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Influenza Vaccine Shortage: San Mateo County Response

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On October 5, 2004, the Chiron Corporation notified the Centers for Disease Control and Prevention (CDC) that the Medicines and Healthcare Products Regulatory Agency in the United Kingdom suspended the company's license to manufacture its influenza vaccine (Fluvirin®) in its Liverpool facility for 3 months, preventing any release of the vaccine for this season. The action significantly reduced the expected supply of trivalent inactivated vaccine ("flu shot") available in the United States for the 2004–2005 influenza season.

Since the influenza vaccine shortage was first announced, CDC and state health officials have worked together to provide vaccine to priority groups, as determined by the Advisory Committee on Immunization Practices' recommendations. The California Department of Health Services (CA DHS) then worked with local counties to determine how vaccine should be distributed throughout the state. CA DHS implemented guidelines restricting vaccine administration only to individuals falling into pre-determined high-risk categories.

San Mateo County (SMC) was particularly affected by the abrupt withdrawal of vaccine supplies; almost all of its flu vaccine was ordered from Chiron. The vaccine shortage prompted the declaration of a local state of emergency in San Mateo County and was accompanied by an order to provide vaccine only to those at highest risk.

Due to the influenza vaccine shortage, the SMC health department cancelled the normally scheduled clinics for seniors and high-risk adults. Instead, the health department identified and allocated vaccine to organizations and providers that serve the priority groups. This was accomplished through a provider survey and contact with various community based organizations (CBO), long-term care facilities (LTCFs), which include assisted living facilities, skilled nursing facilities, and convalescent hospitals. Under SMC policy, assisted living facilities were permitted to order vaccine for their clients; skilled nursing facilities and convalescent homes could order vaccine for their clients and were given vaccine for their staff. Additionally, if staff nurses were not available to administer vaccine, the SMC health department sent nursing staff to administer vaccine. Providers who ordered Chiron vaccine received a portion of their original vaccine order free of charge from the health department. All private providers were allowed to order vaccine for their high-risk patients.

To reach priority populations not covered by private providers, LTCFs and CBOs, the SMC health department administered over 1,800 vaccine doses to high-risk individuals through six influenza clinics on January 5, 2005. This effectively exhausted the SMC health department's current supply of vaccine.

With the CA DHS announcement on January 7, 2005 lifting all previous vaccination restrictions, the SMC health department scaled back its response and encouraged private providers to begin immunizing all clients.



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Flu Activity for the 2004-2005 Season

Although flu epidemics occur almost every year, the beginning, severity, and length of an epidemic can vary widely. Influenza activity was low in the United States from October through early December, but has increased steadily since mid-December. During week 2 (January 9 - January 15), ten states and New York City reported widespread influenza activity, 14 states reported regional influenza activity, and 11 states reported local activity. Fifteen states, the District of Columbia, and Puerto Rico reported sporadic influenza activity. California reported sporadic activity for this period; influenza activity in the country has not yet appeared to peak.

To date, only 2 cases of influenza were reported from sentinel physicians in San Mateo County. Both cases were influenza type A; no positive influenza B tests have been reported. However, SMC health department has received informal reports of increasing activity throughout the county.

Influenza viruses may continue to circulate for several more months; however, it is impossible to predict how the season will progress. Influenza viruses are constantly changing, so it is not unusual for new strains of influenza virus to emerge at any time of the year. As of January 8, 2005, most of the influenza virus strains circulating in the United States were well matched to this season's vaccine.

Severe Pediatric Influenza Surveillance

No severe pediatric influenza cases have been reported from San Mateo County residents. California has confirmed nine cases across the state since December 1, 2004. The age of cases ranged from two months to four years. Five cases were influenza type A and four influenza type B. Two cases were fatal. The first death from influenza type B involved an infant with underlying illnesses, and the second death from influenza type A, involved a healthy infant. Of these nine patients, six were in a high risk group. The predominant presentation is lower respiratory tract infection, with four patients requiring mechanical ventilation.

All providers should report pediatric **laboratory-confirmed influenza** associated with **hospitalization** or **death** to the health department. These are defined as follows:

HOSPITALIZED PEDIATRIC INFLUENZA CASES

1. Age 0-17 years; **AND**
2. A clinical syndrome consistent with influenza or complications of influenza, including lower respiratory tract infection, acute respiratory distress syndrome, apnea, cardiopulmonary arrest, myocarditis, Reye or Reye-like Syndrome, or acute CNS syndrome (e.g., encephalitis, seizures); **AND**
3. Confirmation by laboratory testing for influenza; **AND**
4. Hospitalization in the ICU.

