

# An Audit to Address the Problem of Inappropriate New Patient Referrals For Orthodontic treatment in the Northern Isles of Scotland.

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## Introduction

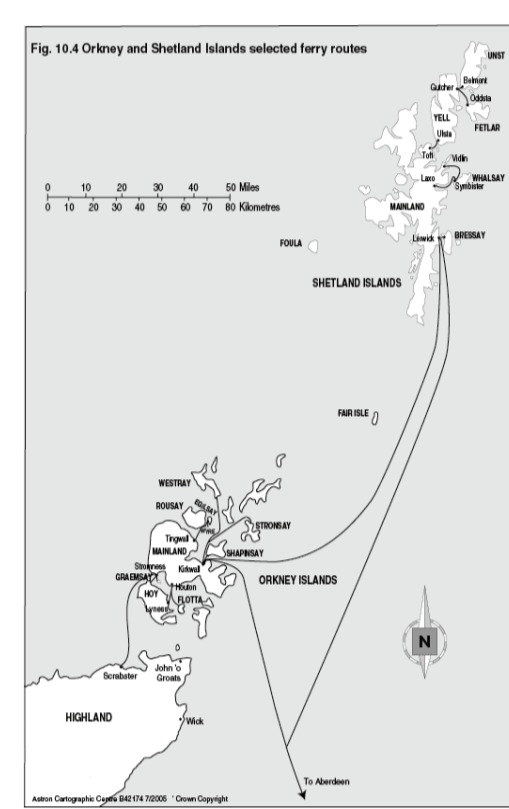
There are no NHS Orthodontic specialists in the Northern Isles. All Orthodontic treatment in both archipelagos is provided by four dentists with special interests in orthodontics (two in Orkney, two in Shetland) within the Community/Salaried Services. Usually the treatment planning for both straightforward & complex cases is carried out periodically by visiting consultants from NHS Grampian. Two consultants visit Lerwick, Shetland for a combined total of 30 clinical sessions per year, and a third consultant visits Kirkwall, Orkney for a total of 20 sessions per year.

There is thus a single referral route for prospective NHS Orthodontic patients within the Northern Isles, in contradistinction to the situation in other areas of mainland Scotland. It is dictated by the salaried character of primary dental care in both archipelagos.

A recent increase in the number of referrals, and political directives to control waiting times has put additional pressures on an already limited service.

Inappropriate referrals are always frustrating as they extend the waiting time for treatment and waste precious clinical time. It is very relevant in the Scottish isles as very often patients have to travel for this appointment by ferry or plane and the consultants' time on the island is limited as they can fly to the isles only occasionally.

**Figure 1**  
Map of Northern Scotland with some selected Ferry routes which the patient has to travel for dental appointments.  
Courtesy of Scottish Government



## Literature Background

Up to 45% of new Orthodontic referrals may be inappropriate(1). Reports on efficiency of guidelines to improve the problem are conflicting. They made a little difference to the referral patterns in study from North West of England(2) but improve the situation in Ireland(3).

Appropriateness and patterns of orthodontic referral were investigated in many different countries but seem to be mainly disclosed in places like United Kingdom (1,2,4,5) where people could benefit from orthodontic treatment as a part of national health service.

The most common reasons for inappropriateness of referrals are: The Low Overall Objective Need for treatment on oral health and aesthetic grounds; patients declining treatment; poor dental health and/or oral hygiene or too early for treatment(2-4).

## Methods

The referrals pathways vary in both archipelagos. In Shetland referred patients are booked straight to a consultant clinic. In Orkney referrals are filtered by the dentist with special interest in orthodontics who is the Chief Administrative Dental Officer (CADO) of the area.

The three visiting Consultant orthodontists each completed the audit for 25 consecutive new patients on their visits to the Northern Isles between December 2009 & March 2010 inclusive.

A similar audit was done by the CADO in Orkney before booking on the Consultant Clinic.

The referrals were audited following accepted model of ideal orthodontic referral which is based on six domain bases on the British Orthodontic Society Referral Guideline(12,13).

