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Abstract #1 has been withdrawn.

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Use of the HBV viral load medical prescription as a preliminary assessment of HBV infection burden in New Caledonia: a 2014-2019 retrospective study

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New Caledonia (NC) harbours a population composed of Melanesian (mostly Kanak), European, Polynesian and other Asia-originating individuals. Ancient NC HBsAg prevalence estimation rated up to 3-7% in Melanesian and Polynesian descends. In order to eliminate HBV infection in this French overseas territory having a specific status, an accurate knowledge of HBV infection rate and sanitary burden is needed. In addition to prospective HBsAg prevalence ongoing project, we retrospectively explored all consecutive NC patients who had a HBV viral load (VL) prescription during the 2014-2019 period.

All HBV VL were performed in the Cerba Laboratory, using Roche commercial assays (quantification range: 10\20 to 10E8 IU/mL. All patients were informed that their sample could be part for a research project, and had the possibility to decline. No extra sampling was needed. After patient anonymization, gender, date of birth and place of living in NC (when available) were recorded.

Patients were stratified according to their initial viral load and its modulation.

A cohort of 5662 samples from 2228 patients (54.1% women) was studied. Women were younger than men (46.0 vs 50.5 year old at initial sampling, p<0.001). Location was recorded for 58% of patients: 58.2% lived in grand Noumea area, 23.9% in the Loyalty Islands, and 9.6% and 8.3% in the West and East municipalities, respectively. Taking in account the population of each municipality, the highest HBV burden was recorded in the Loyalty Islands, with 0.6 to 0.8% of the inhabitants having a VL follow-up for an HBV infection in the last 5 years. Of note, among 112 patients born after 1989, (NC universal newborn HBV vaccination), 57 presented at least one positive HBV VL.

HBV VL on the initial samples were as follows: 50.4% undetectable, 23.2% 10-10E3, 12.8% 10E3-10E6 and 13.5% >10E6IU/mL. In samples from patients having a follow-up [2 to 10 samples], a majority (832/1069, 77.8%) of HBV DNA search was undetectable or had a titer <10E3IU/mL on last evaluation; while 136 (12.7%) and 101 (9.4%) presented with a VL between 10E3 and 10E6 or >10E6IU/mL, respectively. Among the 185 patients with a VL >10E6IU/mL on the first sample, having available follow-up, 97 (52.4%) presented a strong decrease on last sample

HBV VL performed in one center allowed the first study to evaluate HBV replication in NC. Although HBV VL prescription is focused on HBV replication, it may give some information on HBV burden in NC. We observe a clear decrease of prescription in younger patients (born >1989), but vaccination coverage, mainly among HBsAg-positive mother, might be further optimized. The geographical data reveal a high burden in several areas, notably the Loyalty Islands, which may be a challenge for patient clinical management. Because a lot of sampling occurred only once during the 5 years, it remains possible that many patients are not fully aware of their HBV infection. VLs have a wide range and may reflect natural history and/or therapeutic schedules. The persistence of patients with very high VL indicates an ongoing reservoir and reinforces new research protocols to emphasize HBV monitoring and antiviral prescription in NC.

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Overview of the National Hepatitis B Viral Load Testing Programme in Uganda

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Background: Uganda is a high endemic country for Hepatitis B with an estimated prevalence of 4.1%[UPHIA, 2016]. The testing program started in 2014 with highly endemic regions of Uganda. MOH testing and treatment guidelines, training materials and laboratory tools were developed. The Hepatitis B viral load testing program started in 2017, leveraging on the already existing HIV systems. A viral load is necessary in informing treatment legibility (>20,000 IU/ML) and as well as a monitoring tool for those who are on treatment (WHO, 2017). Against this background, this presentation is aimed at showing trends in the Hepatitis B viral load testing at the National Health Laboratory and Diagnostic Services.

Methods: Samples were collected from facilities and transported to NHLDS through the Hub sample transport network.11, 296 samples were analyzed in a period between 2017 November and 2019 February. All the samples were tested for viral load using the HBV DNA PCR test. All analyzed samples were subjected to Quality control checks to ensure release of quality results. The viral load of 20,000 IU/ml was used as a threshold for clinical interpretation as guided by the WHO guidelines for managing CHB. Data analysis was done using SPSS software.

Results: A total of 11,296 samples have been tested for hepatitis B viral load of which 5316 were female and 5256 were male. The overall rejection rate was at 2.24% and the main reason for sample rejection being sample hemolysis at 0.3%. In 2017, 1978 samples were tested, 4731 in 2018 and 4587 have been tested from January to February 2019. 31.5% samples were from Mid-eastern region, central 2 region at 11%, Kampala district at 10.9%, North East at 5.3%, West Nile at 4%. Of the patients tested 16% had non suppressed viral load (above 20,000IU/ML). Pregnant women were a total of 88 patients out of whom 8% were non suppressed. The age category of above 30 years had relatively higher viral load of above 20,000 IU/ML at 7.7% of patients followed by patients aged 17-30 years that were at 5.5% and almost insignificant cases in patients below 17 years at 1.7% and there was a statistically significant relationship between age categories and viral load levels at a P value of <0.001 at 95% CI.

Conclusion: Attention should be given to the female patients that had unsuppressed viral load in a way to reduce mother to child transmission. Age is a predisposing factor to liver disease and delayed suppression so the need for early diagnosis and timely management is necessary.

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Progress in Hepatitis C Testing as Part of the Hepatitis C Elimination Program in Georgia

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Introduction: The country of Georgia, with a population of 3.7 million, initiated the world's first national hepatitis C elimination program in April 2015, which aims to reduce hepatitis C virus (HCV) prevalence by 90% by 2020. In 2015, a seroprevalence study was conducted which estimated that 150,000 Georgian adults were infected by HCV (5.4% of the population). Through the elimination program, screening for hepatitis C is available to all citizens free of charge. The aim is to describe progress in hepatitis C testing as part of hepatitis C elimination program.

Material and Methods: All Georgian citizens have a personal national identification number (ID) assigned at birth which is used for tracking citizens for different purposes, including healthcare. The information system was created to collect data from the elimination program utilizing the national ID to monitor and evaluate program performance and surveillance. This analysis utilizes data from the national screening registry and treatment databases linked by national ID, and 2014 general population census.

Results: As of June 30, 2019, 1,415,804 adults identified with the national ID have been tested for hepatitis C (49.5% of the adult population), of whom 116,622 (8.2%) were anti-HCV positive. In 2015 the positivity rate averaged 27.0% but has fallen to 4.4% in the first half of 2019. Overall, 92,333 individuals received diagnostic testing to determine viremia, and 75,733 (82.0%) were found to have chronic HCV.
Screening rates are similar for men and women – 49.1% (657,062 individuals) of adult males and 49.8% (758,742 individuals) of adult females have been tested for anti-HCV. Screening coverage is the highest for men (52.0%) in the population aged ≥60 and is the lowest in men aged 30-60 (48.0%) which is also the age group with the highest positivity rate - 20.3%. The lowest positivity rate is seen in men aged 18-29 at 2.3% and the overall positivity rate for adult males is 13.0% which means that 87,427 men have been found to be anti-HCV positive.
Screening coverage is the highest for women (60.3%) in the population aged 18-29 and is the lowest in women aged ≥60 (46.8%) which is also the age group with the highest positivity rate - 5.6%. The lowest positivity rate is seen in women aged 18-29 at 1.1% and the overall positivity rate for adult females is 3.4% which means that 29,195 women have been found to be anti-HCV positive

Conclusions: About half of the adult population has been screened in Georgia and half of the estimated number of adults with chronic HCV infection was identified. The highest screening positivity rate was observed in the first year of the program and since then the positivity rate has been declining annually. To gain access to hard-to-reach populations program plans to expand integrated HCV testing and treatment services at the primary healthcare and harm reduction settings throughout the country.

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Alabama's HCV Linkage and retention in care outcomes in community settings

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Background: The Hepatitis C (HCV) linkage to and retention in care (LTRC) main goal is to engage viremic patients for initiating treatment cure regimen. We describe empirically, the major status categories viremic patients occupy at a given point in the LTRC process. The purpose is to magnify the LTRC process in the context of barriers that occur.

Materials-**Methods:** Our observations are derived from our statewide screening program involving multiple sites in varied settings over a period of 2.5 years. The settings include community organizations such as AIDS service organizations, transitional housing, MATs, and Federally Qualified Health Centers. Confirmed viremics from the initial year were a result of point of care (POC) antibody testing and phlebotomy blood draws for the RNA confirmatory. Confirmed viremics for the consequent 1.5 years were derived strictly from clinical settings capable of automated EMR reflex testing that included FQHCs and MATs.

Results: We observed a combined total of 12,626 tested with a sero-prevalence of 14% (1784), 59% confirmed viremic (1047) and 84% (873) linked. The linkage to care (LTC) cascade fell into 4 categories: 51% were linked to a primary care provider (PCP)/HCV treater (445/873); 39% were linked to substance abuse programs; 9% were linked to an HCV specialist with the remaining 1% considered linked (having receiving an individual consultation or an HCV education session).
LTRC remains a challenge. For example, for the 445 linked to a PCP, 4% (19) were unsuccessful attempts and 21% (92) were lost to follow-up (defined as 4 failed attempts), 14% (62) were in treatment at a PCP, 11% (51) were waiting on treatment with labs completed, 13% (51) needed further labs, 12% (53) failed drug screens, 9% (38) missed subsequent appointment, 4% (19) decline treatment; 2% (11) were deceased, 2% (11) had competing comorbidities, and a final 1% (4) were incarcerated. Similarly, for those linked to substance abuse treatment centers, 32% (110/339) were lost to follow-up, 5% (17/339) were unsuccessful attempts, 33% (110/339) needed further labs, and 15% (52/339) missed subsequent appointments.
Overall, 873 viremic patients who completed the initial LTC process continued to be engaged by the health system but encountered a 46% attrition rate failing to actively remain engaged in care. Of the 54% who had engaged in care, 20% (174) are awaiting a subsequent appointment, 7% (65) failed drug/alcohol screens, 7% (60) had treatment labs completed and in progress for treatment evaluation, 9% (78) completed treatment, 10% (86) were referred to a GI/PCP, and 3% (28) either had competing comorbidities (12), were denied treatment by insurance (1) or died (15).

Conclusions: The LTRC cascade in community settings presents many different chances for failure to retain patients in care despite repeated attempts to engage patients. Loss of contact (342/873) was the biggest indicator for those patients in different phases of engagement that fell out of care. Elimination efforts that fail to address this community challenge may fall short of eventual elimination goals.

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Mortality from liver diseases associated with hepatitis B and C in the EU/EEA – descriptive analysis and estimation of 2015 baseline

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Background: WHO's global health sector strategy on viral hepatitis launched in 2016 aims to reduce mortality attributable to hepatitis B (HBV) and hepatitis C (HCV) by 65% by 2030, with 2015 as a baseline. We aimed to describe 2015 mortality from liver diseases, as defined by the WHO Core-10 indicator (C10) using International Classification of Diseases 10-codes (ICD-10), identify trends for 2011-2015 and calculate 2015 baseline mortality attributable to HBV and HCV for the EU/EEA.

Methods: Age-standardised mortality rates per 100,000 from ICD-10 codes indicated by WHO: C22.0 "Hepatocellular carcinoma" (HCC); K72-K75 "Chronic liver diseases" (CLD) and B18.1-B18.3 "Chronic viral hepatitis B and C" (CVH) were calculated by gender, age-group and country using Eurostat data. Trends in EU/EEA mortality rates were estimated using Poisson regression.
Number of deaths from "Liver cancer" (ICD-10 code C22) and CLD, both adjusted by the corresponding Global Burden of Disease aetiology fraction estimates, and number of deaths from CVH in 2015 were used to calculate HBV and HCV attributable mortality baseline.

Results: In 2015, the EU/EEA mortality rates from HCC, CLD and CVH were 4.6/100,000, 8.0/100,000 and 1.3/100,000 respectively, with wide variations across countries. 77% of HCC, 61% of CLD and 53% of CVH deaths were among men. There were no statistically significant trends in mortality from HCC, CLD or CVH during 2011-2015.
A 2015 mortality baseline of 68,062 deaths attributable to HBV and HCV is proposed, that includes all CVH deaths, 55% of liver cancer and 79% of CLD deaths.

Conclusions: The HBV and HCV attributable mortality in the EU/EEA is high. Greater efforts are needed to identify HBV and HCV infections at an early stage and link cases to care to reduce mortality from liver diseases. Country-specific estimates of the aetiology fractions are needed to more accurately estimate HBV, HCV associated mortality

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The uptake of an innovative approach to reduce HCV transmission among MSM: the NoMoreC project

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Background: In the Netherlands transmission of hepatitis C virus (HCV) occurs primarily among HIV-positive MSM and HIV-negative MSM with high-risk sexual behaviour. Early testing and treatment in combination with scaling-up preventive measures may curb the HCV epidemic among this population. Within the MC Free (Amsterdam MSM Hepatitis C Free) consortium we developed the "NoMoreC" multilevel approach to reduce HCV incidence among MSM in Amsterdam.

Material & **Methods:** NoMoreC comprises online and face-to-face interventions aimed to increase HCV awareness, promote risk reduction behavior and willingness to test. The project was developed in co-creation with the MSM community, commercial stakeholders and healthcare professionals. NoMoreC was launched in February 2018. The project website (www.NoMoreC.nl) offers information, instructional videos and a hepatitis C-test service. In addition, personalized risk reduction advice is given based on sexual practices (e.g. group sex, chemsex) and testing advice is based on known risk factors (e.g. sharing snorting straws, sharing toys, having an ulcerative STI). The Hep C-test service is a home-collection testing service using a validated self-sampled dried-blood-spot (DBS) HCV-RNA test. This service allows men to test anonymously at low cost. Test results are communicated via the project's website and online counseling and referral to care is initiated immediately. Furthermore, a 'NoMoreC Toolbox' was developed containing items to help reduce risk for HCV-(re)infection. Here, we present interim results of the uptake of the project up to September 2019.

Results: Since the launch, www.NoMoreC.nl was visited 43.200 times by 26.500 users. The bounce rate was low, with only 12% of visitors leaving the site after viewing 1 page. 39% of the users returned to the website after their first visit. The online personalized advice tool for risk reduction was used 1660 times. The test advice tool was used by 1609 users of which 678 (42%) were advised to test for HCV. Of the men who received a positive test advice, 64 (9%) ordered a test. The main reasons to order the test were: to know my HCV-status (46%), concerns about being infected (29%) and to stay anonymous (29%). Almost all men (96%) were satisfied with the C-test service. 54 tests were returned to the laboratory for analysis, of which 3 tested HCV-RNA positive (5.5%). Furthermore, 66 toolboxes were ordered online and 217 toolboxes were distributed at the STI clinic and HIV treating centers in Amsterdam. The main reasons for ordering a toolbox were: to reduce the risk of getting infected (67%), and to use during a sex party (51%).

Conclusion: NoMoreC has been received positively by the MSM community in Amsterdam and has been successful in reaching its target population. The use of the website and placed orders demonstrate that we provide a service that is appreciated. The anonymous home-sampling test service has successfully diagnosed HCV cases, with 5.5% of the samples testing positive. The NoMoreC approach can be expanded to other cities and regions facing an HCV epidemic among MSM, contributing to the WHO hepatitis elimination goals.

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Emergency Department Screening: Strategy for Elimination through an innovative HBV and HCV Screening, Care, and Cure Program

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325 million people live with Hepatitis B (HBV) or Hepatitis C (HCV) worldwide, with the vast majority unaware of their infection, and therefore cannot benefit from effective care and treatment interventions which can interrupt the inflammation that can lead to hepatocellular and end-stage liver disease. In order to meet the World Health Organization's goal of hepatitis elimination by 2030, innovative strategies must be employed to test, diagnosis, and provide HBV and HCV care.

In a New Jersey suburban community teaching hospital, we implemented a screening scale-up through automated testing in an Emergency Department (ED) with almost 100,000 visits a year. Also automated are positive test notifications to a patient navigator (PN) who contacts patients and links them to care. An outpatient primary care practice with a multi-disciplinary team provides evaluation for viral hepatitis and treatment in a team based approach.

Eligibility for screening is determined by date of birth (born 1945-1965) and country of birth (born in HBV endemic country) collected at patient registration. If a patient meets these identifiers and bloodwork is ordered, an algorithm automatically orders the indicated tests, which include Hepatitis B surface antigen (HBsAg) and Hepatitis C antibody (HCV Ab) with reflex to HCV RNA. A patient eligibility notification through the electronic health record (EHR) alerts nursing staff qualifying tests are being ordered. A positive VH result automates an EHR alert to both nursing staff and PN. The PN also receives real-time notification through an encrypted text message on their mobile device. The PN meets with the patient if results return while patient is in ED or admitted to the hospital; if not, PN contacts patient after discharge, provides hepatitis education, and schedules patients for follow-up and viral hepatitis (VH) evaluation. Care is primarily provided at an outpatient primary care practice associated with the hospital with 2 full time equivalent internists trained in VH care with support from a pharmacist and the PN.

The program began March 2018 and in 18 months, 12,980 patients were tested for HCV and 10,900 tested for HBV. The HCV Ab+ rate was 3.3% (434), with 1.1% (138) confirmed by HCV RNA. Of those infected, 67 patients (50%) were newly diagnosed and 121 (88%) have been linked to care. HCV RNA+ patients were 62% male with a mean age of 64 years and mean HCV RNA of 3,118,625 IU/mL. PCPs were trained in HCV care in 2018 and have initiated HCV therapy for 29 patients, with 15 confirmed HCV RNA undetectable at 12 weeks thus far. For HBV, the top countries of birth screened were Haiti, Jamaica, Guyana & the Dominican Republic. There were 1.2% (131) HBsAg+, with 55 (42%) newly diagnosed and 115 (88%) linked to care.

VH screening with an automated EHR-based screening and alert system is an efficient strategy to screen at-risk individuals in the community. Navigation and primary-care based VH services provide critical transitions of care and improve access to hepatitis evaluation, treatment and cure. Novel strategies like this are critical in making strides towards hepatitis elimination.

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Changes of the composition of the hepatitis B virus (HBV) surface antigen (HBsAg) are associated with HBsAg loss during nucleos(tid)e analogues and Peg-interferon-alfa2a treatment

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Background & **Aims:** In the treatment of chronic hepatitis B virus (HBV) infections loss or seroconversion (SC) of the HBV surface antigen (HBsAg) is considered a functional cure. HBsAg consists of the components large (L), middle (M) and small (S)HBs. The proportion of the different HBsAg components was shown to differ strongly between active disease stages and inactive carriers. The aim of our study was to assess whether the HBsAg composition before and during treatment may be associated with the occurrence of functional cure. **Methods:** A total of 103 patients including 21 patients who achieved HBsAg loss during treatment with either nucleos(t)ide analogues (NA) (n=17) or pegylated interferon-alfa2a (PEG-IFN alfa2a) (n=4) and a cohort of 81 serologic nonresponders matched by age and HBsAg levels were retrospectively included. HBsAg components were quantified in serum samples collected at baseline and during treatment using a validated ELISA with well-defined monoclonal antibodies for L- (LOD=0.03ng/mL) and MHBs (LOD=0.07ng/mL) as well as polyclonal antibodies for SHBs/total HBsAg (LOD=0.08ng/mL; HBsAg 6.0, Enzgnost, Siemens).

Results: At treatment initiation, mean MHBs levels were significantly lower in patients with subsequent HBsAg loss as compared to patients without HBsAg loss. During treatment, MHBs and LHBs proportion showed a fast decline in patients with HBsAg loss but not in patients with HBeAg loss or without serologic response. MHBs became undetectable by months 6 of NA treatment in all patients with subsequent HBsAg loss, and a median time span of 10.9±8.7 (0-52) months before total HBsAg loss occurred. During PEG-IFN alfa2a treatment, MHBs and LHBs ratios showed a similar strong and early decline in patients with subsequent HBsAg SC. MHBs loss occurred 16.0±5.3 (12-24) weeks before HBsAg loss. ROC curve analyses including MHBs, LHBs, total HBsAg and HBV DNA levels revealed proportion of MHBs as best predictor for HBsAg loss before NA (AUC=0.726, p=0.019) or PEG-IFN alfa2a treatment (AUC=0.719; p=0.141) as well as at month three of NA (AUC=0.789; p=0.126).

Conclusion: Independent of the antiviral treatment, MHBs and LHBs became undetectable early in patients with subsequent HBsAg SC. Thus, MHBs and LHBs are strong baseline and early on-treatment predictors for HBsAg loss induced by either NA or PEG-IFN alfa2a.

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Enhancing the hepatitis B care cascade in Australia: a cost-effectiveness model

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Background: In efforts to eliminate hepatitis B as a global health threat by 2030, the WHO Global Health Sector Strategy for Viral Hepatitis (2016-2021) aims for 90% of people living with chronic hepatitis B to be diagnosed and 80% of those eligible to be receiving treatment. Within Australia, shorter term elimination targets are set, with the 3rd National Hepatitis B Strategy aiming for 80% of people living with chronic hepatitis B diagnosed, 50% linked to care and 20% on treatment by 2022. This study used a Markov model to assess the impact, cost and cost-effectiveness of scaling up hepatitis B diagnosis, linkage to care and treatment in Australia to reach: (1) Australia's 2022 national targets; and (2) the WHO's 2030 global targets, compared with current rates.

Material & **Methods:** The model calculated the projected care cascade, disability-adjusted life-years (DALYs), costs and incremental cost-effectiveness ratio (ICER) of achieving the national and WHO targets, compared to the status quo. Direct medical costs associated with each scenario were included but the costs of implementation and demand generation were not, as they were unknown. Instead, we determined a threshold annual budget for auxiliary interventions to improve the hepatitis B care cascade that, if spent by the Australian government, would keep the overall scenarios under a cost-effectiveness threshold of A$50,000 per DALY averted.

Results: Preliminary analysis suggests: under current rates of diagnosing, linkage to care and treating chronic hepatitis B, 68% (IQR: 65.3%-75.0%) of people living with chronic hepatitis B were diagnosed, 24% (IQR: 18.0%- 34.1%) were in care and 11% (IQR: 9.2%- 15.5%) were on treatment by 2030. Compared to status-quo, reaching national targets was estimated to cost an additional A$1.92 (IQR: A$1.38- A$2.27) billion and averted 59,970 (IQR: 45,481- 79,008) DALYs (ICER A$32,089 (IQR: A$21,331- A$39,463) per DALY averted); reaching WHO targets was estimated to cost an additional A$1.62 (IQR: A$1.16- A$1.88) billion and averted 37,368 (IQR: 21,364- 55,739) DALYs (ICER A$43,278 (IQR: A$27,239- A$56,409) per DALY averted). The model estimated that the ICER for the scenarios to reach the Natioanl Strategy and WHO targets would remain under A$50,000 per DALY averted if Australia invested up to A$99 million or A$23 million per annum, respectively, on implementation and demand generation activities. Sensitivity analysis showed that cost-effectiveness was predominately driven by the cost of chronic hepatitis B treatment and influenced by disease progression rates.

Conclusions: For Australia to reach National Hepatitis B Strategy and WHO Strategy targets, improvement in the CHB care cascade is required . Additional to direct medical costs, if Australia invested up to A$23 million and A$99 million per annum on implementation and demand generation to achieve the WHO and National Strategy targets, respectively, both strategies are likely to be cost-effective.

Scott N. and Hellard M.E. are considered joint senior authors

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Evaluation of the hepatitis C care cascade in the country of Georgia: monitoring progress towards elimination

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Background: With technical assistance from the U.S. CDC and support from Gilead Sciences, Georgia launched the world's first national hepatitis C elimination program in April 2015. Key strategies include nationwide hepatitis C screening, active case finding, linkage to care, decentralized care, and provision of treatment for all hepatitis C virus (HCV)-infected persons. The elimination program aims to achieve 90-95-95 targets by 2020: a) diagnose 90% of HCV-infected persons, b) treat 95% of those diagnosed, and c) cure 95% of those treated. We report progress towards elimination targets more than 4 years into the elimination program.

Materials and Methods: The estimated number of persons living with HCV infection was based on a 2015 population-based national seroprevalence survey, which showed that 5.4% of the adult general population has chronic HCV infection (approximately 150,000 persons). We analyzed data among adults in the national hepatitis C screening registry, and treatment database from April 2015 to August 2019.

Results: As of August 31, 2019, 1,686,315 adults had been screened for HCV infection. Overall 120,223 (7.1%) persons tested anti-HCV positive and of those 93,271 (77.6%) underwent diagnostic testing to determine active infection. 76,974 (82.5%) of persons tested had chronic HCV infection, representing 51.3% of the estimated 150,000 adults living with hepatitis C. A total of 60,213 persons initiated treatment, representing 46.9% of the estimated target population to be treated (128,250). Of 39,630 patients who were evaluated for sustained virologic response (SVR), 39,095 (98.7%) tested negative for HCV by PCR. High cure rates were achieved among patients infected with prevalent HCV genotypes in the country: 98.9% in genotype 1, 98.9% in genotype 2, and 98.2% in genotype 3. SVR rates were 98.0% among persons with advanced fibrosis (F3 and F4) vs. 99.0% in patients with mild or no liver fibrosis (≤F2), (p>.05).

Conclusions: Georgia has made substantial progress towards eliminating hepatitis C with over 50% of persons with chronic HCV infection diagnosed, most of whom have initiated treatment and high cure rates are being achieved. However, challenges remain in identifying and linking to care persons living with hepatitis C. Integrated, decentralized hepatitis C treatment has been successful and may greatly improve linkage to care and close the gaps in the hepatitis C care cascade if implemented nationally.

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Strategies towards Elimination of Hepatitis C in Iceland: Models of Care for the Treatment as Prevention for Hepatitis C (TraP HeP C) program

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Background: The Treatment as Prevention for Hepatitis C (TraP HepC) program in Iceland was launched in January 2016, offering treatment with DAAs to all infected individuals with an active treatment phase spanning three years. People who inject drugs (PWID) account for close to 90% of HCV PCR positive individuals in Iceland and almost 100% of new infections; they have traditionally had high drop-out rates from treatment and thus need to be the focus of our elimination efforts.

Patients and Methods: The project is organized with collaboration between infectious disease, addiction medicine and hepatology and multiple other stakeholders. Nurses have played a central role in the elimination efforts and for the case finding, coordinated databases have been used to recall patients for confirmatory testing. Awareness campaigns are conducted in the media and financial incentives have been used in select cases. Care of the patient is conducted in a multidisciplinary manner, with participation within the penitentiary and social welfare system. Patients are allowed to move freely between sites and specialties. Nurses provide counseling and improve adherence by providing advice, pill boxes and phone messages. Patients who discontinue treatment and remain viraemic as well as reinfected patients are reengaged in care and offered retreatment. The endpoints of TraP HepC are reduction in domestic incidence and viraemic prevalence among PWID.

Results: During the first three years of the treatment program DAAs were initiated for 703 individuals, which is over 95% of the eligible (confirmed HCV PCR positive) patient population. The mean age of patients was 44 years (IQR 34-54), males 474 (67%). The most commonly reported route of infection was injection drug use (IDU) (85%), 33% of patients reported recent (within 6 months) IDU; 7% were homeless, and 5% incarcerated. Stimulants were the preferred IV drug among 85% of PWID but opioids by 13%. Overall, 9% were receiving medication assisted therapy for opioid use disorder. Genotype (GT) 3a was most common (58%), followed by GT1 (41%) and 7% had cirrhosis as estimated by hepatic elastography (>12.5 kPa).Frequency of testing for HCV increased nationwide by 22% in 2016, 60% in 2017 and 81% in 2018 compared to previous years (p < 0.001). Of 703 who initiated treatment 614 (87%) have completed per protocol, 53 (7.5%) discontinued treatment, SVR12 data is missing for 20 (3%), pending for 12 and 4 patients are still being treated. Of 614 who completed treatment, 587 (95%) achieved SVR12, 26 remained PCR positive and data are missing for 1 patient. Of 53 who discontinued, 25 (47%) still achieved SVR12. Of those who remained viraemic after the first treatment attempt, the majority have been reengaged in care and successfully retreated. At the sentinel site of Vogur addiction hospital, viraemic prevalence of HCV has fallen by >80% among patients with history of IDU who are admitted since the program initiation.

