HEPATITIS B & C IN CHILDREN
Ways to promote and offer testing

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Viral Hepatitis B & C in children

- World wide diseases
- Acute Infection
  - Rare in childhood
- Carrier Status
  - Chronic Asymptomatic Infection
- Lifetime risk of chronic liver disease
- Hepatocellular Carcinoma

Children with HCV & HBV in the UK

- No accurate figures for numbers of infected children
- Children screened/referred on ad-hoc basis
- Shamaz Ladhani (HPA)

  Surveillance of children with Chronic HBV
- Helen Harris (HPA)

  National HCV register

BCH HCV/HBV Referrals 1990 - 2011

	HBV	HCV
Total case load	359	201
New referrals 2006 - 2011	105	66
Median Age (yrs)	9.3	5.2
Ethnic Origin		
Caucasian	9.5%	53.0%
Eastern European	3.8%	9.1%
SE Asians	34.3%	31.8%
Chinese	17.1%	1.5%
African	28.6%	0%
Arab	5.7%	0%
Mixed	1%	4.6%

BCH – HBV Vaccine Failures

- 1997-2011:
- Vaccine failures 40
- Born in UK = 39/40
- M25 : F15
- Incorrect vaccine schedule = 23/40
- Correct schedule = 11/40

Natural history of Chronic Hepatitis B in the West Midlands 1984-2000

	Never vaccinated	**Vaccinated**
	N = 49	N = 24
Age yrs (Range)	12.5 (2-20)	5.6 (2-10)
M : F	26 : 23	13 : 11
HbeAg +ve	29 (59)	19 (80)
Mean HBV DNA	122 (0 – 527)	170 (0-616)
Immune (%)	3 (6)	0

Boxall EH, Sira J, Kelly DA. Arch Dis Child Fetal Neonatal Ed. 2004; 89: 456-60;
Boxall EH, Sira J, El-Shukri N, Kelly DA. J Infect Dis 2004 ; 190: 1264-1269

Children with HBV in the UK

Shamaz Ladhani (HPA)

- Surveillance of children with Chronic HBV

448 childhood CHB cases in England

- Estimated prevalence of 4.6/100,000

195/448 (44%) referred to a specialist centre

325 children:164 (50%) overseas

Sub-Saharan Africa/Eastern Europe.

216 (66%) asymptomatic:

60 (18%) antiviral therapy

Co-infection (9)

Epic B Study of HBV infection in children

	Asian n= 961	**Western n = 679**
Median Age	12	12.5
Vertical Transmission	45%	28%
Failed Vaccination	57%	37%
HBeAg pos	63%	45%

Kelly D, Jonas M, Pediatric epidemiological study for chronic hepatitis B (CHB) across the world AASLD 2011

Hepatitis B Carriers

- Monitor to prevent/treat complications
- Consider intervention with antivirals to prevent future liver disease
- Provide education/counselling
- Maintain “normal” life
  - School/nursery
  - Career choice

