

Background document



VHPB meeting

Highlight underserved for screening, prevention and treatment of viral hepatitis B and C in Europe

Ljubljana, Slovenia

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Content

This pre-meeting document contains a list of selected abstracts/ references from a Pubmed MEDLINE search on different search terms related to the different meeting topics. The references are ranged by publication year (most recent first) and for each year in alphabetical order of the first author's name.

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1 Presentations related information

1.1 International organization

Correlation network

Website: <http://www.correlation-net.org/>



The Correlation Network works and contributes to an increased quality of life for vulnerable and marginalized groups in Europe. We are committed to marginalised groups, such as drug users, sex workers, migrants, MSM and young people in risk situations as well as people living with HIV and AIDS and other communicable diseases. We aim to improve the access to and the quality of medical and social services and work for a social Europe, in which marginal and vulnerable groups have a permanent place with the same (human) rights than everyone else

Correlation Network aims to increase the access to social and health services and to improve prevention, care and treatment services, targeting blood-borne infectious diseases (BBID), in particular Hepatitis C and HIV/AIDS, among vulnerable and high risk populations (e.g. drug users, sex workers and young people at risk) by:

- To identify and develop strategies and interventions by promoting models of good practice, by developing guidance documents for practitioners and by stimulating exchange of experiences and good practices
- To support and strengthen capacities of health service providers and other players in the area, by maintaining a European network in the field of health promotion, prevention, care and treatment (facilitating exchange and mutual support), by providing information and data (Centre of expertise)
- To influence policies by evaluating the health, social and economic impacts of existing policies, by facilitating the exchange between policy, practice and research and by supporting and advising policy makers in the development of effective policies in the field of BBID

International centre for Migration Health and Development

Website: <http://www.icmhd.ch/>



ICMHD is a WHO Collaborating Centre for health-related issues among people displaced by conflict and disaster

The International Centre for Migration, Health and Development is a Swiss-based non-profit institution that was established in 1995. Its mandate is to work on research, training and policy advocacy in all areas related to migration and health

ICMHD believes the right to health applies to all people, including migrants, refugees, and all other people who find themselves on the move for political, economic or environmental reasons

ICMHD's work is predicated on the belief that by protecting the health and welfare of people on the move, the public health, social development, and human security of the larger society is also enhanced

ICMHD brings to the challenge of migration and health a broad body of multi-disciplinary experience in public health, medicine, social sciences, law, medical geography, health economics and political science

ICMHD works with a wide range of donors and institutions from the public and private sectors, and seeks to show how all partners and stakeholders can and should come together around the health and welfare concerns raised by forced and voluntary migration

WHAT WE DO

ICMHD works with governments, UN agencies, NGOs and all other parties interested in improving the health and welfare of people affected by migration, be it economically or politically motivated

ICMHD research

ICMHD develops databases and information that can provide the evidence on which policies and programs can be constructed to promote and protect the health and welfare of people on the move, the people they leave behind and those they come into contact with as they move

ICMHD situation assessments and evaluation

ICMHD undertakes rapid situation assessments and formulates responses in natural and man-made disasters that displace people. It develops and implements monitoring and evaluation of evolving conditions and the impact interventions have on the health and welfare of displaced people

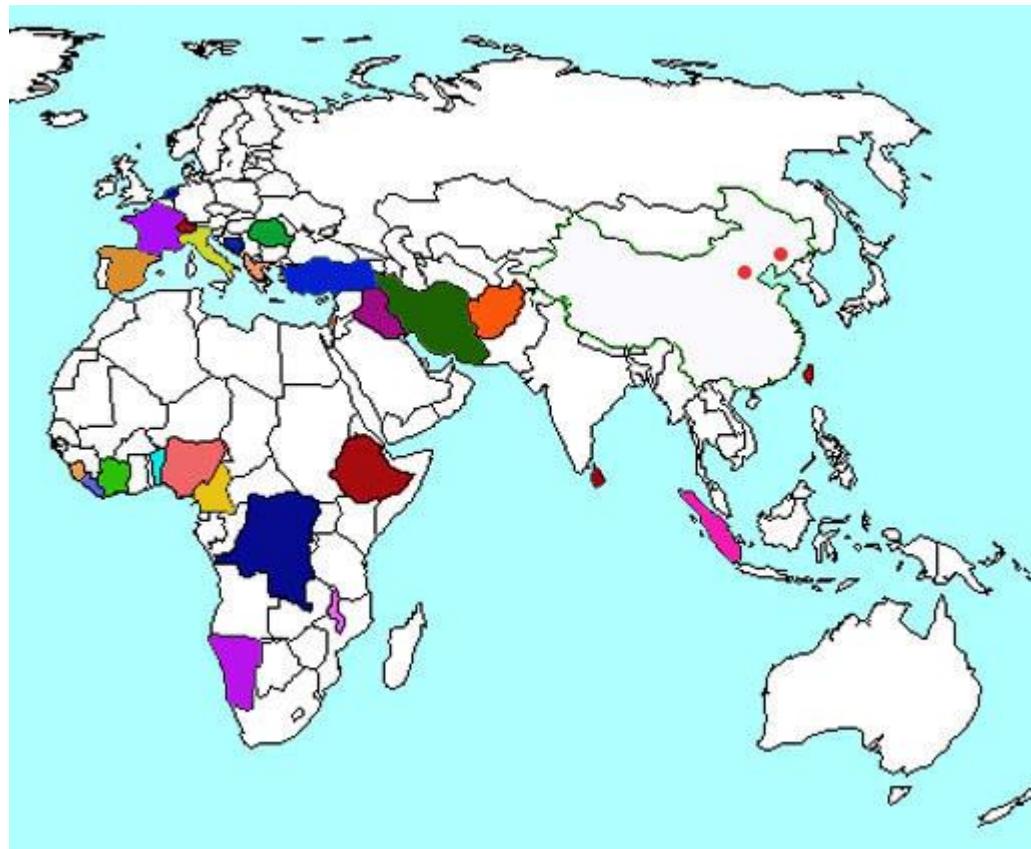
ICMHD training

ICMHD views training as a way of strengthening national and international capacities in health and migration planning and management. It organises training courses for humanitarian relief workers, UN personnel, health practitioners, public health professionals, policy makers/planners and military and peacekeeping forces

ICMHD policy formulation and advocacy

ICMHD formulates migration and health/welfare policy options based on evidence and advocates for these policies on behalf of all stakeholders. It also works with its partners to evaluate the feasibility and effectiveness of policies once they are implemented

Countries ICMHD is currently working in



Health without Barriers (HWBs)



Website: <http://www.hwbfederation.eu/>

MISSION

What is HWBs?

Health Without Barriers/HWBs the European Federation for Prison Health, brings together national-based independent Scientific Societies, in order to promote health and human rights in European prisons, for the public benefit.

HWBs aims at improving inmates' health and custody conditions, through the promotion of good health practices, ethical standards for the protection of human rights in prison, research and interdisciplinary collaboration in the field of prison health.

OBJECTIVES

Since its foundation, HWBs is intended to pursue the following objectives:

- Promote the Exchange of scientific knowledge, expertise and research in the field of prison health;
- Develop common European health standards to assure psycho-physical wellbeing in prison environment;
- Foster the right of equal treatment and access to health assistance conditions for inmates;
- Propose scientific standards and indicators for the improvement of prison health programs;
- Develop a conduct code and ethical principles to be shared among prison medical staff;
- Compare data and disseminate information on good clinical practices currently present at European level;
- Launch the collaboration and further partnerships with European key-Institutions and stakeholders active in the field of prison health;
- Promote public awareness on prison issues.

ICMDDA European Monitoring Centre for Drugs and Drug Addiction

Website: <http://www.emcdda.europa.eu/>



European Monitoring Centre
for Drugs and Drug Addiction

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) was established in 1993. Inaugurated in Lisbon in 1995, it is one of the EU's decentralised agencies. The EMCDDA exists to provide the EU and its Member States with a factual overview of European drug problems and a solid evidence base to support the drugs debate. Today it offers policymakers the data they need for drawing up informed drug laws and strategies. It also helps professionals and practitioners working in the field pinpoint best practice and new areas of research.

Who we are?

- A decentralised EU agency
- Formally established in 1993
- Based in Lisbon, Portugal (operating since 1995)
- A centre of excellence for drug-related information in Europe

What do we do?

- Provide the Community and EU Member States with: 'factual, objective, reliable and comparable information at European level concerning drugs and drug addiction and their consequences'
- Collect, register and analyse information on 'emerging trends', particularly in polydrug use, and the combined use of licit and illicit psychoactive substances
- Offer information on best practice in the EU Member States and facilitate exchange of such practice between them

Why do we do it?

- Inform decision-making on drugs
- Generate a high-quality European evidence base
- Understand what responses work
- Provide early-warning on new threats and developments

For whom?

- Policymakers
- Practitioners and professionals working in the drugs field
- Scientists and researchers

1.2 Abstracts of different presentations by session

Session 2 International organisations involved in hepatitis prevention and control and recommendations

10:15-10:35 ECMDA European Monitoring Centre for Drugs and Drug Addiction – + a systematic review of prevalence and cost-effectiveness of screening hepatitis B and C in Europe - Lucas Wiessing

Lazarus, J. V., Sperle, I., Maticic, M. and Wiessing, L. "A systematic review of Hepatitis C virus treatment uptake among people who inject drugs in the European Region." *Bmc Infectious Diseases* 2014 14.

Background: Fifteen million adults in the World Health Organization European Region are estimated to have active hepatitis C infection. Intravenous drug use is a major hepatitis C transmission route in this region, and people who inject drugs (PWID) constitute a high-risk and high-prevalence population. A systematic review was conducted to assess levels of hepatitis C treatment uptake among PWID in Europe.

Methods: Searches in MEDLINE and EMBASE were carried out for articles in any language published between 1 January 2000 and 31 December 2012. Articles were included in the review if they presented original research findings about hepatitis C treatment uptake levels among people who reported injecting drugs currently or formerly, as well as those who reported using drugs currently or formerly (mode of consumption not specified). Treatment uptake data were extracted if uptake was measurable in relation to the number of patients who either: (a) tested HCV antibody-positive; (b) tested positive for HCV-RNA; or (c) tested positive for HCV-RNA and met additional treatment criteria.

Results: Twenty-five articles from 12 countries were included in the review. Among groups of drug-using study participants who were hepatitis C antibody-positive, the median treatment uptake level was 17%, and among those who were hepatitis C RNA-positive, the median was 30%. In the 11 studies reporting specifically on treatment uptake among current and former injecting drug users, hepatitis C RNA-positive study populations had a median treatment uptake level of 32%. Only one study reported on treatment uptake for current drug users.

Conclusions: This systematic review indicates that hepatitis C treatment uptake is relatively low among drug users in several European countries, and also points to considerable knowledge gaps regarding treatment uptake levels in this population. There was large variability in treatment uptake levels, suggesting that there may be major differences between and within countries in relation to treatment availability, drug-using populations in need of treatment, and the existence of integrated health care services targeting drug users. Stronger national hepatitis C treatment policies are needed, along with efforts to increase knowledge and reduce misconceptions among physicians regarding the feasibility and importance of treating drug users who have hepatitis C.

Presentation related references

Wiessing L, Likatavicius G, Hedrich D, Guarita B, van de Laar MJ, Vicente J. **Trends in HIV and hepatitis C virus infections among injecting drug users in Europe, 2005 to 2010.** Euro Surveill. 2011 Dec 1;16(48). pii: 20031. Erratum in: Euro Surveill. 2011;16(49).pii: 20037. PMID: 22172300 Data on newly diagnosed HIV infections and HIV prevalence in 2005 to 2010 suggest falling infection rates in injecting drug users (IDUs) in the European Union (EU). However, recent increases in HIV and hepatitis C virus (HCV) infection rates in IDUs suggest increasing injecting risks in some countries. The coverage of effective prevention measures has increased, but is still low in several countries. Overall the data suggest a continued risk of new outbreaks of HIV infection among IDUs.

Pharris A, Wiessing L, Sfetcu O, Hedrich D, Botescu A, Fotiou A, Nikolopoulos GK, Malliori M, Salminen M, Suk JE, Griffiths P, van de Laar MJ. **Human immunodeficiency virus in injecting drug users in Europe following a reported increase of cases in Greece and Romania,** 2011. Euro Surveill. 2011 Dec 1;16(48). pii: 20032. PMID: 22172301

Greece and Romania reported an increased number of HIV cases among injecting drug users (IDUs) during 2011. Most European countries reported no changes in the rate of newly diagnosed cases of HIV or HIV prevalence in IDUs; however, six countries did report increases and several additional countries reported increases in injecting risk indicators or low coverage of prevention services. These indicate a potential risk for increased HIV transmission and future outbreaks unless adequate prevention is implemented

Hahné SJ1, Veldhuijzen IK, Wiessing L, Lim TA, Salminen M, Laar Mv. BMC Infect Dis. 2013 Apr 18;13:181. doi: 10.1186/1471-2334-13-181.
Infection with hepatitis B and C virus in Europe: a systematic review of prevalence and cost-effectiveness of screening.

BACKGROUND: Treatment for chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) infection is improving but not benefiting individuals unaware to be infected. To inform screening policies we assessed (1) the hepatitis B surface antigen (HBsAg) and anti-hepatitis C virus antibody (anti-HCV-Ab) prevalence for 34 European countries; and (2) the cost-effectiveness of screening for chronic HBV and HCV infection. **METHODS:** We searched peer-reviewed literature for data on HBsAg and anti-HCV-Ab prevalence and cost-effectiveness of screening of the general population and five subgroups, and used data for people who inject drugs (PWID) and blood donors from two European organizations. Of 1759 and 468 papers found in the prevalence and cost-effectiveness searches respectively, we included 124 and 29 papers after assessing their quality. We used decision rules to calculate weighted prevalence estimates by country. **RESULTS:** The HBsAg and anti-HCV-Ab prevalence in the general population ranged from 0.1%

5.6% and 0.4%-5.2% respectively, by country. For PWID, men who have sex with men and migrants, the prevalence of HBsAg and anti-HCV-Ab was higher than the prevalence in the general population in all but 3 countries. There is evidence that HCV screening of PWID and HBsAg screening of pregnant women and migrants is cost-effective. CONCLUSION: The prevalence of chronic HBV and HCV infection varies widely between European countries. Anti-HCV-Ab screening of PWID and HBsAg screening of pregnant women and migrants have European public health priority. Cost-effectiveness analyses may need to take effect of antiviral treatment on preventing HBV and HCV transmission into account.

Wiessing L, Ferri M, Grady B, Kantzianou M, Sperle I, Cullen KJ; EMCDDA DRID group, Hatzakis A, Prins M, Vickerman P, Lazarus JV, Hope VD, Matheï C. **Hepatitis C virus infection epidemiology among people who inject drugs in Europe: a systematic review of data for scaling up treatment and prevention.** PLoS One. 2014 Jul 28;9(7):e103345. doi: 10.1371/journal.pone.0103345. eCollection 2014. Review. PubMed PMID: 25068274; PubMed Central PMCID: PMC4113410.

Background: People who inject drugs (PWID) are a key population affected by hepatitis C virus (HCV). Treatment options are improving and may enhance prevention; however access for PWID may be poor. The availability in the literature of information on seven main topic areas (incidence, chronicity, genotypes, HIV co-infection, diagnosis and treatment uptake, and burden of disease) to guide HCV treatment and prevention scale-up for PWID in the 27 countries of the European Union is systematically reviewed.

Methods and Findings: We searched MEDLINE, EMBASE and Cochrane Library for publications between 1 January 2000 and 31 December 2012, with a search strategy of general keywords regarding viral hepatitis, substance abuse and geographic scope, as well as topic-specific keywords. Additional articles were found through structured email consultations with a large European expert network. Data availability was highly variable and important limitations existed in comparability and representativeness. Nine of 27 countries had data on HCV incidence among PWID, which was often high (2.7-66/100 person-years, median 13, Interquartile range (IQR) 8.7-28). Most common HCV genotypes were G1 and G3; however, G4 may be increasing, while the proportion of traditionally 'difficult to treat' genotypes (G1+G4) showed large variation (median 53,IQR 43-62). Twelve countries reported on HCV chronicity (median 72, IQR 64-81) and 22 on HIV prevalence in HCV-infected PWID (median 3.9%, IQR 0.2-28). Undiagnosed infection, assessed in five countries, was high (median 49%, IQR 38-64), while of those diagnosed, the proportion entering treatment was low (median 9.5%, IQR 3.5-15). Burden of disease, where assessed, was high and will rise in the next decade.

Conclusion: Key data on HCV epidemiology, care and disease burden among PWID in Europe are sparse but suggest many undiagnosed infections and poor treatment uptake. Stronger efforts are needed to improve data availability to guide an increase in HCV treatment among PWID.

Recommendations

Migrants

11:10-11:25 WHO Recommendations Migrants and health

Antons Mozalevskis (*WHO-Euro, Denmark*)

<http://www.euro.who.int/en/health-topics/health-determinants/migration-and-health>

WHO-UNHCR-UNICEF joint technical guidance: general principles of vaccination of refugees, asylum-seekers and migrants in the WHO European Region

23-11-2015

Background

The unprecedented influx of refugees, asylum-seekers and migrants to countries of the World Health Organization (WHO) European Region poses a public health challenge that must be addressed in a timely, effective manner. An effective response to the challenge will require strengthening national and regional health systems to ensure that all refugees and migrants have easy access to the health services they need. In doing so, the principles of equity, solidarity, human rights and dignity must be adhered to.

Risk for increased transmission of vaccine-preventable diseases

The chronic health problems of refugees, asylum-seekers and migrants are generally similar to those of their host populations; however, the physical and psychological effects of fleeing their home countries and the long, arduous journeys they undertake increase their overall health risks. For example, mass population movement, lack of sufficient water and inadequate shelter and sanitation conditions increase the risks for acquiring communicable diseases. Children are especially prone to acute conditions, such as respiratory diseases, diarrhoea and skin infections. Respiratory illnesses are expected to increase in the winter months as respiratory syncytial virus and seasonal influenza spread in the Region.

Most of the refugees and migrants now arriving in Europe come from Middle Eastern countries where vaccines are widely accepted and coverage has traditionally been high. Those most at risk for vaccine-preventable diseases are

young children who have not yet been vaccinated because the vaccination programmes in their home countries have been interrupted by civil unrest and war.

Furthermore, many residents and mobile individuals in the host countries of the Region remain susceptible. Many do not avail themselves of vaccination due to misconceptions about vaccines, complacency, poor awareness of the benefits of vaccines or religious or philosophical beliefs. Others do not have access to vaccination services because they do not have health insurance or are not registered with the health system. The recent outbreaks of measles in many European countries indicate that adolescents and young adults are particularly susceptible. Measles and rubella outbreaks have disproportionately affected particular groups, such as Roma in Poland (1), immigrants in Spain (2), anthroposophic communities in German-speaking countries (3) and Sweden (4) and orthodox Protestant communities in the Netherlands (5, 6).

Most outbreaks of vaccine-preventable diseases such as measles, rubella and pertussis occur in the Region independently of refugee and migrant population movement. There is a continuing risk for a polio outbreak in the Region, as Bosnia and Herzegovina, Romania and Ukraine have repeatedly been identified by the Regional

Certification Commission for Poliomyelitis Eradication as at high risk for transmission in the event of wild poliovirus importation, and an outbreak of circulating vaccine-derived poliovirus occurred in Ukraine in September. The rapid influx of large numbers of unvaccinated children would therefore only increase existing immunity gaps.

Provision of health services and vaccines

In line with the Alma-Ata declaration on universal health coverage (1978) (7), Health 2020 (the European policy for health and well-being) (8), World Health Assembly resolution WHA61.17 on migrants' health (9) and the 1951 Refugee Convention (10) all state that refugees and asylum seekers should have non-discriminatory, equitable access to health care services, including vaccines, irrespective of their legal status. Access to vaccines is indeed a specific objective in the WHO European Region, as outlined in the European Vaccine Action Plan 2015–2020 (11), which was endorsed by all 53 Member States. The plan proposes that all countries in the Region ensure that immunization policies are non-discriminatory and that the services are fully inclusive and user-friendly. In addition, the Convention on the Rights of the Child (12) and the United Nations Children's Fund (UNICEF) Core Commitments for Children in Humanitarian Action (13) call for equitable access of all children, adolescents and women to

essential health services, with sustained coverage of preventive and curative interventions. These include timely immunization against vaccine-preventable diseases, particularly measles and polio.

The health systems in the countries receiving migrants are well equipped and experienced to diagnose and treat common infectious and noncommunicable diseases. They must be adequately prepared and organized to provide support to refugees, asylum-seekers and migrants while at the same time ensuring the health of the resident population. Vaccines should be provided in an equitable manner with a systematic, sustainable, non-stigmatizing approach. As vaccination is a health intervention that requires a continuum of follow-up until the full schedule is completed, there must be cooperation among the countries of origin, of transit and of destination.

We applaud the many countries, such as those on the front line of large-scale migration, that have been vaccinating refugees, asylum-seekers and migrants regardless of their country of origin and according to these countries' routine vaccination schedules.

Recommendations for vaccination

The current influx of refugees, asylum-seekers and migrants is unprecedented not only in scale but also in speed of movement. This poses particular challenges in deciding when and where to vaccinate. The situation is compounded by the fact that many vaccines must be given in consecutive doses at timed intervals. Access to the full vaccination schedule, through follow-up vaccinations, is difficult to ensure while people are on the move. Nevertheless, refugees, asylum-seekers and migrants should be vaccinated without unnecessary delay according to the immunization schedule of the country in which they intend to stay for more than a week. Measles, mumps and rubella (MMR) and polio vaccines should be priorities. Governments should consider providing documentation of the vaccinations given to each vaccinee or child's caregiver to help avoid unnecessary revaccination.

Vaccination of refugees, asylum-seekers and migrants is not recommended at border crossings unless there is an outbreak of a vaccine-preventable disease in the host or transit country. In such cases, countries are urged to include refugees, asylum-seekers and migrants in any outbreak control measures taken, including vaccination. If the level of risk for serious disease transmission is considered high in an epidemiological risk assessment, countries may decide whether to vaccinate on the basis of the recommendations in the document *Vaccination in acute*

humanitarian emergencies: a framework for decision making (14). Provision of measles-containing vaccines is further defined in Reducing measles mortality in emergencies, WHO–UNICEF joint statement (15), and provision of polio

vaccines is discussed in Reducing risk of poliomyelitis outbreaks in emergencies, issued by the Global Polio Eradication Initiative (GPEI) (16).

The refugee crisis should incite all countries to review any immunity gaps in their populations and ensure tailored immunization services and strong communication and social mobilization in areas and groups that have suboptimal coverage. This will help countries fulfil their shared responsibility to attain the goals of global polio eradication and regional measles and rubella elimination.

Recommendations on specific vaccines

Polio vaccines: In light of the current high level of population immunity against polio and the specificities in the organization and provision of primary health care services in European countries, supplementary polio immunization campaigns for preventive purposes are not considered essential. However, to maintain high population immunity against polio and mitigate the risk of importation and circulation of polioviruses, it is important that equitable access and administration of polio vaccines be given to all individuals and population groups in accordance with current national routine immunization schedules for children and adults.

National stockpiling of oral polio vaccines in anticipation of a possible polio outbreak is not recommended. The GPEI will manage polio outbreaks in accordance with the latest standard operating procedures (17) and provide access to the appropriate polio vaccine.

Measles- and rubella-containing vaccines: As some countries of the Region are still considered endemic for measles and rubella, refugees and migrants should be vaccinated against these diseases as a priority and in line with national vaccination schedules. In view of ongoing transmission in the Region and the 2015 measles and rubella elimination goal set for the Region, WHO supports closure of all immunity gaps with activities such as national supplementary vaccination campaigns with measles- and rubella-containing vaccines. This is particularly important in countries where these diseases are still endemic and will contribute to reaching the goal of eliminating these diseases from the Region.

Protection of health care workers

In line with WHO recommendations, most countries of the WHO European Region recommend seasonal influenza vaccination for health care workers. Vaccination against hepatitis B, measles and rubella is also recommended to those who are still susceptible to these diseases.

