

National increase in meningococcal group C disease, Scotland, 2016.

Authors

Eisin McDonald¹, Clare Murphy², Odile Harrison³, Jen Bishop¹, William Malcolm¹, Martin Maiden³, Andrew Smith², Claire Cameron¹

Introduction

Scotland is low incidence for invasive meningococcal disease (IMD) with a predominance of serogroup B following the introduction of serogroup C (MenC) vaccination. In recent years, serogroup C cases have rarely been reported in Scotland (population 5.4 million), with an average of less than two cases reported per year since 2003; many years with no cases reported (Figure 1). This is undoubtedly due to the MenC immunisation programme, protecting both individuals directly and the wider population through reductions in carriage. In 2016, however, there was an increase in serogroup C cases reported to Health Protection Scotland, some of which had unusual clinical presentations and there was a high case fatality ratio. In order to fully understand the increase in Scotland and potentially prevent further morbidity, a detailed investigation of cases was undertaken, the results of which are described in this report.

Methods

MenC cases were further investigated using routine data from enhanced surveillance questionnaires and health protection records, in addition to detailed case note review and data linkage to hospital discharge, community prescribing and laboratory data. Microbiological characterisation used standard techniques, in addition to whole genome sequencing, for available isolates. To understand genomic isolates were compared with WGS data from the rest of the UK and those recently reported from Italy (Figure 2).

Results

The seasonal IMD peak was observed in April, three months later than the usual (January). The mean age of MenC cases was 46 years (median 58 years) and almost two-thirds were female (8/13; 61.5%). IMD was suspected at initial presentation for six cases (46%). Over one third had an identified underlying risk factor (5/13; 38.5%) that could increase susceptibility. Two cases had clinically significant co-infections at diagnosis.

Clinical diagnoses were stated as bacteraemia (4 cases; 30.8%), meningitis (2 cases; 15.4%), septicaemia (2 cases; 15.4%), meningitis and bacteraemia (2 cases; 15.4%), sepsis (1 case; 7.7%), meningitis and sepsis (1 case; 7.7%) and necrotising fasciitis and sepsis (1 case; 7.7%). Three cases were eligible for MenC vaccination, of whom two were fully vaccinated.

Three cases (23.1%) are known to have died.

Where molecular information was available, 11 were CC11 and one was CC103. WGS analysis revealed two distinct ST-11 clusters differentiated by *porA* and *FetA* type. Scottish ST-11 isolates all clustered together, while Italian WGS clustered with other UK isolates.

Conclusions

No direct epidemiological, temporal or spatial links between cases were identified. The childhood MenC and adolescent MenACWY vaccination programmes should continue to control group C disease. Meanwhile, frontline clinicians and public health specialists must be aware of severe and unusual presentations in order to ensure prompt case diagnosis and treatment, and timely chemoprophylaxis including vaccination for close contacts. Data linkage was effective and relatively timely to investigate increases in IMD. Work is ongoing to understand potential reasons and implications for the distinct WGS clustering.

