Control and management of HBV infection in the UK: current situation.

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The conclusions indicated here are my personal opinion and not necessarily those of my institution or the DH.
General Issues.

Topics:
- **Control of HAV**: Green Book chapter 17;
- **Control of HBV** (NICE Public Health: CHB and CHC case identification 2012; NICE Clinical Guideline on Rx CHB 2013)
- **Control and Rx of CHC**: HCV Action Plan published 2006 (HPA yearly reports); NICE Guidelines on Rx in preparation).

**Note**: Health care in UK is devolved to individual countries: England, Scotland, Wales & Northern Island are separate.
Policy background & strategic context

New focus on quality and the birth of NICE Quality Standards

Focus on quality retained and a strengthened role for NICE Quality Standards

NICE Quality Standards to underpin the new commissioning system

High Quality Care for All

High Quality Care for All

Health & Social Care Act 2012

Aligning the tools and levers of the new commissioning system around NICE Quality Standards

NHS OUTCOMES FRAMEWORK

- Domain 1: Preventing people from dying prematurely
- Domain 2: Enhancing the quality of life for people with LTCs
- Domain 3: Recovery from episodes of ill health / injury
- Domain 4: Ensuring a positive patient experience
- Domain 5: Safe environment free from avoidable harm

NICE Quality Standards

Clinical Commissioning Group Outcome Indicator Set
Commissioning Guidance
Provider payment mechanisms:
- tariff
- standard contract
- CQUIN
- QOF

Commissioning / Contracting:
- NHS England: certain specialist services and primary care
- GP Consortia: all other services
NICE Quality Standards - acting as the bridge between the processes of care and the outcomes of care

Domain 1: Preventing people from dying prematurely

Potential Years of Life Lost from causes considered amenable to healthcare

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A suite of quality standards to support the delivery of improved outcomes in this domain

- Under 75 mortality from cardiovascular disease
- Under 75 mortality from respiratory disease
- Under 75 mortality from liver disease
- One and five year survival breast, colorectal and lung cancer
- Excess under 75 mortality in adults with serious mental illness
- Excess mortality in adults with learning disability
- Infant mortality and neonatal mortality
Control of hepatitis B infection in UK.

Approaches:
- protect the population at risk of infection from the reservoir by vaccination.
- identify and remove the reservoir of infection by treating the existing chronically infected patients;
Control of hepatitis B infection in UK.

What can we achieve by:

- vaccination of the general population

and by:

- Identifying and treating the chronically infected patients.
Advantages of Vaccination and Case Identification Approaches.

- **Vaccination:**
  - prevents acute and stops progression to chronic infection.
  - no effect on established chronic infection.

- **CHB case identification:**
  - allows treatment reducing reservoir.
How many cases of CHB arise from acute infection acquired in UK and how many cases are ‘imported’ as CHB? (HPA data)

- **acute hepatitis B in indigenous population**, acquired in UK or abroad, progressing to CHB - 269 cases p.a from 1996-2000
  - 65 cases p.a. from 2002-2008 ;
- **chronic hepatitis B in ‘incoming groups’** from high prevalence areas of the world - 6571 cases p.a from 1996-2000.

(S.Hahne et al 2004; LJ.Brant et al 2012)
Epidemiological data on HBV infection (HPA): implications for control.

Acute hepatitis B in indigenous population, progressing to CHB can be controlled by vaccination - cases preventable 269 (1996-2000) to 65 (2002-2008) p.a;

Chronic hepatitis B in ‘incoming groups’ from high prevalence areas of the world can be controlled by testing and treating ‘in comers’ but not by UK vaccination - 6571 p.a.

(S.Hahne et al 2004; LJ.Brant et al 2012)
Control of hepatitis B in General Population.

Conclusions:
- should include CHB case identification and treatment, where indicated;
NICE Public Health Recommendations on CHB case identification 2012

- screening general population is not cost effective;
- screen high risk populations including first generation migrants from high prevalence (>2%) countries.
Treat those with persistent viraemia $>10^5$ genomes/ml, abnormal ALT and evidence of progressive fibrosis.