PEDIATRIC INFLUENZA-ASSOCIATED DEATHS

1. Age 0- 17 years; **AND**
2. A clinical syndrome consistent with influenza or complications of influenza, including lower respiratory tract infection, acute respiratory distress syndrome, apnea, cardiopulmonary arrest, myocarditis, Reye or Reye-like Syndrome, or acute CNS syndrome (e.g., encephalitis, seizures); **AND**
3. Confirmation by laboratory testing for influenza; **AND**
4. No period of complete recovery between the illness and death.

World TB Day 2005

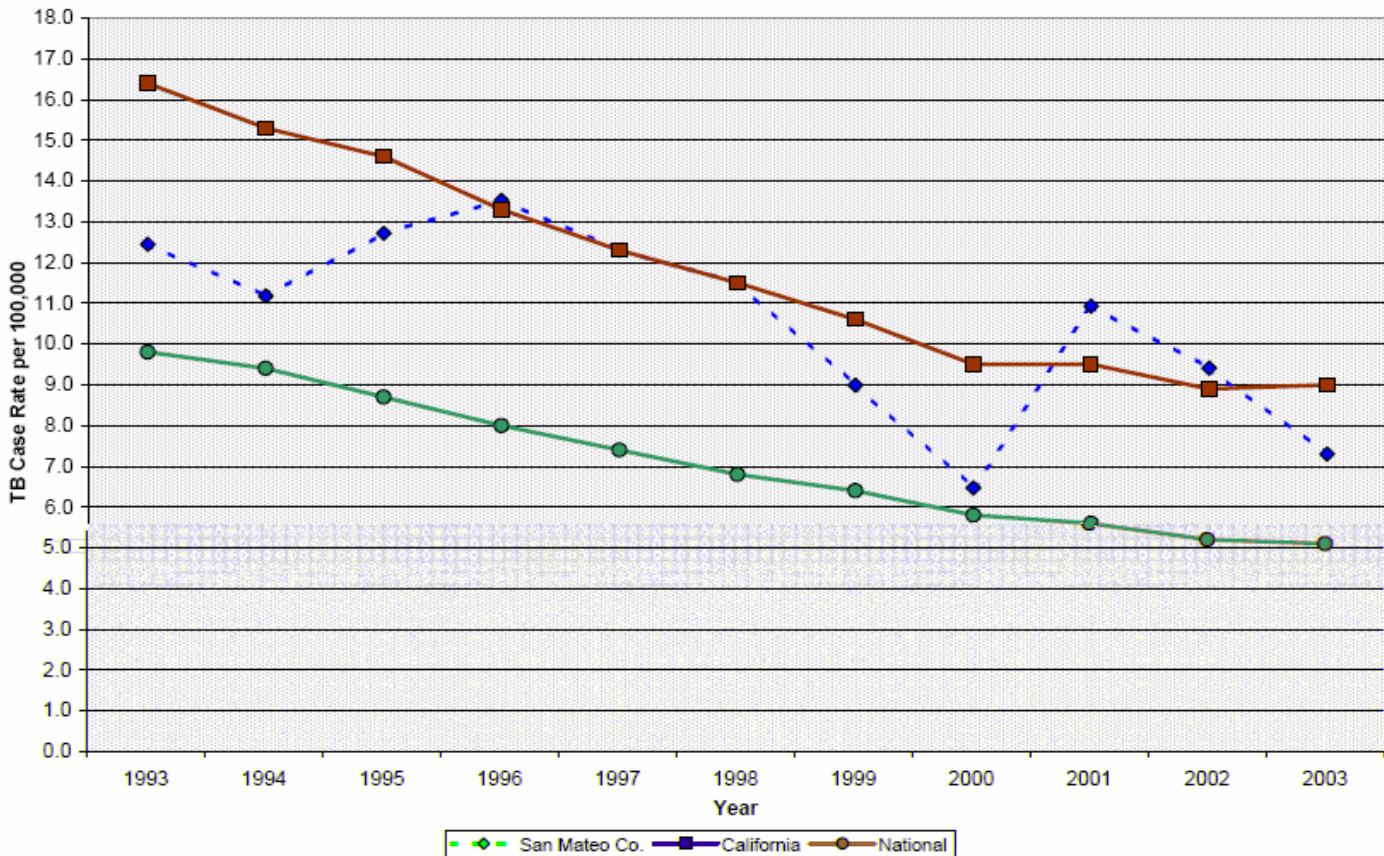
Tracy Marshall Morton, MPH, Epidemiologist

