Abstract PMO-151 Figure 1 HCV free survival in patients who achieve SVR.

currently treated. Antiviral therapy for injecting drug users with HCV in North East London is provided by a Blood Borne Virus nursing team based in community outreach clinics. We aimed to examine HCV and drug related outcomes in patients treated by this service.

Methods A retrospective notes analysis was performed of all patients treated between September 2006 and June 2011. Data were collected on demographics, HCV treatment, health and social outcomes. Minitab 16 and Prism 5 were used to perform statistical analysis. The Wilcoxon signed rank test, unpaired T test, and Mann-Whitney test were used to analyse drug and alcohol and demographic outcomes.

Results 152 patients were treated. 77 were active IDU's and 75 were ex-IDU's. 80% were male. 45% were genotype 1, 54% were genotype 2 or 3. 81% of patients were compliant with treatment. 105 patients (69%) achieved an end of treatment response (ETR) Sustained viral response (SVR) rate was 58%. Overall survival post SVR was 100% and HCV free survival was 98%. Two patients were re-infected at 14 and 51 months after treatment (See Abstract PMO-151 figure 1) five deaths occurred 21, 32, 35, 37 and 44 months after treatment finished. All deaths were in non-responders. No deaths were attributable to treatment. There was no significant difference in demographics or treatment outcomes between active and ex-IDU's. Full data on heroin injection use was available in 133 patients, crack use in 58 patients and alcohol in 72 patients. Overall heroin injection use pre- and post-treatment reduced from 51% of patients to 38% ($p<0.0001$), crack use reduced from 34% to 19% ($p<0.0001$), and alcohol use from 38% to 32% ($p=0.0035$).

Conclusion This is the largest study published to-date examining the impact of antiviral therapy in patients actively using illicit drugs. Of importance long term follow-up data showing low re-infection rates, a significant reduction in illicit drug use after therapy and excellent disease free and overall survival in patients who achieve SVR is presented. Our findings confirm previous, small scale studies showing that effective treatment for injectors is possible within the appropriate clinical setting.

Competing interests None declared.

PMO-152 CHARACTERISING THE IMMUNE STATUS OF HBV-SPECIFIC CD4+ AND CD8+ T-CELLS PRODUCING IL-17 IN PATIENTS WITH CHRONIC HEPATITIS B (CHB) VIRUS INFECTION

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Introduction Virus specific CD4+ and CD8+ T-cells are essential in the control of HBV infection and their functions are tightly regu-

lated by immune homeostatic control mechanisms, such as the programmed death (PD1) pathway, Tim3 and CD244. These pathways maintain the equilibrium between efficient control of viral replication and unnecessary inflammatory/immunopathological damage. Recent studies have described a unique subset of T-cells which produce IL-17. Preliminary studies suggest that IL-17-producing T-cells maybe involved in inflammation and liver damage but largely the role of HBV-specific IL-17 producing CD4+(Th17) and CD8+(Tc17) T-cells during chronic HBV infection remains elusive. Moreover, the impact of immunoregulatory signatures on these T-cells are unknown. The aim of this study was to characterise the role and immune status of virus-specific CD4+ Th17 and CD8+ Tc17 cells in CHB patients.

Methods Peripheral blood mononuclear cells were collected from ten treatment naïve HBeAg+ CHB patients and ten healthy controls. PBMC's were stimulated with recombinant HBcAg/HBsAg and PMA/Ionomycin. The frequency of total and virus-specific CD4 and CD8 T-cell producing IL-17/IFN γ and the expression of T-cell immunoregulatory molecules PD1, Tim3 and CD244 was analysed by flow cytometry.

Results Total number of CD8+ T-cells producing IL-17 was not different between chronic HBV patients and healthy controls. However HBV-specific Tc17 cells were significantly higher in CHB-patients compared to controls ($p=0.007$). Total Th17 were also higher in CHB-patients compared to controls ($p=0.03$) however the difference was more pronounced in HBV-specific CD4+ Th17 ($p=0.003$). Upon analysis of the immune-homeostasis signatures we found a higher expression of PD1 and CD244 on HBV-specific CD4+ and CD8+ T-cells producing IFN γ ($p<0.001$ and $p=0.026$ respectively) in CHB patients. No expression of Tim3 was found on these cells. However, HBV-specific Th17 cells in the CHB patients did not express PD1 or CD244 but had levels of Tim3 significantly lower than healthy controls ($p=0.027$).