Conclusions: During the first three years of TraP Hep C, over 95% of eligible patients in Iceland were initiated on DAAs, thus surpassing the WHO treatment target. In contrast to earlier care models the flexible multidisciplinary approach used in TraP HepC, with adherence support, rescreening following cure, low threshold to treatment and prompt treatment of reinfections has been successful among PWID. Iceland is moving towards elimination of HCV, already with significant reduction in prevalence among those most likely to transmit the virus.

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Micro-elimination of Hepatitis C amongst people living with HIV (PLHIV) in Punjab, India.

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Background: The state of Punjab has one of the highest HCV prevalence in the country at 3.6%(1) in the general population. Within HCV high risk groups (HRG), including people who inject drugs (PWID) and PLHIV, a higher prevalence of HCV is reported of 49%(2) and 19%(3) respectively. The estimated number of PLHIV in Punjab was 40,632(4) in 2017, of whom 32,350 attend for care at one of thirteen ART sites across the state.

Under the Unitaid-funded, HEAD (Hepatitis Elimination through Access to Diagnostics) Start program, the Foundation for Innovative New Diagnostics (FIND) in collaboration with the Punjab government has implemented an HCV micro-elimination project with aim to provide decentralised testing and treatment to 24,080 PLHIV receiving the ART services focusing towards elimination of Hepatitis C in the coinfected population in Punjab.

Methods: Using a decentralized approach, HCV testing and treatment services have been integrated at all 13 ART centers in Punjab. Patients are offered HCV screening using rapid diagnostic tests (RDT) during routine HIV care, with reflex confirmatory testing at GeneXpert testing hubs. Positive patients are provided with treatment and care within the ART setting. We report preliminary results of the project and lessons learnt in this setting.

Results: Between October 2018 to July 2019, 70.2% (16,927) of all PLHIV attending for care were screened for HCV (mean (± SD) age 37.0 (± 11.7) years, 60.9% (10,310) male, 38.9 % (6,577) female, 0.2% (41) transgender. Of those screened, 20.5% (3484) were HCV seropositive and through reflex GeneXpert testing, 98.2% (3422) received a confirmatory RNA test with 78.7% (2742) testing

HCV RNA positive. 30.7% (842) have been initiated on treatment and 39.9% (329) have completed treatment.

Conclusions: A micro-elimination approach enabled the successful screening of PLHIV attending for care at ART sites throughout Punjab. HCV treatment initiation rates are lower than expected, likely due to the need for improvement in the integration of HCV services in HIV programs in this setting. The outcome of this integrated approach will facilitate the National AIDS Control Program (NACP) to reach 1.6 million PLHIV registered for care in India(4).

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"Senza la C" - HCV diagnosis and treatment for people who inject drugs in a community-based setting: preliminary results from an experience in Bologna, Italy

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Background: Eradication of HCV infection is still a challenge in specific groups of people such as people who inject drugs (PWID). Previous data show poor access to HCV treatment, delay in HCV treatment initiation and problems for retention in care in hospitals.

The aim of this study is to evaluate retention in care for PWIDs diagnosed and treated for HCV infection in a community-based setting.

Material & **Methods:** "Senza la C" project started in January 2019 and involved screening for HCV infection and offer of HCV treatment for PWIDs diagnosed in shelters, services for PWIDs and on the street in Bologna, Italy.

Individuals were screened using saliva rapid tests (OraQuick® Rapid HCV Antibody by OraSure Technologies); pre-test peer counseling was offered by educators from OpenGroup, a community-based service for harm reduction; standard blood tests for HIV-Ab, HBsAg and HBsAb were also offered.

In case of reactive saliva HCV-Ab test, a point of care HCV-RNA test on whole blood (Xpert® HCV VL Fingerstick by Cepheid), a transient elastography (Fibroscan®) and a liver echography were performed; those who resulted HCV-RNA positive were tested through standard blood test for liver and kidney function and HCV genotype and started HCV treatment within 4 weeks.

All diagnostic procedures, drug supplying, treatment monitoring and post-treatment follow-up were conducted in a low-threshold, extra hospital setting by a team of peer educators, medical doctors and trained nurses. This study was funded by research grants from AbbVie srl and Gilead sciences.

Results: 343 PWIDs were screened for HCV using saliva test; 67 (19.5%) had a reactive result; 45/67 (67.2%) were linked to the extra-hospital service. 29/45 (64.4%) were HCV-RNA positive.

Median liver stiffness at the baseline was 6.5 kPa [range 5.4-8.3]; 13.8% had cirrhosis, 3/29 were HIV/HCV coinfected.

26/29 (89.7%) are retained in care nowadays; 21/29 (72.4%) started treatment and 5/29 (17.3%) are scheduled to start in the next future.

12 persons reached 12 weeks of follow-up and 11/12 (90.9%) achieved SVR12, while 1 person had reinfection at week 12 of follow-up.

Conclusions: HCV counselling, testing and treatment in an extra-hospital setting is feasible and can lead to high retention in care rates in our cohort of PWIDs. Longer follow-up will provide more data about HCV treatment efficacy in this population.

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Integration of Hepatitis C treatment services with harm reduction service centers for People who Inject drugs in Kenya: Experience from Test and Link to Care for injecting Drug Users Study

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Background: Hepatitis C virus (HCV) is a leading cause of chronic liver disease globally. Africa has the highest estimated HCV prevalence in the world at 5.3%. Despite high rates of hepatitis C infection among the people who inject drugs (PWID) relatively few IDUs receive treatment for HCV. Work done in Kenya estimates that intravenous drug use accounts for 80% of acute HCV infections. Simple and effective hepatitis testing strategies and tools are lacking with very few people with chronic hepatitis infection know their status. Diagnosis often occurs late, appropriate tests to assess liver disease and guide treatment decisions including when to start treatment are rarely available. The cost of treatment is prohibitive for resource-strapped countries.

The Test and Link to Care (TLC) Study demonstrated the feasibility and effectiveness of integrating HCV care and harm reduction service Centers (Methadone Maintenance Treatment and drop in centers-MMT and DICs). Services provided at the harm reduction centers include; screening for and counseling on HCV infection status, onsite HCV treatment and outcomes, demographic and substance abuse data. We hypothesized that the colocation of these services would result in improved access to and utilization of HCV care.

Methodology: In this prospective observation study, respondent driven sampling was used to recruit participants in 10 DICs, rapid HCV test done using a SD Bioline.Confirmatory viral HCV RNA testing was done with confirmed HCV-positive participants providing further sample for genotyping and phylogenetic. Treatment was through direct observation therapy (DOT). HCV care was integrated within the MMTs and the DICs respectively. Defaulters traced by Peer-Educators

Key preliminary **Results:** 2,188 PWIDs (817 Nairobi, 842 Coast, and 529 Western) tested. 291 (105 Nairobi, 183 Coast, 3 Western) were reactive using rapid anti-HCV test. 284 out of the 288 were confirmed by Qualitative/Quantitative RNA. 19% (n=54) were not viremic, while 81% (n=230) were viremic. 37% (n=30) and 40% (n=58) were HCV-HIV co-infected respectively in Nairobi and Coast. Out of the 230, 200 contributed blood for genotyping and phylogenetic. With available funding for 95 participants, 65 participants were treated in Methadone Assisted Therapy clinics while 30 were treated in Needle and syringe program clinics. 5 (5%) were lost to follow-up after initiating treatment (2 from MAT; 3 from NSP). 90 (95%) completed HCV treatment. Of those who completed HCV treatment and have SVR labs, 59/61 (97%) achieved cure.

Conclusion: Treatment of HCV in resource limited setting is feasible; this study demonstrated that injecting drug users can be engaged successfully in treatment of HCV infection when these services are collocated with MMT and DICs. DOT model is effective; however, there is a need to establish other effective models of care for these special groups of population

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Finding the missing millions: Lessons learned from community outreach program in rural communities

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WHO has a stated goal to eliminate viral hepatitis C and B virus infection as a public health threat by 2030. There are many challenges in diagnosing HCV infection and link them to treatment. We have recently described a community-led outreach model for prevention, testing, and treatment of HCV infection in one village in northern Egypt (Al Othmanya, Gharbiah governorate), with the goal of HCV elimination from all adult villagers.

Aim: To demonstrate feasibility and effectiveness of "all in one day "model to ensure near 100% linkage to care.

Methods: Between June 2015 and June 2016, a community-based educate, test-and-treat demonstration project was established by the Egyptian Liver Research Institute and Hospital to eliminate HCV from adults in one village Othmanya. The model was scaled-up between 6/2016 and 06/2018 in 73 villages across Egypt, it comprised community mobilization facilitated by a network of village promoters to support an education and test and treat campaign with fund raising in the local community; a comprehensive testing, linkage to care and treatment of all eligible villagers using HCV antibody and HBsAg rapid diagnostic tests (RDTs) with confirmation of positive cases by PCR and education campaign to raise awareness and disseminate messages through public events, promotional materials and house-to-house visits. In order to demonstrate the feasibility and effectiveness of" all in one day model "; two community sites were selected at the end of 2018 ; 1-Community awareness-raising in the week before testing 2. Transfer of key portable laboratory instruments to the two sites (GeneXpert, Fibroscan and abdominal ultrasound) 3. Screening using rapid diagnostic tests (RDT) for HCV-Ab and HBsAg, with immediate venous or finger stick blood sampling for HCV RNA and HBV DNA measurement, and Fibroscan liver disease staging.

Results: In the 73 villages, Of the 221855 eligible villagers, 204749 persons (92.3%, 95% CI 91.6-93.5) were screened for HCV antibody and HBsAg using RDTs. Of these, 33839 (16.5%)were HCV antibody positive and 763 (0.4%) were HBsAg positive. All 33839 HCV antibody positive persons were tested for HCV RNA and 15892 (47.0), All HCV-RNA positive persons completed a full baseline assessment with liver function tests, full blood count, AFP, transient elastography for staging of liver disease and abdominal ultrasonography. 14495 (91.2%) received DAA treatment. We estimate treatment coverage and cure of 84.6% of the estimated 17137 infected persons aged 12-80 years across the 73 villages.

In the modified model; at site 1, 475 individuals were screened over a single day, 56 were positive for HCV-Ab, and 43 were HCV-RNA positive, and 40 patients received their first dose of HCV treatment, and one for HBV within 3 hours and 4 hours respectively of initial RDT. At site 2: 3188 individuals were screened over 3 days, 38 of 76 were positive for HCV RNA, and 18 of 18 tested were HBV DNA positive. 38 eligible patients were initiated on treatment for HCV and 12 for HBV within 3 hours and 4 hours respectively of initial RDT.

Conclusion: The model shows outstanding results across the continuum of care with high uptake of testing, linkage to care, treatment and achievement of cure. We demonstrated the feasibility of a same day "test and treat" model for chronic HCV and HBV infection in two community-based settings in Egypt that achieved almost complete linkage to care and initial treatment.

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Towards the elimination of HCV in British Columbia: A strategy to address the "messy middle"

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Background: In British Columbia, all medications to treat HCV infection are publicly funded with no restrictions linked to risk behaviors or fibrosis stage. This accessibility to HCV therapies began in 03/18. A systematic initiative to diagnose HCV infection, with an emphasis on groups with a higher prevalence of HCV infection, will soon be implemented to identify the 10,000 undiagnosed British Columbians. One of the major challenges is that patients testing positive for HCV antibodies do not move through the care cascade to treatment initiation in an efficient way. The drop-off from those testing positive to those with RNA and genotype testing and finally to those starting and completing treatment may be referred to as the "messy middle." Addressing this "messy middle" will be the key to HCV elimination in our province.

Methods: We describe the community pop-up clinic (CPC), a scalable approach for the linkage to care of vulnerable, inner-city populations with a high prevalence of HCV infection. At selected neighborhood locations, up to 30 individuals/session are targeted. Many self-report a previous diagnosis of HCV infection, while others are offered on-site oral HCV antibody testing. Those who self-report or test positive for HCV antibodies have the option to immediately consult with a healthcare provider on-site and book a follow-up appointment at a multidisciplinary care clinic to address medical, psychological, social, and addiction-related needs. Once linked to care, subjects are moved through the care cascade in conjunction with the multidisciplinary focus of care, which is maintained during and after therapy to optimize long-term well-being and monitor for recurrent viremia. We report on the HCV cascade of care within this program.

Results: From 03/18-02/19, there were 861 point-of-care HCV tests performed at CPCs, with 52 testing positive, and another 129 cases of individuals self-reporting an HCV infection. Eighty-nine individuals opted to consult immediately with a doctor or nurse and 73 people have attended at least one appointment at a multidisciplinary clinic (78% male, mean age 49 years, 4 co-infected with HIV). Of the clinic attendees, 21 (29%) have achieved SVR, 11 (15%) have finished treatment and are awaiting SVR results, 3 (4%) are currently on treatment, and 3 (4%) are scheduled to start treatment. Another 8 (11%) were found to have spontaneously cleared the virus. These patients at various stages of engagement leading to HCV cure account for 63% of patients seen at the clinic. One (1.4%) discontinued treatment, one (1.4%) was lost to follow-up (LTFU) while awaiting SVR, and 2 (2.7%) were LTFU while on treatment. Twenty (27%) attended at least one appointment but did not initiate treatment, and another 2 (2.7%) are known to be engaged elsewhere. One person died of a drug overdose before initiating treatment. No reinfections have been documented to date.

Conclusions: A novel multidisciplinary program has been designed to address the "messy middle" of engagement in care of HCV-infected substance users in British Columbia. It is highly effective and cost-effective, scalable, and associated with a reduction in opioid-related deaths and rates of recurrent viremia. This program will be an important part of reaching WHO goals of eliminating HCV as a public health concern by 2030.

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Real-World Challenges to and Opportunities for Microelimination in Two Remote Communities in Northwestern Ontario

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Background: Hepatitis C (HCV) is endemic in several indigenous communities in Northwestern Ontario. Development of direct acting antivirals (DAAs), and government's willingness to pay for medication means the main obstacles to HCV elimination are now testing and linkage to care. Testing in remote First Nation communities presents certain challenges and opportunities. We are working with some of these communities to develop culturally appropriate, collaborative approaches to wide-spread testing, followed by linkage to care. Here we present results in two such communities. Comparisons of similarities and differences in approaches used in each community could inform future initiatives.

Aim: Evaluate widespread community testing for HCV, using dried blood spots (DBS) gathered by health care workers and community members in two remote indigenous communities.

Method: Both communities were engaged as follows: presentations to Chief and Council regarding HCV and its suspected local prevalence; formation of a team of planners and testers; development of community-specific approaches to testing; DBS training of team members; counselling of those testing positive, linking them to care. Testing was advertised using flyers, radio, Facebook, and posters, highlighting endorsement by Chief and Council; incentives included coffee-cards, phone cards, food, and raffled gifts. While flyers were delivered house-to-house in Community 1, this was highly unacceptable in Community 2. Instead, Facebook was preferred, and a 15km walkathon was staged to raise awareness. In Community 1, the local health director dedicated his time and seven of his staff to work on the project. In Community 2 the work was primarily organized by the HCV nurse, plus a nursing student indigenous to the community, specifically hired for the role; testing was by healthcare staff, plus three paid trained testers from the general community. Participants read, or were read, a script describing the disease, and reasons for testing. For community 1, post-test counselling was delegated to nurses outside the community.

Results: Each community has ~900 members. DBS used for community-wide testing was piloted in Community 1 where 226 people (~33% of the adult population) were tested in 3.5 days, averaging 65/day. Community 2, considerably more remote (air-access only), is a site of ongoing engagement. Two 4-day test initiatives one month apart resulted in 313 tested, averaging 39/day. HCV seroprevalence was >10x higher in Community 2. Feedback from both communities has been positive. A survey of Community 2 indicated that food and Facebook announcements were the two most important features attracting participants.

Conclusions: Low prevalence in Community 1 may indicate local differences or that the effort did not attract high-risk individuals. Community 1 members did not receive results in a timely manner, highlighting some of the challenges working with the local health authority responsible for that task. High workload for organizers in Community 2 underscores the difficulty in finding sufficient local support at the planning level. The strength of the community-based model was highlighted by the satisfaction expressed in both communities; by the many successful ideas from Community 2's nursing student, and empowerment she says she experienced; plus the opportunity to recruit community members as staff.

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Policy implementation index based off of patient reported outcomes: The Hep-CORE study

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Background: Driven by the availability of new hepatitis C virus (HCV) treatments in 2013, the World Health Organization (WHO) adopted a strategy to eliminate HCV as a public health threat by 2030. Key policies need to be implemented in order to achieve this. In the absence of an international policy monitoring mechanism, this study assesses the extent of implementation of known national HCV policies from the perspective of hepatitis patient groups.

Materials and Methods: Thirty organizations from the European Liver Patients' Association, each representing one country, were surveyed in October 2018. Participants were queried using a Likert scale to assess how well policies were functioning/implemented in practice. Respondents received two sets of questions: 1. addressing specific WHO recommendations; 2. from validated data sources verifying the existence of a policy in their country. A group of experts selected a subset of key variables to include in an index for both sets. We calculated the indices, with a multiple joint correspondence analysis (MJCA). The MJCA reduced the responses of each patient group from a particular country into a single weighted summary of their responses. Standardized proxy countries, StagNation (no policies in place) and ElimiNation (all policies in place and implemented), were included to set a baseline for all other countries to be compared to in both indices. In the second index, ProcrastiNation (all policies in place, but none implemented), was also included. We extracted from the MJCA a score for each country, which was standardized to a range of 0 (worst) to 10 (best).

Results: In total, 25 countries responded. For the WHO recommendation index, experts decided to include: micro-elimination in migrants, people who inject drugs, prisoners, sex workers and service integration of blood safety, harm reduction, and migrant health services (n=7). The MJCA yielded a 1-dimensional solution explaining 75.5% of the variation. Bulgaria had the lowest score (0) with all negative responses while Cyprus, Netherlands, Portugal, Slovenia, and Sweden had scores of 10. For the verified policy index, experts decided to include: fibrosis restrictions, drug alcohol restrictions, needle-syringe program (NSP) general population, NSP prison, opioid substitution therapy (OST) general population, OST prison, testing/screening HCV in prisons, and treatment of HCV in prisons (n=8). For the subset of verified policies, the MJCA yielded a 2-dimensional solution with dimension 1 accounting for 44.3% of the variation and dimension 2 accounting for 34.6%; dimension 1 was related to whether verified policies were in place and dimension 2 was related to the proportion of policies in place that were well implemented. Spain, had high scores for both dimensions followed by Sweden, the United Kingdom, Austria, and Portugal, while Bosnia Herzegovina and Denmark had the lowest scores for dimensions 1 and 2, respectively.

Conclusions: Patient group respondents reported that the level of implementation of HCV policies and recommendations in practice in Europe remains low and with major differences among countries. If countries are to meet the WHO 2030 HCV elimination targets, the response needs to further expand services, especially to the most vulnerable populations.

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Efforts to increase HCV viremia testing uptake to reach 2020 hepatitis C elimination goals in Georgia

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Background: In April 2015, the country of Georgia launched the world's first national program to eliminate hepatitis C, defined as a 90% reduction in prevalence by 2020. In 2017, the data suggested that although large numbers of Georgians were being screened for hepatitis C, the proportion of HCV antibody (anti-HCV) positive persons receiving diagnostic testing to determine current infection was insufficient to meet elimination goals. At that time, although treatment and screening were free for program enrollees, Georgians were required to pay for nucleic acid testing (NAT) to determine current infection. At the end of 2017, the government of Georgia made regulatory changes aimed at improving access to free-of-charge HCV viremia testing through the use of HCV core antigen (HCVcAg). The aim is to describe efforts in Georgia's hepatitis C elimination program to increase HCV viremia testing uptake to reach 2020 elimination goals.

Material & Methods: Regulatory changes pertaining to Georgia's national hepatitis C elimination program enacted from December 2017 to March 2018 were reviewed. Additionally, we analyzed data from the national hepatitis C screening registry and treatment database during September 2017 – August 2019.

In December 2017, the government of Georgia approved HCVcAg testing as an alternative to NAT for diagnosing current HCV infection and made all diagnostics including hepatitis C screening and viremia testing (qualitative or quantitative PCR, HCVcAg) free of charge.
The Lugar Center, the national reference laboratory of the National Center for Disease Control and Public Health (NCDC) has provided reflex HCVcAg test-based viremia testing for all anti-HCV positive blood donors and pregnant women identified through state funded programs since January 1, 2018, and for all anti-HCV positive inpatients and persons screened positive at NCDC laboratory sites since March 10, 2018. To facilitate viremia testing uptake, mandatory sample collection from anti-HCV positive inpatients became the responsibility of all inpatient service providers licensed in the country. Since March 1, 2018, hospitals report both screening results and data pertaining to sample collection and transportation to the Lugar Center directly into the hepatitis C screening registry within 24 hours from the service provision.

Results: From December 2017 through August 2019, 24,205 Georgians received HCVcAg testing to determine viremia, an average of 1,153 tests per month. Those tested had a median age of 52 (interquartile range 41-64) and the majority (67.1%; n=16,240) were male. Overall, 72.9% of HCVcAg tests were positive, resulting in the identification of 17,638 individuals needing treatment.
After the introduction of HCVcAg testing among patients of hospitals, the average number of persons receiving viremia testing increased by 58.7%, from 1,195 per month during September 2017 – February 2018 to 1,897 per month during March 2018 – August 2019. This reversed a downward trend since a peak in July 2016, when 2,641 were tested for current HCV infection.

Conclusions: This report highlights policy initiatives aimed at improving rates of HCV viremia and their impact on viremia testing uptake. Introduction of free-of-charge viremia testing paired with reflex HCVcAg testing among hospitals, antenatal clinics, and blood banks improved HCV viremia testing uptake.

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Hepatitis C Elimination in the Netherlands (CELINE): a nationwide study retrieving lost to follow-up chronic hepatitis C patients

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Background: Hepatitis C virus (HCV) infection prevalence in the Netherlands is estimated at 0.16% (1). As of November 2014, direct-acting antiviral (DAA) therapy is reimbursed in the Netherlands for everyone with health insurance. Unfortunately, up to 30% of the diagnosed population has been lost to follow-up (LTFU) before receiving proper treatment (2,3).

The Hepatitis C Elimination in The Netherlands (CELINE) project is a nationwide retrieval project that aims to retrieve and re-evaluate HCV patients who are LTFU, and link them to care. The ultimate goal is to eliminate HCV in the Netherlands, in line with the WHO goals (4).

Methods: This multicentre cohort study aims to include patients from all 47 Dutch hepatitis treatment centres. Patients are identified based on laboratory records (HCV antibodies, immunoblot, RNA and genotype). Subsequently, patient records are reviewed to identify current HCV-positive but untreated patients. The Municipal Personal Records Database is used to obtain current addresses, which accords with privacy legislations. Patients are contacted for an assessment of current HCV status, liver disease severity and if needed DAA treatment. The primary endpoint of the study is the number of LTFU patients who have been successfully linked to care. Secondary endpoints are number of patients already cured, reasons for being LTFU, transmission route and liver fibrosis severity of the LTFU population.

Results: So far, seven hepatitis treatment centres have finished the identification phase and initiated the retrieval phase. Of 5657 potential ever chronically infected patients, 55% (n=3098) are already cured and 8% (n=475) were LTFU and eligible for retrieval (alive and current address information available). Currently, 240 patients have been invited for outpatient clinic evaluation. Of these 240 patients, 30% (n=73) were already (being) treated, 1% (n=3) moved abroad, 8% (n=19) had too severe comorbidity or were deceased, 10% (n=25) refused to be re-evaluated and in 26% (n=62) contact is not yet established. So far, 26 patients (11%) are scheduled for outpatient assessment and 32 patients (13%) have successfully been linked to care. Linked-to-care patients were mostly male (n=22), aged 62 (median, IQR 58-65) and treatment experienced (n=16). The most common reason for being LTFU was lack of indication or options for therapy (n=8). The prevailing transmission route was intravenous drug use (n=17). Out of 28 known RNA results, 19 patients tested RNA-positive. Nine patients had liver stiffness measurements ≥9.5 kPa. So far, twelve patients have initiated treatment and one reached sustained virological response.

Conclusion: These interim results show that retrieval can contribute to reaching HCV elimination in the Netherlands. As the retrieval phase is ongoing in seven hospitals and soon to start in several other hospitals, we expect to increase the number of patients linked to care in the short term. Results are in line with those of the CELINE pilot project (REACH), which retrieved 16% of LTFU patients (n=47) (3). CELINE can be used to serve as a blueprint for retrieval projects in other countries.

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Oral Prescription Opioid Use should be Considered a Risk Factor for HCV infection: Another Step Toward HCV Elimination

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Background: The opioid epidemic poses an array of public health concerns other than opioid use disorder (OUD) itself, especially HCV transmission. Although rates of prescribing opioids have decreased in recent years in attempts to curb the epidemic, they remain a significant risk factor (RF) for development of OUD and injection drug use (IDU); the latter is the single most significant RF for acquiring HCV. HCV is now widely-curable and theoretically eliminable. Current U.S. guidelines recommend one-time screening for those belonging to the birth cohort (BC, born between 1945-1965) due to the high HCV prevalence. However, despite the established trajectory from oral prescription opioids (OPOs) to OUD, OUD to IDU, and IDU to HCV, we have not found studies or guidelines establishing OPOs as a defined RF for HCV infection. The current study fills this gap by observing HCV screening and antibody reactivity (HCVAb+) rates in patients receiving OPOs, hypothesizing that they should be considered an HCV RF. These findings will be important in global efforts toward HCV elimination.

Methods: The study was conducted on all patients with any OPO in the EHR at a large regional US healthcare system, between January, 2017 and December, 2018. Chi-square and Student t-tests were used for univariate comparisons; multivariate logistic regression was used for independent variable associations. Statistical significance was defined as $p<0.05$; Epi InfoTM and SAS v9.4 were used for statistical analyses; MHRI IRB approval was received.

Results: There were 115,415 persons who received any OPO; mean age was 57.9 ± 16.7, 62.5% (72,113) were female, 38.6% (42,840) were black, and 54.5% (60,478) were white. Of the 9.9% (11,464) who received an HCVAb test, 12.4% (1,421) were HCVAb+; 9.4% (10,900) of testing was performed in those not previously diagnosed with HCV and 8.6% (932) were positive. Of the total OPO population, 3.4% (3,893) had an OUD diagnosis; 20.6% (803) were HCVAb tested, of which 45.0% (361) were HCVAb+, constituting 25.4% of the total HCVAb+ cases (1,421). In the BC, black race (ORadj 2.22, CI95 1.90–2.59), male (2.45, 2.12-2.82) and OUD (6.97, 5.60-8.67), were independent predictors of HCVAb+; white race (1.68, 1.32-2.13) and OUD (9.65, 7.46-12.48) in the non-BC.

Conclusions: These results offer three applicable **Conclusions:** 1) in a large population prescribed oral opioids, HCVAb+ was 8.6% (including prior HCV diagnosis was 12.4%), higher than the published MedStar Health reference (2.5%) and US rate (1.7%); thus, OPOs should be incorporated as a defined RF for HCV screening, counseling and re-testing, 2) although OUD may lead to known HCV RFs, only 20% of patients diagnosed with OUD were HCVAb tested; thus, efforts should be increased to improve HCV RF awareness among practitioners, and 3) although the trajectory from OPOs to OUD to IDU to HCV would predict that a majority of HCVAb+ patients have OUD, only 25% of those HCVAb+ were classified with OUD; therefore, new strategies need consideration for reporting OUD, which will also increase HCV RF identification. These recommendations should be adopted as the natural next steps in global HCV elimination.

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Abstract #23 and abstract #24 have been withdrawn.

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Sero-prevalence of hepatitis B virus and compliance with Hepatitis B vaccination schedules among health care workers and outpatient clinic attendees in Kenya

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Background: Hepatitis B Viral Infection (HBV) remains one of the leading causes of morbidity and mortality globally, accounting for 38-53% of chronic liver diseases, and about 686,000 deaths annually. The prevalence of HBV is 9-20% in Sub-Saharan Africa, and in Kenya it is 5-30% among the general population. HBV is transmitted through percutaneous or per mucosal exposure with infectious blood or body fluids, mainly semen and vaginal fluid. Therefore, the risks of infection by HBV remain a permanent problem, particularly for health care workers (HCWs) and patients. Vaccination of HCWs against HBV is standard practice in many countries, but is often not implemented in resource-poor settings. Nonetheless, data on both the prevalence of HBV and compliance with management of HBV in the population are limited.