Strengthening communicable diseases surveillance systems

Under the International Health Regulations (2005) (18), all countries should have effective disease surveillance and reporting systems, outbreak investigation ability and case management and response capacity. With this capacity, countries should also be able to perform quick, effective epidemiological risk assessments. WHO and the European Centre for Disease Prevention and Control (ECDC) have systems and capacity in place to support national disease surveillance.

IDU

11:25-11:45 Recommendations for the management of hepatitis C virus infection among people who inject drugs - Dalgard Olav

Grebely, J., Robaeys, G., Bruggmann, P., Aghemo, A., Backmund, M., Bruneau, J., Byrne, J., Dalgard, O., Feld, J. J., Hellard, M., et al. "**Recommendations for the management of hepatitis C virus infection among people who inject drugs.**" *Int J Drug Policy* **2015** 26(10): 1028-1038.

In high income countries, the majority of new and existing hepatitis C virus (HCV) infections occur among people who inject drugs (PWID). In many low and middle income countries large HCV epidemics have also emerged among PWID populations. The burden of HCV-related liver disease among PWID is increasing, but treatment uptake remains extremely low. There are a number of barriers to care which should be considered and systematically addressed, but should not exclude PWID from HCV treatment. The rapid development of interferon-free direct-acting antiviral (DAA) therapy for HCV infection has brought considerable optimism to the HCV sector, with the realistic hope that therapeutic intervention will soon provide near optimal efficacy with well-tolerated, short duration, all oral regimens. Further, it has been clearly demonstrated that HCV treatment is safe and effective across a broad range of multidisciplinary healthcare settings. Given the burden of HCV-related disease among PWID, strategies to enhance HCV assessment and treatment in this group are urgently needed. These recommendations demonstrate that treatment among PWID is feasible and provide a framework for HCV assessment and care. Further research is needed to evaluate strategies to enhance testing, linkage to care, treatment, adherence, viral cure, and prevent HCV reinfection among PWID, particularly as new interferon-free DAA treatments for HCV infection become available.

11:45-12:05 Treatment of chronic hepatitis C in drug users: ethic, successful and useful

André Remy

Remy, A. J., Wenger, H. and Bouchkira, H. "**[Treatment of chronic hepatitis C in drug users: ethic, successful and useful].**" *Presse Med* **2014** 43(12 Pt 1): 1314-1316. (French) available on
<http://www.sciencedirect.com/science/article/pii/S0755498214004606>

1. Lucidarme D, Dubuque C, Yassine W et al. Évolution de l'incidence de l'infection par le virus de l'hépatite C chez les usagers de drogue en France. Hépato gastro 2012, 19 (2) 105-116.
2. Jauffret-Roustide M, Pillonel J, Weil-Barillet L et al. Estimation de la séroprévalence du VIH et de l'hépatite C chez les usagers de drogue en France. Premiers résultats de l'enquête ANRS-Coquelicot 2011. BEH 2013, 39-40 : 504-509.
3. Expertise collective INSERM 2010 sur la réduction des risques infectieux chez les usagers de drogue 2010. www.inserm.fr/thematiques/sante-publique/expertises-collectives
4. Circulaire N°DGS/MC2/2008/79 du 28 février 2008 relative à la mise en place des centres de soins, d'accompagnement et de prévention en addictologie (CSAPA))
5. Prise en charge des personnes infectées par les virus de l'hépatite B et ou de l'hépatite C : rapport de recommandations 2014 ANRS AFEF.
http://www.sante.gouv.fr/IMG/pdf/Rapport_Prise_en_charge_Hepatitis_2014.pdf

SESSION 3 SCREENING: UNIDENTIFIED CARRIERS

part 3.1 Methodology of screening (adapted diagnostics) in underserved groups and in general population

13:30-13:50 Using mass media and the Internet as tools to diagnose hepatitis C infections in the general population. Freke Zuure

Zuure, F. R., Davidovich, U., Coutinho, R. A., Kok, G., Hoebe, C. J., van den Hoek, A., Jansen, P. L., van Leeuwen-Gilbert, P., Verheuvel, N. C., Weegink, C. J., et al. "**Using mass media and the Internet as tools to diagnose hepatitis C infections in the general population.**" *Am J Prev Med* 2011 40(3): 345-352.

BACKGROUND: Many individuals with hepatitis C virus (HCV) infection are undiagnosed. **PURPOSE:** This study describes the development and the use and outcomes of a mass media campaign, combined with an Internet risk assessment and an Internet-mediated blood-testing procedure for HCV to identify individuals infected with HCV in the general population. **METHODS:** From April 2007 to December 2008, individuals in HCV risk groups were referred to an online, previously validated risk-assessment questionnaire at www.heptest.nl. Individuals at risk could download a referral letter for a free, anonymous HCV blood test in a nonclinical setting. Test results could be obtained online, 1 week later, using a personal log-in code. Anti-HCV-positive participants were requested to visit the Public Health Service for confirmation and RNA testing. Chronically HCV-infected individuals were referred for treatment. Data were analyzed in 2009-2010. **RESULTS:** The website attracted 40,902 visitors. Of the 9653 who completed the questionnaire, 2553 were at risk for HCV (26.4%). Main reported risk factors were a blood transfusion prior

to 1992 and noninjecting drug use. Of the 1480 eligible for the blood test, 420 opted for testing (28%). HCV antibodies were detected in 3.6% (n=15, 95% CI=2.1%, 5.7%); of the 12 with a chronic HCV infection, six began treatment. CONCLUSIONS: Internet-mediated risk-based testing for HCV has proved to be a feasible and effective strategy to identify undiagnosed HCV infection in the general population. All HCV-infected individuals belonged to hard-to-reach populations. Test uptake was 28%, which is high for an online project that includes blood testing. Because Internet-mediated testing is low-cost, this strategy holds promise for future screening.

Other related articles

1. FR Zuure, TRLJ Heijman, AT Urbanus, M Prins, G Kok, U Davidovich. Reasons for compliance or noncompliance with advice to test for hepatitis C via an internet-mediated blood screening service: a qualitative study. *BMC Public Health* 2011, 11:293

Abstract BACKGROUND:

Hepatitis C virus (HCV) is mainly transmitted by exposure to infected blood, and can lead to liver cirrhosis and liver cancer. Since the onset of HCV and the development of liver cirrhosis usually are asymptomatic, many HCV-infected individuals are still undiagnosed. To identify individuals infected with HCV in the general population, a low threshold, internet-mediated blood testing service was set up. We performed a qualitative study examining reasons for compliance and noncompliance with advice to test for HCV via the online blood testing service.

METHODS: Semistructured telephone interviews were conducted with 33 website visitors who had been advised to test for HCV (18 testers, 15 non-testers). Transcribed interviews were analyzed qualitatively and interpreted using psychosocial theories of health behavior.

RESULTS: Reasons for testing pertaining to the online service were: the testing procedure is autonomous, personalized test advice is provided online, reminder emails are sent, and there is an online planning tool. Reasons for testing not specific to the online service were: knowing one's status can prevent liver disease and further transmission of HCV, HCV is curable, testing can provide reassurance, physical complaints are present, and there is liver disease in one's social environment. Service-related reasons for not testing pertained to inconvenient testing facilities, a lack of commitment due to the low threshold character of the service, computer/printing problems, and incorrectly interpreting an online planning tool. The reasons for not testing that are not specific to the online service were: the belief that personal risk is low, the absence of symptoms, low perceived urgency for testing and treatment, fear of the consequences of a positive test result, avoiding threatening information, and a discouraging social environment.

CONCLUSIONS: Features specific to the online service played a significant role in motivation to test for HCV above and beyond the more conventional perceived health benefits of HCV testing. However, some online specific features were considered problematic and need to be adapted. Methods and strategies for dealing with these impeding factors and for improving compliance with testing via the online service are outlined

2. FR Zuure, U Davidovich, GJ Kok, ACTM Depla, CJPA Hoebe, JAR van den Hoek, PLM Jansen, P van Leeuwen-Gilbert, CJ Weegink, RA Coutinho, M Prins. **Evaluation of a risk assessment questionnaire to assist hepatitis C screening in the general population.** *Eurosurveill* 2010; 15(15):pii=19539.

Abstract Many individuals with hepatitis C virus (HCV) infection are undiagnosed. This study evaluates a risk assessment questionnaire, developed for use online to target blood-screening for HCV. Two hundred and eighty-nine patients with known HCV status completed a written questionnaire on prominent HCV risk factors. Questionnaires generated advice to seek testing if at least one risk factor was reported. Agreement of the testing advice with the HCV status of respondents was evaluated. Subsequently, we validated our questionnaire among 985 patients of an outpatient clinic for sexually transmitted infections. The post-test-probability-of-disease (PTPD) and diagnostic gain (PTPD minus prior probability of disease) were calculated. The questionnaire's sensitivity and specificity were 84.6% and 63.8%, respectively, and higher in the STI clinic patients. The PTPD of positive testing advice was 72.5% given HCV prevalence of 53.0%, yielding a diagnostic gain of 19.5%. Applying the estimated prevalence in the general Dutch population (0.1-0.4%), and the anticipated prevalence in the online project (1.0-6.0%), yielded diagnostic gains of 0.13-0.53% and 1.3-7.0%, respectively. We conclude that our questionnaire succeeded in selecting at-risk individuals as its testing advice agreed well with the HCV status. We suggest that the questionnaire be used online as a selection tool for HCV blood-screening in the general population

13:50-14:10 Performance of rapid diagnostic tests for the detection of antibodies to hepatitis C virus in whole blood collected on dried blood spots *Slim Fourati*

Poiteau, L., Soulier, A., Rosa, I., Roudot-Thoraval, F., Hezode, C., Pawlotsky, J. M. and Chevaliez, S. "Performance of rapid diagnostic tests for the detection of antibodies to hepatitis C virus in whole blood collected on dried blood spots." *J Viral Hepat* 2016.

Rapid diagnostic tests (RDTs) represent an attractive alternative to enzyme immunoassays. A total of 207 individuals, including 68 HCV-seronegative subjects, 10 patients with resolved infection and 129 patients with chronic HCV infection, were studied. The specificity of RDT detection of anti-HCV antibodies in whole blood was 100% with the four RDTs tested: OraQuick(R) HCV Rapid Antibody Test, First Response HCV Card Test, ASSURE HCV Rapid Test and MultiSure HCV Antibody Assay. Their diagnostic sensitivity varied between 98.6% and 100%. RDT detection of anti-HCV antibody in whole blood collected on dried blood spots appears to be a promising new tool for broadscale screening of HCV infection in high- to medium-risk populations.

Chevaliez, S., Poiteau, L., Rosa, I., Soulier, A., Roudot-Thoraval, F., Laperche, S., Hezode, C. and Pawlotsky, J. M. "Prospective assessment of rapid diagnostic tests for the detection of antibodies to hepatitis C virus, a tool for improving access to care." *Clin Microbiol Infect* 2016.

Large-scale hepatitis C screening is required to prevent further spread of the infection, improve access to care in the context of new HCV drug regimens without interferon alpha and subsequently reduce the risk of long-term complications of chronic liver disease. Rapid diagnostic tests (RDTs) represent an attractive alternative to enzyme immunoassay using blood from venipuncture. The aim of the present study was to prospectively assess the clinical performance of CE-marked RDTs detecting anti-HCV antibodies in fingerstick capillary whole blood and/or oral fluid. A total of 513 individuals, including 318 patients with chronic HCV infection, 25 patients with resolved HCV infection and 170 HCV-seronegative individuals, were prospectively enrolled. The specificity of RDTs with fingerstick whole blood varied from 98.8% to 100%. The clinical sensitivity was high for the OraQuick(R) and Toyo(R) tests (99.4% and 95.8%, respectively), but low for the Labmen(R) test (63.1%). The specificity and clinical sensitivity in crevicular fluid were both satisfactory for the OraQuick(R) test (100% and 97.6%, respectively). HCV antibody RDTs were easy and rapid to perform in the context of patient care. They were highly specific. Both the OraQuick(R) and Toyo(R) tests reached the expected level of performance for broad-scale use, with a performance advantage for the OraQuick(R) HCV test. RDTs appears as a promising new tool for broad-scale screening of HCV infection in high-to medium-risk populations. Thus, careful assessment of the performance of HCV RDTs must be recommended before they can be implemented in clinical practice.

Soulier, A., Poiteau, L., Rosa, I., Hezode, C., Roudot-Thoraval, F., Pawlotsky, J. M. and Chevaliez, S. "**Dried Blood Spots: A Tool to Ensure Broad Access to Hepatitis C Screening, Diagnosis, and Treatment Monitoring.**" *J Infect Dis* 2015.

BACKGROUND: With the advent of highly efficient antiviral therapies for hepatitis C virus (HCV) infection, providing broad access to diagnosis and care is needed. The dried blood spot (DBS) technique can be used to collect, store, and ship whole-blood specimens. Our goal was to assess the performance of standardized HCV diagnostic and monitoring tools in the analysis of DBS.

METHODS: Serum specimens and whole-blood specimens collected using the DBS technique from >500 patients were tested for virological markers used to diagnose and monitor HCV infection. **RESULTS:** Enzyme immunoassay detection of anti-HCV antibodies in specimens from DBS was reliable after establishment of a new signal-to-cutoff ratio. HCV RNA was detected DBS from the vast majority of patients with active replication, but HCV RNA levels were substantially lower than in serum specimens, implying that only the presence or absence of HCV RNA or changes in the HCV RNA level should be taken into consideration for therapy. Detection of HCV core antigen in specimens from DBS was not a sensitive marker of chronic HCV infection. HCV genotype determination was possible in the vast majority of DBS.

CONCLUSIONS: This study shows that whole-blood specimens collected using the DBS technique can be confidently used to diagnose and monitor HCV infection. DBS could help improve access to care for HCV infection because they are suitable for use in large-scale screening programs, diagnosis, and therapeutic monitoring.

part 3.2 Screening initiatives taken in the general population and different underserved groups

Prisoners

14:10-14:30 Hepatitis C in European prisons: a call for an evidence-informed response. *Amber Arain*

Arain, A., Robaeys, G. and Stover, H. "Hepatitis C in European prisons: a call for an evidence-informed response." *BMC Infect Dis* 2014 14 Suppl 6: S17.

Globally, over 10 million people are held in prisons and other places of detention at any given time. People who inject drugs (PWID) comprise 10-48% of male and 30-60% of female prisoners. The spread of hepatitis C in prisons is clearly driven by injection drug use, with many infected prisoners unaware of their infection status. Risk behaviour for acquisition of hepatitis C via common use of injecting equipment is widespread in many prison settings. In custodial settings, effective and efficient prevention models applied in the community are very rarely implemented. Only approximately 60 out of more than 10,000 prisons worldwide provide needle exchange. Thus, HCV prevention is almost exclusively limited to verbal advice, leaflets and other measures directed to cognitive behavioural change. Although the outcome of HCV antiviral treatment is comparable to non-substance users and substance users out of prison, the uptake for antiviral treatment is extremely low. Based on a literature review to assess the spread of hepatitis C among prisoners and to learn more about the impact for the prison system, recommendations regarding hepatitis C prevention, screening and treatment in prisons have been formulated in this article.

Presentation related references

1. Post JJ, Arain A, Lloyd AR. **Enhancing assessment and treatment of hepatitis C in the custodial setting.** *Clin Infect Dis*. 2013 Aug;57 Suppl 2:S70-4. doi: 10.1093/cid/cit265.
Acute and chronic hepatitis C (HCV) infections are prevalent in custodial settings worldwide, yet provision of antiviral therapies is uncommon. This disparity between the burden of disease and hepatitis service delivery reflects the marginalized patient population, which features high rates of injection drug use and poor mental health. In addition, the prison environment is intended for deprivation of liberty and not healthcare. Screening for HCV infections

is provided in most jurisdictions, but uptake rates remain low. Assessment and treatment of inmates is often provided only by community-based services. Despite these challenges, assessment and treatment of inmates with chronic HCV via prison-based services has been shown to be feasible and effective. These services offer the potential to substantively increase HCV treatment uptake and reduce the burden of disease for the community at large. Improvements in the efficacy of HCV therapies via direct-acting antivirals, which also offer reduced treatmentduration and decreased toxicities, mean that prison health services will be well placed for the treatment of large numbers of people with HCV who do not access health services in the community.

2. Heike Zurhold and Heino Stöver. **Provision of harm reduction and drug treatment services in custodial settings – Findings from the European ACCESS study** Drugs:Education, Prevention and Policy, DOI: 10.3109/09687637.2015.1112363

Migrants

14:30-14:50

Belgium Hepatitis screening project to reach asian migrants “China aan de Schelde”- Thomas Vanwolleghem

Presentation related references

1. Vedio AB, Ellam H, Rayner F, Stone B, Kudesia G, McKendrick MW, Green ST. Hepatitis B: Report of prevalence and access to healthcare among Chinese residents in Sheffield UK. J Infect Public Health. 2013 Jun 28.

Abstract

Overall prevalence of hepatitis B (HBV) in the UK is low. However, among migrants from endemic areas, prevalence has been shown to be high. Furthermore, timely diagnosis and/or referral are required prevent serious health consequences through early institution of treatment.

METHODS:

We identified locations that would be familiar to Chinese members of the community with the objective of facilitating testing. Dried blood spot samples were collected from 229 Chinese subjects and tested for HBV and also for hepatitis C virus (HCV) infection--offering complete chronic viral hepatitis screening.

RESULTS:

HBsAg was positive in 20/229 (8.7%) participants, (10 F, 10 M). Five women and one man were aware of their condition, but only one man and none of the women were under specialist care. The average length of residence in the UK for positive patients was 15 years (range 2-40). Evidence of HBV past infection, HBcAb(+)/HBsAg(-), was seen in 28/229

participants (12.2%). HCV antibody testing produced negative results in all participants. The methodology of testing was well accepted, 139/144 (95%) responded to a feedback questionnaire declaring no discomfort and 100% finding the information session useful.

CONCLUSION:

This model of outreach testing is helpful for addressing health inequalities afflicting the UK's Chinese community.

2. Veldhuijzen IK, Wolter R, Rijckborst V, Mostert M, Voeten HA, Cheung Y, Boucher CA, Reijnders JG, de Zwart O, Janssen HL. Identification and treatment of chronic hepatitis B in Chinese migrants: results of a project offering on-site testing in Rotterdam, The Netherlands. *J Hepatol*. 2012 Dec;57(6):1171-6. doi: 10.1016/j.jhep.2012.07.036. (see later)
3. Fasano M, Saracino A, Carosi G, Mazzotta F, Marino N, Sagnelli E, Gaeta GB, Angarano G, Verucchi G, Bellissima P, Angeletti C, Santantonio T. Hepatitis B and immigrants: a SIMIT multicenter cross-sectional study. *Infection*. 2013 Feb;41(1):53-9. doi: 10.1007/s15010-012-0384-9.

Abstract

BACKGROUND:

The continuing migration of individuals from geographic areas with high/medium endemicity has determined the arrival of new chronic hepatitis B virus (HBV) carriers in Italy. The magnitude of this phenomenon and clinical/virological features of HBsAg-positive migrants remain not very well defined.

AIMS:

To evaluate the proportion of HBsAg-positive immigrants enrolled in this multicenter Società Italiana di Malattie Infettive e Tropicali (SIMIT)cross-sectional study and to compare the characteristics of chronic hepatitis B infection in migrants to those of Italian carriers.

METHODS:

From February 1 to July 31 2008, anonymous data were obtained from all HBsAg-positive patients aged ≥ 18 years observed at 74 Italian centers of infectious diseases.

RESULTS:

Of the 3,760 HBsAg-positive subjects enrolled, 932 (24.8 %) were immigrants, with a prevalent distribution in central to northern Italy. The areas of origin were: Far East (37.1 %), Eastern Europe (35.4 %), Sub-Saharan Africa (17.5 %), North Africa (5.5 %), and 4.5 % from various other sites. Compared to Italian carriers, migrants were significantly younger (median age 34 vs. 52 years), predominantly female (57.5 vs. 31 %), and most often at first observation (incident

cases 34.2 vs. 13.3 %). HBeAg-positives were more frequent among migrants (27.5 vs. 14 %). Genotype D, found in 87.8 % of Italian carriers, was present in only 40 % of migrants, who were more frequently inactive HBV carriers, with a lower prevalence of chronic hepatitis, cirrhosis, and hepatocellular carcinoma (HCC). Only 27.1 % of migrants received antiviral treatment compared to 50.3 % of Italians.

CONCLUSIONS:

Twenty-five percent of all HBV carriers examined at Italian centers was composed of immigrants with demographic, serological, and virological characteristics that differed from those of natives and appeared to have an inferior access to treatment

4. Veldhuijzen IK, Toy M, Hahné SJ, De Wit GA, Schalm SW, de Man RA, Richardus JH. Screening and early treatment of migrants for chronic hepatitis B virus infection is cost-effective. *Gastroenterology*. 2010 Feb;138(2):522-30.

BACKGROUND & AIMS: Persons with chronic hepatitis B virus (HBV) infection are at risk of developing cirrhosis and hepatocellular carcinoma. Early detection of chronic HBV infection through screening and treatment of eligible patients has the potential to prevent these sequelae. We assessed the cost-effectiveness in The Netherlands of systematically screening migrants from countries that have high and intermediate HBV infection levels.

METHODS: Epidemiologic data of the expected numbers of patients with active chronic HBV infection in the target population and information about the costs of a screening program were used in a Markov model and used to determine costs and quality-adjusted life years (QALY) for patients who were and were not treated. RESULTS: Compared with the status quo, a 1-time screen for HBV infection can reduce mortality of liver-related diseases by 10%. Using base case estimates, the incremental cost-effectiveness ratio (ICER) of screening, compared with not screening, is euros (euro) 8966 per QALY gained. The ICER ranged from euro7936 to euro11,705 based on univariate sensitivity analysis, varying parameter values of HBV prevalence, participation rate, success in referral, and treatment compliance. Using multivariate sensitivity analysis for treatment effectiveness, the ICER ranged from euro7222 to euro15,694; for disease progression, it ranged from euro5568 to euro60,418. CONCLUSIONS: Early detection and treatment of people with HBV infection can have a large impact on liver-related health outcomes. Systematic screening for chronic HBV infection among migrants is likely to be cost-effective, even using low estimates for HBV prevalence, participation, referral, and treatment compliance.
5. Hepatitis Outreach Network: A practical strategy for hepatitis screening with linkage to care in foreign-born communities. *Journal of Hepatology* 2013 vol. 58; 890–897

Abstract

BACKGROUND & AIMS:

Many foreign-born persons in the US are at high risk of chronic hepatitis B (HBV) and C (HCV) infections, yet are not aware of their infection, and lack healthcare coverage or linkage to care.

METHODS:

A unique partnership, the Hepatitis Outreach Network, combines the expertise and resources of the Mount Sinai School of Medicine, the NYC Department of Health and Mental Hygiene, and community-based organizations, to provide education, screening and link to care incommunities with high prevalence of chronic viral hepatitis. Comprehensive HBV and HCV screening identifies infected patients, who then receive further evaluation from either local or Mount Sinai physicians, combined with patient-navigators who organize follow-up visits.

RESULTS:

Of 1603 persons screened, 76 had HBV and 75 had HCV. Importantly, screening for HCV based on traditional risk factors would have missed 67% of those who tested positive. Of the 76 persons with HCV infection, 49 (64%) received a medical evaluation (26 with local providers and 23 at Mount Sinai). Of the 49 HCV-infected persons evaluated, treatment was recommended in 11 and begun in 8 (73%). Of the 76 persons with HBV infection, 43 (57%) received a medical evaluation (31 with local providers and 12 at Mount Sinai). Of the 43 HBV-infected persons evaluated, treatment was recommended and begun in 5 (100%).