World Tuberculosis (TB) day is March 24, 2005. In observance, the San Mateo County Health Department is assembling a summary TB report. The report will include information for TB cases reported from San Mateo County from 1993-2003, as well as a brief summary of TB cases reported from San Mateo County in 2004. The following information is preliminary data from the 1993-2003 TB Report:

- In 2003, CDC reported 14,874 TB cases nationally, with a rate of 5.1 TB cases per 100,000 population. As illustrated in the graph below, this is the lowest rate of TB ever recorded. However, the 3 states with the most cases (California, Texas, and New York) all reported increases in 2003.
- CDC also estimated that in 2003, the TB case rate for the State of California was 9.1 per 100,000 population.
- In 2003, there were 7.4 cases of TB per 100,000 population in San Mateo County.
- The Healthy People 2010 goal is to reduce the national TB case rate to 3.5 per 100,000 population.
- From 1993 through 2003, 808 cases of TB have been reported in San Mateo County.
- 59% of the TB cases reported in San Mateo County from 1993-2003 were male.
- From 1993 through 2003, 7% of TB cases were resistant to isoniazid, less than 1% were resistant to rifampin, and 1% were resistant to both; 12% were resistant to any first-line medication (i.e., isoniazid, rifampin, pyrazinamide, ethambutol, or streptomycin).
- Of the TB cases reported in San Mateo County from 1993-2003, 36% of the pediatric cases were foreign-born while 84% of the adult cases were foreign-born.
- 75% of the TB cases reported in San Mateo County from 1993-2003 were pulmonary, 23% were extrapulmonary, and 2% of the cases were both pulmonary and extrapulmonary.

For further information regarding the status of TB in San Mateo County, including risk factors, drug susceptibility and treatment; please see the 1993-2004 TB Report to be released in March/April 2005.

Comparison of TB case rates per 100,000 population, 1993 - 2003



Syndromic Surveillance in San Mateo County

Glen Youngblood, EMS Coordinator/Data Analyst

On November 15, 2004, as part of the bioterrorism initiative, the San Mateo County (SMC) health department began real-time *syndromic surveillance* when the FirstWatch early warning system went "live". According to the CDC's website, "*syndromic surveillance* applies to surveillance using health-related data that precede diagnosis and signal a sufficient probability of [a] case or an outbreak to warrant further public health response." San Mateo County is the second county in California to implement FirstWatch, after San Diego.

The SMC health department initially became aware of FirstWatch after Scott Morrow, MD, County Health Officer, attended a software demonstration at a conference. In February 2004, health department leaders were given a web-based demonstration of the software's functionality. Work began in earnest in mid-May to finalize the technical details of data transfer and hardware set up.

FirstWatch imports information from the County's Public Safety Communications' computer-aided dispatch (CAD) database at the conclusion of each 911 medical event. Using the Medical Priority Dispatch System of emergency medical dispatch, the reason for medical calls to 911 are identified and categorized by communications center dispatchers. Sixty-four specific determinants for breathing problems, cardiac or respiratory arrest, chest pain, sick person, or unconscious/fainting episode are then monitored. Dr. Morrow chose five determinants as most likely to signal an impending bioterror or natural infectious disease threat.

The FirstWatch database establishes a baseline of requests by determinant within the same day of the week over the past 52 weeks. The number of calls for that determinant, the ratio of determinant requests to all requests of any type, and the cumulative summary (CUSUM) statistic is calculated for each running 12-hour period. When each of these three measures exceeds two and a half standard deviations (2.5 sigma) above the mean for a determinant, an email and/or text page message is sent to various personnel within the Public Health and Emergency Medical Services divisions. The Health Officer, EMS Administrator, epidemiologist or public health nurse then investigates the cause of the alert to determine if an outbreak or other threat is imminent. FirstWatch uses tabular, graphic and spatial data displays to optimize evaluation and analysis of alert information. Figure 1 provides examples of the chart and map displays.

