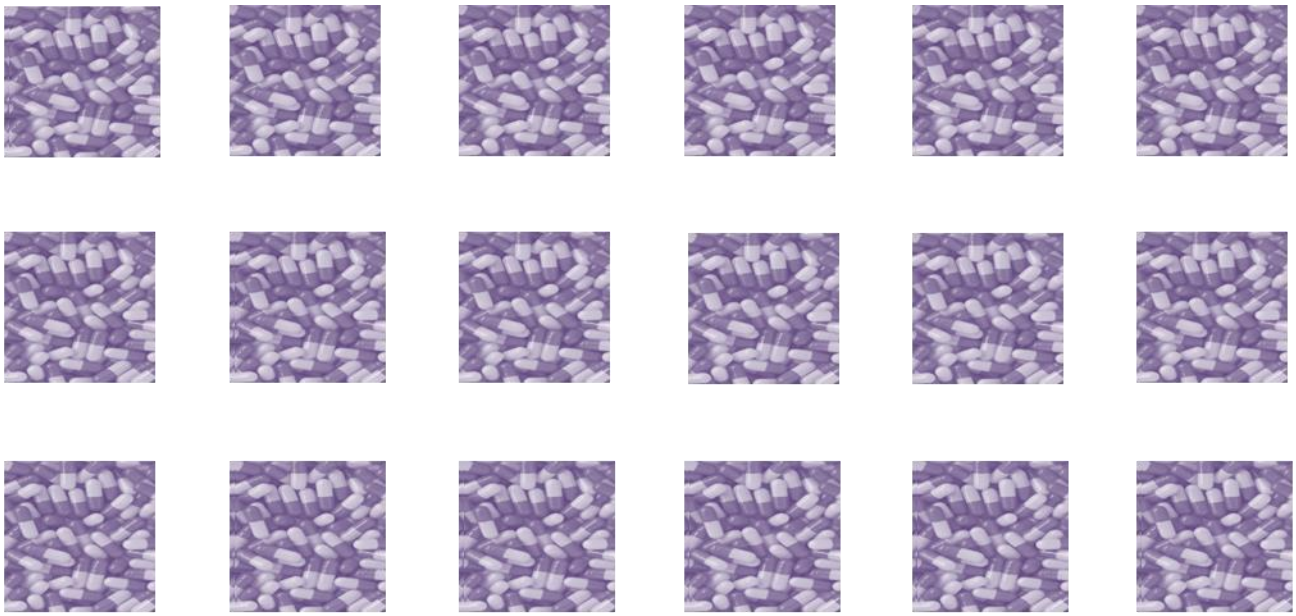
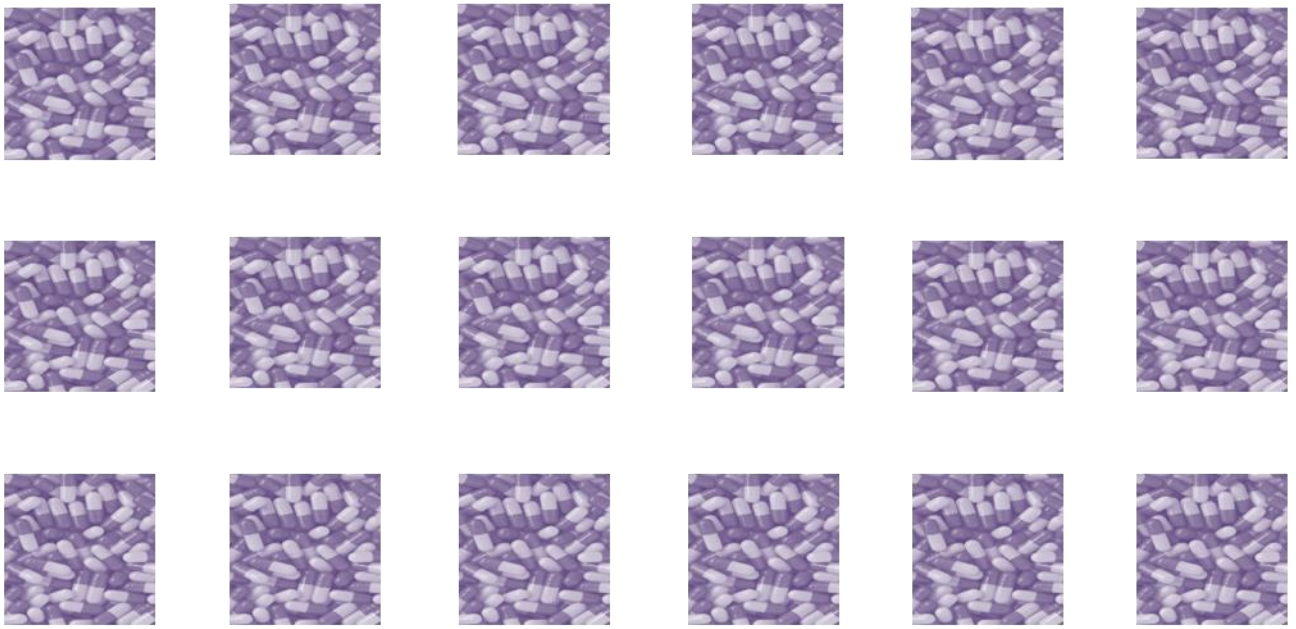
National Therapeutic Indicators and Additional Prescribing Measures 2016/17





