Changing faces: a review of infectious disease screening of refugees by the Migrant Health Unit, Western Australia in 2003 and 2004

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ABSTRACT

Objective: To document demographic characteristics and prevalence of infectious diseases in refugees and humanitarian entrants attending the Migrant Health Unit (MHU) in Perth for health assessment from 1 January 2003 to 31 December 2004.

Design: Retrospective case series.

Participants: All refugees and humanitarian entrants arriving in Western Australia on subclass 200 and subclass 202 visas who were invited to attend the MHU.

Main outcome measures: Demographic details, results of Mantoux tests, and blood and faecal tests for infectious diseases and parasites.

Results: WA accepted 2781 refugee and humanitarian entrants in 2003 and 2004; 2617 were invited to attend the MHU, and 2111 (81%) actually attended for screening. Over three-quarters arrived from Africa. Overall, 25% had a positive Mantoux test result, 5% were carriers of hepatitis B, and 5% had positive serological test results for syphilis. People arriving from sub-Saharan Africa had the highest prevalence of most diseases, with 8% having malaria, 7% schistosomiasis, 5% hookworm, and 2% strongyloidiasis.

Conclusion: Disease prevalence varied greatly between refugees from different countries and was particularly high in those arriving from sub-Saharan Africa, the origin of most of Australia's refugee and humanitarian entrants. These data support the need for refugees and humanitarian entrants from countries with high rates of disease to have access to a comprehensive postarrival medical assessment and appropriate follow-up health care. Health services must provide beneficial and cost-effective services that protect the health of both individual refugees and the wider community.

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At the end of December 2004, there were about 11.9 million refugees worldwide, including 1.12 million new refugees recorded in that year.[1] The countries of origin of refugees vary greatly from year to year.

Australia accepts one refugee for resettlement per 1500 population per year — a higher per capita resettlement rate than any other developed country.[1] Western Australia accepted a total of 2781 refugees in 2003 and 2004 (K Spriggs, Integrated Humanitarian Settlement Strategy, Department of Immigration and Multicultural Affairs, personal communication).

The Migrant Health Unit (MHU) in Perth was established by the Western Australian Department of Health in 1977 to address the health needs (especially in regard to infectious diseases of public health significance) of Vietnamese and Cambodian refugees arriving in WA after the Vietnam War. Since then, refugee entrants (those with subclass 200 visas) have been invited by refugee resettlement agencies to attend MHU for a free health assessment (Box 1). Immigrants arriving in WA as humanitarian entrants (those with subclass 202 visas) are also invited to attend MHU for a free health assessment. The origin of refugees entering Australia has changed greatly in recent years. In 2002, only 43% of the MHU's patients were from Africa, compared with 79% in 2003 and 2004.

The last published study of the prevalence of conditions of public health importance among people applying to Australia for refugee status was conducted from 1 January 2000 to 30 June 2001 among Middle-Eastern people, who had not spent prolonged periods in refugee camps outside Australia.[2] Because of the timing and variable quality of predeparture screening, a health assessment after arrival is important to provide a comprehensive medical assessment of newly arrived refugees, and to detect diseases of public health significance.

Refugees, because of the conditions they have lived in and the trauma they have experienced, are a group with complex medical needs. Providing health services to refugees can be resource-intensive, so continual review of the health benefit to both the individual and the wider community is important. Our aim was to document the prevalence of screened infectious disease among refugees attending the MHU in 2003 and 2004.

METHODS

We examined data for all refugee and humanitarian entrants accepted by WA in 2003 and 2004 and who presented to the MHU between 1 January 2003 and 31 December 2004. Refugees from the former Yugoslavia were not invited to attend because of the MHU's past observation of low prevalences of infectious diseases of public health significance in this group. For this retrospective case series, patient demographic details, and pathology and Mantoux test results were recorded onto a database. Data on age, sex, country of refuge (defined as last country in which the patient resided before relocation to WA), and results of the Mantoux test, screening blood tests, and faeces microscopy, culture and sensitivity tests were analysed with SPSS for Windows (version 12.0; SPSS Inc, Chicago, Ill, USA) and Microsoft Excel (Microsoft Corporation, Redmond, Wash, USA) computer programs.

