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1. Harm Reduction Coverage and Hepatitis C Incidence: Findings From a Cohort of People Who Inject Drugs.

Authors Minoyan, Nanor; Artenie, Andreea A; Zang, Geng; Jutras-Aswad, Didier; Turcotte, Marie-Ève; Bruneau, Julie
Source American journal of preventive medicine; Jun 2020; vol. 58 (no. 6); p. 845-853
Publication Date Jun 2020
Publication Type(s) Research Support, Non-u.s. Gov't Journal Article
PubMedID 32444003
Database Medline
Available at American journal of preventive medicine from ScienceDirect Available to PHE and Local Authority staff
Abstract INTRODUCTIONNeedle and syringe programs and opioid agonist therapy are essential for harm reduction among people who inject drugs. Few studies assess their combined potential in preventing hepatitis C virus infection. No studies have assessed whether they perform similarly among individuals at risk of primary and recurrent infection. This study aimed to estimate the rates of hepatitis C virus acquisition according to harm reduction coverage among hepatitis C virus-naive and previously infected people who inject drugs in Montreal, Canada.METHODSThis prospective cohort study involved regular interviews and hepatitis C antibody and RNA testing (data collection: 2010-2017, analysis: 2018). Opioid agonist therapy coverage was defined by current dose: high (≥60 mg/day methadone, ≥16 mg buprenorphine), low, or none. Complete needle and syringe program coverage was defined as exclusively reporting safe needle and syringe sources (past 6 or 3 months). Combined coverage was defined as full (high-dose agonist/complete needle/syringe coverage), minimal (low-dose agonist/incomplete needle/syringe coverage), and partial (remaining combinations). Cox regression models were fit.RESULTSA total of 106 events were observed over 1,183.1 person-years for primary and recurrent incidence rates of 10.6 (95% CI=8.0, 13.8) and 7.6 (95% CI=5.6, 9.9) per 100 years, respectively. High-dose opioid agonist therapy was associated with a 77% reduction in hepatitis C virus acquisition (hazard ratio=0.23, 95% CI=0.10, 0.50) compared with not receiving opioid agonist therapy. Needle and syringe coverage was not associated with infection rates. Estimates considering their combination reflected opioid agonist therapy coverage. Associations were similar among hepatitis C virus-naive and previously infected people who inject drugs.CONCLUSIONSHigh-dose opioid agonist therapy seems particularly important to reduce drug-related harms among hepatitis C virus-naive and previously infected people who inject drugs in Montreal.

2. Harm reduction and viral hepatitis C in European prisons: a cross-sectional survey of 25 countries.

Authors Bielen, Rob; Stumo, Samya R; Halford, Rachel; Werling, Klára; Reic, Tatjana; Stöver, Heino; Robaeys, Geert; Lazarus, Jeffrey V
Source Harm reduction journal; May 2018; vol. 15 (no. 1); p. 25
Publication Date May 2018
Publication Type(s) Research Support, Non-u.s. Gov't Multicenter Study Journal Article
PubMedID 29751763
Database Medline
Available at Harm reduction journal from BioMed Central
Available at Harm reduction journal from Europe PubMed Central - Open Access
Available at Harm reduction journal from SpringerLink
Available at Harm reduction journal from ProQuest (MEDLINE with Full Text) - NHS Version
Available at Harm reduction journal from ProQuest (Health Research Premium) - NHS Version
Available at Harm reduction journal from Unpaywall

Abstract BACKGROUNDCurrent estimates suggest that 15% of all prisoners worldwide are chronically infected with the hepatitis C virus (HCV), and this number is even higher in regions with high rates of injecting drug use. Although harm reduction services such as opioid substitution therapy (OST) and needle and syringe programs (NSPs) are effective in preventing the further spread of HCV and HIV, the extent to which these are available in prisons varies significantly across countries.METHODSThe Hep-CORE study surveyed liver patient groups from 25 European countries in 2016 and mid-2017 on national policies related to harm reduction, testing/screening, and treatment for HCV in prison settings. Results from the cross-sectional survey were compared to the data from available reports and the peer-reviewed literature to determine the overall degree to which European countries implement evidence-based HCV recommendations in prison settings.RESULTSPatient groups in nine countries (36%) identified prisoners as a high-risk population target for HCV testing/screening. Twenty-one countries (84%) provide HCV treatment in prisons. However, the extent of coverage of these treatment programs varies widely. Two countries (8%) have NSPs officially available in prisons in all parts of the country. Eleven countries (44%) provide OST in prisons in all parts of the country without additional requirements.CONCLUSIONDespite the existence of evidence-based recommendations, infectious disease prevention measures such as harm reduction programs are inadequate in European prison settings. Harm reduction, HCV testing/screening, and treatment should be scaled up in prison settings in order to progress towards eliminating HCV as a public health threat.

3. A high proportion of users of low-threshold facilities with needle exchange programmes in Switzerland are currently on methadone treatment: implications for new approaches in harm reduction and care.

Authors Gervasoni, Jean-Pierre; Balthasar, Hugues; Huissoud, Thérèse; Jeannin, André; Dubois-Arber, Françoise
Source The International journal on drug policy; Jan 2012; vol. 23 (no. 1); p. 33-36
Publication Date Jan 2012
Publication Type(s) Research Support, Non-u.s. Gov't Journal Article
PubMedID 21705205
Database Medline
Available at The International journal on drug policy from ScienceDirect Available to PHE and Local Authority staff
Available at The International journal on drug policy from Unpaywall

Abstract BACKGROUNDIncreasingly, patients receiving methadone treatment are found in low threshold facilities (LTF), which provide needle exchange programmes in Switzerland. This paper identifies the characteristics of LTF attendees receiving methadone treatment (MT) compared with other LTF attendees (non-MT).METHODSA national cross-sectional survey was conducted in 2006 over five consecutive days in all LTF (n=25). Attendees were given an anonymous questionnaire, collecting information on socio-demographic indicators, drug consumption, injection, methadone treatment, and self-reported HIV and HCV status. Univariate analysis and logistic regression were performed to compare MT to non-MT. The response rate was 66% (n=1128).RESULTSMT comprised 57.6% of the sample. In multivariate analysis, factors associated with being on MT were older age (OR: 1.38), being female (OR: 1.60), having one's own accommodation (OR: 1.56), receiving public assistance (OR: 2.29), lifetime injecting (OR: 2.26), HIV-positive status (OR: 2.00), and having consumed cocaine during the past month (OR: 1.37); MT were less likely to have consumed heroin in the past month (OR: 0.76, not significant) and visited LTF less often on a daily basis (OR: 0.59). The number of injections during the past week was not associated with MT.CONCLUSIONSMore LTF attendees were in the MT group, bringing to light an underappreciated LTF clientele with specific needs. The MT group consumption profile may reflect therapeutic failure or deficits in treatment quality and it is necessary to acknowledge this and to strengthen the awareness of LTF personnel about potential needs of MT attendees to meet their therapeutic goals.