Figure 1: IMD by serogroup in Scotland, 1998-2016

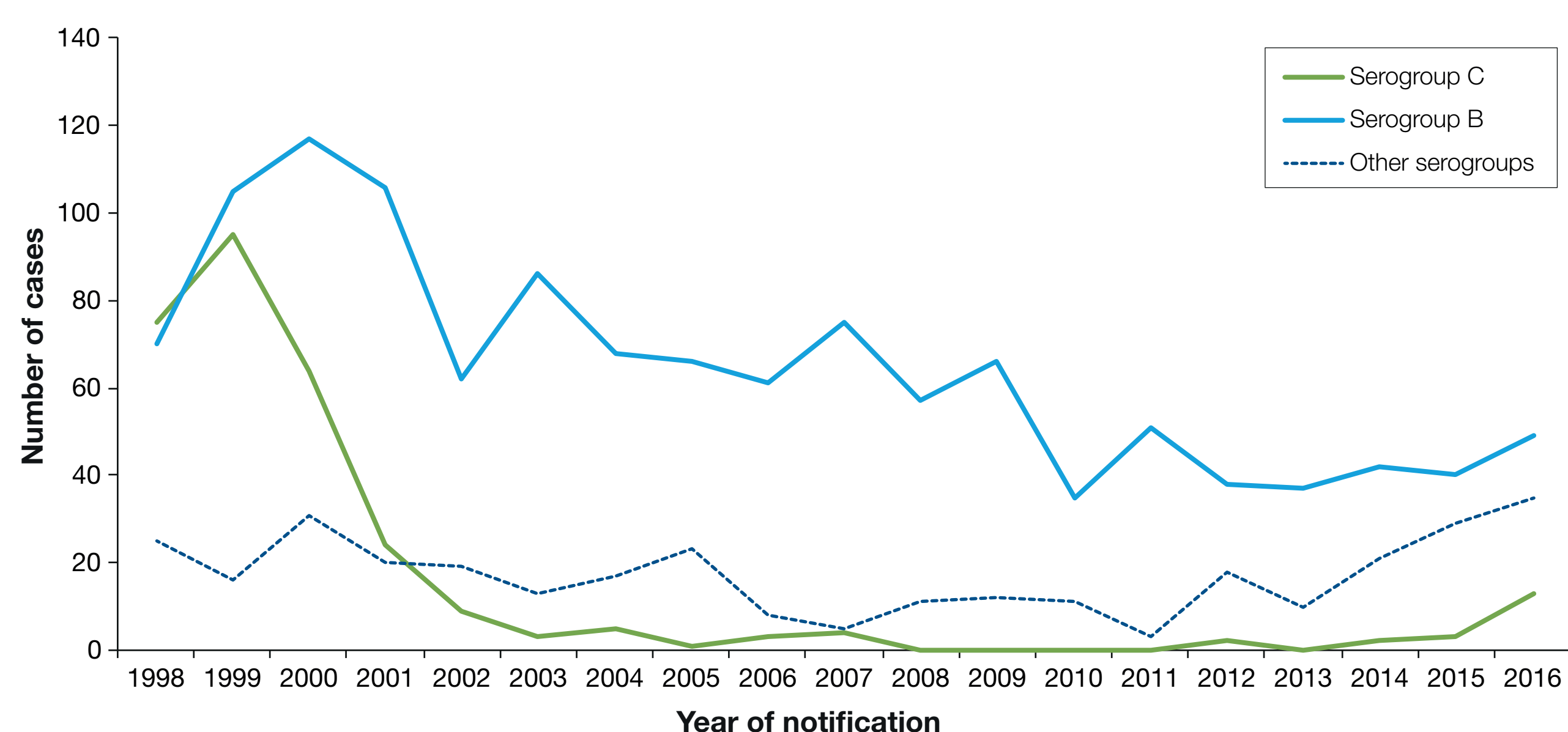


Figure 2: Methods for investigating increase in serogroup C IMD in Scotland, 2017



