

examination, time intervals of screening, education, and confidence into medicine. Age data were taken from the national micro-census dataset. Logistic and ordinal regressions were used to explore associations between the screening uptake and age, time intervals of screening, education, and confidence into medicine.

#### Lessons

An 80% of the 50–69 year-old women reported to have taken up a mammography at least once. Of these women, 60% had had a mammography within the last year and 29% one to three years ago. Even higher (86%) was the uptake among 40–50 year-old women, of which 63% had had a screening within the last year. For mammography there was no association between screening uptake and education. The probability of uptake of clinical

breast examination was almost twice as high among women with vocational training and school compared with women with other education. Low confidence into medicine was related to lower uptake of mammography and clinical breast examination.

#### Conclusions

Uptake of mammography among 40–50 year-old women is high, even though screening this age group is according to current evidence not effective. Furthermore, time intervals of screening are too short according to WHO and other international recommendations. To improve the use of resources and to reduce potential harm of screening, it is necessary to target the screening programme to 50–69 year-old women and to extend screening intervals.

## Track 8: Workshop: Tuberculosis—new tools for a very old public health problem

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Tuberculosis (TB) has been present in Europe (EU) for at least 8000 years. Efforts to control and eliminate this disease are hampered by the tools at our disposal, many of which have changed little in over 50 years. This workshop will examine the potential of some of the new technologies now becoming available to tackle TB. The first speaker will examine the changing epidemiology of TB in Western EU, looking at the situation in Holland. The next study describes a novel method of typing *Mycobacterium* TB isolates which is being used in England to detect previously unsuspected clusters; from Germany a study of the economics of using a new test to diagnose latent TB. The fourth speaker, one of the top TB researchers from Denmark's Statens Serum Institute, will present an overview of current thinking on new TB vaccines. The workshop discussion will focus on the likely contribution of these new tools to controlling and/or eliminating TB in Western EU among those population groups at risk.

### TB control among immigrants and its importance for TB elimination in The Netherlands

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#### Background

Tuberculosis rates are declining in Europe and an increasing proportion of cases is found among immigrants from high burden countries. The Netherlands have excellent surveillance data on tuberculosis including a national database with RFLP results since 1993.

#### Methods

An epidemiological assessment of the impact of TB among immigrants made use of national surveillance and RFLP data. In addition, use was made of mathematical modelling. TB control among immigrants, including TB screening and contact investigation is described.

#### Results

Over the past 10 years, an increasing proportion of tuberculosis cases among the Dutch was attributable to recent transmission from a non-Dutch source case. Tuberculosis incidence among immigrants did not decline substantially with the duration of residence in The Netherlands. Reported delay between disease

onset and start of treatment is in the order of 2 months and cure rates are over 80%. The impact of the screening programme on tuberculosis transmission appears limited.

#### Conclusions

TB elimination in The Netherlands will not be achieved under current conditions. Strengthening TB control among immigrants, e.g. by expanding contact investigation, needs to be explored. Reasons for the high TB incidence among long term immigrants need to be identified.

### Prospective DNA fingerprinting of *Mycobacterium tuberculosis* isolates in the Midlands, UK: detection and confirmation of previously unsuspected clusters

**Grace Smith**

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#### Background

Control of TB depends on rapid detection of epidemiological links between patients. Prospective DNA fingerprinting of all *Myobacterium tuberculosis* clinical isolates can potentially detect unknown transmission events, directing contact tracing and targeting resources to at-risk groups. MIRU–VNTR (*Mycobacterium* interspersed repetitive units containing variable number tandem repeats) typing of *M. tuberculosis* is a rapid molecular method that has been shown to provide results comparable with the current but laborious standard, IS6110 RFLP (restriction fragment length polymorphism) and may be valuable in TB control.

#### Methods

Unknown epidemiological links between patients with active TB disease in the Midlands, UK, were detected by prospective DNA fingerprinting from 2003 to 2005. Automated MIRU–VNTR typing on a Transgenomic WAVE<sup>®</sup> Microbial Analysis System was performed. IS6110 RFLP was performed on large MIRU–VNTR clusters using standardised methodology.

Typing results were discussed with public health teams via quarterly summary reports and cluster analysis meetings. All 'clusters' containing more than five people were investigated using a proforma questionnaire. Records from all identified patients in the clusters were examined and the proforma completed to identify gaps in knowledge. Patients were then interviewed to complete missing information.

## Results

Of 1819 isolates typed, 1130 (62%) were grouped into 215 MIRU–VNTR clusters. The most prevalent MIRU–VNTR profile was 32333/224325153314 (101 isolates, 6%). IS6110 RFLP typing has confirmed the MIRU–VNTR cluster for 50 isolates. Active engagement with TB and public health teams ensures utilisation of results and recognition of unsuspected transmission events across boundaries. Much of the required epidemiological information was not routinely available and patient interviews were necessary.