Choice of therapy for Hepatitis B

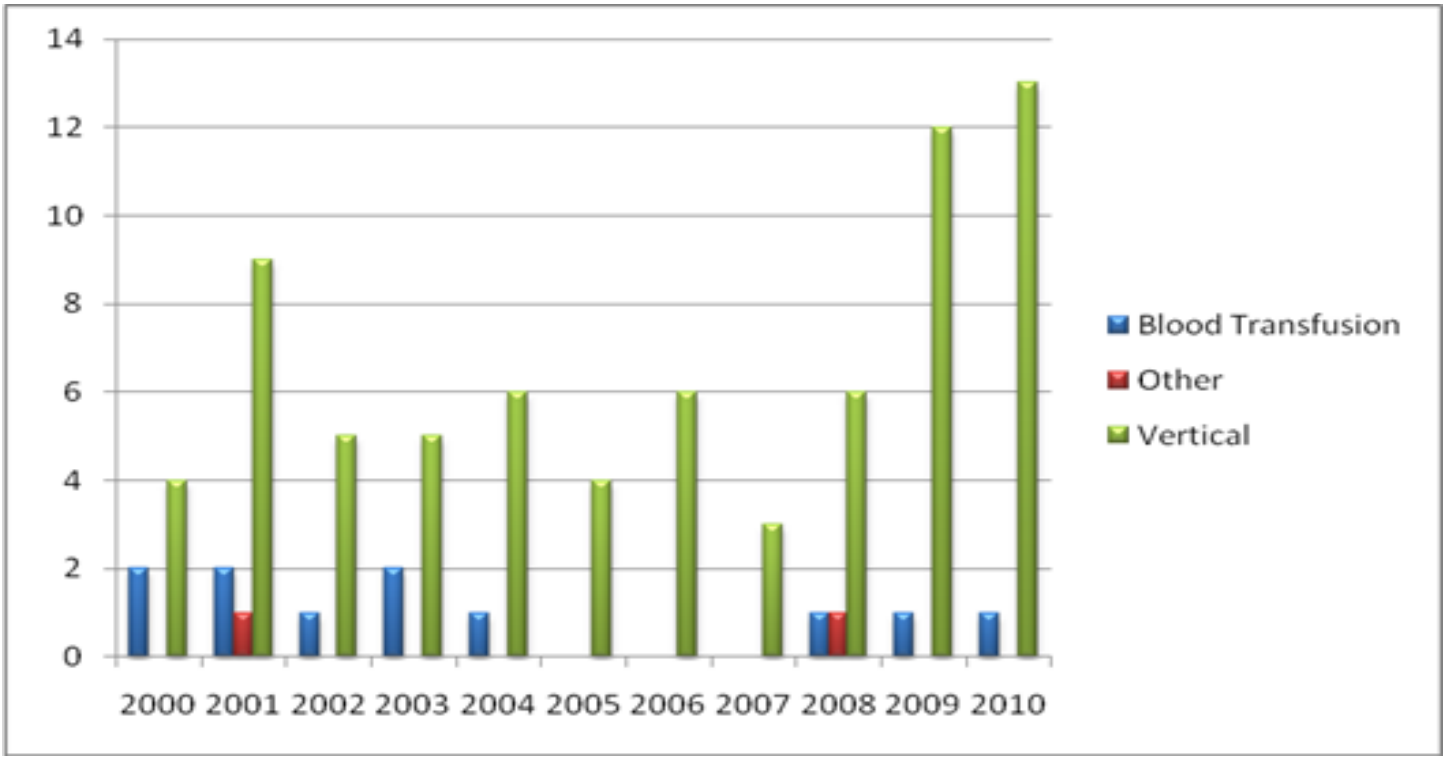
- Treatment effective in 25-30%
- EMA guidelines
  - Treat only in clinical trial vs placebo
- Interferon/Pegylated IFN
- Nucleoside Analogues
  - Lamivudine (licensed > 12yrs)
  - Adefovir (not recommended in children)
  - Tenofovir (licensed for HIV)
  - Telbivudine / Entecavir (trials)

Need for identification of HBV in children in UK

- Main infection route
- Immigrants:
  - Eastern Europe/Africa/S Asian
- Vertical transmission from mother
  - Failed vaccination
- Less likely to clear spontaneously than adults
- Therapy only 30% effective
- Source of infection to close contacts
- Prevention of infection before risk behaviour