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Acknowledgements

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In addition we wish to acknowledge the support of the Scottish Prescribing Advisors Association, The Scottish Antimicrobial Prescribing Group and the National Chronic Pain Prescribing Strategy Group.

Thanks to all involved for their time, patience and expertise.

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Pills Image courtesy of Piyachok Thawornmat at FreeDigitalPhotos.net

Foreword

We are pleased to present the National Therapeutics Indicators Baseline Report for 2016-17, containing data from the third quarter of the fiscal year 2015-16.

NHS Scotland provides high quality care through its use of medication and remains committed to continual review and improvement in this area. With around 270,000 items (medication products) prescribed each day, it is crucial that clinicians and managers continue to focus on safe and effective prescribing.

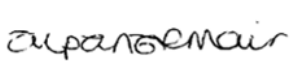
Boards should make use of the information in this report to identify areas for improvement and implement change to reduce unwarranted variation, waste and harm, as recommended by the Chief Medical Officer's report, *Realistic Medicine.*[1] NHS Scotland continues to work towards the goal of higher quality of care within an efficient environment: this report provides Boards with information to help the delivery of that agenda.

Though most of the National Therapeutic Indicators and Additional Prescribing Measures focus on single prescribing areas, they should be viewed in the context that the majority of patients with long-term conditions have more than one, and patient reviews should consider the recommendations in the Polypharmacy Guidance 2015.

Colleagues should use the National Therapeutic Indicators to inform Prescribing Action Plans and consideration of the specific areas identified is recommended for the national focussed approach to medicines management. In addition this report should provide an excellent resource for topics to consider by the GP Cluster Quality Leads.

We commend the information within this report to you.

Kind Regards



Alpana Mair
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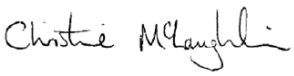
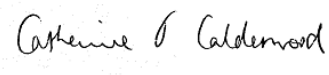


Christine McLaughlin
Director Health Finance



Catherine Calderwood
Chief Medical Officer

May 2017

1 NHS Scotland Chief Medical Officer's Annual Report 2014-15 *Realistic Medicine.*http://www.gov.scot/Resource/0049/00492520.pdf

NATIONAL THERAPEUTIC INDICATORS 2016 to 2017

This report presents the fifth set of National Therapeutic Indicators (NTI) which are developed and maintained by the Effective Prescribing and Therapeutics Branch of the Scottish Government in collaboration with the NTI reference group. The aim of the NTIs is to help continue to improve all six dimensions of quality in prescribing: effectiveness, safety, efficiency, acceptability, equitability and timeliness. [2] The exceptional work which continues to be achieved by prescribers and NHS Board medicines management teams is recognised.

Prescribing indicators have been used by Boards to inform the quality of prescribing over the last fifteen years. Early work was promoted and supported by the Audit Scotland report: *Supporting prescribing in general practice* [3] [4] in 1999. Many early indicators are still in use today. Audit Scotland's report: *Prescribing in General Practice in Scotland (*2013), [5] supports the ongoing use of the NTIs.

