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COUNTY OF SAN MATEO
DEPARTMENT OF HEALTH SERVICES

DEPARTMENTAL MEMORANDUM

Date FEB 2 8 2001
Hearing Date. MAR 0 6 2001

TO: Honorable Board of Supervisors

FROM: Scott Morrow, M D , M P H
Health Officer

SUBJECT: Hepatitis C Report

RECOMMENDATIONS

1) Accept a report on the status of the Hepatitis C (HCV) epidemic in San Mateo County
2) Support the adoption of a stronger emphasis on "harm reduction" by proceeding with the development of a program to provide health services, testing, counseling, and prevention services to drug users in the county who are not yet ready or able to enter treatment
3) Initiate a task force to review and make recommendations on the current status of and the long-term plan for needle exchange in the county as a way to further prevent the spread of Hepatitis C
4) Continue to support a small infrastructure of HCV education, prevention, testing and counseling efforts with a new annual general fund contribution of $85,000

Background

The Hepatitis C Task Force was established by you in March of 1999 Based on the report of the Hepatitis C Task Force provided to you in December 1999, funds were allocated to study Hepatitis C virus (HCV) prevalence and distribution, increase awareness of HCV in high-risk populations, and make recommendations regarding HCV in San Mateo County

Discussion

To elucidate the extent of Hepatitis C endemic in San Mateo County, a point prevalence study was conducted in September 2000 The study is attached The aim of the study was to estimate HCV seroprevalence in local high-risk persons, identify factors locally associated with HCV infection, gather initial information on drug use in identified populations, and lay the groundwork for pursuing future studies These objectives have been accomplished

The study provided HCV testing to 1,025 persons in population groups considered at high-risk

for HCV infection Participants were recruited through several sites/programs catering to high-risk individuals, including alternative test sites for HIV, needle exchange programs, the AIDS clinic, and the county jail

The rates if infection with HCV was higher than anticipated among high-risk groups. HCV seropositivity was highest among participants recruited through needle exchange sites (55 0% positive), followed by the jails (30 1%), HIV clinics (28 6%), and the alternative testing sites (22 8%)

Four goals were accomplished by this effort.

1) More thorough understanding of the epidemiology of HCV in San Mateo County
2) Increased awareness of the disease in both affected populations and in the medical community
3) Initiated education and prevention messages about the disease to a portion of those affected
4) Infrastructure for HCV testing and counseling within the county

Other conclusions from this effort include most people who are infected do not know their status, most people have very little information about this disease, there is a steeply increasing rate of infection with age, no opportunity for testing exists outside of medical offices and high-risk individuals are very unlikely to take advantage of testing under these circumstances, a small percentage of those currently at high-risk of getting HCV have private insurance, and state and federal agencies are not likely to help in the near future

Given the nature of the HCV endemic in the county, we need to continue our educational and risk reduction efforts, more strongly emphasize harm reduction in relation to substance use and addictions in our community, form a task force to review and make recommendations concerning needle exchange, and continue opportunities for those at high-risk to be tested for the disease The infrastructure for accomplishing these tasks was created during the initial period of funding This additional funding will enable the Public Health division to continue developing and providing these services

Term and Fiscal Impact

Health Services will request an ongoing funding augmentation of $85,000 in general fund contributions for FY 2001-02 Health Services will also continue efforts to obtain grant funding to support the infrastructure of HCV education, prevention, testing and counseling services

Recommended

Margaret Taylor

Director, Health Services

Hepatitis C Point-Prevalence Study in High-Risk Populations, San Mateo County, 2000

Final Report to the Board of Supervisors

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Executive Summary

Based on the report of the Hepatitis C Task Force given to the Board in December of 1999, funds were allocated to study Hepatitis C virus (HCV) prevalence and distribution, increase awareness of HCV in high risk populations, and make recommendations regarding the control of HCV infection in San Mateo County.

Four objectives are achieved by this effort:

1) **A study was completed that gave us a better understanding of the epidemiology of HCV in San Mateo County.**
2) **We have been able to raise the awareness of the disease in both affected populations and in the medical community.**
3) **We have assisted in providing education and prevention messages about the disease to a portion of those affected, and have increased the quality of available HCV education materials.**
4) **We have developed an infrastructure for HCV testing and counseling within the county.**

We wish to thank all the partners, public and private, who made this endeavor a success.

The study:

- **To explore the extent of the Hepatitis C epidemic in San Mateo County, a point prevalence study was conducted, concluding in September 2000. The aim of the study was to estimate HCV seroprevalence in local high-risk subpopulations, to identify factors locally associated with HCV infection, gather initial information on drug use in relevant populations, and to lay the groundwork for pursuing future studies. All of these objectives have been accomplished.**

- **The study provided HCV testing to 1025 persons in population groups considered at high risk for HCV infection. Participants were recruited through several sites/programs catering to high risk individuals, including alternative test sites (ATS) for HIV testing, needle exchange programs, the AIDS clinic, and the county jail.**

Results:

- **Infection with HCV was higher than we had hoped to see. HCV seropositivity was highest among participants recruited through needle exchange sites (52.9% positive), followed by the jails (30.1%), HIV clinics (28.6%), and the ATS sites (22.8%).**

- **HIV seropositivity, among site populations other than HIV/AIDS Clinic clients, was highest among participants recruited through the needle exchange (13.0% positive) with much smaller proportions in the jails (1.2%), and the ATS sites (0.4%). HIV seropositivity was highly correlated with HCV seropositivity in our sample, with 26 (72.2%) of 36 HIV+ persons also being infected with HCV.**

- **Initial statistical analyses of this sample indicate that various injection drug use (IDU) behaviors are heavily associated with HCV infection, especially being a current IDU or having a history of needle sharing. To a lesser but still significant extent, certain drug use and incarceration variables - such as a history of cocaine use or being imprisoned more than 5 years total - are also associated with positive HCV status. These associations remain even in non-injection drug users.**

- **Based on this and other population-based studies there are between 11,000 and 17,000 persons with HCV infection in the county's population. HCV infection is approximately 10 to 13 times more prevalent than HIV infection is in our county.**

- **A large percentage of our residents who are HCV infected rely on the county and other public sources for all or part of their medical care, including those in the jails and others who are uninsured.**

- **In the process of this study, an infrastructure for routine HCV screening in San Mateo County has been established, including: (1) counselor roles, (2) laboratory support, (3) survey tools, and (4) analytical databases.**

Awareness:

- **This intensive study has substantially raised local HCV awareness among those at high risk and among San Mateo County's health care community. A comprehensive Hepatitis C Information and Resource Guide was developed by the San Mateo County Health Education Unit for use in this project. This guide has proven valuable for staff as well as for individuals newly diagnosed with HCV. It was found to be of such high quality that the Northern California Grantmakers gave a grant of $25,000 to enable its duplication and regional distribution.**

Education:

- **Two sixteen-session (8-week) "Living Now with HEP C" patient education series were conducted by ACRC. A total of 30 people with HCV received intensive education and many of those have become support resources to other infected with or at risk for HCV.**

Additional things learned from this study:

- **Most people who are infected do not know their status.**

- **Most people have very little information on this disease.**

- **There is a steeply increasing rate of infection with age.**

- **No opportunity for HCV testing exists outside of medical offices. High-risk individuals are very unlikely to take advantage of testing under these circumstances.**

- **Only a small minority of those currently at high risk of being infected with HCV have private insurance. Mostly they rely on the jail, the Health Plan of San Mateo, or other county resources for their medical care. In addition, a significant minority avoid seeking medical care as much as possible for fiscal reasons.**

- **There continues to be significant disagreement in the medical community as to how aggressively to treat HCV.**

- **State and Federal agencies aren't going to assist the County with this problem in the near-term.**

Recommendations to the Board

1) Continue to support a small infrastructure of HCV education, prevention, testing and counseling at $85,000 in new annualized general fund contribution. These activities should continue to be integrated into current HIV education, prevention, testing and counseling efforts.

2) A special effort aimed at prevention of HCV needs to be initiated in the jail and towards younger individuals, including ongoing training of correctional staff, jail medical staff, and inmates.

3) Harm reduction is a model that should be more strongly emphasized in dealing with the HCV endemic in San Mateo County. In particular, the County should:

- **Adopt a stronger emphasis on "harm reduction" in relation to substance use in the county.**

- **Initiate a task force to review and make recommendations on the current status of and the long-term plan for needle exchange in the county.**

- **Support the development of a program to provide health services, testing, counseling, and prevention services to drug users in the county who are not yet ready or able to enter treatment. Emphasis in this program would be placed on moving people towards treatment, while simultaneously trying to reduce risk from the severe social and health problems that they encounter.**

I. Introduction

The annual incidence of new cases of Hepatitis C (HCV) infection in the United States has declined from 180,000 in the mid-1980s to an estimated 28,000 in 1995. [Alter, 1999] Yet, the prevalence of HCV infection is currently on the rise, due to the large numbers of chronically infected persons who serve as reservoirs and transmitters of the virus. The current nationwide prevalence of Hepatitis C infection, indicated by the presence of antibody to HCV (anti-HCV), is estimated to be 1.8%, or roughly 3.9 million persons. [Alter et al, 1999] Although the majority of chronic HCV infections are asymptomatic, Hepatitis C is a growing public health concern because those infected are at an increased risk of experiencing chronic liver disease and liver failure. In fact, an estimated 40 to 60 percent of chronic liver disease in the US is attributable to HCV. [Herrine et al, 1999]

Hepatitis C is most efficiently transmitted through large or repeated percutaneous exposures to infected blood. [Alter, 1995] Existing prevalence and incidence studies have identified several risk factors associated with HCV infection, including: exposure to transfusion in previous 6 months; injection drug use; health care employment with frequent exposure to blood; sexual or household contact with persons with HCV; multiple sexual partners; and lower socioeconomic status. [Herrine et al, 1999]

In the past, a major route of transmission was through blood transfusions. While the blood supply is now essentially free of HCV, many people who were transfused prior to 1992 may be infected and unaware of it. The population group now most likely to acquire HCV is injection drug users (IDU). The rates of infection have been found to be as high as 90% in IDUs. [MMWR, 1998] In one study of injection drug users in Baltimore, HCV seroprevalence was 76.9% of injectors with up to 6 years of experience and 64.7% in those with 1 year or less. [Garfein et al, 1996] This comparative data indicates the extensive prevalence of HCV infection within the IDU population and the need to prevent needle sharing.

Various recent studies have noted significant associations between history of incarceration and HCV infection. In Chicago, researchers have found that prevalent HCV infection among young injection drug users was associated with past incarceration (Thorpe, 1998). Van Beek et al. (1988) reported that incident HCV infection was 3.5 times more likely among those with a history of incarceration. As of this date, at least one recent study in California has evaluated the prevalence of HCV in incarcerated populations in California (Ruiz et al, 1999). No other similar surveys in US settings seem to be available as of yet, although at least one survey article on correctional response to and screening of HCV infection exists. This article (Spaulding, 1999) noted that only one state does routine HCV screening of inmates, although the author's feasibility modeling indicates that such screening is a reasonable use of correctional funds.

