

# RAPiD: Can Audit and Feedback Reduce Antibiotic Prescribing in Dentistry?

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## Background

Antimicrobial resistance is an increasingly serious threat to public health and patient safety<sup>1</sup>.

Dentists prescribe 9% of all antibiotics in primary care in Scotland<sup>2</sup>.

Evidence suggests dentists often prescribe antibiotics inappropriately<sup>3</sup>.

The Scottish Dental Clinical Effectiveness Programme's (SDCEP) *Drug Prescribing for Dentistry*<sup>4</sup> guidance (Figure 1) includes advice on appropriate antibiotic prescribing.

Despite widespread usage of this guidance the total number of antibiotics prescribed by dentists increased steadily up to 2013<sup>2</sup>.

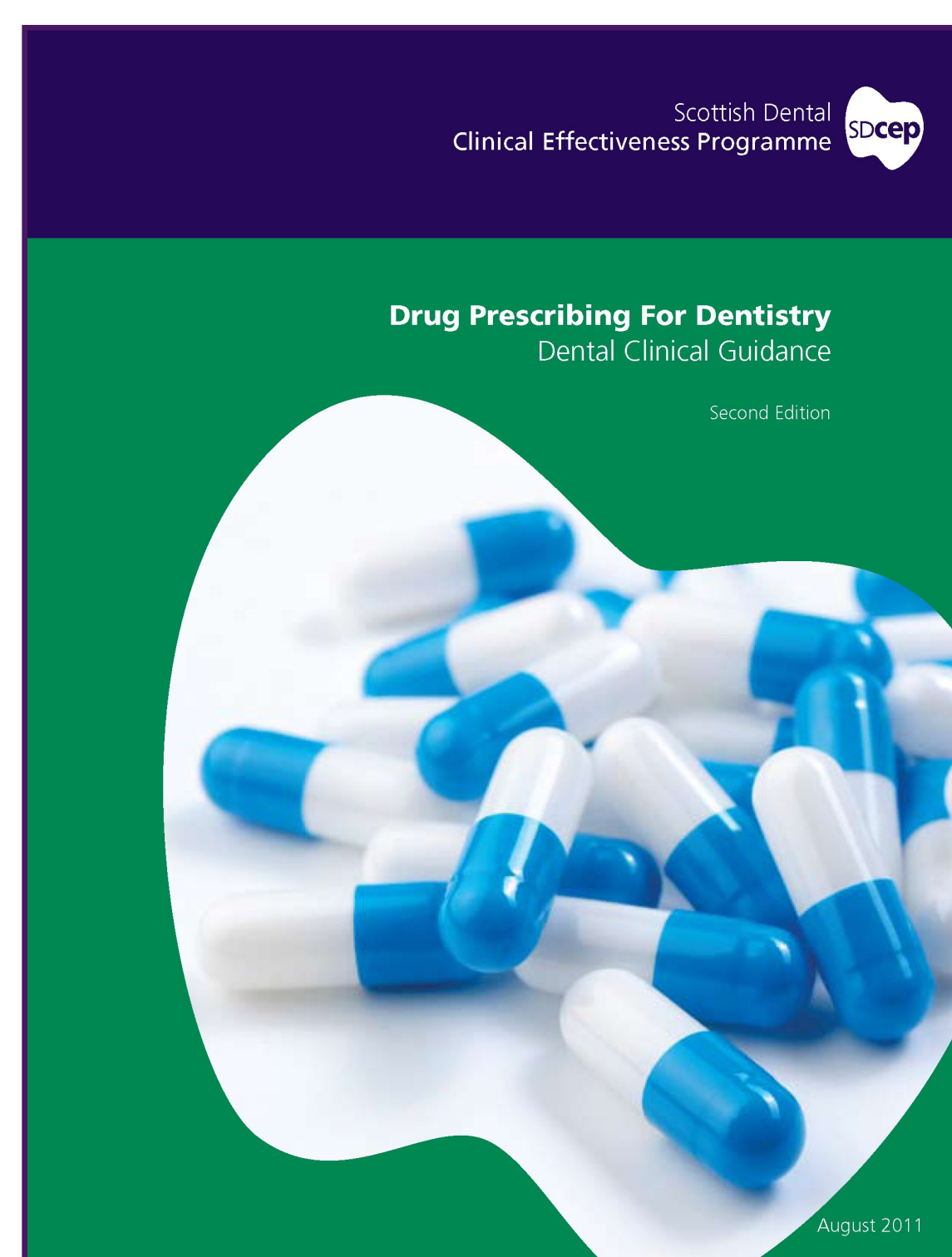


Figure 1

## Aims & Objectives



To evaluate the effectiveness of individualised audit and feedback (A&F) interventions for the translation into practice of the SDCEP guidance recommendations on antibiotic prescribing.

In addition, a concurrent theoretically informed interview based process evaluation was conducted to explore the acceptability of the interventions and to identify barriers and enablers to evidence-based antibiotic prescribing practice.



## Methods

**Design** - a cluster randomised controlled trial<sup>5</sup> conducted in General Dental Practices in Scotland from May 2013 to April 2014 (Figure 2).

795 practices were randomised to control or one of the following A&F intervention groups.

- A&F ± written behaviour change intervention
- A&F ± health board comparator
- A&F at 0 and 6 months ± 9 months

**Prescribing Rates** - Dentists received feedback on their individual prescribing rates. Each dentist's monthly prescribing rate was calculated using linked, routinely collected data from the PRISMS (prescribing) and MIDAS (dental treatment claims) databases (Figure 3).

**Behaviour Change Intervention** - This text based intervention distilled and reiterated the 'behavioural instructions' within the SDCEP guidance (Figure 3).