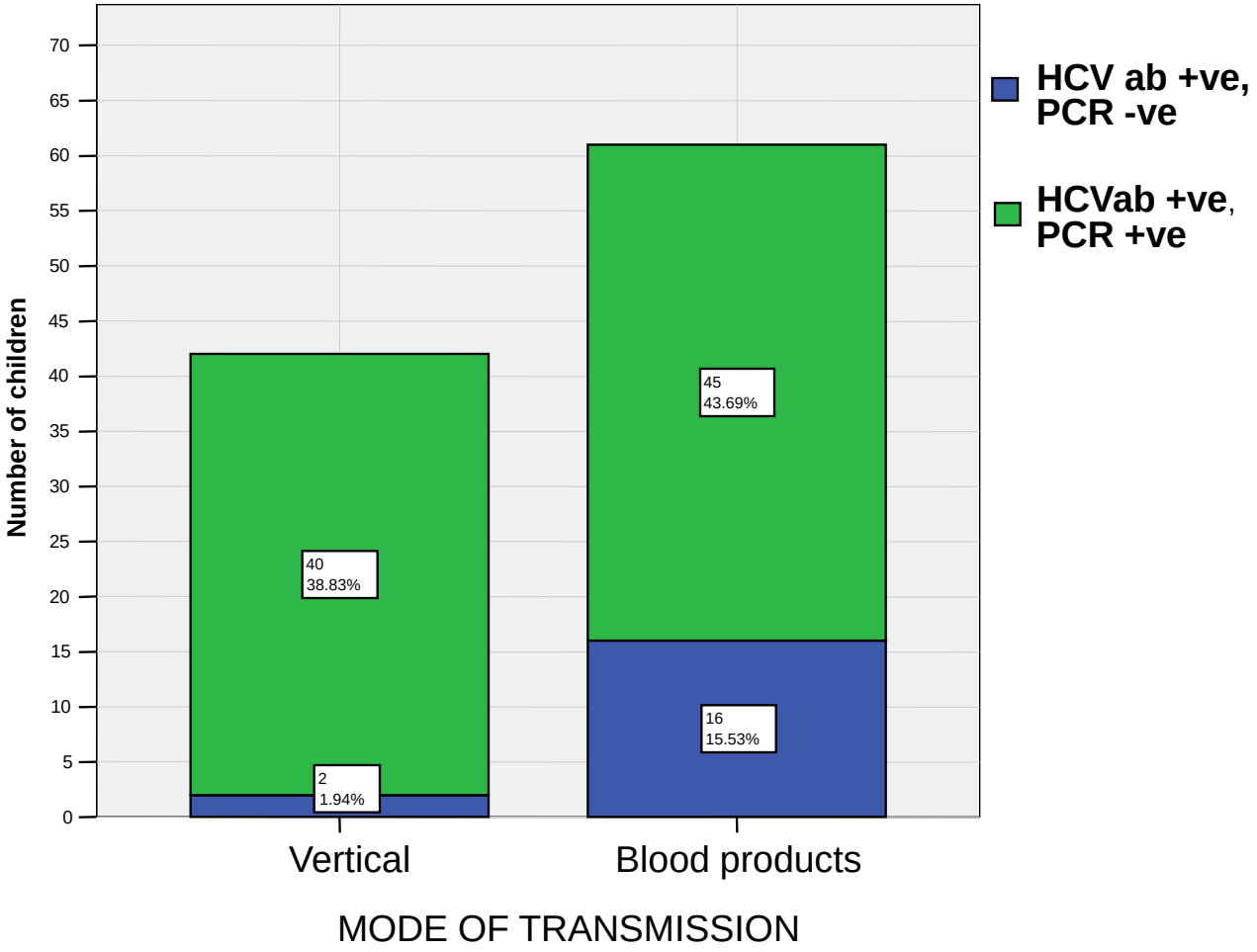
Hepatitis C - Children

Referrals to BCH – UK trend



Increasing trend of referrals of vertical transmission in children

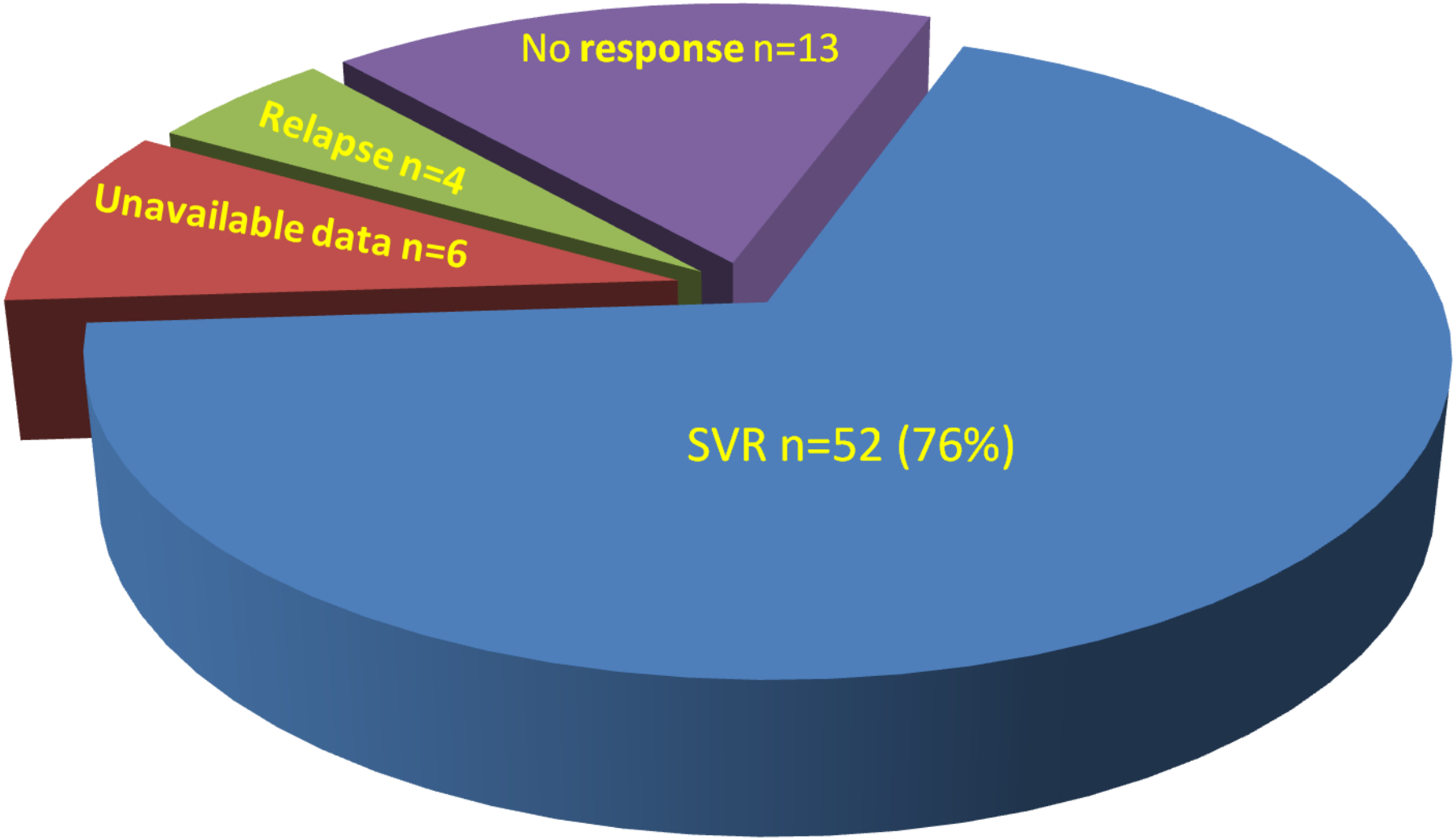
Spontaneous seroconversion compared to route of transmission (BCH)



Response to combination therapy with Peg IFN/Rib (24-48 w) in children with Hepatitis C

	N	**All %**	**1(a&b)**	**2/3**
Wirth	61	59	48	100
Jara	30	50	44	100
Schwarz	55	53	47	80
Sokal	65	68	59	100
Wirth	107	65	53	93

Treatment outcome in children treated for HCV in UK n=(75)



Need for identification of HCV in UK

- Main infection route
  - Vertical transmission from IDU mother
  - Immigrants: Eastern Europe
  - Less likely to clear spontaneously

- Effective therapy
  - 90-95% for Genotypes 2& 3
  - 70% for Genotype 1
  - More effective with direct acting agents (telaprevir/boceprevir)

To identify the prevalence of BBV's in young people involved in at risk behaviour in Birmingham

Aim

- To establish care pathways / health promotion
- Counselling/education/vaccination

Subjects and Methods

- All clients attending YPSMS (10 – 18 yrs) on active list (potentially 250 clients)
- Non-randomised, quantitative study
  - Descriptive questionnaire to ascertain risk behaviour

BBV Study-Results

- 170 young people were approached
- 65 (40%) were enrolled
- median age = 17.2yrs
- F:28; M:37
- Ethnicity- Caucasians 43/65
- Risk behaviour :
  - 6 IV drugs users
  - 58 cannabis users
  - 59 had multiple sexual partners
    - 40 (1 - 5) sexual partners
    - 19 > 6 sexual partners
  - 51 engaged in unprotected sex

Serology Results

- 56/65 negative for HBV, HCV, and HIV
- 8 HBV immune following vaccination
- 1 naturally immune
- Young people had been vaccinated on an adhoc basis
- HBV vaccination was recommended to non-immune young people
- Declined by most
  - inconvenience
  - disclosure to GP's

Summary of BBV study

- Most common risk for BBVs in young people:
  - Un-protected sex /multiple sexual partners
- Difficult to approach young people because of lack of awareness in care workers
- Refusal to accept screening of BBVs
  - Fear and inadequate counselling

Conclusion

Prevalence of BBVs was low in this group of young people involved in high risk behaviour, but is a problem in adults.