Countries of refuge were grouped into regions based on geographical and anticipated health similarities, as indicated in Box 2. While it is not possible to say with certainty where infectious diseases were acquired, we chose to analyse them by country of refuge, as most of the refugees had spent prolonged periods in these countries.

All laboratory tests were performed at PathCentre Laboratory, Perth, WA. Ethical approval was not required for this study as data were collected in the course of the MHU's routine quality assurance program (National Heath and Medical Research Council [NHMRC] national ethics guidelines).[3] Data were de-identified before analysis.

RESULTS

Of the 2781 refugee and humanitarian entrants accepted by WA in 2003 and 2004, 164 were Yugoslavian and not invited to attend the MHU. Of the remaining 2617 people, 2111 (81%) presented to the MHU. Fifty-two per cent were male and 48% were female. They ranged in age from zero to 89 years; 40.9% were aged ⩽ 14 years, 49.7%

were aged 15–34 years, and 9.4% were aged ⩾ 35 years. Their countries and regions of refuge are shown in Box 2.

The prevalence of hepatitis B core antibody seropositivity (indicating exposure) varied from zero in those from Europe to 56.7% in those from sub-Saharan Africa. The prevalence of hepatitis B carriage varied from zero in those from Europe to over 6% in people from Africa and South-East Asia. (Box 2).

Two people (one each from Ghana and Kenya) tested positive for HIV; both had been reported as HIV-negative at predeparture screening.

A total of 99 people (5.0%) had a positive syphilis test result, with refugees from sub-Saharan Africa having the highest prevalence (6.8%) of current or past syphilis infection (Box 2).

A positive Mantoux test result (⩾ 15 mm) was found in 524 people, with both a mean and median age of 28 years. The prevalence of a positive Mantoux result varied from zero in those from South-East Asia to 28.9% in those from sub-Saharan Africa. By lowering the threshold for a positive test to ⩾ 10 mm these prevalences increased to 38% and 55%, respectively (Box 2).

Eight per cent of refugees from sub-Saharan Africa had malaria; all 101 malaria cases involved refugees from sub-Saharan Africa. *Plasmodium falciparum* was detected in 88 people; 52 from Uganda, 21 from Guinea and there were occasional cases in people from Kenya, Sudan, Tanzania and Ethiopia. Among children aged < 15 years from Uganda and Guinea, 26% and 28%, respectively, were infected with *P. falciparum*. *P. ovale* was detected in five people, *P. vivax* in two people (both were co-infected with *P. falciparum*) and *P. malariae* in six people (four co-infected with *P. falciparum*).

Rubella serological tests were conducted in 510 females over the age of 15 (87%), of whom 423 (83%; 95% CI, 79%–86%) were immune.

Giardia intestinalis was the most common intestinal pathogen in refugees from all countries. *Schistosoma mansoni* and *Strongyloides* spp. were found in the faeces of 7% and 2%, respectively, of sub-Saharan Africans. Small numbers of *Shigella* spp., *Entamoeba histolytica, Ascaris lumbricoides* and *Enterobius vermicularis* were found. Prevalences of pathogenic organisms are shown in Box 2. The prevalence of one or more non-pathogenic gastrointestinal infections (eg, *Blastocystis hominis*, *Chilomastix mesnili*, *Endolimax nana*, non-histolytica *Entamoeba* spp., and *Iodamoeba butschlii*) was 49.9% (95% CI, 47.7%–52.1%).