Objective: To determine HBV prevalence, identify beneficiaries of HBV vaccination as well as barriers to HBV vaccination among HCWs and patients attending outpatient clinics.

Materials and Methods: A total of 2946 persons, 302 of them HCWs, participated in the study. Self-administered questionnaires were used to collect their socio-demographic data, while blood samples were screened for presence of HBsAg, using KEMRI hepcell rapid test kit. The mean age of the study population was 31.13 years (range: 4-66), with 59.2% being female. Persons who tested HBsAg negative were offered a full course of three doses of hepatitis B vaccine.
The vaccination register was the source of information regarding the number of doses received by each person.

Results: The study established a HBV prevalence rate of 1.8%, with highest infection rate among the 56-65 years age group. Among HCWs, the prevalence rate was 1.3%, which was lower, though not significantly than that of patients attending outpatient clinics (1.8%). A total of 2894 persons were eligible for vaccination, including 302 HCWs. All (100 %) of outpatient clinic attendees received the first dose of the vaccine, while 51.7 % complied with receiving the required three doses. On the other hand, 100 % and 90 %, respectively, participated and complied with the three doses among the HCWs. Not completing vaccination dose was associated with: not being available (53.1%); not having been contacted by vaccine providers (36.7%).

Conclusion: The presence of serological markers of HBV infection among unvaccinated study participants, stress the need for comprehensive preventative measures at the population level.

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Prevalence of hepatitis B vaccination uptake and associated factors among Health Care Workers from a tertiary and teaching hospital in north-eastern Tanzania.

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Background: There are limited data in low-income countries on hepatitis B vaccination coverage

among HCWs. The study determined the prevalence of hepatitis B vaccination uptake and associated factors among HCWs from a tertiary and teaching hospital in north-eastern Tanzania.

Material and Methods: A cross-sectional study was conducted among consenting HCWs at Kilimanjaro Christian Medical Centre (KCMC) a referral and teaching hospital from August 2016 to June 2017. Questionnaire-based interviews were used to obtain HCWs' demographic characteristics and risk factors. Multivariable logistic regression was used to determine factors associated with HBV infection.

Results: About two-third 295(67.4%) of 438 participants had received HBV vaccination. Among those who ever received HBV vaccination (n=295), 205 (70.5%) received 3 shots, 57 (19.5%) received 2 shots and 33 (10%) received 1 shot. HCWs working in clinical areas had 79% higher odds of vaccine uptake compared to those who were not (OR=1.79, 95%CI 1.11, 2.89). Ever having intravenous and intramuscular injections significantly increased the odds of vaccination uptake compared to those who never had (OR=2.21, 95%CI 1.33, 3.66) and (OR=2.42, 95%CI 1.36, 4.28) respectively. Also, HCWs with fair and good knowledge on HBV infection had over three times higher odds of vaccine uptake compared to those with poor knowledge (OR=3.08, 95%CI 1.90, 5.01) and (OR=3.07, 95%CI 1.75, 5.40) respectively. After adjustment, factors that remained to be significantly associated with HBV vaccine uptake were an area of specialty and knowledge on HBV infection

Conclusions: The vaccination coverage among HCWs at KCMC, teaching hospital in North-eastern Tanzania was only 67.4% despite it been given free of charge. Factors that were associated with HBV vaccine uptake include an area of specialty and knowledge of participants on HBV infection and vaccination. We encourage continuous medical education among HCWs about important of hepatitis B vaccination and make it pre-employment requirements.

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Protection efficacy of hepatitis B vaccine among youths in Cameroon

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Background: Hepatitis B virus (HBV) infection is a global health problem and according to WHO, despite the widespread use of prophylactic vaccines against HBV approximatively 300 milllion people are infected with chronic hepatitis B. The vaccine confers immunity against the hepatitis B infection when titer levels of antibodies against HBV (HBsAb) are > 10mIU/ml in blood. Many factors have been reported and affirmed by the WHO to influence the titer levels of HBsAb post-vaccination. These include factors such as obesity, route of administration, smoking, immune deficiences, genetic factors. Such parameters coin vaccinated persons into ideal responders (HBsAb titer levels >100mIU/ml), hypo-responders (titers levels 10-100mIU/ml) and non-responders (< 10mIU/ml). The aim of this work was to evaluate the efficacy of the vaccine in a youth population in Cameroon.

Material and Methods: From a total of 321 students who opted to receive the HBV vaccine, 252 were eligible after been screened for HBV 5 markers (HBsAg, HBeAg, anti-HBs, anti-HBc, anti-HBe) using ACRO BIOTECH- JusChek HBV Combo Rapid Test Cassettes.
Following the vaccine protocol (Engerix), HBsAbs were quantified using Rapid Labs HBsAb Quantitative EIA Test Kit.

Results: These students were made up of 198 (78.57) females and 54 (21.43) males with ages ranging between 17- 40 years. After completion of HBV vaccine with post-vaccination duration > 6months, 34% of participants presented titer levels > 10mIU/ml (ranging from 19-165mIU/ml) conferring seroprotection, thus, immunity against HBV infection. The remaining (66%) participants were non-responders with HBsAb titer levels < 9mIU/ml. According to WHO, the efficacy of the

HBV vaccine can be tested only after a booster dose when tested non-respondent. Therefore, the term non-responder used in this work is just attributive with respect to titer levels and not affirmative.

Given the above mentioned, 34% of participants were potentially immunised against the HBV infection approximate to a population of 85 UCAC-Messa students out of the 252 considered as study population. This is parallel to a representative proportion of about 1/3. In contrast, 167 (66%) individuals may need to go for a booster dose. Also, from the 34% of potentially immunised participants, ideal responders represent 20% and hypo-responders 14%.

Our study results presented an immunisation level of 34%. This reflects a relatively low or partial immunisation level against HBV infection. Thus, implies that about 66% of participants which were vaccinated against HBV are still susceptible to HBV infection. These results are completely different from awaited results as stipulated by WHO. The hypothesis of TCR or BCR hole may sustain further investigations. Or, the use of booster HBV doses could remedy the situation.

Conclusions: Amongst the 34% of immunised individuals, ideal and hypo-responders represented 20% and 14% respectively. Therefore, 66% of participants were not immunised thereby still susceptible to HBV infection. At large, we attest a partial immunisation level of participants against HBV infection.

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Knowledge, Attitude and Practice towards prevention of Hepatitis B among Health Care Providers: A Cross sectional survey in Wakiso District, Uganda.

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Introduction: Hepatitis B viral (HBV) infection remains one of the most serious occupational risks among health care providers (HCPs) globally and worse in low income countries. However, evidence on the knowledge, attitudes and practices towards its prevention among HPCs in Uganda is lacking. Therefore, the aim of this study was to determine the level of knowledge, attitudes and practices towards prevention of HBV infection among HCPs in Wakiso District, Uganda.

Methods: A cross sectional study was conducted among 306 HCPs in 55 health care facilities in Wakiso district, Uganda. Modified Poisson regression was used to ascertain the determinants for knowledge, attitude and practice towards prevention of Hepatitis B. Prevalence risk ratios (PRR) and 95% confidence intervals (CI) for the associations were obtained.

Results: Out of the 306 participants, 67.3% were female. 52.9% of HCPs exhibited a low level of knowledge; 77.8 % had a positive attitude towards HBV prevention while only 42.2% exhibited good standard prevention practices. Male sex (PRR 1.41, 95% CI: 1.11-1.79, p=0.005), ownership of the health facility where the HCP was working (PRR 0.47, 95% CI: 0.28-0.78, p=0.004), main department of work (PRR 0.54, 95% CI: 0.36-0.81, p=0.003) and positive attitude (PRR 1.52, 95% CI: 1.08-2.14, p=0.016) were significantly associated with a high level of knowledge. There were significant

associations between male (or female) sex (PRR 0.86, 95% CI: 0.75-0.98, p=0.031), location of health facility (PRR 0.81, 95% CI: 0.72-0.92, p=0.001) and the level of knowledge (PRR 1.19, 95% 1.05-1.35, p=0.005); and attitude towards HBV prevention. Lastly, the determinants of good prevention practices included; high/moderate level of knowledge (PRR 1.34, 95% CI: 1.09-1.63, p=0.004), facility ownership (PRR 1.34, 95% CI: 1.08-1.67, p=0.007) and level of health facility (PRR 1.31, 95% CI: 1.05-1.63, p=0.016).

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Hepatocellular Cancer in Nigeria: Urgent need for improved Heparitis B Vaccination Coverage

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Background: Hepatocellular carcinoma (HCC) constitutes the 5th most frequent form of cancer worldwide. It is a disease with a dismal prognosis, which is better prevented. While the survival of patients with most malignancies has improved over the last decade, five-year survival of patients with HCC has remained at less than 10%.
We ascertained the mode of clinical presentation of HCC, the clinical outcome of patients followed up for 3 months, as well as the predictors of mortality in these subjects.

Materials/Methods: A total of 110 persons with liver disease were recruited for this study from 2015 to 2016, out of which 39 were diagnosed with HCC. An informed consent was obtained, and patients were evaluated on the basis of their demographic data, detailed history, clinical, biochemical, and ultrasonographic findings. Associations between variables were assessed using Pearson's Chi-square test (for categorical variables) and correlations (for continuous variables). Logistic regression was used to assess for the independent predictors of mortality.

Results: Of 39 patients with HCC, 28 were positive for hepatitis B virus. Common modes of presentation were ascites, pedal edema, hepatic encephalopathy, abdominal pain, and abdominal swelling. All patients (100%) had died at the end of 3 months. The mean survival duration from presentation to death was 25.1 ± 4.5 days. Multiple logistic regression analysis identified the presence of hepatic encephalopathy, high INR, and Child Pugh score as independent predictors of mortality in these subjects.

Conclusion: All patients who were diagnosed with HCC died before 3 months, giving a mortality rate of 100%. Public enlightenment programs on hepatitis B and widespread implementation of hepatitis B virus vaccination are essential to reduce incidence of HCC, especially as hepatitis B is the commonest source of HCC in Nigeria, and West Africa, as a whole.

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Hepatitis B Virus infections and associated risk factors among medical waste handlers at the Kenyatta National Hospital, Nairobi Kenya

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Medical waste contains a wide range of potentially harmful microorganisms among which Hepatitis B virus are the most significant pathogens. This study is aimed to determine the sero prevalence of Hepatitis B Virus infection and risk profile among medical waste handlers in Kenyatta National Hospital.

A cross sectional study was conducted. A questionnaire was used to capture socio demographic data and factors associated with Hepatitis B Virus infection. Serum samples were obtained from each participant and analyzed for Hepatitis B surface Antigen using the enzyme linked

immune absorbent assay. Data analysis was done using SPSS version 22.0.

Prevalence was calculated as a proportion of participants who were sero reactive to Hepatitis B Surface Antigen. A total of 185 medical waste handlers were recruited. The mean age was 41.5 years (SD 10.3 years) and 53% were females. The median duration of exposure to medical waste was 15 years (IQR 7.5- 20 years). Prevalence of HBV infection was 2.7% (5 medical waste handlers). There was no significant difference between the infected and uninfected participants in relation to risk profile (p >0.05).

In conclusion, the prevalence of HBV among medical waste handlers was of intermediate endemicity in this population. Efforts to eliminate HBV in this population need to focus on increasing awareness, screening, offering universal vaccination and ensure all handlers are trained on infection control.

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Abstract #31 has been withdrawn.

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Prevalence and prevention of Viral hepatitis B and C in Taraba State University

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Background: Viral hepatitis B and C differ significantly in regards to epidemiology, prevention, diagnosis, care and treatment which is a major global health problem with more than 400 million patients chronically infected, causing over 1.4 million death per year. Nigeria is among the countries with the highest burden of viral hepatitis with the prevalence of HBV and HCV at 11% and 2.2% respectively. The distribution of HBV by sex is 62.6% of males and 37.4% of females while the distribution of HCV by sex is 52.4% to 47.6%. Like the HIV/AIDS epidemic, Taraba State has again been rated one of the highest in the country in prevalence of both hepatitis B and C. With higher prevalence of about 19% and 11% for HBV and HCV has been reported for Taraba State.

Methods: This was a descriptive cross sectional survey conducted In jalingo the state capital during the World Hepatitis Day 2019. 300 students of the Taraba State University participated in the survey. Blood samples was obtained from students selected randomly. HBV screening was performed using the HBsAg Rapid diagnostic test strip and Anti HCV rapid diagnostic test strip . It is a rapid visual immunoassay for the qualitative detection of HBsAg and Anti HCV on human whole blood. The whole blood, was dropped in the test Strips with a disposable pipette and a buffer solution was added to the blood on the strips immediately and allowed for 10 minutes after which the result was interpreted.

Results: It was discovered that 28 males representing 19% of the total respondent tested positive to HBsAg and 10% of the males tested positive to Anti-HCV.
On the other hand, 18 of the females representing 12% of the respondent tested positive to HBsAg while 9(6)% tested positive to Anti-HCV. On a general note, 46(15)% of the total respondent (males and females) tested to HBsAg while 24(8)% of the total respondent tested positive to Anti-HCV. It was discovered that 132 of the total respondent (female) representing 88% tested negative to HBsAg while 59 representing 39% of the respondent tested negative to HCV.

Conclusion: This research indicated that HBsAg and Anti-HCV infection is highly prevalent among students of Taraba State University, sadly majority of them are unaware of their status, which could lead to end stage liver disease if diagnosed late. Early diagnosis of hepatitis infection is critical for effective treatment and care. Only 10% of persons living with hepatitis B and 20% of persons living with hepatitis C have been tested and are aware of their status globally, only 9% of persons living with hepatitis B and 20% of persons living with hepatitis C have been tested and are aware of their status.
Awareness is still lacking. Therefore, in order to reduce HBV and HCV infections, Hepatitis B vaccination should be provided for young adolescents, prevention also contribute to broader health outcomes, including the prevention of HIV, sexually transmitted and order blood borne infections and for population at risk. HBV and HCV screening programs should be instituted in all

higher institution in the country to reduce the prevalence rate and the level of transmission of hepatitis virus.

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Abstract #32 has been withdrawn.

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Study Protocol for a Randomized Controlled Trial: Evaluating Geosocial Networking Application-delivered Interventions at Improving Access to HCV Services among High-risk MSM in China

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MSM are at an increased risk for contracting HCV: the prevalence of HCV in Chinese MSM varies from 0.6% to 4.8%, while only 33% of MSM had correct knowledge about HCV and 5% had ever been tested for the disease. Societal stigmatization and institutionalized discrimination of MSM in China have resulted in unequal access to health services, making it difficult to reach this vulnerable population with much-needed interventions. In China, most current public health programs and resources targeting MSM focus on preventing the spread of HIV rather than HCV. Blued, the largest MSM social networking application with 28 million registered users in China, has displayed several advantages in reaching a large number of participants within a short period of time with superior cost-efficiency and increasing outreach to closeted MSM, as well as MSM who have no established contacts with healthcare agencies. Previous experience using Blued to deliver HIV messaging proved to be a cost-effective approach for cohort development and follow-up. In this regard, Blued could also be utilized as a multi-service platform for HCV prevention and care for MSM in China.

The study aims to 1) determine the HCV-awareness level, proportion getting tested, and HCV-risk behaviors of MSM and 2) evaluate the efficacy of a randomized control intervention study, aimed at increasing HCV awareness and testing uptake of MSM.

The research consists of two parts: 1) an online, cross-sectional survey aimed at understanding factors associated with HCV infection among MSM in Beijing and Chengdu, China, and 2) a randomized controlled trial aimed at identifying the effects of an app-based intervention on improving HCV awareness and testing coverage. A back-calculation method was used to estimate the sample size of the cross-sectional study: assuming 800 individuals are enrolled in the intervention study (Part 2), and 40% of MSM are engaged in high-risk behavior (based on previous data), then we expect 2,000 participants to be enrolled in the online survey. We will use splash screen advertisement, one of functional feature of Blued, to recruit participants. There were 628,000 and 208,000 Blued users in Beijing and Chengdu respectively in 2018.

A previously developed HIV risk assessment tool will be used as a proxy for HCV risk. The MSM who are identified as high-risk for HCV will be randomly assigned into either the intervention or control group through a computer algorithm. A double-blind approach will be used in the process of randomization. Incrementally increasing incentives will be given to participants in both arms at 0, 6 and 12 months to promote participation through the end of the study.

Comprehensive online interventions will be delivered exclusively to participants in the intervention arm through several functional feature of Blued, such as direct message, group chat, online counseling, etc. The interventions will focus on improving HCV awareness, HCV knowledge, and testing uptake, and will be in addition to ongoing HCV services provided by the government. In the control arm, participants will only receive regular services.

Evaluations will be done in the medium and end of the study. It is expected that after 12 months of the intervention, participants in the intervention arm: a) will increase their HCV knowledge 20% more than the control arm, and b) will increase their HCV testing uptake 10% more than the control arm.

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Abstract #34 has been withdrawn.

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Hepatitis B, C, and HIV prevalence among injection drug users in the USA

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Background: Bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) are commonly associated infections among injection drug users (IDUs) within the USA. The purpose of this study is to measure the prevalence of these infections and co-infections among IDUs based on demographic factors such as income status, geographical region, age, race, and gender. There is a rising trend observed in these infections over the past few years, mainly in injection drug users, as these are primarily transmitted via direct contact with bodily fluids during needle sharing.

Methods: An electronic literature search was performed and the search was limited to peer-reviewed articles published from January 1, 2000, until June 30, 2019, with our focus concentrated within the USA due to the rising injection drug use epidemic.

Results: Based on the peer-reviewed articles, the prevalence rate of HBV and HCV was consistently found to be increasing with age but actually decreased in HIV patients. Geographically, more cases were reported in the Northeast area, particularly among the white, followed by the Midwest and the West of the USA. The prevalence rate was found to be higher among women and roughly 37% of them are younger than 35 years of age. Overall, the number of infections by HBV, HCV, and HIV has shown an increasing trend over the years, 2009 to 2016, among IDUs. Co-infection with HBV and HCV was also observed to be higher in the HIV patients mainly due to the same mode of transmission and impairment to the immune system.

Conclusions: This study indicates that injection drug use still remains the most common means of transmission for HIV, HBV, and HCV within the USA. There is an urgent need to implement more awareness among communities who are at high-risk to enforce better prevention protocols and proper medical treatment.

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Prevalence of Hepatitis B and C among inmates in Rwanda

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Background: The viral hepatitis is a major public health challenge that requires an urgent global public health response. Understanding the prevalence of hepatitis B (HBV) and hepatitis C (HCV) in most at risk populations is critical for better global and national responses. We conducted this study to determine the prevalence of hepatitis B antigens and hepatitis C antibodies among inmates in Rwanda.

Methods: This study used data from a nationwide HBV and HCV screening campaign organized by the Rwanda Biomedical Centre (RBC) in collaboration with Rwanda Correction Services (RCS) in main prisons across the country from June to October 2017. During the campaign, information on socio-demographic and blood samples were collected by trained nurses; HBV and HCV screening was performed with HBsAg and HCVab using enzyme-linked immunosorbent assays (ELISA) testing. Bivariate and multivariate logistic regressions were used through SPSS version 20.0.

Results: Among 51,717 individuals screened for HBV during the campaign, the male were 48018

(91.4%) and the majority was in age category of 25-34 years old (19.7%); overall 2,304 (4.4%) had a positive HBsAg. The highest prevalence (5.4%) was found in the population aged 25–34 [OR] = 1.7, 95% CI (1.4–2.1). The highest HBV prevalence was found in Kigali city (7.3%) Odds Ratio [OR] = 1.9, 95% Confidence Interval [CI] (1.6–2.2) compared to others provinces. About 51,958 individuals were screened for HCVab; among them 3,317 (6.4%) were HCVab positive. Anti-HCV prevalence varied by age with the oldest age group 65+years significantly higher prevalence of 21.2%, OR = 7.9, 95% CI (6.6–9.4) compared to 3.1% OR = 1.2, 95% CI (1.0–1.5) for those under 35 years. Anti-HCV prevalence was higher in female 8.4% vs. 6.2% in male. HCV Prevalence varied geographically where the highest (8.1%) was found in South province OR =1.7, 95% CI (1.4–2.1) and the lowest prevalence in Nord province 3.6% OR=1.1(0.8-1.4).

Conclusion: The results show that HBV and HCV infection is a burden in inmates compared to general population. Variations were observed related to: age, geography, gender. National Hepatitis program should continue to target this group among other high risk groups.

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Hepatitis B Infection and Risk Factors Among Children Living With HIV in Cameroon: Towards an Integrated Management at Essos Health Centre in the City of Yaoundé

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Background: The endemicity of hepatitis B virus (HBV) prompted the systematic immunization of newborns in Cameroon since 2005. In the frame of a considerable burden of HIV/HBV co-infection (17.5%), monitoring HBV among children living with HIV (CLHIV) would guide toward HIV/HBV integrated paediatric care. We sought to ascertain the prevalence and determinants of HBV infection in the population of CLHIV.

Methods: Cross-sectional study conducted from February through June 2017 in a subset of CLHIV ≤15 years old at the Essos Hospital Centre, Yaounde, Cameroon. HBV was tested by HBsAg ELISA sandwich in duplicates for each sample, and the mean optical density was calculated. The Determinants of HBV-prevalence were evaluated, and p<0.05 was the significance threshold.

Results: Of the 83 CLHIV enrolled (54.2% female, mean age 8.7 [(3.8) years, 60% vaccinated against HBV, all breastfed), HBV-positivity rateprevalence was 2.41% (2/83). HBV-positivity was significantly associated with unknown maternal HBV status (2.9% [2/69] vs. 0.0% [0/14], p=0.0097) and vaginal deliverya normal delivery mode (2.4% [2/82] vs. 0.0% [0/1], p=0.0018). Moreover, the most likely to be positive cases were aged 11 and 15 years, and had experienced neither anti-HBV vaccination nor anti-HBV serum administration, and both had not been treated with any antiseptic solution at birth.

Conclusion: HBV-infection in the population of CLHIV appears at a moderate prevalence, suggesting a decreased burden likely due to preventives measures including the wide vaccine coverage. Priority interventions, targeting mothers with unknown HBV-status, opting for normal viginal delivery, and testing all mother before delivery independently of the mode of delivery would guide toward elimination.

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Use of the HCV-MOSAIC risk score for identification of hepatitis C virus (HCV) reinfection in HIV-positive men who have sex with men (MSM)

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Background: After successful treatment or spontaneous clearance of HCV infection, HCV reinfection occurs frequently in HIV-positive MSM. The HCV-MOSAIC risk score has been previously validated for identifying HIV-positive MSM at high-risk for acute HCV infection. We aimed to determine whether this score is useful to predict for HCV reinfection in this population.

Methods: The HCV-MOSAIC risk score is calculated by summing coefficients specific to six self-reported risk factors when present: receptive condomless anal sex < 6 months (beta 1.1), sharing sex toys < 6 months (beta 1.2), unprotected fisting < 6 months (beta 0.9), injecting drug use < 12 months (beta 1.4), sharing straws during nasally-administered drug use < 12 months (beta 1.0), and ulcerative sexually transmitted infection < 12 months (beta 1.4). A score of ≥ 2.0 was the optimal cut-off point for acute HCV infection. For this study, HIV-positive MSM with HCV reinfection (cases) were compared to those without reinfection (controls) and a follow-up ≥ 6 months using data from the Dutch MOSAIC study (2009-2017). Area under the ROC curve (AUC) was estimated and the optimal cut-off point was determined along with its sensitivity, specificity, and the proportion to be tested.

Results: Of 103 HIV-positive MSM included with a history of cured HCV infection, 27 were cases, with ≥1 HCV reinfection(s), and 76 were controls. Median age was 47.2 years (IQR 42.4-51.4) and 81.4% were of Dutch ethnic origin. Cases versus controls were more likely to engage in receptive condomless anal sex (88.9% vs. 61.8%), sharing sex toys (48.2% vs. 19.7%), unprotected fisting (48.2% vs. 26.3%) and injecting drug use (18.5% vs. 2.6%) (all p< 0.05). Median HCV-MOSAIC risk score was 2.5 (IQR 1.2-3.4) for cases and 1.1 (IQR 0-2.3) for controls (p< 0.001). AUC for HCV reinfection was 0.76 and optimal cut-off was ≥ 1.2. At this cut-off, sensitivity was 77.8%, specificity 61.8%, and proportion to be tested 48.5%.

Conclusions: The HCV-MOSAIC risk score can identify individuals at high-risk of HCV reinfection with comparable accuracy to that of primary acute HCV infection, for which the score was originally developed. It could be a useful tool to help guide HCV-RNA testing in HIV-positive MSM with a history of HCV infection.

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Changes in diagnoses of hepatitis B among migrants and the size of the foreign-born population in several European countries, 2009-2016

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Background: Migrants from areas with intermediate (2-8%) or high (>8%) prevalence of chronic hepatitis B virus (HBV) infection account for one in four chronic cases of hepatitis B in the EU/EEA, despite only representing 10% of the total population. Chronic hepatitis B is largely asymptomatic and the estimated undiagnosed proportion ranges from 40-85% across EU/EEA countries. To achieve the World Health Organization's hepatitis B elimination targets of

reducing mortality by 65% and incidence of new chronic infections by 90% by 2030, it is necessary for EU/EEA countries to ensure that people born in intermediate or high prevalence areas are tested and treated. The number of foreign-born individuals in the EU/EEA has increased in recent years. To assess whether testing efforts among migrants have followed these demographic changes we calculated the annual rate of diagnoses of migrants per 100,000 foreign born people in 2009-2016 as a proxy for testing efforts. We then determined whether this rate has changed over time and therefore whether countries need to reassess their testing policies.

Methods: We used hepatitis B notification data reported to the European Surveillance System (TESSy) by seven countries that reported migration status consistently 2009-2016 (Denmark, Finland, Ireland, Malta, Netherlands, Norway, and Sweden). Cases reported as chronic or unknown (most of which are likely chronic) were included. The number of diagnoses among migrants was estimated using a combination of variables on country of birth, country of nationality, probable country of infection and whether a case was imported. We used EUROSTAT estimates of the number of foreign-born people. Using linear regression, we evaluated changes in the number of foreign-born individuals 2009-2016. We calculated rates of diagnoses per 100,000 foreign born individuals and used linear regression to assess whether rates changed significantly.

Results: The size of the foreign-born population increased significantly 2009-2016 in all seven countries except Ireland and Norway. The rate of diagnoses per 100,000 foreign-born individuals 2009-2016 did not change in Denmark, Finland, Ireland, Malta and Sweden. In Latvia, the rate increased significantly from 0.0 per 100,000 in 2009 to 5.0 in 2016 (Coeff: 0.9, 95% CI: 0.5-1.2, P<0.001). In the Netherlands the rate decreased significantly from 82 per 100,000 in 2009 to 41.9 in 2016, Coeff: -6.0, 95% CI: -7.5-(-)4.4, P<0.001. In Norway the rate decreased from 158.2 per 100,000 in 2009 to 92.4 in 2016, Coeff: -8.0, 95% CI: -12.8-(-)3.1, P=0.007).

Conclusions: As the foreign-born population has increased in several EU countries, many countries have diagnosed larger number of migrants. Netherlands and Norway have however seen a decrease in diagnoses among migrants relative to the size of the foreign-born population. Further assessment into the causes of this decrease is needed. Even so, the absolute rate of diagnoses

among foreign-born individuals remains higher in Norway than in other countries, and all countries would benefit from reviewing possible explanations of this finding e.g. differences in testing policies for migrant populations. Comparability between countries is however limited due to variability in reporting practices and completeness of migration-related variables, which countries should review and improve.

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Occult Hepatitis B Virus among Chronic Hepatitis Patients in Kenya

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Introduction and Objectives: Hepatitis B (HBV) viruses are associated with chronic hepatitis, characterized with cirrhosis and hepatocellular carcinoma. The present study determined the proportion, molecular characterization and nature of occult hepatitis B infection (OBI) among patients seeking medical services at hospitals throughout Kenya.

Methods: Patients presenting with jaundice at four selected hospitals were recruited (n= 389). Sera were tested for the presence of HBV serological markers. Nucleic acid from HBsAg positive samples was extracted, amplified and sequenced. 67 samples of HBsAg negative samples (with enough sera volume) were tested for OBI by a sensitive real-time PCR method targeting 3 genomic regions.