CONCLUSIONS:

Hepatitis Outreach Network has successfully established novel proof of concept for identifying HBV and HCV infections in foreign-born persons through use of several unique elements that effectively link them to care

14:50-15:10 HepatitisB/C screening, retrieval of patients and organization of hepatitis care in Arnhem region, The Netherlands- Clemens Richter

- Richter, C., G. T. Beest, I. Sancak, R. Aydinly, K. Bulbul, F. Laetemaa-Tomata, M. De Leeuw, T. Waegemaekers, C. Swanink and E. Roovers (2012). "**Hepatitis B prevalence in the Turkish population of Arnhem: implications for national screening policy?**" *Epidemiol Infect* **140**(4): 724-730.

Despite the increased prevalence of hepatitis B and C in most migrant groups in The Netherlands, a national screening policy for these infections is not available. In order to estimate the prevalence of hepatitis B and C in the largest group of first-generation migrants (FGM) in The Netherlands, we conducted a screening project in the Turkish community of Arnhem. In a separate project we identified patients from the target population with chronic hepatitis B and C from hospital records (1990-2008). Educational meetings concerning hepatitis were organized, with all participants being

offered a blood screening test. Participants were tested for hepatitis B surface antigen (HBsAg), antibodies to hepatitis B core antigen (anti-HBc) and antibodies to hepatitis C virus (anti-HCV). In total 709 persons were tested, a complete dataset was available for 647 patients. We found that 3.0% and 0.4% of Turkish FGM aged >24 years in Arnhem had active hepatitis B, defined as HBsAg positive, and tested positive for anti-HCV, respectively. The hospital records revealed another 32 patients, 28 with hepatitis B and four with hepatitis C representing 0.7% for hepatitis B and 0.1% for hepatitis C in relation to the total number of Turkish FGM in Arnhem. We believe that active hepatitis screening of FGM from Turkey should be part of the national health policy as it will benefit the individual and public health.

- Richter, C., Ter Beest, G., Gisolf, E. H., P. V. A. N. B., Waegemaekers, C., Swanink, C. and Roovers, E. **"Screening for chronic hepatitis B and C in migrants from Afghanistan, Iran, Iraq, the former Soviet Republics, and Vietnam in the Arnhem region, The Netherlands."** *Epidemiol Infect* 2014 142(10): 2140-2146.

Migrants born in hepatitis B virus (HBV) and hepatitis C virus (HCV) endemic countries are at increased risk of being infected with these viruses. The first symptoms may arise when liver damage has already occurred. The challenge is to identify these infections early, since effective treatment has become available. In 2011 we conducted a screening project in first-generation migrants (FGMs) born in Afghanistan, Iran, Iraq, the former Soviet Republics, and Vietnam and living in Arnhem and Rheden. All participants were offered free blood screening for HBV and HCV. In total 959 participants were tested, with the country of origin known for 927, equating to 28.7% of all registered FGMs from the chosen countries. Nineteen percent (n = 176) had serological signs of past or chronic HBV infection and 2.2% (n = 21) had chronic HBV infection. The highest prevalence of chronic HBV infection was found in the Vietnamese population (9.5%, n = 12). Chronic HCV was found in two persons from the former Soviet Republics and one from Vietnam. Twenty-four percent (n = 5) of the newly identified patients with chronic HBV and one of the three patients with chronic HCV received treatment. Three of the patients, two with HCV and one with HBV, already had liver cirrhosis. The highest (9.5%) HBV prevalence was found in FGMs from Vietnam, indicating a high need for focusing on that particular immigrant population in order to identify more people with silent HBV infection. The fact that three patients already had liver cirrhosis underlines the necessity of early identification of HBV and HCV infection in risk groups.

- Veldhuijzen, I. K., Wolter, R., Rijckborst, V., Mostert, M., Voeten, H. A., Cheung, Y., Boucher, C. A., Reijnders, J. G., de Zwart, O. and Janssen, H. L. **"Identification and treatment of chronic hepatitis B in Chinese migrants: results of a project offering on-site testing in Rotterdam, The Netherlands."** *J Hepatol* 2012 57(6): 1171-1176.
 - BACKGROUND & AIMS: Migrants born in countries where hepatitis B is endemic are a risk group for chronic hepatitis B virus (HBV) infection. Treatment options have improved, but due to the asymptomatic nature of chronic HBV infection, the majority of patients remain unidentified.
 - METHODS: In 2009, a campaign targeting the Chinese community was held in

the city of Rotterdam, The Netherlands. The campaign combined disease awareness activities with free HBV testing at outreach locations. Chronically HBV infected patients were referred to specialist care based on a referral guideline. Before and after the campaign, knowledge of chronic hepatitis B was measured through questionnaires in a convenience sample of the target population (n=285 and n=277). RESULTS: In a period of 3 months, 13 outreach activities took place and 1090 Chinese migrants were tested for HBV. Forty-nine percent had serological signs of a past or recent HBV infection and 8.5% (n=92) were chronically infected. Thirty-eight percent (n=35) of chronically infected patients were referred for evaluation by a specialist and of these, 15 started antiviral treatment within 1 year of follow-up. Before the campaign, 55% answered correctly to 6 or more out of 10 knowledge items. Knowledge was positively associated with educational level. After the campaign, an increase in knowledge was observed in participants with low levels of education. CONCLUSIONS: Chinese migrants could be reached with an outreach campaign, and on-site testing was well accepted. A high prevalence of chronic HBV infection was found and referral to specialist care and initiation of treatment was successful.

- Hahne SJ, Veldhuijzen IK, Wiessing L et al. Infection with hepatitis B and C virus in Europe: a systematic review of prevalence and cost-effectiveness of screening. *BMC Infect Dis* 2013;13: 181
 - BACKGROUND: Treatment for chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) infection is improving but not benefiting individuals unaware to be infected. To inform screening policies we assessed (1) the hepatitis B surface antigen (HBsAg) and anti-hepatitis C virus antibody (anti-HCV-Ab) prevalence for 34 European countries; and (2) the cost-effectiveness of screening for chronic HBV and HCV infection.
 - METHODS: We searched peer-reviewed literature for data on HBsAg and anti-HCV-Ab prevalence and cost-effectiveness of screening of the general population and five subgroups, and used data for people who inject drugs (PWID) and blood donors from two European organizations. Of 1759 and 468 papers found in the prevalence and cost-effectiveness searches respectively, we included 124 and 29 papers after assessing their quality. We used decision rules to calculate weighted prevalence estimates by country.
 - RESULTS: The HBsAg and anti-HCV-Ab prevalence in the general population ranged from 0.1%-5.6% and 0.4%-5.2% respectively, by country. For PWID, men who have sex with men and migrants, the prevalence of HBsAg and anti-HCV-Ab was higher than the prevalence in the general population in all but 3 countries. There is evidence that HCV screening of PWID and HBsAg screening of pregnant women and migrants is cost-effective.
 - CONCLUSION: The prevalence of chronic HBV and HCV infection varies widely between European countries. Anti-HCV-Ab screening of PWID and HBsAg screening of pregnant women and migrants have European public health priority. Cost-effectiveness analyses may need to take effect of antiviral treatment on preventing HBV and HCV transmission into account.

- Richter C, Waegemaekers C, Polling I, et al. Retrieval of patients with chronic hepatitis B and C by optimization of regional collaboration, Arnhem region, the Netherlands. E-poster at EASL 2015, Vienna
 -

15:10-15:30 Hprolipsis: HBV & HCV infections among Roma and migrants in Greece.

Vana Sypsa
<http://hprolipsis.gr/>

THE RESEARCH THE PROCEDURE BODIES OUR NEWS COMMUNICATION EQUIPMENT [f](#) [t](#)



Hprolipsis

Πρόγραμμα Ελέγχου

Ιονενών Ηπατιτίδων και HIV

Welcome to
Hprolipsis

The Hprolipsis is the first National Epidemiological Study of infectious diseases hepatitis B (HBV), hepatitis C (HCV) and HIV. It aims to collect accurate data on the incidence, risk factors and attitudes and knowledge about hepatitis B and C and HIV in the general adult population and vulnerable populations (Gypsies / Roma and immigrants).

ΕΛΛΑΣ ΔΙΑΓΝΩΣΗ
30% ΜΕ ΚΑΘΥΣΤΕΡΗΜΕΝΗ

- 15:30-15:50 Migrant screening for viral hepatitis: two feasible strategies in universities and workplaces in Grampain, Scotland. Maria Rossi**
http://hiveurope.eu/Portals/0/Conference%202014/Poster%20presentations/PO3_02.pdf

HEPscreen
SCREENING FOR HEPATITIS B AND C
AMONG MIGRANTS IN THE EUROPEAN UNION

MIGRANT SCREENING FOR VIRAL HEPATITIS B and C: TWO FEASIBLE STRATEGIES IN UNIVERSITIES AND WORKPLACES IN GRAMPIAN, SCOTLAND

Maria K Rossi¹, Rachel Thomson², Laura Kluzniak³, Irene K Veldhuijzen³

¹NHS Grampian, Public Health Directorate, Aberdeen, Scotland; ²NHS Grampian, Department of Gastroenterology and Hepatology, Aberdeen, Scotland; ³Division of Infectious Disease Control, Municipal Public Health Service Rotterdam-Rijnmond, Rotterdam, The Netherlands.

Introduction

Key causes of liver cancer and cirrhosis worldwide are chronic viral hepatitis B and C infections. Early case-finding is challenging for these conditions which are usually asymptomatic.

The EU-funded HEPSCREEN Project explores community outreach models for viral hepatitis screening among migrant populations through university and workplace settings. No publications had been identified of viral hepatitis screening models in such settings prior to this.

The Grampian area in North East Scotland

- population of 570,000 residents
- area of relative affluence
- semi-rural geography supports a vibrant agricultural industry alongside tourism and food processing
- oil capital of Europe with a strong University tradition of excellent standing.

Over past decades educational and employment opportunities have led to waves of migration

- from the Indian Sub-continent and China
- more recently from Africa and Eastern Europe
- the length of sojourn is variable.

Viral hepatitis B and C infections are more prevalent in most countries compared to Scotland. Diagnosis in migrants can be challenging due to:

- lack of perception of being at risk
- time pressures
- language barriers
- fear of the diagnosis itself
- stigma
- lack of understanding of the local healthcare system

The main modes of transmission are

- vertical in endemic countries
- through inadequate infection control
- through illicit injecting drug use (in Scotland)

Early diagnosis is important from a preventative population perspective and for the individual, since effective treatments are now available.

Settings & Participants

outreach into migrants' communities

- on-site convenience
- consideration of time pressures
- with agreement of premises management.

Universities:

- 156 foreign-born legal new entrant students
- undertaking tuberculosis screening at the University of Aberdeen & Robert Gordon University
- 65% male, mean age 28 years, 76% Sub-Saharan African; 81% from Nigeria, 8% from Ghana and 5% from Ghana
- all English-speaking
- 97% arrived in UK within past 2 years
- 74% not tested for hepatitis B/C previously.

Workplaces:

- 305 foreign-born legal migrant workers
- at 6 food processing businesses
- 36% male, mean age 37 years, 97% Eastern European; 50% Poland, 27% Lithuania, 17% Latvia
- minority English-speaking
- 29% arrived in UK within past 2 years
- 93% not tested for hepatitis B/C previously.

Co-funded by the Health Programmes of the European Union

Erasmus MC **GGD** **NHS**
Rotterdam-Rijnmond Grampian

Responsibility for the information and views set out in this poster lies entirely with the authors. The European Commission is not responsible for any use that may be made of the information contained herein.

Methods – screening in universities and workplaces

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graph TD
    A["contact and agreement with university (2) and business (6) management teams"] --> B["planning for on-site screening sessions: rooms, timing, staffing, training, consumables, laboratory tests, mail-merging of results"]
    B --> C["awareness-raising for target population of voluntary, free and confidential screening (university/workplace not informed of results)"]
    C --> D["University phase  
- screening information at student induction presentation or by generic email  
- 18 screening attendance for Mantoux skin test reading (2nd), when BBV screening offered"]
    C --> E["Workplace phase  
- screening information at workplace with posters, briefing sessions or both  
- attendance during work-time or at breaks  
- one attendance only"]
    D --> F["brief questionnaire, discussion, consent for BBV screen"]
    E --> F
    F --> G["serology sample taken (518)  
(HBV, HCV and/or HIV)  
taken to laboratory"]
    G --> H["positive result  
- communicate to patient  
- communicate to GP  
- generate specialist referral  
- implement contact tracing"]
    G --> I["negative result  
- communicate to patient  
- communicate to GP  
- consider window period  
- advise repeat screen, if/when indicated"]
    I --> J["clinical assessment at Liver Service  
(8 HBV, 5 HCV patients with active infection)  
- fibroscan  
- ultrasound  
- viral load, genotype  
- liver enzymes"]
  
```

Discussion

- This two-site pilot demonstrated that screening migrants for viral hepatitis at university and workplace settings is feasible, whether as an extension of an established TB screening programme or de novo.
- 538 individuals were screened (441 migrants, 57 UK-born); majority migrant groups were Sub-Saharan African or Eastern European; 8 HBV and 5 HCV cases were identified, all but 2 of which were new diagnoses.
- uptake rates among migrants offered screening varied from 33% to 47%. Variables included time given for staff briefings by project team, appointment system or drop-in, screening during work or break time.
- clear, well-informed and brief pre-test discussion led to very high rates of consent for screening (HBV 100%, HCV 100%, HIV 97%). The addition of HIV to hepatitis screening was well-accepted; no HIV cases were diagnosed.
- each of the 3 options for interpreter translation (live, telephone or informal (co-worker, relative)) were used at workplace; not needed for screening at university sessions.
- due to space and time limitations it was not possible to provide HBV vaccination.
- communication of positive (by telephone) and negative (by post) results to screeners/GPs worked well; email and re-posting to changed addresses served as back-up.
- all positive individuals were seen at the specialist liver service within 2 months of screening, most (59%) within 6 weeks.
- no stigma issues apparent or reported.

Conclusions

Screening on-site at university or in the workplace is a feasible model for case-finding viral hepatitis infection among migrants.

Key points for success include:

- understanding the international mix of the target population in community settings ;
- facilitatory relationship with management;
- logistical preparedness for on-site screening, including staffing flexibility;
- clear consent procedures in multiple languages;
- quick turn around of screening results;
- effective referral pathway for positive cases ;
- general flexibility in approach when working with non-health partners.

Further investigation is required regarding variation in screening uptake amongst migrant students and workers across different sites.

Acknowledgements

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- NHS Grampian

Collaborators:

- University of Aberdeen
- Robert Gordon University
- Helen Corrigan, HP Nurse Specialist
- NHS Grampian admin team and Laboratory
- local businesses

For more information visit www.hepscreen.eu or contact Irene Veldhuijzen (ik.veldhuijzen@Rotterdam.nl) or maria.rossi@nhs.net

Introduction :

Key causes of liver cancer and cirrhosis worldwide are chronic viral hepatitis B and C infections. Early case-finding is challenging for these conditions which are usually asymptomatic.

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The Grampian area in North East Scotland

- population of 570,000 residents
- area of relative affluence
- semi-rural geography supports a vibrant agricultural industry, alongside tourism and food processing
- oil capital of Europe with a strong University tradition of excellent standing.

Over past decades educational and employment opportunities have led to waves of migration

- from the Indian Sub-continent and China
- more recently from Africa and Eastern Europe
- the length of sojourn is variable.

Viral hepatitis B and C infections are more prevalent in most countries compared to Scotland. Diagnosis in migrants can be challenging due to:

- lack of perception of being at risk
- time pressures
- language barriers
- fear of the diagnosis itself
- stigma
- lack of understanding of the local healthcare system

The main modes of transmission are • vertical in endemic countries • through inadequate infection control • through illicit injecting drug use (in Scotland) Early diagnosis is important from a preventative population perspective and for the individual, since effective treatments are now available

SESSION 4 TREATMENT

part 4.1 Treatment projects and initiatives taken in different underserved groups

16:25-16:45 Are there national strategies, plans and guidelines for the treatment of hepatitis C in people who inject drugs? A survey of 33 European countries - Moja Maticic

Maticic, M., Zorman, J. V., Gregorcic, S., Schatz, E. and Lazarus, J. V. "Are there national strategies, plans and guidelines for the treatment of hepatitis C in people who inject drugs? A survey of 33 European countries." Bmc Infectious Diseases 2014 14.

Background: Hepatitis C virus (HCV) infection represents a major global health problem, which in high-income countries now mostly affects people who inject drugs (PWID). Many studies show that the treatment of HCV infection is as successful among PWID as among other populations and recently PWID have been included in the international guidelines for the treatment of HCV infection. The aim of this survey was to collect data from European countries on the existence of national strategies, action plans and clinical guidelines for HCV treatment in the general population and PWID in particular.

Methods: Thirty-three European countries were invited to participate. Data on available national strategies, action plans and guidelines for HCV treatment in the general population and in PWID specifically were collected prospectively by means of a structured electronic questionnaire and analyzed accordingly.

Results: All of the 33 invited European countries participated in the survey. Twenty-two responses came from non-governmental organizations, six from public health institutions, four from university institutions and one was an independent consultant. Fourteen (42.4%) of the countries reported having a national strategy and/or national action plan for HCV treatment, from which ten of them also reported having a national strategy and/or national action plan for treatment of HCV infection in PWID. Nearly three-quarters reported having national HCV treatment guidelines. PWID were included in the majority (66.7%) of the guidelines. Fourteen (42.4%) countries reported having separate guidelines for the treatment of HCV infection in PWID.

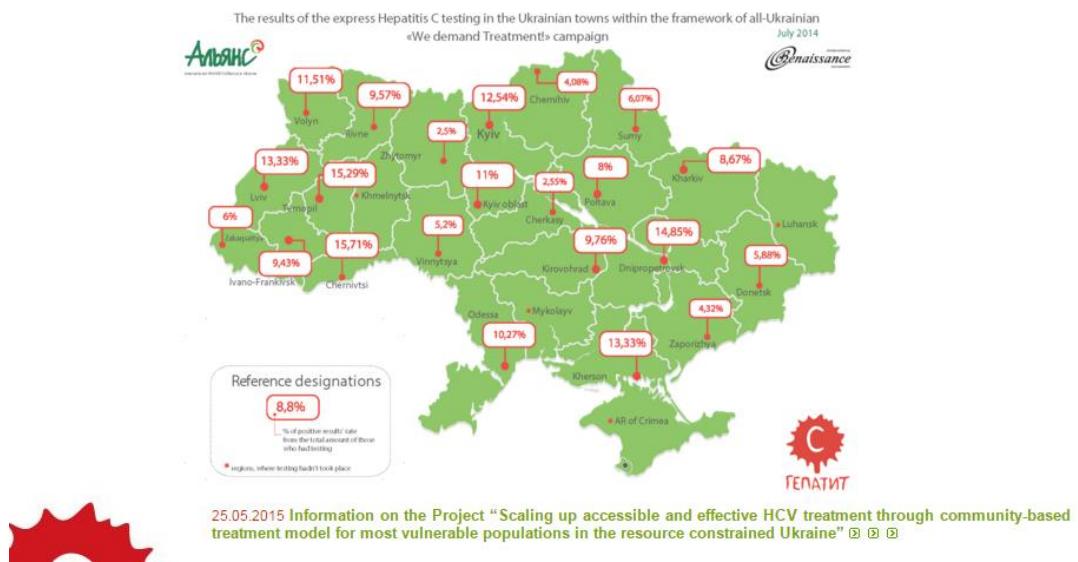
Conclusions: Given the high burden of HCV-related morbidity and mortality in PWID in Europe, the management of HCV infection should become a healthcare priority in all European countries, starting with developing or using already-existing national strategies, action plans and guidelines for this population.

16:45-17:05 Alliance HCV programs hepatitis treatment PWID in Ukraine - Ludmila Maistat

Alliance HCV programs in Ukraine In 2009, International HIV/AIDS Alliance in Ukraine (now Alliance for Public Health) which is a leading NGO in Ukraine and EECA region implementing Harm Reduction programs for 250 000 clients, started to integrate hepC component in Harm Reduction/prevention programs. In 2012, the all-Ukrainian "Demand Treatment!" advocacy campaign aimed at awareness raising, community mobilization and scaling up access to diagnostics and treatment was launched. Within the framework of the campaign, regular testing programs among key populations and general population are held. Simultaneously, regular public action and other activities targeted at government and local authorities with the aim to develop and approve national and local hepatitis programs are implemented, work with diagnostic and pharmaceutical companies on reducing prices is being done. Due to all the advocacy, it became possible for the Alliance to launch the first treatment program (peg-ifn-riba) for 150 OST patients in 2012. In 2015, the first program with DAA (Sof) for 1500 patients, including PWIDs, was launched by the Alliance. Currently, around 500 PWIDs are enrolled in the Alliance treatment program in 15 Ukrainian regions.

<http://www.aidsalliance.org.ua/cgi-bin/index.cgi?url=/en/coop/hepc/index.htm>

Outcomes of express-tests on Hepatitis C in the cities of Ukraine under the "Demanding treatment!" campaign



17:05-17:25 A national multidisciplinary healthcare network for treatment of hepatitis C in people who inject drugs in Slovenia - Mojca Maticic

Maticic, M. "A national multidisciplinary healthcare network for treatment of hepatitis C in people who inject drugs in Slovenia." *Bmc Infectious Diseases* 2014 14.

Presentation related references

- Brinovec V et al. Hepatogastroenterology 2002; 49: 1320-25.

BACKGROUND/AIMS:

Eighty Slovene patients with chronic hepatitis C were included in a prospective study conducted in the period 1997-1998 with the purpose to establish the efficacy of interferon alpha therapy. The average age of the patients was 39 years. In more than half of the patients (52%) the mode and time of onset of the infection were unknown. Two thirds of the patients were males. The plasma viral load exceeded 2×10^6 copies/mL in only three patients and in more than half of the cases (54%) HCV genotype 1b was present.

METHODOLOGY:

The 18-month treatment with 3 MU interferon alpha three times a week was concluded in 53 patients and, after doubling the initial dose of interferon alpha from 3 MU to 6 MU, in 5 patients. In 11 patients, the treatment was discontinued prematurely, after six months, due to therapeutic failure (despite doubling the initial dose of interferon alpha). Eleven patients withdrew from the treatment: six of them due to side effects and five due to personal reasons.

RESULTS:

Complete response to therapy with disappearance of HCV from the blood was observed in 34 patients (49%), while in 24 the response to therapy was partial, i.e., the biochemical tests showed normalization of values but viremia persisted. There was a significant relation between the therapeutic response and those patients with the genotype 3 ($p = 0.01$). After three months of follow-up, complete therapeutic response was still observed in 19 patients (28%), most of them with genotype 3. Despite persistent viremia there was no progression of liver inflammation in eight partial responders, as evidenced by liver rebiopsy. Thus, it was confirmed that treatment is justified in these patients.

CONCLUSIONS:

During the continuation of the follow-up period we shall record further course of the disease and make an attempt in a subsequent study to improve the efficacy of the treatment by introducing a combination of interferon alpha and ribavirin into therapy.

2. Brinovec V et al. Hepatogastroenterology 2004; 51: 506-11.

BACKGROUND/AIMS:

While an optimal treatment of chronic hepatitis C has not yet been established, it has been demonstrated that the interferon alpha/ribavirin combination is more effective than interferon alpha monotherapy.

METHODOLOGY:

One hundred and forty-three patients with chronic hepatitis C received the following treatment: eighty patients an 18-month monotherapy (3-month follow-up) and sixty-three patients a 12-month combined therapy (6-month follow-up). Therapeutic efficacy and adverse effects were compared.

RESULTS:

In 80 patients in the monotherapy group, complete response was achieved in 49.2%. This was reduced to 27.5% three months after therapy. Significant differences were observed in HCV 3 genotype where complete response was achieved in 12 out of 14 patients ($p=0.01$). With the combined therapy administered to 63 patients, complete response was achieved in 54.5%. This was reduced to 43.2% after 6 months of follow-up. Among the responders or partial responders, significant differences were observed with regard to age ($p=0.0047$) and subtype 1b ($p=0.012$). Comparing the groups of naive patients and relapsers, a statistically significant difference ($p=0.027$) was found in therapeutic efficacy.

CONCLUSIONS:

In the treatment of chronic hepatitis C, combined therapy proved more effective than monotherapy. This is, however, not yet a satisfactory solution.

3. Selic Kurincic T, Lesnicar G, Poljak M, Meglic Volkar J, Rajter M, Prah J, Baklan Z, Kotar T, Maticic M. Intervirology. 2014;57(1):23-30.
4. Maticic, M., Kastelic, T., Kordis, P., Oblak, T., Kastelic, A., Meglic-Volkar, J., Rajter, M., Prah, J., Kotar, T., Cuk, J., et al. "A Change in Life-Style after Successful Treatment of Chronic Hepatitis C in People Who Inject Drugs." Journal of Hepatology 2014 60(1): S482-S482.

17:25-17:45 Shared Addiction Care Copenhagen (SACC)-project. better practices at the micro level across the whole HCV pathway from diagnosing, further evaluation when infected to HCV-treatment and follow up - Marianne Linnet

<http://www.chip.dk/Collaborations/SACC>

SACC Project (Shared Addiction Care Copenhagen) will develop and implement a decentralised hepatitis C shared care model in Copenhagen with the aim of decreasing hepatitis C (HCV) related transmission, morbidity and mortality among injection drug users (IDUs).

The 3 year project is funded by the Capital Region of Denmark and the City of Copenhagen. The project involves an expanded collaboration between 12 counselling centres offering drug treatment in Copenhagen, City of Copenhagen and the Department of Infectious Diseases and Rheumatology, Rigshospitalet.

SACC – Shared Addiction Care Copenhagen

The SACC Project (Shared Addiction Care Copenhagen) will develop and implement a decentralised hepatitis C shared care model in Copenhagen with the aim of decreasing hepatitis C (HCV) related transmission, morbidity and mortality among injection drug users (IDUs).

The 3 year project is funded by the Capital Region of Denmark and the City of Copenhagen. The project involves an expanded collaboration between 12 counselling centres offering drug treatment in Copenhagen, City of Copenhagen and the Department of Infectious Diseases and Rheumatology, Rigshospitalet.

Most IDUs in Denmark have never been tested for HCV infection. Among those with chronic HCV infection, only a third is being followed at a hospital clinic and few of these have received HCV treatment. The physical and organisational divide between counselling centres and the hospital have instigated low retention rates in HCV treatment and care of IDUs. Often, clients referred to treatment at the hospital never turn up or have a sporadic contact with the hospital clinic.

In recent years, substantial innovation has taken place within HCV diagnosis, evaluation of the severity of liver disease, and treatment of HCV. This strengthens the opportunity to break down barriers and facilitate integration of diagnosis and treatment of HCV locally at counselling centres.

The SACC project will entail:

- *Development of a shared database (Hospital and counselling centres offering drug treatment)*: A "real time" database will be developed where data from relevant existing databases are gathered in a common patient chart. The health professionals at counselling centres and the Department of Infectious Diseases and Rheumatology will have access to the data. This development will bank on CHIP's experience with database-development and implementation from previous research projects.
- *HCV screening and clinical evaluation*: HCV testing, non-invasive evaluation of liver fibrosis (fibroscanning) and further clinical evaluation of clients in order to identify persons eligible for HCV treatment, will take place locally at the counselling centres. Prior to this phase, a strengthening of teaching and information about hepatitis C, aimed at both clients and staff, will take place.
- *Implementation of a shared care treatment model*: The shared care model will first be implemented in three pilot counselling centres. Prescription of medicine and monitoring of treatment outcome is the responsibility of the Department of Infectious Diseases, while it is responsibility of the counselling centres to ensure compliance and that different tests are carried out as prescribed. The database will be programmed to generate alarms if tests are not performed, or if the results require an intervention. The shared care model will thereafter be validated in the nine remaining counselling centres.
- *Research*: Collection of data on HCV infection, treatment and outcome from a large population of IDUs will enable the production of scientific publications and presentations on the health status of IDUs in general and HCV-related disease and integrated hepatitis C treatment and care in particular. This is done as means to strengthen research in health interventions aiming to secure inclusion of vulnerable and marginalized groups - and reduce inequality in access to health.

The project will run from June 2014 to May 2017. A Project Advisory Board is established with representatives from: Social Services Administration, City of Copenhagen; counselling centres; CHIP and; Department of Infectious Diseases and Rheumatology, Rigshospitalet.

For further information please contact Senior Researcher Lars Peters at Lars.Peters@regionh.dk or Staff Specialist Marianne Linnet at TY35@sof.kk.dk

Presentation related references

1. Christensen PB, Hay G, Jepsen P, Omland LH, Just SA, Krarup HB, Weis N, Obel N, Cowan S. Hepatitis C prevalence in Denmark – an estimate based on multiple national registers. *BMC Infectious Diseases* 2012;12:178 A national survey for chronic hepatitis C has not been performed in Denmark and the prevalence is unknown. Our aim was to estimate the prevalence of chronic hepatitis C from public registers and the proportion of these patients who received specialized healthcare.

METHODS:

Patients with a diagnosis of chronic hepatitis C were identified from four national registers: a laboratory register, the Hospital Discharge Register, a clinical database of chronic viral hepatitis and the Register of Communicable Diseases. The total population diagnosed with hepatitis C was estimated by capture-recapture analysis. The population with undiagnosed hepatitis C was derived from the national register of drug users by comparing diagnosed and tested persons.

RESULTS: A total of 6,935 patients diagnosed with chronic hepatitis C were identified in the four registers and the estimated

population diagnosed with the disease was 9,166 persons (95% C.I. interval 8,973 - 9,877), corresponding to 0.21% (95% CI 0.21%-0.23%) of the Danish population over 15 years of age. The prevalence was highest among persons 40-49 years old (0.39%) and males (0.28%). It was estimated that 40% of the diagnosed patients lived in the capital region, and 33.5% had attended specialised healthcare. It was estimated that 46% of hepatitis C patients had not been diagnosed and the total population with chronic hepatitis C in Denmark was 16,888 (95% C.I. 16,474-18,287), corresponding to 0.38% (95% CI 0.37-0.42) of the population over 15 years of age

CONCLUSIONS:The estimated prevalence of chronic hepatitis C in Denmark was 0.38%. Less than half of the patients with chronic hepatitis C in Denmark have been identified and among these patients, one in three has attended specialised care.

2. Vejledning om HIV (human immundefekt virus), hepatitis B og C virus, Sundhedsstyrelsen 2013, Accessed on 3.3.2015[In danish only]
3. Fuglsang T, Fouchard JR, Ege PP. Prevalence of HIV and hepatitis B and C among drug addicts in the city of Copenhagen. Ugeskr Laeger 2000;162:3860-3864 Blood samples were drawn from 291 drug users attending methadone clinics throughout 1997 and interviews performed about associated risk factors for seroconversion. The overall prevalence of HIV was 3.4%. Sixty-four percent tested positive for HBV and 75% for HCV. Almost all with a ten year history of drug use acquired one or more of the infections, including those who reported not to have injected. Among the sexually active 54% never used a condom and 14% of the injectors had shared needles within the last six months. Prevention measures contributing to the low prevalence of HIV had apparently no effect on transmission of hepatitis B and C. The findings call for more focus on hepatitis prevention including information, counselling, testing and vaccination.
4. Moessner BK, Skamling M, Jorgensen TR, Georgsen J, Pedersen C, Christensen PB. Decline in hepatitis B infection observed after 11 years of regional vaccination among Danish drug users. J Med Virol 2010;82:1635-1639. The aims of this study were to determine the current prevalence of viral hepatitis and HIV among drug users, and to compare this prevalence with previous findings in the same geographical region. Cross-sectional surveys of drug users attending treatment centers on the island of Funen with approximately 500,000 inhabitants were administered in 1996 and 2007. The 2007 prevalence estimates were: anti-HBc 50.2%, HBsAg 0.9%, anti-HCV 66.8%, HCV-RNA 40%, and anti-HIV 1.1%. The corresponding 1996 prevalence values were: anti-HBc 70% ($P < 0.0001$), HBsAg 9.8% ($P < 0.0001$), anti-HCV 82.8% ($P < 0.0001$), HCV-RNA 56.3% ($P = 0.002$), and anti-HIV 1% ($P = 1$). The 2007 prevalence of viral hepatitis decreased due

to the increasing proportion of non-injectors. Among injectors, the prevalence remained unchanged except for a significant decrease in HBsAg. The 2007 prevalence of ongoing HBV infection among infected (HBsAg/anti-HBc proportion) was the lowest that to our knowledge has been reported among drug-users. Vaccination coverage among susceptible persons tested in 2007 was 24%, compared to 0.7% in 1996. Therefore, despite an unchanged prevalence of anti-HBc among injecting drug users, a highly significant drop in HBsAg prevalence was seen during the last decade. This observation may be linked causally to an increase in hepatitis B vaccination of the susceptible population. Our findings suggest that even incomplete vaccination, without persistent protective anti-HBs levels, may induce an immune memory sufficient to prevent chronic infection upon transmission.

17:45-18:05 Cost effectiveness of treating active PWID and the challenges of treating the underserved of the underserved — David Goldberg

Martin, N. K., Vickerman, P., Miners, A., Foster, G. R., Hutchinson, S. J., Goldberg, D. J. and Hickman, M. "Cost-effectiveness of hepatitis C virus antiviral treatment for injection drug user populations." *Hepatology* 2012 55(1): 49-57.

Injecting drug use is the main risk of hepatitis C virus (HCV) transmission in most developed countries. HCV antiviral treatment (peginterferon-alpha + ribavirin) has been shown to be cost-effective for patients with no reinfection risk. We examined the cost-effectiveness of providing antiviral treatment for injecting drug users (IDUs) as compared with treating ex/non-IDUs or no treatment. A dynamic model of HCV transmission and disease progression was developed, incorporating: a fixed number of antiviral treatments allocated at the mild HCV stage over 10 years, no retreatment after treatment failure, potential reinfection, and three baseline IDU HCV chronic prevalence scenarios (20%, 40%, and 60%). We performed a probabilistic cost-utility analysis estimating long-term costs and outcomes measured in quality adjusted life years (QALYs) and calculating the incremental cost-effectiveness ratio (ICER) comparing treating IDUs, ex/non-IDUs, or no treatment. Antiviral treatment for IDUs is the most cost-effective option in the 20% and 40% baseline chronic prevalence settings, with ICERs compared with no treatment of £521 and £2,539 per QALY saved, respectively. Treatment of ex/non-IDUs is dominated in these scenarios. At 60% baseline prevalence, treating ex/non-IDUs is slightly more likely to be the more cost-effective option (with an ICER compared with no treatment of £6,803), and treating IDUs dominated due to high reinfection. A sensitivity analysis indicates these rankings hold even when IDU sustained viral response rates as compared with ex/non-IDUs are halved. CONCLUSION: Despite the possibility of reinfection, the model suggests providing antiviral treatment to IDUs is the most cost-effective policy option in chronic prevalence scenarios less than

60%. Further research on how HCV treatment for injectors can be scaled up and its impact on prevalence is warranted.

Palmateer, N. E., Hutchinson, S. J., Innes, H., Schnier, C., Wu, O., Goldberg, D. J. and Hickman, M. "Review and meta-analysis of the association between self-reported sharing of needles/syringes and hepatitis C virus prevalence and incidence among people who inject drugs in Europe." *Int J Drug Policy* 2013 24(2): 85-100.

BACKGROUND: Although sharing needles/syringes (N/S) is a recognised risk factor for the hepatitis C virus (HCV), epidemiological studies have shown inconsistent associations between self-reported N/S sharing and biological markers of HCV infection. This review aims to summarise, and explore factors that may explain the variation in, the measure of association between self-reported sharing of N/S and HCV prevalence/incidence among people who inject drugs (PWID). **METHODS:** Studies undertaken in Europe during 1990-2011 were identified through an electronic literature search. Eligible studies reported HCV prevalence (or incidence) among those who reported ever/never (or recent/non-recent) sharing of N/S. Meta-analysis was undertaken to generate a pooled estimate of the association and heterogeneity was explored using stratified analyses. **RESULTS:** Sixteen cross-sectional studies and four longitudinal studies were included. Pooled prevalence and incidence of HCV was 59% and 11% among PWID who reported never and not recently sharing N/S, respectively. Random effects meta-analysis generated a pooled odds ratio (OR) of 3.3 (95% CI 2.4-4.6), comparing HCV infection among those who ever (or recently) shared N/S relative to those who reported never (or not recently) sharing. There was substantial heterogeneity between the study effect sizes ($I^2=72.8\%$). Differences in pooled ORs were found when studies were stratified by recruitment setting (prison vs. drug treatment sites), recruitment method (outreach vs. non-outreach), sample HCV prevalence and sample mean/median time since onset of injecting. **CONCLUSION:** We found high incidence/prevalence rates among those who did not report sharing N/S during the risk period, which may be due to a combination of unmeasured risk factors and reporting bias. Study design and population are likely to be important modifiers of the size and strength of association between HCV and N/S sharing.

McDonald, S. A., Hutchinson, S. J., Schnier, C., McLeod, A. and Goldberg, D. J. "Estimating the number of injecting drug users in Scotland's HCV-diagnosed population using capture-recapture methods." *Epidemiol Infect* 2014 142(1): 200-207.

In countries maintaining national hepatitis C virus (HCV) surveillance systems, a substantial proportion of individuals report no risk factors for infection. Our goal was to estimate the proportion of diagnosed HCV antibody-positive persons in Scotland (1991-2010) who probably acquired infection through injecting drug use (IDU), by combining data on IDU risk from four linked data sources using log-linear capture-recapture methods. Of 25,521 HCV-diagnosed individuals, 14,836 (58%) reported IDU risk with their HCV diagnosis. Log-linear modelling estimated a further 2484 HCV-diagnosed individuals with IDU risk, giving an estimated prevalence of 83. Stratified analyses indicated variation across birth cohort, with estimated prevalence as low as 49% in persons born before 1960 and greater than 90% for those born since 1960.

These findings provide public-health professionals with a more complete profile of Scotland's HCV-infected population in terms of transmission route, which is essential for targeting educational, prevention and treatment interventions.

SESSION 5 PREVENTION

18:15 - 18:35 Underserved for Hepatitis B immunization: Use of Hepatitis B Vaccination for Adults with Diabetes Mellitus Recommendations of the Advisory Committee on Immunization Practices (ACIP) - Noele P. Nelson (CDC)

Use of hepatitis B vaccination for adults with diabetes mellitus: recommendations of the Advisory Committee on Immunization Practices (ACIP)." MMWR Morb Mortal Wkly Rep **2011** 60(50): 1709-1711.

Hepatitis B virus (HBV) causes acute and chronic infection of the liver leading to substantial morbidity and mortality. In the United States, since 1996, a total of 29 outbreaks of HBV infection in one or multiple long-term-care (LTC) facilities, including nursing homes and assisted-living facilities, were reported to CDC; of these, 25 involved adults with diabetes receiving assisted blood glucose monitoring. These outbreaks prompted the Hepatitis Vaccines Work Group of the Advisory Committee on Immunization Practices (ACIP) to evaluate the risk for HBV infection among all adults with diagnosed diabetes. The Work Group reviewed HBV infection-related morbidity and mortality and the effectiveness of implementing infection prevention and control measures. The strength of scientific evidence regarding protection was evaluated using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) methodology,* and safety, values, and cost-effectiveness were incorporated into a recommendation using the GRADE system. Based on the Work Group findings, on October 25, 2011, ACIP recommended that all previously unvaccinated adults aged 19 through 59 years with diabetes mellitus (type 1 and type 2) be vaccinated against hepatitis B as soon as possible after a diagnosis of diabetes is made (recommendation category A). Data on the risk for hepatitis B among adults aged $>/=60$ years are less robust. Therefore, ACIP recommended that unvaccinated adults aged $>/=60$ years with diabetes may be vaccinated at the discretion of the treating clinician after assessing their risk and the likelihood of an adequate immune response to vaccination (recommendation category B). This report summarizes these recommendations and provides the rationale used by ACIP to inform their decision making.

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a4.htm>

Current Hepatitis B ACIP vaccine recommendations
<http://www.cdc.gov/vaccines/hcp/acip-recommendations/vaccine-specific/hepb.html>

Vaccine Recommendations of the ACIP

ACIP Recs Home
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Hepatitis B ACIP Vaccine Recommendations

Advisory Committee for Immunization Practices (ACIP)



MMWR as Published in Morbidity and Mortality Weekly Report (MMWR)

The [Advisory Committee on Immunization Practices \(ACIP\)](#) provides advice and guidance to the Director of the CDC regarding use of vaccines and related agents for control of vaccine-preventable diseases in the civilian population of the United States. Recommendations made by the ACIP are reviewed by the CDC Director and, if adopted, are published as official CDC/HHS recommendations in the Morbidity and Mortality Weekly Report (MMWR).

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- [Current Recommendations](#)
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CURRENT Hepatitis B Vaccine Recommendations

- MMWR December 23, 2011, Vol 60, #50
 - [Policy Note: Use of Hepatitis B Vaccine for Adults with Diabetes Mellitus](#)
 - [Print version](#) [1.07MB, 32 pages]
 - [GRADE Tables](#)

Presentation related references

1. Klonoff DC. Improving the safety of blood glucose monitoring. *J Diabetes Sci Technol.* 2011 Nov 1;5(6):1307-11. **Comment on "Never events": hepatitis B outbreaks and patient notifications resulting from unsafe practices during assisted monitoring of blood glucose, 2009-2010**
2. Schillie SF, Xing J, Murphy TV, Hu DJ. **Prevalence of hepatitis B virus infection among persons with diagnosed diabetes mellitus in the United States, 1999-2010.** *J Viral Hepat.* 2012 Sep;19(9):674-6. The prevalence of hepatitis B virus (HBV) infection among persons with diabetes has not been assessed among the US population, despite increasing reports of HBV transmission in institutional care settings. Using national survey data, we found a 60% higher prevalence of HBV infection among persons with (vs without) diagnosed diabetes
3. Reilly ML, Schillie SF, Smith E, Poissant T, Vonderwahl CW, Gerard K, Baumgartner J, Mercedes L, Sweet K, Muleta D, Zaccaro DJ, Kleven RM, Murphy TV. **Increased risk of acute hepatitis B among adults with diagnosed diabetes mellitus.** *J Diabetes Sci Technol.* 2012 Jul 1;6(4):858-66. INTRODUCTION: The risk of acute hepatitis B among adults with diabetes mellitus is unknown. We investigated the association between diagnosed diabetes and acute hepatitis B. METHODS: Confirmed acute hepatitis B cases were reported in 2009-2010 to eight Emerging Infections Program (EIP) sites; diagnosed diabetes status was determined. Behavioral Risk Factor Surveillance System respondents residing in EIP sites comprised the comparison group. Odds ratios (ORs) comparing acute hepatitis B among adults with diagnosed diabetes versus without diagnosed diabetes were determined by multivariate logistic regression, adjusting for age, sex, and race/ethnicity, and stratified by the presence or absence of risk behaviors for hepatitis B virus (HBV) infection. RESULTS: During 2009-2010, EIP sites reported 865 eligible acute hepatitis B cases among persons aged ≥23 years; 95 (11.0%) had

diagnosed diabetes. Comparison group diabetes prevalence was 9.1%. Among adults without hepatitis B risk behaviors and with reported diabetes status, the OR for acute hepatitis B comparing adults with and without diabetes was 1.9 (95% confidence interval [CI] = 1.4, 2.6); ORs for adults ages 23-59 and ≥60 years were 2.1 (95% CI = 1.6, 2.8) and 1.5 (95% = CI 0.9, 2.5), respectively.

CONCLUSIONS: Diabetes was independently associated with an increased risk for acute hepatitis B among adults without HBV risk behaviors.

4. Hoerger TJ, Schillie S, Wittenborn JS, Bradley CL, Zhou F, Byrd K, Murphy TV **Cost-effectiveness of hepatitis B vaccination in adults with diagnosed**. Cost diabetes. Diabetes Care. 2013 Jan;36(1):63-9.
OBJECTIVE To examine the cost-effectiveness of a hepatitis B vaccination program for unvaccinated adults with diagnosed diabetes in the U.S. **RESEARCH DESIGN AND METHODS** We used a cost-effectiveness simulation model to estimate the cost-effectiveness of vaccinating adults 20-59 years of age with diagnosed diabetes not previously vaccinated for or infected by hepatitis B virus (HBV). The model estimated acute and chronic HBV infections, complications, quality-adjusted life-years (QALYs), and incremental cost-effectiveness ratios. Data sources included surveillance data, epidemiological studies, and vaccine prices. **RESULTS** With a 10% uptake rate, the intervention will vaccinate 528,047 people and prevent 4,271 acute and 256 chronic hepatitis B infections. Net health care costs will increase by \$91.4 million, and 1,218 QALYs will be gained, producing a cost-effectiveness ratio of \$75,094 per QALY gained. Results are most sensitive to age, the discount rate, the hepatitis B incidence ratio for people with diabetes, and hepatitis B infection rates. Cost-effectiveness ratios rise with age at vaccination; an alternative intervention that vaccinates adults with diabetes 60 years of age or older had a cost-effectiveness ratio of \$2.7 million per QALY. **CONCLUSIONS** Hepatitis B vaccination for adults with diabetes 20-59 years of age is modestly cost-effective. Vaccinating older adults with diabetes is not cost-effective. The study did not consider hepatitis outbreak investigation costs, and limited information exists on hepatitis progression among older adults with diabetes. Partly based on these results, the Advisory Committee on Immunization Practices recently recommended hepatitis B vaccination for people 20-59 years of age with diagnosed diabetes.

part 5.1 Identify underserved groups (no/low vaccination coverage)

08:30-08:50 Hepatitis B: are at-risk individuals vaccinated if screened and found negative for HBV? Results of an online survey conducted in six EU countries. Miriam Levi

Levi, M., Ahmad, A., Bechini, A., Boccalini, S., Nguyen, Q. V., Veldhuijzen, I., Richardus, J. H., Reintjes, R. and Bonanni, P. **"Hepatitis B: are at-risk individuals vaccinated if screened and**

found negative for HBV? Results of an online survey conducted in six EU countries." *Vaccine* 2014 32(48): 6415-6420.

INTRODUCTION: Vaccination is the best way to prevent hepatitis B infection and its consequences. The aim of the present study is to analyze the current vaccination practices within various population subgroups who are offered screening for hepatitis B, when found negative, in Germany, Hungary, Italy, the Netherlands, Spain and the UK. **METHODS:** Online surveys were conducted in the six countries. In total, 1181 experts from six different health professions were invited to participate. Descriptive analyses of data were performed. **RESULTS:** Less than half of the respondents in the Netherlands, only about 1/4 in Germany and none in Hungary reported that the vaccine is commonly offered to people who inject drugs. Less than half of the respondents in Germany reported vaccinating sex workers or HIV positive patients against hepatitis B as common practice. None in Hungary stated that vaccinating sex workers is common practice, and only according to a minority (17%) HIV patients are commonly vaccinated. 1/4 to 1/3 of respondents in Germany, the Netherlands, Italy, Hungary and the UK, indicated that HCV positive patients are only sporadically immunized. Only in Spain almost half of the respondents reported that migrants from hepatitis B endemic areas who are screened negative are commonly vaccinated. Widespread uncertainty about vaccination practices for asylum seekers was reported. **CONCLUSIONS:** By showing the gaps between current practices and policies in place, our findings can help to increase the success of future vaccination programmes. Implementation of training for health care professional, e.g. introducing vaccinology and vaccination policy courses in the medical and paramedical curriculum, could contribute to a more homogenous application of the recommendations regarding immunization against hepatitis B. Our results show, nonetheless, that the universal vaccination approach, coupled with targeted programmes for immigrants, represents the only way to make the elimination of hepatitis B a foreseeable, realistic objective.

part 5.2 Prevention initiatives taken in different underserved groups

Migrant

08:50-09:10 Migrant's access to immunization in Mediterranean Countries and Immunization programmes in Roma population in Bulgaria

Mira Kojouharova

Riccardo, F., Dente, M. G., Kojouharova, M., Fabiani, M., Alfonsi, V., Kurchatova, A., Vladimirova, N. and Declich, S. "**Migrant's access to immunization in Mediterranean Countries.**" *Health Policy* 2012 105(1): 17-24.

Countries bordering the Mediterranean are part of a major migration system. The aim of this study is to assess the main access barriers to immunization of mobile populations in the region and propose an action based framework to decrease health access inequalities. A survey on formal and informal barriers

to immunization among mobile communities was conducted among public health officials formally appointed as focal points of the EpiSouth Network by 26 Mediterranean countries. Twenty-two completed the questionnaire. Thirteen countries reported at least one vaccine preventable disease (VPD) outbreak occurring among mobile populations since 2006 even though their legal entitlement to immunization is mostly equivalent to the general population's. Informal barriers, particularly lack of information and lack of trust in authorities, and disaggregation of data collection are the major issues still to be addressed. Mediterranean countries need to fill the gap in immunization coverage among pockets of susceptible individuals in order to prevent VPD outbreaks. Having for the most part ensured free entitlement, introducing more migrant friendly approaches, increasing information availability among mobile communities, building trust in public health services and disaggregating data collection to monitor and evaluate service performance among mobile groups are key aspects to address in the region.

IDU

09:10-09:30 High Prevalence and Incidence of HIV and HCV Among New Injecting Drug Users With a Large Proportion of Migrants-Is Prevention Failing *Cinta Folch*

Folch, C., Casabona, J., Espelt, A., Majo, X., Merono, M., Gonzalez, V., Wiessing, L., Colom, J., Brugal, M. T. and Group, R. S. "High Prevalence and Incidence of HIV and HCV Among New Injecting Drug Users With a Large Proportion of Migrants-Is Prevention Failing?" *Subst Use Misuse* 2016; 1-11.

OBJECTIVES: The aim of this study was to assess differences in the prevalence of HIV and HCV infection and associated risk factors between new (injecting for </=5 years) and long-term injectors and to estimate HIV/HCV incidence among new injectors. **METHODS:** Cross-sectional study among people who inject drugs (PWID) who attended harm reduction centers in Catalonia in 2010-11. Anonymous questionnaires and oral fluid samples were collected. Poisson regression models were applied to determine the association between HIV/HCV infection and risk factors. **RESULTS:** Of the 761 participants, 21.4% were new injectors. New injectors were younger than long-term injectors (mean age = 31.6 vs. 37.8) and were more likely to be immigrants (59.0% vs. 33.4%). HIV and HCV prevalence was 20.6% and 59.4% among new injectors, and estimated HIV and HCV incidence 8.7 and 25.1 /100 person-years, respectively. Among new injectors, HIV infection was associated with homelessness (PR = 3.10) and reporting a previous sexually transmitted infection (PR = 1.79). Reporting front/backloading (PR = 1.33) and daily injection (PR = 1.35) were risk-factors for HCV infection. For long-term injectors, HIV risk factors were: having shared syringes (PR = 1.85), having injected cocaine (PR = 1.38), reporting front/backloading (PR = 1.30) and ever having been in prison (PR = 2.03). **CONCLUSION:** A large proportion of PWID in Catalonia are new injectors, a subgroup with a high level of both sexual and parenteral exposure and a high incidence rate of HIV/ HCV infections. It is important to improve early diagnosis of these infections among this group, in

particular among migrants. To identify and address risk factors for homelessness PWID should be a priority.

Presentation related references

1. Centre for Sexually Transmitted Infection and AIDS Epidemiological Studies of Catalonia (CEEISCAT). Integrated AIDS/HIV/STI Surveillance System of Catalonia (SIVES 2015): Technical Document 22. Barcelona: Generalitat de Catalunya, Agència de Salut Pública de Catalunya. Available at:
<http://www.ceeiscat.cat/documents/sives2015.pdf>
2. Uusküla A, Kals M, Rajaleid K, et al. High-prevalence and high-estimated incidence of HIV infection among new injecting drug users in Estonia: Need for large scale prevention programs. *J Public Health* 2008; 30(2), 119–125. Abstract
OBJECTIVE: To examine HIV risk behavior and HIV infection among new injectors in Tallinn, Estonia. Design and methods Data from two cross-sectional surveys of injecting drug users (IDUs) recruited from a syringe exchange program (N = 162, Study 1) or using respondent driven sampling (N = 350, Study 2). Behavioral surveys were administered; serum samples were collected for HIV testing. Subjects were categorized into new injectors (injecting < or = 3 years) and long-term injectors (injecting > 3 years).
RESULTS: Twenty-eight of 161 (17%, Study 1) and 73/350 (21%, Study 2) of the study subjects were new injectors. HIV infection was substantial among the newer injectors: HIV prevalence was 50% (Study 1) and 34% (Study 2), and estimated HIV incidence 31/100 PY and 21/100 PY, respectively. In Study 2, new injectors were more likely to be female and ethnic Estonian and less likely to be injecting daily compared with long-term injectors. No significant difference was found among two groups on sharing injecting equipment or reported number of sexual partners.
CONCLUSIONS: A continuing HIV epidemic among new injectors is of critical public health concern. Interventions to prevent initiation into injecting drug use and scaling up HIV prevention programs for IDUs in Estonia are of utmost importance.
3. Harocopos A, Goldsamt LA, Kobrak P, et al. New injectors and the social context of injection initiation. *Int J Drug Policy* 2009; 20: 317–323
BACKGROUND: Preventing the onset of injecting drug use is an important public health objective yet there is little understanding of the process that leads to injection initiation. This paper draws extensively on narrative data to describe how injection initiation is influenced by social environment. We examine how watching other people inject can habitualise non-injectors to administering drugs with a needle and consider the process by which the stigma of injecting is replaced with curiosity.

METHOD: In-depth interviews (n=54) were conducted as part of a 2-year longitudinal study examining the behaviours of new injecting drug users.

RESULTS: Among our sample, injection initiation was the result of a dynamic process during which administering drugs with a needle became acceptable or even appealing. Most often, this occurred as a result of spending time with current injectors in a social context and the majority of this study's participants were given their first shot by a friend or sexual partner. Initiates could be tenacious in their efforts to acquire an injection trainer and findings suggest that once injecting had been introduced to a drug-using network, it was likely to spread throughout the group.

CONCLUSION: Injection initiation should be viewed as a communicable process. New injectors are unlikely to have experienced the negative effects of injecting and may facilitate the initiation of their drug-using friends. Prevention messages should therefore aim to find innovative ways of targeting beginning injectors and present a realistic appraisal of the long-term consequences of injecting. Interventionists should also work with current injectors to develop strategies to refuse requests from non-injectors for their help to initiate.

4. Neagius A, Gyarmathy V A, Miller M. Injecting and sexual risk correlates of HBV and HCV seroprevalence among new drug injectors. *Drug Alc Depend* 2007; 89(2-3): 234-243.

Abstract

We examine injecting and sexual risk correlates of hepatitis B (HBV) and hepatitis C (HCV) seroprevalence among new injecting drug users (IDUs) (age 18-30 years, injecting < or =6 years). Participants were interviewed/serotested (HIVab, HBVcAb, HCVab) in New York City, February 1999-February 2003. Gender-stratified, multivariate logistic regression was conducted. Participants (N=259) were: 68% male; 81% white. Women were more likely to test HCV seropositive (42% versus 27%) and men HBV seropositive (24% versus 12%); HIV seroprevalence was low (3%). Among both men and women, HBV seropositivity was associated with ever selling sex, and HCV seropositivity with ever having had infected (HIV, HBV or HCV) sex partners (among those ever sharing injecting equipment). Among women only, HBV seropositivity was associated with ever having had infected sex partners (regardless of ever sharing injecting equipment), and HCV seropositivity with > or =300 lifetime drug injections. Among men only, HCV seropositivity was associated with > or =40 lifetime number of sex partners (among those never sharing injecting equipment). In this new IDU sample, HBV and HCV seroprevalence differed by gender and were considerably higher than HIV seroprevalence. Early interventions, targeting injecting and sexual risks and including HBV vaccination, are needed among new IDUs to prevent HBV, HCV and, potentially, HIV epidemics.

5. Folch C, Casabona J, Majó X, et al. Undiagnosed HIV and Hepatitis C infection among people who inject drugs. Oral presentation at the HepHIV 2014 Conference: Barcelona, 5-7 October 2014.

09:30-09:45 Innovative community-based educational face-to-face intervention to reduce HIV, hepatitis C virus and other blood-borne infectious risks in difficult-to-reach people who inject drugs: results from the ANRS-AERLI intervention study. *Patrizia Carrieri*

Roux, P., Le Gall, J. M., Debrus, M., Protopopescu, C., Ndiaye, K., Demoulin, B., Lions, C., Haas, A., Mora, M., Spire, B., et al. "**Innovative community-based educational face-to-face intervention to reduce HIV, hepatitis C virus and other blood-borne infectious risks in difficult-to-reach people who inject drugs: results from the ANRS-AERLI intervention study.**" *Addiction* 2016 111(1): 94-106.

AIMS: To study the effectiveness of an educational intervention on risks associated with drug injection, comparing primary [unsafe HIV-hepatitis C virus (HCV) practices] and secondary (local complications at injecting site) end-points in harm reduction (HR) programmes offering this intervention versus HR programmes not offering it. DESIGN: This non-random clustered intervention study was conducted in nine intervention groups (programmes offering the intervention) and eight control groups (programmes not offering it). Each participant was followed-up through a telephone interview at enrolment and at 6 and 12 months. SETTING: The study took place in 17 cities throughout France. PARTICIPANTS: Of the 271 participants, 144 were enrolled into the intervention group and 127 in the control group. Of the latter, 113 received at least one educational session. INTERVENTION: A series of participant-centred face-to-face educational sessions. Each session included direct observation by trained non-governmental organization (NGO) staff or volunteers of participants' self-injecting the psychoactive product they used habitually; analysis by the trained NGO staff or volunteers of the participant's injecting practices, identification of injection-related risks and explanation of safer injecting practices; and an educational exchange on the individual participant's injection practices and the questions he or she asked. MEASUREMENTS: Primary and secondary outcomes were 'at least one unsafe HIV-HCV practice' and at least one injection-related complication (derived from a checklist). FINDINGS: The proportion of participants with at least one unsafe HIV-HCV practice in the intervention group decreased significantly, from 44% at M0 to 25% at M6, as well as complications at the injection site (from 66 to 39% at M12), while in the control group it remained mainly stable. Multivariate probit analyses showed that the intervention group experienced a significant reduction in unsafe HIV-HCV practices at M6 [coefficient, 95% confidence interval (CI) = -0.73 (-1.47 to 0.01)] and in injection-related complications at M12 [coefficient, 95% CI = -1.01 (-1.77 to -0.24)], compared with the control group. CONCLUSIONS: An inexpensive and easily implemented educational intervention on risks associated with drug injection

reduces significantly unsafe HIV-HCV transmission practices and injection-related complications.

Prisoners

- 09:45-10:00 HCV seropositivity in inmates and in the general population: an averaging approach to establish priority prevention interventions.** *Patrizia Carrieri*

Roux, P., Sagaon-Teyssier, L., Lions, C., Fugon, L., Verger, P. and Carrieri, M. P. "HCV seropositivity in inmates and in the general population: an averaging approach to establish priority prevention interventions." *BMJ Open* 2014 4(10): e005694.

OBJECTIVES: Despite the fact that a considerable portion of hepatitis C virus (HCV) positive individuals are viraemic, the risk of transmitting HCV to others is context dependent. Prison is a particularly risky environment as HCV prevention tools are often unavailable. Using data from a cross-sectional study conducted in centres for HCV testing in southeastern France, we aimed to compare the patterns of risk factors in HCV-positive inmates with those in the general population. **SETTING:** 26 centres for HIV/HCV testing in southeastern France (23 in the general population and 3 in prison). **PRIMARY OUTCOME MEASURE:** HCV seropositivity measured with ELISA test.

METHODS: A propensity score method to ensure that the general and inmate populations could be compared and a multimodel averaging to estimate the degree (strong, weak, none) of the association of a number of specific factors with HCV seropositivity in each group. **RESULTS:** Among the 52,082 participants, HCV infection prevalence was 1.5% and 5.2% in the general (n=46,125) and inmate (n=5957) populations, respectively. In both populations, 'drug injection without snorting' and 'drug injection with snorting' were very strongly associated with HCV seropositivity. Among inmates, 'drug snorting alone' (OR (95% CI) 2.21 (1.39 to 3.52) was also a strong correlate while tattoos, piercings (OR (95% CI) 1.22 (0.92 to 1.61)) and the sharing of toiletry items (OR (95% CI) 1.44 (0.84 to 2.47)) were weak correlates. **CONCLUSIONS:** The pattern of risk factors associated with HCV seropositivity is different between the general and prison populations, injection and snorting practices being more prevalent in the latter. Access to prevention measures in prisons is not only a public health issue but also a human right for inmates who deserve equity of care and prevention.

- 10:00-10:20 An audit of hepatitis C service provision in a representative sample of prisons in England** *Clare Humphreys*

Humphreys, C., Railton, C., O'Moore, E., Lombard, M. and Newton, A. "An audit of hepatitis C service provision in a representative sample of prisons in England." *J Public Health (Oxf)* 2015 37(1): 151-156.

BACKGROUND: Prisons are an important setting to address prevention, testing and treatment of hepatitis C virus (HCV) and other blood-borne viruses. This audit examined current practice against national standards in a

representative sample of prisons in England. METHODS: The audit tool was developed based on best practice guidelines and piloted in one prison. In December 2012, the audit was conducted in a further 20 prisons, which were chosen to represent different types, sizes and geographical spread across England. RESULTS: Testing for HCV was offered in the majority of prisons audited (20 of 21), but only two-thirds had a written policy on testing and treatment; less than a third had a steering group to oversee the process. The nature of services varied greatly. There were inconsistencies across data sources on testing. CONCLUSIONS: This audit found that while there were many areas of good practice, the quality and content of hepatitis C service provision varied. It highlighted the need to provide appropriate guidance for prisons in delivering a high-quality service, ensuring that relevant training is available for different staff and that adequate psychosocial support is provided to patients.

Presentation related references

1. Health Protection Agency and Department of Health, National survey of hepatitis C services in prisons in England, July 2012
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212817/Hep-C-Prison-Survey.pdf
2. Ministry of Justice, The problems and needs of newly sentenced prisoners: results from a national survey, Stewart, 2008
3. Public Health England and Department of Health. An audit of hepatitis C services in a representative sample of English prisons, May 2013
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337401/An_audit_of_hepatitis_C_services_in_a_representative_sample_of_English_prisons_2013.pdf
4. Public Health England. Hepatitis C infection in the UK 2015 Report. July 2015.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/448710/NEW_FINAL_HCV_2015_IN_THE_UK_REPO RT_28072015_v2.pdf
5. Public Health England. Blood Borne Virus Opt-Out testing in Prisons: Preliminary Evaluation of Pathfinder Programme. April to September 2014.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/428942/BBV_pathfinder_evaluation_Phase_1_FINAL.PDF

part 5.2 Prevention initiatives taken in different underserved groups (cont.)

Sex Workers

- 11:00-11:20 Hepatitis B vaccination and HCV screening: access to sex workers in Flanders – Healthcare and social care for sex workers (GHAPRO)** *Tine Cornelissen*
<http://www.ghapro.be/nl/index.html> (Flemish)

Others

- 11:20-11:40 Saunas programme: an outreach approach to diagnose and prevent hepatitis in a vulnerable population of the city of Barcelona**
Sandra Manzanares

The Saunas programme is aimed at men who have sex with men (MSM) users of gay bathhouses and other gay leisure venues in the city of Barcelona, offering them vaccination against hepatitis A and B since 2004, among other services. More recently, quick hepatitis C test is also offered. This programme has been the source of a cohort of MSM at risk of HIV and other STI, who get periodically tested. This is a project developed at the Public Health Agency of Barcelona (ASPB) jointly by the Department of Epidemiology and the Department of Preventive interventions and programs. [1]

Presentation related references

1. Díez E, García de Olalla P, Carvajal S, et al. Intervenciones preventivas en saunas de hombres que tienen relaciones con hombres. Premios Virgilio Palacio, 4 a ed. 2006.
2. Tortajada C, de Olalla PG, Diez E , Pinto RM , Bosch A , Perez U , Sanz M , Caylà JA; Saunas Working Group. Hepatitis A among men who have sex with men in Barcelona, 1989-2010: insufficient control and need for new approaches.
BMC Infect Dis. 2012 Jan 20;12:11. doi: 10.1186/1471-2334-12-11. BACKGROUND:Men who have sex with men (MSM) are a known group at risk for hepatitis A and outbreaks among this group are frequent. InBarcelona, vaccination for MSM has been recommended since 1994. In 1998 a vaccination campaign among preadolescents was implemented and an immunization program in gay bathhouses began in 2004.

OBJECTIVE: to asses the incidence of hepatitis A in adults in Barcelona from 1989 to 2010 and to evaluate the outbreaks among MSM including all genotypes involved.

METHODS: All cases of acute hepatitis A among young adults notified to the Public Health Agency of Barcelona from 1989 to 2010 were included for analyses. We calculated the annual incidence rate and the incidence ratio male-to-female (M:F) as a marker for MSM. Spearman's coefficient was used to evaluate trends. We also evaluated the outbreaks among MSM and compared their characteristics using Chi-squared and ANOVA test. Fragment amplification of the VP1/P2A region was used for genetic analysis.

RESULTS: The median annual incidence for the period of study was 4.7/100000 among females and 11.7/100000 among males. The rate of hepatitis A for adult woman decreased over time (Spearman's coefficient = -0.63, p = 0.002), whereas there was no decrease for adult men (Spearman's coefficient = 0.097, p = 0.67). During the study period the M:F ratio increased (Spearman's coefficient = 0.73, p < 0.001). Three large outbreaks among MSM were detected. When comparing outbreaks, there was a decrease in the percentage of bathhouse users (from 47% to 19%, p = 0.0001) and sex workers (from 6.5% to 0%) while the percentage of HIV infected individuals did not change significantly (range: 21%-28%, p = 0.36). The isolated strains were closely related to those circulating in Europe.