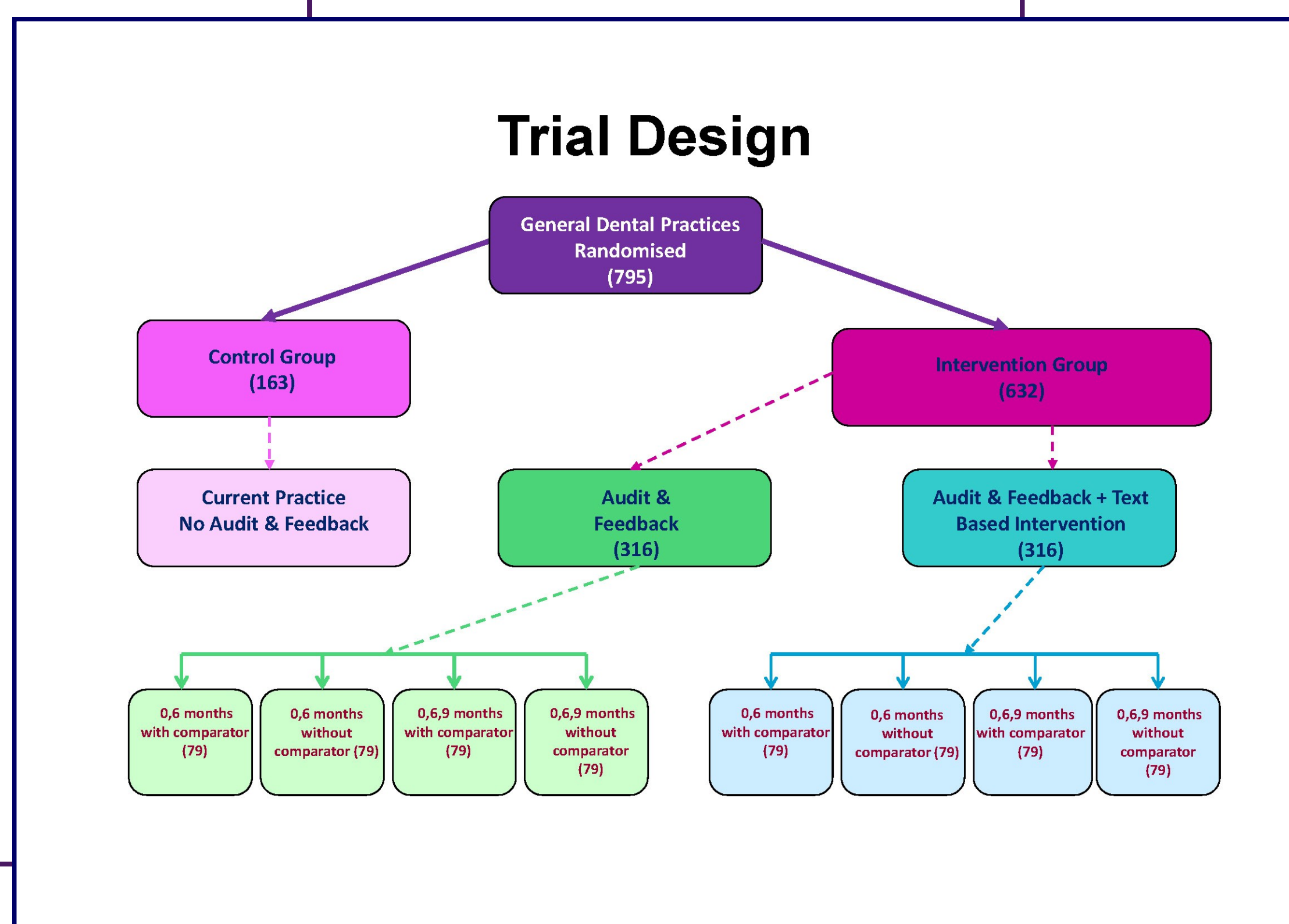


Figure 2

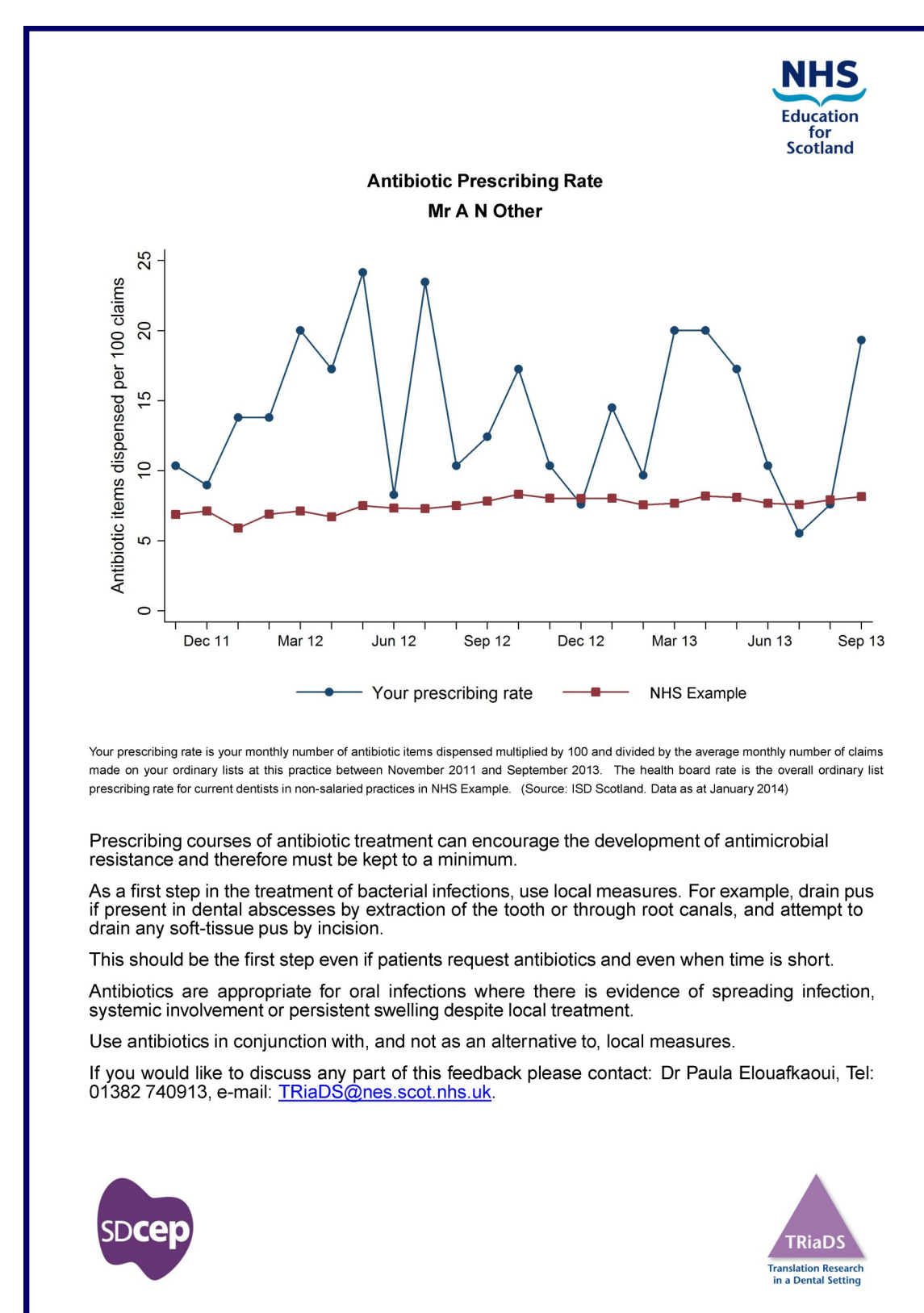


Figure 3

## Results

**Primary Outcome** - The total number of antibiotic items dispensed per 100 treatment claims over the 12 months from May 2013 to April 2014.

**Main Analysis** - At 12 months, the antibiotic prescribing rate in the intervention group was **6% lower** than in the control group ( $p=0.014$ ).

Extrapolated to all dentists in Scotland this represents a reduction of approximately **20,000 antibiotic items**.

**Sub Group Analyses** - Greatest reduction observed for high prescribing dentists - 12% reduction compared to high prescribers in the control group.

A&F that includes a written behaviour change intervention and a health board comparator is likely to have the greatest effect:

A&F + written behaviour change intervention (-6%;  $p=0.005$ )

A&F + health board comparator (-4%;  $p=0.057$ )