Conclusion This study reveals the involvement of virus-specific Th17 and Tc17 in the pathogenesis of chronic HBV infection. Interestingly, we observe differential patterns of immunoregulatory signatures operational within the populations of virus-specific T-cells producing IFN γ and IL-17 which may influence their role in HBV disease.

Competing interests None declared.

PMO-153 HEPATITIS A VIRUS VACCINATION IN PERSONS WITH HEPATITIS C VIRUS INFECTION: CONSEQUENCES OF IMPLEMENTATION IN LOW INCIDENCE AREAS

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Introduction Hepatitis A virus (HAV) superinfection in persons with hepatitis C virus (HCV) infection has been associated with a high mortality rate. Consequently HAV vaccination is recommended by many authorities for this patient group. The incidence of HAV is low and has been reducing in many areas, including Western Europe and the USA. The aim of this study was therefore to determine the cost and clinical consequences of routine vaccination in persons with HCV infection.

Methods To determine the mortality risk of HAV superinfection a meta-analysis including studies reporting mortality in HCV infected persons was done using RevMan 5.1 (Cochrane Collaboration). Data were extracted independently by two investigators and recorded on a standardised spreadsheet. The pooled mortality estimate was used

to determine the number needed to vaccinate (NNV) to prevent mortality from HAV. The total vaccine cost was also calculated. Baseline mortality and cost data from the US were used as an example.

Results 239 studies were identified using a defined search strategy. From those, 11 appeared to be relevant to the study and of these 7 were suitable for inclusion in the meta-analysis. The pooled OR for mortality risk in HAV superinfection of HCV infected persons was 7.23 (95% CI 1.24 to 42.12) with significant heterogeneity ($I^2=56\%$, $p=0.03$) between studies. Case-fatality rates are however low, and in the US at the last estimate (2007) the number of deaths from HAV in the general population was 34 per year (0.2/1 000 000 population). Using the pooled OR for mortality that translates to 1.4 deaths per 1 000 000 susceptible persons with HCV per year. The NNV to prevent 1 death per year is therefore 814 849 assuming 90% vaccine uptake and 94.3% vaccine efficiency. The vaccine cost for this totals \$162 million, or \$80.1 million per death prevented per year.

Conclusion These data challenge the utility of routine HAV vaccination in HCV infected persons and its incorporation into clinical practice guidelines. HAV vaccination of all HCV infected persons in low incidence areas is likely to expose many individuals to an intervention that is of no direct benefit.

Competing interests None declared.

PMO-154 PLASMA HBSAG LEVELS DECLINE WAS SIMILAR DURING SUBSEQUENT PEGYLATED INTERFERON AND NUCLEOS(T)IDE ANALOGUES TREATMENT IN CHRONIC HEPATITIS B PATIENTS

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Introduction Pegylated interferon (Peg-IFN) therapy responses in chronic hepatitis B (CH-B) are associated with decline of HBsAg plasma levels (qHBsAg) ($>10\%$ in HBeAg- and $>0.5 \log_{10}$ IU/ml in HBeAg+) and HBV DNA decrease $>2 \log_{10}$ IU/ml during the first 6 months of therapy. In contrast, qHBsAg decline is less pronounced, but with sharper HBV DNA decline on therapy with nucleos(t)ide analogues (NA). The previous studies comparing qHBsAg and HBV DNA kinetics between Peg-IFN and NA treatments were performed on variable cohorts, but not on a monocentric single cohort of patients undergoing consecutively variable courses of therapy.

Aims To compare the kinetics of qHBsAg and HBV DNA levels before and during therapy; initially with Peg-IFN and then after at least a 6-month break (median 15 months) with subsequent NA therapy in the same cohort of CH-B patients.

Methods qHBsAg levels by Abbott ARCHITECT® assay and HBV DNA by real-time TaqMan PCR [both $\log_{10}$ IU/ml] were quantified in serial samples at baseline, treatment week 12 (TW12), TW24, TW48. HBeAg loss/anti-HBe seroconversion were evaluated at the same time-points. All results are presented as medians.