CONCLUSIONS: Annual incidences remain high among MSM without tendency to decrease. More strategies which effectively reach the whole MSM community are needed.

3. Jacques Aviñó C(1), García de Olalla P(2), Díez E(3), Martín S(4), Caylà JA(2) [.Explanation of risky sexual behaviors in men who have sex with men] Gac Sanit. 2015 Jul-Aug;29(4):252-7. doi: 10.1016/j.gaceta.2015.03.002. Epub 2015 Apr 11

Objectives To explore views about risky sexual behaviors and perceptions of HIV, and to propose interventions for preventing HIV infections in a group of men who have sex with men.

METHODS: We performed a qualitative study in a sample of 13 men who have sex with men, who were participating in an HIV-seronegative cohort, and who we contacted via saunas for the gay community in Barcelona (Spain). We performed in-depth semi-structured interviews, followed by content analysis.

RESULTS: Risky sexual behaviors were associated with masculinity related to strong sexual needs, certain sexual exchange venues (such as saunas, private parties and clubs), drug use, and a desire to experiment with risk and one's own sexuality. HIV infection was perceived as a normalized disease, although becoming infected was still associated with shame and guilt. Proposed interventions included raising awareness of

what it is like to live with HIV, generating greater social alarm, incorporating new technologies in prevention, and intensifying activity at gay venues.

CONCLUSIONS: The concept of masculinity plays a fundamental role in sexual practices among men who have sex with men. We suggest renewed innovation in preventive programs and incorporating the perception of risk and HIV infection from a gender perspective

4. Besoain F, Perez-Navarro A, Caylà JA, Aviñó CJ, de Olalla PG. Prevention of sexually transmitted infections using mobile devices and ubiquitous computing. *Int J Health Geogr.* 2015 May 3;14:18. doi: 10.1186/s12942-015-0010-z. PubMed PMID: 25935151; PubMed Central PMCID: PMC4428096.

BACKGROUND:

Advances in the development of information and communication technologies have facilitated social interrelationships, but also sexual contacts without appropriate preventive measures. In this paper, we will focus on situations in which people use applications to meet sexual partners nearby, which could increase their chance of exposure to sexually transmitted infections (STI). How can we encourage users to adopt preventive measures without violating their privacy or infringing on the character of the application?

METHODS:

To achieve the goal of preventing STI, we have used the design and creation methodology and have developed a prototype software package. This prototype follows the RESTful services principles and has two parts: an Android OS application with emphasis on ubiquitous computing and designed according to General Responsibility Assignment Software Patterns (GRASP), and a server with a web page. To choose the preventive messages, we performed a test in 17 men who have sex with men (MSM).

RESULTS:

Our software sends preventive notifications to users when it detects situations such as the activation of particular applications on their smartphones, or their proximity to areas with a high probability of intercourse (hot zones). The underlying idea is the same as that for warning messages on cigarette packets, since users read the message just when they are going to smoke. The messages used have been selected from a list that has been rated by the users themselves. The most popular message is "Enjoy sex and enjoy life. Do not expose yourself to HIV". The user is unaware of the software, which runs in the background.

CONCLUSIONS:

Ubiquitous computing may be useful for alerting users with preventive and educational messages. The proposed application is non-intrusive

because: 1) the users themselves decide to install it and, therefore, users' privacy rights are preserved; 2) it sends a message that helps users think about taking appropriate preventive measures; and 3) it works in the background without interfering with users unless a trigger situation is detected. Thus, this type of application could become an important tool in the complex task of STI prevention

11:40-12:00 Hepatitis initiatives in vulnerable populations in Albania

Elona Kureta

12:00-12:20 Mobile vaccination team in Flandres, Belgium – Els Van de Mieroop

part 5.3 Recommendations

12:25-12:45 Tailoring Immunization plan (TIP), WHO Euro. - Karina Godoy

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2013 The "Guide to tailoring immunization programmes (TIP)" aims to provide proven methods and tools to assist national immunization programmes (NIPs) design targeted strategies that increase uptake of infant and childhood vaccinations. The Guide provides tools to identify susceptible populations, determine barriers to vaccination and implement evidence-based interventions.

The strategies outlined in this Guide may be used at any time to maintain high coverage rates, but may be particularly valuable when pockets of low vaccination coverage or increased susceptibility to VPDs are identified. The Guide may be used independently by Member States or implemented in conjunction with technical support from the WHO Regional Office for Europe.



<http://www.euro.who.int/en/health-topics/communicable-diseases/poliomyelitis/publications/2013/guide-to-tailoring-immunization-programmes>

Van Damme, P., Lindstrand, A., Kulane, A. and Kunchev, A. "**Commentary to: Guide to tailoring immunization programmes in the WHO European Region.**" *Vaccine* 2015 33(36): 4385-4386.

2 ***Meeting related references***

2.1 **Introduction Underserved groups**

Pubmed MEDLINE search was performed on with the following selection criteria [Hepatitis OR HCV OR HBV) AND Underserved AND (Screening OR prevention OR Treatment OR immunization OR Vaccination)] from the last 5 years. A relevant selection was made in end-note and the reference are sorted by publication time and first authors name

Screening

Trager, E., Khalili, M., Masson, C. L., Vittinghoff, E., Creasman, J. and Mangurian, C. "**Hepatitis C Screening Rate Among Underserved Adults With Serious Mental Illness Receiving Care in California Community Mental Health Centers.**" *Am J Public Health* **2016**: e1-e3.

Although HCV is more prevalent among people with severe mental illness (SMI; e.g., schizophrenia, bipolar disorder) than in the general population (17% vs 1%), no large previous studies have examined HCV screening in this population. In this cross-sectional study, we examined administrative data for 57 170 California Medicaid enrollees with SMI to identify prevalence and predictors of HCV screening from October 2010 through September 2011. Only 4.7% (2674 of 57 170) received HCV screening, with strongest predictors being nonpsychiatric health care utilization and comorbid substance abuse. (*Am J Public Health*. Published online ahead of print February 18, 2016: e1-e3. doi:10.2105/AJPH.2016.303059).

Trooskin, S. B., Poceta, J., Towey, C. M., Yolken, A., Rose, J. S., Luqman, N. L., Preston, T. W., Chan, P. A., Beckwith, C., Feller, S. C., et al. "**Results from a Geographically Focused, Community-Based HCV Screening, Linkage-to-Care and Patient Navigation Program.**" *J Gen Intern Med* **2015** 30(7): 950-957.

BACKGROUND: Many of the five million Americans chronically infected with hepatitis C (HCV) are unaware of their infection and are not in care. **OBJECTIVE:** We implemented and evaluated HCV screening and linkage-to-care interventions in a community setting. **DESIGN:** We developed a comprehensive, community-based HCV screening and linkage-to-care program in a medically underserved neighborhood with high rates of HCV infection in Philadelphia, Pennsylvania. We provided patient navigation services to enroll uninsured patients in insurance programs, facilitate referrals from primary care physicians and link patients to an HCV infectious disease specialist with intention to treat and cure. **PATIENTS:** Philadelphia residents were recruited through street outreach. **MAIN MEASURES:** We measured anti-HCV seroprevalence and diagnosis, linkage and retention in care outcomes for chronically infected patients. **KEY RESULTS:** We screened 1,301 participants for HCV; anti-HCV seroprevalence was 3.9 % and 2.8% of all patients were chronically infected. Half of chronically infected patients were newly diagnosed; the remaining patients were aware of infection but not in care. We provided confirmatory RNA testing and results, assisted patients with attaining insurance and linked most chronically infected

patients to a primary care provider. The biggest barrier to retaining patients in care was obtaining referrals for subspecialty providers; however, we obtained referrals for 64% of chronically infected participants and have retained most in subspecialty HCV care. Several have commenced treatment. CONCLUSIONS: Non-clinical screening programs with patient navigator services are an effective means to diagnose, link, retain and re-engage patients in HCV care. Eliminating referral requirements for subspecialty care might further enhance retention in care for patients chronically infected with HCV.

Scott, J., Kowdley, K. V., Ioannou, G. N., Krantz, E., Lallemand, O., Tsosie, U. and Buchwald, D. "The Prevalence and Presumed Etiology of Elevated Aminotransferase Levels in a Pacific Northwest Tribal Community." *J Health Care Poor Underserved* 2015 26(3): 957-966.

American Indians and Alaska Natives (AI/ANs) die from chronic liver disease at high rates, but little data exist on the etiology of liver disease in AI/ANs. Adult participants from a tribal health clinic in the Pacific Northwest completed an alcohol consumption survey and underwent laboratory testing, and anthropometric measurements. Participants with abnormal serum alanine aminotransferase (ALT) levels, positive hepatitis B surface antigen, or hepatitis C antibody were invited for follow-up visit. Then, they received a limited liver ultrasound, additional liver function tests, and confirmatory hepatitis tests. Among 71 participants, 26 (37%) had sustained elevation of ALT over six months. Two patients (8%) had chronic hepatitis C virus and 19 (73%) had ultrasonographic steatosis suggesting nonalcoholic fatty liver disease (NAFLD). Elevated aminotransferase levels were common, with NAFLD and hepatitis C accounting for most cases. Few participants were aware of their liver condition, indicating the need for increased awareness, screening, and intervention.

Rumble, C., Pevalin, D. J. and O'Moore, E. "Routine testing for blood-borne viruses in prisons: a systematic review." *Eur J Public Health* 2015 25(6): 1078-1088.

BACKGROUND: People in prison have a higher burden of blood-borne virus (BBV) infection than the general population, and prisons present an opportunity to test for BBVs in high-risk, underserved groups. Changes to the BBV testing policies in English prisons have recently been piloted. This review will enable existing evidence to inform policy revisions. We describe components of routine HIV, hepatitis B and C virus testing policies in prisons and quantify testing acceptance, coverage, result notification and diagnosis. METHODS: We searched five databases for studies of both opt-in (testing offered to all and the individual chooses to have the test or not) and opt-out (the individual is informed the test will be performed unless they actively refuse) prison BBV testing policies. RESULTS: Forty-four studies published between 1989 and 2013 met the inclusion criteria. Of these, 82% were conducted in the USA, 91% included HIV testing and most tested at the time of incarceration. HIV testing acceptance rates ranged from 22 to 98% and testing coverage from 3 to 90%. Mixed results were found for equity in uptake. Six studies reported reasons for declining a test including recent testing and fear. CONCLUSIONS: While the quality of evidence is mixed, this review suggests that reasonable rates of uptake can be achieved with opt-in and, even better, with opt-out HIV testing policies. Little evidence was found relating to hepatitis testing. Policies need to specify exclusion criteria and consider consent processes, type of test and timing of the testing offer to balance

acceptability, competence and availability of individuals.

Kuncio, D. E., Newbern, E. C., Fernandez-Vina, M. H., Herdman, B., Johnson, C. C. and Viner, K. M. "**Comparison of risk-based hepatitis C screening and the true seroprevalence in an urban prison system.**" *J Urban Health* **2015** 92(2): 379-386.

Hepatitis C virus (HCV) is the most common blood-borne infection in the USA, though seroprevalence is elevated in certain high-risk groups such as inmates. Correctional facility screening protocols vary from universal testing to opt-in risk-based testing. This project assessed the success of a risk-based HCV screening strategy in the Philadelphia Prison System (PPS) by comparing results from current testing practices during 2011-2012 (Risk-Based Screening Group) to a September 2012 blinded seroprevalence study (Philadelphia Department of Public Health (PDPH) Study Cohort). PPS processed 51,562 inmates in 2011-2012; 2,727 were identified as high-risk and screened for HCV, of whom 57 % tested HCV antibody positive. Twelve percent ($n = 154$) of the 1,289 inmates in the PDPH Study Cohort were anti-HCV positive. Inmates $>/=30$ years of age had higher rates of seropositivity in both groups. Since only 5.3 % of the prison population was included in the Risk-Based Screening Group, an additional 4,877 HCV-positive inmates are projected to have not been identified in 2011-2012. Gaps in case identification exist when risk-based testing is utilized by PPS. A more comprehensive screening model such as opt-out universal testing should be considered to identify HCV-positive inmates. Identification of these individuals is an important opportunity to aid underserved high-risk populations and to provide medical care and secondary prevention.

Hasan, S. S., Ma, J., Kang, F., Song, J., Fang-Hollingsworth, Y. and Sears, D. "**Hepatitis prevention project in the Korean American community in Killeen, Texas.**" *Proc (Bayl Univ Med Cent)* **2015** 28(4): 435-437.

Educational efforts related to viral hepatitis have the potential to increase awareness and identify chronically infected individuals and can lead to successful vaccination strategies. However, in underserved semirural communities, such as the Korean American community in Killeen, Texas, these outreach activities are lacking. The GanYum ("hepatitis" in Korean) Prevention Project aimed to evaluate thoughts/behaviors, assess vulnerability, and educate Korean Americans on hepatitis B and C. Two outreach events were held at a Korean church and a Korean market (O'Mart) to provide education, screening, and outreach about viral hepatitis. Ninety-six patients were screened at two events. Five patients were found to be positive for hepatitis B surface antigen and were referred to their primary care physicians and the liver clinic at Scott & White Healthcare in Temple, Texas. Fifty-one patients (53%) were found to be immune to hepatitis B, and 40 patients (42%) were hepatitis B vulnerable. We demonstrated that the prevalence of chronic hepatitis B in Koreans in our study is similar to the previously documented prevalence (5%). Our educational efforts were successful in changing perceptions regarding the modes of transmission and exacerbating factors of chronic viral hepatitis and encouraged participants to seek care for their liver diseases, if needed. We found that both venues (the church and Korean market) were appropriate to screen and educate participants; churches seemed to have a more engaged audience.

Juon, H. S., Lee, S., Strong, C., Rimal, R., Kirk, G. D. and Bowie, J. "Effect of a liver cancer education program on hepatitis B screening among Asian Americans in the Baltimore-Washington metropolitan area, 2009-2010." *Prev Chronic Dis* 2014 11: 130258.

INTRODUCTION: Asian Americans have the highest incidence of hepatocellular carcinoma (HCC), the major form of primary liver cancer, of all ethnic groups in the United States. Chronic hepatitis B virus (HBV) infection is the most common cause of HCC, and as many as 1 in 10 foreign-born Asian Americans are chronically infected with HBV. We tested the effectiveness of a culturally tailored liver cancer education program for increasing screening for HBV among Chinese, Korean, and Vietnamese Americans residing in the Baltimore-Washington metropolitan area, from November 2009 through June 2010. METHODS: We used a cluster randomized controlled trial to recruit volunteer participants from community-based organizations (CBOs) in the Baltimore-Washington metropolitan area. We selected 877 participants by using a pretest survey. People were eligible to participate if they had not attended a hepatitis B-related education program in the past 5 years. The intervention group ($n = 441$) received a 30-minute educational program, and the control group ($n = 436$) received an educational brochure. After attending the educational program, the intervention group completed a post-education survey. Six months later, participants in both groups were followed up by telephone. Receipt of HBV screening was the outcome measure. RESULTS: Approximately 79% ($n = 688$) of participants completed the 6-month follow-up telephone survey. Among those who had not had HBV screening at baseline ($n = 446$), the adjusted odds of self-reported receipt of HBV screening at the 6-month follow-up to the educational program were significantly higher for the intervention group than for the control group (odds ratio = 5.13; 95% confidence interval, 3.14-8.39; $P < .001$). Chinese Americans and Vietnamese Americans had significantly higher odds of having HBV screening in the 6-month period than Korean Americans. CONCLUSION: Culturally tailored education programs that increase liver cancer awareness can be effective in increasing HBV screening among underserved Asian American populations.

Toleran, D. E., Friese, B., Battle, R. S., Gardiner, P., Tran, P. D., Lam, J. and Cabangun, B. "Correlates of HIV and HCV risk and testing among Chinese, Filipino, and Vietnamese men who have sex with men and other at-risk men." *AIDS Educ Prev* 2013 25(3): 244-254.

Asian Americans are one of the more under-researched groups in the United States. This holds true with regard to research on risk assessment, screening, and testing for human immunodeficiency virus (HIV) and hepatitis C (HCV). Here, we address that lack by exploring correlates of risk and testing for the two diseases among Chinese, Filipino, and Vietnamese men who have sex with men (MSM) and other at-risk men in the San Francisco Bay Area. We do so by analyzing findings from the study of a community-based prevention program, Project 3-3-3 (P333), designed to address the often comorbid conditions of substance abuse, HIV infection, and HCV infection among underserved and high-risk Chinese, Filipino, and Vietnamese adults, most of whom are MSM. A risk-behavior survey completed at preintervention identified risk factors related to HIV, HCV, and substance use among this population ($n = 273$). The study of survey data identifies and distinguishes between correlates of HIV and HCV testing. Among our findings, significant differences were found between Asian ethnic subpopulation groups with respect to number of sexual partners ($p = .007$), and HIV

testing rates comparing MSM and heterosexual men differed significantly ($p < .002$). Those who spoke English at home were more likely to be tested for HIV ($p < .008$). With HCV testing, the number of partners was positively correlated to getting tested ($p < .047$), and Filipino men were significantly more likely to get tested for HCV than Chinese men ($p < .022$).

Kue, J. and Thorburn, S. "**Hepatitis B knowledge, screening, and vaccination among Hmong Americans.**" *J Health Care Poor Underserved* **2013** 24(2): 566-578.

We examined Hmong women and men's knowledge of hepatitis B and their screening and vaccination behavior. In-depth interviews were conducted with Hmong in Oregon aged 18 and older ($n=83$). Independent samples t-test was used to assess mean differences in knowledge by demographic characteristics. Qualitative data were analyzed using content analysis. Most participants had heard of hepatitis B (96.4%). Fifty-three percent of participants had been screened, and half had been vaccinated (50.6%). Transmission knowledge was significantly higher among younger participants, those born in the U.S., and those who reported seeking preventive care. Sequelae knowledge was significantly higher among those who sought preventive care. Transmission and sequelae knowledge were not associated with screening and vaccination. Qualitative data showed that, of those hepatitis B positive participants, most did not have a comprehensive understanding of their illness. Intervention strategies should address knowledge deficits and improve health literacy, especially among Hmong who have hepatitis B.

Joseph, G., Nguyen, K., Nguyen, T., Stewart, S., Davis, S., Kevany, S., Marquez, T. and Pasick, R. "**Efficient identification of low-income Asian American women at high risk for hepatitis B.**" *J Health Care Poor Underserved* **2013** 24(4): 1701-1716.

Hepatitis B disproportionately affects Asian Americans. Because outreach to promote testing and vaccination can be intensive and costly, we assessed the feasibility of an efficient strategy to identify Asian Americans at risk. Prior research with California's statewide toll-free phone service where low-income women call for free cancer screening found 50% of English-and Spanish-speaking callers were willing to participate in a study on health topics other than cancer screening. The current study ascertained whether Asian Americans could be recruited. Among 200 eligible callers, 50% agreed to take part (95% confidence interval 43%-57%), a rate comparable to our previous study. Subsequent qualitative interviews revealed that receptivity to recruitment was due to trust in the phone service and women's need for health services and information. This was a relatively low-intensity intervention in that, on average, only five minutes additional call time was required to identify women at risk and provide a brief educational message. Underserved women from diverse backgrounds may be reached in large numbers through existing communication channels.

Chin, C. D., Cheung, Y. K., Laksanasopin, T., Modena, M. M., Chin, S. Y., Sridhara, A. A., Steinmiller, D., Linder, V., Mushingantahe, J., Umvilighozo, G., et al. "**Mobile device for disease diagnosis and data tracking in resource-limited settings.**" *Clin Chem* **2013** 59(4): 629-640.

BACKGROUND: Collection of epidemiological data and care of patients are hampered

by lack of access to laboratory diagnostic equipment and patients' health records in resource-limited settings. We engineered a low-cost mobile device that combines cell-phone and satellite communication technologies with fluid miniaturization techniques for performing all essential ELISA functions. METHODS: We assessed the device's ability to perform HIV serodiagnostic testing in Rwanda and synchronize results in real time with electronic health records. We tested serum, plasma, and whole blood samples collected in Rwanda and on a commercially available sample panel made of mixed antibody titers. RESULTS: HIV testing on 167 Rwandan patients evaluated for HIV, viral hepatitis, and sexually transmitted infections yielded diagnostic sensitivity and specificity of 100% and 99%, respectively. Testing on 40 Rwandan whole-blood samples-using 1 μL of sample per patient-resulted in diagnostic sensitivity and specificity of 100% and 100%. The mobile device also successfully transmitted all whole-blood test results from a Rwandan clinic to a medical records database stored on the cloud. For all samples in the commercial panel, the device produced results in agreement with a leading ELISA test, including detection of weakly positive samples that were missed by existing rapid tests. The device operated autonomously with minimal user input, produced each result 10 times faster than benchtop ELISA, and consumed as little power as a mobile phone. CONCLUSIONS: A low-cost mobile device can perform a blood-based HIV serodiagnostic test with laboratory-level accuracy and real-time synchronization of patient health record data.

Strehlow, A. J., Robertson, M. J., Zerger, S., Rongey, C., Arangua, L., Farrell, E., O'Sullivan, A. and Gelberg, L. "**Hepatitis C among clients of health care for the homeless primary care clinics.**" *J Health Care Poor Underserved* 2012 23(2): 811-833.

OBJECTIVES: To describe the prevalence, distribution and risk factors for hepatitis C virus (HCV) infection among homeless adults using eight Health Care for the Homeless (HCH) clinics nationally. METHODS: Data were collected for 387 participants through blood draws, structured interviews, chart reviews. RESULTS: Overall prevalence of HCV-antibody positivity was 31.0%, including 70.0% among injection drug users and 15.5% among reported non-injectors. Much HCV infection was hidden as the majority (53.3%) of HCV-antibody positive participants was unaware of their status. Independent risk factors for HCV among the total sample included injection drug use, prison, and tattoos; among injectors, risk factors included prison and three or more years of injection drug use; among reported non-injectors, risk factors included tattoos and prison. CONCLUSION: These HCH clinics serve high concentrations of HCV-infected injectors, making these and similar clinics priority intervention sites for aggressive screening, education, testing, and treatment for HCV and other blood-borne diseases.

Pena-Orellana, M., Hernandez-Viver, A., Caraballo-Correa, G. and Albizu-Garcia, C. E. "**Prevalence of HCV risk behaviors among prison inmates: tattooing and injection drug use.**" *J Health Care Poor Underserved* 2011 22(3): 962-982.

Hepatitis C virus (HCV) is the most common blood-borne chronic viral infection in the United States and it is over represented in incarcerated populations. This study estimates if in prison tattooing is associated with self reported HCV infection in a probabilistic sample of 1,331 sentenced inmates in Puerto Rico prisons anonymously

surveyed in 2004, who had previously been tested for HCV. Analysis were carried out with the total sample and among non-injectors ($n=796$) to control for injection drug use (IDU) and other confounders. Nearly 60% of inmates had acquired tattoos in prison. HCV was reported by 27% of subjects in the total sample and by 12% of non-injectors who had undergone tattoos in prison. IDU was the strongest predictor of HCV in the total sample ($OR=5.6$, 95% CI=3.2-9.7). Among non injectors, tattooing with reused needles or sharp objects and/ or reusing ink was positively associated with HCV self-report ($OR=2.6$, 95% CI=1.3-5.5). Tattooing is a common occurrence in this prison setting. Findings suggest that preventive interventions are required to reduce the risk of HCV transmission through unsterile tattooing and injection practices.

Gish, R. G. and Cooper, S. L. "**Hepatitis B in the Greater San Francisco Bay Area: an integrated programme to respond to a diverse local epidemic.**" *J Viral Hepat* **2011** 18(4): e40-51.

Although chronic hepatitis B (CHB) affects approximately 2 million United States residents, there is no systematic screening of at-risk individuals, and most remain unaware of their hepatitis B virus (HBV) infection. Unmonitored and untreated, CHB results in a 25-30% risk of death from liver cancer and/or cirrhosis, inflicting an increasing healthcare burden in high-prevalence regions. Despite high prevalence in immigrant Asians and Pacific Islanders, among whom CHB is a leading cause of death, community and healthcare provider awareness remains low. Because safe and effective vaccines and effective antiviral treatments exist, there is an urgent need for integrated programmes that identify, follow and treat people with existing CHB, while vaccinating the susceptible. We describe an extant San Francisco programme that integrates culturally targeted, population-based, HBV screening, vaccination or reassurance, management and research. After screening over 3000 at-risk individuals, we here review our operational and practical experience and describe a simple, rationally designed model that could be successfully used to greatly improve the current approach to hepatitis B while ultimately reducing the related healthcare costs, especially in the high-risk populations, which are currently underserved.

Prevention

Spauwen, L. W., Niekamp, A. M., Hoebe, C. J. and Dukers-Muijres, N. H. "Drug use, sexual risk behaviour and sexually transmitted infections among swingers: a cross-sectional study in The Netherlands." *Sex Transm Infect* 2015 91(1): 31-36.

OBJECTIVES: Recreational drug use has been found to be associated with high-risk sexual behaviour and with sexually transmitted infections (STI). This study is the first to assess the prevalence of drug use among swingers (heterosexuals who, as a couple, practise mate swapping or group sex, and/or visit sex clubs for couples), and its association with high-risk sexual behaviour and STI. **METHODS:** We recruited individuals who self-identified as swingers and visited our STI clinic (from 2009 to 2012, South Limburg, The Netherlands). Participants (n=289; median age 45 years; 49% female) filled in a self-administered questionnaire on their sexual and drug use behaviour while swinging, over the preceding 6 months. We assessed associations between sexual behaviour, drug use and STI diagnoses (Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG), syphilis, HIV and hepatitis B) using logistic regression analyses. **RESULTS:** Overall, the prevalence of CT and/or NG was 13%. No other STIs were observed. Seventy-nine percent of swingers reported recreational drug use (including alcohol and use of erectile dysfunction drugs); 46% of them reported multiple drug use. Recreational drug use excluding alcohol and erectile dysfunction drugs (reported by 48%) was associated with high-risk behaviours in men and women. Drug use was independently associated with STI in female swingers, especially those who practice group sex. **CONCLUSIONS:** High rates of multiple drug use, as well as risky sexual behaviour and STIs among swingers, warrant paying more attention to this key population in prevention and care, as they are a risk group that is generally under-recognised and underserved in care.