A&F at 0 and 6 months + 9 months (0%;  $p=0.989$ )

**Process Evaluation** - Acceptable to the dentists and support the results of the statistical analyses. Findings will enable development of additional educational interventions to support dentists further reduce their antibiotic prescribing.

## Discussion

This study, conducted as part of NHS Education for Scotland's Translation Research in a Dental Setting (TRiADS)

programme, provides a robust evaluation of the impact of A&F on antibiotic prescribing in real world dental practice and adds to the evidence base about how and when A&F works best.

The results demonstrate that antibiotic prescribing by dentists can be significantly reduced by the provision of individualised A&F. The A&F strategy likely to have the greatest impact is the provision of A&F plus a comparator plus a written intervention reiterating the 'behavioural instructions' included in guidance. More frequent provision of A&F showed no differential impact.

This is a relatively straightforward public health and patient safety intervention that could help the dental profession address the increasing challenge of antimicrobial resistance.

Through its collaborative links with dental healthcare policy makers, TRiADS is currently identifying how this intervention might be adopted within routine service delivery.

## References

1. World Health Organisation. Antimicrobial Resistance Factsheet No. 194; April 2014.
2. Scottish Antimicrobial Prescribing Group. Primary Care Prescribing Indicators. Annual Report 2013-14.
3. Dar-Odeh NS *et al*. Antibiotic prescribing practices by dentists. *Ther Clin Risk Manag*; 2010.
4. Scottish Dental Clinical Effectiveness Programme: Drug Prescribing for Dentistry, Dental Clinical Guidance; 2011.
5. Current Controlled Trials ISRCTN49204710.