4. Feasibility of reaching world health organization targets for hepatitis C and the cost-effectiveness of alternative strategies.

Authors Wisløff, T; White, R; Dalgard, O; Amundsen, E J; Meijerink, H; Kløvstad, H
Source Journal of viral hepatitis; Sep 2018; vol. 25 (no. 9); p. 1066-1077
Publication Date Sep 2018
Publication Type(s) Journal Article
PubMedID 29624813
Database Medline
Available at Journal of viral hepatitis from Wiley Online Library Medicine and Nursing Collection 2019
Available at Journal of viral hepatitis from Ovid (Journals @ Ovid)
Available at Journal of viral hepatitis from Unpaywall

Abstract New drugs for treating hepatitis C have considerably increased the probability of being cured. Treatment uptake, however, is still low. The objectives of this study were to analyse the impact of initiatives that may increase the proportion of infected people on treatment and interventions aimed at reducing the incidence of new infection among people who inject drugs. A compartmental model for Norway was used to simulate hepatitis C and related complications. We analysed 2 different screening initiatives aimed to increase the proportion of infected people on treatment. Interventions aiming at reducing the hepatitis C incidence analysed were opioid substitution therapy (OST), a clean needle and syringe programme and a combination of both. The most cost-effective strategy for increasing hepatitis C treatment uptake was screening by general practitioners while simultaneously allowing for all infected people to be treated. We estimated that this intervention reduces the incidence of hepatitis C by 2030 by 63% compared with the current incidence. The 2 harm reduction strategies both reduced the incidence of hepatitis C by about 70%. Combining an increase in the current clean needles and syringe programme with OST was clearly the most cost-effective option. This strategy would reduce the incidence of hepatitis C by 80% compared with the current incidence by 2030. Thus, interventions to reduce the burden and spread of hepatitis C are cost-effective. Reaching the WHO target of a 90% reduction in hepatitis C incidence by 2030 may be difficult without combining different initiatives.

5. Intervention packages to reduce the impact of HIV and HCV infections among people who inject drugs in Eastern Europe and Central Asia: A modeling and cost-effectiveness study

Authors Mabileau G.; Yazdanpanah Y.; Scutelniciuc O.; Tsereteli M.; Konorazov I.; Yelizaryeva A.; Popovici S.; Saifuddin K.; Losina E.; Manova M.; Saldanha V.; Malkin J.-E.
Source Open Forum Infectious Diseases; Mar 2018; vol. 5 (no. 3)
Publication Date Mar 2018
Publication Type(s) Article
Database EMBASE
Available at Open Forum Infectious Diseases from Europe PubMed Central - Open Access
Available at Open Forum Infectious Diseases from Oxford Journals - Open Access
Available at Open Forum Infectious Diseases from Ovid (Journals @ Ovid)
Available at Open Forum Infectious Diseases from Unpaywall

Abstract Background. We evaluated the effectiveness and cost-effectiveness of interventions targeting hepatitis C virus (HCV) and HIV infections among people who inject drugs (PWID) in Eastern Europe/Central Asia. We specifically considered the needle-syringe program (NSP), opioid substitution therapy (OST), HCV and HIV diagnosis, antiretroviral therapy (ART), and/or new HCV treatment (direct acting antiviral [DAA]) in Belarus, Georgia, Kazakhstan, Republic of Moldova, and Tajikistan. Methods. We developed a deterministic dynamic compartmental model and evaluated the number of infections averted, costs, and incremental cost-effectiveness ratios (ICERs) of interventions. OST decreased frequencies of injecting by 85% and NSP needle sharing rates by 57%; ART was introduced at CD4 <350 and DAA at fibrosis stage .F2 at a $2370 to $23 280 cost. Results. Increasing NSP+OST had a high impact on transmissions (infections averted in PWID: 42% in Tajikistan to 55% in Republic of Moldova for HCV; 30% in Belarus to 61% in Kazakhstan for HIV over 20 years). Increasing NSP+OST+ART was very cost-effective in Georgia (ICER = $910/year of life saved [YLS]), and was cost-saving in Kazakhstan and Republic of Moldova. NSP+OST+ART and HIV diagnosis was very cost-effective in Tajikistan (ICER = $210/YLS). Increasing the coverage of all interventions was always the most effective strategy and was cost-effective in Belarus and Kazakhstan (ICER = $12 960 and $21 850/YLS); it became cost-effective/cost-saving in all countries when we decreased DAA costs. Conclusion. Increasing NSP+OST coverage, in addition to ART and HIV diagnosis, had a high impact on both epidemics and was very cost-effective and even cost-saving. When HCV diagnosis was improved, increased DAA averted a high number of new infections if associated with NSP+OST.

6. Needle syringe programmes and opioid substitution therapy for preventing hepatitis C transmission in people who inject drugs

Authors Platt L.; Minozzi S.; Reed J.; Hagan H.; Jordan A.; Vickerman P.; French C.; Hickman M.; Degenhardt L.; Hope V.; Hutchinson S.; Palmateer N.; Maher L.; Taylor A.; Bruneau J.
Source Cochrane Database of Systematic Reviews; Sep 2017; vol. 2017 (no. 9)
Publication Date Sep 2017
Publication Type(s) Review
PubMedID 28922449
Database EMBASE
Available at The Cochrane database of systematic reviews from Cochrane Collaboration (Wiley)
Available at The Cochrane database of systematic reviews from Unpaywall

Abstract Background: Needle syringe programmes and opioid substitution therapy for preventing hepatitis C transmission in people who inject drugs Needle syringe programmes (NSP) and opioid substitution therapy (OST) are the primary interventions to reduce hepatitis C (HCV) transmission in people who inject drugs. There is good evidence for the effectiveness of NSP and OST in reducing injecting risk behaviour and increasing evidence for the effectiveness of OST and NSP in reducing HIV acquisition risk, but the evidence on the effectiveness of NSP and OST for preventing HCV acquisition is weak.
Objective(s): To assess the effects of needle syringe programmes and opioid substitution therapy, alone or in combination, for preventing acquisition of HCV in people who inject drugs.
Search Method(s): We searched the Cochrane Drug and Alcohol Register, CENTRAL, the Cochrane Database of Systematic Reviews (CDSR), the Database of Abstracts of Reviews of Effects (DARE), the Health Technology Assessment Database (HTA), the NHS Economic Evaluation Database (NHSEED), MEDLINE, Embase, PsycINFO, Global Health, CINAHL, and the Web of Science up to 16 November 2015. We updated this search in March 2017, but we have not incorporated these results into the review yet. Where observational studies did not report any outcome measure, we asked authors to provide unpublished data. We searched publications of key international agencies and conference abstracts. We reviewed reference lists of all included articles and topic-related systematic reviews for eligible papers.
Selection Criteria: We included prospective and retrospective cohort studies, cross-sectional surveys, case-control studies and randomised controlled trials that measured exposure to NSP and/or OST against no intervention or a reduced exposure and reported HCV incidence as an outcome in people who inject drugs. We defined interventions as current OST (within previous 6 months), lifetime use of OST and high NSP coverage (regular attendance at an NSP or all injections covered by a new needle/syringe) or low NSP coverage (irregular attendance at an NSP or less than 100% of injections covered by a new needle/syringe) compared with no intervention or reduced exposure.
Data Collection and Analysis: We followed the standard Cochrane methodological procedures incorporating new methods for classifying risk of bias for observational studies. We described study methods against the following 'Risk of bias' domains: confounding, selection bias, measurement of interventions, departures from intervention, missing data, measurement of outcomes, selection of reported results; and we assigned a judgment (low, moderate, serious, critical, unclear) for each criterion.
Main Result(s): We identified 28 studies (21 published, 7 unpublished): 13 from North America, 5 from the UK, 4 from continental Europe, 5 from Australia and 1 from China, comprising 1817 incident HCV infections and 8806.95 person-years of follow-up. HCV incidence ranged from 0.09 cases to 42 cases per 100 person-years across the studies. We judged only two studies to be at moderate overall risk of bias, while 17 were at serious risk and 7 were at critical risk; for two unpublished datasets there was insufficient information to assess bias. As none of the intervention effects were generated from RCT evidence, we typically categorised quality as low. We found evidence that current OST reduces the risk of HCV acquisition by 50% (risk ratio (RR) 0.50, 95% confidence interval (CI) 0.40 to 0.63, I^2 = 0%, 12 studies across all regions, N = 6361), but the quality of the evidence was low. The intervention effect remained significant in sensitivity analyses that excluded unpublished datasets and papers judged to be at critical risk of bias. We found evidence of differential impact by proportion of female participants in the sample, but not geographical region of study, the main drug used, or history of homelessness or imprisonment among study samples. Overall, we found very low-quality evidence that high NSP coverage did not reduce risk of HCV acquisition (RR 0.79, 95% CI 0.39 to 1.61) with high heterogeneity (I^2 = 77%) based on five studies from North America and Europe involving 3530 participants. After stratification by region, high NSP coverage in Europe was associated with a 76% reduction in HCV acquisition risk (RR 0.24, 95% CI 0.09 to 0.62) with less heterogeneity (I^2 =0%). We found low-quality evidence of the impact of combined high coverage of NSP and OST, from three studies involving 3241 participants, resulting in a 74% reduction in the risk of HCV acquisition (RR 0.26 95% CI 0.07 to 0.89). Authors' conclusions: OST is associated with a reduction in the risk of HCV acquisition, which is strengthened in studies that assess the combination of OST and NSP. There was greater heterogeneity between studies and weaker evidence for the impact of NSP on HCV acquisition. High NSP coverage was associated with a reduction in the risk of HCV acquisition in studies in Europe.

7. Interventions against HCV & HIV infections among people whoinject drugs (PWID) In Eastern Europe & central Asia: A modeling and cost-effectiveness study

Authors Mabileau G.; Yazdanpanah Y.; Konorazov I.; Tsereteli M.; Yelizaryeva A.; Popovici S.; Saifuddin K.; Losina E.; Manova M.; Saldanha V.; Malkin J.-E.
Source Journal of Hepatology; Apr 2016; vol. 64 (no. 2)
Publication Date Apr 2016
Publication Type(s) Conference Abstract
Database EMBASE

Abstract Background and Aims: This study aimed to evaluate the effectiveness and cost-effectiveness of interventions such as Needle-Syringe Program (NSP), Opioid Substitution Therapy (OST), HCV & HIV diagnosis, antiretroviral therapy (ART), and/or new HCV treatment among PWIDs for averting new HCV & HIV infections and HCV & AIDS related deaths in 5 countries in Eastern Europe & Central Asia (Belarus, Georgia, Kazakhstan, Moldova, Tajikistan).
Method(s): We developed a deterministic dynamic compartmental model to simulate the trajectory of the general populations (PWIDs & none-PWIDs aged 15 to 65 years) according to the injecting status & HCV/HIV mono- or co-infection stages. Data were derived from international literature, national databases, and included HIV/HCV transmission risks. OST decreased frequencies of injecting by 85%; NSP for PWIDs, if 100% of injections, decreased needle sharing rates by 57%; ART introduced at CD4 cell count <350 cells/mm3 decreased the HIV-transmission risk for sexual intercourse by 90% & through needle sharing by 50%; HCV treatment was introduced when fibrosis stage >=F2. Country data are reported in Table.
Result(s): Numbers of HCV & HIV infections averted compared to base case for different strategies over 20 years are presented in the Table. Increasing NSP + OST + ART was very cost-effective in Georgia (Incremental Cost-Effectiveness Ratio (ICER) = 650$/life years saved); cost-saving in Kazakhstan & Moldova. This strategy was dominated (less effective & more expensive) by NSP + OST + ART & increasing HIV-diagnosis strategy in Tajikistan, which was very cost-effective (ICER = 780$/LYS). Increasing the coverage of all interventions (i.e. including HCV diagnosis & treatment) was always the most effective strategy; cost-effective in Belarus, Kazakhstan & Moldova (ICER = 15520, 28100 & 1910$/LYS), but not in other countries. When HCV treatment costs were reduced to $900 this strategy became cost effective in Tajikistan, Belarus & Georgia over 20 years (ICER = 2844; 900 & 2560$/LYS); cost-saving compared to the baseline in Kazakhstan & Moldova. Results were robust to multiple sensitivity analyses.
Conclusion(s): Increasing NSP + OST coverage, in addition to ART, and in some countries ART diagnosis had a high impact on HCV & HIV/ AIDS epidemics and was very cost-effective and even cost-saving in some settings. When HCV diagnosis was improved, HCV treatments increase averted a very high number of new infections if associated with NSP + OST. This strategy was cost-effective but only at very low HCV treatment costs. (Table Presented).