Mukhtar, N. A., Toy, B. C., Burman, B. E., Yu, A., Chen, A. H., Berman, P., Nguyen, T., Chan, D., Hammer, H., McCulloch, C. E., et al. "Assessment of HBV preventive services in a medically underserved Asian and Pacific Islander population using provider and patient data." *J Gen Intern Med* 2015 30(1): 68-74.

BACKGROUND: Hepatitis B (HBV) represents a significant health disparity among medically underserved Asian and Hawaiian/Pacific Islander (API) populations. Studies evaluating adherence to HBV screening and vaccination guidelines in this population are limited. **OBJECTIVE:** The purpose of this study was to evaluate HBV screening and vaccination practices using both provider self-report and patient records. **DESIGN:** Medical records for 20,574 API adults were reviewed retrospectively and primary care providers were surveyed to evaluate rates and adherence to HBV screening and vaccination guidelines. **PARTICIPANTS:** The study included primary care providers and their adult API patients in the San Francisco safety-net healthcare system. **MAIN MEASURES:** Patient, practice, and provider factors, as well as HBV screening and vaccination practices, were assessed using provider survey constructs and patient laboratory and clinical data. Generalized linear mixed models and multivariate logistic regression analyses were used to identify factors associated with recommended HBV screening and vaccination. **KEY RESULTS:** The mean age of patients was 52 years, and 63.4 % of patients were female. Only 61.5 % underwent HBV testing, and 47.4 % of HBV-susceptible patients were vaccinated. Of 148 (44.8 %) responding providers,

most were knowledgeable and had a favorable attitude towards screening, but 43.2 % were unfamiliar with HBV guidelines. HBV screening was positively associated with favorable provider attitude score (OR per unit 1.80, 95 % CI 1.18-2.74) and negatively associated with female patient sex (OR 0.82, 95 % CI 0.73-0.92), a higher number of clinic patients per week (OR per 20 patients 0.46, 95 % CI 0.28-0.76), and provider barrier score (OR per unit 0.45, 95 % CI 0.24-0.87). HBV vaccination was negatively associated with provider barrier score (OR per unit 0.48, 95 % CI 0.25-0.91).

CONCLUSIONS: Rates of HBV screening and vaccination of API patients in this safety-net system are suboptimal, and provider factors play a significant role. Efforts to cultivate positive attitudes among providers and expand healthcare system resources to reduce provider barriers to HBV care are warranted.

Hasan, S. S., Ma, J., Kang, F., Song, J., Fang-Hollingsworth, Y. and Sears, D. "**Hepatitis prevention project in the Korean American community in Killeen, Texas.**" *Proc (Bayl Univ Med Cent)* **2015** 28(4): 435-437.

Educational efforts related to viral hepatitis have the potential to increase awareness and identify chronically infected individuals and can lead to successful vaccination strategies. However, in underserved semirural communities, such as the Korean American community in Killeen, Texas, these outreach activities are lacking. The GanYum ("hepatitis" in Korean) Prevention Project aimed to evaluate thoughts/behaviors, assess vulnerability, and educate Korean Americans on hepatitis B and C. Two outreach events were held at a Korean church and a Korean market (O'Mart) to provide education, screening, and outreach about viral hepatitis. Ninety-six patients were screened at two events. Five patients were found to be positive for hepatitis B surface antigen and were referred to their primary care physicians and the liver clinic at Scott & White Healthcare in Temple, Texas. Fifty-one patients (53%) were found to be immune to hepatitis B, and 40 patients (42%) were hepatitis B vulnerable. We demonstrated that the prevalence of chronic hepatitis B in Koreans in our study is similar to the previously documented prevalence (5%). Our educational efforts were successful in changing perceptions regarding the modes of transmission and exacerbating factors of chronic viral hepatitis and encouraged participants to seek care for their liver diseases, if needed. We found that both venues (the church and Korean market) were appropriate to screen and educate participants; churches seemed to have a more engaged audience.

Eldred, S. V., Hamid, H. S., Snider, J. C., Weinberg, S. H., Speck, N., Reed, B. D. and Riley, M. "**A Medical Student-Driven "Vaccine Blitz" at a School-Based Health Center as an Effective Way to Improve Adolescent Vaccination Rates.**" *Fam Med* **2015** 47(7): 546-548.

BACKGROUND AND OBJECTIVES: Adolescent vaccine rates are below goal in the United States. We sought to assess a medical student driven "vaccine blitz" at a middle school with a school-based health center (SBHC) as a means to increase vaccination. **METHODS:** Written and/or verbal consent was obtained for specific vaccines needed. Vaccines were given at the SBHC by a team of medical students, public health students, and SBHC staff. Students who received vaccines at the SBHC or primary care physician's (PCP's) office in the 3 weeks after consent was attempted were included as participating in the intervention. **RESULTS:** Of 184 potential participants, 183 lacked at least one vaccine. On the day of the vaccine blitz, 48

students were given 94 vaccines. During the entire intervention time, an additional 14 students received 38 vaccines at the SBHC, and 23 students received 34 vaccines from their PCP. In sum, 85 students received 166 vaccines from this intervention.

Immunization rates increased above the state average for all recommended vaccines; rates of HPV, hepatitis A, and influenza vaccination were most affected.

CONCLUSIONS: Medical student-driven vaccine blitzes within an SBHC are a feasible, replicable, and effective way to increase adolescent vaccination rates. In addition, the blitz provided preclinical medical students' exposure to underserved populations, adolescent health as part of the breadth of family medicine, SBHCs, and community medicine and allowed for multidisciplinary work between medical students, public health students, physicians, and nurse practitioners.

Morris, M. D., Evans, J., Montgomery, M., Yu, M., Briceno, A., Page, K. and Hahn, J. A. "**Intimate injection partnerships are at elevated risk of high-risk injecting: a multi-level longitudinal study of HCV-serodiscordant injection partnerships in San Francisco, CA.**" *PLoS One* **2014** 9(10): e109282.

BACKGROUND: It is increasingly recognized that the risk for HIV and hepatitis C (HCV) transmission among people who inject drugs (PWID), such as syringe sharing, occurs in the context of relationships between (at least) two people. Evidence suggests that the risk associated with injection behavior varies with injection partner types.

METHODS: We utilized longitudinal dyad-level data from a study of young PWID from San Francisco (2006 to 2013) to investigate the relationship-level factors influencing high-risk injecting within HCV-serodiscordant injection partners (i.e., individuals who injected together ≥ 5 times in the prior month). Utilizing data from 70 HCV-serodiscordant injection partnerships, we used generalized linear models to examine relationship-level predictors (i.e., partnership composition, partnership closeness, and partnership dynamics) of: (1) receptive syringe sharing (RSS); and (2) receptive cooker use (RCU), as reported by the HCV-negative injection partner. **RESULTS:** As reported by the "at-risk" HCV-negative injection partner, receptive syringe sharing (RSS) and receptive cooker use (RCU) were 19% and 33% at enrollment, and 11% and 12% over all visits (total follow-up time 55 person-years) resulting in 13 new HCV-infections (incidence rate: 23.8/100 person-years). Person-level factors, injection partnership composition, and partnership dynamics were not significantly associated with either RSS or RCU. Instead, intimate injection partnerships (those who lived together and were also in a sexual relationship) were independently associated with a 5-times greater risk of both RSS and a 7-times greater risk of RCU when compared to injecting only partnerships. **CONCLUSION:** Our findings suggest a positive, and amplified effect of relationship factors on injecting drug risk behaviors among young PWID injection partnerships. The majority of interventions to reduce injection drug use related harms focus on individual-based education to increase drug use knowledge. Our findings support the need to expand harm reduction strategies to relationship-based messaging and interventions.

Clouston, S., Kidman, R. and Palermo, T. "**Social inequalities in vaccination uptake among children aged 0-59 months living in Madagascar: an analysis of Demographic and Health Survey data from 2008 to 2009.**" *Vaccine* **2014** 32(28): 3533-3539.

BACKGROUND: Socioeconomic inequalities in vaccination can reduce the ability and

efficiency of global efforts to reduce the burden of disease. Vaccination is particularly critical because the poorest children are often at the greatest risk of contracting preventable infectious diseases, and unvaccinated children may be clustered geographically, jeopardizing herd immunity. Without herd immunity, these children are at even greater risk of contracting disease and social inequalities in associated morbidity and mortality are amplified. METHODS: Data on vaccination for children under five came from the most recent Demographic and Health Survey in Madagascar (2008-2009). Vaccination status was available for diphtheria, pertussis, tetanus, hepatitis B, measles, tuberculosis, poliomyelitis, and H. influenza type-B. Multilevel logistic regression was used to analyze childhood vaccination by parental socioeconomic status while accounting for shared district, cluster, and household variation. Maps were created to serve as a roadmap for efforts to increase vaccination. FINDINGS: Geographic variation in vaccination rates was substantial. Districts that were less covered were near other districts with limited coverage. Most districts lacked herd immunity for diphtheria, pertussis, poliomyelitis and measles. Full herd immunity was reached in a small number of districts clustered near the capital. While within-district variation in coverage was substantial; parental education and wealth were independently associated with vaccination. INTERPRETATION: Socioeconomic inequalities in vaccination reduce herd immunity and perpetuate inequalities by allowing infectious diseases to disproportionately affect the most vulnerable populations. Findings indicated that most districts had low immunization coverage rates and unvaccinated children were geographically clustered. The result was inequalities in vaccination and reduced herd immunity. To further improve coverage, interventions must take a multilevel approach that focuses on both supply- and demand-side barriers to delivering vaccination to underserved regions, and to the poorest children in those regions.

Hadler, S. C., Fuqiang, C., Averhoff, F., Taylor, T., Fuzhen, W., Li, L., Xiaofeng, L. and Weizhong, Y. "The impact of hepatitis B vaccine in China and in the China GAVI Project." *Vaccine* 2013 31 Suppl 9: J66-72.

The China GAVI Project (CGP) was initiated in 2002 to provide hepatitis B (HB) vaccine to infants born in the less developed areas of China including the Western provinces and poverty counties of Middle provinces, to prevent the consequences of hepatitis B virus infection. By 2009, the project areas had raised coverage of 3 doses of HB vaccine and timely birth doses to almost 90% among infants, comparable to those in wealthier Eastern provinces, and reduced HBV prevalence to <1% among children in these areas. We estimated the impact in disease prevented by HB vaccine in China between 1992, when the vaccine was routinely recommended, and 2009, and in CGP areas for the years 2003-2009, when the CGP was active. A published model was used to estimate the burden of chronic and acute HBV infection and death prevented due to HB vaccination in China and the CGP areas using data from national serosurveys in China in 1992 and 2006, and HB vaccine coverage from surveys in 2004, 2006 and 2010. We used sigmoid modeling to estimate vaccine coverage nationally, regionally, and CGP areas. We also estimated the incremental impact of the CGP on HB vaccine coverage in those underserved areas. Our findings suggest that between 1992 and 2009, HB vaccination in China has prevented 24 million chronic HBV infections and 4.3 million future deaths due to cirrhosis, hepatocellular carcinoma and acute hepatitis.

During the CGP between 2003 and 2009, an estimated 3.8 million chronic HBV infections and 680,000 deaths were prevented in CGP areas. We found that the CGP funding increased HB vaccine coverage in project areas by 4-15% for HB3 and 4-27% for timely birth dose beyond the coverage expected without the CGP. The CGP represents a highly successful public health collaboration between the national government and international partners.

Moss, J. L., Reiter, P. L., Dayton, A. and Brewer, N. T. "**Increasing adolescent immunization by webinar: a brief provider intervention at federally qualified health centers.**" *Vaccine* **2012** 30(33): 4960-4963.

OBJECTIVE: To evaluate a brief intervention to increase provision of adolescent vaccines at health centers that reach the medically underserved. **METHOD:** In April 2010, clinical coordinators from 17 federally qualified health centers (serving 7827 patients ages 12-17) participated in a competition to increase uptake of recommended adolescent vaccines: tetanus, diphtheria, and pertussis booster; meningococcal conjugate; and human papillomavirus. Vaccination coordinators attended a webinar that reviewed provider-based changes recommended by the CDC's Assessment, Feedback, Incentives, and eXchanges (AFIX) program and received weekly follow-up emails. Data on vaccine uptake came from the North Carolina Immunization Registry. **RESULTS:** Uptake of targeted adolescent vaccines increased during the one-month intervention period by about 1-2% (all p<.05). These small but reliable increases were greater than those observed for non-targeted vaccines (measles, mumps, and rubella; hepatitis B; and varicella). **CONCLUSION:** This AFIX webinar led to small increases in provision of targeted adolescent vaccines over a one-month period. Similar, sustainable programs at healthcare facilities, including federally qualified health centers that function as safety net providers for medically underserved populations could help reach populations with great need.

Fu, L. Y., Weissman, M., McLaren, R., Thomas, C., Campbell, J., Mbafor, J., Doshi, U. and Cora-Bramble, D. "**Improving the quality of immunization delivery to an at-risk population: a comprehensive approach.**" *Pediatrics* **2012** 129(2): e496-503.

OBJECTIVE: Immunization quality improvement (QI) interventions are rarely tested as multicomponent interventions within the context of a theoretical framework proven to improve outcomes. Our goal was to study a comprehensive QI program to increase immunization rates for underserved children that relied on recommendations from the Centers for Disease Control and Prevention's Task Force on Community Preventive Services and the framework of the Chronic Care Model. **METHODS:** QI activities occurred from September 2007 to May 2008 at 6 health centers serving a low-income, minority population in Washington, DC. Interventions included family reminders, education, expanding immunization access, reminders and feedback for providers, and coordination of activities with community stakeholders. We determined project effectiveness in improving the 4:3:1:3:1:3 vaccination series (4 diphtheria-tetanus-pertussis vaccines, 3 poliovirus vaccines, 1 measles-mumps-rubella vaccine, 3 Haemophilus influenzae type b vaccines, 3 hepatitis B vaccines, 1 varicella vaccine, and three 7-valent pneumococcal conjugate vaccines) compliance. **RESULTS:** We found a 16% increase in immunization rates overall and a 14% increase in on-time immunization by 24 months of age. Improvement was achieved at all 6 health centers

and maintained beyond 18 months. CONCLUSION: We were able to implement a comprehensive immunization QI program that was sustainable over time.

Chen, J. J., Chang, E. T., Chen, Y. R., Bailey, M. B. and So, S. K. "**A model program for hepatitis B vaccination and education of schoolchildren in rural China.**" *Int J Public Health* **2012** 57(3): 581-588.

OBJECTIVES: Incomplete hepatitis B virus (HBV) vaccine coverage and poor HBV-related knowledge in China leave millions of children unprotected from this life-threatening infection. To address these gaps, a pilot program for HBV education and vaccination was launched in rural China. METHODS: In 2006, public and private organizations in the US and China collaborated to provide HBV education and vaccination to 55,000 school-age children in the remote, highly HBV-endemic area of Qinghai Province. The impact of the educational program on HBV-related knowledge was evaluated among more than 2,800 elementary school students. RESULTS: Between September 2006 and March 2007, the three-shot hepatitis B vaccine series was administered to 54,680 students, with a completion rate of 99.4%. From low pre-existing knowledge levels, classroom educational sessions statistically significantly increased knowledge about HBV risks, symptoms, transmission, and prevention. CONCLUSIONS: This program offers an effective and sustainable model for HBV catch-up vaccination and education that can be replicated throughout China, as well as in other underserved HBV-endemic regions, as a strategy to reduce chronic HBV infection, liver failure, and liver cancer.

Caballero, J. B., Martin, M., Weir, R. C., Agbayani, N., Soon, N. A. and Chen, K. "**Hepatitis B prevention and care for Asian Americans, Native Hawaiians and Pacific Islanders at community health centers.**" *J Health Care Poor Underserved* **2012** 23(4): 1547-1557.

INTRODUCTION: A needs assessment was conducted of hepatitis B education, screening, vaccination, and care within community health centers (CHCs) serving Asian Americans, Native Hawaiians, and Pacific Islanders. METHODS: Written surveys were administered to health education directors from 13 CHCs and 75 medical providers from 14 CHCs in the U.S. and affiliated Pacific Islands. RESULTS: Although hepatitis B is within the mission of CHCs and clients are screened regardless of insurance status, little financial or staffing resources are dedicated to hepatitis B services. Lack of funding is considered the greatest barrier. Better coordination between HBV prevention and primary and specialty medical services is needed. DISCUSSION: HBV cross-training for providers and allied staff, particularly around identification and screening of high risk groups and case management, would greatly enhance services along with additional funding. Findings support national hepatitis B strategy recommendations made by the Institute of Medicine and Office of Minority Health.

Trinh-Shevrin, C., Pollack, H. J., Tsang, T., Park, J., Ramos, M. R., Islam, N., Wang, S., Chun, K., Sim, S. C., Pong, P., et al. "**The Asian American hepatitis B program: building a coalition to address hepatitis B health disparities.**" *Prog Community Health Partnersh* **2011** 5(3): 261-271.

BACKGROUND: Community coalitions are increasingly recognized as important strategies for addressing health disparities. By providing the opportunity to pool

resources, they provide a means to develop and sustain innovative approaches to affect community health. OBJECTIVES: This article describes the challenges and lessons learned in building the Asian American Hepatitis B Program (AAHBP) coalition to conduct a community-based participatory research (CBPR) initiative to address hepatitis B (HBV) among New York City Asian-American communities. METHODS: Using the stages of coalition development as a framework, a comprehensive assessment of the process of developing and implementing the AAHBP coalition is presented. LESSONS LEARNED: Findings highlight the importance of developing a sound infrastructure and set of processes to foster a greater sense of ownership, shared vision, and investment in the program. CONCLUSION: Grassroots community organizing and campus-community partnerships can be successfully leveraged to address and prevent a significant health disparity in an underserved and diverse community.

Treatment

Westergaard, R. P., Stockman, L. J., Hyland, H. A., Guilfoyle, S. M., Fangman, J. J. and Vergeront, J. M. "Provider Workforce Assessment in a Rural Hepatitis C Epidemic: Implications for Scale-up of Antiviral Therapy." *J Prim Care Community Health* 2015 6(3): 215-217.

New recommendations for birth cohort screening for hepatitis C virus (HCV) infection and the development of new, highly effective antiviral medications are expected to increase the demand for HCV treatment. In the past, antiviral therapy for HCV was almost exclusively prescribed by specialists in the field of gastroenterology and infectious diseases, meaning that people living in rural areas that are underserved by specialists may have poor access to treatment. We investigated the number and geographic distribution of medical providers who actively prescribed direct acting antiviral drugs for hepatitis C in Wisconsin during 2012. Using public health surveillance data and a state-wide prescription drug database, we found that there was 1 treatment provider for every 340 residents known to be living with HCV. However, 51 of 72 Wisconsin counties had no providers who provided HCV treatment in 2012. Scaling up antiviral treatment to address the epidemic of hepatitis C efficiently and equitably will require strategies to increase the number of treatment providers in rural communities. Providing education, training, and support to the primary care workforce serving rural communities should be considered a potentially effective and efficient approach to preventing future HCV-related illness.

Tahan, V., Almashhrawi, A., Mutrux, R. and Ibdah, J. A. "Show Me ECHO-Hepatitis C: A telemedicine mentoring program for patients with hepatitis C in underserved and rural areas in Missouri as a model in developing countries." *Turk J Gastroenterol* 2015 26(6): 447-449.

Project (Extension for Community Healthcare Outcomes) (ECHO) is a telemedicine case-based training model for primary care providers to treat complex diseases by mentoring academicians of universities. It was first developed by the University of New Mexico for rural and underserved areas in New Mexico. The project Show Me ECHO- Hepatitis C (HCV) is an adaptation of Project ECHO to improve healthcare and hepatitis C therapy in the entire state of Missouri, including rural and underserved areas. Show Me ECHO- HCV uses telemedicine as videoconferencing technology for the case-based learning. The medical specialists of the University of Missouri-Columbia provide training and mentoring to primary care providers working in rural and urban underserved areas to deliver the best evidence-based care for patients with hepatitis C. This type of a model is promising in the management of patients with hepatitis C in developing countries with the availability of basic internet connections and potential voluntary participants.

Schaeffer, S. and Khalili, M. "Reasons for HCV non-treatment in underserved African Americans: implications for treatment with new therapeutics." *Ann Hepatol* 2015 14(2): 234-242.

BACKGROUND: African Americans are disproportionately affected by hepatitis C (HCV) and are less likely to undergo HCV treatment. Underserved populations are especially at risk for experiencing health disparity. Aim. To identify reasons for HCV non-treatment among underserved African Americans in a large safetynet system.

MATERIAL AND METHODS: Medical records of HCV-infected African Americans

evaluated at San Francisco General Hospital liver specialty clinic from 2006-2011 who did not receive HCV treatment were reviewed. Treatment eligibility and reasons for non-treatment were assessed. Factors associated with treatment ineligibility were assessed using logistic regression modeling. RESULTS: Among 118 patients, 42% were treatment ineligible, 18% treatment eligible, and 40% were undergoing work-up to determine eligibility. Reasons for treatment ineligibility were medical (54%), non-medical (14%), psychiatric (4%), or combined (28%). When controlling for age and sex, active/recent substance abuse (OR 6.65, p = 0.001) and having two or more medical comorbidities (OR 3.39, p = 0.005) predicted treatment ineligibility. Excluding those ineligible for treatment, 72% of all other patients were lost to follow-up; they were older (55 vs. 48 years, p = 0.01) and more likely to be undergoing work up to determine treatment eligibility (86 vs. 21%, p < 0.0001) than those not lost to follow-up. CONCLUSIONS: Medical comorbidities and substance abuse predicted HCV treatment ineligibility in underserved African Americans. Importantly, the majority of those undergoing work-up to determine HCV treatment eligibility were lost to follow-up. While newer anti-HCV agents may increase treatment eligibility, culturally appropriate interventions to increase compliance with evaluation and care remain critical to HCV management in underserved African Americans.

Jayasekera, C. R., Perumpail, R. B., Chao, D. T., Pham, E. A., Aggarwal, A., Wong, R. J. and Ahmed, A. **"Task-Shifting: An Approach to Decentralized Hepatitis C Treatment in Medically Underserved Areas."** *Dig Dis Sci* 2015 60(12): 3552-3557.

BACKGROUND: Despite the availability of safe and effective direct-acting antiviral drugs (DAAs), the vast majority of patients with chronic hepatitis C (HCV) in the USA remain untreated, in part due to lack of access to specialist providers. AIMS: To determine the effectiveness of DAA-based treatment in medically underserved areas in California, in a healthcare model dependent on task-shifting--wherein a visiting hepatologist assesses patients for treatment eligibility, but subsequent routine follow-up evaluation of patients prescribed treatment is devolved to a part-time licensed vocational nurse under remote supervision of the hepatologist. METHODS: We retrospectively determined rates of sustained virologic response 12 weeks after treatment completion (SVR-12), adverse events, and treatment discontinuations in patients who received sofosbuvir-based DAA regimens between December 2013 and November 2014. RESULTS: Despite limited specialist provider involvement in medically underserved areas, all but two of 58 patients completed treatment, and 88 % of patients achieved the curative endpoint of undetectable HCV RNA 12 weeks after completing treatment (sustained virologic response, SVR-12). Almost 80 % of patients with cirrhosis and 85 % of patients with prior treatment experience achieved SVR-12. CONCLUSIONS: Treatment effectiveness with sofosbuvir-based regimens in medically underserved areas utilizing task-shifting from a specialist to a mid-level provider is comparable to those achieved in pivotal clinical trials for these regimens, and to "real-world" experiences of tertiary care centers in the USA.

Roose, R. J., Cockerham-Colas, L., Soloway, I., Batchelder, A. and Litwin, A. H. **"Reducing barriers to hepatitis C treatment among drug users: an integrated hepatitis C peer education and support program."** *J Health Care Poor Underserved* 2014 25(2): 652-662.

This report describes an innovative HCV Peer Educator Program that facilitates

education, support, and engagement in HCV treatment among patients in an opioid treatment program. Integrating peer educators in a collaborative manner with close supervision holds promise as a model to reduce barriers to HCV treatment among drug users.

Mitruka, K., Thornton, K., Cusick, S., Orme, C., Moore, A., Manch, R. A., Box, T., Carroll, C., Holtzman, D. and Ward, J. W. "**Expanding primary care capacity to treat hepatitis C virus infection through an evidence-based care model--Arizona and Utah, 2012-2014.**" MMWR Morb Mortal Wkly Rep **2014** 63(18): 393-398.

Hepatitis C virus (HCV) infection is the leading reason for liver transplantation and a common cause of hepatocellular carcinoma, the most rapidly increasing cause of cancer-related deaths in the United States. Of the approximately 3 million persons living with HCV infection in the United States, an estimated 38% are linked to care, 11% are treated, and 6% achieve cure. Recent development of highly effective and well-tolerated medications, such as sofosbuvir and simeprevir, to treat chronic HCV infection shows promise in curbing rising HCV-related morbidity and mortality, with the potential to cure >90% of patients. To fully benefit from these new treatments, improvement in linkage to care and treatment is urgently needed.* Lack of provider expertise in HCV treatment and limited access to specialists are well-documented barriers to HCV treatment. In September 2012, CDC funded programs in Utah and Arizona to improve access to primary care providers with the capacity to manage and treat HCV infection. Both programs were modeled on the Extension for Community Healthcare Outcomes (Project ECHO), developed by the University of New Mexico's Health Sciences Center in 2003 to build primary care capacity to treat diseases among rural, underserved populations through videoconferencing and case-based learning in "teleECHO" clinics. To assess the effectiveness of these programs in improving primary care provider capacity and increasing the number of patients initiating treatment, process and patient outcome data for each state program were analyzed. In both states, Project ECHO was successfully implemented, training 66 primary care clinicians, predominantly from rural settings. Nearly all (93%) of the clinicians had no prior experience in care and treatment of HCV infection. In both states combined, 129 (46%) of HCV-infected patients seen in teleECHO clinics received antiviral treatment, more than doubling the proportion of patients expected to receive treatment. These findings demonstrate Project ECHO's ability to expand primary care capacity to treat HCV infection, notably among underserved populations.