Results: HBsAg was found in 50.6 % of the patients and 2.3 % were positive for IgM antibody to the core protein, indicating probable acute infection. HBV genotype A was predominant (90.3 %) followed by D (9.7 %) among HBV DNA positive specimens. Full genome analysis showed two recombinant sequences demonstrated >4% nucleotide divergence from other previously known D/E recombinants. Out of the 67 HBsAg Negative tested, Occult hepatitis B infection (OBI) was observed in 28.4% (19/67). 44.8% (30) and

55.2% (37) were anti-Hepatitis B Core antigen negative and positive respectively, OBI was prevalent among positive aHBc patients 37.8% (14/37) as compared to negative anti-HBc patients; 22.7% (5/22). HBV genotype A, clustering with subgenotype A1 reference sequences, was predominant among jaundiced OBI cases, Anti-HBs antibody levels were significantly higher in anti-HBc positive, DNA negative samples compared to OBI samples. Two known drug resistance mutations (A194T and V191I) were detected in sequence from two chronic patients; one genotype D and the other genotype A.

Conclusions: HBV infected patients seek medical services when the virus is already chronic. OBI is highly prevalent among jaundiced populations seeking medical services in Kenya and associated with anti-HBc positivity and low levels of anti-HBs antibody. Molecular characterization of HBV isolates indicated recombinant strains that may give rise to new circulating variants. There is a need to document the clinical manifestation and distribution of the variants observed.

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High rates of unusual HCV genotype 1, 2 and 4 subtypes in chronically infected patients in Cameroon: implication for the elimination of Hepatitis C

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Background: Most of the clinical trials on 'direct acting antivirals' (DAAs) against Hepatitis C virus (HCV) are conducted in industrialized countries, where the 'epidemic' genotypes 1a, 1b, 2a, 2b, 3a, 4a, 4d represent the vast majority of viral genetic diversity. However, recent data suggest that the high efficacy of the novel pangenotypic regimens may not be mirrored in the less well characterized 'endemic' HCV subtypes from sub-Saharan Africa.

In addition, as these pan-genotypic regimens are currently not available in most countries in sub-Saharan Africa, costly genotyping is required to guide HCV treatment. Here, we report the HCV genotype distribution in patients undergoing diagnostic workup for HCV therapy in routine care in Yaounde, Cameroon.

Material and Methods: All plasma samples received at Centre Pasteur of Cameroon (CPC) for HCV genotyping in 2016, were included. Viral loads were determined using the Abbott Real Time assay. HCV viremic samples were genotyped by sequencing the core and NS5B regions, followed by phylogenetic analysis including HCV reference sequences retrieved from Genbank.

Results: A total of 369 samples were received during the study period with a median viral load of 9,30,952 IU/ml. The median age of the patients was 62 years [IQR: 56–69 years] and 212 (57.5%) were females. Amplification was successful in at least one genomic region (core or NS5B) for all the samples with similar amplification rate in the two genomic regions. Among the 369 samples, 146 (39.6%) were classified as genotype 4, 132 (35.8%) as genotype 1, 89 (24.1%) as genotype 2. In two samples (0.54%), analysis of the core and NS5B regions resulted in discordant genotype classification, as the core sequence clustered with genotype 4, while the NS5B sequence clustered with genotype 1, suggesting either a recombinant virus or the presence of multiple infections in these samples. Discrimination of HCV subtypes was more successful with NS5B compared to core region. Many subtypes were identified based on NS5B sequencing. Eighty (23.7%) were classified as 4f, 22 (6.5%) as 1l, 13 (3.9%) as 4p, 10 (3.0%) as 1h, 8 (2.4%) as 4t, 2 (0.6%) as 2a, 2 as 1b (0.6%) and finally subtypes 1c, 4c and 4o were identified in one (0.3%) sample each. We were not able to assign a subtype in the NS5B region for 198 (58.6%) samples including 84 (42.4%) of genotype 1, 83 (41.9%) of genotype 2 and 31 (15.7%) of genotype 4.

Conclusion: The genetic diversity of HCV circulating in Cameroonian patients is extremely high. Genotype 1 and 4 are the most prevalent genotypes, however, in the majority of patients subtype classification is not possible. Population based studies to determine the frequency of these endemic subtypes are urgently needed to inform DAA treatment guidelines.

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TLR-3 gene polymorphism rs3775291 and Hepatitis C Virus infection

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Hepatitis C virus (HCV) is an enveloped single-stranded positive RNA hepatotropic virus. Despite cellular defenses, HCV is able to replicate in hepatocytes and to establish a chronic infection that could lead to severe complications.

One of the major player in subverting the host response to HCV infection is the viral non-structural protein NS5A, in addition to its role in replication and assembly, that targets several pathways of innate immunity the viral replication cycle, double-stranded RNA (dsRNA), produced as an intermediate, is sensed by several pattern recognition receptors (PRRs) of the innate immune system including Toll-like receptors (TLR). TLRs constitute a family of receptors playing a key role in innate and adaptive immune response, among them TLR3,-7 and -8, which are expressed on endosomal membrane, and have been suggested to play an important role in antiviral immune responses based on their recognition of dsRNA and single-stranded RNA (ssRNA).

Single nucleotide polymorphisms (SNPs) may shift balance between pro- and anti-inflammatory cytokines, contributing to successful resistance to infection or leading to chronic inflammation and cancer. The association between TLR-3, -7 and -8 polymorphism and the outcome of HCV infection was investigated.

Materials and Methods: patients were enrolled in the study and genotyped for the TLR3, -7 and -8 SNPs. Logistic regression was used to assess the association between the polymorphisms and the outcome of the infection.

Results: A significant association between TLR-3 SNP at rs3775291 and risk of advanced liver disease was identified. The rs3775291-A/A genotype was more common in subjects with advanced liver disease than subjects with mild chronic hepatitis C (OR=3.81; 95% CI, 2.16-6.72; p= 0.000004) and this difference was higher with healthy controls (OR= 5.34; 95% CI, 2.70-10.58; p= 0.000002).

Conclusions: findings indicate that a TLR-3 SNP rs3775291 is associated with progression of HCV infection to cirrhosis and hepatocellular carcinoma.

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Seroprevalence of the coinfection HBV, HCV, HIV among clinic attender at Laquintinie Hospital, Douala, Cameroon

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Background: In Cameroon, the new national AIDS control strategy test and treat apart from lymphocytes TCD4 rate to achieve 90-90-90 target impose a systematic screening and the early management of HIV. However, HBV, HCV and HIV share the same routes of transmissions increasing the risk of co-infection and of severe damage. This study was undertaken to evaluate the prevalence of the co-infection HIV/HBV/HCV among subjects aged from 15-75 years at Laquintinie Hospital, Douala, Cameroon.

Methodology: A cross-sectional, prospective study was held from October, 2017 to March 2018 at Laquintinie Hospital. HBV, HCV and HIV immunochromatograhic test were performed to each ignorant participants and HIV positives cases were confirmed by oraQuick as recommended by the National AIDS control Committee in 2016. Datas analysis were performed using Epi info 7.0. P value <0.05 was considered as statistically significant.

Results: Out of 247 patients enrolled, there were 51.52% of women and the mean age among participants was 42,3(1.98 years [min : 15; max : 75]. The seroprevalence of HIV was 10,12% (25/247), HBV 7,69 % (13/247), and HCV 4,04 % (10/247). The co-infection HIV/HBV was 1.21% (3/247), HIV/HCV (2.02%) and HBV/HCV (1.61%).

Women seemed to be most affected by HIV infection (12,5% vs.7,5% men, p=0.28) and co-infection HIV/HBV (1,5%vs.0,8%, p=0,9), HIV/HCV (2,3%vs.1,6%, p=0,9) whereas male subjects by HCV (5,0% vs. 3,1% women, p=0,65), HBV (10,0%vs. 5,4%, p=0,89) and the co-infection HBV/HVC (2,5% Vs. 0,8%, p=0,56). Subjects aged (45; 60(were more likely to be positives either by HIV 23,6%(9/38), HBV 12,1%(5/38), HCV 7,8% (3/38) or by co-infection HIV/HBV 7,8% (3/38), HIV/HCV 7,8% (3/38).

Conclusion: We should keep intensifying sensitization on prevention measures against HBV, HCV and HIV in the town of Douala-Cameroon.

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Assessing the prevalence of hepatitis B virus infection among health care workers in a referral hospital in Kisantu, Congo DR: A pilot study

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Context: Hepatitis B virus (HBV) infection is endemic in the Democratic Republic of Congo (DRC), where the prevalence of the surface antigen of HBV (HBsAg) is reported to be 4.9% based on extrapolations because no nationwide survey has been performed in the DRC. The risk of contracting HBV infection is high among health care workers (HCWs) through their occupation. However, policies for vaccination of HCWs against HBV is not yet implemented in the DRC.

Goal: We aimed to determine HBV prevalence and risk factors for health care workers (HCWs) to contract HBV infection in a referral hospital in Congo DR.

Methods: From October 2015 to August 2016, we recruited 97 HCWs (55 males and 42 females, aged 41.2±10 years) from Kisantu St. Luke's Hospital, a Congolese referral hospital located in the province of Kongo Central. Serum samples were assayed for HBV markers using ELISA. A

questionnaire was used to record the HCWs' demographics, medical histories, and risk factors.

Results: The overall prevalence of exposure to HBV infection [HBsAg+, and/or hepatitis B core antibody (anti-HBc) +] was 56.7 % (55/97). HBsAg positivity was found in 18.6% (18/97) of the HCWs whereas 29.9% (29/97) were anti-HBc positive. Approximately 8.2% (8/97) of the HCWs tested positive for both HBsAg and anti-HBc. Being a physician [odds ratio (OR) = 2.8 (95% CI: 1.34 - 12.23)], a laboratory technician [OR= 3.35 (95% CI: 1.35 – 5.21)], and having multiple sexual partnerships [OR= 3.05 (95% CI: 1.13 – 9.09)] were found to be factors associated with HBV infection.

Conclusion: Exposure to HBV is common among HCWs at Kisantu St. Luke's Hospital. Isolated HBsAg was also prevalent among them. There is a high risk that HBV could be spread to others. Therefore, there is an urgent need for HBV screening, treatment, and vaccination policies.

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Frequency and factors associated with hepatitis C in PLHIV in 3 hospitals located in the Maluku Health Zone from July 1st to December 31st, 2016

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Context: Hepatitis C virus (HCV) infection among people living with HIV (PLHIV) remains a major public health problem and raises huge concerns of management regarding the co-infection of theses two infectious diseases.

Goal: The present study aimed to contribute to improving knowledge on HIV / HCV co-infection to ensure adequate prevention and care in the DR Congo.

Methods: This is an analytical cross-sectional study conducted from July to December 2016 in 3 hospitals located in the Maluku Health Zone where all HIV-positive adults were seen in consultation or hospitalized. Data were collected through interview and from medical records. Rapid test was performed to measure for Anti HCV Ab.. Data analysis was done with SPSS 21 software. A multivariable logistic regression model was used to search for HCV risk factors at the 5% threshold.

Results: 62 out of the 100 subjects included in the studywere female. The average age was 38.8 ± 13.6 years. The frequency of hepatitis C was estimated at 14% (95% CI: 11.3% -16.7%). The risk factors associated with this prevalence in multivariate analysis were spousal travel, which increased the risk by 3 (ORa: 3.39, 95% CI (1.81-14.16)), the non-use of the condom by 3(ORa: 3.40, 95% CI (1.87-13.29)) and the STIs by 2 (ORa, 2.03, 95% CI (1.51-8.19)).

Conclusion: The frequency of HIV / HCV coinfection in the Maluku Health Zone is high. The management of hepatitis C in people living with HIV needs to be strengthened.

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Viral hepatitis/HIV co-infections in Armenia

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Synthesis of the existing data on HIV/HCV co-infection in the Republic of Armenia

Background: The prevalence of co-infection caused by HIV and HCV is increasing in the world. The 3/4 of the people living with HIV are also infected with HCV. Patients co-infected with HIV/ HCV have a more rapid fibrosis progression than HCV mono-infected patients. There is no vaccination against HIV and HCV.
Assessment of the epidemiological situation on HIV/HCV in Armenia was needed to develop recommendations for the improvement of the surveillance system and implementation of the prevention practices.

Methods: The literature on HIV/HCV in the world and in Armenia, as well as the Armenian and WHO guidelines on HIV/HCV prevention, care and treatment were reviewed. Data on registered HIV/HCV cases in Armenia during 2005-2015 were collected from the registries of the National Center for Disease Control and Prevention, National Center for AIDS Prevention and the "Nork" Republican Infectious Hospital of Armenia. Data of different sources were compared, HIV/HCV trends in Armenia were analyzed and discussed with the specialists of the corresponding organizations.

Results: From 2005 to 2015, 228 PLHIV (13.9%) tested positive for HCV. The number of HIV/HCV registered cases per 100,000 population has increased from 0.4 in 2010 to 1.5 in 2014. In 2015, the number of registered HIV/HCV cases was less than in 2014 and was equal to 1.0 per 100,000 population.
Among HIV positive PWID, 73.5% were also infected with HCV in Armenia in 2014.
The proportion of HCV among the people living with HIV in Armenia varies from 70 to 95% among the people who inject drugs, 1-12% - among the men who have sex with men and 9-27% -among the heterosexuals.

Conclusion: Routine HCV laboratory examination in all individuals, who live with HIV and people who inject drugs is needed. The medical evaluation, to determine their disease status and initiate antiviral therapy among those who live with HIV/HCV should be done. People who have HIV/HCV should be provided with the information concerning how they can prevent further harm to their health and prevent transmitting infection to others. Awareness raising campaigns on HIV/HCV co-infection and its prevention should be done among the general population.

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Impact of a high coverage HCV "educate, test and treat" programme in rural Egypt on subsequent incidence

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Background: Generally, studies about incidence of HCV and HBV in literature are very few. They are of two types, either cohort studies or modelling studies. To the best of our knowledge, only two prospective studies estimating the incidence of HCV infection in village cohorts have been conducted in Egypt. Educate, test and treat program expanded to include 73 villages all over Egypt with target an overall goal to eliminate viral hepatitis from these villages. Establishing the incidence of HCV infection in these villages after initial testing and treatment of all those identified as infected would give a clear idea about the effectiveness of the programme on ongoing transmission to reduce health care related transmission in Egypt. Also, identifying the risk factors for the new cases will help in evaluation of the programme and planning for future interventions.

Patients and Methods: Briefly, during 2016 and 2017 we implemented "educate, test and treat" program in 73 villages across 3 of the 27 governorates in Egypt. 27420 were tested using HCV antibody and hepatitis B surface antigen (HBsAg) rapid diagnostic tests, with same day results and collection of blood samples in the villages for HCV-RNA PCR confirmation of positive cases. All HCV PCR RNA positive patients had an initial clinic visit at ELRIAH and were treated with 12 or 24-week course of one of several DAA regimens. After 2-3 years we returned to nine villages and asked all subjects that were negative in the initial visit to provide blood samples for HCV testing.

Results: 20490 individuals were identified as HCV antibody negative during the initial screening in 9 villages that were part of the "educate, test and treatment" project. 19816 (96.7%) of these individuals were identified and re-tested at a mean of 2.45 years after initial screening. There were 19

seroconverters, defined as subjects who tested anti-HCV negative at initial screening and subsequently tested HCV antibody positive at the repeat/follow-up screening visit. This equates to an overall incidence rate of 0.37 / 1000 py (95% C.I. 0.241-0.593/1000 py). Four of the 9 villages had an incidence rate of ≤0.2/10000py, including one with no new infections.

Conclusion: There was an overall reduction in HCV incidence rate by 85% and no new cases of HBV infection associated with implementation of Educate Test and Treat programme in nine villages in the Nile delta. We consider that this systematic approach to active case finding, treatment and cure of all infected persons in the community in high prevalence settings is an important model for elimination in other high prevalence settings.

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Improving Access to Hepatitis Care for People who Inject drugs in Kenya: From a Pilot Study to a National Program.

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Background: Injecting drug users in sub-Saharan Africa are amongst the most vulnerable populations at risk for HCV infections. They have been and are a politically powerless lacking access to addiction treatment and HCV prevention as they face persecution from police and communities. Comprising a growing proportion of HCV transmission in the region. Africa has the highest estimated HCV prevalence in the world at 5.3%.However not enough is known about HCV in sub-Saharan Africa where an increasing number of PWID are becoming HCV –infected.HCV in Kenya has not been established definitely, in part due to lack of confirmatory testing in the past. Work done in Kenya estimates that intravenous drug use accounts for 80% of acute HCV infections.

The Test and Link to Care (TLC) Study was originally designed to leverage on Kenya's national needle

syringe program in 2012.Working with global funded implementing partners in Nairobi, Coastal and Western regions, the study provides a unique and time sensitive opportunity to study national rollout of evidence based services.

By the time of study HCV initiation in 2015, Kenya did not have a formal national plan or guidelines on viral hepatitis.

Methodology: Model of care was adapted to PWIDs specific needs based on; proximity screening (DIC & MMT Clinics);medical assessment and pre-treatment preparation (through individual and group counseling sessions);Ttreatment delivery through DOT and peer support to ensure adherence and high uptake bearing in mind the unique challenges PWID in Kenya experience (homelessness, lack of social support, poor health seeking behavior); Counseling and post treatment follow-up; continuous Prevention strategies (support groups, peer education, MAT, NSP and continuous health education

DAAs delivered through directly-Observed Treatment (DOTs), at MMTs and DICs by nurses and medical team with defaulters traced by Peer-Educators; Post treatment Counseling and follow-up conducted by nurses, medical and outreach team emphasizing on reinfection.

Findings: The overall prevalence of HCV among the PWID was 17.4%.Treatment was provided to 95 participants established a 97% cure rates for those who completed HCV treatment and have SVR labs, 59/61.
The Ministry of Health-Kenay through NASCOP has allocated funding(Global Fund support) to treat > 1000 patients prioritizing on key population in addition to taking lead on development of viral hepatitis guidelines . Sensitization to increase awareness on viral hepatis (including HCV) are ongoing countrywide.

Conclusion: With proper support and integration, HCV treatment in a resource constrained setup is feasible. As access to HCV medication improves, community health centers with staff of Physician Assistants and Nurse Practitioners s are well positioned to screen and treat HCV positive patients.

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Integrated hepatitis Care at primary health care level in Cambodia

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Background: Cambodia has estimated 257,000 (1.6%) people living with chronic hepatitis C (HepC), while 77% of the population living in rural area. In March, 2018, Médecins Sans Frontières has implemented the first hepatitis C virus (HCV) screening and treatment project in rural Cambodia. It was integrated in primary health care in an health operational district with 117,000 18-year-old and above population, and being covered by 1 referral hospital (RH), 15 health centers or health posts (HC).

Methods: The prospective observational study included patients screened 12 March- 24 December 2018, diagnosed with chronic HepC, received consultation in RH, and did not opt-out from the study.

Patients 18-year-old and above, with no HIV infection, received voluntary HCV serology test in HC by rapid diagnosis test with capillary blood. When tested serology positive, venous blood sample was collected at HC, and transported to the laboratory in RH for HCV viral load (VL) test by GeneXpert®, while hepatitis B virus (HBV) surface antigen were tested on viremic samples. VL results were informed to patients by phone, and the viremic patients were arranged to have consultation with a general practitioner at RH to assess clinical status and eligibility for direct-acting-antivirus (DAA) treatment. All patients received FibroScan® examination, and other tests were provided according to clinical indication.

Patients were prescribed with Sofosbuvir and Daclatasvir 12 weeks, or 24 weeks if with decompensated cirrhosis. Only Patients with HBV coinfection, decompensated cirrhosis, or comorbidities that required medical attention received follow-up with a doctor in RH. All other patients received the 1st month's supply of DAA at RH and then were referred back to HC for follow-up and monthly refill by nurse .

Treatment outcome was assessed at 12 weeks post-treatment (PT12) by proportion of sustained virological response (SVR12) among all initiated, and among the patients with known outcomes (i.e excluded patients without PT12 virologic data because of loss to follow-up [LTFU] or discontinuation for reasons unspecified).

Results: Total of 986 HCV viremic patients were assessed by doctor in RH, and 981 were initiated with DAA. Among patients initiated, 61.3% (n=601) were female, median age was 55 (IQR: 47, 62) years, 13.3%(n=131) had BMI>=27.5Kg/m2, 20.0% (n=196) had FibroScan result>14kPa, and 57.6%(n=565) had baseline HCV VL>=10,000,000 IU/mL. Patients had baseline diabetes or random blood sugar>=200mg/dL (n=95 , 9.7%), hypertension (n=215, 21.9%), and HBV coinfection (n=38, 3.9%). One patient was HCV treatment experienced with Pegylated-Interferon+Ribavrin. Most patients were prescribed 12 weeks DAA (98.9%, n=970). While 876 patients (89.3%)were referred back to HC, 70 (8.0%) of whom had additional visit(s) in RH after. Seven serious adverse events occurred including 6 deaths, but none was due to DAA.

In total, 860 (87.7%) patients achieved SVR12, 23 (2.3%) had virological failure, 6 (0.6%) death, 4 (0.4%) discontinued treatment by medical decision, 5 (0.5%) and 83 (8.5%) LTFU happened during and after treatment, respectively. SVR12 achieved by 87.7%(95%CI: 85.4, 89.7) among all initiated, and 96.3% (95%CI: 94.9, 97.4) among patients with known outcomes(n=899).

Conclusion: Our study has indicated that integrated HCV care at primary health care level provided by nurse in rural area could achieve good outcome in resource-limited countries. Way forward, in addition to follow-up and refill, DAA might also be initiated at HC to facilitate scaling-up HCV care in rural area.

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Model of care and treatment for Hepatitis C among people who inject drugs in Nairobi, Kenya.

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Background: People who inject drugs (PWID) have a persistent epidemic of HCV (Hepatitis C virus infection) and remain as the population experiencing the most significant impact of HCV related morbidity and mortality worldwide. Evidence shows that people who abuse drugs are prone to various instabilities like homelessness and immigration which pose challenges in any treatment adherence. This abstract aims to describe a model of care and treatment of HCV in a PWID cohort in Nairobi, Kenya.

Intervention: Medecins du monde an international humanitarian organization offering harm reduction services for PWID through DIC (drop in center) and outreach activities, started screening for HCV since 2014 using Anti-HCV (HCV antibody) test . In 2016 through 2017, the positive Anti-HCV tests were confirmed using PCR (Polymerase chain reaction) and the patient who had CHC (chronic hepatitis C) were started on DAA (Direct-acting antiviral) medication. HCV viral load was measured at baseline and at 12 weeks after treatment completion. The modality of treatment was through DOT (Directly observed Therapy) at the Dic with transport facilitation and provision of meals. Followed up was done by clinicians, nurse counselors and peer educators.

Results: One hundred and seventeen patients had a positive Anti-HCV test but only 88 had CHC through PCR.76 were started on DAA with 13 not started because of either contraindication to the treatment or loss of follow up. By July 2018, all 76 clients completed treatment, outcome was available for 73 (96%) with a sustained virological response (SVR12), 1 (1.3%) did not attain SVR12, 2(2.6%) died before final HCV viral load was done.

Conclusion: HCV treatment combined with a model that enhance adherence can achieve high HCV treatment success rate among PWID. Therefore

there is need to include interventions that promote stability among PWID to optimize care outcome.

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Hepatitis C: from testing to treatment. Detection of Hepatitis C positive clients of social relief centers in Amsterdam

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Background: People who use drugs or who have used it in the past and are therefore in medical treatment, such as methadone treatment, are also systematically tested for HCV in the Netherlands. A target group that can get stuck in this situation are (former) homeless persons, people who are not in medical or methadone treatment, but who have been at risk due to (ever) unsafe use, who have had unsafe sex between men (MSM), who have had unsafe tattoos or have undergone medical intervention in high-risk countries. The objective of this study was to detect HCV among these target groups in social relief centers in Amsterdam.

Methods: We conducted a cross-sectional study in the period August-December 2017 among clients of 14 social relief centers and walk-in homes. Employees from the participating locations were offered a practical workshop on viral hepatitis, focusing on the method of infection, complications, prevention and treatment. Employees were asked to actively motivate visitors or residents to participate in the screening program.
Participation in the test was free and completely voluntary. The clients were informed of the investigation by means of posters at the location. The participants were asked to complete a short risk checklist and an informed consent. During the waiting period, there was an opportunity to speak with a field worker, there were brochures about hepatitis and a question and answer game could be played.

After completing the risk checklist, the public health nurse took an oral swab (OraQuick rapid HCV test) for detection of HCV antibodies (anti-HCV). HCV RNA was then determined in the blood of someone with HCV antibodies. The blood collection was done by the Public Health Service at a later date. Individuals with a HCV-RNA positive result were referred to the hepatologist. After referral, nurses of the Public Health Service continued to monitor progress in the background and, where necessary, encouraged the client to cooperate with the treatment.

Results: The self-report of 233 clients shows that 90% were at risk of HCV. 225 Clients were tested, of which 22 (9.8%) tested anti-HCV positive, including 10 (4.4 %) who tested HCV-RNA positive. We saw a high dropout (50%) between testing for anti-HCV and treatment uptake.

Conclusions: Prevalence of anti-HCV in this group is considerably higher than the prevalence of anti-HCV in the Netherlands (9.8% versus 0.2–0.4%). The target group therefore belongs to a risk group for HCV. Treatment on location will improve the Cascade of Care, taking into account to
1. Provide targeted information prior to screening about hepatitis C to clients and employees.
2. Appoint an employee on each social relief center who takes care for the intervention process ("hepatitis ambassador").
3. Do the HCV RNA test also in the center and take the test immediately after a positive result of anti-HCV.
4. Preferably use anti-HCV and HCV-RNA tests with finger prick blood.
5. Use the latest test methods which can be analyzed in the center.
6. Ensure proper supervision of positively tested patients, for example counseling by the hepatitis ambassador.

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High Rate of Sustained Virological Response in Persons Who Inject Drug (PWID) Using an Innovative Procedure: A Case-Control Study

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Background: In literature few data are available on efficacy of Direct-acting antiviral therapy (DAA) in PWID, suggesting a higher rate of drop-out than in non-PWID population. This case-control study evaluated the SVR12 of DAA by intention-to-treat analysis in PWID with HCV infection versus non-PWID, using an interventional and innovative procedure to identify and link to care this population.

Methods: between January 2017 and April 2019 a prospective, interventional program based on the active and close cooperation between all the six Service for the Dependence (SerD) operating in Caserta and the corresponding 3rd level unit of Infectious Diseases (ID) in Caserta, Campania, Southern Italy, was performed. The intervention included prospective audits conducted by the ID consultants in the SerDs to improve the knowledge on HCV infection and on the need to treat, a diagnostic protocol for HCV infection, a fast lane to access the ID unit and to start DAA, a protocol for the follow-up during and after DAA with a close collaboration between SerD and ID' personnel. From January 2017 to November 2018, 138 consecutive PWID with HCV infection (Case group) were treated with DAA and enrolled in this study. Among the 1417 HCV non-PWID subjects treated with DAA in the same period and in the same ID unit, 276 patients were chosen pair-matched 1:2 with the Cases for DAA treatment (Control group). The indication for antiviral therapy and the choice of the IFN-free regimen was made by the physician according to the international guidelines and local availability.

Results: Table 1 shows characteristics of the Cases and Controls. In the Case Group, patients were more frequently male (88.4% vs 46.7%, p<0.0001), younger (median age, range: 47, 23-82 vs. 67, 19-89; p<0.0001) and with genotype 1a (26% vs 13%, p<0.0005) or with genotype 3 (21% vs.10.9%, p<0.005). Of the 138 PWID, 14 (10%) were active, 81 (58.7%) were in substitution therapy and 50 (36.2%) non-active/non in substitution therapy. The two groups were similar in the prevalence of severity of liver disease. The prevalence of SVR 12 was similar in the two group: 97.8% in Case and 97.1% in Control group. No patient discontinued therapy due to side effects or was lost in follow-up in both groups.

Conclusion: A interventional, innovative program to identify and link to care PWID allows to obtain a very high rate of SVR12 in this population, like that observed in non-PWID population.