8. Effectiveness and cost-effectiveness of improvements in harm reduction interventions, a better cascade of care, and treat as prevention of chronic hepatitis C in people who inject drugs (PWID) in France (ANRS 95146)

Authors Cousien A.; Deuffic-Burban S.; Mabileau G.; Yazdanpanah Y.; Tran V.C.; Jauffret-Roustide M.; Dhersin J.-S.
Source Hepatology; Oct 2015; vol. 62
Publication Date Oct 2015
Publication Type(s) Conference Abstract
Database EMBASE
Available at Hepatology from Wiley Online Library
Available at Hepatology from Ovid (Journals @ Ovid)
Abstract We estimated the cost-effectiveness of strategies designed to improve harm reduction interventions and/or the cascade of care in PWID in the context of the incoming direct-acting antivirals (DAAs) in France. We used a dynamic model to simulate life expectancy in discounted quality adjusted life years (QALYs), direct lifetime discounted costs, incremental cost-effectiveness ratio (ICER) and the number of first generation new HCV infections for each strategy among PWID in Paris metropolitan area from 2015 until death: S1: base case=current practice. Time before access to needle and syringe programs (NSP) after injection initiation=1y, time before access to opioid substitution therapies (OST) when in NSP=0.5y, time to diagnosis after infection=1.25/1.45y, time to linkage to care after diagnosis=2.6y, loss to follow-up (LTFU) rate=14%/y, SVR rate=95%, treatment initiation: fibrosis >=F2 S2: improved risk reduction interventions. Access to NSP after injection initiation= 0.25y, time before access to OST when in NSP=0.25y S3: treatment initiation: fibrosis >=F0 S4: improved cascade of care. Time to diagnosis=0.5y, time to linkage to care=0.5y, LTFU rate=5%/y, SVR rate=95% S5: S3&S4 S6: S2&S3&S4 Results are presented in Table. Compared with the base case, improved cascade of care (S4) increased the average life expectancy with an ICER of 8,373/QALY gained (

9. Interventions to prevent HIV and hepatitis C in people who inject drugs: A review of reviews to assess evidence of effectiveness

Authors MacArthur G.J.; Hickman M.; van Velzen E.; Palmateer N.; Roy K.; Goldberg D.; Hutchinson S.J.; Kimber J.; Pharris A.; Salminen M.; Hope V.; Rhodes T.; Taylor A.; Aspinall E.; Hedrich D.
Source International Journal of Drug Policy; Jan 2014; vol. 25 (no. 1); p. 34-52
Publication Date Jan 2014
Publication Type(s) Review
PubMedID 23973009
Database EMBASE
Available at The International journal on drug policy from ScienceDirect Available to PHE and Local Authority staff

Abstract Background: Injecting drug use is a major risk factor for the acquisition and transmission of HIV and Hepatitis C virus (HCV). Prevention of these infections among people who inject drugs (PWID) is critical to reduce ongoing transmission, morbidity and mortality.
Method(s): A review of reviews was undertaken involving systematic literature searches of Medline, Embase, CINAHL, PsychINFO, IBSS and the Cochrane Library (2000-2011) to identify English language reviews regarding the effectiveness of harm reduction interventions in relation to HIV transmission, HCV transmission and injecting risk behaviour (IRB). Interventions included needle and syringe programmes (NSP); the provision of injection paraphernalia; opiate substitution treatment (OST); information, education and counselling (IEC); and supervised injecting facilities (SIFs). Reviews were classified into 'core' or 'supplementary' using critical appraisal criteria, and the strength of review-level evidence was assessed.
Result(s): Twelve core and thirteen supplementary reviews were included. From these reviews we identified: (i) for NSP: tentative review-level evidence to support effectiveness in reducing HIV transmission, insufficient review-level evidence relating to HCV transmission, but sufficient review-level evidence in relation to IRB; (ii) for OST: sufficient review-level evidence of effectiveness in relation to HIV transmission and IRB, but tentative review-level evidence in relation to HCV transmission; (iii) for IEC, the provision of injection paraphernalia and SIFs: tentative review-level evidence of effectiveness in reducing IRB; and either insufficient or no review-level evidence for these interventions in relation to HIV or HCV transmission.
Conclusion(s): Review-level evidence indicates that harm reduction interventions can reduce IRB, with evidence strongest for OST and NSP. However, there is comparatively little review-level evidence regarding the effectiveness of these interventions in preventing HCV transmission among PWID. Further studies are needed to assess the effectiveness and impact of scaling up comprehensive packages of harm reduction interventions to minimise HIV and HCV transmission among PWID. © 2013 Elsevier B.V.

10. Upscaling prevention, testing and treatment to control hepatitis C as a public health threat in Dar es Salaam, Tanzania: A cost-effectiveness model.

