INTRODUCTION
Transmission of isolates of epidemic meticillin-resistant Staphylococcus aureus (MRSA) has traditionally been associated with hospital facilities. In recent years dissemination of MRSA has been increasingly recognised in other healthcare settings, including primary care. Acquisition of MRSA frequently brings about asymptomatic colonisation; however it may be associated with infection resulting in significant morbidity and mortality, particularly in vulnerable patients. The epidemiology of MRSA is further complicated by the emergence of strains of community-acquired MRSA that transmit efficiently in otherwise healthy people who do not have ongoing interaction with the healthcare system.

In Ireland comprehensive national data on the scale of the problem of MRSA colonisation are not available. The most up-to-date comprehensive national data on MRSA infection in Ireland come from the European Antimicrobial Resistance Surveillance System (EARSS). These data indicate that 42% of bloodstream isolates of Staphylococcus aureus in Ireland reported through EARSS are meticillin-resistant. This proportion is similar to that in the UK but is much higher than the proportions reported in some northern European countries. The aim of this point-prevalence study was to determine the rate of nasal MRSA carriage in GPs in the Western region of the Health Service Executive (HSE West) in the counties of Mayo, Galway, and Roscommon, Ireland.

METHODO
A current list of GPs working in counties Mayo, Galway, and Roscommon with general medical service patients was obtained from the HSE West. This list provided data on GP age, sex, practice location, practice type (that is, single or group practice), and practice nurse status. There were 244 GPs in total, of whom 120 were randomly selected for the study using randomised tables.

The study took place in October and November 2005. An information package containing the following items was mailed to selected GPs:
In recent years dissemination of MRSA has been increasingly recognised as occurring in healthcare settings other than hospitals, including primary care settings. In Ireland comprehensive national data on the scale of the problem of MRSA colonisation are not available. This study set out to measure the rate of nasal carriage of MRSA in GPs in the West of Ireland. The results indicating that 7.7% of participants were nasal carriers for MRSA emphasise the need for high standards of infection control in primary care to prevent MRSA transmission in either direction between GPs and patients.

Each participant was requested to send the swab and microbiology form directly to the Department of Bacteriology, National University of Ireland, Galway, in the stamp-addressed envelope provided. Each selected GP was assigned an anonymous code. No person other than the investigator had access to the anonymous-link system. Participants were specifically instructed not to put their name on either the swab or the laboratory form to ensure anonymity.

The swabs were plated on selective chromogenic agar. Suspect MRSA colonies were identified as S. aureus by conventional means. Meticillin resistance was determined by testing susceptibility to cefoxitin by the Clinical and Laboratory Standards Institute disk-diffusion method. The laboratory emailed the coded results to the investigator, who contacted those GPs with positive results by telephone and sent them copies of the relevant pages from the Irish national guidelines for the control and prevention of MRSA in hospitals and in the community. Participants with negative results were informed in writing.

Results were analysed with SPSS (version 14). The χ² test was used for analysis of nominal data. The Student’s t-test was used to investigate for possible significance in age gap.

MRSA isolates were sent to the Irish National MRSA Reference Laboratory for epidemiological typing by antibiogram-resistogram (AR) typing and DNA macrorestriction analysis using the restriction endonuclease Smal and pulsed-field gel electrophoresis (PFGE) as described previously.10

RESULTS

A total of 78 GPs participated in the study, giving a response rate of 65% (78/120). The average age of participants was 49.9 years (+/-8.5 years). Participants and their practices were representative of the overall diversity of GP practices in the region (Table 1).

Six GPs carried MRSA, giving a point-prevalence rate of 7.7%. As the number of positive GPs was small it was not possible to reliably compare MRSA positive and negative participants for statistical differences based on their demographics.

Four of the six MRSA isolates exhibited AR type AR06 and pulsed-field group (PFG)-01. Two isolates exhibited AR patterns to which no AR type was assigned pending the results of PFGE.10 One isolate belonged to PFG-01 and the other exhibited a sporadically-occurring PFGE pattern. Earlier studies investigating multilocus sequence typing and staphylococcal chromosome cassette mec (SCCmec) types of MRSA from Ireland have shown that isolates exhibiting the AR-PFG 06-01 correspond to sequence type (ST) 22 and SCCmec type IV10,11. The isolates from the present study are closely related to the predominant healthcare-associated MRSA strain in Ireland.10 Their inferred genotype of ST22-MRSA-IV confirms their similarity to the UK epidemic nosocomial strain EMRSA-15.10

DISCUSSION

This study detected a nasal carriage rate of MRSA of 7.7% in the GPs studied. The study had a relatively high response rate of 65%. The result indicating that 7.7% of participants were nasal carriers of MRSA is an important reference for future studies in this area. A limitation of the study is that the sample size was relatively small and that carriage was investigated at a single point in time. To ensure that data would be applicable on a national level, a greater number of GPs would need to participate.

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<th>Table 1. Demographic details of GPs in the Health Service Executive West and of GPs who participated in the study.</th>
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A number of studies examining nasal carriage rates of MRSA in adults in the community have been carried out in other countries and have detected rates ranging from 0.8 to 3%.\textsuperscript{15–17} Nasal carriage of MRSA in healthcare workers internationally has also been studied in the hospital setting and carriage rates in these studies range from 6 to 17.8%.\textsuperscript{15–17}

The results of the present research show that the prevalence rates of MRSA nasal carriage in GPs in the West of Ireland are comparable to rates reported in some hospital-based studies carried out in other countries.\textsuperscript{15–17} This is understandable as GPs, like other healthcare workers, are exposed to patients with MRSA infection and/or colonisation in the course of their work.

Future research in this area should ideally include a larger number of GPs across a wider geographical area and over a longer period of time in order to collect comprehensive national data. It should also seek to correlate MRSA carriage with a more detailed description of practice setting, with particular emphasis on access to and use of hand-hygiene facilities and implementation of other infection control practices. It would be appropriate to ask GPs to provide specimens at a number of time points to ensure that intermittent carriage would be detected.

The significance of MRSA colonisation in healthcare workers in transmission of MRSA to patients and the community is not entirely clear and further research in this area is needed. The results of the present study emphasise the need for high standards of infection control in primary care to prevent MRSA transmission in either direction between GPs and patients.

Ethics committee
Irish College of General Practitioners

Competing interests
The authors have stated that there are none

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REFERENCES