Several studies found no significant relation between sexual behaviors and HCV infection [Villano, JCM 1997; Garfein et al, AJPH 1996; Weinstock et al, 1993]; yet, others found a significant dose-response relationship, with the risk of infection increasing with the number of sexual partners. [Alter et al, 1999; Thomas et al, 1994; Thomas et al, 1995; Conry-Cantilena et al, 1996] In addition, results from one study indicate that male to female HCV transmission is more efficient. [Thomas et al, 1995] Transmission between monogamous sexual partners has been rare in some studies; yet, in other studies it appears that having a high number of sexual partners increases the risk of acquiring HCV, perhaps because of multiple exposures to positive individuals or coexisting disease factors that make transmission more efficient. [Herrine et al, 1999] The relative importance of sexual transmission in the epidemic spread of HCV remains controversial.

Studies of HCV prevalence in other populations are appearing more frequently in the literature. A recent study in San Francisco outpatient veterans found the prevalence of HCV infection to be 14% and significantly correlated with combat blood exposure, incarceration for greater than 48 hours, history of injection drug use, and blood transfusion before 1992. [Briggs et al, 1999] Another study in San Mateo County found 0% HCV prevalence in a population-based sample of women ages 18-29 from low SES neighborhoods. [Morrow, correspondence, 2000]

Based on previous studies, it is clear that injection drug use is the greatest risk factor for acquiring HCV infection. Today, because of the widespread prevalence of the Hepatitis C virus in the IDU population, any non-infected user who shares needles is likely to become infected in a short period of time. The evidence for incarceration as a risk factor is also fairly strong. Poor infection control practices or other opportunities for HCV transmission may occur in correctional facilities, such as tattooing, sharing of razors or other contaminated articles. The evidence for sexual transmission of HCV is less clear-cut but suggests that HCV can be contracted, to some extent, through sexual contact.

Many of the existing large epidemiological studies on HCV have been conducted in large cities such as San Francisco, Washington, DC or Baltimore. Although the results of these studies may be generalized to the population in San Mateo County to derive estimates of HCV prevalence, it is also possible that San Mateo County has a distinct set of risk factors reflecting the ethnic diversity, economic circumstances, and suburban nature of the population. The results from the local Young Women's Study are a case in point. In San Mateo County there may be differences in injection drug use or high-risk sexual behavior patterns that result in risk factors and disease prevalence different from other urban areas. In order to design effective education and prevention campaigns for the local community, public health providers need a better understanding of the distribution and correlates for the disease.

II. Objectives of the Study

San Mateo County Health Services Agency (SMCHSA) has sought to explore and understand the HCV endemic in San Mateo County. This epidemiological study was meant to characterize the prevalence of Hepatitis C in San Mateo County high-risk populations using existing public health infrastructure and testing modalities.

Specific objectives of the study were to:

A) estimate the seroprevalence of HCV in:

1) persons entering the San Mateo County jail;
2) injection drug users and their sexual/social associates contacted through needle exchange outreach in the county;
3) clients of the San Mateo County AIDS Clinic; and
4) the population seeking HIV tests with the county's Alternative Testing Service.

B) identify factors associated with HCV infection in these populations.

C) gather information on drug use in these populations.

D) lay the groundwork for pursuing future studies of local HCV epidemiology.

It was SMCHSA's intent that this study would generate initial information about actual prevalence of and risk factors for HCV infection in San Mateo County among individuals at increased risk. The information gathered from this study is a starting point for characterizing HCV infection and risk activities in selected populations in the County. Information on who is affected and how the virus is transmitted should then be used to design and deliver preventive interventions. The recruitment of subjects for this study was also meant to lead to the establishment of cohort candidates for future prospective studies that may enable researchers to assess HCV disease progress or transmission.

III. Methods and Sources of Data

Eligibility and Recruitment

Participants in the survey came from a convenience sample of individuals present at the various sites on the days of data collection. Study participants were selected from the 4 population groups mentioned above. Eligible participants include all individuals who visited the various study sites during the data collection period who:

- were capable of giving informed consent and answering survey questions in either English or Spanish;
- posed no risk to the physical safety of study counselors;
- and had not already participated in the study, as noted by a unique identifier.

Study counselors explained to clients seeking services at all sites the purpose of the study and the obligations of and benefits to the client if s/he chose to participate. In discussing this, the counselor tried to determine if the client had the ability to give informed consent and answer the study questions coherently. The Epidemiology team trained study counselors on how to approach the clients and how to explain the purposes of the study to prospective participants. The study was reviewed and approved by the Institutional Review Board of the Mills-Peninsula Hospital District.

Jail Recruitment

Unlike the other sites, jail participants were recruited from selected pods (jail residential sections) via group educational presentations on HCV. Names were taken at the conclusion of these presentations and survey appointments scheduled at that time. While eligible individuals included all inmates of San Mateo County jail facilities (RWC Maguire and Women's Jail,) security constraints prevented recruitment in the maximum security facility. In addition, recruitment was not done in the two transient short-stay pods, as inmates there were rarely in-house long enough to complete participation in the survey. Thus, this sample ended up being more of a convenience sample than expected. Due to logistic and custodial considerations, blood draws for jail inmates were done by the contract phlebotomist in the jail facility from 1-2 days after the inmates underwent the survey procedure

Needle Exchange Recruitment

Injection drug users, and by extension their social and sexual networks, were contacted through the currently operating needle exchange program (NEX) in San Mateo County. Needle exchange clients were initially selected for study participation at four pre-designated syringe distribution sites and through some off-site distribution points. After a month long introduction period, recruitment

and testing for this sample subset was handled through the Redwood City offices of the AIDS Community Research Consortium.

A flyer was developed by the needle exchange program and distributed by program volunteers during on-site distribution hours whenever clients approached them. The flyer announced that the NEX was participating in a study among persons who had ever been injection drug users and/or their sexual partners. The study included a blood draw and a 30-minute interview. Persons interested in participating were instructed to continue to exchange syringes with the program or contact the program for more information. Further, the flyer indicated that survey participants would be paid an incentive for their time and that their HCV test result would be kept confidential. To thoroughly distribute the flyer among the hard-to-reach IDU community, outreach workers and volunteers began giving out the flyer two weeks prior to the day that actual counseling and testing began.

HIV/AIDS Clinics Recruitment

Virtually all HIV/AIDS Clinic patients were expected to make at least one clinic visit during the study period February 1 through September 30. As the patients made appointments for either medical or social services in the clinics, patients were approached about participation in the study and, if willing, were scheduled for an additional half hour in addition to their other appointments.

ATS Recruitment

All individuals seeking HIV testing through ATS sites during the study period were encouraged to get an HCV test and participate in the survey at the same time.

Sample Sizes

Jail Sample

Assuming a total (transient and otherwise) population at the jail of about 4,000 persons in a year, the proposed study targeted the inclusion of 400 subjects, over a 5-month enrollment period. The Epidemiology team estimated the underlying HCV prevalence in the jail population to be approximately 35%. By testing at least 400 individuals from this population, seroprevalence was estimated to fall within ±10% of the true prevalence, at alpha level equal to .05.

Needle Exchange Sample

Unfortunately, there are no counts known to be accurate of the size of the injection drug-using population in San Mateo County, as is often the case with hard-to-reach populations. For this reason, it was determined that the study would simply strive to recruit the largest possible number of needle exchange study participants, without a particular numeric goal, in order to maximize accuracy in our resulting prevalence rate.

HIV/AIDS Clinic

The San Mateo County HIV/AIDS Clinics has a roster of approximately 420 clients at any given time. Sampling in this study was to be focused on clients at the Edison Street facility, which accounts for a majority of the total. Again, recruitment was to be done without a set numeric goal, while aiming to access as many Clinic clients as possible in the time allotted.

ATS

The clientele of the Alternative Testing service is the largest of any of the sub-populations, with up to 4000 tests being performed annually. It also the most varied and the least predictable of the site sample in terms of HCV positivity rates. Assuming a total testing population of about 4,000 persons annually, the proposed study targeted the inclusion of 500 subjects, over the 8-month enrollment period. The Epidemiology team estimates the underlying HCV prevalence in ATS test seekers to be approximately 15%. By testing at least 500 individuals from this population, seroprevalence was estimated to fall within ±20% of the true prevalence at an alpha level equal to .05.

Incentives

Individuals recruited into the study received a cash incentive after completing the survey and blood draw. Participants also received an introductory pamphlet on Hepatitis C, a comprehensive Hepatitis C Information and Resource guide specific to San Mateo County, and the chance to find out their HCV status. Participants were also allowed to request a written confirmation of their HCV test results. When the participant returned in-person to obtain their test result and post-test counseling, s/he received a small additional cash incentive.

Jail Incentives

Cash incentives are prohibited in the correctional setting, so jail participants were not eligible to receive money for study participation. Recruiting personnel emphasized the benefits of knowing one's serostatus, preventing the potential serious consequences of HCV infection, and being able to seek earlier, more effective treatment.

Confidentiality

The initial HCV tests in this survey were offered on a anonymous basis. Participants' survey responses, blood, and lab results were identified by a unique identifier code as described below. Reports of HCV status were released only to the participant and then only when they could cite or reconstruct their identifier code.

When the participant returned for their results, the counselor asked for contact information for future research studies and if they agreed, the participant signed a

second, separate consent to allow retention of their identifiers and locating information. This information did not appear on lab forms, blood samples, or any other reports and was linked to the participant's unique identifier, but was stored in a separate, secured database structure. This information will only be accessed in order to contact prospective cohort members in the event of a future research studies on these populations.

Jail Confidentiality

Jail study participants' surveys and blood draws were linked with identifying information, as required by jail policies. This information was treated in the same confidential manner as identifying information from any other study participant, as described above.

Informed Consent

Counselors explained the risks and benefits of study participation to prospective subjects. Subjects were required to sign a consent form, which was provided in English or Spanish as appropriate, before enrolling in the study. This form clearly explained: (1) the purpose of the research; (2) what was expected of the study participant; (3) confidentiality of responses; (4) the voluntary nature of participation; and (5) whom to contact for more information. All of the participants, except those from the HIV/AIDS clinics, were offered an HIV test in conjunction with the HCV test. As a witness, the interviewer also signed the consent form. The participant received a copy of the consent form. Additional study information, such as how to obtain results and how to interpret them, was printed on the brochure provided to participants. Because of procedural differences between the jail sampling and that of the other study populations, jail participants received a jail-specific consent form.

Refusals

While data on refusals is available for a subset of jail inmates who refused testing after undergoing the survey process, data on refusals for other sites was not consistently collected. It was the anecdotal impression of study personnel that there were relatively few refusals and that testing availability was mostly limited by the lack of testing and recruitment staff.

