Introduction

CHIPS is a multi-centre cohort study of HIV-infected children in the UK and Ireland. It was established in 2000 and is a collaboration between clinics caring for HIV infected children, the National Study of HIV in Pregnancy and Childhood (NSHPC) at the Institute of Child Health, and the MRC Clinical Trials Unit at University College London which also coordinates the Paediatric European Network for the Treatment of AIDS (PENTA) trials.

The main objectives of CHIPS are to describe clinical, laboratory and treatment data for these children, and to describe the use of paediatric HIV services. CHIPS aims to enhance the exchange of information and expertise between clinics, in order that standardised and high quality paediatrician-led care can be delivered to all HIV-infected children in the UK and Ireland.

CHIPS is primarily funded by the NHS London Specialised Commissioning Group.

How CHIPS works

Children born to HIV-infected women or those found to have HIV infection after birth are initially reported to the NSHPC. The NSHPC then notifies CHIPS of any children with confirmed infection, and for each of these children baseline and annual follow-up CHIPS forms are sent to the main clinic of care for completion.

Summary data to the end of March 2018¹

A total of 2,151 children were reported to CHIPS by the end of March 2018, comprising virtually all of those receiving HIV-related care in the UK and Ireland from 2006 onwards. Overall, 42% were born in the UK or Ireland, 56% were born abroad and 2% unknown. For those born in the UK or Ireland, the median age at first presentation has been relatively constant at around 6 to 18 months although 17% did not present until ≥5 years of age. For children born abroad, the median age at first presentation ranged from 9 to 12 years among those first presenting to care between 2009 and 2017. In the last five years (2014-2018) around 25-60 newly diagnosed children have been reported each year.

By the end of March 2018, 116 (5.4%) children were known to have died while receiving paediatric care, and of these deaths, 96 occurred prior to 2008, nine were in 2008, six in 2009, one in 2010, two in 2011 and one in 2016. Overall, 122 (5.7%) children were reported to have

¹ Numbers are based on reports received rather than children seen to the end of March 2018. 2017/18 data are subject to reporting delay and may therefore be incomplete.
left the country and 38 (1.8%) were lost to follow up. To date 1074 (50%) young people have left paediatric HIV care and transitioned to adult clinics, with 50-120 patients transferring each year between 2009 and 2017. The median age at transfer has been relatively steady at around 18 years. A total of 801 patients were alive and in active follow-up at a paediatric clinic. Of these, just over half (54%) were female, 48% were born in the UK or Ireland, 77% were of black ethnicity, and the vast majority (91%) were known to have been infected through mother-to-child transmission. Forty-five per cent of children were being seen at clinics in London, 42% in the rest of England, 3% in Scotland, 2% in Wales, 1% in Northern Ireland and 6% in the Republic of Ireland. The median age at last visit was 14.9 years (IQR, 11.6, 16.9).

The overall rate of hospital admissions in the cohort has continued to decline from 69 per 100 child years in 2000 to 7.5 in 2016 and has risen slightly to 9.6 in 2017 (data for 2017 subject to reporting delay and may not be complete). Viral load suppression among those starting combination ART naïve has improved with calendar time: 42% suppressed viral load ≤50c/ml at 12 months after start of ART in 2000-2004, increasing to 74% in 2010-2014 and 76% for 2015 onwards. Less than one-quarter (22%) of patients had ever progressed to CDC stage C and another quarter (23%) to CDC stage B while in paediatric care. Among patients with a follow up visit since January 2016 (n=764), 31 children (4%) were ART naïve, the majority of whom (n=24, 77%) were aged ≥10 years at time of last visit. Among those on ART at last visit (n=713), 5% of patients were on mono or dual therapy, 90% were on a 3-drug combination antiretroviral regimen (excluding ritonavir booster) and 5% were on regimens including ≥4 drugs.

As part of our outcome measures reported to NHS England, and based on data for 2015 (more recent data are likely to be incomplete due to the time lag in reporting to CHIPS), we observed the following outcomes across all children in the UK/Ireland:

- Retention in care: 28 of the 30 (93%) children newly diagnosed with HIV in 2015 had ≥2 CD4 and ≥2 VL measurements within 12 months of diagnosis
- Retention on ART: 100% of the 28 children newly starting ART in 2014 remained on ART 12 months later
- Immunological status: Among children aged <5 years, 100% (n=23/23) of those on ART and 10% (n=1/10) of those not on ART had ≥1 CD4% ≥25% in 2015. Among children aged ≥5 years, 95% (n=566/598) of those on ART and 71% (n=61/86) of those not on ART had ≥1 CD4 ≥350 cells/mm3
- Viral suppression on ART: Among patients on ART through 2015 (n=675), the proportion with confirmed virological suppression <400 copies/mL was 87%, and <50 copies/mL was 78%.