## Conclusions

Prospective MIRU–VNTR typing can enhance the surveillance and control of TB in the community. It is effective to investigate large clusters that are still increasing in size. Typing centres need strong user groups to review clusters and control strategies for patients identified as having a ‘clustered’ isolate.

## Are interferon-gamma tests effective tools for detecting latent tuberculosis (TB) in TB contact tracing?—a preliminary report of an ongoing prospective study in Hamburg, Germany

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## Background

By convention, diagnosis of latent infection with *Mycobacterium tuberculosis* (LTBI) is based on testing by testing by TST (Tuberculin Skin Test, Mantoux) where a purified protein derivative of *M. tuberculosis* is injected intracutaneously. The size of the resulting skin induration is measured in millimetres and a judgement based on a predetermined cutoff is made as to the infection status of the test subject. Disadvantages of TST include its reliance on a second visit for the test to be read after at least 3 days which can be a problem where compliance in high risk individuals is weak, and that cross reactivity with atypical Mycobacteria and BCG vaccination may lead to false positive results. In contrast to TST, new *in vitro* assays are based on direct immune response in whole blood to antigens specific for *M. tuberculosis* (Interferon-gamma, INF- $\gamma$ ) which can be measured by a simple ELISA Test in a single intravenous blood sample. If one follows the current guidelines of the German Central Committee for the Control of TB, positive results of a TST in close contacts of infectious TB cases lead to an extensive follow-up

with a series of chest X-ray examinations. This must be done in order to find active TB cases in contact persons, who develop manifest disease within the first two years. Hamburg, one of the German federal states and the second largest city in Germany, has the highest TB incidence rate of all 16 federal states. We therefore performed a prospective study in order to evaluate the outcomes of TB contact tracing using TST and INF- $\gamma$  to determine the factors contributing to differences between them.

## Methods

The ongoing study included more than 500 close contacts of smear positive TB cases who were simultaneously tested with TST and the QuantiFERON(tm) Gold in-Tube test (QTF). Test results were collected blindly. Through personal interviews, information for all of the contacts was obtained on sex, date and country of birth, immigration status, the nature of the contact’s employment, type and duration of exposure to the source case, any evidence of previous contact tracing or of TB disease, and any TB-related clinical symptoms. Data were analysed by multilevel logistic regression analysis.

## Results

We detected significant differences in positivity rates between TST testing and QTF Gold in-Tube. Results will be discussed with a focus on efficacy and health economic considerations.

## An overview of new vaccines against tuberculosis

Mark Doherty

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The last 5 years have been an exciting time for TB research. After more than half a century, the first new diagnostic tests for *Mycobacterium tuberculosis* infection have reached the market and the first new vaccines for TB are beginning to enter human clinical trials. Behind these forerunners, new vaccine candidates are filling the preclinical pipeline and our understanding of the natural history of *M. tuberculosis* infection is expanding rapidly, helped in part by the increasing number of human studies and by results from the first clinical trials. By understanding where and why the BCG vaccine has failed to prevent pulmonary TB in adults, the new vaccines aim to avoid the same pitfalls. At the same time, it is hoped that a better understanding of the interaction between host and pathogen will lead not just to better vaccines but also to faster, cheaper, and more reliable clinical trials.

# Track 9: Psycho-social problems and risk constellations

## A comparison between three questionnaires for detecting children with psycho-social problems

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## Background

Early detection of children with psycho-social problems is an important task of the Dutch Preventive Child Healthcare (PCH). Concise, reliable, and valid questionnaires are essential for this. However, for the age group 7–12 such questionnaires were not available in the Netherlands. This study assessed the suitability of three questionnaires for use by the Dutch PCH: Strengths and Difficulties Questionnaire (SDQ), Pediatric Symptom Checklist (PSC), and a newly developed questionnaire, the PSYBOBA.

## Methods

Three groups of about 750 parents with a child aged 7–12 years received a questionnaire, containing both the Child Behavior Checklist (CBCL) and either the PSC, the SDQ or the PSYBOBA. During a routine Preventive Health Check, PCH recorded additional data on psycho-social problems. Scale structure of the questionnaires was evaluated by means of structural equation modelling (SEM) and Cronbach’s alphas. Sensitivity and specificity were calculated, using the CBCL total problem score (clinical/normal) as criterion. Added value of the questionnaires for PCH was evaluated by means of logistic regression.

## Results

SEM showed a poor fit of the scales of all three questionnaires. Nevertheless, Cronbach’s alphas were high (0.80–0.89). Using the original cut-offs, sensitivity and/or specificity were poor for all three questionnaires. However, better cut-offs could be obtained; a specificity of about 0.90 and a sensitivity of at