Unique Identifier Construction

Because of the nature of the study, the high-risk population involved, and the sensitive nature of the associated HIV testing, it was felt that it would be best to link the survey and lab results by unique identifier rather than by name. A unique identifier (UI) was linked to each participant with data from his/her (1) HCV Risk survey; (2) laboratory slip; (3) consent form and (4) any supplemental surveys. This identifier was provided on all documents/samples pertaining to the participant and provided a means

for the study coordinators to identify individuals who have already been tested, based on the prior existence of the UI in the study records database. Each participant also used the unique identifier to obtain the results of his/her blood draw. The identifier was based on the following personal characteristics: 1- First initial of participant's first name; 2- First initial of participant's mothers' first name (if unknown, coded as X); 3- First initial of participant's fathers' first name (if unknown coded as Y); 4- First initial of participant's mothers' maiden name (if unknown, coded as Z); 5- Participant's date of birth (mm/dd/yy) - if unknown, coded missing variables as zeros. The possibility of duplicate UIs could have occurred with twins, but in general, this system helped to ensure anonymity while helping to reduce duplication of individuals in this study. After assigning the UI, counselors checked that the individual had not already participated in the study by comparing the new UI with a recently updated list of past participants' UIs.

The UI was then written onto all paper forms - consents, survey, lab slips, and the participant information pamphlet - for each participant. It was also written onto a sticker for labeling each participant's blood sample and was submitted to the lab for testing using that number.

Survey Administration and Blood Draw

Data collection included a counselor-administered risk behavior survey and a blood draw. Trained counselors administered the survey questions in either English or Spanish. Most demographic and some risk behavior information was collected on the State of California Department of Health Services HIV Counseling Information Form, also known as HIV4 (DHS-8458-Appendix E). In addition, participants were also asked questions from the HCV Baseline Survey developed by the San Mateo County Epidemiology Section for the purposes of this study. This questionnaire was designed to specifically assess behavioral risk factors, particularly within the drug using community. Survey questions were accompanied by a blood draw. Counselors also provided all study participants with a County Health Department brochure that described Hepatitis C, its risk factors, and potential consequences.

Phlebotomists working in the study were required to draw enough blood to completely fill one red-topped tube, or 7 mL of blood, from each study participant. This amount of blood yielded 3 mL of serum of which 1 mL was needed to perform the HCV and HIV blood tests. Providing the participant signed the appropriate consent form, the remaining 2 mL of serum were banked in the San Mateo County Health Services Public Health Laboratory for future studies contingent upon client consent. In the event that the phlebotomist was unable to draw a complete tube (7 mL) of blood from the participant, a second attempt was made.

Blood samples were labeled with the participant's unique identifier and packaged with a Public Health Laboratory Test Form. The San Mateo County Public Health Laboratory analyzed samples for HCV, and also for HIV where participants elected to get that test. Study aliquots of sera were tested in duplicate for antibody to HCV (anti-HCV) using a enzyme-linked immunosorbent assay (ELISA-2, Ortho Diagnostic Systems). Samples found to be positive were confirmed using a recombinant

Immunoblot assay (RIBA-HCV, Ortho Diagnostic Systems).. These methods have been shown to have sensitivity and specificity that approached 95% when compared to HCV RNA testing by PCR (Nakagiri, 1993.)

Jail Phlebotomy

For jail participants, Communicable Disease Investigators from the SMCHSA Disease Control and Prevention Unit administered the survey questions, while the blood draw was performed by a outside contract phlebotomist, usually on a medical call shift the day after the survey.

Needle Exchange Phlebotomy

During the four weekly scheduled syringe exchange sessions, at least one study counselor was available for the purposes of carrying out the HCV Study protocol. Specifically during the first three weeks of the needle exchange testing, one of two public heath vans, either the "Rainbow" van or the "Bubble" van, was available to the Study Counselor(s) for the purposes of transportation to the syringe exchange site and to perform survey tasks. This allowed the regular clients of the needle exchange to participate in the study on-site. After the people who regularly showed up at NEX sites were given the opportunity to participate in the study, a more fixed testing site was available for testing this population at the AIDS Community Research Consortium (ACRC) in Redwood City. Needle exchange staff were encouraged to bring clients and their sexual partners to ACRC for possible inclusion in the study.

HIV/AIDS Clinics Phlebotomy

Patients were scheduled by the front desk to see the nurses and counselors for phlebotomy (if not already scheduled) and, depending on availability, either the health educator or one of the social workers in order to complete the survey.

Storage of Blood Samples

For those participants that signed appropriate consent forms, remaining blood samples were stored for future epidemiological studies. These samples were labeled with the study participant's unique identifier number only. Samples were stored in a secured freezer at the County Public Health Laboratory.

Attainment of Results and Counseling

Study participants was informed that their individual HCV-test results would be available two weeks from the date of blood draw. If a participant also had a HIV test, those results would be available at the same time. In order to receive the additional cash incentive, participants needed to obtain results in person at the enrollment site. This policy was intended to insure that participants could not go to several different sites to obtain their test results and thus receive a cash incentive more than once.

Participants also had the option of requesting written confirmation of their test results when they received their results. Individuals with a positive result received post-test counseling in person from a counselor. Counseling consisted of giving the test results, explaining disease risk reduction strategies, and referral to ongoing support, if needed. These counseling sessions were modeled after HIV post-test counseling sessions and lasted between 20 and 30 minutes. During the counseling session, positive participants received the comprehensive Hepatitis C Information and Resource guide newly developed by San Mateo County. All participants returning for results were asked whether the Health Department could contact him/her for future research studies. If the participant agreed, then the name and address of the participant was then recorded and linked with their unique identifier. This information was stored in a database completely separate from the HCV prevalence database. All other identifying information was carefully guarded and did not appear on any document containing survey responses or test results. Participants also had the option to obtain their results by phone from the Disease Control and Prevention Unit, but this option was only suggested as an alternative if obtaining results in person was not possible.

The Epidemiology unit distributed a printed index with HCV test results matched to unique identifiers to all study sites on a weekly basis. When a participant had obtained their test result, the study staff checked off a box on the index to indicate this was the case. These indexes were then returned to the data entry clerk for notation and database updates on a weekly basis. A new index reflecting changes and new test results was then generated for use the following week.

Jail Results

Inmates still in custody obtained their results and any needed counseling from study personnel at the jail facility by appointment. Procedures were the same as for the current program of HIV testing and counseling in these facilities, with the exception that HCV study personnel rather than jail medical personnel gave the results and did the counseling.

In the event that inmates were to be released before their tests results were available, all inmates undergoing the questionnaire were given contact numbers and instructed to obtain their results at one of the other test sites, or to call the Disease Control and Prevention Unit directly for their results.

HIV/AIDS Clinic

If the patient's next appointment was within a month, the medical provider provided the result disclosure. The provider discussed the meaning of the result, treatment options (if relevant), disease risk reduction, and referrals for ongoing support. If no appointment for nursing or medical care had been scheduled, the Health Outreach Team (HOT) members assisted by delivering negative results in person to clinic patients and assisting those who tested positive in making an appointment to see their provider. The HOT worker also gave the information packet. Positive results were given by providers only.

Data Entry

Survey data from the HCV Baseline Survey was coded and entered into a Microsoft Access Hepatitis C Prevalence database using a pre-generated form for ease of data entry. This database was password protected, accessible only to the study coordinators, epidemiologists, and the data entry clerk. Selected data from the HIV4 form was double-keyed into a separate table in this secure HCV Prevalence database, in addition to the usual CA DHS HIV4 database. The DHS HIV4 database does not have a field for unique identifier, and the UI for the study was never put into that system, preventing any reference by users of that database to the results of this study.

Survey data entry, although handled primarily by the project assistant, was piloted and closely supervised the project epidemiologists. Data for the HCV questionnaire and the HIV4 questionnaire were entered into separate tables and only extracted and merged into the Hepatitis C Prevalence database at the time of data analysis.

Data Analysis

HCV prevalence for any given risk factor was estimated as the number of persons testing HCV positive over the total number tested in that sub-group. Raw frequencies and prevalences by sites and HCV status for various population subgroups were calculated, along with distributions for demographic variables for our study population. Distributions of other variables of particular interest in this population were also provided. As a supplement to the analysis, HCV prevalences for various subgroups and the general population were estimated using both our data and information form other national and local sources.

Chi-square analyses were used to examine the relationships between the presence of HCV infection and predictor variables. Multivariate procedures, for more detailed analysis of risk factors with control of confounders, are pending.

IV. Results of the Study

Demographics

By design, the gender, age and ethnic group reported by participants were all disproportionately distributed in comparison to the overall San Mateo County population. Males constituted 66.9% of the study sample, although males are only 49.5% of the county's population. In addition, only 25.3% of the sample was under 30 years of age, while 38.4% of the county's total population is under age of 30. The ethnic distribution of the sample was especially dissimilar to that of the county as a whole. Blacks represent the largest ethnic group in the study at 32.9% versus 4.5% in the county as a whole. In contrast, Whites made up 30.5% of the sample versus 50.5% in the county, Hispanics 27.9% versus 23.1% in the county, and Asian/Pacific Islanders 3.9% in the sample versus 21.5% in the county. For more detailed breakdowns by site and HCV status, see Tables 1, 3, 4, 12, 13, and 22 in Section VIII.

At the end of data collection in September 2000, 1107 persons had participated in some manner in the study. Of the four testing sites, the ATS sites provided the most participants (n=546, 49.3%) to the study, followed by needle exchange sites/ACRC (n=282, 25.5%), the jails (n=201, 18.1%) and the HIV clinics (n=79, 7.1%). Due to some site-specific transport and phlebotomy problems, laboratory issues and a small amount of post-questionnaire refusals to have blood drawn, 1025 study participants (92.5%) completed HCV testing. All of these tests are included in the analysis below. As HIV testing was recommended but not required for study participants, only a subset of persons getting HCV tests (n=934, 91.1%), actually received HIV tests. Interestingly, nearly 80% of this high-risk population had not been tested previously for HCV.

As for completion of study participation, the study as a whole saw 706 (63.8%) of subjects return to receive their HCV test results and counseling, with higher rates for persons recruited through the needle exchange (82.4%) and in the jail (71.6%.) Among the 706 who re-contacted study staff and obtained their results, 404 (57.2%) re-consented to have their blood stored at San Mateo County Public Health Laboratory and agreed to be contacted for any possible further studies.

For more detailed breakdowns of returns and consents by site and HCV status, see Tables 4 and 14 in Section VIII.