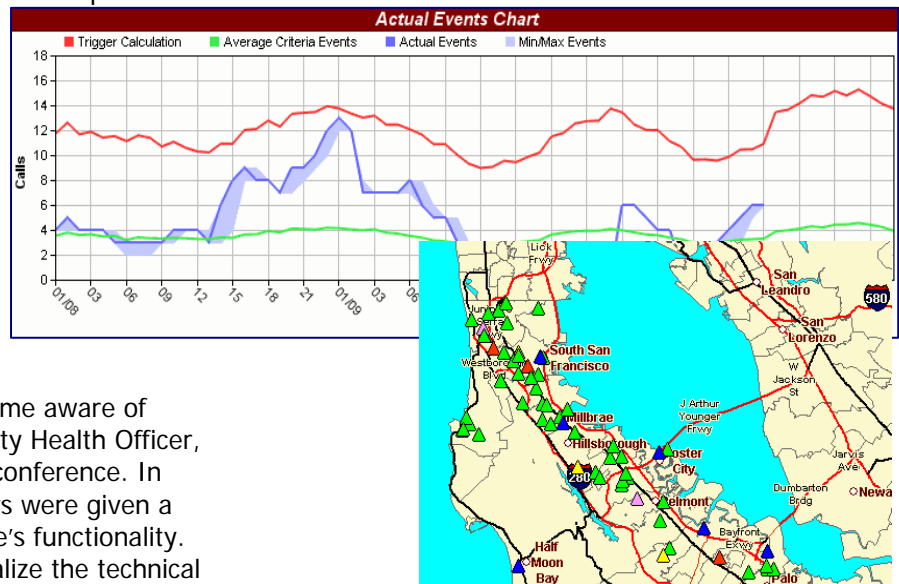


Fig. 1: FirstWatch data displays

Expanded surveillance of other datasets is currently underway. In the near future, we will be using FirstWatch to monitor and graph hospital emergency department status and hospital census levels. We will also be importing and monitoring 911 patients' paramedic impressions and treatment via connections to the MEDS electronic pre-hospital care record database. Eventually, the Health Department would like to have emergency department assessment and diagnosis information from all local hospitals monitored in real-time, as ambulance and EMS contacts represent a relatively small subset of patients with any given condition. The inclusion of clinical information from emergency departments would substantially increase the sensitivity of FirstWatch surveillance.

Beyond bioterrorism surveillance, this analytical tool provides exciting opportunities in other areas of epidemiology such as motor vehicle injury prevention or childhood respiratory disease prevalence monitoring.

The Centers for Disease Control and Prevention maintains a repository of information on syndromic surveillance at www.cdc.gov/epo/dphsi/syndromic/index.htm. Further information about FirstWatch is available at www.firstwatch.net. Additional information about the Medical Priority Dispatch System and emergency medical dispatch is available at www.emergencydispatch.org.

Leading Causes of Death, San Mateo County, 1990-2001

Sara Ehlers, MPH, Epidemiologist

Addressing diseases and conditions that contribute most to deaths in San Mateo County can help determine where the greatest improvements in community health can be made. Death statistics can be used to monitor and evaluate the impact of injury, chronic disease, and other health conditions, as well as to identify segments of the population at greatest risk of death from specific disease and injuries. Differences in death rates among demographic groups, such as age, race, and ethnicity, may reflect differences in socioeconomic status, access to medical care, or the prevalence of other risk factors. The leading causes of death for San Mateo County residents are presented in the table below. Rates are compared for 1990 through 2001, the most recent year for which complete data is available.

Using mortality as an indicator for health, San Mateo County has historically been one of California's healthiest counties. In 2001, the County's mortality rate for all causes of death was 662.8 per 100,000 population (confidence interval: 644.0, 681.7), making it the 4th lowest in California, which had an overall mortality rate of 745.0 (confidence interval: 741.9, 748.0).

