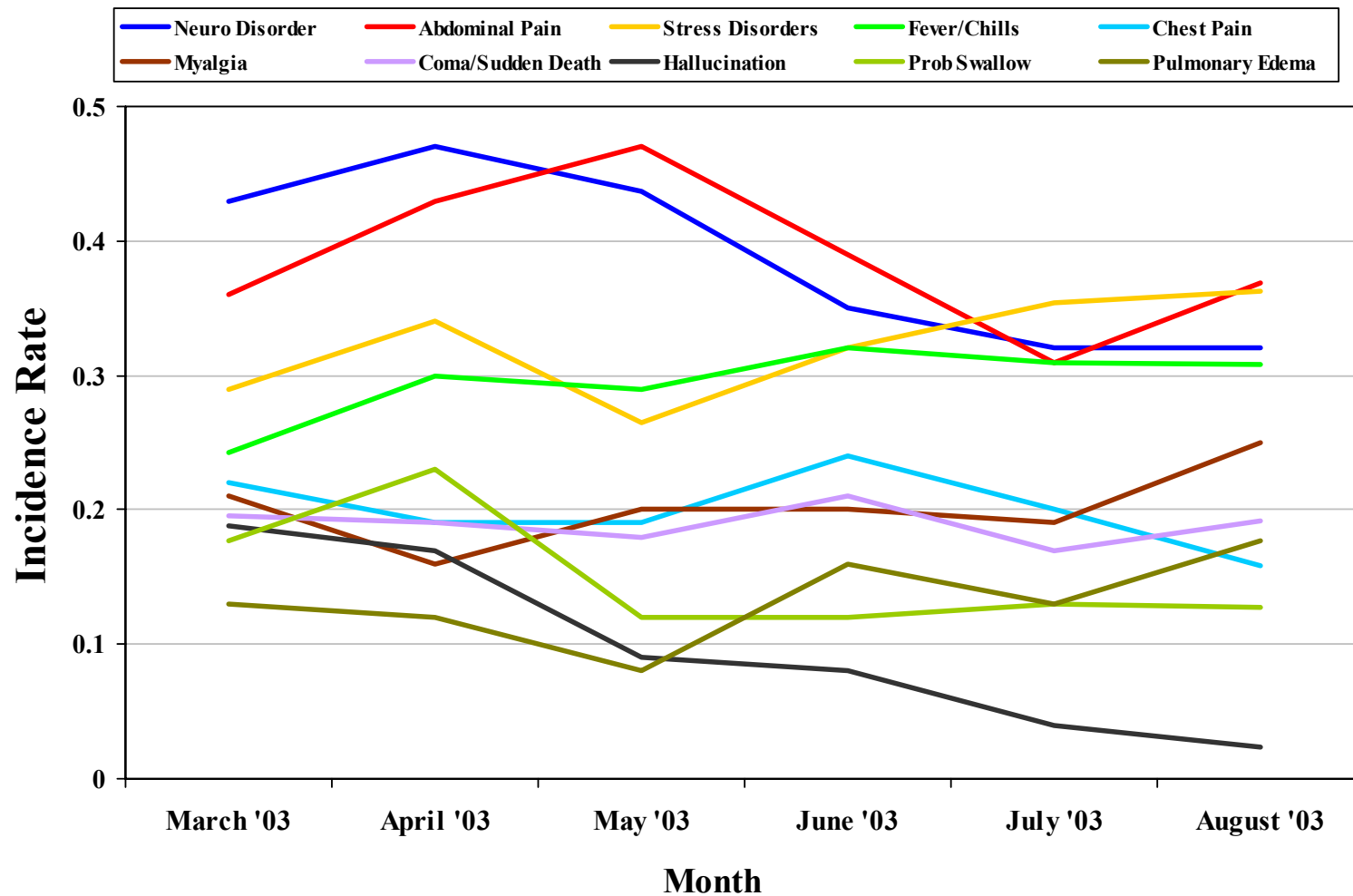


Table 6 presents average weekly rates of Key Symptoms for individual San Diego MTFs. Incidence of *Cold or Influenza*, *Pupillary Disturbances*, and *Joint Pain* were the most common symptoms. These common symptoms varied considerably among San Diego MTFs. For example, *Cold or Influenza* rates ranged from 0.3 (NMCSD) to 21 (BMC MCRD San Diego). BMC MCRD San Diego, in fact, showed particularly high rates of the top three symptoms.

**Table 6. Average Weekly Incidence Rates of Key Symptoms for San Diego MTFs for the Period
1 Mar to 31 Aug 2003**

	NBMA NALF San Clemente	BMC NAB Coronado	BMC El Centro	BMC MCRD San Diego	BMC MCAS Miramar	BMC NAS North Island	BMC NAVSTA San Diego	BMC NTC San Diego	NMCSD	TRICARE Outpt Clinic 1	TRICARE Outpt Clinic 2
Key Symptom											
Cold or Cold w/ Influenza	5.5	0.4	2.8	21.3	2.1	2.9	4.7	4.2	0.3	6.1	8.8
Pupillary Disturbances	0.0	0.0	0.0	26.4	2.8	4.4	3.4	11.1	2.4	0.0	0.2
Joint Pain	3.2	0.0	1.0	14.3	1.5	2.1	6.0	0.5	1.1	1.2	1.3
Bronchitis	0.0	0.0	0.2	2.2	0.3	0.4	1.6	1.9	0.1	1.7	3.4
Congestion	0.0	0.0	0.0	2.8	0.1	0.1	0.3	0.5	0.1	0.8	1.9
Itch or Pruritis	2.7	0.1	1.0	0.6	0.9	0.9	2.4	0.1	0.1	1.5	2.6
Acute Headache	2.3	0.1	0.4	0.6	0.3	0.5	2.1	0.0	0.4	0.8	0.9
Rash	2.3	0.1	0.8	0.7	0.1	0.5	1.2	0.9	0.0	0.8	1.0
Diarrhea	0.9	0.1	0.7	0.8	0.3	0.7	1.6	0.0	0.2	0.4	0.6
Dizziness/Vertigo	0.0	0.0	0.1	0.1	0.0	0.2	0.3	0.0	0.7	0.1	0.3
Neurological Disorder	0.0	0.0	0.0	2.9	0.1	0.3	0.4	0.0	0.5	0.1	0.2
Abdominal Pain	0.0	0.0	0.2	0.2	0.2	0.3	1.0	0.0	0.5	0.7	0.4
Stress Disorders	0.0	0.0	0.0	1.3	0.0	0.0	2.3	0.0	0.4	0.0	0.0
Fever/Chills	0.0	0.0	0.6	0.2	0.3	0.2	0.4	0.0	0.1	0.5	0.7
Chest Pain	0.5	0.0	0.0	0.2	0.1	0.2	0.7	0.0	0.3	0.2	0.1
Muscle Pain, Myalgia	0.0	0.0	0.0	0.6	0.0	0.1	0.0	0.0	0.2	0.2	0.3
Coma or Sudden Death	0.5	0.0	0.1	0.0	0.1	0.2	0.5	0.0	0.2	0.2	0.2
Hallucination	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Problems w/ Swallowing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Pulmonary Edema	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Population at risk	85	6484	811	4076	9612	6085	5000	7095	36546	16126	14590

7.0 Ill-Defined Conditions

7.1 Ill-Defined Conditions: Camp Pendleton

Figure 9 is a 2-page graph showing trends in the most common Ill-Defined Conditions for all Camp Pendleton MTFs combined. *Bronchitis (Diffuse, Infectious, Inflammatory)*, *Rash*, and *Fever/Chills of Unknown Origin* had the highest rates, with overall rates of .12, .15, and .09 respectively. For some *Ill-Defined Conditions*, there was slight variation by month. For example, there was a visible increase in *Rash* in July, and the change was a statistically significant increase over the month before ($p < .05$). All Ill-Defined Conditions at Camp Pendleton occurred at relatively low rates, with no condition exceeding .2 cases per 1,000 population.

Figure 9. Trends of Ill-Defined Conditions for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