Window of opportunity
Important to implement effective HB screening for young adults at risk to educate and vaccinate

Recommendation
Better awareness and education about prevention of BBVs for key workers and young people.

Saliva study to determine prevalence of HBV in children 7-11 years

Aim

- To estimate horizontal transmission of hepatitis B in children born in the UK preventable by hepatitis B immunisation

Subjects and Methods

- 5000 school children in inner city areas
- Manchester/Birmingham/ London (2 centres)
- Saliva samples tested for anti-HBc
- Recruitment-Interactive presentation at schools

Birmingham Saliva Study

- 14 schools visited
- 2097saliva samples
- 60% uptake from schools
- 11 (0.5%) children antiHBc positive
- 1 HBsAg positive - born abroad
- 2 naturally immune (one born abroad)
- Effective method of screening
- ? School nurses to screen new migrants

Barriers for testing for HBV & HCV in children in UK

<u>Lack of awareness in profession</u>

- Asymptomatic disease in childhood
- Lack of knowledge of infection rates/progress
- Potential for effective treatment for HCV

<u>Lack of awareness in public/social services</u>

- Lack of support for mothers/families
- Stigma for family/young person with school etc
- Cultural perceptions and customs
- Drug Action Team – screening children not considered

Barriers to testing for HBV & HCV in children in UK

Lack of awareness in communities

- Language barrier
- Stigma within the family
- Stigma for children/young person in schools
- Cultural perceptions and customs
- Case scenario – Stigmatization

Barriers to testing for HBV & HCV in children in UK

- Mothers involved in high risk behaviour:
  - Mothers' guilt – don't want to know
  - Lead a socially challenging life style
  - High non attendance rate
- Lack of perception of child's infection
  - Child appears healthy

Where should we intervene and offer testing for HBV & HCV in children

- Antenatal screening for HBV & HCV
- Identify mothers
- Screen family and contacts
- Follow infants and test
  - 3 and 12 months (HCV)
  - Vaccination schedule and test at 12 months (HBV)

Where should we intervene and offer testing for HBV & HCV in children

- General practice
  - New immigrant families for HBV & HCV
  - Asylum seekers
- ? School nurses to screen or identify
- Adoption agencies/social services
  - Children for fostering/adoption
- Drug Action Teams/YOTs/Care homes
  - Young people at risk

Facilitators for testing for HBV & HCV in children in UK

- WORKING TOGETHER – THE PROFESSION
- Include paediatric issues in Hepatitis strategy
- Adult services to provide Family Centred information
- Adult campaigns to include awareness of hepatitis in children
- Identify common misconceptions & myths

  -training packs for staff

  -Availability of follow up care/treatment

Facilitators for testing for HBV & HCV in children in UK

- WORKING TOGETHER: THE PUBLIC
- Identify common misconceptions & myths

  -educational packs for public
- Awareness of cultural traditions, family respect and arranged marriages
- Information required for :

  -Community/Religious leaders/ local counsellors
- Availability of follow up care/treatment

Facilitators for testing for HBV & HCV in children in UK

- WORKING TOGETHER: PARENTS
- Paediatric information and support
- Dispel parents guilt about their children's infection
- Parents perception – accurate information about
- children's symptoms & treatments
- HCV treatment in children– better tolerance and response
- Awareness of support from the multidisciplinary team

Facilitators for testing for HBV & HCV in children in UK

- WORKING TOGETHER: CHILDREN/ YOUNG PEOPLE
- Post diagnosis support
- Living with hepatitis – be in control
  - HBV/HCV advice for teenagers
  - Disease information
  - Disclosure – nurseries/schools/friends/relatives
  - Career
  - Prevention – general
  - Vaccination of partner/newborn/Safe sex
- Importance of follow up