Results Four Peg-IFN patients (20%) achieved anti-HBe seroconversion, in contrast to only 1 NA patient (5%). At baseline, qHBsAg and HBV DNA levels were similar between Peg-IFN and NA (3.92 vs 3.72 and 6.21 vs 5.91). At TW12 and TW24, qHBsAg did not change in Peg-IFN and NA treatment (3.86 vs 3.68 and 3.57 vs 3.49 respectively), but HBV DNA dropped significantly during NA therapy only (4.55 vs 2.29 and 4.53 vs 1.23, both $p<0.01$). At TW48, qHBsAg remained unchanged in both treatments (3.48 vs 3.46), but HBV DNA was undetectable in NA patients (0 vs 4.68, $p<0.01$). Only NA therapy achieved complete virological response (HBV

DNA <20 IU/ml) in six patients (30%) at TW12, 8 patients (40%) at TW24 and 15 patients (75%) at TW48 (all $p<0.05$). Only patients with qHBsAg decline by $>0.5 \log_{10}$ IU/ml by TW24 achieved anti-HBe seroconversion in both treatments.

Conclusion HBsAg decline $>0.5 \log_{10}$ IU/ml by TW24 was predictive of anti-HBe seroconversion irrespective of therapeutic approach. Although plasma HBsAg kinetics was similar during Peg-IFN or NA therapy in Peg-IFN non-responders, HBV DNA viral load declined significantly only during NA therapy from TW12 in the same cohort of CH-B patients.

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PMO-155 LOW PRE-TREATMENT HBSAG PLASMA LEVELS, ON THERAPY HBSAG LEVELS DECLINE AND IP-10 CONCENTRATIONS INCREASE PREDICT RESPONSE TO TREATMENT IN TOLERANT CHILDREN WITH CHRONIC HEPATITIS B

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Introduction Changes in HBsAg plasma levels during antiviral therapy with pegylated interferon (IFN) predict response in chronic hepatitis B (CH-B). High baseline plasma levels of inducible interferon- γ protein 10 (IP-10) predicted HBsAg loss in CH-B adults on nucleos(t)ide analogues (NA) therapy. No data are available on the relationship between IP-10 and HBsAg plasma levels in children with infancy-acquired CH-B on combination therapy.

Aims To investigate whether baseline plasma IP-10 levels and their changes during therapy can help to predict HBsAg loss in children with infancy-acquired CH-B on combination therapy with lamivudine (LAM) and IFN- α .

Methods Patients: 23 children (eight males, median age 10.2 yrs) with infancy-acquired CH-B (all HBeAg+), treated for 52 weeks [lead-in LAM (3 mg/kg/d) for 9 weeks; LAM plus IFN- α (5 MU/m² TIW) from week 9 for 44 weeks], were divided according to treatment response: five responders (R = anti-HBs seroconversion) and 18 non-responders (NR).

Methods Plasma IP-10, HBsAg and AST levels were measured in serial samples before (treatment week 0, TW0), during (TW9, TW28, TW52) and after (follow-up week, FUW24) therapy by ELISA [pg/ml], Abbott ARCHITECT® assay [$\log_{10}$ IU/ml] and AutoAnalyser [IU/l]. The results are presented median.

Results Baseline IP-10 levels were similar in R and NR (123 vs 99, $p=0.4$), but increased significantly in R than NR at TW28 (220 vs 79, $p=0.04$). Baseline HBsAg levels were lower in R than NR (4.36 vs 4.74, $p=0.02$), but similar in R and NR at TW9 (4.34 vs 4.66, $p=0.1$) and markedly lower in R than NR during IFN add-on therapy and therapy follow-up (TW28: 2.34 vs 4.33; TW52: 0 vs 4.08 and FUW24: 0 vs 4.51; $p<0.01$ for all). Baseline AST levels were similar in R and NR (29 vs 31, $p=0.6$) and tended to be higher in R than NR at TW28 (47 vs 32, $p=0.07$). At TW28, there was an inverse correlation between IP-10 and HBsAg levels ($r=-0.45$, $p=0.03$), but no correlation with AST.

Conclusion Low baseline HBsAg levels, HBsAg plasma levels decline and IP-10 concentrations increase during interferon add-on at TW28 predict HBsAg loss and response to therapy in tolerant children with CH-B.

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