HCV and HIV Seropositivity

Of the 1025 participants for whom HCV status was determined, 333 (32.5%) were HCV positive and 692 (67.5%) were HCV negative. As expected, HCV seropositivity is highest among participants of the needle exchange (55.0% positive), followed by the jail (30.1%), HIV clinics (28.6%), and the ATS sites (22.8%). HIV test results were directly determined for 933 of the participants while all 79 recruited HIV/AIDS clinic clients were HIV-positive by definition. Of the directly determined HIV results, 38 (4.1%) were positive or indeterminate, and 895 (95.9%) were negative. When the HIV/AIDS clinic participants are included, 117 (11.6%) were positive or indeterminate

for HIV infection. HIV Clinic clients aside, the sub-sample with the highest rates of HIV seropositivity was the needle exchange sample, 13% of which was HIV-positive.

In addition, infection status for both HCV and HIV was determined for a total of 920 persons. The overall proportion of co-infection (infection with both HCV and HIV) was 3.1%, or 5.2% if HIV Clinic clients are included. Coinfection with HCV and HIV, a condition with particularly serious implications for long-term prognosis, was highest in HIV Clinic clients (nearly 29%) and in needle exchange clients (13%.)

For breakdowns of HCV and HIV serostatus by site, see Table 2 in Section VIII.

Lifestyle Risk Factors

As expected in the populations targeted by this survey, participants in this study reported high rates of several risk activities. Some other results, however, were less anticipated. Most surprising was that of all those tested, 728 (75.2%) reported that they had spent some time in jail during their lifetime and 475 (49.1%) reporting that they had been incarcerated for more than one year.

Among male study participants, 299 (nearly 41%) reported having had sex with commercial sex workers, and 154 (21.1%) reported a history of sexual contact with other men (MSM). As expected, nearly three-quarters of HIV/AIDS clinic patients reported a MSM history, with much lower proportions at other sites.

Over 39% of participants reported using drugs during sexual activity, and 14% reported having sold sex in the past. In addition, 314 (28.4%) of participants reported a history of at least one STD diagnosis, with 99 (35.2%) of needle exchange recruits reporting such a diagnosis, which can be compared to an estimated prevalence in the general population of an STD history of 17%.

When all the sites were considered, 376 (34.8%) participants reported injecting drugs at some time during their lives. Among these injectors, 310 (86.1%) of those injected more than 10 times during their life. The HCV positive rate for this subset of injectors was 84.2% compared to 39.6% of those that had injected less than 10 times (lifetime). This is similar to the proportions observed in national statistics.

Further breakdowns of returns and consents by site and HCV status, see Tables 6, 11, 16, 21 in Section VIII.

Drug Use Among Drug Injectors

Not all of the participants who tested through the needle exchange were injection drug users. In fact, just 152 of 269 (56.5%) respondents at that site reported a history of injection drug use, although 140 (92.1%) of that 152 had injected more than 10 times in their life. This is an instance of 'snowball' sampling, where the injecting drug users initially contacted brought members of their sexual and social networks into the study, which was a desired effect of the study design. At all sites, most persons with an injection drug history had not injected drugs within the past thirty days. This tendency towards low rates of recent injection was most pronounced in the HIV clinic

(8.3%) and jail samples (16.7%), but was true even of the needle exchange sample, where only 37.5% of injection drug users had done do within the previous 30 days.

Among the sample (n=113) of persons who had indulged in recent injection activity, heroin was far and away the most frequent drug of choice, with nearly 80% of injectors citing it among drugs recently injected. Cocaine by injection was the next most used drug, being used by 32% of recent injectors and 26.3% of recent injectors recruited through the needle exchange. For breakdowns by site and HCV result, see Tables 7 and 17 in Section VIII.

Non-Injection Drug Use

The analysis of the recent use of other drugs offers additional useful information. Alcohol was the most commonly recently consumed drug (46.0%), followed by marijuana (25.1%) The most unexpected result was a relatively high rate of use of crack cocaine at 15.8%, which was used by nearly 20% of both the needle exchange sample and the ATS sample. This latter result is of concern, given that the ATS sample is the sub-sample of lowest behavioral risk. Methamphetamines, which currently have a very high media profile, were used in non-injectable form by 5.7% of our sample. Heroin, although the most popular injectable drug among our participants, was recently used in non-injectable form (smoking or snorting) by only 3.9% of the participants. For breakdowns by site and HCV status, see Table 8 and 18 in Section VIII.

Estimates of HCV Prevalence in San Mateo County

General estimates of HCV infection prevalence are provided in Table 23 in Section VIII. These estimates are primarily based upon prevalence information provided by both the CDC and San Francisco Department of Public Health, along with the current study of local high-risk groups. Denominator information is derived from US census and state projections of populations, as well as local estimates for certain subpopulations such as blood donors and health care workers. Based on these estimates there are between 11,000 and 17,000 persons with HCV infection among the county's population.

Univariate Associations with HCV and HIV Infection

Basic univariate measures of association between HCV and HIV infection and selected risk factors are provided in Tables 24, 25 and 26. Some of the results are surprising and indicate a need for more in-depth analysis to control for confounders.

Injection drug behaviors are extremely strongly associated with HCV infection, with any history of injection drug use showing an odds ratio (OR) of 36.5 ($p<0.000$). Current injection drug is an even stronger indicator, with an OR of 89.7 ($p<0.000$). Also strongly associated is a history of needle sharing at an OR of 61.4 ($p<0.000$). Other variables strongly associates with HCV positivity include a history of cocaine use (OR=8.9, $p<0.000$), ever being incarcerated (OR=9.3, $p<0.000$) and a history of snorting drugs (OR=4.8, $p<0.000$). Sexual risk factors are more variable in association.

When examining only the sub-population with no injection history, there are few strong associations, although most of the imprisonment measures such as ever incarcerated (OR=3.6, p=0.0005) and incarcerated for more than 5 years (OR=6.0, p<0.0000) are still significantly associated with infection.

One interesting note is the behavior of the variable on a history of intra-nasal drug use, which appears significantly associated with HCV in the overall sample(OR= 4.8 , p<0.0000) but not in non-IDU (OR= 1.5, p=0.2615.) This variable has been found in some parts of the literature to be associated with HCV infection, but in this situation may be so heavily correlated with injection drug use that only multivariate analysis can determine a valid degree of association.

V. Discussion

Inherent Study Bias

Since our study scheme was not based on random sampling, this study probably has inherent selection biases. Selection was possibly further biased by the monetary incentives offered to non-incarcerated participants. Finally, the relatively large number of staff persons employed as tester/counselors may have introduced some further variation into the data, as survey procedures for different sites may have developed some uniqueness during data collection.

Fraud

As is often a concern in multi-site studies offering monetary incentives, the potential for participant fraud and illicit multiple participation was considered during the study planning stages. This occurred during the initial two weeks of sampling when a small group of clients got tested at one site and then immediately went to another site and got tested again. This problem was noted through anecdotal observation and procedures were altered to prevent recurrences. Questionnaires from those two sites from that time period were carefully reviewed and the duplicate paperwork deleted from the study. While the study design - and particularly the construction of the unique identifier - was not foolproof against this type of activity, in several detailed quality control reviews study staff detected only one participant who understood the UI system well enough to change their UI sufficiently to get their questionnaire information into the sample more than once.

Variance in Participation Rates by Site

Unexpectedly, participation was very poor among HIV/AIDS clinic clientele. Only 79 of the approximately 420 clinic patients were surveyed and HCV-tested. It appears that clinic staff was not prepared to handle the extra work that the study required, especially the recruitment and counseling duties. An attempt was made to train volunteers to do the work, but that approach was also unsuccessful. Another barrier identified was the attitude of many of the clinic's patients. Many of the HIV/AIDS Clinic clients have been subjects in several trials or other research projects and felt fatigued with from participation in multiple projects. Others found that the small monetary incentive was not worth the wait required to see a counselor or the time spent undergoing a rather lengthy survey.

Some milder problems similar to those encountered at the HIV/AIDS clinics were also experienced at the jail sites. Low participation in the jails was mainly due to the prohibition of monetary incentives and also due to institutional barriers, such as the limited time staff had access to the jail and the scarcity of private space in the facility in which to conduct surveys.

High Level of Data Quality Assurance

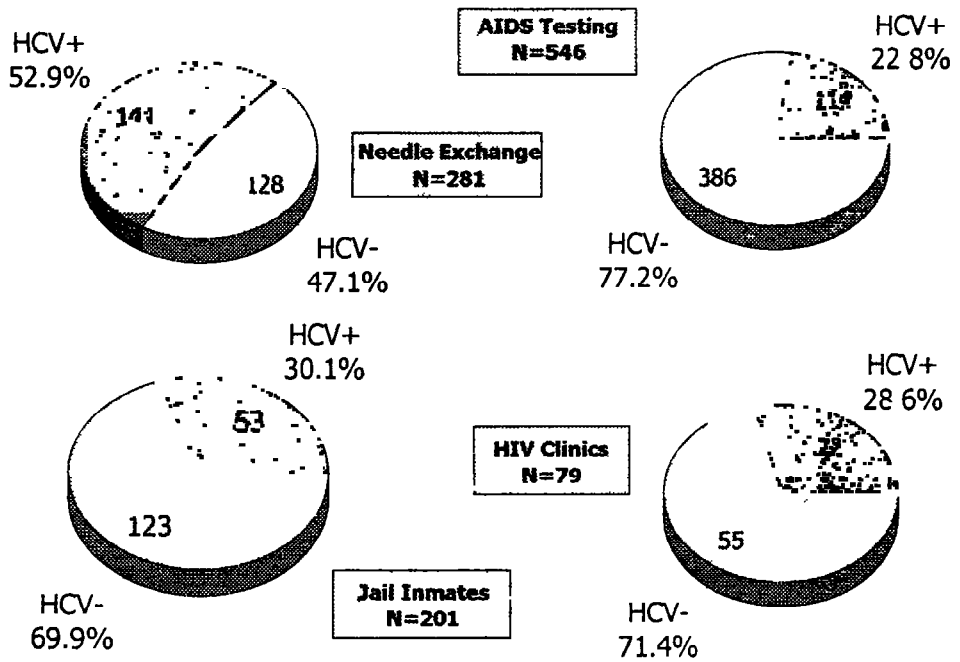
Quality control was a priority throughout the study. Counselors were often asked to clarify or get further information from study participants if epidemiologists were not satisfied with submitted data forms. At all times, at least two staff members carefully checked each survey entered into the HCV databases for quality control purposes. For consistency, the same person entered all data into the HCV databases.

VI. Conclusions

Seroprevalence of HCV in High-risk Groups

This study was designed to improve our estimates of the prevalence of HCV infection in groups that we know are currently at high risk of HCV infection. It was not designed to get general population estimates. The participants in the study were not randomly selected. Among the 1025 participants tested for HCV, the study found 333 (32.5%) were HCV positive. A visual representation of HCV seroprevalence by site is provided in Figure 1 below.