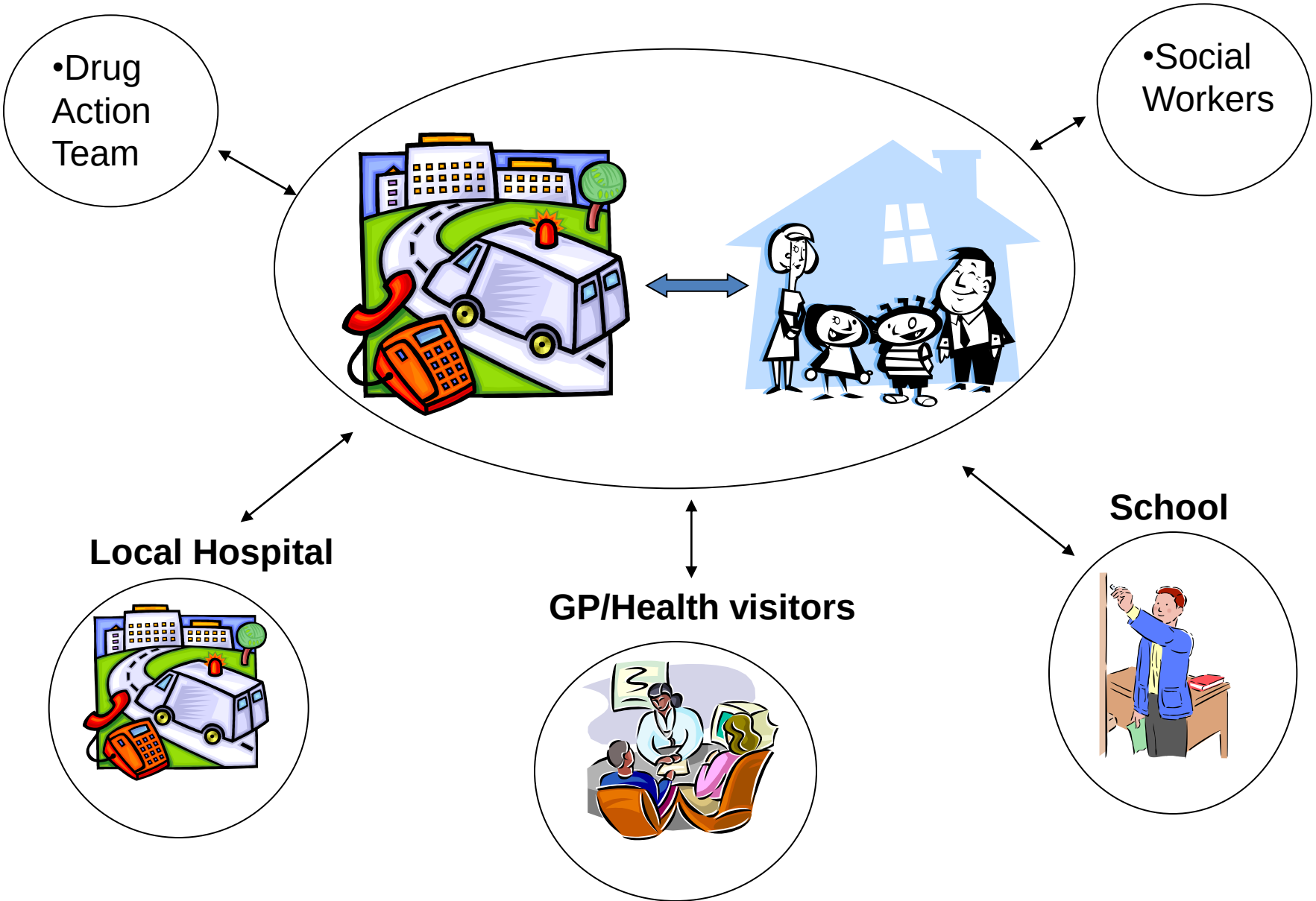
How should we test for HBV & HCV in children

- Family centred care
- Convenience of testing
  - Saliva / Blood Spot tests
- Primary care - GPs
- Community Centres
- Schools

Treating children with HBV & HCV in the UK

- > 200 children treated in clinical trials
- No ‘drop outs’
- Care Pathways/Treatment
  - In specialist paediatric units
  - Family Centred Care – commitment
  - Patient pre-assessment preparation
  - Shared care with local teams
  - Specialist Nurse support from centre

Implementation of Shared Care



Whose health will it benefit?

Children with HBV & HCV

- Follow up care by paediatric specialist centres
- Age appropriate education
- Shared care with local primary and tertiary care units
- Access to treatment

Public

- ? Reduce the burden of infection

Recommendations for research in HBV & HCV in children

- Database for HCV and HBV
- Epidemiological studies in children
- Acceptability of antenatal screening for HCV
- Mechanisms of HCV maternal transmission
- Prevention of failed vaccination in HBV
- Evaluation of efficacy of awareness raising
- Evaluation of Saliva or Dry Blood tests for testing HCV