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Peer Based Approach Model of Care in Treatment of Hepatitis C

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Background: The prevalence rate for Hepatitis c for people using drugs in Kenya is 23% and it's against this background that MDM traced and contacted patients living with Viral Hepatitis C.
MDM was to trace and refer patients to MSF who were to provide treatment.

Aims and Objectives: The aim of the MDM/MSF project was to treat patients with chronic Hepatitis C by providing them with treatment, prevention of re-infection and cross infection among people who inject drugs

Method: Testing was done through Rapid Results initiative to attending MDM DIC. The positive patients were referred to MSF clinician within MDM DIC. The clinician enrolls him to pretreatment investigations. PCR and genotyping was done and the positive for PCR, other medical investigations were done.

Through MDM peer educators, outreach workers and nurse counselors the patients were closely monitored and traced to ensure adherence to medication. This was done by mapping the patients' sites, area of origin, and the close family members.

Results: 78 patients were treated for Hepatitis C with 99% treatment success with one treatment failure. Through this model PWUD were able to access treatment and other harm reduction services (Needle and syringe exchange program, HIV and STI screening, referral to Opioid Substitution Therapy and hygiene support). The social support provided ensured 100% adherence and 99% treatment success. Peer-led support ensured that all investigations are done on time and adherence to treatment is maintained.

Conclusion: Using the MDM model using the peer educators, hepatitis C patients benefited from the medication. This is because the peers MDM were using had chronic Hepatitis and hence there no stigma.
Through this model, cross infection and new infections have been reduced.
It's possible to treat hepatitis c with minimal resources .

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Test to cure: HCV microelimination modele in France

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Background: Although highest European screening rate in France, 33% of patients didn't take care of hepatitis C because there were no diagnosed. Drug injection was main contamination route of hepatitis C virus (HCV) in France since 1990. HCV treatment for all patients was effective in France since 2017 even fibrosis level. Pangenotypic DAA did not require determination of viral genotype before treatment. Also access of HCV screening, care and treatment in vulnerable people was low in France. HCV testing, diagnosis and treatment of drugs users and precarious people seems difficult for many health professional. Hepatitis Mobile Team (HMT) was created in July 2013 to increase screening care and treatment of hepatitis B and C patients. HMT was composed of 1 hepatologist, 3 nurses, 1 secretary, 2 social workers, 1 health care worker, for a cross-disciplinary approach. Target population was drugs users, prisoners, homeless, precarious people, migrants and psychiatric patients. We proposed part or all of our services to our medical and social partners.
There were 15 services in half million people area. There were 4 steps: for early detection and primary prevention 1. screening by Point of Care Testing PDBS (dried blood test) for HIV HBV HCV 2. outside POCT/DBS and FIBROSCAN** in specific converted van. 3. Outreach open center 4. Drug users information and prevention 5. Free blood tests in primary care for patients without social insurance 6. Staff training. For linkage to care and fibrosis assessment: 7. Social screening and diagnosis 8. Mobile liver stiffness Fibroscan* in site 9. Advanced on-site specialist consultation. For access to treatment: 10. Easy access to pre-treatment commission with hepatologists, nurses, pharmacist, social worker, GP, psychiatric and/or addictologist. 11. Low cost mobile phones for patients. For follow up during and after treatment 12. Individual psycho-educative intervention sessions 13. Collective educative workshops 14. Peer to peer educational program 15. Specific one day hospitalizations. All services were free for patients and partners. Since 2017, point-of-care HCV RNA testing permits diagnosis of active infection with real time measure in one hour.

Objective: estimate feasibility of test to cure real time session allowing access in 5 hours to antiviral treatment to vulnerable populations to increase outreach screening and treatment to obtain HCV microelimination in french south area.

Methods: Target population had with known positive serology, risk behavior, unknown or unchecked viral load after antiviral treatment; 6 patients per session were recruited by social or nursing interview. Between 9 am and 2 pm patients had access to measure of fibrosis by FIBROSCAN, HCV viral load in real time (Xpert HCV Viral load finger-stick), social interview, shared educational evaluation, collective workshops, especially harm reduction. Depiction of results by hepatologist and prescription of DAA allowed delivery of 1st month of treatment on-site or with support to pharmacy.

Results: From March 2018 to April 2019, 144 patients were eligible; 23 sessions were realized on 11 sites; 5 patients did not come; 57% were positive; 94% of positive viral load patients begun

treatment same day, 2 were delayed due to default social rights. Social and nursing follow-up was made during and after the treatment according to procedures and biological tests standardized.

Conclusion: Our model, by screening and real time measure in unity of place, adapted to precarious public, patients distant from system of care had access immediately to treatment.

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Free Hepatitis C Testing and Treatment for 17,000 inmates in 7 prisons in Jakarta, Indonesia

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Hepatitis C is more frequent than in the general population, but access to proper management and treatment is more difficult. One study on the prevalence among 639 prisoners of Hepatitis C in Indonesian prison shows a seroprevalence of HCV is 18.6% (95% CI 15.5-21.6). These estimates far exceed the 1.0% HCV prevalence in the general population. Within the second semester of 2018, Indonesian Ministry of Law and Justice had put much attention had been highlighted for Hepatitis C in prison. There are three major activities for Hepatitis C response in prison: protocol development, training for doctors and data officers in 7 prison and detention centers in Jakarta and Study Club for inmates. Elimination of Hepatitis C in prison will inquire a massive planning (including budget and strategy). Micro elimination in a smaller scale is therefore a much feasible effort and the lesson will be replicable to other provinces. Below is the plan for micro elimination in 6 correctional facilities in Jakarta, divided in 3 part, Hepatitis C Diagnosis, Hepatitis C Treatment and Micro elimination study among inmates in 7 correctional facilities in Jakarta. Micro-elimination in 6 prisons in Jakarta will be the first in Indonesia to provide relevant evidence to support policy makers, government and organizational

public health objective with respect to HCV elimination in consistent with WHO goals.The analysis will include HCV prevalence, risk factor, APRI score, leakage in the cascade, and treatment.

The project started on 28 June 2019, and now on the 4 July 2019 already 12.000 inmates get tested from total estimation about 17,000 inmates. The collaboration between various stake holders are became stronger every time. With that kind of spirit, we got lots of new way, strategy, a better communication platform and the most important thing is every institution feels the ownership of this pilot project.

Now, we already got 730 people positive and will get treatment soon. But, sometimes not everything goes well. We are now facing of stock out of Sofosbufir. We did almost all the advocacy effort to solved this issue such as audience, send a letter to Health Minister, reported to public service complaint authorities, talked to Parliament, press release. In the next 2 months the new leader and member of parliament will come and we do not want to start from the scratch again. We will do everything in the next month to get the medicine. Right now already 3 company registered and got the market license number. Bit according to our law, to follow the bidding all the company have to register to the e-cataloque. It was long process to encouraged generic company to register their medicine in Indonesia but now after they got the market license number, what is stopping them to register to the e-cataloque?

It is very important for us to keep paying attention to the bidding process, we just want the process will be fair, transparent and accessible by public. And also the cheapest offered should be winning the bidding, because we can treat more people than we only buy from one company that register to e-cataloque. Monopoly can not be tolerate anymore.

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An Innovative Model For Micro-Elimination of HCV Infection in Persons Who Inject Drug (PWID)

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Background: The latest regional report on HCV infection in Campania, Italy, highlited a reduced percentage of people with genotypes correlated with people who injected drug (PWID) subjected to therapy compared to the national average (7.17% compared to 13.57% for genotype 3, 7.95% compared to 10.05% for genotype 1a). The aim of this study was to evaluate an innovative model for eliminate HCV infection in a high-risk population of PWID.

Methods: Between December 2017 and June 2019 a prospective, interventional, before and after study, based on the active and close cooperation between some Services for the Dependence (SerDs) in Campania and the corresponding 3rd level units of Infectious Diseases in Caserta, Campania, Italy, was performed.

The intervention included three periodic prospective audits conducted by the infectious disease consultants in the SerD to improve the knowledge on HCV infection and on the need to treat. The infectious disease consultants were responsible for writing and sharing diagnostic protocols for HCV infection to do at SerD; finally, a fast lane to access the Infectious Disease Unit and to start DAA was planned and a protocol for the follow-up during and after DAA with a close collaboration between SerD and Infectious Disease Unit' personnel was identified.

Conclusions: This innovative procedure has high rates of linkage to care in PWID with HCV infection.

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Sofosbuvir, Velpratasvir, Veloxpravir Efficacy in 12-week treatment in triple infected (Chronic Hepatitis C, Chronic Hepatitis B, and HIV} Geno 3 naive population: An open level prospective clinical trial - SOLVVE - C

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Objectives: Chronic Hepatitis C treatment is no longer challenging in the era of DAAs with an SVR of up to 97%. Triple infection treatment with HCV, HIV and Hepatitis B has not been explored in real-life situations. HCV Genotype 3 is still the most challenging clinical state in Hepatitis C treatment. Regardless of concomitant triple infection, shorter duration of therapy revealed favorable outcome with the highest retention, fewer side events, and cost containment. This study evaluates the efficacy and safety of Sofosbuvir, Velpratasvir, and Veloxpravir in the treatment of triple infection with HBV, HIV and HCV (Genotype 3).

Methods: Twenty-two (n = 22) HCV treatment-naive patients with Triple Infection (HIV HBV HCV Genotype 3) were recruited for the study.

Patients with HIV were on Atripla for over three years with HIV with Undetectable Viral load and HBV Viral load Undetectable. HCV infected patients had a Median Viral load of 3 million IU and Genotype 3 prior to treatment.

Demographics:

HCV Genotype	Genotype 3	Genotype 3a	Genotype 3c	Genotype 3b
No of people	22	10	9	3

Patient Characteristics

Race	No of Patients		Mode of transmission		
	Males	Females	IVDU	MSM	Blood transfusion
African-American	1	0	1	0	0
Caucasian	1	0	0	1	0
Haitian	2	0	0	0	2
Asian	0	18	1	0	17
India	0	4	1	0	3
Pakistan	0	12	0	0	12
Bangladesh	0	2	0	0	2
Total	4	18	2	1	19

Mean Age	56 (44 – 68)
Mean BMI	27 (21 – 29.6)
Mean Fibrosis	F3

Patient HBV characteristics

Race	No of Patients		Genotype					
	Males	Females	A	B	C	D	G	H
Asian	0	18	0	1	5	12	0	0
India	0	4	0	1	0	3	0	0
Pakistan	0	12	0	0	3	9	0	0
Bangladesh	0	2	0	0	2	0	0	0
Caucasian	1	0	1	0	0	0	1	0
African-American	1	0	1	0	0	0	1	0
Haitian	2	0	0	0	0	0	2	2

Infection	Mean years of acquisition
HIV	20
HBV	15
HCV	7

HBV Characteristics

HBeAg Negative	19
HBeAg Positive	3
HBsAg Positive	22
HBcAb Positive	22

Exclusion Criteria: Active Drug Abuse or excess Alcohol intake, CHF NY heart Type IV, Cardiomyopathy, Arrhythmia, COPD, Renal Failure with creatinine clearance less than 30 %, Decompensated Cirrhotic HCC, Transplant recipients,

Results

Duration of treatment	HCV Viral load	
	Viral load - Undetectable	Viral load detectable
a. Fourth week	18/21	3/21 detectable, 200 copies mean
b. Eighth week	18/21	3/21 detectable
c. Twelfth week	18/21	
d. Twenty fourth week	18/21	

Resistance associated substitution	Pre therapy	Post therapy
RAS 31	1	3
RAS 36	0	1
RAS 93	1	1

Conclusion: The study demonstrates the efficacy of DAAs in 12-week treatment with an SVR of 87% in a very challenging triple infected cohort, with significant efficacy, tolerability, and safety. A larger trial is needed to validate the results.

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Treatment of viral hepatitis C by direct-acting antivirals in Kinshasa (DR Congo): multicenter observational study

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Introduction: Viral hepatitis C (HCV) is a major public health problem worldwide. It is diagnosed with HVC every year in 1.75 million new people around the world. On the African continent, 5.3% of the general population is infected. In Central Africa, rates ranging from 5% to 14.7% have been reported. In the DRC, the overall prevalence of HCV is 2.9%, genotype 4 is the most prevalent. It is one of the leading causes of death in the world. The hepatitis C virus (HCV) determines both a viral, liver and extra-hepatic disease.

HCV treatments have progressed significantly over the last 30 years with sustained virological response (SVR) rates exceeding 95% with direct-acting antivirals (DAAs). These effective treatments are unfortunately of limited access in sub-Saharan Africa because of its exorbitant cost. This problem has been partially solved with the arrival on the African market of generics sold at affordable cost. Therefore, it seemed appropriate to evaluate the effectiveness of these DAAs in HCV in the Congolese population.

Method: This is a historical cohort with a descriptive and analytical focus, conducted between 2015 and 2018 in 6 clinics specialized in the management of hepatogastroenterology patients in the city of Kinshasa.
Included in this study were all adult patients treated for HCV by DAAs during the study period.

Results: 56 patients included with a median age of 62 years, 32 (57.1%) were male, 20 (35.7%) had cirrhosis (decompensated in 44% of cases). Genotype 4 was the most prevalent (40 cases, 83.3%). The predominant comorbidities were alcohol intake (19.9%), diabetes mellitus (12%), co-infection with HBV (12.5%) and chronic renal failure (12.5%). The sofosbuvir / ledipasvir regimens (36 cases, 64.3%) and sofosbuvir / daclastavir (11 cases, 19.6%) were the most prescribed. 16% or 9 patients had received a regimen with ribavirin.

The overall RVS12 obtained was 95%. In multivariate analysis, the factors associated with elevated SVR12 were the treatment regimen and its duration while PPI intake was associated with low SVR12.

Conclusion: DAAs were effective and well tolerated in our patients. The SVR12 rate was high (95%).

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Gilead Sciences' Commitment to Global Elimination of Hepatitis C Virus

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Background: With an estimated 71 million people living with hepatitis C virus (HCV) infection globally, the World Health Organization (WHO) set a target to eliminate viral hepatitis by 2030. In the past 6 years, Gilead Sciences helped transform the HCV landscape through innovative medicines, partnerships, and access programs.

Methods: Through multiple departments, Gilead supports the efforts of governments and partners with professional and community-based organizations, healthcare providers (HCPs), and payers to accelerate progress toward the WHO's goal. This abstract provides a comprehensive review of the collaborative educational programs, call for action research programs, community screening and linkage to care (SLTC) programs, voluntary drug technology transfer, and licensing to generic manufacturers.

Results: Through the Local Elimination Programs Leading to Global Action in HCV (LEGA-C) investigator-sponsored research (ISR) and collaborations, Gilead supports global HCV elimination projects in high-risk populations and geographies. By year-end 2019, the ISR program

will be supporting over 150 HCV SLTC studies in HCV monoinfected and HIV/HCV co-infected patients.

Gilead supported programs in Mongolia and the Republic of Georgia demonstrate the immense progress that can be made on HCV elimination in high prevalence, resource limited settings through active leadership by government. Furthermore, Gilead's strategy of technology transfer and voluntary licensing has facilitated scale of access to DAAs in India.

Through the TRAP-HepC program, Iceland is on track to become the first country to eliminate HCV. Gilead also supports several key initiatives in Australia related to its nationwide elimination program and supports multi-state initiatives in rural Appalachia at the heart of the opioid epidemic in the US.

Gilead's LEGA-C meetings gather HCPs involved in HCV elimination research to provide a forum to discuss ideas, share experiences and discuss best practice to help progress towards the WHO target of HCV elimination by 2030.

The SLTC Summit is a collaborative medical educational event which gathers expert faculty and colleagues from a broad range of settings and specialties to explore new frontiers in the management and treatment of HCV, especially in the most underserved patient groups. In 2019, the third edition of this patient-centered initiative will bring together over 700 clinical and non-clinical stakeholders.

The Independent Medical Education Department supports programs aimed at improving the knowledge and competence of HCPs to manage HCV in their practice. From September 2017 – August 2019, 45 Independent Medical Education programs educated more than 150,000 international HCPs on HCV SLTC topics.

In response to the intersecting opioid and HCV epidemics, HepConnect, a five-year, multi-million-dollar initiative, was launched to help address the increase in HCV infections and support community partnerships in Indiana, Kentucky, North Carolina, Tennessee and West Virginia. HepConnect supports expanding HCV SLTC, harm reduction and community education, and activating healthcare infrastructure.

Corporate Grants supports the efforts of community-based organizations and public health entities to educate their constituents about HCV.

The Frontline of Communities in the US (FOCUS) program enables partners, including health systems, governments, and harm reduction organizations, to develop and share best practices in HCV SLTC. Through Q2 2019, over 300 FOCUS partners have conducted HCV antibody screening tests in 93 cities/counties in the US, Spain and Portugal.

Conclusions: Gilead maintains a global strategy toward HCV elimination through its partnerships and ongoing commitments to educational programs, ISRs, program grants, patient advocacy, and technology transfer and voluntary licensing to generic manufacturers in lower- and middle-income countries.

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Enabling Viral hepatitis elimination by Task Shifting of Viral hepatitis care and treatment to non-specialist at Health Centers in Rwanda

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Introduction: Viral hepatitis is nowadays the pandemic worldwide due to mortality and morbidity it is causing and most of these consequences are from Hepatitis B and C. Sub-Saharan African countries are most affected by both Hepatitis B and C when compared to other countries. Rwanda is among countries affected by these diseases. In line with WHO recommendations of viral hepatitis elimination by 2030 launched in 2016 and Rwanda hepatitis C elimination by 2024 plan launched in December 2018, one of the strategies to achieve this was to increase access to care and treatment to general population. This needs different means, one of them is increasing the number of health care providers at all levels, increasing then the capacity to manage viral hepatitis. That is why the Rwanda MOH committed to in increase Health care providers trained in hepatitis management by delegating power from

Specialists to non-specialists (general practitioners and nurses).

Methodology: Training in cascade was done for all health care workers. Specialists in the first cohort were trained for one week for theories and practicum. The following other cohort of specialists, general practitioners and nurses were trained in theories for one week using power point presentations and clinical cases presentation. Then they were exposed to practicum for one week. Finally, for laboratory technicians, one week of training was done for two teams: one for Viral load testing and another one for serological testing (ELISA and RDTs). These 2 teams trained others from different health facilities.

Results and Lessons learned: In 2016, in collaboration with University of Yale, 4 specialists from Referral Hospitals were trained on viral hepatitis management and trained additional in 2017, 20 specialists from Provincial and Referral Hospitals. These 20 specialists supported in 2018 the training of about 96 specialists and general practitioners from all Provincial and Districts Hospitals (2 per hospital). This year another cohort of 96 medical doctors, 96 nurses and 96 laboratory technicians who were supposed to support in both training of nurses and lab technicians in health center and in management of viral hepatitis were trained. With existing staff engaged in VH care and treatment, they started to participate in VH screening, testing and treatment mass campaign. This resulted in about 1,000,000 of people screened actually, 13,800 people treated for HCV, 15,000 waiting for HCV treatment and 5,000 patients put on HBV treatment.

Conclusion and next step: From 2015 with only 4 specialists in referral hospitals with capacity of viral hepatitis management to 2019 with about 300 health care providers, dispatched in all hospitals countrywide having the capacity of managing Viral Hepatitis, Rwanda is on a good way to increase the access to viral hepatitis care and treatment by its population. This is one step and there is still a lot to do in this area. As people are aware of these pandemics, patients will increase and will need more health care providers and that is why Rwanda MOH should continue multiply its effort in strengthening the capacity of more health care providers using task shifting model.

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Screening, Vaccination and Referrals as Viral Hepatitis Elimination Triad Among Internally Displaced Persons in Edo State, Nigeria

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Introduction: The number of people displaced annually by conflict and violence has increased since 2003 with about 40.8m becoming IDPs by 2015. Displacement is associated with increased risk of communicable diseases as a result of mass movements. This has serious implications on viral hepatitis elimination. In this ongoing viral hepatitis elimination project, we assessed the prevalence and risk factors for hepatitis B virus (HBV) and hepatitis C virus infections among internally displaced persons (IDPs) in Edo state, South-South, Nigeria and carry out referrals and vaccinations as part of our contributions in global war towards viral hepatitis elimination.

Methodology: This is a Community based descriptive cross sectional study among 346 registered and consenting IDPs in August, 2018. Ethical approval was obtained from University of Medical Sciences (UNIMED) Research and Ethics Committee. The managers of the IDP camp gave written informed consent on behalf of the respondents towards their taking part in the project. All subjects agreed to participate before inclusion into the study. Laboratory analyses were carried out using standard methods. Subjects were screened for Hepatitis B Surface Antigen (HBsAg), Hepatitis B 'e' Antigen (HBeAg), Hepatitis B 'e' Antibody (HBeAb), Hepatitis B Surface Antibody (HBsAb) and Hepatitis B core Antibody (HBcAb) using 3rd generation enzyme-linked Immunosorbent Assay (ELISA) kits. Procedures as described in the manufacturer's manual were carefully followed in testing. Individuals with HBsAg were interpreted as positive. Information relating to risk factors was collected using semi structured interviewer administered questionnaire. Data was analyzed using the SPSS software version 23.0. HBV seropositive individuals were referred for follow up

management while seronegative individuals were vaccinated.

Results: Mean age of respondents was 18.5+6.7 years. One hundred and one (32.1%) were males, 307(88.7%) were single while 130(37.8%) had up to secondary level of education. Less than one tenth (nine percent) of our respondents knew their Hepatitis status. As many as one fifth of our respondents had risk factors to viral hepatitis. Female respondents were 2 times less likely to have risk factors compared to males. Among these subjects, 15.9% of them were seropositive for HBV. Female respondents were 1.4 (1/0.7) times less likely to have a positive HBV laboratory results compared to males, and this observation was found not to be statistically significant. In addition, 4 (1.1%) subjects (2 females and 2 males) were seropositive for Hepatitis C antibodies. Leading risk factors for viral hepatitis include scarification marks 20 (5.8%), previous prick injury 28(8.1%), previous unprotected sexual intercourse 11(3.2%). About 80.9% had no risk to HBV, 12.2% had a single risk, 5.5% had double risks while 1.4% had multiple risks to HBV infection. Predictors of having HBV or a positive HCV laboratory result include older age (above 19 years), being a male, and having a risk factor for viral hepatitis and having first sexual intercourse at age less than 15 years.

Conclusion: A high prevalence of HBV was reported among the internally displaced persons studied. The prevalence of HCV among the IDPs was higher than the general population. Our efforts at modifying the numerous risk factors include health education and screening, referral of viral hepatitis seropositives and vaccination of seronegatives individuals against HBV.
We recommend an elimination triad of mass education and screening, vaccination and treatment/referrals in viral hepatitis elimination among this high risk group.

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Toward Viral Hepatitis Elimination in Rwanda: Use of Rapid Diagnostic Tests (RDTs), to detect HCV Ab and HBs Ag curriers

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Introduction: Rwanda has fixed the plan for HCV elimination by 2024 and this was launched in December 2018, the aim of this elimination is screening of about 4 million and treat 110000 patients with chronic Hepatitis. To achieve this goal more strategies were suggested including use of RDTs as screening tests which could be more cost effective comparably to other tests which were used before. This study aims to evaluate the strength and weakness of first use of RDTs in mass campaign screening of Viral hepatitis in Rwanda.

Methodology: This study will examine the screening of viral hepatitis using SD Bioline RDTs, tests of high specificity and high sensitivity. Prevalence of Hepatitis B and Hepatitis C viruses were calculated and compared to what found using ELISA tests used before from 2016 to 2018 in VH screening mass campaign. Cascade of testing for the two tests also were compared. SPSS was used to measure prevalence and in comparison of different outcome variables as well as factors which should influence the difference.

Results: Using RDTs, 164225 people were screened for two weeks in 6 districts (Gasabo, Nyarugenge and Kicukiro in Kigali, Gakenke, Karongi and Rusizi in North and West). Prevalence of HCV Ab positivity and HBs Ag positivity were respectively 6.7% and 2.6% respectively comparably to 6.8% and 3.9% found in previous campaigns using ELISA. 70.1% of samples tested for HCV VL revealed detectable comparably to 42.08% found in previous HCV VL testing (p-value=0.005). 34.4% of patients tested positives were not tested for HCV VL while for previous campaigns 57.9% of patients tested positive for HCV Ab were not tested for HCV VL (p-value= 0.0058)

Conclusion: RDTs Could be cost effective in developing countries due it increases access of testing to more population, there is improvement in cascade of testing. However, we still need control quality with gold standards for measuring technical effectiveness of RDTs. More efforts are needed to decrease rate of lost to follow up from serology testing to nucleic acid testing.

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Steps towards the elimination of chronic viral hepatitis C in the Dnipropetrovsk region of Ukraine

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Background: Ukraine as majority of countries in the world are implementing a WHO strategy for the elimination of viral hepatitis. The estimated amount of HCV-infection in Ukraine is 5-7% (about 161355 people are infected in Dnipropetrovsk region). The purpose of the study was to evaluate the status and the real steps of cascade of services to the elimination of chronic viral hepatitis C in Dnipropetrovsk region for 2013 - 2019.

Materials & Methods: The prevalence and incidence of HCV-infection in the Dnipropetrovsk region of Ukraine during 2013-2018 years were studied using epidemiological methods and descriptive statistics. First, we created "Register" of patients with HCV-infection with providing the cascade of diagnostics and medical services of the patients. The statistic was processed using Statistica V.6.1.

Results: The prevalence of HCV in the Dnipropetrovsk region was 290.2 per 100,000 population, the prevalence of HIV infection was 793.4 per 100,000 population. The calculated number of patients with chronic viral hepatitis C in the Registry is increasing every year and by 2019 is 9365 people with positive IFA testing for HCV antibodies.

Regarding other diagnostics: HCV RNA viral load was tested in 3475 patients (37.1%), including 3110 (89.5%) HCV patients without HIV co-infection. RNA HCV genotyping was performed in 65% patients. Genotype 1 b HCV was detected in 1331 (39.3%), G3 - in 775 (22.9%), G2 - 171 (5.05%), G4 - 2 (0.06%). The average duration of the disease was 3.49 years (1 to 27 years). According to the degree of fibrosis - F1 - 28%, F2 - 36%, F3 - 24%, F4 - 12%. Antiviral HCV treatment was prescribed for 1040 (11.1%) patients - 546 (52%) men and 494 (48%) women. Cumulative coverage of antiviral therapy for patients with HCV-infection was in 2014 - 6.07%, 2015 - 7.83%, 2016 - 10.11%, 2017 – 21.75%, 2018 - 30.72%. During 2013-2019 patients were treated with different antiviral regimens. SVR24 was evaluated in 841 (8.98%) patients with a mean age of 45.43 years (18 to 76 years) 454 men, 387 women, other patients are still continuing therapy. According to our data SVR24 in the Peg-IFN/RBV scheme was 93%, with HIV/hepatitis co-infection - 83%, the Peg-IFN/SOF/RBV - 98%, and the LDV/SOF/RBV and the 3D regimen accounted for 100%.

Conclusions: A Cascade of service for patients with HCV continue to be successfully implemented. In Dnipropetrovsk region cumulative coverage with antiviral therapy for HCV patients increased from 6.07% to 30.72%. The prescribed regimens have proven to be effective from 83% to 100%, which contributes to the reduction of further spread of the virus and the complete recovery of patients, which are the primary goals of HCV elimination strategy. However, it is necessary to strengthen steps: towards adequate funding, increasing access of patients to diagnosis, modern treatment, as well as post treatment monitoring and follow up.

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Implementation of the hepatitis C elimination plan in Brazil, advances and challenges

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Introduction: In Brazil, until 2016, 320 000 cases of hepatitis C had been reported. Approximately 140 000 received public treatment, a total investment of 5.6 billion reais, including 130 000 treatments with the new direct-acting antivirals (DAA) between 2015 and 2018. The government distributed 20 million rapid tests from 2011 to 2018. Nonetheless, it is noted the need to better understand the HCV epidemics in the country, in addition to elaborate a plan to achieve WHO goals to eliminate hepatitis C by 2030.

Methodology: Intervention plan. Sequential mixed method (quantitative and qualitative). A mathematical model estimated the HCV prevalence in Brazil and supported the discussions to identify elimination strategies. Program managers from federal, state and municipal levels gathered and discussed the core components of the elimination strategy, which was approved by the Tripartite Committee (CIT).