Authors Scott ; Mohamed, Zameer; Rwegasha, John; Mbwambo, Jessie; Lemoine, Maud; Hellard, Margaret
Source International Journal of Drug Policy; Feb 2021; vol. 88
Publication Date Feb 2021
Publication Type(s) Academic Journal
PubMedID NLM31882272
Database CINAHL
Available at International Journal of Drug Policy from ScienceDirect Available to PHE and Local Authority staff

Abstract Background: Hepatitis C (HCV) elimination strategies are required for low and middle-income countries (LMICs), because although treatment access is currently limited, this is unlikely to remain the case forever. We estimate and compare the impact, cost and cost-effectiveness of a variety of prevent, test and treat strategies for HCV in Dar es Salaam, Tanzania.Methods: A mathematical model.Results: Without intervention, the HCV epidemic in Dar es Salaam was estimated to result in US$29.1 million in disease costs between 2018 and 2030. Maintaining existing harm reduction coverage (4% needle and syringe program, 42% opioid substitution therapy) over this period was estimated to prevent 22% of injecting drug use-acquired HCV infections compared to a zero coverage scenario. Implementing antibody/RNA, serum-based HCV core antigen (HCVcAg) and dry blood spot (DBS) HCVcAg test/treat programs among PWID increased the total cost by US$0.7 million, US$3.1 million and US$6.5 million respectively by 2030; however this expenditure led to 57%, 61% and 73% reductions in annual incidence among PWID, 25%, 27% and 33% reductions overall annual incidence (PWID+non-PWID), and reduced HCV prevalence among PWID from 27% to 9%, 8% and 5%, respectively. The Ab/RNA, serum-based and DBS HCVcAg test/treat programs cost US$689, US$2857 and US$5400 per disability-adjusted life year averted, respectively, compared to no test/treat program.Conclusion: Primary prevention among PWID can provide important reductions in HCV transmission in the absence of treatment availability. HCV Ab/RNA or serum-based HCVcAg test/treat programs among PWID are likely to be cost-effective in Dar es Salaam, with serum-based HCVcAg test/treat achieving greater impact due to a simpler diagnostic process and better retention in care. If used for regular testing of PWID, the additional coverage benefits of non-laboratory-based DBS HCVcAg tests in LMICs would outweigh their reduced sensitivity.

11. Eradicating hepatitis C: Are novel screening strategies for people who inject drugs cost-effective?

Authors Manca ; Robinson, Emma; Dillon, John F; Boyd, Kathleen Anne
Source International Journal of Drug Policy; Aug 2020; vol. 82
Publication Date Aug 2020
Publication Type(s) Academic Journal
PubMedID NLM32585583
Database CINAHL
Available at The International journal on drug policy from ScienceDirect Available to PHE and Local Authority staff

Abstract Background: In developed countries, people who inject drugs (PWID) have a high prevalence of hepatitis C virus (HCV), yet they are often under-diagnosed. The World Health Organization has set 2030 as a target year for HCV elimination. To meet this target, improving screening in convenient community settings in order to reach infected undiagnosed individuals is a priority. This study assesses the cost-effectiveness of alternative novel strategies for diagnosing HCV infection in PWID.Methods: A cost-effectiveness analysis was undertaken to compare HCV screening at needle exchange centres, substance misuse services and at community pharmacies, with the standard practice of detection during general practitioners' consultations. A decision tree model was developed to assess the incremental cost per positive diagnosis, and a Markov model explored the net monetary benefit (NMB) and the cost per Quality Adjusted Life Years (QALYs) gained over a lifetime horizon.Results: Needle exchange services provided a 7.45-fold increase in detecting positive individuals and an incremental cost of £12,336 per QALY gained against current practice (NMB £163,827), making this the most cost-effective strategy over a lifetime horizon. Screening at substance misuse services and pharmacies was cost-effective only at a £30,000/QALY threshold. With a 24% discount to HCV treatment list prices, all three screening strategies become cost-effective at £20,000/QALY.Conclusions: Targeting PWID populations with screening at needle exchange services is a highly cost-effective strategy for reaching undiagnosed HCV patients. When applying realistic discounts to list prices of drug treatments, all three strategies were highly cost-effective from a UK NHS perspective. All of these strategies have the potential to make a cost-effective contribution to the eradication of HCV by 2030.

12. WHO guidance on the prevention of viral hepatitis B and C among people who inject drugs.

Authors Walsh ; Verster, Annette; Rodolph, Michelle; Akl, Elie A
Source International Journal of Drug Policy; May 2014; vol. 25 (no. 3); p. 363-371
Publication Date May 2014
Publication Type(s) Academic Journal
PubMedID NLM24561223
Database CINAHL
Available at The International journal on drug policy from ScienceDirect Available to PHE and Local Authority staff

Abstract Viral hepatitis B and C (HBV, HCV) disproportionately affect people who inject drugs (PWID) across the world. To date there has been little global action focusing on prevention, care and treatment of HBV and HCV among PWID. Here we report on the development process and discuss the implications of evidence informed WHO Guidelines for the Prevention of HBV and HCV in PWID. The World Health Organization (WHO) convened a Guideline Development Panel to develop recommendations on the prevention of HBV and HCV among PWID. The process followed the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology. It included the development of PICO (Population, Interventions, Comparator, Outcomes) questions and conducting systematic reviews. Quality of evidence was classified into 4 levels: high, moderate, low, and very low. In the process of moving from evidence to recommendations, the following were considered: quality of evidence, balance of benefits and harms, community values and preferences and resource use. The WHO recommendations include the following for working with PWID: offer the rapid HBV vaccination regimen; offer incentives to increase uptake and completion of the HBV vaccine schedule; needle and syringe programs should also provide low dead-space syringes for distribution; and offer peer interventions to reduce the incidence of viral hepatitis. This guideline complements other WHO documents regarding PWID, including HIV prevention initiatives such as needle and syringe programs and opioid substitution therapy. This guidance offers a first step in the prevention of HBV and HCV among PWID. However, the lack of high quality evidence in this area necessitates further research and resources for implementation.

13. Full participation in harm reduction programmes is associated with decreased risk for human immunodeficiency virus and hepatitis C virus: evidence from the Amsterdam Cohort Studies among drug users.

Authors Van Den Berg C; Smit C; Van Brussel G; Coutinho R; Prins M
Source Addiction; Sep 2007; vol. 102 (no. 9); p. 1454-1462
Publication Date Sep 2007
Publication Type(s) Academic Journal
PubMedID NLM17697278
Database CINAHL
Available at Addiction (Abingdon, England) from Wiley Online Library Medicine and Nursing Collection 2019
Available at Addiction (Abingdon, England) from EBSCO (Psychology and Behavioral Sciences Collection)
Available at Addiction (Abingdon, England) from Ovid (Journals @ Ovid)
Available at Addiction (Abingdon, England) from Unpaywall