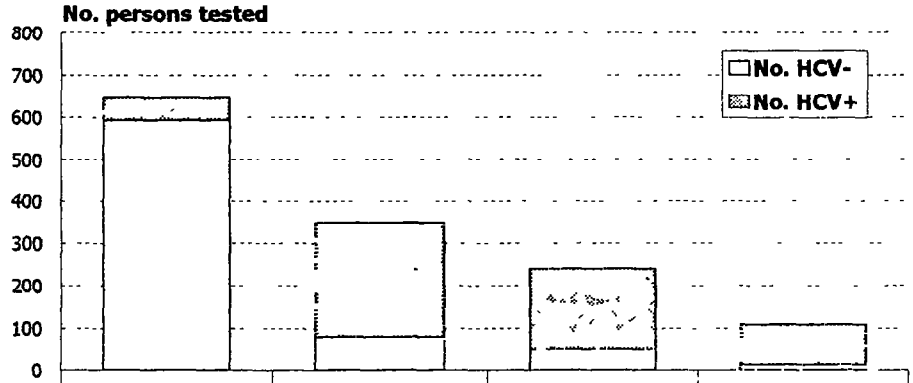
Figure 1. HCV Prevalence by Site, San Mateo County, 2000 (N=1025)



Data San Mateo HCV Point Prevalence Survey 10/2000

As anticipated, HCV seropositivity is highest among participants of the needle exchange (52.9% positive), followed by the jails (30.1%), HIV clinics (28.6%), and the ATS sites (22.8%.) When further examining drug injectors only at each site, HCV seropositivity is somewhat reordered although still highest among participants of the needle exchange (84.1%), followed by the jails (72.6%), HIV clinics (78.3%), and the ATS sites (70.0%.) These results for IDU populations are comparable to results for similar populations in the literature. The vast difference in risk between IDU and the general public is illustrated by the comparison of these high prevalences in IDUs to the national estimates of a general population prevalence of 1.8%. Additional information about HCV prevalence in the IDU portion of the sample is visualized in Figure 2, below.

Figure 2. HCV Prevalence by IDU Subgroups
High Risk Sample Population, San Mateo County, 2000



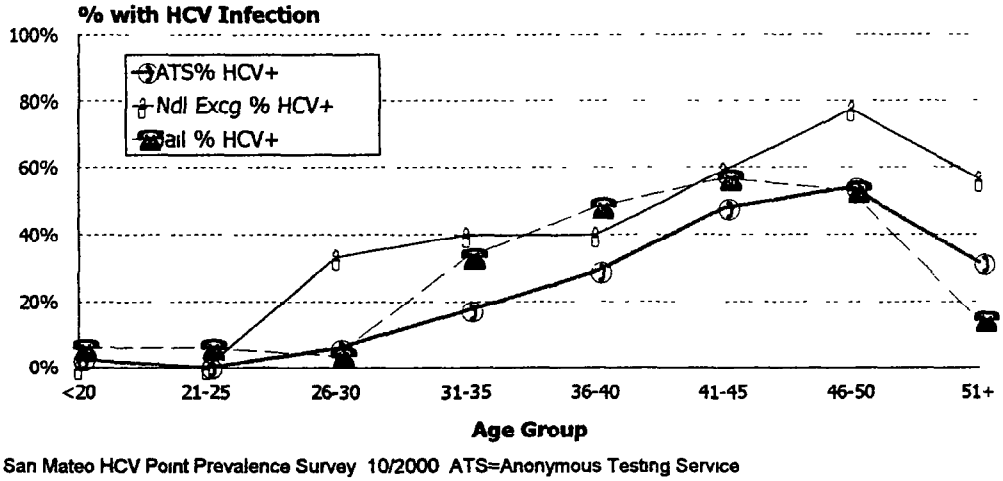
	Non-IDU	Ever IDU	Ever Shared Ndls	RecentIDU
% HCV+	8 3	76 9	78 5	89 1
No HCV+	54	269	190	98
No HCV-	593	81	52	12

Data San Mateo HCV Po nt Prevalence Survey 10/2000 Recent IDU= IDU within past 30 days

Despite the mostly high-risk nature of our, HIV infection was not as common as we had expected, although a prevalence of 4.6% is still around nine times that thought to be found in the general population. Co-infection with HIV and HCV, while 100% in the few HIV+ individuals in the jail and ATS samples, was also less than expected overall, especially in the HIV clinic sample, which showed a coinfection prevalence of just 28.6%, about one-third of what study staff anecdotally expected.

Also of particular interest is the age distribution of HCV prevalence in this sample by site and IDU subgroup, as visualized in Figures 3 and 4, below.

Fig 3. HCV Prevalence by Age Group, Needle Exchange, Jail and ATS Risk Clients, San Mateo County, 2000

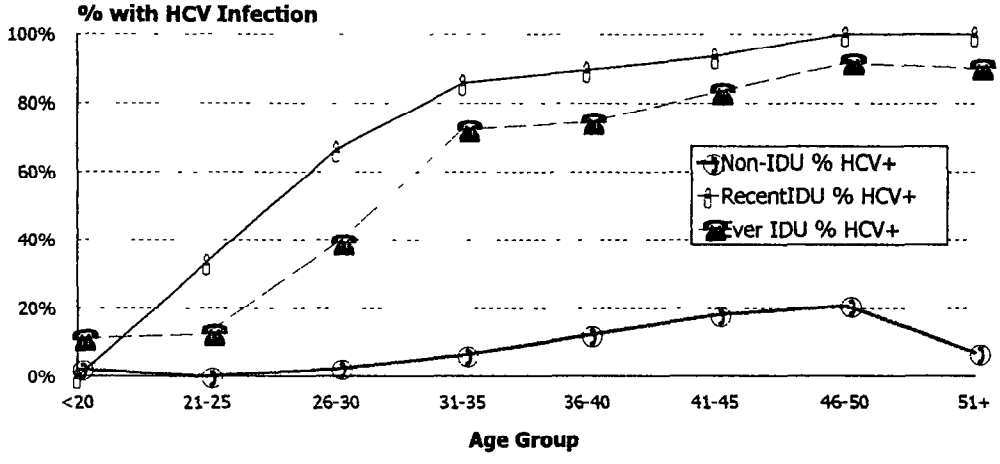


Data San Mateo HCV Point Prevalence Survey 10/2000 ATS=Anonymous Testing Service

In Figure 3, the ATS portion of the sample is perhaps the most appropriate baseline, as that site sample contained the largest numbers of persons tested and probably

contained the individuals at the lowest average risk of HCV infection among the four sites. The needle exchange population consistently had the highest HCV prevalences, even as prevalence increased with increasing age, peaking in the 46-50 age bracket. The jail portion of the sample was less consistent, but also showed a higher prevalence in the middle age ranges between 31 and 50.

Figure 4. HCV Prevalence by Age Group, Non-IDU vs. Various IDU Subgroups, San Mateo County, 2000



Data San Mateo HCV Po nt Prevalence Survey 10/2000 IDU=Injection Drug User

In our survey sample, HCV prevalence was generally higher in older persons, and injection drug users consistently had higher rates in all age brackets. Figure 4 displays the radical difference in HCV prevalence numbers between those with and without injection drug use experience. In any case, even though many of the non-IDU persons in this survey were socially affiliated with injection drug users or had risk factors of their own, including sexual risks and other drug use, no non-IDU age group displayed a prevalence greater than 21%. In contrast, persons with some IDU experience (and especially those with recent experience) displayed rapidly increasing HCV prevalence by advancing age group. In our sample, only rare IDUs over the age of 40 had escaped becoming infected with HCV. While this was a cross-sectional study and did not follow a cohort over an extended period of time with repeat testing, the rapid increase in prevalence between the ages 20 and 35 remains suggestive and reinforces the idea that early intervention is required in populations of IDU.

Risk Factor Associations with HCV Infection

While the analysis so far indicates a need for more controlled, multivariate methods, some univariate associations have been found that are useful. Notably, **injection drug use behaviors of various kinds are statistically highly associated with HCV infection**. This is in line with the literature and indicates that local IDUs have a similar HCV epidemiology to those in other parts of the country – a similarity that has not always held for HIV infection in IDUs by region. It also indicates the need for better

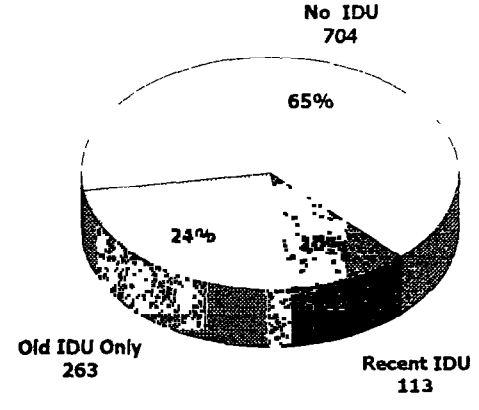
monitoring of and access to this difficult to reach population if we are going to make progress in prevention.

Another relevant result concerned the **significant associations between incarceration variables and HCV infection**, along with the very high rate of incarceration histories in our sample. The fact that current jail incarceration was not associated with HCV infection, while history of previous incarceration or extended incarceration was associated is puzzling. These findings are only somewhat supported by the literature, and definitely need to be explored via multivariate analysis with controls for the effects of age and illicit drug use in our sample. In any case, the possibility is raised that the experience of incarceration or the social milieu of incarceration is a primary contributor to risk of acquisition of HCV. Aggressive screening, education and harm reduction methods need to be applied to incarcerated populations, in particular county jail populations, which may be younger and still have a lower prevalence.

Of additional note, was **the high proportion of study participants who had not recently used illicit drugs**. Even in the needle exchange sub-sample, barely one-third of persons with a history of IDU had done so within 30 days, indicating either that our sampling selected for ex-users or perhaps that it noted a trend away from such activities. Some of these relationships and others are noted in Figure 5, below.