Results: HCV prevalence in Brazil is 0.7%, with 657 000 viremic cases between 15 and 69 years, and affecting 30% more men than women. The strategy is divided into three axis: Diagnosis: expansion of diagnosis and strengthening of epidemiological surveillance (VE). The first, aims to: expand rapid test (RDT) services network; intensify RDT reporting; strengthen diagnostic confirmation flow; expand the use of RDT to day-care centers, primary health care (elderly health, men's health, women's health), indigenous health and prison health system. The second refers to improve HCV surveillance on diabetic, hemodialysis and hospitalized patients; reported cases confirmation flows; and linkage to care of cases identified in blood banks. Treatment: aims to treat infected patients. Crosscutting Axis: divided into management and permanent education and communication. Management includes the construction of lines of care, expansion of the service network and strategic information. Permanent education and health communication includes educational activities for qualification of healthcare providers and awareness of the population about viral hepatitis.

Conclusion: Eliminate hepatitis C in a continental country with universal health care is a challenge. Brazil presents theoretical and technical tools, and the political will to achieve the elimination by 2030. This strategy will assist health services organization and care of infected patients, expanding access to care, focusing on the integrality of the viral hepatitis response and that take into consideration vulnerabilities of different populations.

Conclusion: These results may guide the elaboration of a national viral hepatitis plan, aligned with the World Health Organization strategies and the 2030 Sustainable.

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Syndemic of Hepatitis B and C and their coinfection with HIV in Rwanda: role of unsafe medical practices and sexual behaviors

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Background: Co-infection with hepatitis B, C and HIV is associated with higher morbidity and mortality. However, population level data on co-infections in Africa, including Rwanda, are limited. Therefore, this study aims to describe the burden of the three coinfections and assess the associated risk factors.

Methodology: This analysis utilized data from a viral hepatitis screening campaign including individuals aged > 15 years conducted in 6 of 30 districts of Rwanda during April to May 2019. During the campaign, a structured interview was administered by trained healthcare workers to collect information on socio-demographic, clinical and behavioral characteristics of participants. HIV status was self-reported during the screening but people who were tested HBV and HCV positives were all tested for HIV. HBV and HCV screening was performed with HBs Ag and HCV Ab using SD Bioline Rapid tests testing. HBV DNA and HCV RNA testing for was performed on individuals testing positive in rapid test. Multivariate logistic regressions were used to assess factors associated with HBV, HCV and HIV, mono and co-infections.

Results: Of 156,499 individuals screened, 3465(2.2%) were HBsAg positive with 2872 (2%) had detectable HBV DNA. 4382(2.8%) were positive for anti-HCV and among them 3163(2.0%) had detectable HCV RNA. 3307(2.1%) had HBV mono-

infection, 2887(1.8%) had HCV mono-infection, 3758(2.4%) had HIV mono infection, 38(0.2%) had HBV/HCV co-infection, 153(0.1%) HBV/HIV co-infection, 238(0.15%) HCV/HIV coinfection and 3(0.002%) had triple infection. Multiple sex partners was associated with higher risk while residence in wealthy districts (Ubudehe category 2,3&4) was associated with lower risk of HIV, HBV/HIV co-infection. Urbanicity was associated with higher risk of HIV, HBV and HBV/HIV while lower risk of HCV infection. Scarification or operation from traditional healers associated with all infections. Health care risk factors such as history of surgery, transfusion or trauma associated with higher risk of various infections.

Conclusions: Overall mono-infection were common and there were differences in risk factors distribution for various infections; HIV and related co-infection associated with high risk sexual behaviors, urbanicity and healthcare risk factors while HCV and HBV with rurality and healthcare transmission. These findings highlight magnitude of co-infections as well as differences in underlying risk factors important for designing prevention and care programs.

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Abstract #67 has been withdrawn.

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The Role of Community with all the Barriers in Hepatitis C Elimination in Prisons

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Background: On early May, Koalisi Satu Hati was signed a Memorandum Of Understanding (MoU) with Department of Correctional in Jakarta. The MoU was a collaboration between two parties to do free testing and treatment of 17,000 inmates in all 7 prisons in Jakarta. The latest prevalence we have was did in 2009, 18,6% of inmates was infected of Hepatitis C. The health care providers in prison is very limited. In 2018, total cost of health support for each inmate is only $ 2,5. In every prison, they only have two General Practitioners, one dentist and four nurses. While the number of inmates in prisons are almost 700% over capacity. Based on this issue, we think it is important to collaborate with Department of Correctional to do that activity. Inmates are neglected population in terms of health care intervention.

Activity: On the 28 June 2019, we started this activity. We planned to finished the testing in two months. To achieved our goals, we were collaborated with three clinics who had Gen Expert machines in Jakarta where we bring the blood sample to do the confirmatory test after the screening. We provide training for medical staff in prisons collaboration with the Liver Researcher Association (Hepatologists Association - PPHI) to give training to all General practitioners and also Internist at Pengayoman Hospital so they can give prescription for Hepatitis C medicine for inmates who needs treatment. In this activity, we also working together with Sub Directorate of Hepatitis of the Indonesian Ministry of Health, because the medicines for the treatment will be provide by MoH. 28 health care officers get the training and including the data manager with support from Clinton Health Access and Initiative - CHAI Indonesia. Before we do all the testing, we developed together a guideline, implementation instructions and technical instructions with all the details of the implementation for this activity.

Result: On the 6 September 2019, finally we succeeded to tested all the inmates in those 7 prisons. The total number of inmates got tested is 17,455 people. From those number, 1034 people need treatment soon. So, now the prevalence of Hepatitis C in 7 prisons in Jakarta is 6% from total population of inmates in those 7 prisons. One Gen Expert machine
was exploded because we pushed until the maximum limit.

Barriers: Now as our planned before is to give treatment for those who need it, we are facing a big challenges which is the stock out of DAA in Indonesia. The Government Program to provide medicines, Sofosbuvir and Daclatasvir was delayed for 8 months. Sub Directorate of Hepatitis, Ministry of Health already asked to the Directorate general of Pharmacy and Health Equipment of Ministry if

Health since January 2019. But, until now they have not purchase the DAA with lots of excuses. We did everything we can to get the medicines, the last effort we did was protested in front of LKPP, which is the Government Body who managing all the purchasing for medicines, health equipment and other things from different Ministerial in Indonesia through e- catalogue. Now, we are trying to get DAA's donation from any Pharma so we can start to treat all the 1034 inmates. This is the maximum effort that community can do in our country, we still depend on the government decision.

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Assessment of 10 core indicators of viral hepatitis in Indonesia

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As a country with moderate-high endemic of Hepatitis B Virus (HBV) infection, Indonesia experiencing high prevalence of HBV in 2013 as 7,1%. However, for Hepatitis C Virus (HCV) infection, current situation showed the prevalence of HCV in Indonesia is 1% and it categorized into non-endemic HCV infection country.

This assessment aims to assess current hepatitis situation, and its national responses by using the 10 WHO core indicators.

Indicator #1 prevalence of HBV and HCV infection in Indonesia were 7,1% and 1%.
Indicator #2, infrastructure for HBV and HCV serological testing were 1,36 facilities per 100.000 population.
Indicator #3 coverage of timely Hep B vaccine birth dose and third dose were 87,5% and 93,3%.
Indicator #4 needle-syringe distribution was 9,49 new needles distributed per people who inject drugs.
Indicator #5 90% facilities provided new, disposable and single use injection equipment.
Indicator #6 10% and 75% patients with HBV and HCV infection are diagnosed.

Indicator #7 treatment coverage for hepatitis B and C treatment were 1,86% and 0,55‰.
Indicator #8 viral suppression for Hepatitis B and cure for hepatitis C who received treatment were 53,1% and 73,5%-100%.
Indicator #9 incidence for hepatitis B among 1-4 years old children were 4,2% and incidence for hepatitis C were 1%.
Indicator #10 Among hepatocellular carcinoma deaths, 67,8% attributable to HBV and 13,8% attributable to HCV. For cirrhosis deaths, 56,7% were attributable to HBV and 25,4% attributable with HCV infection.

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Addressing Viral Hepatitis B and C through an Integrated Approach in Canada

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Background: Hepatitis C (HCV) is one of the leading causes of infectious disease deaths in Canada. HCV disproportionally affects a number of populations in Canada, including people who inject drugs, people with experience in Canada's federal and provincial prisons, Indigenous peoples, immigrants and newcomers from countries where there are high rates of HCV, and gay, bisexual and other men who have sex with men. Although vaccine preventable, Canada also continues to see a small number of hepatitis B cases annually. The Government of Canada has endorsed global targets that aim to end the viral hepatitis epidemic and to reduce the health impact of other sexually transmitted and blood-borne infections by 2030.

Material and Methods: The Pan-Canadian Framework for Action on Sexually Transmitted and Blood-Borne Infections (STBBI) was launched by Canadian federal, provincial and territorial ministers of health in 2018. The Framework provides a vision and strategic goals for reducing the health impact of viral hepatitis in Canada by 2030 through a multi-sectoral approach that is integrated across STBBI. Following this, in July 2019, the Government of Canada released its new Action Plan to accelerate progress in reducing STBBI.

Results: The Government of Canada Five-Year Action Plan takes a whole-of-government approach in areas related to public health, immigration, national defense, Indigenous services, justice, correctional services, research, and women and gender equality; makes a commitment to report regularly on domestic progress; and recognizes human rights principles, including equality, non-discrimination, privacy, confidentiality, and respect for personal dignity and autonomy, as being fundamental to the development and implementation of effective programs and services to address STBBI. It identifies seven priorities including moving toward truth and reconciliation with First Nations, Inuit, and Métis Peoples; stigma and discrimination; community innovation; reaching the undiagnosed; prevention, treatment, and care for federally eligible populations; leveraging existing knowledge and targeting future research; and measuring impact. The Government of Canada will apply nine guiding principles in the implementation of the Action Plan, which include meaningful engagement of people living with viral hepatitis and an integrated approach to STBBI to move beyond single disease-focused programs and initiatives so that interventions take the common features of STBBI into consideration.

Conclusion: The new Government of Canada STBBI Action Plan articulates a renewed commitment to meeting global targets for viral hepatitis elimination while recognizing the opportunity of an integrated approach.

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Performance Evaluation of Centralized Barber & Saloon Licensing System for Prevention of Viral Hepatitis Transmission in Punjab, Pakistan

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Background: According to Hepatitis Prevalence Survey conducted by Pakistan Medical and Research Council in 2008, reuse of blades in barbershops and beauty salons is significant contributor in transmission of hepatitis B & C. Traditionally, infection control protocols are implemented at healthcare service delivery institutions to prevent transmission of viral hepatitis and other infectious diseases. To achieve the goal of "nano-elimination" of hepatitis B & C from Punjab, it was paramount to address every source of spread. Also, regulation of barbers & beauty salons is legally binding by virtue of Punjab Hepatitis Act 2018. Therefore, a comprehensive and well-articulated system for "Centralized Barbers and Salon Licensing" (CBSL) was established, which involved registration, inspection and licensing of all such establishments to ensure compliance with infection prevention and control protocols (IPCP) and mandatory screening, vaccination, diagnosis and treatment of barbers and beauty salon personnel for viral hepatitis B & C.

Materials & Methods: A mix method study was conducted for performance evaluation of CBSL. Primary data available from real time web-based Management Information System was used for descriptive quantitative analysis. Focus Group Discussions (FGDs) were carried out with barbershops & beauty salon owners and workers. In-depth Interviews (IDIs) with government officials were conducted. Thematic Analysis of FGDs and IDIs was carried out. Triangulation of data sources was done to elaborate a more accurate and meaningful understanding of the findings.

Results:
Quantitative: Average time between stage of registration and inspection of the establishment was 38 working days. Registration of establishments from rural areas was higher (56.20%). The proportion of inspections done was considerably low (11.33%) with respect to total applications received. In terms of category wise distribution, proportion of barbers was highest (77.5%). Proportion of barbers registered at hepatitis clinics for screening and vaccination was 79%.

Qualitative: Registration of barbers and beauty salons is done by reach-out to establishments by concerned government official and on walk-in basis by barbers and salon owners in the concerned government office. Inspection is carried out by the government officials according to que of registrations. Concerned government officials lack resources to conduct inspections and reach-out in the community to locate and register paddlers. Inspection of barbers and beauty salons is done

based on checklist developed by Punjab Hepatitis Control Program (PHCP). Barbershop and beauty salon owners and workers are trained on Infection prevention & control protocols. Paddlers are provided with "Safe Barber Kit Bags" augmenting behavior change. Screening and vaccination of barbershop and beauty salon owners and works from dedicated hepatitis clinics of PHCP is a mandatory component of the system. After licensing, periodic inspection visits are carried out to ensure that compliance with infection prevention and control protocols is sustained. Barbershops & beauty salons personnel are provided with Information, Education & Communication (IEC) material for sensitization and awareness. Data of registration, inspection, training and licensing is uploaded on web-based Management Information System in real time via android application. To increase enrollment in the system, PHCP had an on-going awareness campaign in print media.

Conclusions: Time duration between registration and inspection should be reduced in order to enhance efficiency of the system. Concerned government officials should be provided transportation facility to carry out inspections and training. Special consideration should be given for increasing enrollment of paddlers. Rigorous IEC campaign is required to increase enrollment of paddlers in the system.

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Mother-To-Child-Transmission of Hepatitis C in Brazil: a mathematical modeling approach

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Background: The proportion of mother-to-child-transmission (MTCT) of hepatitis C in Brazil is unknown. The Municipality of São Paulo, through the Viral Hepatitis Epidemiological Bulletin, published a MTCT of hepatitis C rate of 7.6%, according to newborn's notification from 2013 to 2017.

Hepatitis C is of great importance for public health in Brazil. In 2015, the Ministry of Health of Brazil (MoH) incorporated Direct-Acting Antivirals (DAA) for hepatitis C and have treated approximately 100,000 people.

In 2017, a mathematical model helped to estimate the prevalence of hepatitis C in Brazilian population, as well as the number of people that needed to be diagnosed and treated in the country. Then the MoH launched the country's "Hepatitis C Elimination Plan" and has made a commitment to achieve the goal of eliminating hepatitis C as public health problem by 2030.

The current Brazilian guideline of prevention of MTCT only recommend hepatitis C screening for high-risk pregnant women. Never the less, there is a strong interest in improving this policy and increase screening for all pregnant women as an opportunity to treat infected women after pregnancy and early identification of the exposed children who would also benefit from timely treatment.

Material and Methods: This study is based on the elaboration of a model to estimate the number of pregnant women with chronic hepatitis C from 2007 to 2017 who had live births, using data from the Brazilian Institute of Geography and Statistics (IBGE). The prevalence of hepatitis C among pregnant women was estimated by the Hepatitis C Mathematical Model conducted at the Ministry of Health in 2017, and the MTCT rate used was the one published by the Municipality of São Paulo, which is 7.6%.

Results: From 2007 to 2017, about 31 million women had a live birth in Brazil. From the prevalence rate applied by the age group of the mother who ranged from 10 to 54 years old (average rate of 0.45%), it was possible to estimate about 81,000 pregnant women with hepatitis C. Of the 81,000 children who were exposed to hepatitis C virus, approximately 5,800 children may have become infected with the hepatitis C virus.

Conclusions: In the next 10 years, Brazil has made a commitment to eliminate hepatitis C as a public health problem. There is no active surveillance of pregnant women with hepatitis C and there is a difficulty in tracking pregnant women with chronic hepatitis C so far. The estimated 87,000 people with hepatitis C who may have missed the opportunity of timely diagnose, demonstrate the need to expand screening for all pregnant women and their

exposed children, and to include this policy on the Hepatitis C Elimination Plan.

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Strategy for the Implementation of the Who's Program to Eliminate Hepatitis C in Ukraine until 2030

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Background: Ukraine is among the countries supported WHO's global strategy for elimination of viral hepatitis to 2030. The aim of the study is develop a model for the natural history of chronic hepatitis C (CHC) in Ukraine and find a strategy for the implementation of the WHO's program to eliminate hepatitis C in Ukraine until 2030.

Materials & Methods: We have developed the model of dynamics of the population of HCV-infected patients in Ukraine from 2011 to 2030. Based on epidemiological data, we estimated the number of patients with HCV as 1.5 million at the beginning of 2011. The distribution of the patients by sex, age and the stage of fibrosis was performed according to the investigation of a representative sample of 897 patients with CHC. The yearly number of new cases of CHC was considered equal to 80% of the number of the reported cases of acute hepatitis C (ACH). The incidence of ACH after 2018 was calculated on the basis of nonlinear regression analysis of the actual incidence of ACH in Ukraine from 2003 to 2018: $Z = \exp(123.1263 - 0.0610 \cdot x)$, where Z the incidence of ACH, x – the observation year.
The total number of ACH was considered equal to the calculated incidence multiplied by 7 (the ratio of identified to undetected cases of ACH in Ukraine is 1 to 7). In view of the absence of any data to assess the dynamics of fibrosis progression in Ukraine they were borrowed from article by H. Razavi et al. The frequency of decompensation of liver cirrhosis (LC) in our model was 7.2% per year and the death rate from LC - 34.3% of the number of the patients with decompensated LC.

When modeling the effect of antiviral treatment on the population of patients with CHC, we proceeded from the following initial assumptions: a) treatment will be received only patients with F3 / F4 in the proportion of 50% to 50%; b) the annual number of patients receiving treatment from 2016-2030 will be the same; c) the effectiveness of treatment of patients with LC in the model will be - 90%, without LC - 95%.

Results: The simulation showed that within the defined strategy to reduce the mortality rate by 65% by 2030, it is necessary to treat 615 000 patients with F3 / F4 (42,2% of the number of HCV-infected patients in 2015). The number of deaths in the period from 2016 to 2030 will decrease by 123307 people, and the specific weight of patients with decompensated LC and hepatocellular carcinoma (HCC) in the population of patients in 2030 will decrease by 2 times, compared with the natural history of the disease (1.9% and 4% respectively). However, achieving the goal of reducing mortality is not equivalent to eliminating hepatitis C in Ukraine.

Conclusions: In order to reduce the mortality rate from decompensated LC and HCC by 65%, it is necessary to treat 615 000 patients with F3 / F4 from 2016 to 2030.

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Community Involvement in Simplification of HCV Management in Prison Setting in Indonesia

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Issue: The 2013 Basic Health Research Serology Research Report showed that the proportion of Hepatitis C in the adult population of Indonesia is 1.1% of the total population.This means that nearly 3 million people are estimated to be infected with Hepatitis C in Indonesia.

Although hepatitis C in prison is more frequent than in the general population, proper treatment of chronic hepatitis C in prison is rare because most

inmates with HCV infection remain unaware of their virological condition. While the response to antiviral treatment is similar in prisoners to that of the general population, it is unfortunate that treatment is administered less frequently. Nevertheless, when appropriate services are in place, periods of incarceration may provide an opportunity for the people in prison to be aware of their Hepatitis C status and to engage with the treatment provided in the prison.

Setting: Prison and detention centers setting in Indonesia

Project Description: Community had been involved in the beginning of HCV treatment to bridge between the government and the community. However, the involvement had not been in terms of providing technical and expert input in the guidelines. As PWID, were always questioned about our adherence and the risk of reinfection, while other problem such as side effects and drug-drug interaction are less discussed among the experts. As people who experience the side effects and drug interaction, PWID community becomes an expert in equipping ourselves with knowledge. In several meeting, we were able to provide significant input to the expert panel of HCV in Indonesia, including simplification of HCV management:
a. The use of pan genotypic DAA
b. Simple scoring to diagnose most of the fibrosis stage (APRI, FIB-4) instead of FibroScan, ultrasound and/or liver biopsy
c. One test to determine cure on the 12 weeks post treatment (instead of early virological response at 4 week, end of treatment response, sustained virological response at 12 and 24 weeks post therapy)

Outcomes: By using a simplified guidelines, up until August 2019 as many as 17,500 people in 7 prison in Jakarta had been screened and 1,023 of them have been confirmed with viral load and APRI scoring and ready to start treatment. The model of care, although currently been piloted in Jakarta, will soon have the HCV elimination model to be replicated in all prison in Indonesia.

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Hepatitis B virus carriage in children born from HIV-seropositive mothers in Senegal: the need of birth-dose HBV vaccination

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Background: Hepatitis B is a major public health problem in Senegal, a country with high prevalence and a transmission occurring mainly during infancy. Only, one 6–8 weeks vaccination campaign was initiated in 2005 and it was part of the expanded program of immunization. The aim of this study was to determine the prevalence of HBsAg in children born from HIV-seropositive mothers using dried blood specimens.

Methods: Specimens were collected between July 2007 and November 2012 from children aged 2–48 weeks in Dakar and decentralized sites working on HIV mother-tochild transmission prevention. HBsAg detection was performed using Architect HBsAg Qualitative II kit (Abbott Diagnostics, Ireland) and for all reactive samples confirmation was done using Architect HBsAg Qualitative II Confirmatory kit (Abbott Diagnostics, Ireland).

Results: Nine hundred thirty samples were collected throughout the country with 66% out of Dakar, the capital city. The median age was 20 weeks and 88% of children were less than 1 year of age with a sex ratio of 1.27 in favor of boys. HBsAg was detected in 28 cases giving a global prevalence of 3%. According to age, HBsAg prevalences were 5.1% for children less than 6 weeks, 4.1% and 4.6%, respectively, for those aged 12–18 weeks and 18–24 weeks of age. The HIV prevalence was 2.6% with no HIV/HBV co-infection.

Conclusion: This study showed a high rate of HBV infection in children under 24 months, confirming again the relevance of birth-dose HBV vaccination needed and recently implemented in Senegal as recommended by WHO in order to achieve in Sub-Saharan Africa the elimination goals such as

prevention of new infections, the diagnosis and treatment of hepatitis B infected children.

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Abstract #76 has been withdrawn.

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Eliminating hepatitis C by 2030: the role of AbbVie

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Background: The World Health Organization's (WHO) 2030 hepatitis C virus (HCV) infection elimination goal is 11 years away.[1] The availability of pangenotypic, direct-acting, antivirals (DAAs) has played an important role in progressing towards this goal. However, achieving this target requires an in-depth knowledge of epidemiology and the HCV care cascade focused on micro-elimination, particularly in historically underserved populations including people who inject drugs (PWID), prisoners, and migrants. AbbVie has committed to partner with external stakeholders as a call to action to support projects addressing HCV elimination.

Materials and Methods: Stakeholders and investigators had the opportunity to submit proposals for micro-elimination projects based on unmet needs and vulnerable populations in their respective regions. AbbVie selected projects most likely to have the biggest impact on HCV elimination. Project selection was based on the strategic relevance of the intervention plan, patient population size, stakeholder collaboration and financial sustainability, robust data collection processes, and the evidence generation plan.

Results: AbbVie supports approximately 300 micro-elimination projects worldwide to elevate and prioritise HCV elimination. These are targeted, local initiatives tailored for specific patient populations and geographies. High-risk populations such as prisoners and PWID are two key populations with high prevalence where HCV elimination efforts are required. As an example, one study in Spain has used epidemiological data and bibliographic sources to estimate the number of people eligible for DAA therapy according to high-risk practices, to identify vulnerable populations.[2] Similar studies are also being undertaken in Italy and Germany. In Portugal, a former inmate and founder of Johnson's Academy provides peer-to-peer counselling for the One Step More programme which aims to promote social reintegration, including tackling HCV infection through inmate education. This helps inmates connect with medical care, prioritise treatment and continue treatment outside of prison.[3] Germany, Spain and Israel have projects focusing on PWID. In Germany, a powerful and multi-layered support network 'Project PLUS' provides a holistic approach to care for PWID. By helping with addiction, social support and accommodation, Project PLUS allows PWID to prioritise HCV treatment.[3] A hospital in Spain, has started a project facilitating hepatitis C patient referrals from general practitioners (GPs) to specialists and aims to build a referral network for PWID at harm reduction centres.[3] In Israel, mapping locations most frequented by PWID allows HCV treatment and laboratory services to be taken to them, facilitating fast diagnosis and reduction of HCV treatment fragmentation in this high-risk group. Another project, in Switzerland, focuses on increasing access to HCV care by empowering GPs and strengthening their role in testing, diagnosis and treatment of patients with HCV infection.[3]

Conclusion: The goal of these targeted elimination projects is to strengthen the shared capacity to fight HCV infection. The WHO's 2030 elimination goal1 is achievable, and AbbVie continues to work towards this goal by developing innovative medicines and fostering transformative partnerships to address these barriers in the HCV care continuum.

1.   WHO Global Hepatitis Report 2017. https://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/
2.   Calleja LJ, et al. Rev Esp Enferm Dig 2019;[accepted draft]
3.   AbbVie commitment to hepatitis C elimination. https://www.abbvie.com/our-science/therapeutic-focus-areas/virology.html

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Characterization of the environmental presence of hepatitis A virus in Low and Middle-Income Countries: a systematic review and meta-analysis

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Background: Hepatitis A virus (HAV) belongs to Picornaviridae family which are small, non-enveloped, single-stranded RNA viruses. It is estimated that 1.5 million cases of clinical HAV infections occur annually. HAV can be classified into six genotypes with genotypes I, II and III having human origin. Genotypes I, II and III can be further classified into sub-genotypes A and B. As transmission of HAV is linked to environmental factors, the environmental presence of HAV is a major risk factor for HAV infection within populations. This review was conducted to generate up-to-date evidence on the environmental presence of HAV as one of the key drivers of HAV infections in LMICs.

Methods: A comprehensive literature search strategy that included text words (all fields) and medical subject headings (MeSH) using the following terms with Boolean operators: hepatitis A virus, environmental presence and low and middle-income countries. The electronic databases searched for relevant published studies includes: EBSCOhost, PubMed, Scopus, ScienceDirect, Clinical Key and Web of Knowledge. Grey literature was sourced from Open Grey, the National Health Research Database and Mednar. Forests plots were used to present a narrative of HAV environmental presence.

Results: This review has found the reporting of environmental presence of HAV to be limited in LMICs hence there is need for studies quantifying environmental presence of HAV as it is a key driver of hepatitis A transmission. Secondly, the studies included in the review have reported high to moderate occurrence of HAV in a variety of environmental samples including raw and treated sewage, ground water, surface water, vegetable and shell fish. Detection of HAV was reported in all

seasons by the studies included the review. Phylogenetic analysis of HAV strains detected in environmental samples identified genotypes; IIIA, IB, IA and V as the HAV genotypes circulating in LMICs.

Conclusion: This review was not able to estimate average HAV concentration levels in environmental sources as too few studies reported on the outcome. As the environmental occurrence of HAV in LMICs is not uniform, classification of countries on HAV environmental occurrence should be based on each country's unique data and not income classification.

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Public Health Campaign : a major tool to evaluate the KAP on hepatitis B and C in a university community in Southern Nigeria

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Background: Viral hepatitis is a global public health problem with millions infected and unfortunately unaware of their status. In Nigeria, the prevalence rate of Hepatitis B and C is about 13.5% and 2.5% respectively. This study emanated from a public health campaign programme aimed to assess the knowledge, attitude, and practices among members of a University community in southern Nigeria, and afterward creating awareness on viral hepatitis and its risk factors.

Materials and Method: A total number of 344 apparently healthy individuals registered and participated in this study. A self-administered questionnaire was used to generate the data on Nintex software which was validated and checked for its reliability to assess knowledge, attitude, and practices on Hepatitis B and C. A quantitative analysis of data was conducted using SPSS software.

Result: Study participants were between the ages of 16 to 71 (mean age 26 years old). Among the 344 participants, 69.7% were female while 30.3% were males. Two hundred and eighty-seven (83.3%) of the population were students, 8.2% were academic staff, 5% non-academic staff and 2.8% were in the other categories (food vendors, shop owners, transporter, etc.). Majority of the participants were aware of the aetiologies of viral hepatitis; 57.8% knew about the Hepatitis B virus, and 35.1% of the Hepatitis C virus. Their knowledge about HBV vaccination was also assessed; 66.6% knew about the HBV vaccination and 90.7% acknowledged its importance. 55.9% were unaware of the availability of Hepatitis B vaccine on the country's Expanded Programme on Immunization, 57.5% thought the vaccination would either be very expensive or expensive. One hundred and six (33.6%) participants were willing to go for vaccination. The major risk factors that were identified that were associated with Hepatitis B and C infection included sharing of sharp objects, hair clippers, history of dental procedure,unprotected sex, needle-stick injuries and body piercing. Nine (11%) of them had been diagnosed with one or two other sexually transmitted disease (STD).