Frequency Of Deaths By Cause And Year

Leading and Selected Causes of Death, San Mateo County, 1990-2001

Rank	Cause of Death	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1	Heart Disease	1430	1414	1382	1496	1399	1437	1471	1457	1434	1422	1267	1331
2	Cancer	1250	1266	1282	1218	1237	1297	1278	1217	1320	1263	1280	1236
3	Cerebrovascular Disease	482	447	459	500	494	490	519	485	475	495	471	449
4	Respiratory Disease	272	269	257	288	300	276	266	263	286	366	311	352
5	Pneumonia & Influenza	175	184	180	182	190	204	193	226	269	202	196	187
6	Unintentional Injury	170	132	148	150	141	166	142	150	121	154	145	133
7	Liver Disease	105	104	111	102	109	110	90	100	78	60	60	71
8	AIDS	89	105	104	127	124	107	83	22	13	17	10	27
9	Suicide	66	73	79	90	67	87	78	62	78	64	53	51
10	Diabetes Mellitus	59	57	68	73	89	100	96	99	119	110	103	94
11	Infectious Disease	49	59	48	59	49	57	59	59	44	62	55	57
12	Alzheimer's Disease	62	54	59	62	71	76	70	68	89	115	113	132
13	Homicide	40	47	49	40	33	44	21	30	30	22	14	20
14	Atherosclerosis	37	43	26	39	37	29	36	38	38	30	16	21
15	Parkinson's Disease	29	22	25	27	25	32	29	27	21	32	39	43

Heart disease is the leading cause of death in the county, state and nation. It accounted for 28.5% of the county deaths during 1997-2001, followed by cancer, which accounted for 26.0%. The 3rd leading cause of death was cerebrovascular disease, accounting for slightly less than 10% of the annual average incidence. Respiratory disease, pneumonia and influenza, and unintentional injuries were the 4th, 5th, and 6th leading causes of death respectively. These were the same six leading causes of death for all Californians in 2000, although statewide, unintentional injuries caused more deaths than did pneumonia and influenza.

Since 1990, deaths due to unintentional injuries, liver disease, AIDS, homicide, and suicide declined. Conversely, deaths attributable to diabetes mellitus and Alzheimer's disease approximately doubled.

Pertussis Outbreak in a Local High School

Diana McDonnell, PhD, Epidemiologist

Approximately 150 students from a local high school were excluded from school for suspected pertussis (whooping cough) between August 19 - December 16, 2004. Based on clinical symptoms, 54 students were treated with antibiotics for illness or close exposure. Laboratory culture and/or polymerase chain reaction (PCR) tests were performed on 64 students; six cultures/tests were positive. Descriptive information for possible and confirmed cases is summarized in the table below.

The SMC health department first became aware of this outbreak after the school nurse contacted us at the beginning of October. The school nurse had observed a higher incidence of coughing illnesses than in previous years, with cases more severe than usual.

The health department worked with the school nurse to control the outbreak. Cultures were obtained from all students sent home from school with any type of coughing illness. An exposure notice was sent to all students and staff informing them of the outbreak, their possible exposure, symptoms and treatment. The exposure notice also included information for their healthcare provider and a clearance form.

This outbreak illustrates the need to consider pertussis in diagnosing any coughing illness, especially in other similar populations. The protection imparted by the DTaP (diphtheria, tetanus, acellular pertussis) vaccine wanes, resulting in little protection after 5-10 years. Generally, adolescents and adults who become infected with *B. pertussis* usually present with milder disease: a persistent (>7 days) cough, often indistinguishable from other upper respiratory infections, usually without the inspiratory whoop. Because many students had been previously immunized with the DPT vaccine, they presented atypical symptoms. In this outbreak, some physicians excluded a pertussis diagnosis in students whose laboratory tests were later found to be positive.

According to the CDC, pertussis is endemic in the U.S., with epidemics occurring every 3-5 years (the most recent occurring in 1996). Incidence has been increasing since 1990, with disproportionate increases in adolescents and adults. In 2002, 8,296 cases were reported in the U.S., 1,120 in California, and 9 in San Mateo County. The incubation period is 5-10 days (up to 21), with an insidious onset similar to minor upper respiratory infections. Fever is usually minimal throughout. The infection is highly communicable, with 80% secondary attack rates. People with pertussis are most infectious in the *first 2 weeks after cough onset*.

A clinical case is defined as a cough illness lasting at least 2 weeks with paroxysms of coughing, inspiratory "whoop", and/or post-tussive vomiting. The preferred laboratory test is isolation of *B. pertussis* by culture or PCR. If these tests are positive, a case is anyone with an acute cough illness *of any duration* or epidemiologically linked directly to another confirmed case. Note that serologic testing for pertussis is available in some areas but is not standardized and should not be relied on as a criterion for laboratory confirmation.