Figure 5. Distribution of IDU Behaviors, HCV Prevalence Sample, San Mateo County, 2000

Site	% IDU	% Recent IDU	% Ndl Share
Needle Ex	56 5	20.3	40.8
Jail	36	6	22 4
ATS	24	7 7	21 3
HIV/AIDS Pgm	31.6	2.5	25
Overall	34.8	10.2	24.8



Recent IDU: Median Years since Initiation of IDU = 23.0 (Range 2-47)
All IDU : Median Years since Initiation of IDU = 20.1 (Range 1-54)

Data: San Mateo HCV Po nt Prevalence Survey, 10/2000 Recent IDU= IDU w th n past 30 days

Other Risk Factors

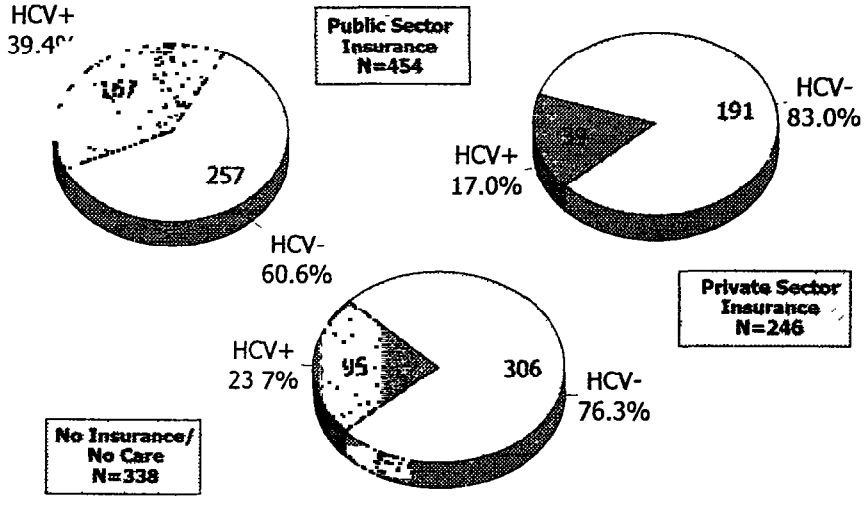
The literature notes a relatively high proportion of HCV infections (about 30%) that cannot be readily attributed to causes such as injection drug use, and this is also true for our sample. Among non-injectors in our study, few major associations stand out from the rest, making it likely that a confusing mix of low-efficiency sexual, previous transfusion-related and non-injecting drug-related forms of transmission threaten

persons outside the injecting sub-culture. Further work in a more rigorous fashion is needed to sort out any non-injection risk factors, both locally and nationally.

Insurance Coverage of High Risk Populations

The survey also attempted to ascertain information about the insurance status and heath care seeking habits in the high-risk population. A breakdown of HCV prevalence among various health care payor groups is provided in Figure 6, below.

Figure 6. HCV Prevalence by Usual Payor Type, San Mateo County, 2000 (N=1086)



Data San Mateo HCV Point Prevalence Survey 10/2000
Publ c= Med Care Med Cal VA Other Gov't Private=HMO Blue Cross Other Pr vate

In an elaboration of the dichotomous insurance variables on the Tables, Figure 6 breaks our survey sample down among those with public and private insurance, with a separate category for those who have no insurance or who avoid seeking care for financial reasons. The numbers and HCV prevalences noted here are relevant for planning of future HCV treatment and interventions and an indication of the tendency towards use of public health facilities and public financial support on the part of many chronically infected with HCV.

Drug Abuse in General in a High Risk Sample

In addition to acting as a prevalence survey for HCV infection, this project attempted to examine general illicit drug use and treatment variables in this high-risk sample. Although interpretation of some of the data is problematic – especially with regards to alcohol use – useful information of the prevalence and recency of drug use has emerged on the distribution of drug use by drugs and method of ingestion across a variety of study sites. In addition, a disturbing result was obtained indicating a relatively high prevalence of recent crack use (15.8%) in this population, it being the third-ranked choice of non-injected drugs after alcohol and marijuana.

Infrastructure for Routine Screening

During the study period, an infrastructure for HCV screening in San Mateo County was established, including (1) counselor roles, (2) laboratory support, (3) survey tools/associated forms, and (4) databases. Our study data indicated that prior to our study, this high-risk and difficult to access subpopulation had minimal access to or awareness of HCV testing, with barely 20% having previously been tested. Hopefully, this study will set a precedent for offering such testing on a routine or semi-routine basis, extending to this population the advantages of early HCV detection and more effective prevention of HCV transmission to drug-use associates, sex partners and others at risk.

Development of HCV Resource Guide

As part of this study, the Health Education Department of the San Mateo County Health services Agency, with primary responsibility to Shandra Guzman, developed a comprehensive Hepatitis C Information and Resource Guide specific for San Mateo County. This guide has already been widely praised for it's usefulness and will continue to be a valuable asset for County Health Educators as well as for individuals newly diagnosed with HCV infection. In addition, with funding support from the Northern California Grantmakers, we have been able to distribute the resource guide throughout the Bay Area.

Increasing Level of HCV Awareness

Throughout the County, the study has facilitated a strong shift of awareness toward HCV epidemic and its related issues. This is particularly true among the 1025 persons who have been tested, among the 242 individuals who have received a HCV positive result and especially among San Mateo County's health care community. At least 150 health care professionals, either directly or indirectly, incorporated responsibilities related to the HCV study into their everyday work. Consequently, many have become more knowledgeable HCV advocates and educators.

Considering the limited resources, compressed time-line, and paperwork burden of this study, things proceeded relatively smoothly. We have learned that if adequate staff is given the appropriate resources and support, HCV screening can be effectively "piggy-backed" onto existing HIV counseling and testing services. We have also witnessed an excellent group effort, in which six departments of the Health Services Agency worked together productively with no less than 5 local non-profit organizations.

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VIII: Tables and Figures

Denominators may vary by category with the number of participants who responded to a given question.

Table 1: Demographic data on study participants by site, San Mateo County HCV Prevalence Survey, 2000.

Demographics	Needle Exchange (N=281)		ATS Sites (N= 546)		HIV/AIDS Clinics (N= 79)		Jail (N=201)		Total - All Sites (N=1107)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Sex										
Male	191	68.0	349	63.9	59	74.7	142	50.5	741	66.9
Female	87	31.0	188	34.4	18	22.8	59	21.0	352	31.8
Other	1	0.4	5	0.9	1	1.3	0	0.0	7	0.6
Unknown	*2*		*4*		*1*		*0*		*7*	
Race										
White	119	42.3	117	21.4	31	39.2	71	25.3	338	30.5
Black	109	38.8	171	31.3	17	21.5	67	23.8	364	32.9
Hispanic	27	9.6	218	39.9	25	31.6	39	13.9	309	27.9
Asian/PI	2	0.7	21	3.8	3	3.8	17	6.0	43	3.9
Other	6	2.1	9	1.6	1	1.3	6	2.1	22	2.0
Unknown	*18*		*9*		*2*	-	*1*	-	*30*	--
Age										
<18	0	0.0	43	7.9	1	1.3	0	0.0	42	3.8
18 29	23	8.2	148	27.1	5	6.3	62	22.1	238	21.5
30-49	197	70.1	303	55.5	63	79.7	126	44.8	687	62.1
50+	61	21.7	52	9.5	10	12.7	13	4.6	138	12.5
Unknown	*0*	-	*0*	--	*0*	-	*0*	--	*0*	--
Median Age	43		35		39		34		38	

Table 2: HCV and HIV serologies among 1107 study participants, San Mateo County HCV Prevalence Survey, 2000.

HCV/HIV Serologies	Needle Exchange (N=281)		ATS Sites (N= 546)		HIV/AIDS Clinics (N= 79)		Jail (N=201)		Total - All Sites (N=1107)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
	N=272		**N=500**		**N=77**		**N=176**		**N=1025**	
HCV+	144	52.9	114	22.8	22	28.6	53	30.1	333	32.5
	N=262		**N=501**		**N=79**		**N=170**		**N=1012**	
HIV+	34	13.0	2	0.4	79	100.0	2	1.2	117	12.5*
	N=258		**N=494**		**N=77**		**N=167**		**N=920**	
Co-infection	22	8.5	2	0.4	22	28.6	2	1.2	48	5.2**
HCV+, HIV Unknown	*11*		*5*		*0*		*3*		*19*	

* Total HIV Prevalence in non-HIV/AIDS Clinic population is 39/855 (4.6%)
** Total Co-infection Prevalence in non-HIV/AIDS Clinic population is 26/841 (3.1%)

Table 3: Residence data on study participants, San Mateo County HCV Prevalence Survey, 2000.

Residence	Needle Exchange (N=281)		ATS Sites (N= 546)		HIV/AIDS Clinics (N= 79)		Jail (N=201)		Total - All Sites (N=1107)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Catchment Area	**208**		**483**		**72**		**133**		**903**	
North County	26	12.5	86	17.8	14	19.4	33	24.8	159	17.6
Mid County	32	15.4	73	15.1	18	25.0	16	12.0	139	15.4
South County	148	71.2	300	62.1	40	55.6	83	62.4	571	63.2
Coastside	2	1.0	23	4.8	1	1.4	1	0.8	27	3.0

Table 4: Result acquisition and second consents among 1107 study participants, San Mateo County HCV Prevalence Survey, 2000.

Received results/ Reconsents	Needle Exchange (N=281)		ATS Sites (N= 546)		HIV/AIDS Clinics (N= 79)		Jail (N=201)		Total - All Sites (N=1107)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Known refusals	1	0.4				-	19	9.5	20	1.8
Had prior HCV test	60	23.1	52	9.6	41	75.9	31	15.7	200	19.0
- Knew positive	36	60.0	19	36.5	19	46.3	15	48.4	89	44.5
Returned for results	232	82.4	279	50.7	51	65.4	144	71.6	706	63.8
Reconsented										
% of returned	161	69.4	79	28.3	42	82.4	122	84.7	404	57.2
- % of total		57.3		14.5		53.2		60.7		36.5

* Due to separate nature of jail population recruitment, refusals occurred at time of blood draw, after survey completion.

Table 5: Living arrangements among 903 non incarcerated study participants, San Mateo County HCV Prevalence Survey, 2000.

Living Arrangements	Needle Exchange (N=281)		ATS Sites (N= 546)		HIV/AIDS Clinics (N= 79)		Total - All Sites (N=906)	
	Freq	%	Freq	%	Freq	%	Freq	%
	281		**537**		**78**		**896**	
Has their own place	96	34.2	225	41.9	52	66.7	373	41.6
Staying with someone else temporarily	45	16.0	110	20.5	2	2.6	157	17.5
Transitional – hotel/motel/YMCA/rooming house	25	8.9	33	6.1	2	2.6	59	6.6
Living in a shelter	44	15.7	19	3.5	2	2.6	64	7.1
Homeless – living on streets, in cars, etc.	56	19.9	23	4.3	0	0.0	78	8.7
Staying with their parents	11	3.9	83	15.5	7	9.0	100	11.2
Other living arrangements	4	1.4	43	8.0	13	16.7	60	6.7

Table 6: Prior incarceration data among 1108 study participants who answered questions concerning incarceration, San Mateo County HCV Prevalence Survey, 2000.

Jail Data	Needle Exchange (N=281)		ATS Sites (N= 546)		HIV/AIDS Clinics (N= 79)		Jail (N=201)		Total - All Sites (N=1107)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Any time in jail or prison	228	81.1	337	61.7	40	50.6	201	100.0	806	72.8
More than 1 year in jail or prison	157	55.9	184	33.7	23	29.1	158	78.6	522	47.2
More than 5 years in jail or prison	74	26.3	60	11.0	5	6.3	66	32.8	205	18.5
Got a tattoo while in prison	51	18.1	47	8.6	10	12.7	49	24.4	157	14.2

Table 7: **Drugs injected** within a month prior to interview among 113 participants who reported recent injection drug use, San Mateo County HCV Prevalence Survey, 2000.