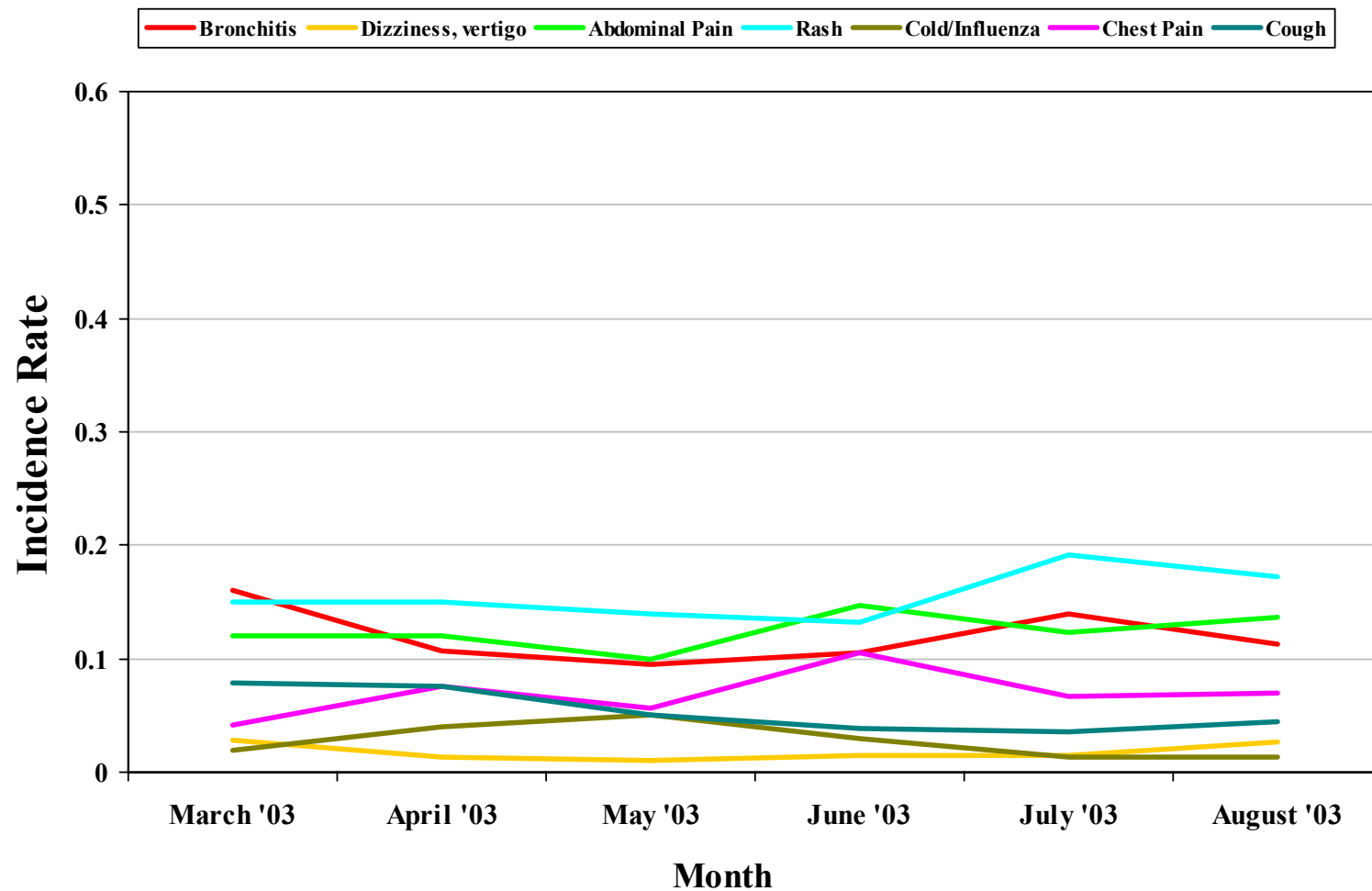


Figure 9 (cont'd). Trends of Ill-Defined Conditions for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

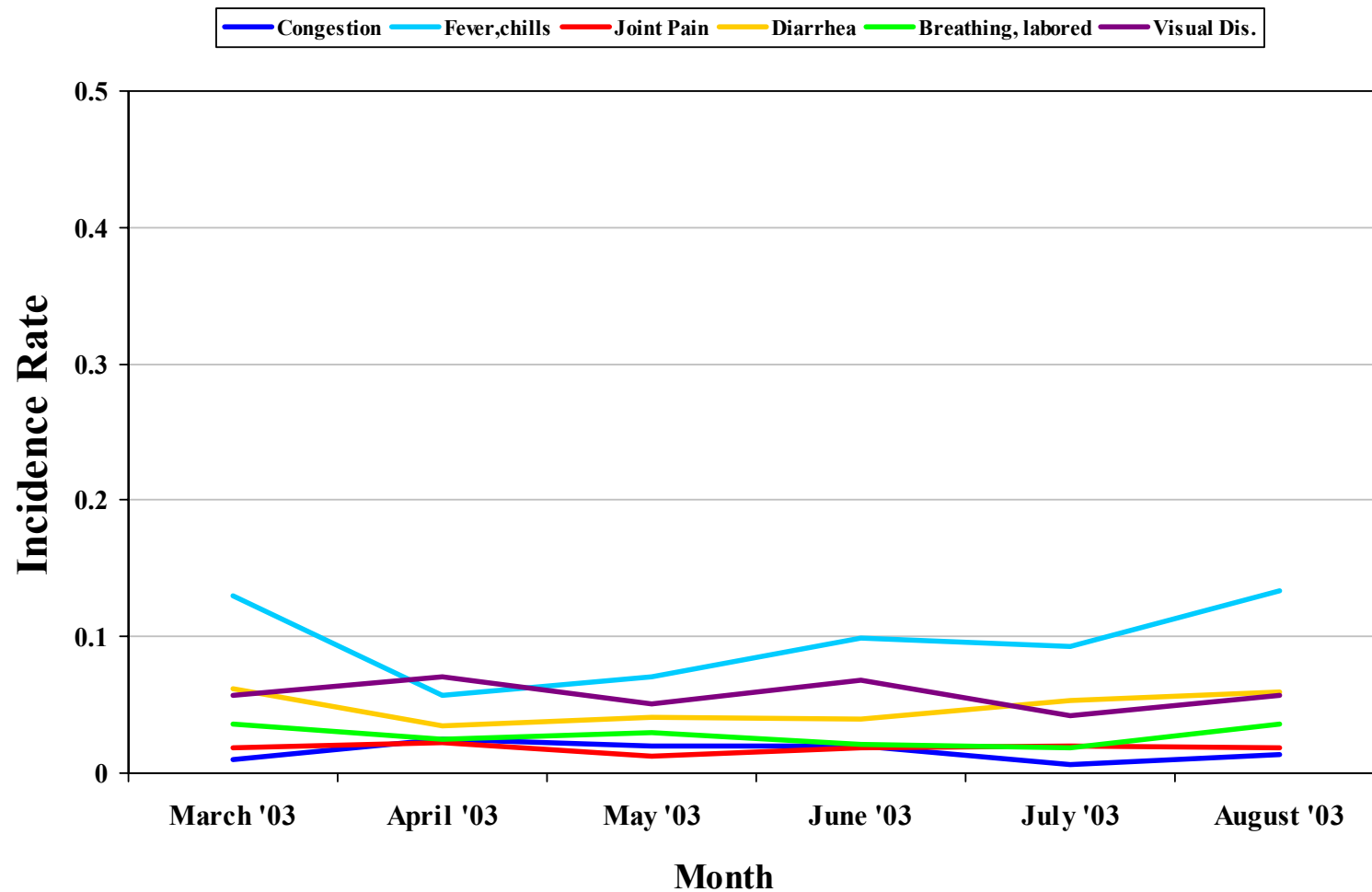


Table 7 shows rates of Ill-Defined Conditions by individual Camp Pendleton MTFs. In general, rates of Ill-Defined Conditions were low. Among the most frequent Ill-Defined categories were *Rash*, *Abdominal Pain*, *Cough*, *Fever/Chills*, and *Bronchitis*. *Rash* was the most common Ill-Defined diagnosis at 5 of the MTFs, and was the second highest Ill-Defined diagnosis at 5 other MTFs. There was variability among the MTFs in the incidence of a particular Ill-Defined Condition. For example, the average weekly rate of *Bronchitis* visits at TRICARE Outpatient–Oceanside was 6 per 1,000, while at other clinics, the rate was zero. The rate of *Visual Disturbances* was 7.4 at NH Twentynine Palms, while at other MTFs, the rate of *Visual Disturbances* was low or zero. Variability also existed among the MTFs in their overall pattern of Ill-Defined Conditions. For example, quite a few Ill-Defined Conditions were represented at visits to TRICARE Outpatient–Oceanside and NH Twentynine Palms, while very few Ill-Defined Conditions were evident at BMC Seal Beach and NH Camp Pendleton.

**Table 7. Average Weekly Incidence Rates of Ill-Defined Conditions for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pndltm	BMC NAS Pt Mugu	BMC NAVWPN CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Camp Pndltm	NH Twenty- nine Palms	TRICARE O'side
Category													
Bronchitis	0.2	3.4	1.4	0.0	0.3	0.9	0.0	0.2	0.0	0.3	0.0	1.8	6.0
Dizziness	0.0	0.0	0.6	0.1	0.1	0.2	0.0	0.0	0.0	0.2	0.0	0.7	0.5
Abdominal Pain	0.1	0.9	0.8	0.0	0.7	0.9	0.5	0.2	0.0	1.4	0.1	5.8	3.2
Rash	1.1	1.0	1.3	0.1	0.9	2.3	1.7	0.0	0.1	1.3	0.0	4.3	3.7
Cold/ Influenza	0.0	0.0	1.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Chest Pain	0.0	0.3	0.8	0.1	0.2	1.2	0.1	0.1	0.0	0.3	0.0	2.8	0.8
Cough	0.0	0.2	0.1	0.0	1.6	1.0	0.6	0.0	0.0	0.3	0.0	0.9	2.2
Congestion	0.1	0.2	0.0	0.0	0.0	0.7	0.1	0.0	0.0	0.2	0.0	0.7	0.1
Fever/Chills	0.1	0.2	0.1	0.0	0.3	0.5	1.1	0.0	0.0	0.3	0.1	4.1	0.6
Joint Pain	0.0	0.0	0.6	0.0	0.4	0.0	0.0	0.0	0.0	0.7	0.0	0.3	0.5
Diarrhea	0.1	0.4	0.6	0.0	0.2	0.6	0.6	0.0	0.0	0.3	0.0	1.6	0.8
Breathing, Labored	0.0	0.2	0.1	0.0	0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.7	0.2
Visual Disturbances	0.1	0.2	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.0	7.4	0.3
Population at risk	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	130,000	1,000	1,000

7.2 Ill-Defined Conditions: San Diego

Figure 10 is a 2-page graph showing monthly trends in the most common Ill-Defined Conditions for all San Diego MTFs combined. *Bronchitis*, *Dizziness/Vertigo*, *Abdominal Pain*, and *Rash* predominated, with overall rates of .32, .31, .37, and .29 respectively. For some *Ill-Defined Conditions*, there was slight monthly variation. For example, there was a visible and statistically significant decrease in *Bronchitis* ($p < .01$), *Dizziness/Vertigo* ($p < .05$), and *Cold or Cold with Influenza, Flu, or Grippe* ($p < .01$). *Fever/Chills of Unknown Origin* (second page of Figure 10), although of relatively low occurrence, showed statistically significant increases over the months of surveillance ($p < .01$). In general, Ill-Defined Conditions at San Diego occurred at relatively higher rates and showed greater dispersion over the surveillance period than did Ill-Defined diagnoses at Camp Pendleton.