- **Timeliness** The patients should be developmentally ready for either:
  - full assessment for definitive treatment
  - assessment for interim advice, e.g. for a mixed dentition problem.
- **Need for treatment** based on the Index of Orthodontic Treatment Need (IOTN DHC &/or IOTN AC).
- **Interest in treatment** The patients should be keen to consider treatment.
- **Oral Health** should be good and stable with regard to Oral Hygiene and gingival health
- **Oral Health** should be good and stable with regard to caries stability.
- **Correct specialty**

After first audit circle the Referral Package was created and distributed to all primary dental care dental practitioners in the Northern Isles including newly recruited and locum dentists. It contained the standardised referral letter on a "tick the box" model and a referral booklet. The design of the referral letter gives reassurance that even if referrer is not familiar with booklet, the letter would allow him to refer appropriately.

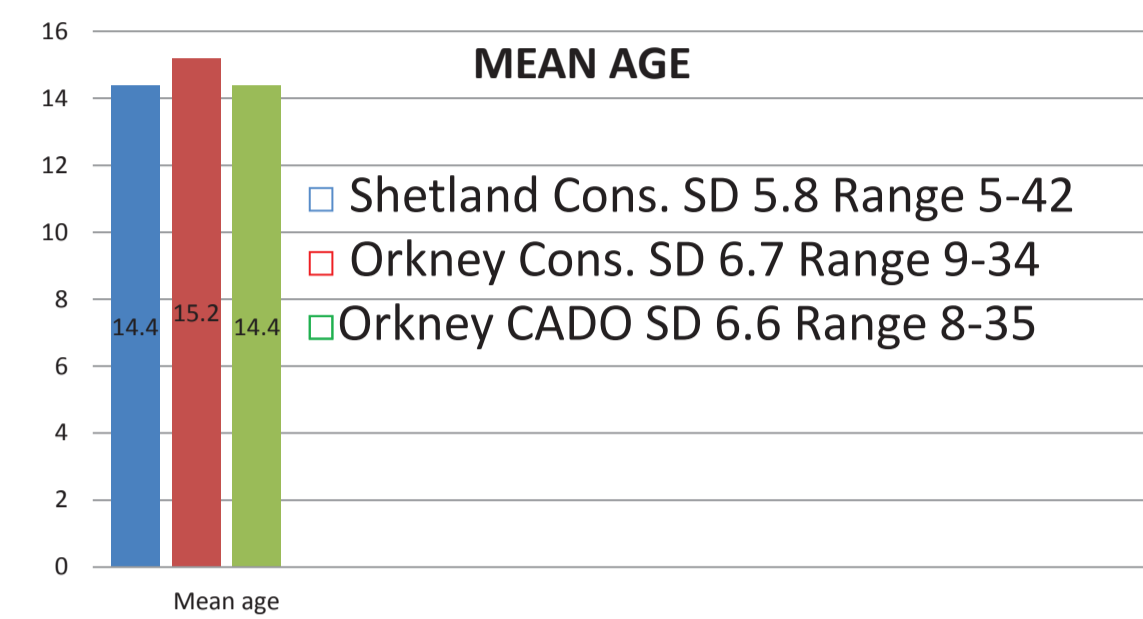
**Figure 2: Referral Package**

After distribution, the referral pathway in Orkney was changed. CADO stopped seeing all new patients and started to triage the referral letters only with assessment of the borderline cases only.