Drugs (s) Injected	Needle Exchange (N=57)		ATS Sites (N=42)		HIV/AIDS Clinics (N=2)		Jail (N=12)		All Qualifying Participants (N=113)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Heroin	50	87.7	39	92.9	0	0.0	9	75.0	90	79.6
Cocaine	15	26.3	18	42.9	0	0.0	3	25.0	36	31.9
Speedballs	14	24.6	14	33.3	0	0.0	3	25.0	31	27.4
Crystal meth	9	15.8	1	2.4	2	100.0	7	58.3	19	16.8
Median age start IDU	**20**		**20**		**22**		**20**		**20**	

Table 8: Drugs used but not injected within a month prior to interview among 1107 participants who answered questions concerning recent drug use, San Mateo County HCV Prevalence Survey, 2000.

Drugs (s) Snorted, Eaten, Inhaled or Drank	Needle Exchange (N=283)		ATS Sites (N=546)		Jail (N=201)		HIV/AIDS Clinics (N=78)		Total - All Participants (N=1107)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Alcohol	122	43.1	338	61.9	23	11.4	27	34.6	510	46.0
Marijuana	82	29.0	176	32.2	14	7.0	6	7.7	278	25.1
Crack cocaine	56	19.8	107	19.6	8	4.0	4	5.1	175	15.8
Powder cocaine	16	5.7	78	14.3	4	2.0	1	1.3	99	8.9
Crystal meth	14	4.9	40	7.3	7	3.5	2	2.6	63	5.7
Heroin	15	5.3	23	4.2	4	2.0	1	1.3	43	3.9
Hallucinogens	3	1.0	10	1.8	0	-	0	-	13	1.2
Other non injected drugs	6	2.0	1	<1.0	2	1.0	0	--	9	<1.0
*Did not use any drugs	114	40.3	172	31.5	168	83.6	46	59.0	502	45.3

Table 9: Usual method of payment for medical/hospital expenses among 1098 study participants who answered questions concerning medical insurance, San Mateo County HCV Prevalence Survey, 2000.

Method of Payment	Needle Exchange (N=280)		ATS Sites (N=536)		HIV/AIDS Clinics (N=78)		Jail (N=201)		Total - All Participants (N=1103)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Medicare or Medi-Cal/Health Plan of SM	85	30.4	116	21.6	50	64.1	64	31.8	323	29.3
Workers compensation	2	0.7	2	0.4	0	0.0	0	0.0	4	0.4
Veterans administration	21	7.5	11	2.1	0	0.0	4	2.0	36	3.3
Other government Insurance	29	10.4	15	2.8	25	32.1	19	9.5	88	8.0
HMO	25	8.9	118	22.0	0	0.0	37	18.4	180	16.3
Other Private Insurance	7	2.5	11	2.1	1	1.3	9	4.5	38	3.4
Self Pay	25	8.9	16	3.0	0	0.0	22	10.9	63	5.7
Doesn't pay medical bills	19	6.8	47	8.8	1	1.3	10	5.0	78	7.1
Doesn't go to M.D	16	5.7	172	32.1	1	1.3	8	4.0	197	17.9

Table 10a: Proportion in or entering of drug treatment among 1092 study participants, by site, San Mateo County HCV Prevalence Survey, 2000.

Type of Drug Treatment Desired	Needle Exchange (N=278)		ATS Sites (N=535)		Jail (N=201)		HIV/AIDS Clinics (N=78)		Total - All Participants (N=1092)	
	Freq	%	Freq	%	%	%	Freq	%	Freq	%
Currently in treatment	30	10.8	101	18.9	50	24.9	15	19.2	196	17.9
About to enter treatment	14	5.0	10	1.9	1	0.5	0	0.0	25	2.3

Table 10b: Type of drug treatment desired among 163 study participants who are not presently in drug treatment but desire it, by site, San Mateo County HCV Prevalence Survey, 2000.

Type of Drug Treatment Desired	Needle Exchange (N=42)		ATS Sites (N=25)		Jail (N=93)		HIV/AIDS Clinics (N=3)		Total - All Participants (N=163)	
	Freq	%	Freq	%	%	%	Freq	%	Freq	%
Methadone maintenance	6	14.3	0	0.0	0	0.0	2	66.7	8	4.9
Methadone detox (60 180 days)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Residential (medical)	4	9.5	6	24.0	2	2.2	0	0.0	12	7.4
Residential (drug free)	11	26.2	9	36.0	57	61.3	0	0.0	77	47.2
Out patient (medical)	6	14.3	2	8.0	3	3.2	0	0.0	11	6.7
Out-patient (drug free)	10	23.8	7	28.0	28	30.1	1	33.3	46	28.2
Psychiatric/dual diagnosis	0	0.0	1	4.0	0	0.0	0	0.0	1	0.6
Other	0	0.0	0	0.0	3	3.2	0	0.0	3	1.8

Table 11: Sexual behaviors and risk factors among 1107 study participants, by site, San Mateo County HCV Prevalence Survey, 2000.

Various Risk Factors	Needle Exchange		ATS Sites		Jail		HIV/AIDS Clinics		Total - All Participants	
	Freq	%	Freq	%	%	%	Freq	%	Freq	%
N(Males)	**184**		**346**		**142**		**59**		**731**	
Male, had sex with prostitutes	84	45.7	145	41.9	53	37.3	17	28.8	299	40.9
Male, had sex with men	15	8.2	89	25.7	6	4.2	44	74.6	154	21.1
N(All)	**281***		**546***		**201***		**79***		**1107***	
Exchanged sex for drugs	49	17.4	53	9.7	14	7.0	29	36.7	145	13.1
Sold sex	47	16.7	63	11.5	10	5.0	35	44.3	155	14.0
Used drugs during sex	159	56.6	175	32.1	28	13.9	71	89.9	433	39.1
Previously diagnosed with an STD	99	35.2	100	18.3	41	20.4	74	93.7	314	28.4
Ever injected drugs	152	56.5	128	24.0	72	36.0	24	31.6	376	34.8
Recently injected drugs	57	21.2	42	7.9	12	6.0	2	2.6	113	10.5
Ever shared needles	107	40.8	90	17.5	44	22.4	19	25.0	260	24.8

* Actual denominator vary depending on how many eligible participants provided information on each question.

Table 12: Demographic data on study participants by HCV results, San Mateo County HCV Prevalence Survey, 2000.

Demographics	% HCV+ Prevalence	HCV (+) (N=333)		HCV (-) (N=692)	
		Freq	%	Freq	%
Sex		**329**		**689**	
Male	32.0	219	66.6	465	67.5
Female	33.3	109	33.1	218	31.6
Other	14.3	1	0.3	6	0.9
Unknown		*4*		*3*	
Race		**325**		**671**	
White	40.8	131	40.3	190	28.3
Black	43.3	143	44.0	187	27.9
Hispanic	15.3	44	13.5	243	36.2
Asian/PI	4.9	2	0.6	39	5.8
Other	55.6	5	1.5	4	0.6
Unknown		*8*		*21*	
Age		**333**		**692**	
<18	7.0	3	0.9	40	5.8
18-29	2.8	6	1.8	208	30.1
30-49	41.9	270	81.1	375	54.2
50+	43.9	54	16.2	69	10.0
Unknown		*0*		*0*	
Median Age		43		34	

Table 13 : Residence data among 1025 study participants by HCV test results, San Mateo County HCV Prevalence Survey, 2000.

Residence	% HCV+ Prevalence	HCV+ (N= 333)		HCV- (N=692)	
		Freq	%	Freq	%
Catchment Area					
North County	18.1	27	10.4	122	21.4
Mid County	28.5	39	15.1	98	17.2
South County	36.6	189	73.0	327	57.4
Coastside	14.8	4	1.5	23	4.0
Unknown		*74*		*122*	

Table 14: Return rate and second consents among 1025 study participants with HCV test results, San Mateo County HCV Prevalence Survey, 2000.

Received results/ Reconsents	% HCV+ Prevalence	HCV+ (N= 333)		HCV- (N=692)	
		Freq	%	Freq	%
Returned for results	35.6	242	72.7	437	63.2
Reconsented					
- % of returned	39.3	155	64.0	239	54.7
- % of total			46.5		34.5

Table 15: Living arrangements among 1015 study participants with HCV test results and answers about domicile, San Mateo County HCV Prevalence Survey, 2000.

Living Arrangements	% HCV+ Prevalence	HCV+ (N= 331)		HCV- (N=684)	
		Freq	%	Freq	%
Has their own place	27.7	98	29.4	256	37.0
Staying with someone else temporarily	40.4	57	17.1	84	12.1
Transitional – hotel/motel/YMCA/rooming house	47.3	26	7.8	29	4.2
Living in a shelter	42.6	26	7.8	35	5.1
Homeless – living on streets, in cars, etc.	42.9	33	9.9	44	6.4
Staying with their parents	18.3	17	5.1	76	11.0
Other living arrangements	38.2	21	6.3	34	4.9

Table 16: Prior incarceration data among 1025 study participants by HCV test result, San Mateo County HCV Prevalence Survey, 2000.

Jail Data	% HCV+ Prevalence	HCV (+) (N= 333)		HCV (-) (N=692)	
		Freq	%	Freq	%
Spent some time in jail or prison	40.3	312	93.7	426	61.6
Spent more than 1 year in jail or prison	42.3	246	73.9	232	33.5
Spent more than 5 years in jail or prison	51.5	133	39.9	59	8.5
Got a tattoo while in prison	69.3	89	26.7	58	8.4

Table 17: Drugs injected within month prior to interview among 110 participants who reported recent injection drug use by HCV status. San Mateo County HCV Prevalence Survey, 2000.

Drugs (s) Injected	% HCV+ Prevalence	HCV (+) (N= 98)		HCV (-) (N=12)	
		Freq	%	Freq	%
Heroin	90.5	86	87.8	9	75.0
Cocaine	97.2	35	35.7	1	8.3
Speedballs	96.8	30	30.6	1	8.3
Crystal meth	84.2	16	16.3	3	25.0
Median age start IDU		**20**		**22**	

Table 18: Drugs used but not injected within a month prior to interview by HCV status in participants who answered questions concerning recent drug use, by HCV status, San Mateo County HCV Prevalence Survey, 2000.

Method of Payment	% HCV+ Prevalence	HCV (+) (N= 326)		HCV (-) (N=688)	
		Freq	%	Freq	%
Alcohol	40.3	134	41.1	338	49.1
Marijuana	28.4	89	27.3	166	24.2
Crack cocaine	34.9	79	24.2	86	12.5
Powder cocaine	47.9	26	8.0	63	9.2
Crystal meth	29.2	22	7.3	32	4. 7
Heroin	40.7	27	8.3	14	2.0
Hallucinogens	65.9	3	0.9	9	1.3
*Did not use any drugs	25.0	151	46.3	308	44.8

Table 19: Usual method of payment for medical/hospital expenses among 1025 study participants by HCV test results, San Mateo County HCV Prevalence Survey, 2000.