Conclusion: The participants had a fair knowledge regarding HBV and HCV and its prevention and treatment. Although the Hepatitis B vaccine has been included in the National Expanded Immunization Programme for a decade now, many participant were not aware. Majority of those that were aware, were however not vaccinated. From this study, the importance of liver care advocacy and hepatitis prevention especially through immunisation has been reiterated This is key to the World Health Organisation hepatitis elimination goal come 2030.

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Strategies to achieve a hepatitis C Reduction, Prevention, and Treatment with Program in Prisons

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Background: According to data in 2013 Balitbangkes, Hepatitis C prevalence in Indonesia reached 1% or around 2.5 million people, while for HBV it was 7.1% or approximately 18 million of the total population of Indonesia.

in 2017 the government through Permenkes no. 52 and 53, launching an elimination program for transmission of hepatitis C and B, HIV and syphilis can be achieved in 2030, by involving all components of the nation as an integral part of integrated health development of actors.

One of the population which has a high enough risk is in the Prison, the Overcapacity of Prison inmates in all prisons and detention centers in Indonesia, making the Prison Assisted Residents not get a suitable place for activities and rest, environmental conditions that are not conducive, poor sanitation, Limited budget plus the Prisoner Behavior is difficult to control causes easy Transmission of Disease, this has been going on for a long time but cannot be solved either, due to the complexity of the diverse and accumulated problems plus inadequate Human Resources.

Strategy: On this case, the Non-Government Organization, the Koalisi Satu Hati and the Directorate General of Ministry of Law and Human Rights are assisted by the CHAI (Clinton Health Access Initiative), Globalindo, Pengayoman Hospital and the Hepatitis Sub Directorate of the Ministry of Health were work together to start Free Tests and Treatment for 17,000 WBP in 7 prisons and remand centers in all regions of Jakarta.

Result: With limited facilities and infrastructure as well as existing resources, from the initial target of 17,000 WBP, finally, the test can be carried out to 17,455 Prison Assisted Residents. According to the plan, Tests begin on June 28 until August 28, 2019, from the test results, obtained 5.9% Prison inmates or about 1023 Hepatitis C reactive.

Many things can be learned for all involved, from the beginning of the meeting, training for Health Officers and staff, the target test for 17,000 WBP can be accomplished, but the problem does not stop with only the results of the Reactive Test but it continues because of the lack of DAA drugs.

Many ways have been carried out by us, Koalisi Satu Hati as the initiator of Tests and Treatment, from writing to the Director-General of Pharmaceuticals, in a letter to the Chairperson of Commission IX of the House of Representatives to the Demonstration and

Peaceful Action at the Institute of Goods and Services Providers, meetings with Drug manufacturers and others.
Until now we pushing the government to procure Hepatitis C medicine

Conclusion: Hopefully the availability of drugs can be immediately carried out for the treatment of friends who have been tested, but we will not stop just at this point, the road is still long, there is still much work to be done, the policies and the systems that must be improved, and of course the willing of the Government, because by letting the situation like this, is the same as letting Citizen of Indonesia suffer, How can we eliminate Hepatitis and achieve the Hepatitis-Free in 2030, If we still don't care and keep our eyes closed.

Because Living with a potentially infectious virus is like living with a time bomb not only could it hurt me and you, it could hurt others also being cured is Freedom and Real Life.

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Abstract #81 has been withdrawn.

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HBsAg and Anti-HCV Screening and Linkage to Care among People Who Inject Drugs in Jalingo LGA of Taraba state

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Introduction: According to the 2017 WHO Global hepatitis report, 257 million people are chronically affected by hepatitis B virus (HBV) and 71 million by hepatitis C virus (HCV) worldwide. Sub-Saharan Africa is one of the hotspots of these two epidemics. HBV infection is widespread in the continent, affecting >8% of the population in West and Central Africa, reaching 15% in some areas. HCV infection is less evenly distributed with prevalence ranging from 6.1% in Burkina Faso and 2.2% in Nigeria.

Nigeria has an estimated population of 190 million people and a prevalence of 11% hepatitis B (HBV) and 2.2% hepatitis C (HCV); with 19 million people, many of whom are unaware that they are infected. Currently, majority of hepatitis treatment in Nigeria is provided at tertiary level services, which are not easily accessible to majority of the population. For Nigerians that are able to access health care services, significant financial barriers remain to accessing testing and treatment for hepatitis, with majority paying out of pocket for health care.

Objective: Uptake of testing and linkage to care, using point of care are both essential initial components of the elimination goal and hepatitis B and C care continuum. However, currently, levels of uptake of testing for hepatitis B and C are very low and a large proportion of people living with viral hepatitis B and C are unaware of their infection, especially in LMICs, contributing to gaps in attaining the elimination goal and meeting targets.

Background: People who inject drugs are at high risk of acquiring hepatitis B (HBV), hepatitis C (HCV), due to risky injection and sexual practices. The objective of this study is to investigate the challenges and opportunities of providing quality screening and linkage to care for HBV and HCV among people who inject drugs in Jalingo, Taraba state.

Methods: We used respondent-driven sampling to identify 120 participants, from whom we collected demographic data, information on sexual behaviours and injection drug practices, and blood samples for biological testing.

Results: Prevalence of HBsAg, and Anti-HCV, were 15.9, and 25.4%, respectively. Out the entire 120 participants; 18.4% were infected with hepatitis B, 16.3 with HCV and 9.4% with dual infection of both HBV and HCV infections. Of the 16.3% with Anti-HCV, 79% had confirmed RNA viremia and 21% not detected, after one month of awaiting HCV RNA tests results. Of the 79% with confirmed HCV RNA, only 12% returned and accessed FREE DAAs, with the remaining lost to follow-up.
Of the 18.4% with positive HBsAg, 95% had varying range of HBV DNA, with only 5% HBV Not detected. Out of the 95% with confirmed HBV DNA results, only 9% returned for follow up with their doctors, with remaining lost to follow up.

Conclusions: The ambitious targets for Hepatitis elimination set by WHO are achievable in many countries, but will require researchers, healthcare providers, policy makers, affected communities, advocates, the pharmaceutical and diagnostics industries, and governments around the world to work together to make this happen.

Without linkage to prevention, treatment and care, testing and learning one's hepatitis B or C status has limited value.

These findings underscore the importance of community driven use of Point of Care diagnostic tools for quality screening and linkage to care for key vulnerable populations to access treatment, contributing to the elimination goal of Viral Hepatitis.

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Assessment of Usage of Auto Diasble Syringes in Primary & Secondary Level Healthcare Facilities of Punjab for Prevention of Viral Hepatitis Transmission

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Background: The Hepatitis Prevalence Survey conducted by Pakistan Medical and Research Council (PMRC) in 2008, indicated reuse of syringes in healthcare facilities as a significant factor in transmission of hepatitis B & C. Prevalence of HBsAg was higher (3.0%) among individuals who had reused syringes in comparison with individuals who had used a new disposable syringe (2.1%). Likewise, with the new syringe the HCV prevalence was 3.5%, which rose to 2 folds i.e. 6.8%, when a reused syringe was used. In accordance with Global Health Sector Strategy (GHSS) on viral hepatitis of WHO, Punjab Hepatitis Control Program is determined to eliminate viral hepatitis. To achieve this purpose, the program focused on improvements in hospital waste management, infection control and injection safety practices in public sector health facilities.

Materials and Methods: A structured questionnaire was developed for primary data collection. Data collection was primarily aimed at performing interviews of healthcare workers and patients regarding usage of Auto Disable Syringes. Descriptive quantitative analysis was conducted by using SPSS version 20.

Results: Health workers were interviewed regarding their experience with usage of AD syringes in comparison to ordinary syringes. Based on interviews, 16.1% of workers stated that they found AD syringes more difficult to use in comparison to ordinary syringes. 42.9% health workers had complained that patients do not feel comfortable with usage of AD syringes. 20% of the health workers interviewed asserted that they had not received training regarding the usage of AD syringes.

Among those who had received training, 34% of workers did not know the proper way to deal with glass ampules; 36% of workers did not know the correct angle of application of syringe for Intravenous injection; 45% of workers did not know the correct angle of application of syringe for Intradermal injection; 41% did not know the correct angle of application of syringe for subcutaneous injection; and 14% of the workers did not know the precautions to be used to avoid needle stick injuries.

21.4% of workers indicated issues in usage of AD syringes which include the following issues: 1) Piston of AD syringes was either too hard or too smooth which made usage difficult; 2) needle gauge of AD syringes provided was narrow and it was very difficult to inject macro molecular injectable using these syringes; 3) facing issues in intramuscular injection because thinner syringe should be used for this purpose but AD syringes had a thicker needle; 4) AD syringes cannot be used for powder form injectable because it gets locked while diluting the injection and removing air bubbles.

Patients were interviewed regarding their awareness of benefits of usage of AD syringes. It was noted that 95% patients were not aware of the benefits of AD syringes. 94% patients did not know the difference between ordinary and AD syringes. 36% of the patients felt pain while being injected with an AD syringe while certain patients complained of a lot of pain while being injected.

Conclusions: Majority of healthcare workers do not find use of AD syringes difficult as compared to ordinary syringes. Training of healthcare workers

on use of AD syringes should be a structured, competency-based training designed on adult learning principles, with ongoing refresher trainings along with facilitative supervision to bring about the desired behavior change. Awareness about AD syringes among patients must be elevated.

Conclusion: Before establishing the actions it is recommended to make the local situational diagnosis establish the line of care and draw up a local plan for permanent health education.

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Hepatitis C elimination plan in the Municipality of Petrópolis, Rio de janeiro, Brazil

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Introduction: Hepatitis C is a silent epidemic; it is estimated that 1 million infected patients in Brazil represent the leading cause of death among viral hepatitis and the third cause of liver transplantation in Brazil; access to treatment has been expanded to all stages of fibrosis since 2018 to achieve targeted reduction of new infections by 90%; 15 to 79 years old patients should be eligible to treatment. ; between 1999-2016 331.855 cases of positive antiHCV+viral load positives were reported with higher number reports in the Southeastern region, 288 cases (51%).

Material and Methods: following WHO's (World Health Organization) proposal to reduce new hapatotropic virus infections and their associated mortality by 90% by 2030, Brazil has embarked on a specific course of action to achieve the objectives proposed at the Summit in 2017, aimed at broadening access to diagnosis and treatment of hepatitis C involving the 3 spheres of government, for the reduction of new infections and mortality. 1855 persons over 15 years of age underwent the rapid hepatitis C test; 29 of them were positive antiHCV+viral load.

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Knowledge, practices and attitudes about hepatitis B and C among barbers working in South India.

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Background: This study aimed to assess the knowledge, practices and attitudes of barbers regarding transmission risk of HBV and HCV viruses.

Methods: A cross-sectional survey using a pretested questionnaire was conducted among barbers working in salons in the city of Kozhikode, India between May-July 2019. The questionnaire included queries about hepatitis, knowledge regarding hepatitis transmission through razor, vaccination, sterilization, and the form of media they use for information and entertainment. Use of instruments on at least 2 clients was observed in each shop. Proportion and their 95% confidence intervals were computed.

Results: Of 210 barbers surveyed, only 26 (12.3%) had the knowledge that hepatitis is a disease of the liver, causing jaundice, it is transmitted through parenteral route and could also be transmitted by a razor. 78.5% (n=165) agreed that they have heard of hepatitis B, but only 11.9% (n=25) had heard of hepatitis C. Only 37.1% (n=78) confirmed that they have undergone hepatitis B vaccination. During the actual observation of 250 clients, razors were cleaned with an antiseptic solution for 198 (79.2%). It was found that only 4% (n=10) of the razors were reused for clients.

Conclusion: Level of knowledge and awareness among barbers about hepatitis and risks of transmission was not satisfactory. The health authorities and also the barbers' associations should take serious measures to educate these skilled workers about the viral infections through media campaigns, in addition to regulation of practices.

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Abstract #87 has been withdrawn.

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Viral Hepatitis Among LGBT People in Uganda

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Background: The LGBT community is part of approximately 44 million people in Uganda that is reported to be most affected with the Hepatitis B virus in Sub Saharan Africa. Recently, it has been estimated that over 10% of the total population is already living with chronic Hepatitis B infections which is responsible for 80% of all liver cancer cases in the country. According to the New Vision Newspaper (27 July 2018), the highest infections rates of Hepatitis B were found in Karamoja, Northern Uganda, West Nile and in the Western region among people within the age range of 20 to 49 year.
Prevalence of Hepatitis B virus in Uganda among LGBT people is 10% especially among men who have sex with men (MSM).In this study, I aimed at determining the prevalence and incidence of HeP B, (HBV), in youths LGBT group in 3 districts that is; Kampala, Wakiso, and Mukono. I also characterized a cohort of LGBT youths for future participation in phase I/II Hepatitis vaccine trials.

Methods: The study was conducted at friendly LGBT clinics, LGBT organisations, and at grassroots community levels in Kampala, Wakiso and Mukono districts of Uganda from August 2015 to October 2017. Youths of all genders aged 18–35 years were screened for HBV using an enzyme linked immunosorbant test. The clinical and behavioral data were collected using structured questionnaires.

Results: The study population was MSM's dominant (76.8%), and Lesbians at 23.2%. Most participants had a formal education, with 44.6% studying for technical or higher education degrees. The mean age at 23 years sexual debut was with

85.6% reporting more than one sexual partner in life. The screening showed the prevalence of HBV at 12.2%. Retention rates were stable throughout the study being 85.1% at the last visit.

Conclusion: Incidence of Hepatitis B virus in this cohort of LGBT youths in the 3 districts of Uganda was relatively low. However, this has changed over time and the prevalence of Hepatitis B virus continue to occur within the LGBT community due to the increased stigma and discrimination within the different Health centers.

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Detection of Hepatitis C Virus and The Risk of Transmission among Pregnant and Nursing Mothers from Rural and Urban Communities in Kogi State, Nigeria

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Background: Hepatitis C virus (HCV) is associated with liver complicated diseases resulting in end stage hepatocellular carcinoma. Vertical transmission from mother to child serves as an important route of HCV acquisition in children yet in pregnant and nursing women HCV infection is still under studied in Nigeria. Therefore, we investigated the burden of HCV, associated risk factors and viremia among ante-natal and post-natal clinics attendees in the rural and urban communities of Kogi State, Nigeria.

Methods: A total of 176 blood samples were collected from 78 (44.2%) consenting breast feeding mothers and 98 (55.8%) pregnant mothers (age ranged 18-47 years (Median age =26.3) and tested for anti-HCV by ELISA technique. All anti-HCV positive samples were re-tested by Taq One step RT–PCR technique for viral RNA detection. The bio-socio-demographic information of the participants

were collected using a well-structured questionnaire and correlated with the test results, using an IBM SPSS version 21. A measure of goodness was considered significant at p < 0.05.

Results: This study found an overall rate of 4.6% for HCV and 2.2% viremia among the participants. HCV rate was higher among the civil servants (2.3%; CI=-0.25–2.91; p=0.241) and peaked among age group 31-35 years (2.3%; CI=0.183-2.182; p=0.293). Various risk factors identified included, high HCV rates during first trimester (1.7%; CI=-2.2–3.6; p=0.047), ear/nose piercing (4.6%;CI =-46.83–54.82; p=0.157), sero-positivity among the urban dwellers (2.8%; CI=-8.71-16.71; p=0.157).

Conclusion: This study showed a high rate anti-HCV and also revealed that a proportion of the participants had an active infection. Therefore, all ante and post natal clinic attendee should be screened for anti-HCV and those found positive properly monitored to reduce risk of vertical transmission.

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Evaluation of the performance of a rapid diagnostic test for the detection of Hepatitis C antibodies (HCVAb) at Laquintinie Hospital Douala, Cameroon

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Background: In Cameroon the prevalence of hepatitis C varies from region to region. To ensure safe blood transfusion prompts a meticulous screening of viral infections such as hepatitis C among donors. In low and middle income countries especially in community area, rapids diagnostics test are commonly used for that purpose. The

objective of this study was to evaluate performances of diaspot-AcHCV, a rapid diagnostic test usually used for the qualitative detection of Hepatitis C antibodies.

Methods: A cross-sectional and prospective study was undertaken at the blood bank of Laquintinie during six months from October 2018 to march, 2019. Hepatitis C antibodies detection was performed on blood of each donor by 2 techniques: immunonographic- Diaspot®-HCVAb and ELISA-Fortress (Gold standard). Comparison of categorical variables was performed by Epi info 7.0 using a X2 test and for p<0.05, the difference was considered as statistically significant.

Results: Out of 3442 blood donors ignoring their HCVAb status, men were predominant compared to women (93% vs 7%) and the mean age was 49.5(1.9 years (min:17 ; max :68). The prevalence of HCVAb was 4.3 % (147/3442) by Diaspot®-HCVAb and 2.5% (86/3442) by FORTRESS-ELISA. Diaspot®-HCVAb performances were: sensitivity 54.65%(47/86), specificity 98,54%(3256/3356), positive predictive value 31,97% (47/147), negative predictive value 98,81%(3256/3295), accuracy 95,96 % (3303/3442).

Conclusion: This study revealed that the test Diaspot®-HCVAb used for the screening of HCV in our context has a lower sensitivity than what is expected by WHO for rapids diagnostic test (Se>95%). In addition, this test gives false positives results. A local technical evaluation must be always done prior the use as far as rapid diagnostic tests (RDT) concern.

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Abstract #91 has been withdrawn.

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Barriers towards case-detection of Hepatitis in HIV co-infection among Healthcare Professionals in a Nigerian University Teaching Hospital.

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Background: Viral hepatitis is frequently encountered as opportunistic / co-infection among people with human immunodeficiency virus (HIV). This is a serious public health issue, particularly in low- and middle-income countries. Active surveillance and case-detection by healthcare professionals are crucial strategies for effective control and elimination of this public health challenge. There is limited data on the barriers to active case-detection of viral hepatitis towards their effective elimination. This study was done to determine the barriers towards effective case-detection of hepatitis among clients o antiretroviral therapy in a Nigerian University Teaching Hospital.
Objectives: To determine the barriers towards effective case-detection of hepatitis among clients o antiretroviral therapy in the Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria.

Method: A cross–sectional study was carried out using a structured, self–administered questionnaire to determine the barriers towards case-detection of hepatitis co-infection among the healthcare professionals

Results: Among the healthcare professionals included in this survey were 57 (69.5%): their mean age was 37.2 SD 8.7 years while their mean length of services within the teaching hospital was 6.6 SD 5.3 years. More than half of the respondents knew about the World Health Organization's guideline for prevention of transmission of hepatitis infection, however, only 44% of them were aware of hepatitis co-infection with HIV. The major barriers towards case-detection of hepatitis co-infection in the HIV clients were: the cost of performing hepatitis screening tests, mean score 3.32; lack of awareness, mean score 3.15; workload, mean score 3.10. The least considered barriers were lack of

working tools and time constraint, mean scores 2.65 respectively.

Conclusion: The greatest challenges reported by the respondents in this study towards active surveillance and case-detection of hepatitis among HIV clients were the high cost of hepatitis screening tests. Further research is required to explore alternative and cheaper screening methods to achieve effective case-detection of hepatitis co-infection during HIV therapy, particularly in resource-limited settings.

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Challenges in the Elimination of Viral Hepatitis in a Low-Income Country

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Background: The WHO estimates 6.1% prevalence of hepatitis B and 1% prevalence of hepatitis C in Africa. In Kenya, the prevalence of HBV is estimated to be 8%, while that of HCV is estimated to be at 2%. Kenya has improved its laboratory infrastructure to enable its people to access diagnostic and management services for HIV, TB and malaria infections. However, diagnosis and monitoring of HBV, there is still a lot more to be done. In 2016, the WHO came up with 7 steps to elimination of viral hepatitis in 2016: having national plans, testing for HBV and HCV, treatment coverage, vaccination against HBV, preventing mother-to-child transmission, blood safety and harm reduction.

Methods: In January of 2019, the National Public Health Laboratories (NPHL) in Kenya, together with the Disease Surveillance and Response Unit, responded to reports of increased cases of hepatitis B in Baringo and Elgeyo Marakwet counties. 406 samples were collected from Baringo County. 48 out of the 406 samples tested positive by the rapid HBsAg test. From Elgeyo Marakwet County, 400 samples were collected, and 10 were found to be positive by HBsAg rapid test.

Results: All samples that tested positive for HBsAg were sent to NPHL to determine viral load so as to guide clinicians on administration of therapy. However, this has not happened due to the unavailability of kits for further testing.

Conclusion: According to the WHO strategy towards the elimination of viral hepatitis, Kenya is lagging behind, largely on testing and treatment. NPHL is well equipped in terms of capacity and equipment, but require support in the purchase of testing kits. Treatment for HBV is limited, as current therapy (nucleotide analogues) is allocated for HIV patients only. Therapy for HCV is unavailable to majority of patients due to the cost of medication. Another challenge is HIV-HBV coinfection. Coinfection has been shown to increase HBV viral load, reactivation of HBV in asymptomatic carriers, faster progression to fibrosis, cirrhosis and HCC. Local guidelines recommend screening of all HIV patients for HBV. This is not happening due to unavailability of testing kits. All these issues highlighted facilitate in the spread of HBV and HCV, due to non-suppression in patients with chronic infection. If these challenges remain unresolved, elimination of HBV in Kenya, and other developing countries, may not happen by 2030. However, not all is hope is lost. There have been vaccination activities for health workers, which will hopefully be extended to the general public. In 2003, the government introduced the HBV vaccine to the vaccination schedule of children. This ensures all children born in health facilities are protected.

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Evaluation of performances of a rapid diagnostic test for the detection of Hepatitis B surface antigen in Douala, Cameroon

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Background: Cameroon is a high endemic country of hepatitis B. To ensure safe blood transfusion implies a meticulous screening of Hepatitis B surface antigen (HBsAg) among donors. In resource-limited countries especially in community area, rapids diagnostics test are commonly used for that purpose. The objective of this study was to evaluate performances of diaspot-HBsAg, a rapid diagnostic test usually used for hepatitis antigen detection.

Methods: A cross-sectional and prospective study was undertaken at the blood bank of Laquintinie during six months from November 2017 to April, 2018. Hepatitis B antigen detection was performed on blood of each donor by 2 techniques: immunonographic- Diaspot® and ELISA-Fortress (Gold standard). Comparison of categorical variables were performed by Epi info 7.0 using a X^2 test and for $p < 0,05$, the difference was considered as statistically significant.

Results: Out of 376 blood donors ignoring their AgHBs status, men were predominant compared to women (89% vs 11%) and the mean age was 49.5(1.9 years (min:18 ; max : 68). The Frequency of HBsAg was 7.98% (30/376) by Diaspot®-AgHBs and 8.78% (33/376) by FORTRESS-ELISA. Diaspot®-AgHBs performances were: sensibility 75.75%, specificity 98,54%, positive predictive value.33%, negative predictive value 97,68%, accuracy 96,5 %.

Conclusion: This study revealed that the test Diaspot®-AgHBs used for the screening of HBsAg in our context has lower sensibility than what is recommended by WHO for rapids diagnostic test (Se>95%). A local technical evaluation most always be done before and after use as far as rapid diagnostic test concerns.

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The sero prevalence of antigen HBs in pregnant women at the Major Leka Hospital Center in Maluku. "From 01 December 2016 to 31 May 2017"

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Context: The diagnosis of viral hepatitis B during pregnancy raises the problem of its seriousness in women but also fetal risk and mother-to-child transmission.

Goal: To evaluate the seroprevalence of hepatitis B and its associated factors in pregnant women at the Major Leka Hospital Center in Maluku.

Methods: Analytical cross-sectional study conducted from 1st December 2016 to 30th May 2017 at the Major Leka Hospital Center in Maluku. Included were all women seen in consultation who consented to participate and perform a rapid HBV test. Data were collected through interviews and medical records. The HBs antigen was searched by a rapid test. Data analysis was done with SPSS 21 software. A multivariate logistic regression model was used to search for risk factors for HBV at the 5% threshold.

Results: The average age was 25.7 ± 6.5 years. The frequency of hepatitis B was estimated at 15.3%, n = 11/72. The risk factors associated with this prevalence in multivariate analysis were transfusion, which increased the risk by 2 (ORa: 2.31, 95% CI: 1.19-8.55), the manicure / piercing multiplied the risk by 3 (ORa: 2.99, 95% CI: 1.14-7.26), non-condom use increased risk by 3 (ORa: 3.18, 95% CI 1.58-7.48), and STIs increased this risk per 6 (ORa: 5.87, 95% CI: 1.33-11.95).

Conclusion: The frequency of HBV in pregnant women at Major Leka Hospital Center in Maluku is high. Systematic screening and treatment for hepatitis B in pregnant women should be recommended.

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Hepatitis B genotypes as viral marker for monitoring dual hepatitis B and Delta virus infection in Cameroonian patients

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Background: Viral biomarkers are important tools for monitoring patients infected with hepatitis B virus (HBV) and viral load represent one of the main parameters of treatment eligibility. The natural history of HBV infection is crucially influenced by dual hepatitis Delta virus (HDV) infection and several factors can influence the dynamic replication of both viruses. The role of genotype on the viral hepatitis B replication interference processes remain largely unknown.
Material and Methods: We performed a transversal study on 60 patients with chronic hepatitis B virus with and without hepatitis Delta dual infection. In all, surface hepatitis B antigen and antibody against hepatitis Delta were analysis using serological immunoassay tests. Hepatitis B virus DNA (HBV-DNA) and hepatitis Delta RNA (HDV-RNA) titers were analyzed using the Abbott Molecular and Roche TaqMan technologies respectively whereas genotypes were determined by hemi-amplification and sequencing of Ro and S gene of HBV and HDV.

Results: HBV-DNA was detected in 73.3% (22/30) of the mono-infected patients and 56.7% of patients with dual infection. The level of HDV-DNA was significantly found lower in patients with dual infection compared with those monoinfected with the median and interquartile (IQR) of 1.20 (1.00-1.32) vs. 2.93 (2 , 05-3.92) log10 (copies/ mL); P = 0.012). The identification of different genotypes of HDV was effective in 80% (24/30) of patients and revealed the unique circulation of genotype 1. HBV genotyping showed a co-circulation of genotypes A and E in mono and co-infected patients. Remarquably, HBV-DNA levels were significantly found lower in patients infected with HBV genotype A than those infected with genotype E with the

madian and IQR of 2.64 (1.24-2.68) vs 7.35 (4.51-7.66) log10 (copies/mL), P < 0.001.

Conclusion: This study indicated that viral replication interference between HBV and HDV dual infection is HBV-genotype dependent. Viral replication is more evident in patients infected with HBV genotype A than those infected with HBV genotype E. Suggesting that HBV genotype could be taken into account in the follow up of patients.

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Abstract #97 has been withdrawn.

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Laboratory evaluation of two HBsAg rapid diagnostic tests in Kenya

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Background: Hepatitis B virus (HBV) infections are a growing public health concern globally. In response to this health threat, the World Health Organization (WHO) has set ambitious targets for HBV elimination by 2030. Achievement of these targets is however currently jeopardized by low diagnostic rates among infected individuals as only a small proportion of HBV carriers are aware of their status. Rolling out HBV diagnosis and treatment programs in high burden settings but limited in resources will require highly sensitive and specific rapid diagnostic tests to rival enzyme immunoassays in core laboratories to detect HBsAg. In Kenya, a large number of RDTs are currently available in the market. However, their performance characteristics have not been described therefore compromising the quality of testing. In this study, we aimed at validating the performance of two HBsAg RDTs (Alere Determine and Selexon) for use ijn the country's response to the HBV epidemic.

Methods: A panel comprising a total of 210 archived plasma specimens was tested with both the RDTs and the reference assay (ELISA) at the virology laboratory of the National Public Health Laboratories, Kenya and their results compared. Statistical analyses were done to assess sensitivity, specificity and predictive values.

Results: Sensitivity was of 99.1% (95% CI: 94.9%-100%) and 98.2% (95% CI: 89.3%-99.9%) for Determine and Selexon respectively. The kits also had high specificities at 99.0% (95%Ci: 94.8%-100%) and 100% (95%CI: 93.4%-100%) respectively. Positive and negative predictive values were recorded at 99.1% and 99.0% for Determine, and 100% and 98.4% for Selexon respectively.