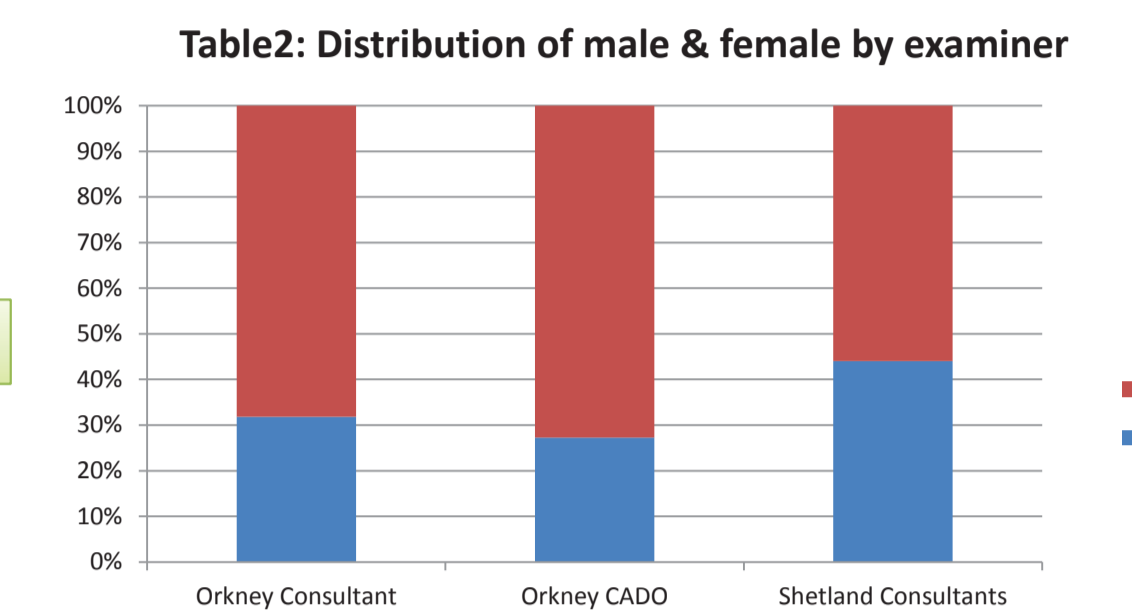
A subsequent audit started four months after distribution of the referral package and the patients referred prior to distribution of the Referral Package were excluded

## Results

There were 3 duplicate records in the Orkney CADO and Consultant lists which were removed. The basic demographic is shown in Charts 1 and 2