Method of Payment	% HCV+ Prevalence	HCV (+) (N= 330)		HCV (-) (N=683)	
		Freq	%	Freq	%
Medicare or Medi Cal/Health Plan of San Mateo	40.3	118	35.8	175	25.6
Workers compensation	50.0	2	0.6	2	0.3
Veterans administration	25.0	6	1.8	18	2.6
Other government Insurance	66.7	30	9.1	15	2.2
HMO	17.5	30	9.1	141	20.6
Other Private Insurance	17.1	6	1.8	29	4.2
Self Pay	35.5	22	6.7	40	5.9
Doesn't pay medical bills	52.6	41	12.4	37	5.4
Doesn't go to M.D	24.7	44	13.3	134	19.6
Other	46.4	13	3.9	15	2.2

Table 20a: Proportion in or entering of drug treatment among 1092 study participants by HCV status, San Mateo County HCV Prevalence Survey, 2000.

Method of Payment	% HCV+ Prevalence	HCV (+) (N= 329)		HCV (-) (N=681)	
		Freq	%	Freq	%
Already in treatment	41.2	77	23.4	110	16.2
About to enter treatment	40.0	10	3.0	15	2.2

Table 20b. Type of drug treatment desired among 144 study participants who are not in drug treatment but desire it, by HCV status. San Mateo County HCV Prevalence Survey, 2000.

Method of Payment	% HCV+ Prevalence	HCV (+) (N= 66)		HCV (-) (N=78)	
		Freq	%	Freq	%
Methadone maintenance	100.0	7	10.6	0	0.0
Methadone detox (60 180 days)	100.0	5	7.6	0	0.0
Residential (medical)	55.6	5	7.6	4	5.1
Residential (drug free)	48.5	33	50.0	35	44.9
Out-patient (medical)	20.0	2	3.0	8	10.3
Out-patient (drug free)	28.6	12	18.2	30	38.5
Psychiatric/duel diagnosis	0.0	0	0.0	1	1.3
Other	100.0	2	3.0	0	0.0

Table 21: Sexual behaviors and risk factors among 1025 study participants tested for HCV, San Mateo County HCV Prevalence Survey, 2000.

Various Risk Factors	% HCV+ Prevalence	HCV (+) (N= 333)		HCV (-) (N=692)	
		Freq	%	Freq	%
Male, had sex with prostitutes	37.3	103	47.9	173	37.7
Male, had sex with men	16.4	24	11.2	122	26.4
Exchanged sex for drugs	49.6	68	20.4	69	10.0
Sold sex	50.7	71	21.3	69	10.0
Used drugs during sex	54.3	219	66.9	184	27.1
Previously diagnosed with an STD	38.9	111	33.3	174	25.1
Ever injected drugs	76.9	269	83.3	81	12.0
Recently injected drugs	89.1	98	29.4	12	1.8
Ever shared needles	78.5	190	62.9	52	7.5

Table 22: Hepatitis C Prevalence by demographic group in study sample, San Mateo County HCV Prevalence Survey, 2000.

Demographics	HCV Prevalence	
	HCV+/Total	HCV+%
Sex		
Male	219/684	32.0
Female	109/327	33.3
Other	1/7	14.3
Unknown	*4/7*	
Race		
White	131/321	59.2
Black	143/330	43.0
Hispanic	44/287	15.3
Asian/PI	2/41	4.9
Other	5/9	55.6
Unknown	*8/29*	
Age		
<18	3/43	7.0
18-29	6/214	2.8
30-49	270/645	41.9
50+	54/123	43.9
Unknown	--	

Table 23: Estimates of Hepatitis C Infection Prevalences in San Mateo, 2000.
(Total County Population =747,000)

Risk Group	Prev Est	HCV Prev Low	HCV Prev High	Risk Group % of Pop'n	Total Pop'n	HCV+ No. Low	HCV+ No. High
IV Drug Users	77%	72%	86%	0.46%	3,500	2,520	3,010
Sex Prtnrs (life)							
50+	10%	6%	16%	4%	29,900	1,795	4,785
10-49	4%	3%	5%	22%	164,340	4,930	6570
2-9	1%	1%	2%	52%	388,450	3,885	7,770
Persons with STD History	6%	1%	10%	17%	126,990	1,270	12,700
Men Having Sex with Men	4%	2%	18%	5%	37,350	750	6,725
General Population	1.8%	1.5%	2.3%	100%	747,000	11,200	17,180
Health Care Workers	1%	1%	2%	1.5%	~60,000	600	1200
Pregnant Women	1%	--	-	1.3%	10,100	100	100
Volunteer Blood Donors	0.15%	-	--	0.05	37,300	56	56

Table 24: Univariate risk factor associations with Hepatitis C infection in a high-risk population (N=1109), San Mateo County HCV Prevalence Survey, 2000.

Risk Group	N	Odds Ratio	95% CI (Low, High)	p-value	Result
Injection Drug Use*					
Ever	**350/997**	**36.5**	(24.6, 54.2)	**<0.0000**	**Significant**
- Current	**110/997**	**89.7**	(44.2, 185.5)	**<0.0000**	**Significant**
- Ever Share Needles	**73/997**	**61.4**	(27.0, 145.2)	**<0.0000**	**Significant**
Intra-Nasal Drug Use	**820/1092**	**4.8**	(3.1, 7.3)	**<0.0000**	**Significant**
History Alcohol Use	**812/878**	**6.1**	(2.1, 20.1)	**0.0002**	**Significant**
History of Cocaine Use	**665/731**	**8.9**	(3.01, 29.31)	**<0.0000**	**Significant**
Male with Male Sex	**161/1108**	**0.4**	(0.2, 0.6)	**<0.0000**	**Protective**
History of STD	**314/1108**	**1.5**	(1.1, 2.0)	**0.0067**	**Marginal**
Sex Partners Past Year:					
>10	**37/1087**	**1.5**	(0.7, 0.3)	**0.3105**	**N/S**
>50	**15/1072**	**3.8**	(1.2, 13.3)	**0.0232**	**Marginal**
Ever Incarcerated	**806/1108**	**9.3**	(5.7, 15.3)	**<0.0000**	**Significant**
Incarcerated 5+ Years	**205/1108**	**7.2**	(5.0, 10.4)	**<0.0000**	**Significant**
Currently Incarcerated	**201/1108**	**0.9**	(0.6, 1.3)	**0.5272**	**N/S**
Tattooed while Incarc	**157/1108**	**4.0**	(2.7, 5.8)	**<0.0000**	**Significant**
HIV (+)	**39/934**	**5.5**	(2.6, 12.2)	**<0.0000**	**Significant**
Uninsured	**578/1086**	**1.3**	(1.0, 1.7)	**0.0777**	**N/S**

N/S=Not significant

* Referent level of dichotomous comparison is that of individuals with no IDU history.

Table 25: Univariate risk factor associations with HIV infection in a high-risk population, San Mateo County HCV Prevalence Survey, 2000. (N=1109)

Risk Group	N	Odds Ratio	95% CI (Low, High)	p-value	Result
Injection Drug Use*					
Ever	**344/989**	**1.5**	(1.0, 2.3)	**0.0718**	**N/S**
Current	**102/989**	**0.8**	(0.3, 1.8)	**0.6307**	**N/S**
- Ever Share Needles	**67/989**	**0.6**	(0.2, 1.7)	**0.3635**	**N/S**
Intra-Nasal Drug Use	**740/998**	**1.5**	(0.9, 2.6)	**0.1016**	**N/S**
History Alcohol Use	**738/802**	**0.7**	(0.3, 1.7)	**0.5378**	**N/S**
History of Cocaine Use	**598/662**	**0.7**	(0.3, 1.6)	**0.4072**	**N/S**
Male with Male Sex	**152/1012**	**5.8**	(3.7,9.1)	**<0.0000**	**Significant**
History of STD	**280/1012**	**3.5**	(2.3,5.3)	**<0.0000**	**Significant**
Sex Partners Past Year:					
>10	**37/998**	**0.2**	(0.0,1 .4)	**0.1470**	**N/S**
>50	**15/998**	**0.5**	(0.0,4.1)	**0.8523**	**N/S**
Ever Incarcerated	**712/1012**	**0.6**	(0.4, 0.9)	**0.10183**	**Significant**
Incarcerated 5+ Years	**181/1012**	**1.2**	(0.7, 2.0)	**0.5912**	**N/S**
Currently Incarcerated	**170/1012**	**0.2**	(0.0, 0.3)	**<0.0000**	**Protective**
Tattooed while Incarc	**140/1012**	**1.1**	(0.6, 1.9)	**0.9287**	**N/S**
HCV (+)	**314/996**	**1.7**	(1.1, 2.6)	**0.0106**	**Significant**
Uninsured	**517/915**	**0.1**	(0.1, 0.2)	**<0.0000**	**Protective**

N/S=Not significant

* Referent level of dichotomous comparison is that of individuals with no IDU history.

Table 26: Univariate risk factor associations with Hepatitis C infection in a high-risk population, San Mateo County HCV Prevalence Survey, 2000. (Non IDU Only, N=704)

Risk Group	N	Odds Ratio	95% CI (Low, High)	p-value	Result
Injection Drug Use					
- Ever					
- Current					
- Needle Sharing					
Intra-Nasal Drug Use	**451/697**	**1.5**	(0.8, 2.9)	**0.2615**	**N/S**
History Alcohol Use	**544/604**	**5.3**	(0.8, 106.6)	**0.1202**	**N/S**
History of Cocaine Use	**388/448**	**6.7**	(0.9, 135.2)	**0.0594**	**Marginal**
Male with Male Sex	**123/704**	**0.3**	(0.1, 1.0)	**0.0489**	**Marginally protective**
History of STD	**175/704**	**1.5**	(0.3, 1.5)	**0.3739**	**N/S**
Sex Partners Past Year:					
>10	**21/702**	**2.9**	(0.8, 9.8)	**0.1336**	**N/S**
>50	**6/702**	**7.6**	(0.9, 57.9)	**0.0792**	**Marginal**
Ever Incarcerated	**436/704**	**3.6**	(1.6, 8.1)	**0.0005**	**Significant**
Incarcerated 5+ Years	**62/704**	**6.0**	(3.0, 12.2)	**0.0000**	**Significant**
Currently Incarcerated	**128/704**	**0.7**	(0.3, 1.6)	**0.4697**	**N/S**
Tattooed while Incarc	**53/704**	**3.1**	(1.3, 6.9)	**0.0057**	**Significant**
HIV (+)	**13/594**	**2.1**	(0.0, 10.6)	**0.6456**	**N/S**
Uninsured	**340/692**	**1.2**	(0.6, 2.2)	**0.6943**	**N/S**

N/S=Not significant

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Mills/Peninsula Hospital District
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