Figure 10. Trends of Ill-Defined Conditions for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

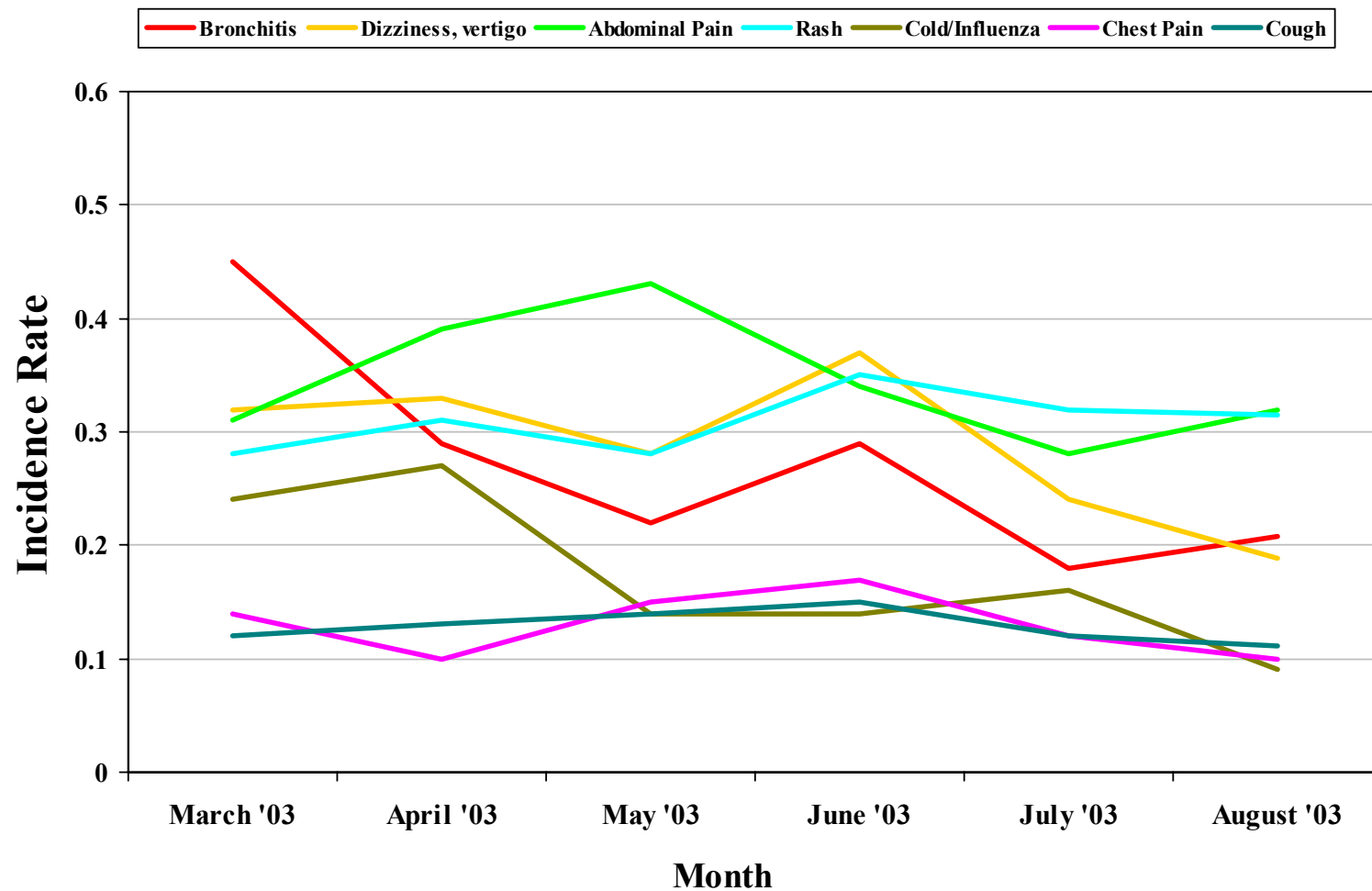


Figure 10 (cont'd). Trends of Ill-Defined Conditions for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

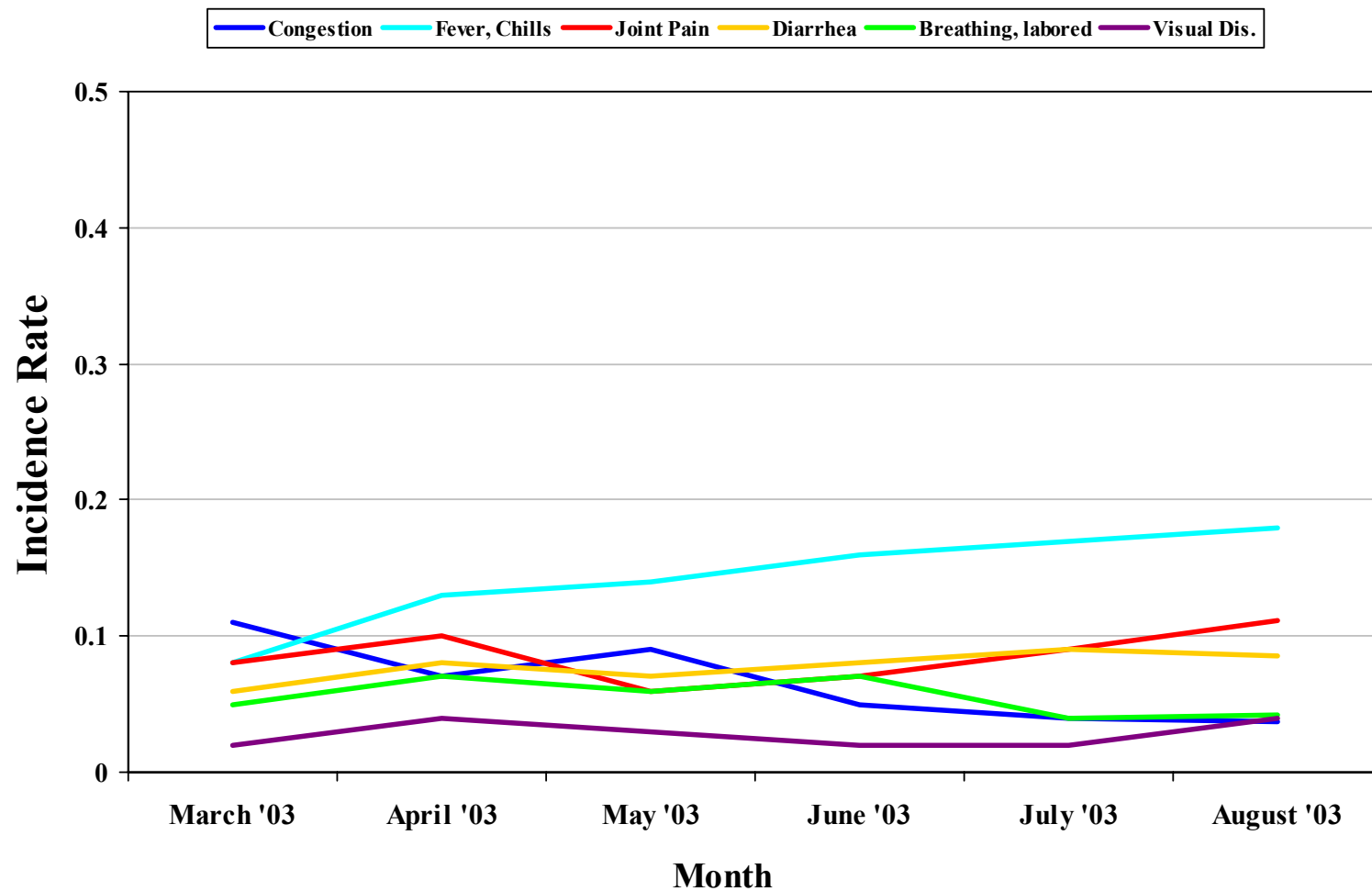


Table 8 shows average rates in Ill-Defined Conditions by individual San Diego MTFs. The rates of Ill-Defined Conditions were low, generally lower than those seen at Camp Pendleton MTFs. Among the most frequent Ill-Defined categories were *Rash*, *Abdominal Pain*, *Cough*, and *Cold or Cold with Influenza, Flu, or Grippe*. *Rash* was the most common Ill-Defined diagnosis at 4 of the 11 MTFs, and was the second highest Ill-Defined diagnosis at 4 other MTFs. There was only slight variability among the MTFs in incidence of a particular Ill-Defined Condition. For example, the average weekly rate of *Rash* visits ranged from a high of 1.4 cases per 1,000 (NBMA NALF San Clemente) to 0 (BMC NAB Coronado, BMC NTC San Diego, and NMCSO). There was some variability among the MTFs in their overall pattern of Ill-Defined Conditions. For example, quite a few Ill-Defined Conditions occurred, albeit at low rates, at the two TRICARE Outpatient clinics, while no Ill-Defined Conditions were evident at BMC NAB Coronado.

**Table 8. Average Weekly Incidence Rates of Ill-Defined Conditions for San Diego MTFs for the Period
1 Mar to 31 Aug 2003**

	NBMA NALF San Clemente	BMC NAB Coronado	BMC El Centro	BMC MCRD San Diego	BMC MCAS Miramar	BMC NAS North Island	BMC NAVSTA San Diego	BMC NTC San Diego	NMCSD	TRICARE Outpt Clinic 1	TRICARE Outpt Clinic 2
Category											
Bronchitis	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5	1.4
Dizziness/Vertigo	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.7	0.1	0.2
Abdominal Pain	0.0	0.0	0.1	0.2	0.2	0.3	0.9	0.0	0.4	0.5	0.4
Rash	1.4	0.0	0.4	0.5	0.4	0.3	1.0	0.0	0.0	0.6	0.5
Cold/Influenza	0.5	0.0	0.0	0.3	0.2	0.4	1.6	0.0	0.1	0.1	0.1
Chest Pain	0.5	0.0	0.0	0.2	0.1	0.2	0.7	0.0	0.1	0.2	0.1
Cough	1.4	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.0	0.2	0.3
Congestion	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.0	0.0	0.1
Fever/Chills	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.4	0.5
Joint Pain	0.0	0.0	0.1	0.6	0.0	0.1	0.2	0.0	0.1	0.0	0.0
Diarrhea	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.0	0.1	0.1	0.1
Breathing, Labored	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0
Visual Disturbances	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Population at risk	85	6484	811	4076	9612	6085	5000	7095	36546	16126	14590

8.0 Reportable Conditions

8.1 Reportable Conditions: Camp Pendleton

Figure 11 is a 2-page graph showing trends in the most common Reportable Conditions for all Camp Pendleton MTFs combined. *Glaucoma* and *Occupational Exposure to Blood-Borne Pathogens* showed the highest rates overall (.06 and .04 cases per 1,000 population, respectively). *Glaucoma* showed a large, marginally significant spike in the number of cases seen in June ($p < .05$), possibly due to routine screening. *Occupational Exposure to Blood-Borne Pathogens* increased slightly but steadily over the surveillance period, though changes did not reach statistical significance. The number of cases diagnosed as *Chemical Warfare Agent Exposure* increased from 2 to 21 over the surveillance period, a statistically significant increase ($p < .01$), and further investigation indicated that all cases were due to venomous bites of snakes, lizards, or spiders.