Rossaro, L., Torruellas, C., Dhaliwal, S., Botros, J., Clark, G., Li, C. S. and Minoletti, M. M. "**Clinical outcomes of hepatitis C treated with pegylated interferon and ribavirin via telemedicine consultation in Northern California.**" Dig Dis Sci **2013** 58(12): 3620-3625.

BACKGROUND: Patients in rural communities are less likely to receive treatment for their hepatitis C (HCV) infection. Telemedicine (TM) consultation can close the gap of access to specialists in remote and under-served areas. **AIM:** To determine treatment response and side-effect profiles among HCV patients treated with pegylated interferon and ribavirin via TM consultation in different rural locations in Northern California compared with patients treated in traditional hepatology office visits.

METHODS: We performed a retrospective analysis of 80 HCV patients treated at different TM sites (TM, n=40) and at the University of California Davis Hepatology

Clinic (HC, n=40) between 2006 and 2010, comparing baseline characteristics and clinical outcomes. RESULTS: At baseline, response to therapy was similar for patients in both groups. Sustained virological response (SVR) was similar in both groups (TM: 55 vs. HC: 43%; p=0.36), and a higher proportion of patients treated via telemedicine completed treatment (TM: 78 vs. HC: 53%; p=0.03). TM patients had many more visits per week of therapy (TM: 0.61 vs. HC: 0.07; p<0.001). Neutropenia, GI side effects, fatigue, depression, weight loss, insomnia, and skin rash were similar in both groups. For HC patients incidence of anemia was significantly higher (53%) than for the TM group (25%; p=0.02). CONCLUSIONS: The two groups had equivalent SVR. For the TM group therapy completion was superior and incidence of anemia was lower. This initial study suggests that, as a group, patients with HCV, can be safely and effectively treated via telemedicine.

Khatri, K., Haddad, M. and Anderson, D. "**Project ECHO: replicating a novel model to enhance access to hepatitis C care in a community health center.**" *J Health Care Poor Underserved* **2013** 24(2): 850-858.

Project Extension for Community Healthcare Outcomes (Project ECHOTM) is an innovative telemedicine program that improves patient care by developing and supporting the competence of primary care providers. The Community Health Center, Inc. replicated this model to address significant access issues and improve hepatitis C management and treatment for its patients.

Miller, L., Fluker, S. A., Osborn, M., Liu, X. and Strawder, A. "**Improving access to hepatitis C care for urban, underserved patients using a primary care-based hepatitis C clinic.**" *J Natl Med Assoc* **2012** 104(5-6): 244-250.

OBJECTIVE: Chronic hepatitis C affects 200 million people worldwide and is a leading cause of death from liver disease. Effective treatment is available but can be difficult to access for uninsured, urban patients. National organizations have called for improving access to hepatitis C care in these groups. We present an innovative model for expanding access to hepatitis C care for urban, underserved patients (The Grady Liver Clinic, Grady Memorial Hospital, Atlanta, Georgia). The liver clinic provides hepatitis C care by general internists in the primary care setting. METHODS: We performed a retrospective chart review of all liver clinic patients (n=807) who presented in the first 5 years of the clinic's operation. Measures included patients' demographic and hepatitis C-related characteristics; prevalence of medical, psychiatric, and substance abuse comorbidities; and treatment status. RESULTS: The liver clinic population is primarily black (76%) and uninsured (59%). Patients had difficult-to-treat characteristics, including genotype 1 hepatitis C (90%), advanced liver fibrosis (28%), and high viral loads. Sixty-seven percent had comorbid medical conditions, and 40% had psychiatric disease. Fourteen percent of patients were treated for hepatitis C during the study period. CONCLUSION: The liver clinic has proven to be a successful model for improving access to hepatitis C care for urban, underserved patients. Despite having significant hepatic disease and medical and psychiatric comorbidities, patients in the liver clinic can be successfully maintained in care and initiated on hepatitis C treatment by general internists in a primary care setting.

Harvin, J. A., Van Buren, G., Tsao, K., Cen, P., Ko, T. C. and Wray, C. J. "**Hepatocellular carcinoma survival in uninsured and underinsured patients.**" *J Surg Res* **2011** 166(2): 189-193.

BACKGROUND: The incidence of hepatitis C virus (HCV) and hepatocellular carcinoma (HCC) is increasing. The purpose of this study is to establish baseline survival in a medically-underserved population and to evaluate the effect of HCV seropositivity on our patient population. **MATERIALS AND METHODS:** We reviewed clinicopathologic parameters from a prospective tumor registry and medical records from the Harris County Hospital District (HCHD). Outcomes were compared using Kaplan-Meier survival analysis and log-rank tests. **RESULTS:** A total of 298 HCC patients were identified. The median survival for the entire cohort was 3.4 mo. There was no difference in survival between the HCV seropositive and the HCV seronegative groups (3.6 mo versus 2.6 mo, $P = 0.7$). Patients with a survival < 1 mo had a significant increase in alphafetoprotein (AFP), international normalized ratio (INR), model for end-stage liver disease (MELD) score, and total bilirubin and decrease in albumin compared with patients with a survival ≥ 1 mo. **CONCLUSIONS:** Survival for HCC patients in the HCHD is extremely poor compared with an anticipated median survival of 7 mo reported in other studies. HCV seropositive patients have no survival advantage over HCV seronegative patients. Poorer liver function at diagnosis appears to be related to shorter survival. Further analysis into variables contributing to decreased survival is needed.

Grebely, J. and Tyndall, M. W. "**Management of HCV and HIV infections among people who inject drugs.**" *Curr Opin HIV AIDS* **2011** 6(6): 501-507.

PURPOSE OF REVIEW: Despite a high burden of hepatitis C virus (HCV) and HIV infection among IDUs and the advent of effective therapies, assessment and treatment remain limited. The current review focuses on the management of HCV and HIV among IDUs, focusing particularly on recent strategies to enhance assessment, uptake and response to HCV and HIV treatment. **RECENT FINDINGS:** There are compelling data demonstrating that with the appropriate programs, treatment for HIV and HCV among IDUs is successful. However, assessment and treatment for HCV and HIV lags far behind the numbers of IDUs who could benefit from therapy, related to systems, provider and patient-related barriers to care. Strategies for enhancing assessment and treatment for HCV and HIV have been developed, including novel models integrating HCV/HIV care within existing community-based and drug and alcohol clinics, innovative methods for education delivery (including peer-support models) and directly observed therapy. **SUMMARY:** As we move forward, research must move beyond demonstrating that HCV and HIV infections can be successfully treated among IDUs. There is clear evidence that this is both feasible and effective. Novel strategies to enhance assessment, uptake and response to treatment should be evaluated among IDUs to elucidate mechanisms to enhance care for this underserved population.

Evon, D. M., Simpson, K., Kixmiller, S., Galanko, J., Dougherty, K., Golin, C. and Fried, M. W. "**A randomized controlled trial of an integrated care intervention to increase eligibility for chronic hepatitis C treatment.**" *Am J Gastroenterol* **2011** 106(10): 1777-1786.

OBJECTIVES: Mental health and substance abuse (MH/SA) comorbidities are the most

oft-cited reasons for deferral from peginterferon (PegIFN) therapy for chronic hepatitis C virus (HCV). We sought to determine whether an integrated care intervention (INT) for patients deferred from PegIFN owing to MH/SA could improve subsequent treatment eligibility rates. METHODS: In this randomized controlled trial, 101 HCV patients who were evaluated at two hepatology centers and deferred from antiviral therapy owing to MH/SA were enrolled. Participants were randomized to an INT (N=50) or standard of care (SC; N=51). The INT group received counseling and case management for up to 9 months. All participants underwent 3-, 6-, and 9-month clinical follow-up visits, where hepatologists, masked to group, re-evaluated patients for treatment eligibility. Standardized mood and alcohol use instruments were administered to all participants to aid clinicians in treatment decisions. RESULTS: Of 101 participants, the mean age was 48 years and 50% were men, 61% Caucasian, and 77% genotype 1. Patients were initially deferred owing to psychiatric issues (35%), alcohol abuse (31%), drug abuse (9%), or more than one of these reasons (26%). In an intent-to-treat analysis, 42% (21/50) of INT participants became eligible for therapy compared to 18% (9/51) of SC participants ($P=0.009$, relative risk (RR)=2.38, 95% confidence interval (CI) (1.21, 4.68)). When baseline predictors significant at $P<0.10$ in univariate models were entered into multivariate models adjusted for treatment group, only baseline depression remained significant ($P=0.05$, RR=0.98, 95% CI (0.96, 1.00)). With the exception of a model adjusted for genotype, treatment group remained significant in all models. CONCLUSIONS: This trial suggests that INTs can increase eligibility for HCV treatment and expand treatment to the underserved population with MH/SA comorbidities.

Arora, S., Thornton, K., Murata, G., Deming, P., Kalishman, S., Dion, D., Parish, B., Burke, T., Pak, W., Dunkelberg, J., et al. "**Outcomes of treatment for hepatitis C virus infection by primary care providers.**" *N Engl J Med* 2011 364(23): 2199-2207.

BACKGROUND: The Extension for Community Healthcare Outcomes (ECHO) model was developed to improve access to care for underserved populations with complex health problems such as hepatitis C virus (HCV) infection. With the use of video-conferencing technology, the ECHO program trains primary care providers to treat complex diseases. METHODS: We conducted a prospective cohort study comparing treatment for HCV infection at the University of New Mexico (UNM) HCV clinic with treatment by primary care clinicians at 21 ECHO sites in rural areas and prisons in New Mexico. A total of 407 patients with chronic HCV infection who had received no previous treatment for the infection were enrolled. The primary end point was a sustained virologic response. RESULTS: A total of 57.5% of the patients treated at the UNM HCV clinic (84 of 146 patients) and 58.2% of those treated at ECHO sites (152 of 261 patients) had a sustained viral response (difference in rates between sites, 0.7 percentage points; 95% confidence interval, -9.2 to 10.7; $P=0.89$). Among patients with HCV genotype 1 infection, the rate of sustained viral response was 45.8% (38 of 83 patients) at the UNM HCV clinic and 49.7% (73 of 147 patients) at ECHO sites ($P=0.57$). Serious adverse events occurred in 13.7% of the patients at the UNM HCV clinic and in 6.9% of the patients at ECHO sites. CONCLUSIONS: The results of this study show that the ECHO model is an effective way to treat HCV infection in underserved communities. Implementation of this model would allow other states and nations to treat a greater number of patients infected with HCV than they are

currently able to treat. (Funded by the Agency for Healthcare Research and Quality and others.).

Others (education)

Roose, R. J., Cockerham-Colas, L., Soloway, I., Batchelder, A. and Litwin, A. H. "**Reducing barriers to hepatitis C treatment among drug users: an integrated hepatitis C peer education and support program.**" *J Health Care Poor Underserved* **2014** 25(2): 652-662.

This report describes an innovative HCV Peer Educator Program that facilitates education, support, and engagement in HCV treatment among patients in an opioid treatment program. Integrating peer educators in a collaborative manner with close supervision holds promise as a model to reduce barriers to HCV treatment among drug users.

Morris, M. D., Evans, J., Montgomery, M., Yu, M., Briceno, A., Page, K. and Hahn, J. A. "**Intimate injection partnerships are at elevated risk of high-risk injecting: a multi-level longitudinal study of HCV-serodiscordant injection partnerships in San Francisco, CA.**" *PLoS One* **2014** 9(10): e109282.

BACKGROUND: It is increasingly recognized that the risk for HIV and hepatitis C (HCV) transmission among people who inject drugs (PWID), such as syringe sharing, occurs in the context of relationships between (at least) two people. Evidence suggests that the risk associated with injection behavior varies with injection partner types.

METHODS: We utilized longitudinal dyad-level data from a study of young PWID from San Francisco (2006 to 2013) to investigate the relationship-level factors influencing high-risk injecting within HCV-serodiscordant injection partners (i.e., individuals who injected together >/=5 times in the prior month). Utilizing data from 70 HCV-serodiscordant injection partnerships, we used generalized linear models to examine relationship-level predictors (i.e., partnership composition, partnership closeness, and partnership dynamics) of: (1) receptive syringe sharing (RSS); and (2) receptive cooker use (RCU), as reported by the HCV-negative injection partner. **RESULTS:** As reported by the "at-risk" HCV-negative injection partner, receptive syringe sharing (RSS) and receptive cooker use (RCU) were 19% and 33% at enrollment, and 11% and 12% over all visits (total follow-up time 55 person-years) resulting in 13 new HCV-infections (incidence rate: 23.8/100 person-years). Person-level factors, injection partnership composition, and partnership dynamics were not significantly associated with either RSS or RCU. Instead, intimate injection partnerships (those who lived together and were also in a sexual relationship) were independently associated with a 5-times greater risk of both RSS and a 7-times greater risk of RCU when compared to injecting only partnerships. **CONCLUSION:** Our findings suggest a positive, and amplified effect of relationship factors on injecting drug risk behaviors among young PWID injection partnerships. The majority of interventions to reduce injection drug use related harms focus on individual-based education to increase drug use knowledge. Our findings support the need to expand harm reduction strategies to relationship-based messaging and interventions.

Hammett, T. M., Phan, S., Gaggin, J., Case, P., Zaller, N., Lutnick, A., Kral, A. H., Fedorova, E. V., Heimer, R., Small, W., et al. "**Pharmacies as providers of expanded health services for people who inject drugs: a review of laws, policies, and barriers in six countries.**" *BMC Health Serv Res* **2014** 14: 261.

BACKGROUND: People who inject drugs (PWID) are underserved by health providers but pharmacies may be their most accessible care settings. **METHODS:** Studies in the

U.S., Russia, Vietnam, China, Canada and Mexico employed a three-level (macro-, meso-, and micro-) model to assess feasibility of expanded pharmacy services for PWID. Studies employed qualitative and quantitative interviews, review of legal and policy documents, and information on the knowledge, attitudes, and practices of key stakeholders. RESULTS: Studies produced a mixed assessment of feasibility. Provision of information and referrals by pharmacies is permissible in all study sites and sale and safe disposal of needles/syringes by pharmacies is legal in almost all sites, although needle/syringe sales face challenges related to attitudes and practices of pharmacists, police, and other actors. Pharmacy provision of HIV testing, hepatitis vaccination, opioid substitution treatment, provision of naloxone for drug overdose, and abscess treatment, face more serious legal and policy barriers. DISCUSSION: Challenges to expanded services for drug users in pharmacies exist at all three levels, especially the macro-level characterized by legal barriers and persistent stigmatization of PWID. Where deficiencies in laws, policies, and community attitudes block implementation, stakeholders should advocate for needed legal and policy changes and work to address community stigma and resistance. Laws and policies are only as good as their implementation, so attention is also needed to meso- and micro- levels. Policies, attitudes, and practices of police departments and pharmacy chains as well as knowledge, attitudes, and practices of individual PWID, individual pharmacies, and police officers should support rather than undermine positive laws and expanded services. Despite the challenges, pharmacies remain potentially important venues for delivering health services to PWID.

Ouyang, D., Yuan, N., Sheu, L., Lau, G., Chen, C. and Lai, C. J. "Community health education at student-run clinics leads to sustained improvement in patients' hepatitis B knowledge." *J Community Health* 2013 38(3): 471-479.

While student-run clinics are often important healthcare safety nets for underserved populations, their efficacy for improving patient health knowledge has not been thoroughly explored. From September 2011 to April 2012, we assessed patients' retention of hepatitis B virus (HBV) knowledge after receiving student-led education at two student-run HBV screening and vaccination clinics. Patient education was provided by trained first and second-year medical, nursing, and pharmacy students, aided by a script and interpreters. Patient knowledge of HBV was evaluated at three points: before education, after the initial visit, and at one-month follow-up. Student-led education produced improved knowledge of HBV transmission, prevention, and management, which was retained 1 month after education for 52 patients tracked through time. Mean scores on an HBV knowledge survey improved from 56.4 % ($SD = 15.2\%$) at baseline to 66.6 % ($SD = 15.1\%$) after education, and 68.3 % ($SD = 15.2\%$) after one month. There was a statistically significant difference between the first and second (paired T test, $p < 0.001$) and the first and third tests (paired T test, $p < 0.001$), but no difference between the second and third tests (paired T test, $p = 0.45$).

Multivariate analysis demonstrated that retention was correlated with patient educational background but independent of patient age, gender, income, primary language and number of years lived in the United States. Our study suggests that trained health professional students can effectively impart health knowledge that is retained by patients for at least 1 month. These results warrant consideration of student-led educational sessions at SRCs as a promising community health education

model.

Brunings, P., Klar, S., Butt, G., Nijkamp, M. D. and Buxton, J. A. **"It's a big part of our lives": A qualitative study defining quality of hepatitis C care from the patient's perspective.** *Gastroenterol Nurs* **2013** 36(4): 249-257.

Nurses play a key role in the ongoing treatment and management of chronic conditions such as Hepatitis C. Their skills in counseling, education, and as liaisons between patients, support services, and other healthcare providers make them crucial in the management of patients with Hepatitis C. Qualitative methods were used to explore and describe quality-of-care perspectives of patients receiving care in viral hepatitis clinics. Data were collected through focus group interviews at three hepatitis prevention and care demonstration projects located in underserved rural and small urban areas in British Columbia, Canada. Key themes were identified and used to construct a "Hepatitis C care model" and generate quality-of-care statements. These statements were then rated by another group of participants with Hepatitis C, using concept mapping. Most themes identified by the participants in focus groups ($n = 21$) related to care provision processes (autonomy, communication, education/information, continuity of care, professional competence, and support) rather than structure or outcomes of care. Concept-mapping participants ($n = 20$) rated communication as the key theme. Participants also highlighted the supportive role nurses played. Hepatitis C programming can be improved by leveraging nurses' strengths within multidisciplinary teams to address patient's concerns about process and communication issues.

Lee, H., Hann, H. W., Yang, J. H. and Fawcett, J. **Recognition and management of HBV infection in a social context.** *J Cancer Educ* **2011** 26(3): 516-521.

Chronic viral hepatitis B and C infection is three to five times more frequent than HIV in the USA, and chronically infected people are at risk for long-term sequelae including cirrhosis, liver decomposition, and hepatocellular carcinoma (Institute of Medicine, 2010). Socio-cultural factors are central to the way an individual constructs hepatitis B virus (HBV) infection, perceives it as serious health problem, and moves on to appropriate health behavior (Lee et al., *J Canc Educ* 25:337-342, 2010; Kim, *J Health Care Poor Underserved* 5:170-182, 2004; Lee et al., *Asian Nurs Res* 1:1-11, 2007; Wu et al., *Asian Pac J Cancer Prev* 8(1):127-234, 2007; Yang et al., *J Korean Academy Nurs* 40:662-675, 2010). The purpose of this study was to seek "real world" data about factors that influence the recognition and management of HBV infection in Korean Americans' socio-cultural contexts. The descriptive qualitative study used an interview informed by ethnography to collect data and was guided by the Network-Episode Model. (Pescosolido, *Adv Med Sociol* 2:161-184, 1991; Pescosolido, *AJS* 97:1096-1138, 1992; Pescosolido, *Res Sociol Health Care* 13A:171-197, 1996). The sample comprised 12 HBV patients and nine key informants. Six factors that influenced the management of HBV infection emerged from the interviews: recognition of disease within a social context, unrecognized disease in a hidden health system, the socio-cultural meaning of disease, lay construction of the cause of disease, misunderstandings and cultural learning styles, and personal and environmental barriers to health care. Each theme was associated with Korean American (KA) social contexts, participants' experiences, and the beliefs they held about the disease. The findings explored that the family

network is "genetic code" for social networking among KAs and the network of patients was not geographically bound. Health management behaviors are mediated by an array of types and levels of social and personal networks, and this raises questions about current health education, management of HBV, and prevention of liver cancer.

3 Reference list of hepatitis in different underserved groups in Europe

3.1 Hepatitis migrants, refugee, asylum seekers in Europe

Pubmed MEDLINE search was performed on with the following selection criteria [Hepatitis OR HCV OR HBV) AND (Migrant\$ OR Refugee* OR Asylum*) AND (Screening OR prevention OR Treatment OR immunization OR Vaccination) AND Europe] from the last 5 years. A relevant selection was made in end-note and the reference are sorted by publication time and first authors name

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3.2 Hepatitis IDU Or PWID

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3.3 Hepatitis Prisoners

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EBERHARD SCHATZ, Correlation network

From speaker's form:

Publisher, editor or author in

1. **Effective Prevention of Hepatitis C among Drug Injectors: why and how to improve the quality of needle and syringe programs**, Leicht, Correlation Hepatitis and Drug Use Initiative 2014
2. **Challenges of Testing People who Inject Drugs for HCV in Europe**, Farrell, Schatz, Correlation Hepatitis and Drug Use Initiative 2014
3. **Viral Hepatitis in Europe**, BMC Infection Disease Journal Vol 14. Supplement 6, Lazarus, Correlation Hepatitis and Drug Use Initiative 2014
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5. **Roundtable discussion: how lessons learned from HIV can inform the global response to viral hepatitis**, Lazarus, Schatz, BMC Journal Vol 14
6. **Manifesto: Hepatitis C: Access to Prevention, Testing, Treatment and Care for People who Use Drugs**, Correlation Hepatitis and Drug Use Initiative 2014
7. Peer Support Training Manual, B. Stralenkranz, Correlation Hepatitis and Drug Use Initiative 2014
8. **Monitoring of HCV: testing in low threshold drug services**, H. Zurhold, Correlation Hepatitis and Drug Use Initiative 2014
9. **Drug Use and Hepatitis C: Experiences with HCV testing and treatment**, H. Zurhold, Correlation Hepatitis and Drug Use Initiative 2014
10. **Drug Consumption Rooms: theory and practice**, Schatz, Correlation Network

MANUEL CARBALLO, International Centre for Migration Health and Development

From speaker's form:

1. Seme K, Maver PJ, Korac T, Canton A, Castkova J, Dimitrov G, Filippova I, Hudecova H, Iljazovic E, Kaic B, Kesic V, Kupreviciene N, Lausevic D, Molnar Z, Perevoscikovs J, Spaczynski M, Stefanova V, Ucakar V, Poljak M. **Current status of human papillomavirus vaccination implementation in central and eastern Europe**. Acta Dermatovenerol Alp Pannonica Adriat 2013;22:21-25.

SERGIO BABUDIERI, Health Without Barriers (HWBs)

From speaker's form:

1. **2000 – 2003:** Local Principal investigator for the study “*A randomized open-label, multi center, efficacy and safety study comparing Pegylated-Interferon alfa-2a plus amantadine to Pegylated- Interferon alfa 2a plus ribavirin for the treatment*

- of naive Patients with Chronic hepatitis C” - IMPACT STUDY - proposed by Roche S.p.A ,Milan.**
2. **2000 – 2009:** Local Principal investigator for the study “*Multicenter open label Expanded Access Program of Peginterferon α-2a (Ro25-8310) monotherapy and combination therapy with Ribavirin (Ro 20-9963) in naïve patients with Chronic hepatitis C*” proposed by Roche S.p.A., Milan.
 3. **2005 – 2009:** Principal Investigator for the study: “*PROBE (Pegylated Interferons and Real Optimisation of Best Efficacy)*” - proposed by Roche S.p.A, Milan.
 4. **2005 – 2011:** Local Principal investigator for the study: “*An open, randomized, multicentre trial to evaluate efficacy and safety of a 24 week-course of Peg-Interferon α-2b versus a 12 week-course of Peg-Interferon α-2b alone or plus ribavirin in patients with acute hepatitis C – “EPAC STUDY”*” (Prot. P03552), proposed by Schering-Plough, Milan.
 5. **2007 – 2012:** Principal investigator and Coordinator for the study “*1st Sardianian Multicenter Study on Adefovir Plus Lamivudine in cirrhotic HBV-DNA Undetectable 3Tc Ongoing treatment HBeAg neg.ve patients*” – PLUTO STUDY – (EudraCT number: 2007-003205-26), spontaneous study proposed by University of Sassari.
 6. **2010 – 2011:** Local Principal Investigator for the study” TMC435HPC3007:” *A Phase III, randomize, double blind, placebo-controlled study to investigate the efficacy, safety and tolerability of TMC435 vs. placebo as part of a treatment regimen including peginterferon alfa-2a and ribavirin in hepatitis C, genotype 1 infected subjects who relapsed after previous interferon based therapy.* EudraCT No. 2010-021113-23. Proposed by Janssen-Cilag Italia SpA. Milan.
 7. **2011 – 2014:** Local Principal Investigator for the study” VX-950HEPC3002:” *“Multicenter, open-label, early access program of Telaprevir in combination with Peginterferon alfa and Ribavirin in genotype 1 chronic hepatitis C subjects with severe fibrosis and compensated cirrhosis.”* EudraCT No. 2010-023669-23. Proposed by Janssen-Cilag Italia SpA. Milan.
 8. **2011 – 2014:** Local Principal Investigator for the study” VX-950HEPC3005:” *“Multicenter, open-label, study of Telaprevir in combination with Peginterferon alfa and Ribavirin in Human Immunodeficiency Virus/Genotype 1 chronic hepatitis C Coinfected subjects with severe fibrosis and compensated cirrhosis.”* EudraCT No. 2011-003593-85. Proposed by Janssen-Cilag Italia SpA. Milan.
 9. **2013 – 2015:** Local Principal Investigator for the study – MV25599 *“PegBase – Non-Interventional Cohort Study on the Utilization and Impact of Dual and Triple Therapies Based on Pegylated Interferon for the Treatment of Chronic Hepatitis C”* Proposed by Roche S.p.A Milan.
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LUCAS WIESSING ECMDDA

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MARIANNE LINNET

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DAVID GOLDBERG

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MIRIAM LEVI

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MIRA KOJOUHAROVA

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PATRIZIA CARRIERI

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1. Wolfe, D., M.P. Carrieri, and D. Shepard, **Treatment and care for injecting drug users with HIV infection: a review of barriers and ways forward.** Lancet, 2010. 376(9738): p. 355-66.
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TINE CORNELISSEN

No relevant publications reported;

SANDRA MANZANARES

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