2 Viral load ≤ lower limit of detection of the assay if the lower limit was >50 but ≤400c/ml.
CHIPS Annual Report 2017/18

GDPR

We recently wrote to you to update you about some changes we are making to the way we manage patient data in the CHIPS cohort in response to the General Data Protection Regulation (GDPR). To summarise, we are currently piloting the use of follow-up forms with reduced identifiers (removing hospital number, so date of birth (DOB) is the only piece of identifiable data). If successful, we will use the same format for all follow-up forms in 2019. To facilitate clinics identifying the right patients we will provide a new CHIPS Study File which will contain a list of each patient’s CHIPS identification number, DOB, initials, hospital number and sex.

In addition, we will now be using a secure system called Galaxkey to transfer any documents or emails containing patient identifiable data. Please contact us if you have any problems gaining access to these emails and we can provide instructions and/or IT support. Please only use the CHIPS identification number in emails to us about patients. If you do not know a patient’s CHIPS identification number, please call us (020 7670 4612).

Developments 2017/18

Follow-up into adult care – AALPHI and CHIPS+

• AALPHI: We have now finished the second round of AALPHI (Adolescents and Adults Living with Perinatal HIV) interviews. Participants had two 2-hour interviews with a research nurse over a five year period. In total, we interviewed 355 young people for interview 2 out of the 419 young people in interview 1 (91% of PHIV and 80% of HIV-negative affected young). We will be liaising with AALPHI clinics in the future to help our new trial manager gain access to complete the AALPHI clinical data collection. Analyses from interview 1 are ongoing and data cleaning is in progress for interview 2 data. We have recently published findings on anxiety and depression in AIDS Care (Le Prevost M, Arenas-Pinto A, Melvin D et al (2018) Anxiety and depression symptoms in young people with perinatally acquired HIV and HIV affected young people in England, AIDS Care, 30:8, 1040-1049, DOI: 10.1080/09540121.2018.1441972). Our findings on transition experience were presented at the 9th International Workshop on HIV Paediatrics in Paris (see publications list below). AALPHI has been funded by the Monument Trust and PENTA.

• AALPHI dissemination: We have recently secured a small grant from the MRC (MRC Engagement in Science Activities Seed Fund) to run focus group discussions on how best to disseminate findings from AALPHI. The work is being carried out in partnership with CHIVA, and the focus groups will be run with young people from the Youths Trials Board (a group of young people with perinatal HIV who have been trained by CHIVA to advise on clinical trials and research) and some AALPHI participants.

• CHIPS+: The CHIPS+ study protocol has received ethics approval in England, Scotland and Ireland. We are currently processing applications for R&D approvals at clinics throughout the UK and Ireland. To date 16 clinics are open to recruitment and 35 participants have been enrolled into CHIPS+, in addition to the 220 who consented to the former UK Register and who are being transferred over. The CHIPS+ study will enable us to follow-up the whole of
the CHIPS cohort as they transition to adult care. It is being supported by CHIPS funding from the CHIPS pharmacovigilance work, and we are seeking longer term funding options.

- **CHIPS, UK CHIC and Public Health England data linkage:** Our PhD student, Hibo Asad, is presenting her preliminary results from her work linking patient level data in CHIPS with UK CHIC and Public Health England’s national surveillance data of adult patients with HIV in the UK at the upcoming 10th International Workshop on HIV Pediatrics in Amsterdam in July 2018. She will present her findings on “Severe immunosuppression and viral failure in adult care among antiretroviral therapy-experienced young people with perinatal HIV in the UK” (oral presentation), and “Mortality and AIDS-defining events among young people with perinatal HIV following transition to adult care in the UK” (poster discussion).

- Please see our newly updated CHIPS website at [www.chipcohort.ac.uk](http://www.chipcohort.ac.uk) for a full list of publications, most of which are available in Open Access.

**CHIPS form returns and slide sets**

- For 94% of children followed in CHIPS, a follow up form was received for 2017-18. Thank you to all contributing clinics and staff for you for your fantastic collaboration and ongoing support.
- Slide sets containing annual feedback data for the overall cohort, regions and by clinic were sent to all contributing clinics in June 2018. Please send us any feedback and comments.
- We continue to support commissioning needs by producing and refining outcome measures for paediatric care, and responding to ad hoc commissioner requests.

**Recent publications/presentations and ongoing analyses in CHIPS**

**CHIPS cohort papers**

- Our preliminary analyses on the safety and effectiveness of dolutegravir (DTG) in children and adolescents in CHIPS has been selected for poster presentation at the upcoming 10th International Workshop on HIV Pediatrics in Amsterdam in July 2018.
- Our analyses on the cascade of care for children and adolescents with HIV in the UK and Ireland in 2015 was selected for oral presentation at the CHIVA 2018 meeting. The analysis is being updated with data through to 2017 and a manuscript is being prepared.

**CIPHER global collaboration**

The first global paediatric cohort collaboration, called CIPHER ([http://www.iasociety.org/cipher.aspx](http://www.iasociety.org/cipher.aspx)), and sponsored by the International AIDS Society (IAS), is a collaboration of international paediatric cohort collaborations. It has recently published its first two papers on the global epidemiology of adolescents living with HIV. The second project
on the duration of first-line therapy has a manuscript under review at Lancet HIV. Members of the CHIPS team (Ali Judd and Jeannie Collins) have co-led these projects. The results of the adolescent study were published in PLOS Medicine and JIAS:


Further analyses on the CIPHER data are underway, exploring (i) response to second line ART, (ii) growth and immunology of adolescents with perinatal HIV infection, and (iii) trends in characteristics of children and adolescents on ART to inform UNAIDS estimates and forecasting drug needs, with continued involvement of key members of our CHIPS team. Preliminary results of the response to second line analysis has been selected for oral presentation at the 10th International Workshop on HIV Pediatrics and at the 22nd International AIDS Conference in Amsterdam, July 2018.