Figure 11. Trends of Reportable Conditions for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

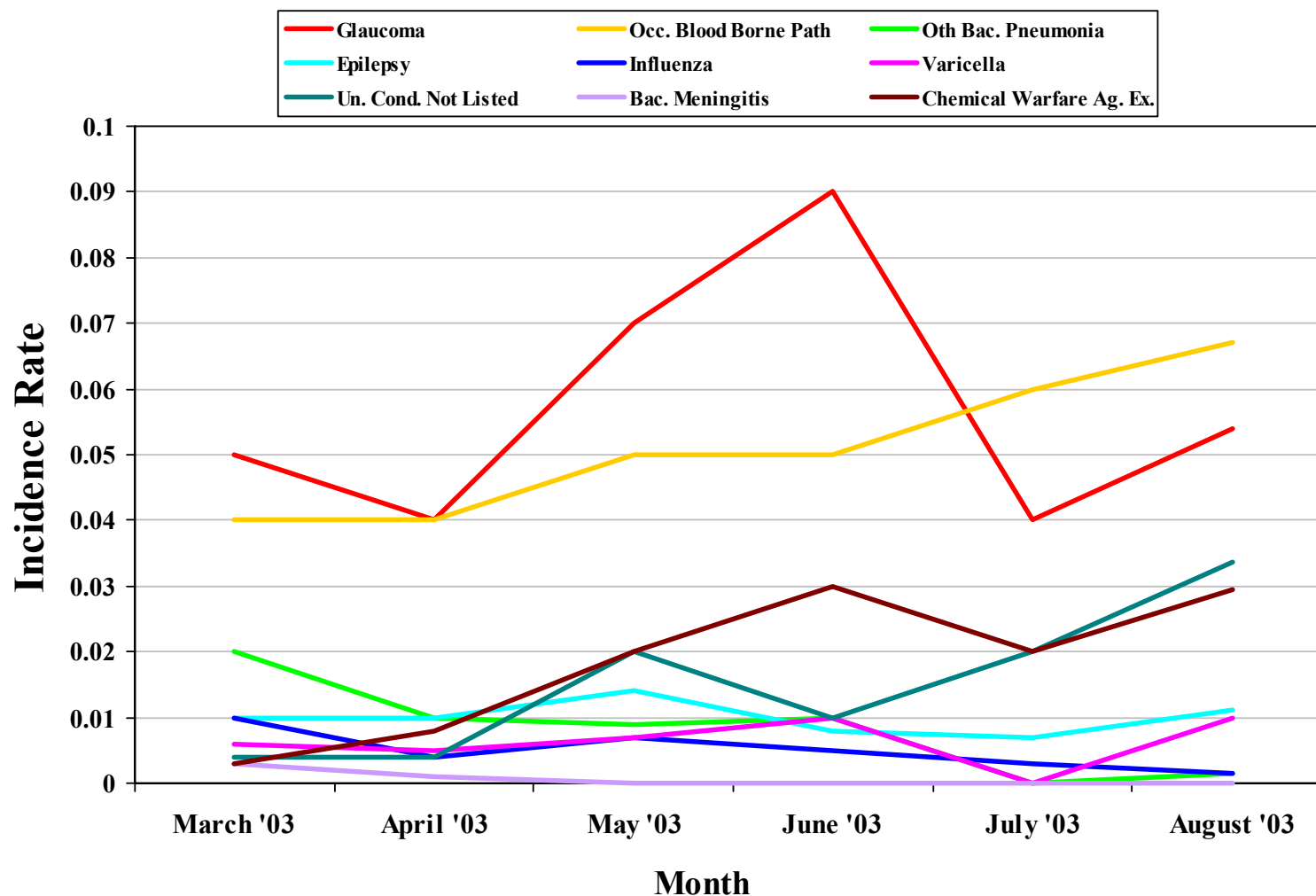


Figure 11 (cont'd). Trends of Reportable Conditions for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

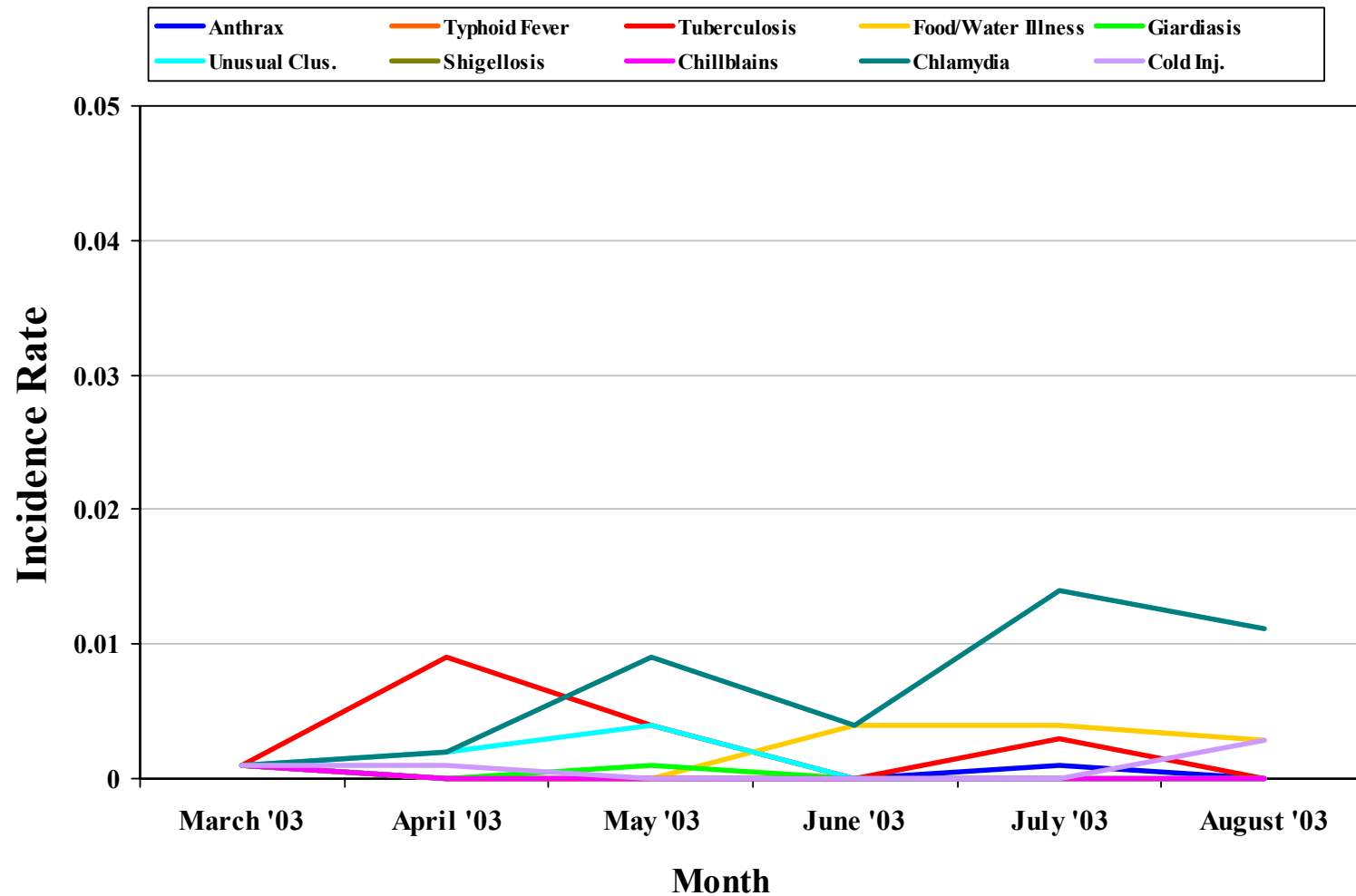


Table 9 shows averaged weekly rates in Reportable Conditions for individual Camp Pendleton MTFs. Rates are only carried out to one decimal point, so a few conditions shown as 0.0 might actually have occurred at very low rates per 1,000. Typically, Reportable Conditions were rare, with incidence rates of zero or near zero. Over the surveillance period, *Glaucoma* was reported by 4 MTFs: BMC MCB Camp Pendleton, NACC Port Hueneme, BMC Yuma, and NH Twentynine Palms. *Occupational Exposure to Blood-Borne Pathogens* was reported by 7 MTFs: BMC Edson Range, BMC NAVWPNCEN China Lake, BMC MCB San Onofre, NACC Port Hueneme, BMC Barstow, NH Twentynine Palms, and TRICARE–Oceanside. NH Twentynine Palms showed more Reportable Conditions than other MTFs.