Conclusion: Both RDTs recorded high sensitivities and specificities making them suitable for the detection of HBsAg in whole blood, plasma and serum. The RDTs can therefore be used for point-of care screening for HBsAg, allowing infected individuals to be rapidly identified and linked to care.

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The Association of Depression among Patients of Hepatitis C Virus Taking Direct Antiviral Agent

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Abstract: **Background:** Hepatitis C virus (HCV) - induced decompensated liver cirrhosis is a life-threatening illness with an average 5-year survival rate of 50%. HCV is endemic in Pakistan and its burden is expected to increase in coming decades owing mainly to widespread use of unsafe medical procedures. A systematic review showed that HCV seroprevalence among the general adult Pakistani population is 6.8%, while active HCV infection was found in approximately 6% of the population.

Aim: To determine the association of depression among patients of hepatitis C virus taking direct antiviral agent.

Material and Methods:
Study design: Cross sectional study
Setting: Unit II, Department of Medicine, Jinnah Hospital, Lahore, Pakistan
Duration: Six months from September 2017 to March 2018
Data collection procedure: Total 110 Patients fulfilling the inclusion criteria were selected from OPD of Department of Medicine, Jinnah Hospital, Lahore. Informed consent was obtained. Demographic information (name, age, gender, duration of HCV and DAA treatment) was also obtained. Then patients were evaluated for depression by a senior psychiatrist having at least 4 years' residency experience with assistance of researcher. If HADS score >11, the depression was labeled (as per operational definition). Patients with depression were managed by standard hospital protocol along with HCV treatment. All this information was recorded on proforma (attached).

Results: The mean age of the patients was 45.82±13.20 years the minimum age was 22 years and maximum was 69 years. There were 53(48.2%) males and 57(51.8%) females in our study. There were 36(32.7%) patients who were illiterate, 41(37.3%) were middle, 33 (30%) were having education as matric or higher. There were 45(40.9%) patients with depression and 65(59.1%) without depression. There was significant association between Depression and age groups as the p-value was significant. (p-value=0.000).

Conclusion: Study findings concluded that major depression is a frequent occurrence among patients with hepatitis type C taking antiviral therapy.

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Positivity rate of Hepatitis B surface antigen(HBsAg) among tuberculosis patients from Cameroon.

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Background: Tuberculosis appears as one of the most dangerous opportunistic diseases worldwide with a tedious treatment. In case of co-infection with hepatic viral hepatic infections, the probability of liver failure seems high. This study was to evaluate the rate of Hepatitis B surface antigen(HBsAg) among cameroonian suffering from tuberculous disease.

Methodology: A cross-sectional study took place from December 2018 to April 2019 at Jamot, hospital, the most famous center of tuberculosis prevention and management in Cameroon. Immunochromatographic detection of HBsAg were done on each serum samples of pulmonary tuberculosis patients. Statistical analysis performed by Epi info 7.0 using X2 test and p<0.05, the difference was statistically significant.

Results: Out of 100 pulmonary tuberculous patients enrolled (58% men), the mean age was 38.34(4.29 years [min: 9; max: 64] years. The overall positivity rate of HBsAg was 4% (4/100) with female more affected (4.16%vs.3.45% men, p=0.85). Tuberculous patients aged [40-52[and married seemed to be more positive (p=0.67 and p=0.7 respectively). Furthermore, patients with a previous history of at least one sexual infectious diseases and those presenting clinical symptoms of hepatitis B such as jaundice were the most affected (p=0.012 and p=0.02). Surprisingly, all the HBsAg positive patient were practicing mono partnership 4.82%(4/83), p=0.06

Conclusion: Co-infection with hepatitis B among tuberculous patients should not be neglected.

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Seroprevalence and determinants of hepatitis C virus among Kinshasa drugs users 2016-2017

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Context: Infection with hepatitis C virus is a public health problem. its prevalence is increasing especially in HIV key person such as drug addicted users.

Goal: The main objective of this study was to determine the prevalence of hepatitis C among drug addicted users.

Material and Methods: This is an analytical cross-sectional study of 100 drug addicts in the period from September 2016 to April 2017. Sociodemographic data, risk and predisposing factors and knowledge of HIV were analyzed.

Results: The prevalence of hepatitis C was estimated at 5.0% with predominance among female. The age of the patients ranged from 18 to 80 years with an average of 33.3 ± 12.33 years. They were mostly unemployed, in common-law union, with a primary level of education, Catholic and residing in the district of Funa. Drug use (injection or sniffing) (94.0%) and piercing or tattooing (86.0%) are the risk factors for hepatitis C and the average age at the first injection was 30, 3 ± 12.33 years. The age at the first injection is between 15-24 years and the last injection was in the last 6 months (71.0%). The substance most consumed by drug addicts was hemp (90.0%) and the average age at the first use of substances ranged from 21 to 45 years. Predisposing factors most frequently found were pipe sharing (95.0%), sharing straw (89.0%), sexual intercourse with a casual partner (67.0%) and coined sex (45.0%). 0%). Thirteen percent of our responders had tested for HIV, of which only one was positive, with a prevalence of 7.7%. Tattooing, tooth extraction and syringe sharing had emerged as primary determinants of hepatitis C. Tattooing increased the risk of hepatitis C by 3 (ORa: 2.56, 95% CI: (1.14) 4.52), p = 0.014); tooth extraction multiplied this risk by 4 (ORa: 4.36, 95%

CI: (1.83-8.31), p <0.001), and syringe sharing multiplied this risk by 6 (ORa: 5.83 95% CI: (1.96-8.76), p <0.001).

Conclusion and Perspective: The hepatitis C virus is circulating among drug addicts. Sufficient knowledge about this infectious diseases in this group would reduce its prevalence.

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Definitive Laboratory Management of HBV/HIV Coinfections in Kenya

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In Kenya, the prevalence of Hepatitis B is reported to be 31.5% (95% CI = 28.0–35.3%) among HIV-negative adults and adolescents aged 15–64 years. HIV and HBV have shared transmission routes. Acute HBV infection in HIV positive people is associated with increased risk of chronicity, reduced chances of spontaneous clearance, higher rates of replication and reactivation and therefore increased incidence of chronic liver disease, cirrhosis and hepatocellular carcinoma (HCC). Additionally, HIV/HBV co-infection has been associated with rapid HIV disease progression and poorer HIV treatment outcomes. Other complications of HIV/ HBV co-infection include increased incidence of direct hepatotoxicity, drug-toxin interactions and ART-related immune reconstitution hepatitis.

In this regard, the National Public Health Labs and NASCOP through partner and stakeholder involvement developed The Key Considerations in managing HIV/HBV coinfections in Kenya guidelines that provides a framework on how these class of patient will be managed both clinically and at the laboratory. This guideline is intended for use by various stakeholders including national and county health policy makers and program managers, development partners, investors, implementing partners, logistics and procurement personnel, laboratory and health care service providers.

Method: Development of a clinical and laboratory algorithm that clearly defines management of HBV/HIV Coinfections through meetings, workshops and formation of a technical working group

Results: A detailed lab algorithm that describes details on what sample type to be collected, timing of sample collection, type of test to be done, frequency of subsequent test and a flowchart on how the clinicians should manage the client.

Conclusion: The newly developed algorithm is the surest way to manage this category of PLHIV as an effort to better treatment outcomes for PLHIV and enable Kenya meet its UNAIDS 90-90-90 targets.

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Production of virus like particles from an Egyptian hepatitis C virus isolate

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Background: Hepatitis C virus (HCV) is one of the major globally cause of death and morbidity. The high level of genetic diversity is one of the most difficulties that face the development of an influential vaccine for HCV. Virus like particles (VLPs) are composed of viral structural proteins which self-assemble into non-infectious particles that lack genetic material and resemble native viruses. New vaccines are designed for preventive and therapeutic use through induction of robust immunity, including neutralizing antibodies and T-cell-mediated immunity. Novel future vaccine approaches include virus-like particle (VLP)-based vaccines that have been successfully employed to prevent infections to HBV. The HCV-derived VLP approach simplifies the delivery of neutralizing antibody- and core-specific T-cell epitopes in a highly immunogenic single construct resembling mature HCV virions. HCV VLPs elicit both NAb and cellular immune responses. Compared to HCV core, E1 and E2 DNA vaccines HCV VLPs produce stronger cytotoxic T cell responses in mice. This is significant given the important role of HCV core specific T cell responses in clearance of HCV.

Material & Methods: Blood samples were collected from Egyptian patients with HCV infection. Samples collection was approved by the Medical Ethical Committee of the National Research Center in Egypt according to the ethical guidelines approved by the Ethical Committee of the Federal Legislation and the ethical guidelines of the National Institutes of Health in the USA. Amplification of the HCV structural protein genes was done using Viral RNA/DNA Minikit (Invitrogen), Reverse Transcriptase (Thermo Fisher Scientific, USA) and Taq DNA polymerase (NEB, England) and Phusion Taq DNA polymerase (Thermo Fisher Scientific, USA). pDrive and pEGFP-N1 vectors were used in cloning and expression.

Result: Viral RNA was extracted from sera of HCV-infected patients. The Core, E1 and E2-encoding RNA was reverse transcribed and amplified by PCR using their specific primers. PCR products were resolved by electrophoresis in 1 % agarose gels, and gel slices containing the amplified fragments were extracted (Gel Cleaning Kit; (QIAGEN, Hilden, Germany) and then cloned into pDrive cloning vector (Qiagen). Both the pDrive with C-E2 insert and the pEGFP-N1 expression vector were digested with the restriction enzymes Hind III and XhoI (NEB, England), and the digested fragment was ligated using T4 DNA ligase (Thermo Fisher Scientific, USA). The generated construct was then used to transform DH5-Alpha E.coli competent cells according to the manufacturer's instructions.

Conclusions: HCV virus like particles from genotype 4a were produced successfully and ready to be injected into the mice in order to study the immunogenicity, efficacy and safety of HCV like particles for genotype 4 as a candidate HCV vaccine development preclinical studies in experimental animals and in vitro studies.

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The Circle Model

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Background: HCMSG was founded in 2010 to address the lack of awareness, education and supportive services for people affected by Hepatitis C, and/ or co-infected with HIV.

Methods And Materials: The Circle groups provide a non-hostile environment where they are given patient education counseling kits to reduce the harm of infection and to encourage a healthy lifestyle. There is no judgment of lifestyle in these groups and participants are treated with respect encouraging them to make healthy choices. There is a generation of young people who have become infected with Hepatitis C through injecting opiates and other drugs sharing syringes. Education in regard to transmission is necessary for this population in a non-judgmental environment. Using HCMSG's mission and goals, we provide insight and direction into providing options and developing effective ways to educate, engage and retain people in care and treatment. Our goal is to empower them to be in charge of their overall health and show that their voice matters as advocates.

Results: Community based organizations are able to make an impact with patients and providers. Educational groups and supportive patient mentoring services are important elements in the cascade of successful and cost effective medical care. These programs provide the knowledge and tools to enable participants to continue and advocate for this work in their various communities. "The Circle" impacts communities in New York and nationwide through the collaboration of organizations such as:
ekiM for Change Syringe Exchange Greenville, NC
Hawaii Department of Health Honolulu, HI
Hep Free Hawaii Honolulu, HI
Hawaii Health and Harm Center Honolulu, HI
Choice Health Network/ Positively Living Knoxville, TN
Harm Reduction Clinic Knoxville, TN
St. Ann's Corner of Harm Reduction, Inc. Bronx, NY
Washington Corner Project Washington Heights, NY

Conclusions: More work needs to be done to build capacity in rural communities. Expanding the reach of The Circle to more sites across the country would greatly benefit communities in need and meet people where they are in an attempt to reduce the harm. It is vital to continue to deliver patient education and support through community outreach, one on one/ groups, and trainings.

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Aminotransferase activity as a predictor of the progression of liver disease in dialysis patients with chronic hepatitis C

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Background: A decrease in aminotransferase (AT) activity in patients undergoing dialysis makes it difficult to assess the natural course of infection with hepatitis C virus (HCV). The aim of the study was to establish risk factors associated with aminotransferase activity in dialysis patients with chronic hepatitis C.
Material and methods. 36 patients are involved in the study. Patients divided into two groups based on the AT levels: the first group included 29 (80.6%) chronic HCV infected patients with stably normal AT levels and the second group 7 (19.4%) chronic HCV infected patients with elevated ALT.

Results: The first genotype of the virus was the dominant genotype in both groups (27 (75%) patients). In the examined patients of the second group, with elevated ALT levels, a significantly shorter duration of dialysis was noted, which amounted to 6 months up to 2 years (average 16 months) and significantly shorter duration of HCV infection (average 27 months) compared with patients with steadily normal ALT levels. That is, in patients who had been on dialysis for more than 8 years, extinction of symptoms of chronic hepatitis C with AT levels within normal limits (ALT 0.32 ± 0.20 mmol / L) was noted. In patients receiving dialysis treatment more recently (in up to 2 years) the severity of asthenovegetative and arthralgic syndromes and a higher level of AT (AT 0.98 ± 0.24 mmol/l) were noted. The values of the measured ultrasound parameters did not differ significantly between the two groups.
Univariate analysis revealed a higher level of direct bilirubin in serum, which amounted to 6.1 ± 1.3 µmol / l, not its indirect jelly fraction 12.6 ± 1.3 µmol / l; shorter duration of dialysis (up to 2 years) and shorter duration of HCV infection (p = 0.005) in patients on dialysis. After a stepwise logistic regression, none of the potential predictors (level of BR and AT) indicated a progression of chronic hepatitis C due to effective filtering of blood from

these indicators after each dialysis session. Only the clinic of chronic renal failure came to the fore.

Conclusion: Serum aminotransferase levels are poor prognostic factors for liver disease progression in dialysis patients with chronic hepatitis C.

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Eliminating Viral Hepatitis in Africa, Implementing the viral Hepatitis Strategy- The Role of Patient Organizations

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The World Health Organization (WHO) African Region has approximately 100 million people with chronic hepatitis B virus (HBV) infection. This review describes the status of hepatitis B control in the Region.

Viral hepatitis is a major contributor to the global burden of disease, causing an estimated 1·34 million deaths per year—a figure comparable with other major infectious diseases such as HIV/AIDS, tuberculosis, and malaria.Despite this burden, policies to reduce the impact of viral hepatitis have lagged behind those for the other major communicable diseases.

The WHO global health sector strategy on viral hepatitis, created in May, 2016, aims to achieve a 90% reduction in new cases of chronic hepatitis B and C and a 65% reduction in mortality due to hepatitis B and C by 2030. Hepatitis B virus (HBV) is endemic in sub-Saharan Africa, and despite the introduction of universal hepatitis B vaccination and effective antiviral therapy.

Patient Organizations and the affected community have a unique and important role to play in addressing the barriers to diagnosing viral hepatitis; however, to facilitate a more effective response a multi-stakeholder approach is required and governments will need to create an enabling environment that fosters collaboration. Further, all countries need to ensure that those diagnosed with

hepatitis B or hepatitis C are linked to care as quickly as possible.

People living with viral hepatitis and the affected community should be at the heart of every effort to eliminate viral hepatitis. Aside from fulfilling the need for trusted entities that consistently disseminate reliable information, civil society organizations bring fundamentally important perspectives and experiences which greatly enhance the effectiveness of strategies and programmes.

In the context of addressing eliminating viral hepatitis, a meaningful partnership with the affected community and patient organizations can, amongst other things, contribute to the delivery of stronger awareness campaigns; strengthen innovative approaches to finding the undiagnosed through peer support services; help identify gaps within action plans which would otherwise be missed; and offer a platform to address stigma and discrimination, ensuring an equitable response so that the most vulnerable and marginalized are not left behind in the effort to eliminate viral hepatitis. As such, policy-makers should harness the voices of those affected by viral hepatitis, recognising them as vital partners in the elimination effort.

Further, as more people living with viral hepatitis are aware of their diagnosis,they and those in their social environment can be part of the drive to prevent the disease by ensuring access to services, from prevention to testing to treatment and follow-up care, and by encouraging innovation, such as health systems reforms that facilitate new, more people-centered health services.

The key to achieving these elimination goals in Africa is the effective prevention of new infections via universal implementation of the HBV birth-dose vaccine, full vaccine coverage, access to affordable diagnostics to identify HBV-infected individuals, and to enable linkage to care and antiviral therapy.

As hepatitis elimination strategies are cascaded down to the regional and national level, it is vital that civil society and the affected community are kept at the heart of the hepatitis elimination, as an essential element to accelerate hepatitis elimination.

Hepatitis testing and treatment to be included in universal health coverage packages, as set out by the Universal Health Coverage Forum in the Tokyo Declaration (2017)

No decision about us without us.

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HBV mutations and Human TP53 Gene polymorphisms among Hepatocellular Carcinoma and Chronic Hepatitis B Patients in Kenya

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Background: TP53 gene regulates the all cell cycle and prevents the final stage of chronic HBV (hepatocellular Carcinoma (HCC) among other cancers. Both viral and TP53 mutations may affect gene optimal functions.

Objectives: To analyze human TP53 mutations, HBV genotypes and HBV mutations among chronic HBV patients in the North Rift region of Kenya.

Methodology: Serum specimens were collected from symptomatic HBV patients attending the Moi Teaching and Referral Hospital (MTRH). HBsAg, Anti-HBcAg (IgM and IgG), anti-HIV and anti-HCV were tested using commercially available kits. Human TP53 exon 4 and 7 together with viral genome (BCP/PC, polymerase and Surface regions) were amplified and sequenced.

Results: A total of 33 HCC and HBsAg+ patients from hospital cancer registry and another 33 HBsAg+ without HCC at outpatient were selected. Codon 72 Homozygous Proline(P) was prevalent (54.5%), followed by heterozygous Arg/Pro (33.3%) and lastly homozygous Arg/Arg(R) (12.1%,). Pro/Pro allele was frequent among HCC while Arg/Arg allele among patients without HCC. Codon 249, 24.2% had Arg-Ser mutation of which 75.0% had HCC and 25.0% did not. HBV genotype A was 74.2%, genotype D 22.5% and genotype E 3.2%. Genotype D circulating in this area clustered with both subgenotype D6 and D1. All precore and core mutations A1762T/G1764A (33.3%) and G1896A (83.3%) were among HCC with TP53 Codon 249 mutation. Generally, there was no association between HCC and codons polymorphisms (Fisher

test=3.5 and p=0.12). Two known drug resistance mutations (A194T and V191I) were detected in sequence from two chronic patients; one genotype D and the other genotype A.

Conclusion: This study did not find any association or clear mutational pattern between P53 mutations and HCC development. The observed Core/precore mutations (A1762T/G1764A and G1896A) among HCC TP53 mutations patients need to be assessed further and their combination may be an early HCC indicator.

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Overview of Preliminary Results from Activities Commemorating 2019 World Hepatitis Day in a Tertiary Institution in Nigeria

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Background: In Nigeria, of 200 million population, only 9.6% of those infected with viral hepatitis are aware of their diagnosis. Most of the research studies reported are on the prevalence of HBV and HCV among acutely and chronically infected patients and co-infection in HIV/AIDS patients. An event to commemorate the 2019 World Hepatitis Day was therefore organized by the university to create awareness on hepatitis infection. A Health talk, posters on hepatitis, free testing and counseling sessions were the activities of the event. Thus, the aim of this study was to create the most needed awareness and offer free testing to individuals in the University community.

Materials and Method: The Health talk was delivered to create awareness on viral hepatitis, encourage action on preventive measures, testing and treatment. Information posters on hepatitis were also used to strengthen the awareness campaign of the different forms of hepatitis and how they are transmitted and prevented. Free testing on viral hepatitis B was carried out on participants who gave their consent. Plasma collected were screened using HBV-5 rapid chromatographic immunoassay to qualitatively detect HBsAg, HBsAb, HBeAg, HBeAb and HBcAb. Based on the outcome of participants' results, counseling sessions were offered afterward to interpret and explain the implication of results to interested participants. Participants were encourage to take action by going for vaccination, treatment, avoid risk factors and maintain healthy lifestyle as the case may be.

Result: Three hundred and nine (309) individuals, including 215 (69.7%) women and 94 (30.3%) men aged, 16 to 68 years (mean age 26) participated in this study. Most of the participants were undergraduate students, 257 (83.3%) and others were members of staff, 25 (8.2%.). of the University. A prevalence rate of 1.28 % (5/309) of HBsAg was obtained. This prevalence was higher in the age group of 21-24 years. Two hundred and sixty-five (79.7%) were found to be susceptible to HBV (negative results for HBsAg, HBsAb and HBcAb) and 26 (8.39%) had antibody to HBs which showed that they were immune due to HB vaccination. Most participants in this category however , did not remember that they had received the HB vaccine at some point. Past HBV infection (HBcAb) resulting in natural immunity was observed in 6 (1.93%) of participants and 7(2.7%) had unclear interpretation.

Conclusion: Although, this study reports a low prevalence rate of HBV infection, a large number of our young adults are susceptible to the HBV infection. This information and observation calls for prompt intervention and implementation of preventive measures. Apart from the strengthened and successful national immunization programme for infants, the Nigerian government should consider supporting the vaccination of older persons especially the at-risk individuals and our teeming young adult population.

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Prevalence of Hbsag and Anti-Hcv in The General Population in Benue State, Central Nigeria

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Introduction: Hepatitis B and C viruses are major causes of severe illness and death. The global burden of disease due to acute hepatitis B and C and to cancer and cirrhosis of the liver is high (about 2.7% of all deaths) and is forecast to become a higher ranked cause of death over the next two decades.

There have been various estimates of the prevalence of HBV and HCV infection in Nigeria. Some recent studies have shown the prevalence to be lower than previously reported. The different populations studied might have introduced the varying prevalence. To plan for control and treatment of hepatitis, it is important to have a real population data that would inform the policies to be adopted to meet the 2030 plan.

Aims and Objective:
• To determine the Prevalence of Hepatitis B and C in Benue State, Nigeria.
• To determine the prevalence of HBV and HCV and co-infection in rural and urban areas of Benue State

Methodology: 4005 subjects one year and above were selected through a multistage random sampling method to represent all parts of the state. Trained community health extension workers, community health officers and doctors administered a validated questionnaire. Rapid test kits were standardized and used in determining the prevalence of the respective viruses.

Results: HBsAg and anti-HCV were found to be positive in 5% and 1% respectively of subjects screened.

Conclusion: HBV immunization, which has been on for over 10 years, may be having an impact in reducing the prevalence of the virus. If the trend continues, Nigeria may move from high endemicity to intermediate one in the near future.

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Risk of Exposure, Perception and Vaccination Status of Chronic Viral Hepatitis among Health Care Workers in Benue State, North Central Nigeria

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Background: Health care workers are high-risk group for contracting hepatitis B and C virus infections. Hepatitis B and C can be contracted in the hospital setting by needle prick injury, contact with blood (and body fluids) and during invasive medical procedures.

Objective: The aim of this study was to assess the risk of exposure, the concern or perception of the health care worker about getting infected (with HBV and/or HCV) from work place and the level of HBV vaccination practice among them.

Methodology: The study was carried out during a capacity building workshop organized for health care workers from all the Local Government Areas in Benue State. A self-administered questionnaire was distributed to 168 participants in attendance, 138 filled and returned their questionnaires.

Results: 138 questionnaires were properly filled and retuned, 115 (83.3%) have had needle prick injury, 127 (92%) have had blood spilling on them and 118 (85.5%) have been involved in the management of hepatitis patients. 119 (86.2%) are afraid of contracting hepatitis infection from their place of work, 133 (96.4%) are aware of hepatitis B vaccine for adult, 87 (63%) had received at least one dose of hepatitis B vaccine but only 56 (40.6%) received 3 doses.

Conclusion: Health care workers in Benue State are aware of the risk of contracting viral hepatitis at their work place and are concerned about it, but the practice of hepatitis B vaccination is poor among them.

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Stigma/discrimination against hepatitis: newer initiatives

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Issues: stigma/discrimination against HEPATITIS in resource-poor-nations is one major factor for poor HEPATITIS -Treatment-Adherence. We need to devise model to overcome this hurdle. This model's Interventions must include methods to devise better access to low-cost drug supply chain, reduce stigma, improve QOL of HEPATITIS & psychosocial-support. This model trains locally-working-traditional-faith-healers who are backbone of tribal/rural healthcare in developing-nations.

Methodology: This unique initiative is Phase-I trial-project. Project components included physician, medical nurse, counselor & traditional-faith-healers [TFH] . We work in 21 villages with 143 patients enrolled in medical-clinics for participation in this study. TFH advocated awareness raising/spiritual health/ community support. Social and community efforts reduces stigmatization/discrimination

Results: total 16 workshops conducted, shows positive outcome in >78% subjects. Negative attitude of HEPATITIS towards health-care providers analyzed. Among 40 who underwent full ARV course, 70% reported positive outcome/mind-frame. Incidences of forced sex is 40%; physical abuse is 57%; verbal abuse 84%; & threat to job 36% communicated to appropriate higher authorities for action. **Conclusion:** Stigma/discrimination changes attitudes of HEPATITIS towards ARV-therapy & reduces compliance. Involvement of local/respected faith-based leaders for AIDS control and creation of environment where faith plays important role.

Conclusion/Recommendations: AIDS-care-providers play vital role for sensitization of general-population/health-care-workers towards sex workers/HEPATITIS . study results demonstrated that multi-sectoral and multi-disciplinary approach by NGO's with community participation will improve ARV-treatment outcome & overall QOL of HEPATITIS -affected. Our model seeks to explore power faith approach in promoting love, compassion and support to HEPATITIS positive community. conferences should be platform to show needs/concerns of HEPATITIS about ARV treatment adherence from our resource-poor-nations. We need a strong platforms to interact/exchange ideas with HEPATITIS researchers to work on common guidelines to overcome stigma associated with HEPATITIS.

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Cascade Plasmapheresis in Combined Therapy for Hepatitis C Virus Mono-Infection

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Background: Viral hepatitis is one of the leading places of infectious pathology. This is due to an increase in the frequency of severe forms of the course of the disease and preserved to date, high mortality. To analyze the effectiveness of cascade plasmapheresis (CP) sessions in the treatment of patients with liver failure due to chronic viral hepatitis C.

Methods: Examined 15 patients with signs of liver failure on the background of chronic viral hepatitis C, genotype 1b, with pronounced initial viral activity (quantitative polymerase chain reaction (PCR): the number of copies of RNA in 1 ml, on average, was 10.3 ± 3.4 x 106 IU / ml), which was carried out CP course. The age of patients ranged from 30 to 56 years. The CP course was conducted using a «Spectra Optia» apparatus from «Gambro Bct.» (USA), using «Evaflux 5A20» plasma fractionators from «Kawasumi Laboratories Inc.» (Japan), and included three CP sessions with an interval of 72 hours, against the background of complex antiviral therapy using various specific drugs. One volume of circulating plasma (CP) was processed in a patient during one CP session. The volume of replacement therapy during the session, as well as after its completion, was 500 ml and included: 0.9% sodium chloride solution - 400 ml; 10% albumin solution - 100 ml. In all patients, the course of CP sessions was smooth, various reactions were not observed. The effectiveness of the PF course was monitored based on the results of monitoring of clinical and biochemical blood parameters (total blood protein

and albumin fraction, total bilirubin and direct bilirubin, transaminases, coagulograms), as well as quantitative PCR.

Results: In all patients, when analyzing clinical and biochemical monitoring, normalization of the studied parameters was noted, so the level of total and direct bilirubin after the course of CP, on average, decreased by 23.4 ± 2.1%, the activity of transaminases, respectively, by 29.7 ± 3.6%. The sizes of the hepatitis C virus are 550-650 angstroms, and the pores of the Evaflux 5A20 plasm fractionator are 300 angstroms, which makes it possible to remove viruses from plasma. According to the monitoring of quantitative PCR in the studied patients, the number of RNA copies in 1 ml after the CP course decreased by an order of magnitude and averaged 5.1 ± 2.7 x 105 IU / ml. Substitution therapy with 10% albumin solution -100 ml, after each CP session, provided adequate normalization of albumin losses during the CP session, because «Evaflux 5A20» plasma fractionators remove only macromolecules, with albumin losses of 2-5%.

Conclusion: The inclusion in complex therapy of patients with liver failure due to chronic viral hepatitis C, genotype 1c, cascade plasmapheresis, contributes to the regression of manifestations of liver failure and the effective removal of the virus from the body.

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