1 Components of the health assessment at the Migrant Health Unit, 1 January 2003 to 31 December 2004

- Clinical assessment (all patients)
- Laboratory tests (all patients)
  - Full blood picture
  - Haemoglobinopathy screen
  - Serum ferritin levels
  - Malarial antigen test (immunochromatographic test) followed by microscopy
  - HIV antibodies (patients ⩾ 18 years, or on parental request)
  - Syphilis serum test (*Treponema pallidum* total antibody)*
  - Hepatitis B serum tests (hepatitis B core antibody, hepatitis B surface antigen and hepatitis B surface antibody)
  - Rubella serum test (female patients ⩾ 15 years)
- Empirical treatment of gut parasites with pyrantel (patients ⩾ 6 months)
- Faeces sample for microscopy, culture and sensitivity; postempirical treatment with pyrantel (all patients)
- Chest x-ray (patients ⩾ 12 years)
- Tuberculin skin test (nurses with a current Western Australian Department of Health certificate in Mantoux testing performed tuberculin skin testing on all patients over 6 months of age)
- Catch-up immunisation in accordance with the Western Australian immunisation schedule (all patients)
- Health education (all patients as appropriate)
- Referral for ongoing health care (as required)

* As most people were unaware of prior syphilis infection and whether or not they had received treatment, all those with a positive *Treponema pallidum* total antibody test result were referred to the sexual health clinic. For this study, a positive *T. pallidum* total antibody test result was considered positive for syphilis. ◆

DISCUSSION

Of the 2111 newly arrived refugees to WA who were the subjects of this retrospective study, more than 78% were born in, and 59% had been refugees in, sub-Saharan Africa. This demographic was very similar to that in other Australian states and territories over the same period, except for New South Wales, which had a lower proportion of sub-Saharan African arrivals (Gus Overall, Business Process Section, Humanitarian Branch, Department of Immigration and Multicultural Affairs, personal communication).

The high prevalence of infectious diseases of public health significance in sub-Saharan Africans supports the need for comprehensive postarrival medical assessments and appropriate follow-up health care for refugees and humanitarian entrants from countries with high rates of disease. It also highlights the need for health professionals in both migrant and mainstream health services to be aware of the conditions prevalent in refugee groups.

Eighty-one per cent of invited refugee and humanitarian entrants arriving in WA in 2003 and 2004 attended the MHU. This high attendance rate is likely to be the result of the excellent relationships (developed over more than two decades) and positive interactions between the MHU staff, refugee resettlement agencies and previously settled refugees who attended the clinic in the past, and who are usually the sponsors of the humanitarian entrants. While 81% is a good attendance, it is possible that the 19% who did not attend for screening differed from those who did by being sicker on arrival and receiving medical care before screening at MHU, or by having better access to general practice and therefore not requiring MHU services.

Twenty-seven per cent of refugees aged between 15 and 19 years had positive tuberculin skin test results (increasing to 55% if a positive test is taken to be ⩾ 10 mm induration). In comparison, a Melbournian cross-sectional survey of year 11 and 12 students showed only 0.7% of Australian-born students had positive results.[4] Reactivation of latent tuberculosis (TB) is particularly high in the first 5 years after migration, and remains high for many years after arrival from countries where the disease is endemic.[5] Over a quarter of African refugees had a Mantoux test result ⩾ 15 mm induration, and therefore required treatment, so TB screening, treatment, follow-up and contact tracing services need to be adequately resourced to prevent the resurgence of this once common infection within the wider Australian community.

Hepatitis B carrier state was seen in 6.4% of sub-Saharan Africans, 6.5% of South-East Asians and 6.8% of north Africans, compared with a 2004 population-based study

2 Total number of refugees from each region, number tested, and prevalence (95% CI) of indicators of infectious disease by region of refuge among those presenting to the Migrant Health Unit, 1 January 2003 to 31 December 2004