**Table 9. Average Weekly Incidence Rates of Reportable Conditions for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pendleton	BMC NAS Pt Mugu	BMC NAVWPN CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Camp Pndlttn	NH Twenty -nine Palms	TRICARE O'side
Reportable Condition													
Glaucoma	0.0	0.0	1.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	2.5	0.0
Occ. Exp. to Blood Path	0.0	0.3	0.0	0.0	0.3	0.2	0.2	0.4	0.0	0.0	0.0	1.7	0.1
Other Bacterial Pneumonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.1
Epilepsy	0.0	0.1	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Influenza	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Varicella	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0
Any Unusual Condition	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0
Bacterial Meningitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical Warfare Exp.	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
Anthrax	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Typhoid Fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuberculosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Food/Water	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Giardiasis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Any Unusual Clustering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Table 9 (cont'd). Average Weekly Incidence Rates of Reportable Conditions for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pndltn	BMC NAS Pt Mugu	BMC NAVWP CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Camp Pndltn	NH Twenty -nine Palms	TRICARE O'side
Reportable Condition													
Shigellosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chillblains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chlamydia	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.8	0.0
Cold Injuries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Population at risk	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	130,000	1,000	1,000

8.2 Reportable Conditions: San Diego

Figure 12 is a 2-page graph showing trends in the most common Reportable Conditions for all San Diego MTFs combined. *Influenza* and *Occupational Exposure to Blood-Borne Pathogens* were among the highest Reportable Conditions, with overall rates of .05 and .04, respectively. *Influenza* showed a statistically significant decrease over time, with the number of cases dropping from 39 in March to 2 in August. *Occupational Exposure to Blood-Borne Pathogens* varied quite a bit from month to month. *Chemical Warfare Agent Exposure* showed significant activity over the surveillance period, particularly from June to August ($p < .05$). Further investigation of the *Chemical Warfare* cases indicated that all cases were due to venomous bites of snakes, lizards, or spiders.

Figure 12. Trends of Reportable Conditions for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

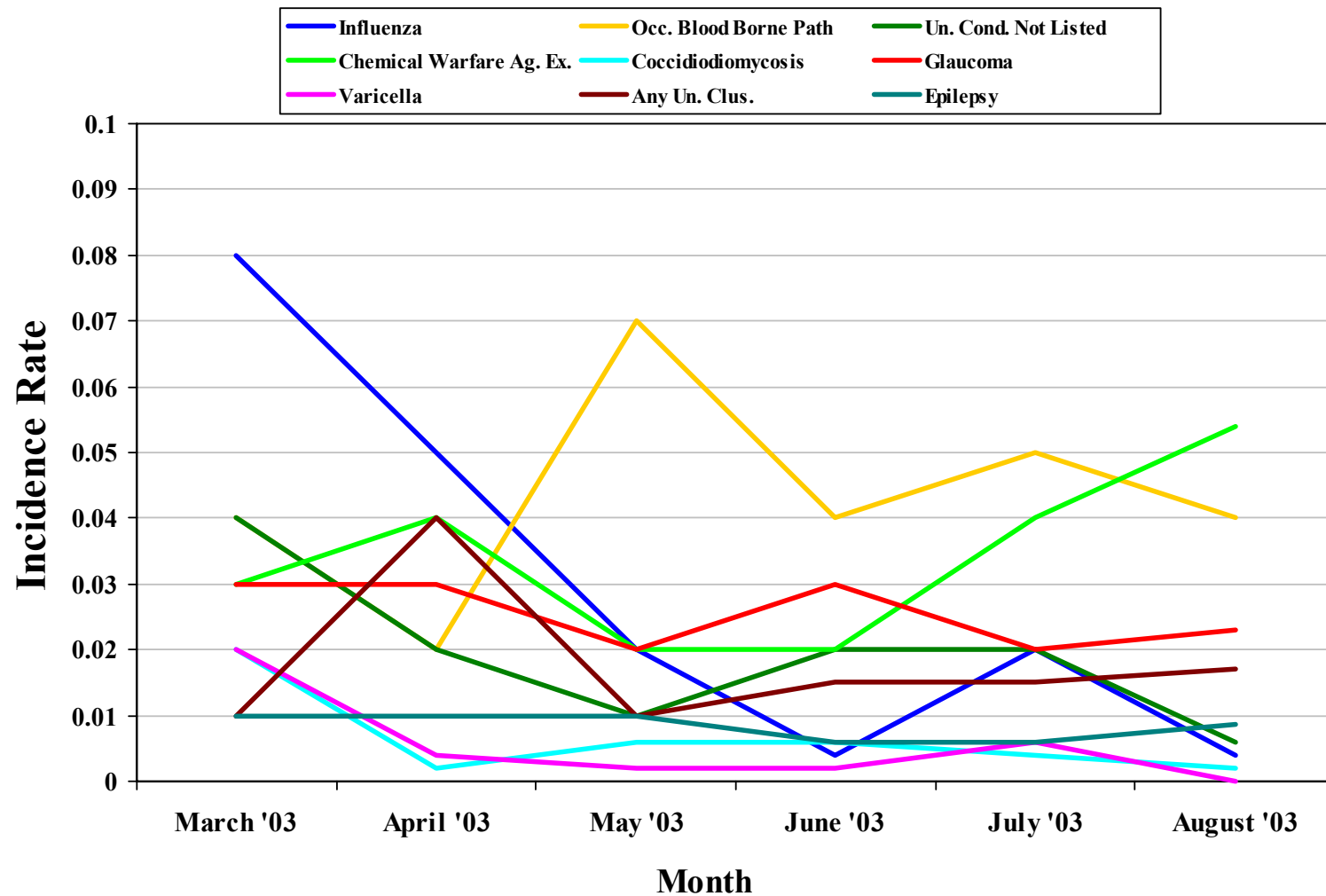


Figure 12 (cont'd). Trends of Reportable Conditions for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

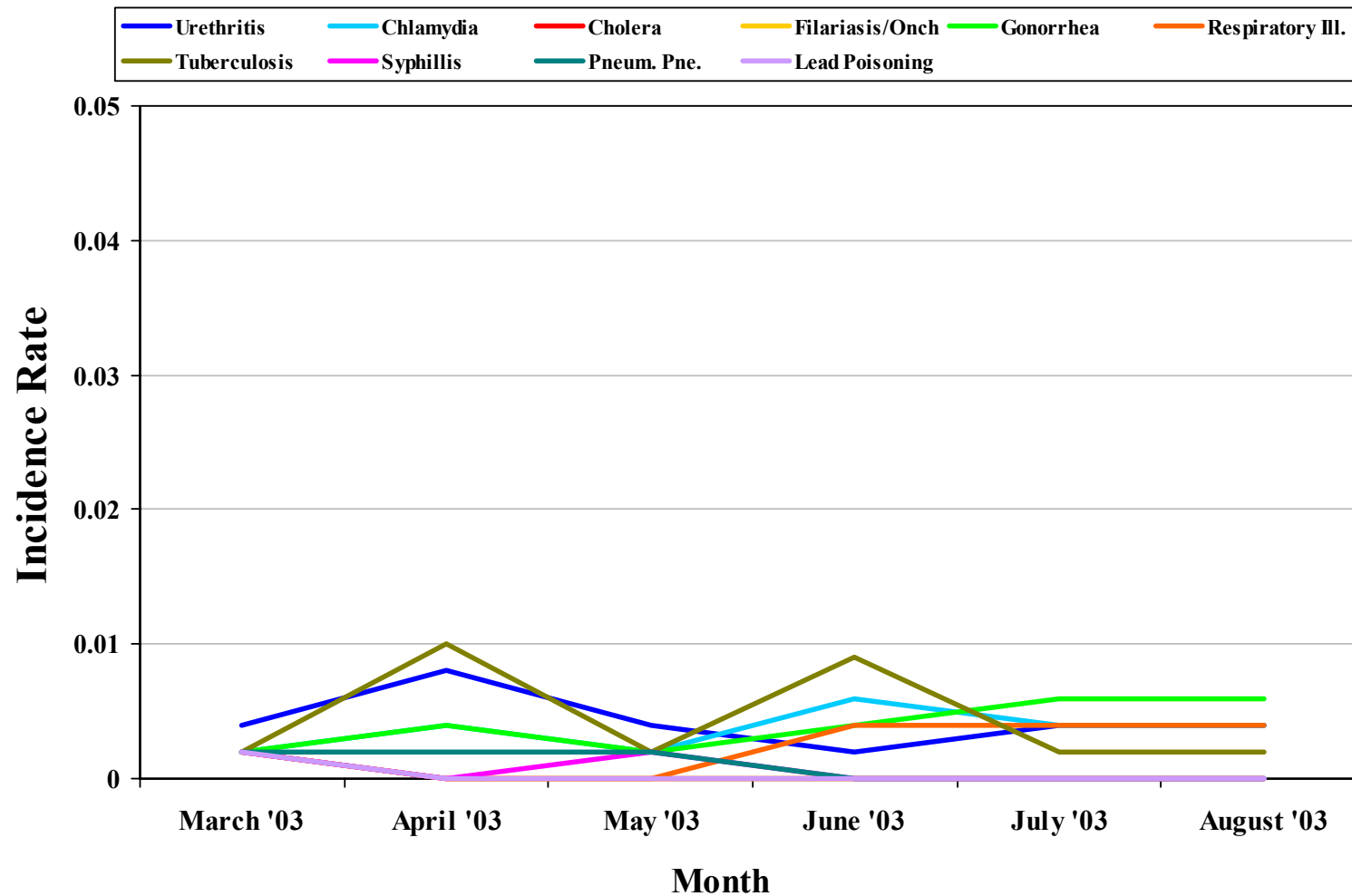


Table 10 shows average rates in Reportable Conditions for individual San Diego MTFs. (Rates are only carried out to one decimal point, so a few conditions shown as 0.0 might actually have occurred at very low rates). Typically, Reportable Conditions were rare, with incidence rates of zero or near zero. Over the surveillance period, *Influenza* was reported by 4 MTFs: BMC MCRD San Diego, BMC NAS North Island, BMC NAVSTA San Diego, and TRICARE Outpatient Clinic 1. *Occupational Exposure to Blood-Borne Pathogens* was reported by 4 MTFs: BMC MCRD San Diego, BMC MCAS Miramar, BMC NAS North Island, and BMC NAVSTA San Diego. BMC NAS North Island had 5 Reportable Conditions over the surveillance period, and BMC MCRD San Diego had 3.