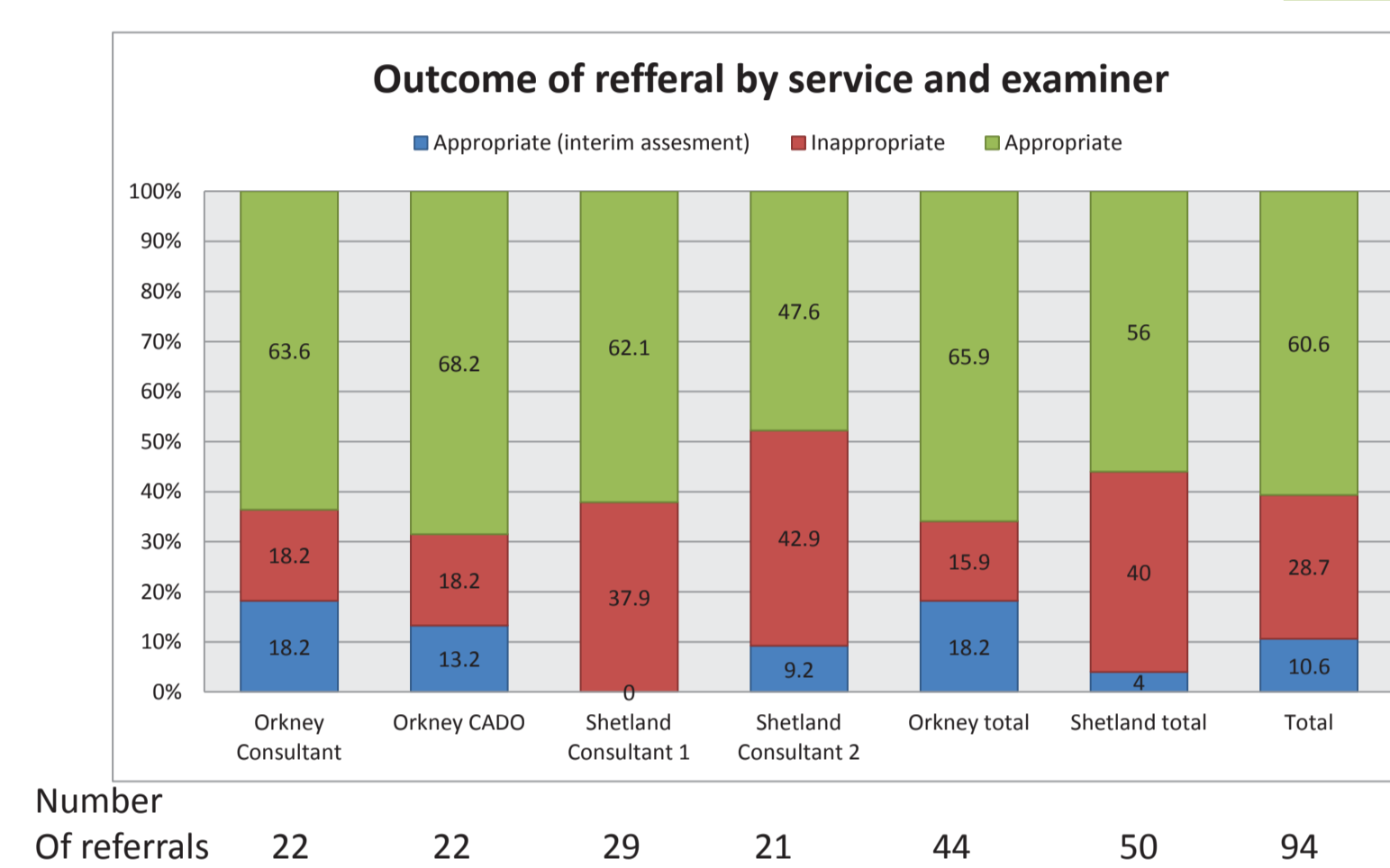
**Charts 1 and 2**



Orkney cf Shetland  $\chi^2 = 2.092$   
 $P = 0.148ns$  Fisher's Exact  $P = 0.2ns$

Over a quarter (28.7%) of the 94 audited referrals in the Northern Isles fell into the "Inappropriate – Totally" category, with 60.6% appropriate for full assessment and treatment planning and 10.6% appropriate for advice on interim management (see Chart 3).