Abstract OBJECTIVES: To investigate the impact of harm-reduction programmes on HIV and hepatitis C virus (HCV) incidence among ever-injecting drug users (DU) from the Amsterdam Cohort Studies (ACS). METHODS: The association between use of harm reduction and seroconversion for human immunodeficiency virus (HIV) and/or hepatitis C virus (HCV) was evaluated using Poisson regression. A total of 714 DU were at risk for HIV and/or HCV during follow-up. Harm reduction was measured by combining its two most important components--methadone dose and needle exchange programme (NEP) use--and looking at five categories of participation, ranging from no participation (no methadone in the past 6 months, injecting drug use in the past 6 months and no use of NEP) to full participation (> or = 60 mg methadone/day and no current injecting or > or = 60 mg methadone/day and current injecting but all needles exchanged). RESULTS: Methadone dose or NEP use alone were not associated significantly with HIV or HCV seroconversion. However, with combination of these variables and after correction for possibly confounding variables, we found that full participation in a harm reduction programme (HRP) was associated with a lower risk of HIV and HCV infection in ever-injecting drug users (DU), compared to no participation [incidence rate ratio 0.43 (95% CI 0.21-0.87) and 0.36 (95% CI 0.13-1.03), respectively]. CONCLUSIONS: In conclusion, we found that full participation in HRP was associated with a lower incidence of HCV and HIV infection in ever-injecting DU, indicating that combined prevention measures--but not the use of NEP or methadone alone--might contribute to the reduction of the spread of these infections.

14. A Systematic Review and Meta-Analysis of Studies Evaluating the Effect of Medication Treatment for Opioid Use Disorder on Infectious Disease Outcomes.

Authors McNamara KF; Biondi BE; Hernández-Ramírez RU; Taweh N; Grimshaw AA; Springer SA
Source Open forum infectious diseases; Aug 2021; vol. 8 (no. 8); p. ofab289
Publication Date Aug 2021
Publication Type(s) Journal Article; Review
PubMedID 34430670
Database PubMed
Available at Open forum infectious diseases from Europe PubMed Central - Open Access
Available at Open forum infectious diseases from Oxford Journals - Open Access
Available at Open forum infectious diseases from Ovid (Journals @ Ovid)
Available at Open forum infectious diseases from Unpaywall

Abstract The opioid epidemic has fueled infectious disease epidemics. We determined the impact of medications for opioid use disorder (MOUD) on treatment outcomes of opioid use disorder (OUD)-associated infectious diseases: antiretroviral therapy (ART) adherence, human immunodeficiency virus (HIV) viral suppression, hepatitis C virus (HCV) sustained virologic response, HCV reinfection, new hepatitis B virus infections, and infectious endocarditis-related outcomes. Manuscripts reporting on these infectious disease outcomes in adults with OUD receiving MOUD compared with those with OUD "not" receiving MOUD were included. Initial search yielded 8169 papers; 9 were included in the final review. The meta-analysis revealed that MOUD was associated with greater ART adherence (odds ratio [OR] = 1.55; 95% confidence interval [CI] = 1.12-2.15) and HIV viral suppression (OR = 2.19; 95% CI = 1.88-2.56). One study suggested a positive association between MOUD and HCV sustained virologic response. There is significant support for integrating MOUD with HIV treatment to improve viral suppression among persons with HIV (PWH) and OUD. Treatment of OUD among PWH should be a priority to combat the opioid and HIV epidemics.

15. Integrated treatment of hepatitis C virus infection among people who inject drugs: A multicenter randomized controlled trial (INTRO-HCV).

Authors Fadnes LT; Aas CF; Vold JH; Leiva RA; Ohldieck C; Chalabianloo F; Skurtveit S; Lygren OJ; Dalgård O; Vickerman P; Midgard H; Løberg EM; Johansson KA; INTRO-HCV Study Group
Source PLoS medicine; 2021; vol. 18 (no. 6); p. e1003653
Publication Date 2021
Publication Type(s) Journal Article; Research Support, Non-U.S. Gov't
PubMedID 34061883
Database PubMed
Available at PLoS medicine from Europe PubMed Central - Open Access
Available at PLoS medicine from Public Library of Science (PLoS)
Available at PLoS medicine from ProQuest (MEDLINE with Full Text) - NHS Version
Available at PLoS medicine from ProQuest (Health Research Premium) - NHS Version
Available at PLoS medicine from Unpaywall

Abstract BACKGROUND: The standard pathways of testing and treatment for hepatitis C virus (HCV) infection in tertiary healthcare are not easily accessed by people who inject drugs (PWID). The aim of this study was to evaluate the efficacy of integrated treatment of chronic HCV infection among PWID.
METHODS AND FINDINGS: INTRO-HCV is a multicenter, randomized controlled clinical trial. Participants recruited from opioid agonist therapy (OAT) and community care clinics in Norway over 2017 to 2019 were randomly 1:1 assigned to the 2 treatment approaches. Integrated treatment was delivered by multidisciplinary teams at opioid agonist treatment clinics or community care centers (CCCs) for people with substance use disorders. This included on-site testing for HCV, liver fibrosis assessment, counseling, treatment, and posttreatment follow-up. Standard treatment was delivered in hospital outpatient clinics. Oral direct-acting antiviral (DAA) medications were administered in both arms. The study was not completely blinded. The primary outcomes were time-to-treatment initiation and sustained virologic response (SVR), defined as undetectable HCV RNA 12 weeks after treatment completion, analyzed with intention to treat, and presented as hazard ratio (HR) and odds ratio (OR) with 95% confidence intervals. Among 298 included participants, 150 were randomized to standard treatment, of which 116/150 (77%) initiated treatment, with 108/150 (72%) initiating within 1 year of referral. Among those 148 randomized to integrated care, 145/148 (98%) initiated treatment, with 141/148 (95%) initiating within 1 year of referral. The HR for the time to initiating treatment in the integrated arm was 2.2 (1.7 to 2.9) compared to standard treatment. SVR was confirmed in 123 (85% of initiated/83% of all) for integrated treatment compared to 96 (83% of initiated/64% of all) for the standard treatment (OR among treated: 1.5 [0.8 to 2.9], among all: 2.8 [1.6 to 4.8]). No severe adverse events were linked to the treatment.
CONCLUSIONS: Integrated treatment for HCV in PWID was superior to standard treatment in terms of time-to-treatment initiation, and subsequently, more people achieved SVR. Among those who initiated treatment, the SVR rates were comparable. Scaling up of integrated treatment models could be an important tool for elimination of HCV.
TRIAL REGISTRATION: ClinicalTrials.gov.no NCT03155906.