**Table 10. Average Weekly Incidence Rates of Reportable Conditions by San Diego MTFs for the Period
1 Mar to 31 Aug 2003**

	NBMA NALF San Clemente	BMC NAB Coronado	BMC El Centro	BMC MCRD San Diego	BMC MCAS Miramar	BMC NAS North Island	BMC NAVSTA San Diego	BMC NTC San Diego	NMCS	TRICARE Outpt Clinic 1	TRICARE Outpt Clinic 2
Condition											
Influenza	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.1	0.0
Occ. Exp. to Blood Path.	0.0	0.0	0.0	0.1	0.1	0.4	0.2	0.0	0.0	0.0	0.0
Any Unusual Condition	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0
Chem. Warfare Agent Exp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Coccidioidomycosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Glaucoma	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Varicella	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Any Unusual Clustering	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Epilepsy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urethritis	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Chlamydia	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Filariasis/ Onchocerciasis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gonorrhea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Respiratory Illness	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuberculosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Syphilis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pneumococcal Pneum.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead Poisoning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Population at risk	85	6484	811	4076	9612	6085	5000	7095	36546	16126	14590

9.0 CBR Conditions

9.1 CBR Conditions: Camp Pendleton

Figure 13 presents trends in CBR Conditions for all Camp Pendleton MTFs combined. *Vomiting and Diarrhea of Unknown Origin*, and *Fever of Greater Than 100.5° in the Absence of Other Disease Criteria* were the most common CBR Conditions, with overall rates of .11 and .08, respectively. There was little variation month to month.

Figure 13. Trends of CBR Conditions for all Camp Pendleton MTFs by Month for the Period of 1 Mar to 31 Aug 2003

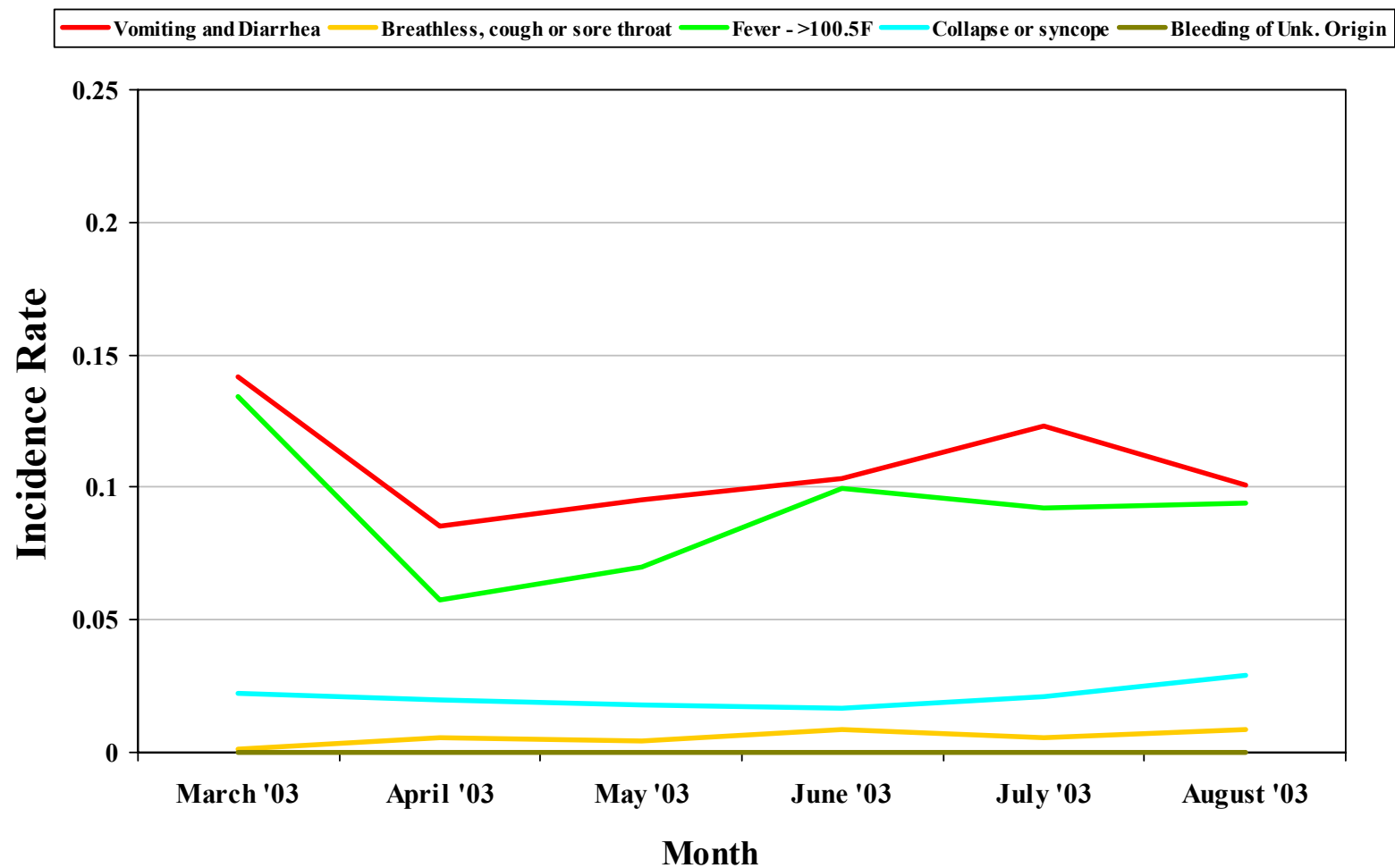


Table 11 shows averaged weekly rates in CBR Conditions for individual Camp Pendleton MTFs. *Vomiting and Diarrhea of Unknown Origin* was the most common of the CBR categories, reported by 9 of the MTFs. *Vomiting and Diarrhea of Unknown Origin* also had the highest incidence within MTFs in most instances, although *Fever* was the highest at NACC Port Hueneme and NH Camp Pendleton. NH Twentynine Palms had relatively high rates of *Vomiting and Diarrhea* and *Fever* compared with other MTFs.

**Table 11. Average Weekly Incidence Rates of CBR Categories for Camp Pendleton MTFs for the Period
1 Mar to 31 Aug 2003**

	BMC CORCEN MCB	BMC Edson Range	BMC MCB Camp Pndltn	BMC NAS Pt Mugu	BMC NAVWPN CEN China Lake	BMC MCB San Onofre	NACC Port Huen	BMC Barstow	BMC Seal Beach	BMC Yuma	NH Camp Pndltn	NH Twenty- nine Palms	TRICARE O'side
CBR Category													
Vomiting and Diarrhea of Unkn. Origin	0.2	0.5	0.8	0.0	1.1	1.9	0.7	0.0	0.0	0.8	0.0	4.7	1.2
Bleeding of Unkn. Origin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Breathless, cough or sore throat assoc. W/ temp >100.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Collapse or syncope	0.0	0.3	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2
Fever: Temp > 100.5°	0.0	0.1	0.2	0.0	0.2	0.3	1.0	0.0	0.0	0.3	0.1	4.1	0.5
Population at Risk	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	130,000	1,000	1,000

9.2 CBR Conditions: San Diego

Figure 14 presents trends in CBR Conditions for all San Diego MTFs combined. *Breathless, Cough, or Sore Throat Associated with a Temperature Greater than 100.5 °F* was the most common condition overall (.18 across the months), followed by *Vomiting and Diarrhea of Unknown Origin* (.15 across the months). These conditions showed some variability over the months, as did *Fever of Greater than 100.5 °F*.

Figure 14. Trends of CBR Conditions for all San Diego MTFs by Month for the Period of 1 Mar to 31 Aug 2003

