A Study to Compare Chest X-Ray Reports on Overseas Nursing Recruits

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Abstract
This study was carried out to assess if there was a difference in the Chest X- ray (CXR) report on recruited nurses carried out overseas and later repeated in Ireland. This study was carried out in 2 two Irish teaching hospitals. The subjects of this study comprised all overseas nurses recruited in each of the two hospitals within the defined period. The total number of subjects recruited from the 2 two centres was 84. Only nurses that had a repeat CXR were included in this study. 6/84 (7%) of the CXR that were initially reported as normal were subsequently reported as abnormal and were later diagnosed as Latent TB. 2/84(2%) of the CXR that were reported as abnormal were subsequently reported as normal. The data collected in this study has demonstrated that there was a significant difference in the CXR report from overseas and the CXR report in Ireland.

Introduction
Tuberculosis is endemic in many Asian countries [1] and the Philippines ranks ninth on the list of 22 high-burden tuberculosis (TB) countries in the world, according to the World Health Organizationâ s (WHOâ s) Global TB Report 2009. The escalating trend of developed nations recruiting nurses from developing countries has raised concerns about the impact of migration on nursing workforce and the health systems in both the source and host countries [2]. It is possible that â TB migrationâ into the host countries could occur with migration of such Health Care Workers (HCW). There is no gold standard test for the diagnosis of latent TB; the diagnosis involves a number of tests. In asymptomatic persons, exposure to and potential infection with TB can be demonstrated by clinical assessment, a positive Tuberculin Skin test (TST) or a positive immunological blood test i.e. Interferon Gamma Release Assays (IGRA) and CXR. Neither TST nor IGRA can distinguish active TB from Latent Tuberculosis Infection (LTBI). CXR is a major screening and diagnostic tool for TB and with clinical assessment can help distinguish active TB from LTBI. This study was carried out to assess if there was a difference in the CXR report on recruited nurses carried out overseas and later repeated in Ireland and if so, the degree of discrepancies and whether or not this affected the care of the nurses involved. It was hoped that the results might contribute to defining a more structured and uniform pathway to TB screening on overseas nurse recruits.

Methods
This study was carried out in two Irish teaching hospitals. The subjects of this study comprised all overseas nurses recruited in each of the two hospitals within the defined period. The occupational health records of overseas nurses recruited between January 2005 through to January 2006 were reviewed in the Cork University Hospital (CUH). A similar health record search was carried out in Beaumont Hospital (BH). The occupational health records of overseas nurses recruited between December 2004 through to December 2006 were reviewed. The country of origin, and BCG status was noted in each case. The CXR reports from the overseas hospitals were noted and compared to the results of the chest radiograph reports that were subsequently repeated for some individuals in the Irish hospitals. All the relevant charts were obtained and were readily available. The total number of subjects recruited from the 2 centres was 84, 54 from CUH and 30 from BH. In CUH, 54 of the recruited nurses had a repeat CXR. 52/54 of the nurses from CUH had BCG scars. All of the nurses were from the Philippines. In BH all nurses had repeat CXRâ s during the two-year period. BCG scars were present in all but one of the nurses. All of the nurses were from India.

Results
All of the 54 nurses in the CUH had a repeat CXR. 3/54 nurses who brought a normal CXR from overseas, had an abnormal CXR when the CXR was repeated in Ireland. One of the nurses had a CXR report from overseas that was abnormal and this was subsequently reported as normal when repeated in the CUH. Those with an abnormal CXR were referred to a local respiratory specialist in CUH. The 3 nurses were assessed clinically and were investigated by bronchoscopy. All three nurses had a positive mantoux reading between 13-14mm. All three had been vaccinated with BCG. On the basis of their CXR reports and clinical assessment they were diagnosed with LTBI. 30/103 recruited nurses from BH had a repeat CXR. 27/30 had a repeat CXR due to a strongly positive mantoux. 2/30 had reported a history of suspicious symptoms. 1/30 had a reported abnormal CXR report from India. Three were subsequently reported as being abnormal. The nurses were referred on to a local respiratory specialist for further tests.

All three nurses had a strongly positive mantoux reading and were subsequently diagnosed with LTBI. A Cohenâ s Kappa was calculated to assess the chance corrected agreement between the overseas tests and Irish tests. Cohenâ s Kappa was estimated as: K= [(0+76) / 84 â (0.14282571+76.142857) /84] / 1 â (0.14282571+76.142857) / 84 K= -0.037 (K<0.20 indicates poor agreement between the tests). The Cohenâ s Kappa suggested that the agreement in the results of CXR done overseas and in Ireland is poor. The time intervals between CXR overseas and repeated in the CUH, CXR intervals ranged from 1 to 9 months, with an average interval of 6 months. In BH the intervals range from 1 month to 11 months, with an average interval of 3.5 months between CXR done overseas and in BH.

Discussion
The data collected in this study has demonstrated that there was a significant difference in the CXR report from overseas and the CXR report in Ireland. It is difficult to identify the exact reasons for these observed differences however, there are many possible factors. The interval range between the initial CXR overseas and its subsequent repeat in Ireland can extend between 1-11 months. One could postulate that it is reasonable that the individual could have been exposed to TB during this lengthy time interval. Often HCWâ s from high incidence countries supply results of TB screening performed in their country of origin. The quality and authenticity of these results should be evaluated.

The performance of CXR expressed as sensitivity and specificity to pick up culture-positive TB cases depends on the intensity and the presentation of the disease [3]. Another important factor is the experience and the interpretation skill of the reader, making CXR subject to intra- and inter-reader variation. The well known International Union Against Tuberculosis and Lung Disease (IUATLD) study on x ray classification found up to 34% disagreement. [4-6] Other studies had also shown that there are variability in interpretation of radiological findings between physicians. [7,8] In particular, a study of 101 clinicians involved in managing TB demonstrated that agreement between clinicians were only fair when it came to deciding on whether or not radiological abnormalities were present. The authors concluded that screening for TB among Russian populations may be suboptimal due to limitations in agreement on radiological interpretation. [9] Irish nursing recruits complete a questionnaire and an assessment for evidence of BCG. Individuals who have suggestive symptoms are referred for a CXR and a mantoux. Those that do not have a history of BCG will have a mantoux test and if this is negative they will be offered BCG.

The implications of this study are that a nationwide policy within the HSE needs to be established for the screening of HCW from overseas. The policy of repeating CXR on the overseas recruits varied widely in different hospitals within one healthcare system. For example, CUH repeat the chest X Rays of all overseas nurses recruited into the hospital whereas only high risk individuals had their chest X Ray repeated by the BH occupational health department. The following suggestions could be considered: The individuals could bring the CXR from overseas with them and it could be re-read in Ireland, provided the CXR can be identified as being the individuals. If the interval period between the CXR overseas and arrival in Ireland was greater than 3 months the CXR should be repeated in Ireland. If the individual is symptomatic, the individual should have a clinical examination and should be referred for a CXR. If the individual has a mantoux reading of greater than 10 mm a repeat CXR should be considered.

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Comments:
