Dental Stewardship – update on achievements & new work plan

Andrew Smith
Professor & Consultant Microbiologist,
Objectives

SAPG – Dental: Overview & Terms of Reference

Information

Quality Improvement

Education

Future plans
GLOBAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE

Five strategic objectives:

1. Improve awareness and understanding
2. Strengthen the knowledge through surveillance and research
3. Reduce the incidence of infection
4. Optimize the use of antimicrobial medicines
5. Ensure sustainable investment
Untreated tooth decay is the most common global health condition. It affects 34% of the global population. Although largely preventable, the problem has barely improved in the last 30 years.

Extreme oral health inequalities exist for the most marginalised and socially excluded groups. Early childhood tooth decay affects between 68-90% of Indigenous children around the world. People with lower socioeconomic status have poorer oral health.

The Lancet
Figure 8: Change in the percentage of P1 children in Scotland with no obvious decay experience; by SIMD quintile\textsuperscript{1,2}

Source: PHS NDIP Database
1. No obvious decay experience is when $d_{mft}=0$.
SAPG – Dental Group Membership

Membership:
1. Jacqueline Sneddon, Project Lead, the Scottish Antimicrobial Prescribing Group
2. William Malcolm, Pharmaceutical Adviser, National Services Scotland
3. Tom Ferris, Deputy Chief Dental Officer, Scottish Government
4. Irene Black, Assistant Director of Dental, NHS Education for Scotland
5. Andrew Seaton, Consultant in Infectious Diseases, NHS Greater Glasgow and Clyde
6. Alison Macdonald, Lead Antimicrobial Pharmacist, NHS Highland
7. Helen Devennie, Specialist Dental Officer, Inverness Dental Centre
8. Stuart Robb, Independent dental contractor

Membership:
9. Linda Young, TRiADS representative
10. Samantha Rutherford, SDCEP representative
11. Colin Ritchie, Specialty Registrar in Orthodontics (ST2), NHS Tayside
12. Jim McCaul, Consultant in Maxillo-facial Surgery, NHS Greater Glasgow and Clyde
13. Douglas Robertson, Senior Clinical lecturer/Honorary Consultant in Restorative Dentistry, University of Glasgow Dental School
14. Deborah Lockhart, SMVN representative
15. David Martin, Assistant Postgraduate Dental Dean (CPD)
16. Adelle McElrath, Dental Practice Adviser, NHS Borders
17. Dr Lesley Cooper, Health Service Researchers, SAPG

Marion Pirie (HIS admin support)
SAPG – Dental

NES National GDP antibiotic prescribing audits

Linked to requirement to carry out 15 hours of clinical audit/QI activities (funded)
Total breakdown of antibiotic use in 2019

- **Primary care**: 71.5%
  - Medical
  - Nurses
  - Dentists

- **Secondary care**:
  - Pharmacists
  - Acute hospitals
  - Non-acute hospitals

- **Overall**: 2.9%
  - 7.9%
  - 14.3%
  - 0.7%
SAPG – Dental

Figure 7: Antibiotic prescribing by dentists in primary care in Scotland (items per 1,000 population per day; Items/1,000/Day), 2015 to 2019, by year

17.7% (p<0.001)

29% MTZ

68% Amoxyl

[Data source: NHS National Services Scotland (NSS) and Public Health Scotland (PHS)]
With thanks to William Malcolm & Polly Russell, ARHAI, Scotland

Advice, Analgesia, Antibiotics

*A remote consultation and triage service whose outcomes are:
- advice, analgesia, antimicrobials *where appropriate* (AAA)
- referral, when absolutely necessary and treatment cannot be delayed, to a designated UDC site for a face-face consultation

Comparison of antimicrobial prescribing for dental and oral infections in England and Scotland with Norway and Sweden and their relative contribution to national consumption 2010–2016

Andrew Smith, Rania Al-Mahdi, William Malcolm, Nikolaus Palmer, Gunnar Dahlen & Mohammed Al-Haroni

Proportion (%) ab: total antibiotics dispensed by GDP’s

Comparison of antimicrobial prescribing

![Graph showing comparison of antimicrobial prescribing in Norway, Sweden, England, and Scotland.](image-url)
Pen V versus Amoxicillin

Penicillins

“Phenoxymethyl penicillin is effective for dento-alveolar abscess.”

Broad spectrum penicillins:

“Amoxicillin is as effective as Phenoxymethyl penicillin but is better absorbed; however it may encourage emergence of resistant organisms.”

Clinical efficacy Pen V vs Amoxyl

The Use of Antibiotics in Odontogenic Infections: What Is the Best Choice?
A Systematic Review (2017)

The search included 1,109 articles.
46 articles full reading
16 included in final review
15 different antibiotics were used......

- once drainage has been performed +/- infection source removed,
- all antibiotics tested are equally effective with respect to clinical cure,
- choice of antibiotics is not as successful as the local intervention treatment procedure.

SAPG – Dental: Severe Odontogenic infections

Scotland wide data
Epidemiological year (missing 2018/19 data)
(Treatment: F16.1 incision & drainage)

Data courtesy of Douglas Robertson
Severe Odontogenic Infections

47/67 pts had sepsis on admission
Sepsis pts stay = 4.7 days (2-17)
No systemic sepsis = 2.9 days (1-6)


Prof Jim McCaul
Douglas Robertson
SAPG – Dental: Impact of SOI

Dental sepsis cases and their management: OMFS Dept, QEUH, Glasgow

Emma Ford DF2 NHS Lanarkshire, Mark Ansell SpR, Colin Maclver Consultant

12 months retrospective case note review (2017 data)

Total of 108 patients required Incision and Drainage +/- dental extractions under GA at QEUH

Range of in-patient stay 1-20 days (mean 4.3)

12 patients had ITU stays (n=54 days)

The cost....

ITU: 54 days @ £2,260 pd =
Ward: (mean 3 days): 324 days @ £1,874 =
Theatre: 108 x £2,428 =
Total approx = £1 million
Tackling Antibiotic Resistance: What Should Dental Teams Do?

4.7 (14 reviews)

Discover the danger posed by antibiotic resistance, and how dental teams can meet the challenge to protect patients.

Join course for free

Tackling Antibiotic Resistance: What Should Dental teams do?
Evaluation of University of Glasgow Student Feedback

Dr Lesley A. Cooper
Health Service Researcher SAPG
Phenoxymethylpenicillin recommended first line when antibiotics are required for acute dento-alveolar infections

Scottish Dental
Accessible information about Dentistry

Penicillin V
recommended as first line antibiotic for acute dento-alveolar infections

Posted on: October 15, 2020

Scotland Revises Antibiotic Prescribing Guidance for Acute Dento-alveolar Infections

Priscilla Lynch
November 19, 2020
......you have failed to appreciate the point made by the FGDP guidance and appreciated widely by GDPs – the practicalities of prescribing & Pt compliance......
“The emphasis at the moment should be on using antibiotics only when appropriate to do so and encouraging the provision of clinical interventions rather than distracting the agenda by a focus on nuances of what to prescribe.”
Dental: Postgraduate Education

**CLINICAL**

40 Remote restorations
43 Phenoxy methyl penicillin
45 Paediatric caries post-COVID

**Back to the future?**
Phenoxy methylpenicillin as a first line antimicrobial agent for acute dento-alveolar infections

Dentists lead antimicrobial resistance fight
Penicillin V reemerges as first-line antibiotic in dental infections
Dental: Postgraduate Education

TURAS platform
Free to access
CPD credits

David Martin
Assistant Postgraduate Dental Dean
for GDP Education (CPD)
(& James Bremner)
NHS Education for Scotland
Pt Consultation
Jacqui Sneddon
Domenico (Graphic Designer)
Results: dental phenoxyethylpenicillin use

Number of Paid Phenoxyethylpenicillin Items for dental (GP14) forms - Scotland

With thanks to William Malcolm & Polly Russell, ARHAI, Scotland
Duration of antibiotic treatment

NICE: Prescribe a 5 day course of amoxicillin/Pen V (review after 3 days)

% of total Amoxyl 500mg capsules

Credit: William Malcolm

2019 data

On-going Evidence review
Lesley Cooper
Nikolai Stankiewicz (GDP)

https://cks.nice.org.uk/topics/dental-abscess/prescribing-information/phenoxymethylpenicillin/
Audit and feedback with or without training in-practice targeting antibiotic prescribing (TiPTAP): a study protocol of a cluster randomised trial in dental primary care

Beatriz Goulao¹, Claire Scott², Irene Black², Jan Clarkson²,³, Lee McArthur², Craig Ramsay¹, Linda Young²,³ and Eilidh Duncan¹
Metronidazole resistance: a hidden epidemic?

A. Smith

BRITISH DENTAL JOURNAL | Advance Online Publication | MARCH 16 2018

Table 3  Non-susceptibility in anaerobic isolates.

<table>
<thead>
<tr>
<th>Organism (total number)</th>
<th>Antimicrobial (non-susceptible)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bacteroides thetaiotaomicron</em> (n=1)</td>
<td>metronidazole; <em>Eco-amoxiclav; clindamycin</em></td>
</tr>
<tr>
<td><em>Actinomyces radingae</em> (n=1)</td>
<td>clindamycin</td>
</tr>
<tr>
<td><em>Clostridium perfringens</em> (n=1)</td>
<td>clindamycin; penicillin</td>
</tr>
<tr>
<td><em>Bacteroides xylanisolvens</em> (n=1)</td>
<td>clindamycin; piperacillin-tazobactam</td>
</tr>
<tr>
<td><em>Fingeoldia magna</em> (n=1)</td>
<td>metronidazole</td>
</tr>
<tr>
<td><em>Bacteroides xylanisolvens</em> (n=1)</td>
<td>clindamycin</td>
</tr>
<tr>
<td><em>Parabacteroides distasonis</em> (n=1)</td>
<td>metronidazole; <em>Eco-amoxiclav; clindamycin</em></td>
</tr>
</tbody>
</table>

Non-susceptibility in anaerobic isolates such as *Bacteroides thetaiotaomicron*, *Actinomyces radingae*, *Clostridium perfringens*, *Bacteroides xylanisolvens*, *Fingeoldia magna*, *Bacteroides xylanisolvens*, and *Parabacteroides distasonis* was reported.

**Review**

Metronidazole resistance and *nim* genes in anaerobes: A review

Corentine Alauzet a,b, Alain Lozniewski a,b, Hélène Marchandin c,*

Anserobe 55 (2019) 40–53
**Metronidazole use in dental infections?**

**Dental Metronidazole as % of All Primary Care (PC) Metronidazole**

![Graph showing percentage of dental metronidazole use from 2014 to 2020.]

**Evidence base for dental prescribing?**

**Items (2020)**
PC = 177,220
Dental = 104,108
World Antibiotic Awareness Week
Each November

The future of antibiotics depends on all of us.

Each November, World Antibiotic Awareness Week (WAAW) aims to increase global awareness of