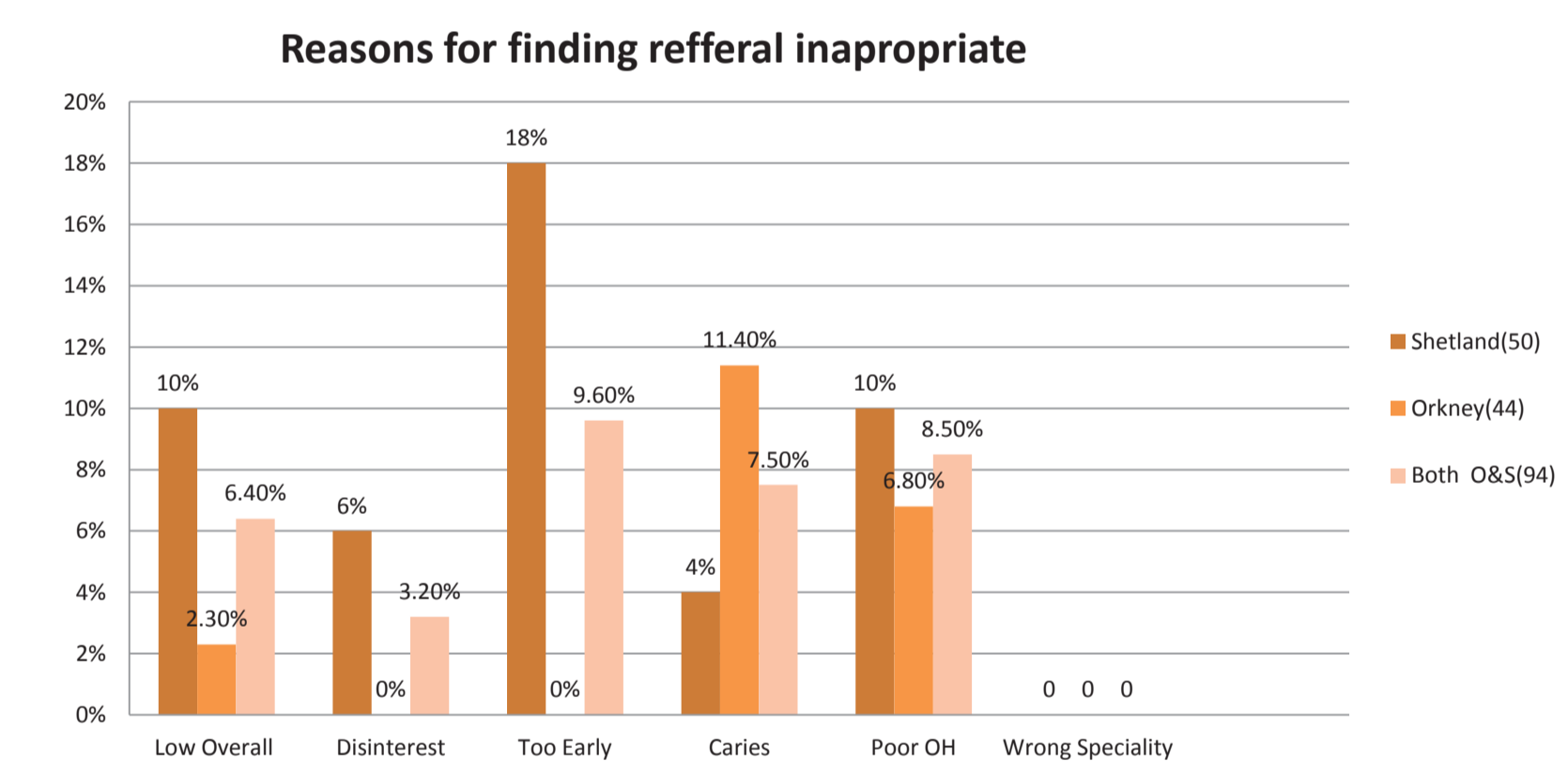
**Chart 3**



Statistics for comparison of two-way outcome i.e. rates of Inappropriate referral  
Orkney Consultant cf Orkney Prelim:  $\chi^2 = 0.170$ ,  $P = 0.680 ns$ , Fisher's Exact test:  $P = 0.500 ns$   
Shetland Consultant 1 cf Shetland Consultant 2:  $\chi^2 = 0.123$ ,  $P = 0.726 ns$ , Fisher's Exact  $P = 0.776 ns$   
Orkney Consultant cf Shetland Consultants  $\chi^2 = 6.145$ ,  $P = 0.013^*$ , Fisher's Exact test:  $P = 0.017^*$   
Orkney Prelim cf Shetland Consultants (two-way outcome for Inappropriate referrals)  $\chi^2 = 3.273$ ,  $P = 0.070$ , Fisher's Exact test:  $P = 0.103$   
All Shetland cf All Orkney (two-way outcome for Inappropriate referrals)  $\chi^2 = 6.635$ ,  $P = 0.010^{**}$ , Fisher's Exact test  $P = 0.012^{***}$

There appeared to be marked differences between the results from Shetland and Orkney, but no significant differences between the two Shetland consultants' figures, or between the Orkney Consultant & the CADO's "Preliminary Views". The reasons for referrals being considered inappropriate also varied between the two island groups.

**Chart 4**



The second audit data was collected but awaits analysis.

## Discussion

Gender distribution is difficult to interpret because of the sample size. Shetland's higher number of male referrals is closer to the figures found in the North of Scotland(5) and could be connected with social background and higher migration connected with the oil industry. On the other hand all three 'inappropriate referrals' due to lack of interest in treatment were the male patients in Shetland.

The number of inappropriate referrals was significantly lower in Orkney than in Shetland, and in fact was much better than that found in the North East of Scotland(5). This could suggest that the CADO "Initial Views" makes this difference. However, comparing the data of Orkney Consultant and CADO shows a very small not statistically significant difference in inappropriate referrals number in favour to consultant. This reduces the value of the Initial View clinics, however, although sampling errors cannot be ruled out, and the knowledge that CADO runs these clinics may make the dentists more cautious about their referral patterns. The problem in Shetland may be more due to the high turnover of professional staff, and the number of staff who qualified overseas, perhaps in countries where mixed, or even deciduous dentition orthodontic treatment is the norm.

## References

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