Selected Characteristics of Possible and Confirmed Pertussis Cases, August-December 2004		
	Confirmed Cases	Students Excluded from School
Age (years)		
Mean	14.3	15.2
Range	14 - 16	13 - 18
Gender		
Male	67%	52%
Female	33%	48%
Cough Duration (days)		
Mean	21.0	22.4
Range	14 - 28	2 - 64
Symptoms		
Paroxysmal Cough	80%	50%
Whoop	33%	15%
Vomiting	33%	28%
Apnea	0%	3%

**All suspected and confirmed cases should be reported to the Health Department
by fax 650-573-2919 or phone 650-573-2346**



Notes From The Disease Control and Prevention Unit

DCPU welcomes a new Public Health Nurse (PHN), **Nancy Anderson**. Nancy has worked with San Mateo County Public Health for approximately 3 ½ years in the Prenatal-to-Three Initiative (Pre-to-3) and California Children Services (CCS). Prior to working for San Mateo County, Nancy worked as an ICU nurse for the Veterans Administration (VA) hospital in Palo Alto. Nancy is bilingual and is currently pursuing her Masters in Business Administration (MBA). Nancy is both a Registered Nurse (RN), a PHN, and now works as the full-time TB nurse for the DCPU.

DCPU welcomes new Public Health Nurse (PHN), **Sonia Baldassarre**. Sonia has a Masters degree in Nursing from San Francisco State University with an emphasis in Case Management. She also has more than 15 years of acute care hospital experience at San Mateo Medical Center (SMMC) and Peninsula Hospital. Sonia is bilingual. Her main responsibilities will include bioterrorism preparedness planning and institutional infection control, as well as general communicable disease control in the DCPU.

DCPU welcomes a new Community Worker, **Antonio Fajardo**. Antonio previously worked at San Francisco General Hospital with Health Advocates helping patients obtain health insurance. Antonio has worked at The Taft Family Center in Redwood City as a home visitor. Antonio is bilingual and will be conducting Directly Observed Therapy (DOT) for the TB Program.

DCPU welcomes new epidemiologist, **Michael Leach**. Michael is a graduate of the University of Michigan's School of Public Health with an MPH in hospital and molecular epidemiology. He previously worked as the epidemiologist for the Macomb County Health Department in Michigan, located just north of Detroit. Michael is the new supervising epidemiologist and quickly adjusting to the beautiful California weather.

DCPU welcomes new Communicable Disease Investigator (CDI), **Teresa (Terri) Lopez**. Terri is a recent graduate of California State University, San Marcos with a BA in Research Psychology. She previously worked as a Health Educator in San Diego, where she focused on STDs, HIV/AIDS and Family Planning. Terri is bilingual and she will manage HIV/AIDS Surveillance.

Lisa Netherland has recently changed positions within the Health Department. Previously, Lisa worked as the Program Services Manager for Health Promotion and Disease Control. Lisa is now a CDI for Tuberculosis (TB) and other communicable diseases. Lisa's position change reflects her future goal of attending medical school.

DCPU welcomes new office specialist, **Angela Sajuthi**. Angela is a recent graduate of the University of California Davis, with a BA in Sociology-Organizational Studies and a minor in Education. She previously worked for the Department of Environmental Health. Angela's assistance and organizational skills in the recent influenza vaccine distribution were exceptional; DCPU is very grateful to have Angela as a new employee.

Diane Webster has left the DCPU to pursue a new position in the AIDS program. For the past 2 years Diane worked as a CDI focusing on HIV surveillance. Diane's new position is the HIV Testing and Outreach Supervisor. Diane now acts as the HIV testing coordinator for the County, ensuring that staff (outreach workers and HIV counselors and testers) comply with testing protocols. She also updates continuing education training; oversees mobile clinical STD services (including HIV, HCV and other STDs) and the lab process; directs mobile van maintenance and driver training; supervises street based services; and manages the incentive program. Congratulations Diane on your new position – DCPU will miss you.

DCPU bids farewell to epidemiologist, **Sarah Cottrell**. Sarah recently moved to Nashville, Tennessee after her husband found new employment. Sarah worked as an epidemiologist for San Mateo County for 4 years. DCPU is sad to see Sarah leave and wishes her and her family the best for the future.

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Vicky Camilleri, RN	Senior Public Health Nurse	(650) 573-2959
Sue Chen RN, MPH	Public Health Nurse	(650) 573-2551
Tony Concepcion	Communicable Disease Investigator	(650) 301-8630
John Conley	Deputy Director, Public Health	(650) 573-3477
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