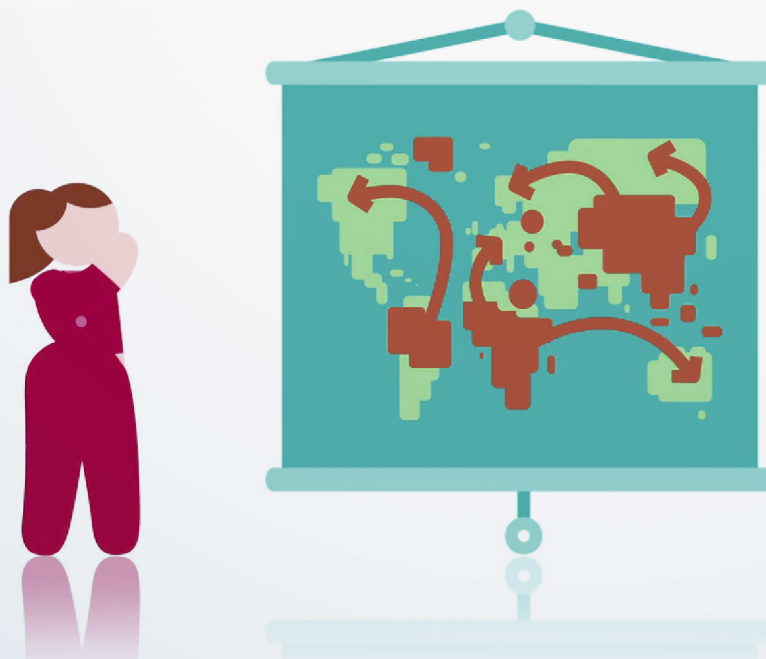


Estimating the burden of chronic hepatitis B among foreign-born populations:

A Practical Guide

The aim of this guide is to help public health and other health professionals estimate the burden of chronic viral hepatitis among foreign-born populations and to define which populations are most affected. This analysis will also enable you to see the different linguistic and cultural characteristics of the communities in which more chronic viral hepatitis cases are found in your area/country. Services and interventions can then be tailored according to these characteristics. Alongside this guide, you will also need the excel sheet where you can add your own data and make the calculations.

- ▶ **Step 1** : Define the countries of origin and population size of the main foreign-born populations in your area.
- ▶ **Step 2** : Derive the estimated prevalence in these countries of origin.
- ▶ **Step 3** : Estimate the burden of chronic hepatitis B (by population size x prevalence).
- ▶ **Step 4** : Define the most affected migrant groups.



Step 1: Define the countries of origin and size of the main migrant population

Prepare a list of the top 10-15 countries of origin according to population size. The OECD regularly publishes the 'International Migration Outlook' which provides estimates for the size of the foreign-born population in all OECD countries [for e.g. Figure 1]. Local demographic data could also be used instead of or alongside these national sources to define the most populous migrant groups. An example of the UK using the OECD data is on the next page.

Figure 1: Country of Origin and Population Size for Migrants in United Kingdom:

Table B.1.4. Stocks of foreign-born population by country of birth
Thousands
UNITED KINGDOM

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Of which: Women		
											2007	2008	2009
India	--	--	--	--	--	--	570.0	553.0	601.0	661.0	269.0	294.0	331.0
Poland	--	--	--	--	--	--	229.0	423.0	495.0	540.0	189.0	226.0	265.0
Pakistan	--	--	--	--	--	--	274.0	357.0	422.0	427.0	174.0	209.0	200.0
Ireland	--	--	--	--	--	--	417.0	410.0	420.0	401.0	225.0	242.0	220.0
Germany	--	--	--	--	--	--	269.0	253.0	273.0	296.0	143.0	151.0	189.0
South Africa	--	--	--	--	--	--	198.0	194.0	204.0	220.0	100.0	108.0	108.0
Bangladesh	--	--	--	--	--	--	221.0	202.0	193.0	199.0	100.0	91.0	89.0
Nigeria	--	--	--	--	--	--	117.0	147.0	137.0	166.0	74.0	72.0	93.0
United States	--	--	--	--	--	--	169.0	162.0	173.0	160.0	81.0	96.0	88.0
France	--	--	--	--	--	--	111.0	134.0	129.0	144.0	79.0	72.0	80.0
Kenya	--	--	--	--	--	--	138.0	135.0	140.0	134.0	69.0	64.0	73.0
Philippines	--	--	--	--	--	--	95.0	107.0	101.0	134.0	69.0	63.0	88.0
Jamaica	--	--	--	--	--	--	135.0	173.0	142.0	130.0	100.0	81.0	73.0
Zimbabwe	--	--	--	--	--	--	111.0	106.0	101.0	126.0	58.0	53.0	69.0
Australia	--	--	--	--	--	--	116.0	123.0	139.0	123.0	61.0	71.0	56.0
Other countries	--	--	--	--	--	--	2 587.0	2 713.0	2 963.0	3 038.0	1 413.0	1 519.0	1 546.0
Total	--	--	--	--	--	--	5 757.0	6 192.0	6 633.0	6 899.0	3 204.0	3 412.0	3 568.0

Note: For details on definitions and sources, please refer to the metadata at the end of the tables.