**IeDEA and COHERE collaboration**

CHIPS data have contributed to other global analyses, and results of a collaboration with IeDEA and COHERE were recently published:


**European Pregnancy and Paediatric HIV Cohort Collaboration (EPPICC)**

We continue to lead analyses of data from EPPICC individual patient meta-analyses. These have resulted in two recent publications on AIDS and mortality after ART start, and switch to second line, published in PLOS Med and Clinical Infectious Diseases, respectively:


A number of other analyses are ongoing, including virologic and immunological response, outcomes in migrant children, growth and obesity, long term non-progressors, malignancies, trends in use of new antiretroviral drugs and transition from paediatric to adult HIV care, all across Europe and Thailand. Preliminary findings from our growth analyses will be presented at the 10th International Workshop on HIV Pediatrics in July 2018.

CHIPS continues to contribute data to the EPPICC pharmacovigilance programme. This year we are in the final year of a 5 year study investigating the usage and long-term safety of etravirine, which is a Post Authorisation Safety Study (PASS) to be submitted to the European Medical Agency (EMA).

Staffing update

- CHIPS/CHIPS+ team members: We welcome our new Data Manager Chathurika Rajapakse. Donna and Chathu will be working together across the CHIPS and CHIPS+ studies. We also have a new Study Manager for CHIPS+, Aziza Mirza who will be working with Kate Sturgeon (senior study nurse), helping clinics prepare for study recruitment and data collection.
- CHIPS Steering Committee: We welcome new members who have recently joined the Steering Committee: Conor Doherty (NHS Greater Glasgow and Clyde), Julia Kenny (Guy’s and St Thomas’ NHS Trust), Paddy McMaster (North Manchester General Hospital).

Published papers and conference presentations since October 2017

**Papers led by CHIPS/CHIPS+/AALPHI:**


**Collaborations with other groups:**


**Recent and upcoming conference presentations (Oct 2017 - present)**

Collins IJ, Crichton S, Judd A on behalf of the Collaborative HIV Paediatric Study (CHIPS) Steering Committee. Safety and effectiveness of dolutegravir (DTG) in children and adolescents with HIV in the UK/Ireland. 10th International Workshop on HIV Pediatrics, Amsterdam, Netherlands, 2018 (poster).


Asad H, Sabin C, Collins IJ, Goodall R, Judd A on behalf of the Collaborative HIV Paediatric Study (CHIPS) Steering Committee and the UK Collaborative HIV Cohort (UK CHIC) Study Steering Committee. Severe immnosuppression and viral failure in adult care among antiretroviral therapy-experienced young people with HIV in the UK. 10th International Workshop on HIV Pediatrics, Amsterdam, Netherlands, 2018 (oral).

Asad H, Collins IJ, Goodall R, Sabin C, Judd A on behalf of the Collaborative HIV Paediatric Study (CHIPS) Steering Committee and the UK Collaborative HIV Cohort (UK CHIC) Study Steering Committee. Mortality and AIDS-defining events among young people with PHIV following transition to adult care in the UK. 10th International Workshop on HIV Pediatrics, Amsterdam, Netherlands, 2018 (oral).

CHIPS Annual Report 2017/18

- Asad H, Sabin C, Collins IJ, et al. on behalf of the CHIPS and UK CHIC Steering Committees. Severe immunosuppression in adult care in antiretroviral therapy-experienced young people with perinatal HIV in the UK. 22nd International Workshop on HIV and Hepatitis Observational Databases (IWHOD), Fuengirola, Spain, March 2018 (oral).
- Asad H, Collins IJ, Goodall R et al. on behalf of the CHIPS and UK CHIC Steering Committees. Linking patients with perinatal HIV across paediatric and adult care in the UK. 22nd International Workshop on HIV and Hepatitis Observational Databases (IWHOD), Fuengirola, Spain, March 2018 (oral).
- Crichton S, Belfrage E, Collins IJ, et al. on behalf of EPPICC. Long term growth in HIV-infected children and adolescents on ART in Europe and Thailand. 22nd International Workshop on HIV and Hepatitis Observational Databases (IWHOD), Fuengirola, Spain, March 2018 (poster).

Please visit our website (http://www.chipscohort.ac.uk/publications/) to obtain the full list of all publications and talks.

Forthcoming CHIVA meetings

CHIVA runs a series of educational meetings, held bi-monthly in central London. For further information please contact the MRC Clinical Trials Unit at email: mrcctu.hivchiva@ucl.ac.uk.

Contacts for further information

Please visit our website for further information about CHIPS: www.chipscohort.ac.uk

Alternatively, please contact the CHIPS team, by email: chips.mrcctu@ucl.ac.uk