16. The effect of needle and syringe program and opioid agonist therapy on the risk of HIV, hepatitis B and C virus infection for people who inject drugs in Amsterdam, the Netherlands: findings from an emulated target trial.

Authors van Santen DK; Boyd A; Matser A; Maher L; Hickman M; Lodi S; Prins M
Source Addiction (Abingdon, England); Mar 2021
Publication Date Mar 2021
Publication Type(s) Journal Article
PubMedID 33788326
Database PubMed
Available at Addiction (Abingdon, England) from Wiley Online Library Medicine and Nursing Collection 2019
Available at Addiction (Abingdon, England) from Ovid (Journals @ Ovid)

Abstract BACKGROUND AND AIMS: Major declines in HIV and hepatitis C and B virus (HCV/HBV) incidence among people who inject drugs (PWID) have been attributed to early implementation of harm-reduction programs (HRP) in the Netherlands, but alternative factors such as selective mortality and demographic and drug market shifts over time probably contributed to observed incidence declines. We quantified and tested the effect of HRP participation on risk of these infections among PWID in Amsterdam, the Netherlands.
DESIGN: We emulated the design of a hypothetical, ideal randomized trial using observational data from the Amsterdam Cohort Studies (1985-2014).
SETTING: Amsterdam, the Netherlands.
PARTICIPANTS: We included PWID who ever used opioids, had a recent history of injecting drug use (IDU) and tested negative for HIV, HCV or HBV. Of 983 participants, 640, 137 and 308 were included for the HIV, HCV and HBV analyses and 59, 45 and 49 seroconversions were observed, respectively.
INTERVENTIONS: Intervention arms were: complete HRP participation [≥ 60 mg/day methadone and 100% needle and syringe program (NSP) coverage, or any methadone dose if no recent injection drug use] versus no HRP and partial HRP participation combined (< 60 methadone mg/day and/or < 100% NSP coverage).
CONCLUSIONS: Complete participation in harm reduction programs appears to have led to substantial decreases in HIV and hepatitis C and B virus acquisition risk among people who inject drugs in the Netherlands.
MEASUREMENTS: Separately for each infection, we estimated the hazard ratios (HR) comparing HRP arms using marginal structural models.
FINDINGS: Compared with no/partial HRP participation, complete HRP participation led to lower risk of HIV [HR = 0.54, 95% confidence interval (CI) = 0.27-1.08], HCV (HR = 0.16, 95% CI = 0.06-0.40) and HBV (HR = 0.28, 95% CI = 0.13-0.61) acquisition.

17. Cost-effectiveness of syringe service programs, medications for opioid use disorder, and combination programs in hepatitis C harm reduction among opioid injection drug users: a public payer perspective using a decision tree.

Authors Ijioma SC; Pontinha VM; Holdford DA; Carroll NV
Source Journal of managed care & specialty pharmacy; Feb 2021; vol. 27 (no. 2); p. 137-146
Publication Date Feb 2021

Publication Type(s) Journal Article
PubMedID 33506729
Database PubMed
Available at Journal of managed care & specialty pharmacy from Unpaywall

Abstract BACKGROUND: The hepatitis C virus (HCV) prevalence rate among injection drug users (IDUs) in North America is 55.2%, with 1.41 million individuals estimated to be HCV-antibody positive. Studies have shown the effectiveness of syringe service programs (SSPs) alone, medications for opioid use disorder (MOUD) alone, or SSP+MOUD combination in reducing HCV transmission among opioid IDUs. OBJECTIVE: To evaluate the cost-effectiveness of SSP alone, MOUD alone, and SSP + MOUD combination in preventing HCV cases among opioid IDUs in the United States. METHODS: We used a decision tree analysis model based on published literature and publicly available data. Effectiveness was presented as the number of HCV cases avoided per 100 opioid IDUs. A micro-costing approach was undertaken and included both direct medical and nonmedical costs. Cost-effectiveness was assessed from a public payer perspective over a 1-year time horizon. It was expressed as an incremental cost-effectiveness ratio (ICER) and an incremental cost savings per HCV case avoided per 100 opioid IDUs compared with cost savings with "no intervention." Costs were standardized to 2019 U.S. dollars. RESULTS: The incremental cost savings per HCV case avoided per 100 opioid IDUs compared with no intervention were as follows: SSP + MOUD combination = $347,573; SSP alone = $363,821; MOUD alone = $317,428. The ICER for the combined strategy was $4,699 compared with the ICER for the SSP group. Sensitivity analysis showed that the results of the base-case cost-effectiveness analysis were sensitive to variations in the probabilities of injection-risk behavior for the SSP and SSP + MOUD combination groups, probability of no HCV with no intervention, and costs of MOUD and HCV antiviral medications. CONCLUSIONS: The SSP + MOUD combination and SSP alone strategies dominate MOUD alone and no intervention strategies. SSP had the largest incremental cost savings per HCV case avoided per 100 opioid IDUs compared with the no intervention strategy. Public payers adopting the SSP + MOUD combination harm-reduction strategy instead of SSP alone would have to pay an additional $4,699 to avoid an additional HCV case among opioid IDUs. Although these harm-reduction programs will provide benefits in a 1-year time frame, the largest benefit may become evident in the years ahead. DISCLOSURES: This research had no external funding. The authors declare no financial interests in this article. Ijioma is a Health Economics and Outcomes Research (HEOR) postdoctoral Fellow with Virginia Commonwealth University and Indivior. Indivior is a pharmaceutical manufacturer of opioid addiction treatment drugs but was not involved in the design, analysis, or write-up of the manuscript.

18. Clinical effectiveness of pharmacist-led versus conventionally delivered antiviral treatment for hepatitis C virus in patients receiving opioid substitution therapy: a pragmatic, cluster-randomised trial.

Authors Radley A; de Bruin M; Inglis SK; Donnan PT; Hapca A; Barclay ST; Fraser A; Dillon JF
Source The lancet. Gastroenterology & hepatology; 2020; vol. 5 (no. 9); p. 809-818
Publication Date 2020
Publication Type(s) Comparative Study; Journal Article; Randomized Controlled Trial; Research Support, Non-U.S. Gov't
PubMedID 32526210
Database PubMed
Available at The lancet. Gastroenterology & hepatology from ScienceDirect
Available at The lancet. Gastroenterology & hepatology from Unpaywall

Abstract

BACKGROUND: Highly effective direct-acting antiviral drugs provide the opportunity to eliminate hepatitis C virus (HCV) infection, but established pathways can be ineffective. We aimed to examine whether a community pharmacy care pathway increased treatment uptake, treatment completion, and cure rates for people receiving opioid substitution therapy, compared with conventional care.