StatLink <http://dx.doi.org/10.1787/888932442883>

Data source: Estimates for all OECD countries can be found in the **International Migration Outlook:** <http://www.oecd.org/els/mig/keystat.htm>

Step 2 : Derive the estimated chronic hepatitis B prevalence in the countries of origin

Use the extracted hepatitis B prevalence estimates for each country of origin found in the local/national population (from Step 1) using the excel sheet that accompanies this How to Guide. This uses estimates for prevalence among migrant groups found in a study published in *Hepatology* in 2012 by Kowdley and colleagues. In this paper, meta-analytic methods were used to determine the country-specific pooled hepatitis B surface antigen (HBsAg) seroprevalence rates for 102 countries. The World Health Organisation classifies countries with prevalence rates below 2% as low endemicity countries, between 2% - 7.9% as intermediate and prevalence rates of 8% and higher as high endemicity countries. To identify the population groups with higher chronic hepatitis B prevalence, select only the intermediate and high prevalence countries (see highlighted rows in Table 1).

Data source: Kowdley K.V, Wang C.C, Welch, S et al. *Prevalence of chronic hepatitis B among Foreign-Born Persons Living in the United States by Country of Origin.* *Hepatology.* 2012 Aug;56(2):422-33. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22105832>

Step 3 : Estimating the burden – population x prevalence:

Calculate the estimated hepatitis B burden for each of the migrant populations, by multiplying the population size of each migrant group (step 1) by the estimated hepatitis B prevalence in that country of origin (step 2). The formula are built into the excel calculator. Select the countries of origin relevant for the population of interest, edit the list further to only include intermediate or high endemicity countries, add the estimated population size and the tool will calculate the estimated number of HBsAg (the burden of chronic hepatitis B) for these groups.

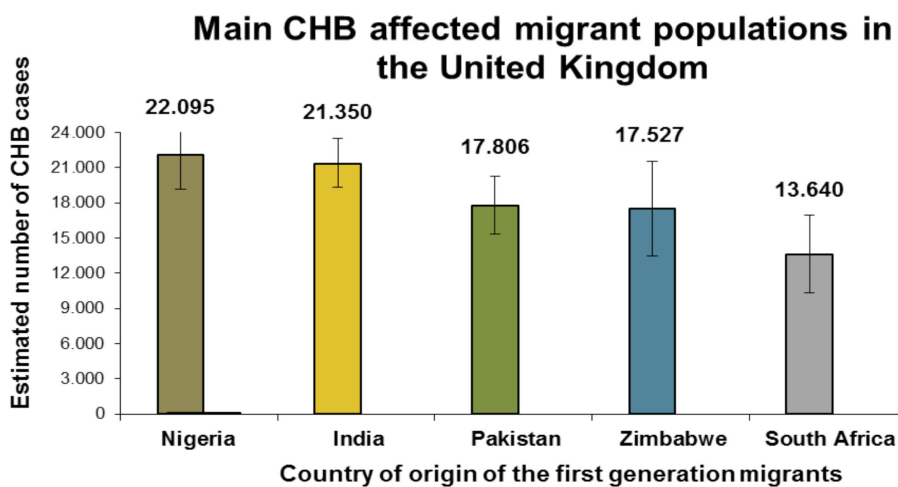
Table 1: Estimating the CHB burden (population x prevalence) among foreign-born migrant populations in the United Kingdom

Example: United Kingdom									
Total Population (2009): 60,930,000 million									
Migrant Population (foreign born): 6,899,000 million (11.3% of the total population)									
Column	A		B	C	D	E	F	G	
Country of Origin (first generation migrants)	Population Size in 2009	WHO HBV Endemicity Classification	Estimated Chronic Hepatitis B Prevalence (%)			Estimated CHB Burden of among Migrants			Country Ranking
			Prevalence Estimate	Lower 95% CI	Upper 95% CI	Burden estimate	Lower 95% CI	Upper 95% CI	Most affected Migrant Populations
India	661,000	Intermediate	3.23	2.92	3.55	21350	19301	23466	2
Poland	540,000	Low	1.44	1.16	1.72	7776	6264	9288	
Pakistan	427,000	Intermediate	4.17	3.59	4.75	17806	15329	20283	3
Ireland	401,000	Low	0.35	0.26	0.44	1404	1043	1764	
Germany	296,000	Low	0.60	0.40	0.80	1776	1184	2368	
South Africa	220,000	Intermediate	6.2	4.68	7.7	13640	10296	16940	5
Bangladesh	199,000	Intermediate	4.83	4.02	5.64	9612	8000	11224	
Nigeria	166,000	High	13.31	11.57	15.06	22095	19206	25000	1
United States	160,000	Low							
France	144,000	Low	0.68	0.44	1.05	979	634	1512	
Philippines	134,000	Intermediate	7.36	6.32	8.39	9862	8469	11243	
Kenya	134,000	Intermediate	5.70	4.21	7.20	7638	5641	9648	
Jamaica	130,000	Intermediate	3.94	0.81	7.07	5122	1053	9191	
Zimbabwe	126,000	High	13.91	10.7	17.11	17527	13482	21559	4
Step 1: From OECD Data			Step 2: From Kowdley et al study			Step 3: Multiply Population by Prevalence in each row			
						E = A * B	F = A * C	G = A * D	
						661,000 * 3.23/100	661,000 * 2.92/100	661,000 * 3.55/100	

Step 4 : Define the groups with the largest estimated burden:

Identify the most affected migrant groups by ordering them by estimated burden (number of estimated cases of CHB). At this stage, you might see that the most numerous groups (i.e. largest absolute population) are not those where the greatest burden of disease is expected. Look at the example of migrants to the United Kingdom from Poland. This the second largest country in terms of origin of population (size) but the lower CHB prevalence (1.44%) means that migrants from Poland are not in the top five most affected groups. This analysis will enable you to see the different linguistic and cultural characteristics of the communities in which more CHB cases are found in your area/country. Services and interventions can then be tailored according to these characteristics.

Figure 2: Estimated Chronic hepatitis B burden among migrants in the United Kingdom



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