Figure 3: IMD serogroup C cases by month of diagnosis, Scotland 2017

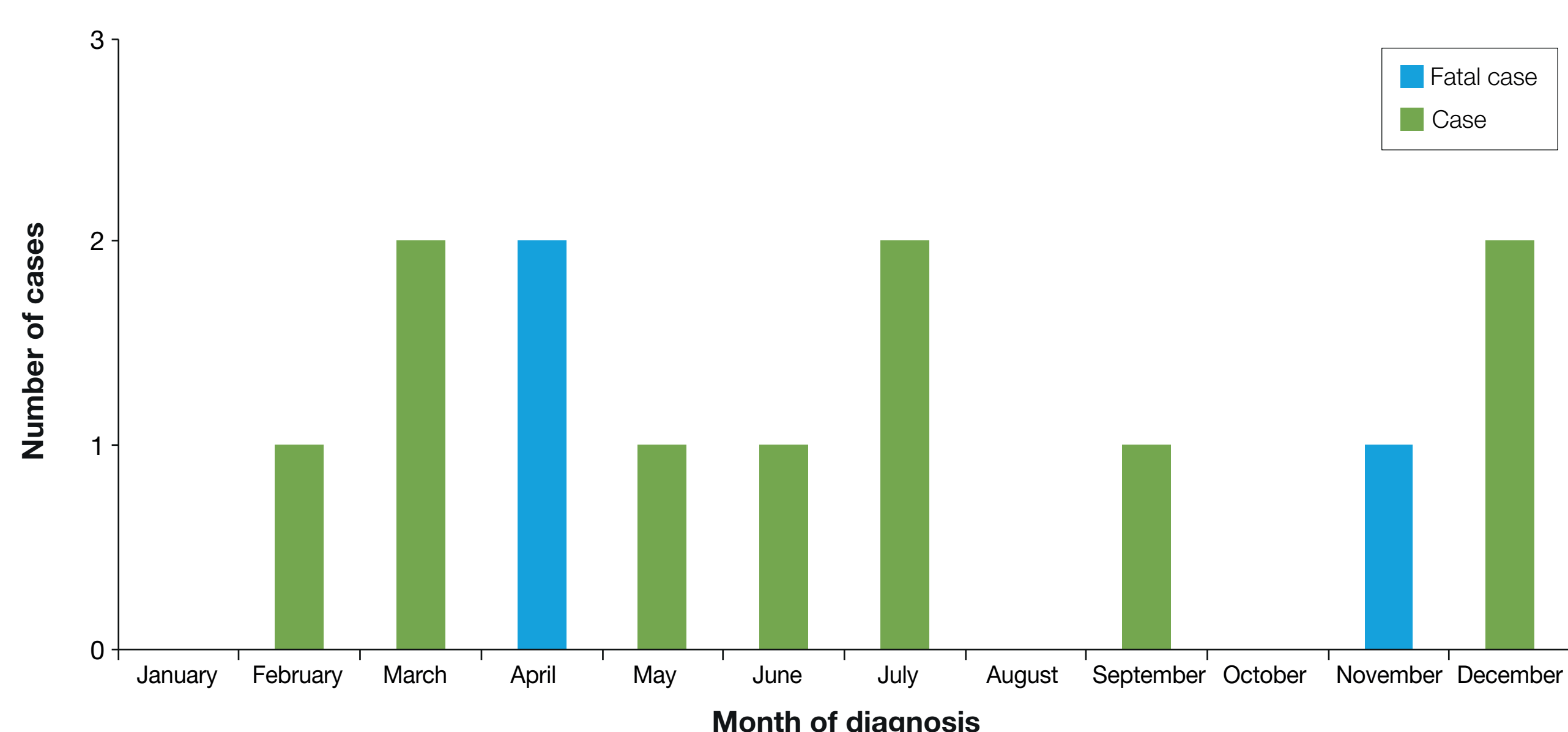
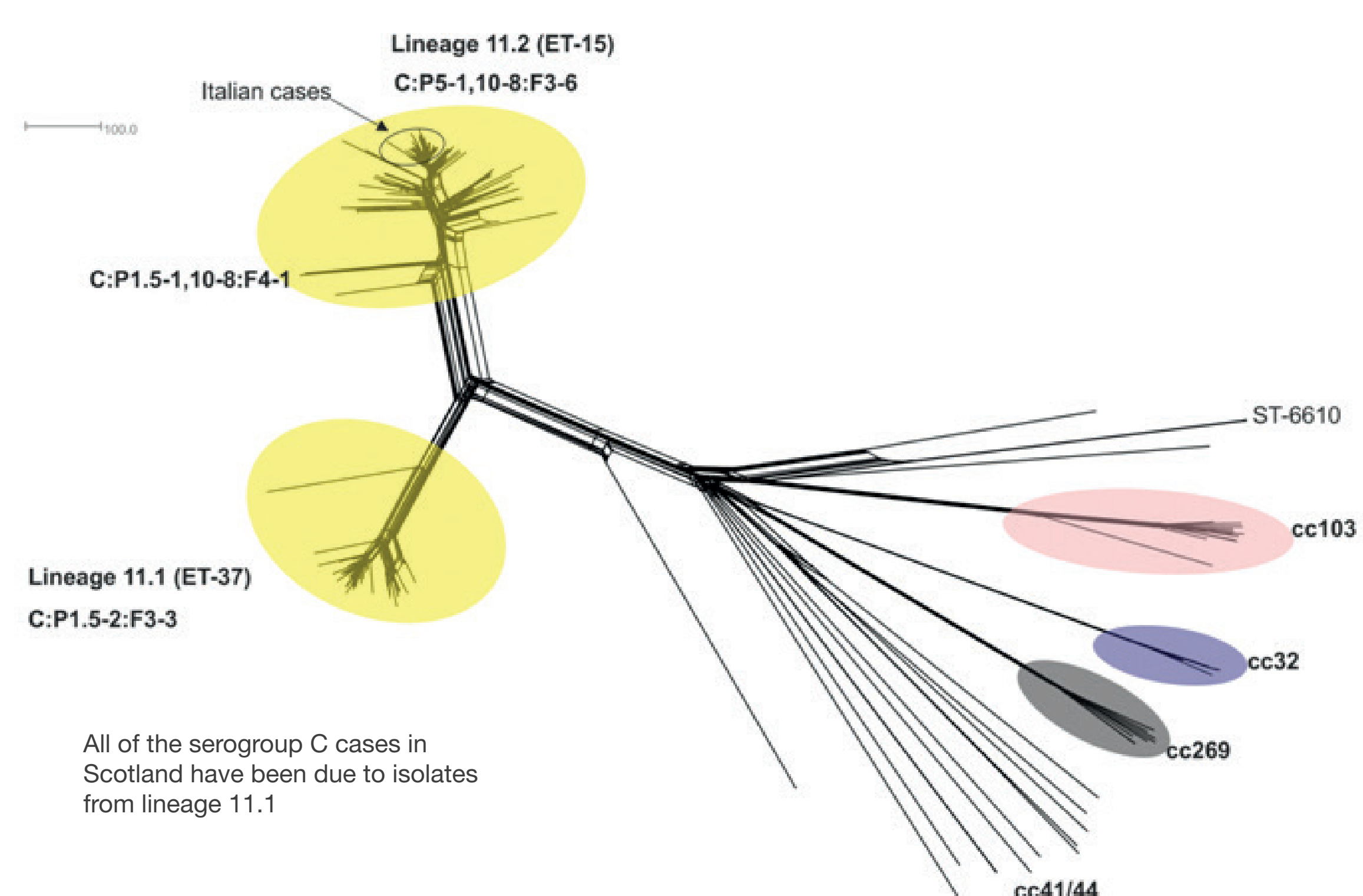


Figure 4: cgMLST phylogenetic analysis of all serogroup C isolates in the UK (MRF-MGL)



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Affiliations

1. Health Protection Scotland, Glasgow, Scotland, UK.
2. NHS Greater Glasgow & Clyde, Glasgow, Scotland, UK
3. Department of Zoology, University of Oxford, England, UK

Contact email address: eisin.mcdonald@nhs.net