METHODS: This cluster-randomised trial was done in Scottish community pharmacies. Before participants were recruited, pharmacies were randomly assigned (1:1) to refer patients with evidence of HCV antibodies to conventional care or offered them care in the pharmacy (pharmacist-led care). Pharmacies were stratified by location. All pharmacies were trained to offer dried blood spot testing. All eligible participants had received opioid substitution therapy for approximately 3 months, and those eligible to receive treatment in the pharmacist-led care pathway were HCV PCR positive, were infected with HCV genotype 1 or 3, and were willing to have a pharmacist supervise their antiviral drug administration. Neither pharmacists nor patients were masked to treatment allocation. In both groups, assessment blood samples were taken, infection with HCV was confirmed, and daily oral ledipasvir-sofosbuvir (90 mg ledipasivir plus 400 mg sofosbuvir) for 8 weeks for genotype 1 or daily oral sofosbuvir (400 mg) plus oral daclatasvir (60 mg) for 12 weeks for genotype 3 was prescribed by a nurse (conventional care group) or pharmacist (pharmacist-led care group). In the conventional care group, the patient received care at a treatment centre. Once prescribed, medication in both groups was delivered as daily modified directly observed therapy alongside opioid substitution therapy in the participants' pharmacy where treatment was observed on 6 days per week. The primary outcome was the number of patients with sustained virological response 12 weeks after completion of treatment (SVR12) as a proportion of the number of people receiving opioid substitution therapy at participating pharmacies. Participants were monitored at each visit for nausea and fatigue; other adverse events were recorded as free text. Secondary outcomes compared key points on treatment pathway between the two groups. These key points were the proportion of patients having dry blood spot testing, the proportion of patients initiating HCV treatment, the proportion of patients completing the 8 or 12 week HCV course of treatment, and the proportion of patients with sustained virological response at 12 months. This study is registered with ClinicalTrials.gov, NCT02706223.

FINDINGS: 56 pharmacies were randomly assigned (28 to each group; one pharmacy withdrew from the conventional care group). The 55 participating pharmacies included 2718 patients receiving opioid substitution therapy (1365 in the pharmacist-led care group and 1353 in the conventional care group). More patients met the primary endpoint of SVR12 in the pharmacist-led care group (98 [7%] of 1365) than in the conventional care group (43 [3%] of 1353; odds ratio 2·375, 95% CI 1·555-3·628, p<0·0001). More users of opioid substitution therapy in the pharmacist-led care group versus the conventional care group agreed to dry blood spot testing (245 [18%] of 1365 vs 145 [11%] of 1353, 2·292, 0·968-5·427, p=0·059); initiated treatment (112 [8%] of 1365 vs 61 [4%] of 1353, 1·889, 1·276-2·789, p=0·0015) and completed treatment (108 [8%] of 1365 vs 58 [4%] of 1353, 1·928, 1·321-2·813, p=0·0007). The data for sustained virological response at 12 months are not reported in this study: patients remain in follow-up for this outcome. No serious adverse events were recorded.

INTERPRETATION: Using pharmacists to deliver an HCV care pathway made testing and treatment more accessible for patients, improved engagement, and maintained high treatment success rates. The use of this pathway could be a key part of an integrated and effective approach to HCV elimination at a community level.

FUNDING: Partnership between the Scottish Government, Gilead Sciences, and Bristol-Myers Squib.

Strategy 1081085

#	Database	Search term	Results
1	Medline	("needle and syringe program*").ti,ab	291
2	Medline	("needle exchange*").ti,ab	946
3	Medline	(1 OR 2)	1233
4	Medline	"OPIATE SUBSTITUTION TREATMENT"/	3768
5	Medline	("hepatitis C" OR HCV).ti,ab	91398
6	Medline	(3 AND 4 AND 5)	28
7	Medline	6 [DT 1996-2021] [Languages English]	27
8	EMBASE	("needle and syringe program*").ti,ab	478
9	EMBASE	("needle exchange*").ti,ab	1211
10	EMBASE	(8 OR 9)	1680
11	EMBASE	"OPIATE SUBSTITUTION TREATMENT"/	2723
12	EMBASE	("hepatitis C" OR HCV).ti,ab	148218
13	EMBASE	(10 AND 11 AND 12)	82
14	CINAHL	("needle and syringe program*").ti,ab	200
15	CINAHL	("needle exchange*").ti,ab	481
16	CINAHL	("hepatitis C" OR HCV).ti,ab	16991
17	CINAHL	"DRUG SUBSTITUTION"/	229
18	CINAHL	(14 OR 15 OR 17)	906
19	CINAHL	(16 AND 18)	138
20	CINAHL	19 [DT 1996-2021] [Languages eng]	137
21	PubMed	("needle and syringe program*").ti,ab	91
22	PubMed	("needle exchange*").ti,ab	1001
23	PubMed	("hepatitis C" OR HCV).ti,ab	92301

24	PubMed	(opiate OR opium OR opioid).ti,ab	103264
25	PubMed	(substitution OR therapy OR treatment).ti,ab	5899550
26	PubMed	(24 AND 25)	37077
27	PubMed	(21 OR 22)	1088
28	PubMed	(26 OR 27)	38063
29	PubMed	(23 AND 28)	1104
30	Medline	(compar*).ti,ab	5753472
31	Medline	(3 AND 4 AND 5 AND 30)	7
32	EMBASE	(compar*).ti,ab	7846054
33	EMBASE	(10 AND 11 AND 12 AND 32)	26
34	CINAHL	("hepatitis C" OR HCV).ti,ab	16991
35	CINAHL	("needle and syringe program*").ti,ab	200
36	CINAHL	("needle exchange*").ti,ab	481
37	CINAHL	"DRUG SUBSTITUTION"/	229
38	CINAHL	(35 OR 36 OR 37)	906
39	CINAHL	(compar*).ti,ab	1021888
40	CINAHL	(38 AND 39)	186
41	CINAHL	(34 AND 40)	33
42	PubMed	(compar*).ti,ab	5864948
43	PubMed	(29 AND 42)	314