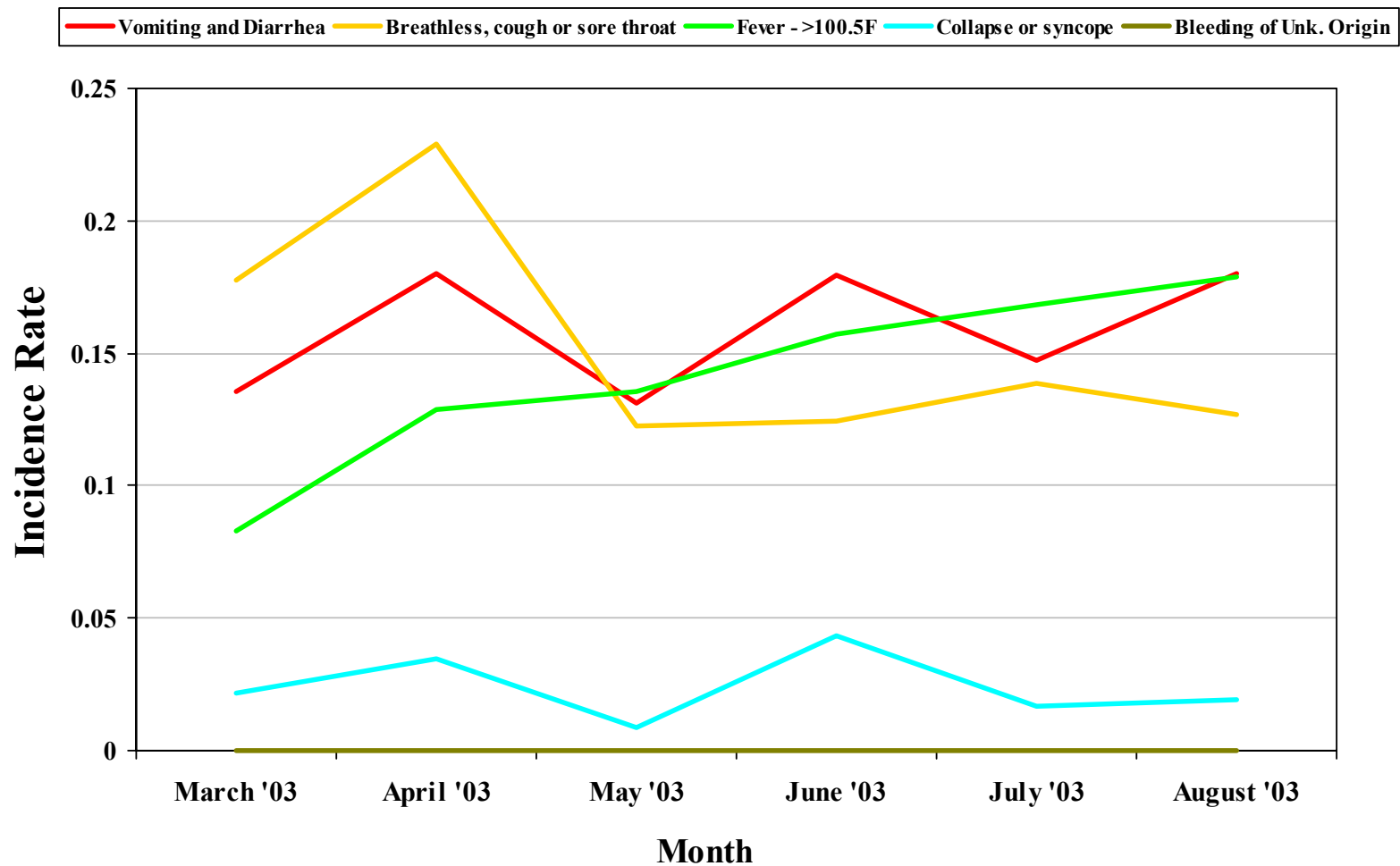


Table 12 shows rates in CBR Conditions for individual San Diego MTFs. In general, rates of CBR Conditions were very low. *Vomiting and Diarrhea of Unknown Origin* was the most common of the CBR categories, reported by 7 of the MTFs. Four MTFs reported no CBR Conditions.

**Table 12. Average Weekly Incidence Rates of CBR Categories for San Diego MTFs for the Period
1 Mar to 31 Aug 2003**

	NBMA NALF San Clemente	BMC NAB Coronado	BMC El Centro	BMC MCRD San Diego	BMC MCAS Miramar	BMC NAS North Island	BMC NAVSTA San Diego	BMC NTC San Diego	NMCS	TRICARE Outpt Clinic 1	TRICARE Outpt Clinic 2
Category											
Vomiting and Diarrhea of Unkn. Origin	0.0	0.0	0.0	0.2	0.2	0.3	0.6	0.0	0.1	0.2	0.1
Breathless, cough or sore throat assoc. w/ Temp >100.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Fever: Temp > 100.5°	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.4	0.5
Collapse or syncope	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Bleeding of Unkn. Origin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Population at risk	85	6484	811	4076	9612	6085	5000	7095	36546	16126	14590

10.0 Distribution of Encounters

In addition to incidence rates, another perspective for understanding medical encounters is to examine the distribution of all diagnoses within a given mapping. For example, Figure 15 presents the distribution of DNBI encounters for Camp Pendleton MTFs; Figure 16 presents the same information for San Diego MTFs. The 2 large catchment areas showed similarities in their pattern of distribution. In both instances, the majority of encounters (40% to 46%) were for *Other Medical/Surgical* conditions (i.e., conditions not included in specific categories). *Respiratory* conditions accounted for 15% of all DNBI visits in both catchment areas, and *Other Injury*, *Ophthalmological*, and *Psychiatric Mental* accounted for a fair percentage in both. However, statistical tests indicated overall differences in the DNBI distributions for the 2 catchment areas. More focused analysis showed that San Diego had significantly more *Other Medical/Surgical* encounters than Camp Pendleton, and that Camp Pendleton had more conditions coded as *Other Injury* than did San Diego.

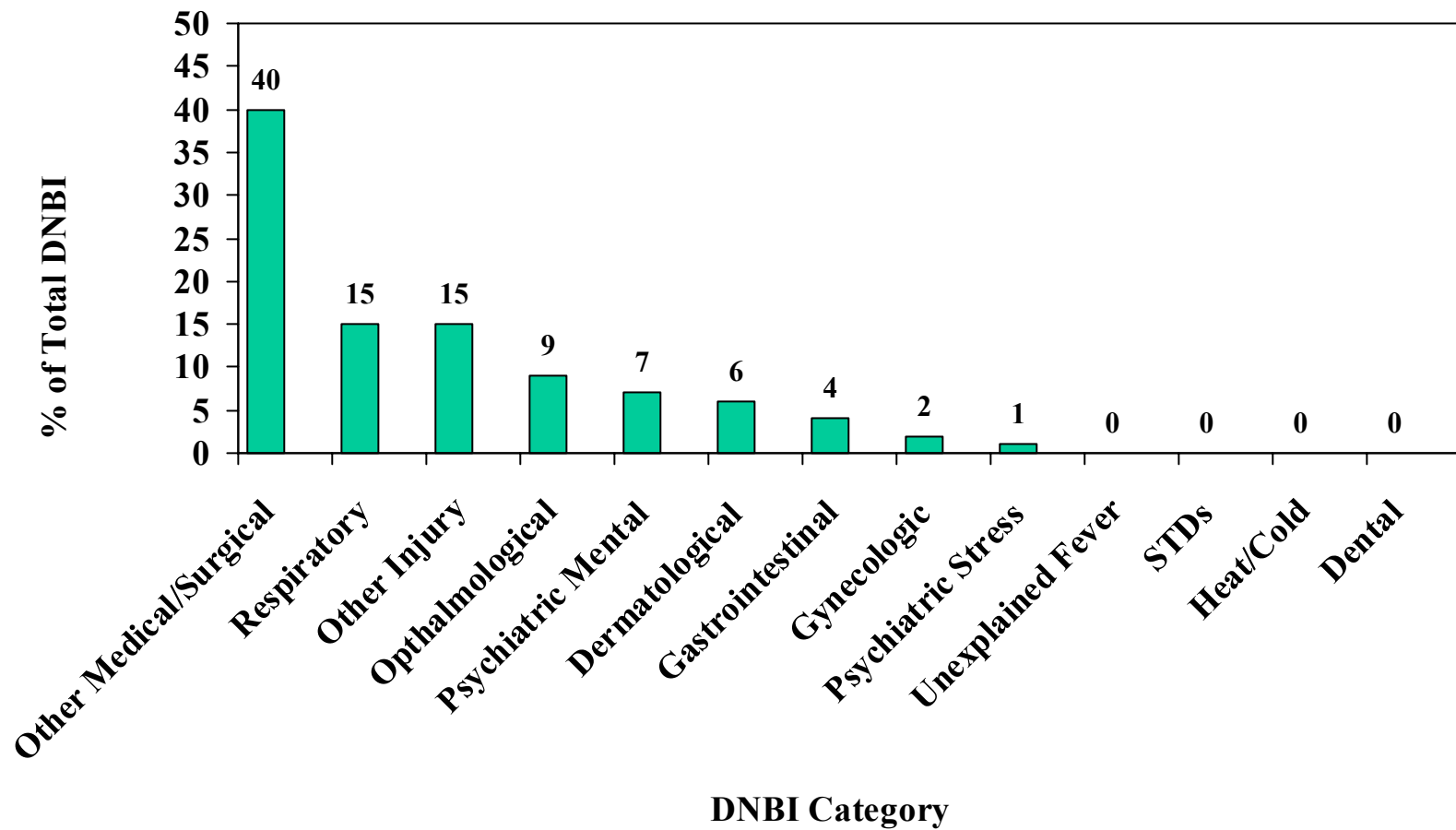
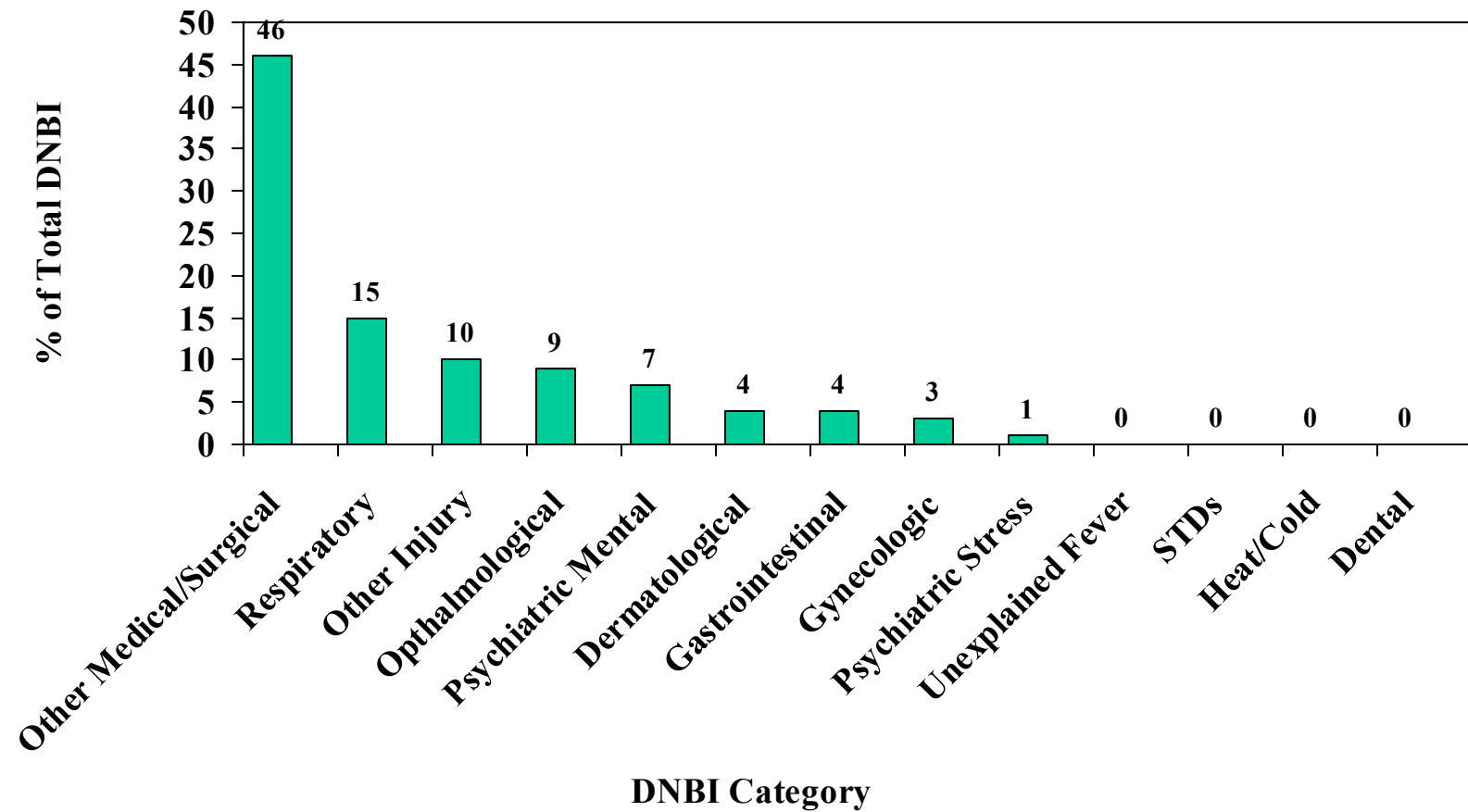
Figure 15. Distribution of DNBI Encounters for all Camp Pendleton MTFs

Figure 16. Distribution of DNBI Encounters for all San Diego MTFs

11.0 Utility of MDSS Mappings

The various mappings or reports within MDSS each have their unique strengths and advantages. It is difficult to determine the “precision” of any of the reports without some kind of external validation, although the *utility* of the reports can be evaluated by daily users at the EpiCenter. After 5 months of using MDSS to conduct daily surveillance, EpiCenter staff have found 2 reports to be particularly useful in reflecting medical conditions occurring at local MTFs: (a) the DNBI report, and (b) the Summary Reportable Conditions report. Despite the “catch all” DNBI category of *Other Medical/Surgical*, the DNBI report has become the preferred one for general “first-glance” surveillance. For example, there has been a high incidence in Respiratory Conditions at several MTFs, and these are accurately reflected under DNBI’s Respiratory category. However, for some conditions, such as infectious diseases, DNBI is less useful because it categorizes these into *Other Medical/Surgical*. The Summary Reportable Conditions is more useful for identifying severe and infectious conditions, such as recent cases of Coccidioidomycosis. Typically, EpiCenter staff use the DNBI and Summary Reportable Conditions reports in tandem to get an accurate, complete picture of current medical conditions.

12.0 Conclusions

According to the findings in this report, no unusual disease trends were visible for the Camp Pendleton and San Diego area during the 6-month surveillance period of 1 March to 31 August 2003. Analyses yielded several interesting findings, a few of which are summarized as follows. (Conclusions are primarily based on DNBI conditions because of the overlap of DNBI findings with other mappings.)

- A consistent and expected finding was the gradual decline of respiratory illness over the surveillance period (from spring to summer of 2003). This finding was consistent across mappings and for both catchment areas.
- Of all DNBI diagnoses, *Other Medical/Surgical* was the leading diagnosis in both catchment areas, and with the exception of *Respiratory* illness, DNBI diagnoses generally showed marked stability month to month in both catchment areas.
- San Diego area MTFs generally showed the same pattern of diagnoses as Camp Pendleton MTFs in terms of leading diagnoses. However, San Diego area MTFs generally had higher incidence.
- As might be expected due to differences in the type and characteristics of patients seen, there were a few statistically significant differences in DNBI incidence rates of certain conditions by catchment area (e.g., *Other Medical/Surgical*, *Gynecologic* conditions). Because the San Diego area has an older patient population than Camp Pendleton, additional analyses were conducted to adjust for differences in age structures (data not shown). However, after controlling for differences in age, the rates of several conditions remained different for the 2 catchment areas. Clearly, more study is needed to understand the differences between the two areas.
- Typically, variation occurred in patterns (i.e., leading diagnoses) and incidence rates by individual MTFs. For example, the rates of most DNBI diagnoses were high at NH Twentynine Palms compared with other MTFs within the Camp Pendleton catchment area.
- Among recruits, visits for *Musculoskeletal* problems were particularly important.

13.0 Limitations and Future Directions

This report provides a considerable amount of potentially useful information; however, it is necessary to keep several important limitations in mind. In assessing incidence rates or trends over time detected by surveillance, the first question to ask is, “is it real?” A host of artifacts can influence surveillance results. For example, the assignment of ICD-9 codes might be variable and unstandardized among the MTFs. Furthermore, incidence rates are only as good as the numerator (i.e., cases) and denominator (i.e., the number of those at risk) information. PAR estimates (i.e., denominator data) have been set by MDSS administrators at each catchment area who may not have all relevant information about force or population to be served. To the degree that denominator data are not accurate, conclusions drawn from comparisons of catchment areas or individual MTFs will be incorrect. Before concluding that differences between medical units exist or do not exist, denominator data must be verified. Efforts are ongoing to obtain accurate denominator data for each MTF, though the task is challenging from a number of logistical standpoints (e.g., rapidly changing force numbers). Recent information indicates that current denominator data for at least 2 branch clinics may underestimate their PAR by as much as 300%, greatly overestimating their disease incidence rates. In addition to denominator data, improved accuracy of numerator information is desirable. MDSS routinely captures outpatient visits to participating brick-and-mortar MTFs; however, to the degree that it does not capture medical encounters occurring elsewhere in the catchment area (e.g., battalion aid stations), incidence rates and certain diagnoses might be underestimated. Despite the limitations, the information presented in this report is certainly useful for observing monthly changes within a given MTF.

Several important data fields are currently unavailable in MDSS. For example, a reliable indicator of the patient’s status (e.g., active duty, recruit, family member, or retired individual) is not available. Therefore, certain assumptions were made in the present report, for example, to identify recruits. Other important sociodemographic information is not available, including patients’ race/ethnic group and assigned unit. Efforts are ongoing to “populate” more of the data fields within MDSS so that data analysis can include more reliable demographic information.

A considerable number of statistical tests were conducted for this report, though efforts were made not to overuse or overemphasize them. A large number of tests can capitalize on chance findings, and a large number of cases will affect the likelihood of finding statistically significant associations. For example, even minute differences between incidence rates for March and April might be statistically significant if a large number of medical encounters are available to be analyzed. In short, statistically significant associations described in this report should also be judged in terms of their practical or clinical significance.

Because this trending report covers a 6-month surveillance period, data were aggregated into weekly incidence rates averaged for each month. (In the case of the individual MTFs, rates were based on the entire 6-month period). Data aggregated over such a long period might be too gross to be of use for some

purposes. Important daily or weekly spikes or changes will be masked or “washed out” because they have been folded into many other days of data. However, the average weekly rates by month give an idea of general trends over a longer period of time and can be useful for seeing seasonal variation.

Limitations of the characteristics of certain mappings deserve mention. The DNBI category of *Other Medical/Surgical* is a catchall category for diagnoses not included in specific categories. *Other Medical/Surgical* is consistently the leading DNBI category, yet it is too general to be useful from a disease surveillance and medical planning point of view. Medical decision makers are discussing the creation of additional DNBI categories (e.g., Infectious Disease), which, once adopted, should reduce the number of patient encounters assigned to the *Other Medical/Surgical* category. In addition, Major ICD-9 Codes are very broad, and because they do not always provide the highest level of specificity, they have limited utility. Therefore, work will continue to improve both medical encounter surveillance capability and the broader issue of MDSS disease categorization.

14.0 References

Pugh, J. (2002). *Medical Data Surveillance System Reference Manual V3.1*. San Diego, CA: Naval Health Research Center and Space and Naval Warfare Center.

REPORT DOCUMENTATION PAGE

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB Control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. Report Date (DD MM YY) 30-09-2003		2. Report Type Final		3. DATES COVERED (from - to) March – August 2003	
4. TITLE AND SUBTITLE Annual Report of Incidence Rates and Trends in Medical Encounters at Camp Pendleton and San Diego Medical Treatment Facilities				5a. Contract Number: GS09K99BHD005 5b. Grant Number: 5c. Program Element: 0603729N 5d. Project Number: 09162 5e. Task Number: 9T3SSS025D 5f. Work Unit Number: 60317	
6. AUTHORS Woodruff, Susan I., PhD; Kleiner, Hillary, MPH; Murphy, Brian P., DrPH, CDR, MSC, USN				9 PERFORMING ORGANIZATION REPORT NUMBER Tech Doc 03-7G	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Health Research Center P.O. Box 85122 San Diego, CA 92186-5122					
8. SPONSORING/MONITORING AGENCY NAMES(S) AND ADDRESS(ES) Chief, Bureau of Medicine and Surgery Code M2 2300 E St NW Washington DC 20372-5300				10. Sponsor/Monitor's Acronyms(s) BuMed	
				11. Sponsor/Monitor's Report Number(s)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT (maximum 200 words) This report summarizes the incidence rates of medical conditions and trends over a 6-month period of time (1 March 2003 to 31 August 2003) from data collected by the Medical Data Surveillance System (MDSS). MDSS is a Web-based medical surveillance system that provides near-real-time medical threat assessment and ongoing surveillance. Data included in this report are from two large local catchment areas—Camp Pendleton and San Diego—and their associated individual medical treatment facilities. All outpatient medical encounters (initial and follow-up) were analyzed using both MDSS analysis functions and other statistical programs. This annual report indicates that during the surveillance period, no unusual disease trends appeared in the two catchment areas. However, the many analyses yielded several interesting findings regarding rates of respiratory illness, leading diagnoses, stability of incidence rates, diagnosis patterns between the catchment areas, and the importance of musculoskeletal problems. This report provides a considerable amount of potentially useful information. Incomplete, inaccurate, and unavailable information, as well as nonstandardized ICD-9 coding are a few factors that may limit the reliability of the results.					
15. SUBJECT TERMS medical surveillance, epidemiology, respiratory illness					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 82	19a. NAME OF RESPONSIBLE PERSON Commanding Officer
a. REPORT UNCL	b. ABSTRACT UNCL	b. THIS PAGE UNCL			19b. TELEPHONE NUMBER (INCLUDING AREA CODE) COMM/DSN: (619) 553-8429