Variable	Region not recorded	Europe	Middle East	North Africa	Sub-Saharan Africa	South Asia	South-East Asia
Total number of refugees	26	57	214	420	1245	118	31
Hepatitis B							
Number tested	23	52	206	365	1182	115	31
Carrier state	0	0	0	6.8% (5%–10%)	6.4% (5%–8%)	3.5% (2%–9%)	6.5% (2%–21%)
Exposure	30% (15%–50%)	3.8% (1%–13%)	10.7% (7%–16%)	43.6% (39%–49%)	56.7% (54%–60%)	14.8% (10%–23%)	12.9% (5%–25%)
Syphilis							
Number tested	0	52	211	376	1201	115	31
Treponema pallidum total antibody positive*	0	3.8% (1%–13%)	0.9% (0–3%)	2.9% (2%–5%)	6.8% (6%–9%)	1.7% (1%–7%)	0
Intestinal infections†							
Number tested	26	56	207	409	1224	115	31
Giardia intestinalis	4% (1%–19%)	5% (2%–14%)	4% (2%–8%)	14% (11%–18%)	13% (11%–15%)	17% (11%–25%)	10% (4%–25%)
Schistosoma mansoni	4% (1%–19%)	0	0	3% (2%–5%)	7% (6%–9%)	0	0
Strongyloides stercoralis	0	0	0	2% (1%–4%)	2% (1%–3%)	0	0
Hymenolepis nana	0	0	2% (1%–5%)	6% (4%–9%)	3% (2%–4%)	2% (1%–7%)	0
Salmonella (all species)	0	2% (0–10%)	1% (0–4%)	1% (0–3%)	1% (1%–2%)	0	0
Hookworm	0	0	0	1% (1%–3%)	5% (4%–6%)	0	6% (2%–20%)
Mantoux test							
Number tested	0	54	207	409	1217	115	31
⩾10 mm induration	0	46% (33%–59%)	47% (40%–54%)	47% (42%–52%)	55% (52%–58%)	39% (31%–48%)	38% (23%–55%)
⩾15mm induration	0	7.4% (3%–17%)	20% (15%–26%)	25.2% (21%–29%)	28.9% (27%–32%)	19.2% (13%–27%)	0

* *Treponema pallidum* total antibody positive indicates past or present infection. † Intestinal infections are tested for by faecal microscopy and culture of a single faeces sample after empiric treatment with pyrantel.

Countries of refuge are grouped into regions as follows: Europe (Turkey); Middle East (Iran, Iraq, Jordan, Lebanon, Qatar, Syria); North Africa (Egypt, Tunisia): sub-Saharan Africa (Botswana, Burundi, Congo, Djibouti, Eritrea, Ethiopia, Ghana, Guinea, Kenya, Liberia, Malawi, Mozambique, Nigeria, Rwanda, Sierra Leone, Somalia, South Africa, Somaliland, Sudan, Tanzania, Uganda, Zaire, Zambia, Zimbabwe); South Asia (Afghanistan, India, Pakistan, Sri Lanka); South-East Asia (Burma, Indonesia, Malaysia, Singapore, Thailand). ◆

estimate of hepatitis B carriage in the Australian population of 0.87%.[6]

Infectious diseases posing little or no risk of transmission in Perth, but that may have significant health implications in receptive areas of Australia and for the refugees infected, were also identified. *P. falciparum* was found in more than a quarter of children arriving from highly endemic areas.

Giardia intestinalis was common in refugees from all areas, while other pathogenic gut parasites were found mostly in people from Africa. *Schistosoma mansoni* was found in 7%, and *Strongyloides stercoralis* in 2% of refugees from sub-Saharan Africa. This compares with a study in a Sudanese refugee camp where 26% of individuals were infected with *Schistosoma* spp. and 20% had *Strongyloides* spp. detected on faecal microscopy.[7] Stool and urine microscopy are relatively insensitive tools in identifying *Schistosoma* and *Strongyloides* spp., and studies recommend serological testing for screening.[8-11]

In April 2005, the MHU protocol was changed to provide more comprehensive and effective screening and empirical treatment for African refugees, including serological testing for schistosomiasis and strongyloidiasis, urinary nucleic acid testing for genital chlamydia and gonorrhoea and empirical antihelminthic treatment with albendazole. The revised MHU protocol complements the Communicable Diseases Network Australia protocol (published in February 2006)[12] for predeparture communicable diseases health screening of refugees arriving from Africa, which checks for TB, HIV, malaria and acute medical conditions that would preclude air travel, and is consistent with the Victorian Foundation for Survivors of Torture's *Caring for refugee patients in general practice* desktop guide.[13]

Our study demonstrates the need to monitor the prevalence of diseases of public and personal health significance in refugees entering Australia to provide cost-effective services that protect the health of both individual refugees and the wider community.

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COMPETING INTERESTS

None identified.

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