**HBe Ag +ve** should have trial of PEG-IFN for 6 months and non-responders then maintained on long term viral suppressive therapy with nucleoside analogues (tenofovir or entecavir).

**HBe Ag -ve** should have trial of PEG-IFN for 6 months and non-responders then maintained on long term viral suppressive therapy with nucleoside analogues (entecavir or tenofovir).
Treatment with anti-virals prolongs survival.


Continuous treatment with lamivudine (now use tenofovir or entecavir) delays clinical progression in patients with chronic hepatitis B and advanced fibrosis or cirrhosis by significantly reducing the incidence of hepatic decompensation and the risk of hepatocellular carcinoma.
Benefits to population of treating CHB cases.

Reduced infectivity:
• Treatment reduces HBV titre by >5 logs;
• Majority of treated CHB have viral levels \(<10^4\).
• Patients with viraemia \(<10^{4.5}\) are non-infectious in most circumstances
Control of hepatitis B in General Population.

- should include identification and treatment, where indicated, of imported cases of CHB;
- improvement of existing selective vaccination programs in groups at high risk of hepatitis B,

- Babies born to CHB mothers;
- Parenteral drug users (prison program);
- People with multiple sex partners (STD program);
- Close family contacts of CHB cases;
- Families adopting CHB children;
- Haemophiliacs and CRF pts;
- Staff of mental sub-normality institutions;
- Travellers to high prevalence areas;
- HCWs (medical and nursing students program)
Control of transmission of hepatitis B in hospitals
Control of transmission of hepatitis B in hospitals: patient to health care worker (HCW).

• All medical students, nurses and new doctors are required to be vaccinated and checked for adequate response

• Non immune given hyperimmune globulin as post-exposure prophylaxis..
Control of transmission of hepatitis B in hospitals: health care worker (HCW) to patient:

All HCWs screened for HBV;

- HBs Ag positive stopped from going into EPP (exposure prone procedure) using specialties;
- HBs Ag negative vaccinated and checked for adequate response (100iu/ml).

Existing HBs Ag positive staff undertaking EPPs:

- checked for viraemia: if > $10^3$ stopped from doing EPPs or given long term anti-viral Rx.
Is excluding HCW’s with viraemia above $10^3$ adequate?

Lowest level of viraemia reported to be associated with transmission is $10^{4.5}$ (N Engl J Med. 1997 Jan 16;336(3):178-84)

No new transmissions reported in UK since this rule was introduced in 1999.
Incidence of HBV Infection is Declining (LJ. Brant et al 2012).

2002-2008: 1.3 cases /100,000 population (ie 650 p.a) of which 10% may become chronic.
Thus 65 CHB arise as a result of HBV infection acquired in UK
Control of hepatitis B in General Population.

Should Include:
- identification and treatment, where indicated, of imported cases of CHB YES;
- improvement of existing selective vaccination programs in groups at high risk of hepatitis B, including IV drug users (prisons program), people with multiple sexual partners & spouses of CHB YES;
- introduction of neonatal or childhood vaccination program by integration into existing vaccination schedule???
Universal neonatal or adolescent vaccination to prevent acute HBV in UK: not cost effective.

- Universal infant: £260k per QALY gained; Universal adolescent: £493k per QALY gained.
- **Neither cost effective** but universal neonatal would be if cost of vaccine and delivery < £4.09.

(MR.Siddiqui 2011: Vaccine 29: 466-475)
Control of hepatitis B in General Population.

Should include:

- identification and treatment, where indicated, of imported cases of CHB (NICE Public Health and Clinical Management Guidelines 2012/13);

- improvement of existing selective vaccination programs in groups at high risk of hepatitis B,

Should not include universal vaccination:

- Currently not cost effective
Control of hepatitis B in General Population.

Should include:

- identification and treatment, where indicated, of imported cases of CHB (NICE Public Health and Clinical Management Guidelines 2012/13);
- improvement of existing selective vaccination programs in groups at high risk of hepatitis B,

Should not include universal vaccination:

- Currently not cost effective

**BUT** if cost < £4.09 per case, universal neonatal vaccination integrated into existing childhood program would be cost effective and could be introduced.