The Prescribing Information SysteM for Scotland (PRISMS) provides all of the data used for the NTIs. PRISMS is maintained by the Public Health Intelligence team (PHI) of NHS National Services Scotland (NSS) and allows access to the data collected by Practitioner Services Division (PSD), when processing each prescription dispensed for payment verification.

The NTIs 2015-16 have been developed with ongoing, detailed consultation with medicines management experts from all of the Boards. The NTI reference group is a subgroup of the Scottish Prescribing Advisers Association (SPAA). Consideration of the Welsh National Prescribing Indicators (2015-16) [6] and the English Key Therapeutics Topics (2015) [7] is important in confirming the value of the National Prescribing Indicators. The NTIs are published as corporate reports in PRISMS.

For the second year, we are pleased to include twenty Additional Prescribing Measures (APMs). These national indicators use the Prescribing Information System (PIS). The dataset includes anonymised patient level data, which allows more sophisticated indicators. The APMs are published as corporate reports in PIS.

The fourteen NTIs and twenty APMs are developed to use Q3 of the previous year as the baseline.

Nani gigantum humeris insidentes

2 WHO Quality of care http://www.who.int/management/quality/assurance/QualityCare_B.Def.pdf?ua=1
3 *Supporting prescribing in general practice – a progress report* June 2003 ISBN 1 304651 05 4
4 *Supporting prescribing in general practice September 1999* ISBN 0 906206 72 3
5 P*rescribing in general practice in Scotland* January 2013 ISBN 978 1 907916 86 1
6 All Wales Medicines Strategy Group. *National Prescribing Indicators* (2014-15) January 2014
7 NICE. Key therapeutics topics – *Medicines management options for local implementation* (2013)

Contents

Key for enclosed graphs:

- Median – dark grey bar
- Interquartile range – grey box
- Maximum and minimum – whiskers, unless greater than 1.5 of interquartile range
- Outliers – (○) values of greater than 1.5 but less than 3.0 of interquartile range
- Extreme outliers – (●) values of greater than 3.0 of interquartile range

Proton Pump Inhibitors

This NTI focusses on the safety concerns regarding the long-term use of proton pump inhibitors (PPI). There is no clinical evidence suggesting improved efficacy of high-dose, high-cost PPIs when compared to low-dose, low-cost PPIs. The considerable drivers to prescribe PPIs and the difficulties of withdrawing treatment once commenced are recognised. **The aim is to encourage use of PPIs at the lowest and most cost-efficient dose and to minimise the potential risks of inappropriate long-term prescription.**

A PPI can be considered for gastroprotection for patients at high risk of gastro-intestinal complications with a NSAID.[8] Gastroprotection must be used for patients on combined antiplatelet and oral anticoagulant.

The most common use of PPIs in primary care is in the management of dyspepsia. Around 25 to 40% of adults in the general population have dyspepsia at any one time and this accounts for up to 5% of GP consultations.[9]

The best empirical anti-secretory drug for treating uninvestigated dyspepsia remains unclear. (Note that uninvestigated dyspepsia would include patients with peptic ulcers; dyspepsia and gastro-oesophageal reflux). A systematic review confirms that PPIs are the most effective anti-secretory drug for treating uninvestigated gastro-oesophageal reflux.[10]

Despite the development of key guidelines,[11] [12] the management of uninvestigated dyspepsia remains controversial. In the absence of '*red flag'* features, two management strategies are recommended: empirical PPI or '*Test and Treat'* for *H* pylori. SIGN 68 *Dyspepsia* currently only recommends the latter approach.

NICE CG17 recommends as-required low-dose PPI (omeprazole 20 mg capsule or lansoprazole 15mg capsule) for uninvestigated dyspepsia. This should be reviewed at least annually. Where patients have uninvestigated 'reflux-like' symptoms regular high-dose PPI (omeprazole 40 mg capsule or lansoprazole 30mg capsule) may be required until symptoms are controlled. Then, as-required low-dose PPI should be considered.

The preference for as-required low-dose PPI with regular review is further reinforced by concerns around serious side effects. Chronic use of PPIs is associated with: community acquired pneumonia[13]; fragility fractures [14] and *Clostridium difficile* Infection (CDI).[15]

Patients prescribed PPIs should be reviewed at least annually and where appropriate continued use stopped. When it is not possible to stop the PPI then an 'as-required low-dose' agent should be used when clinically possible.

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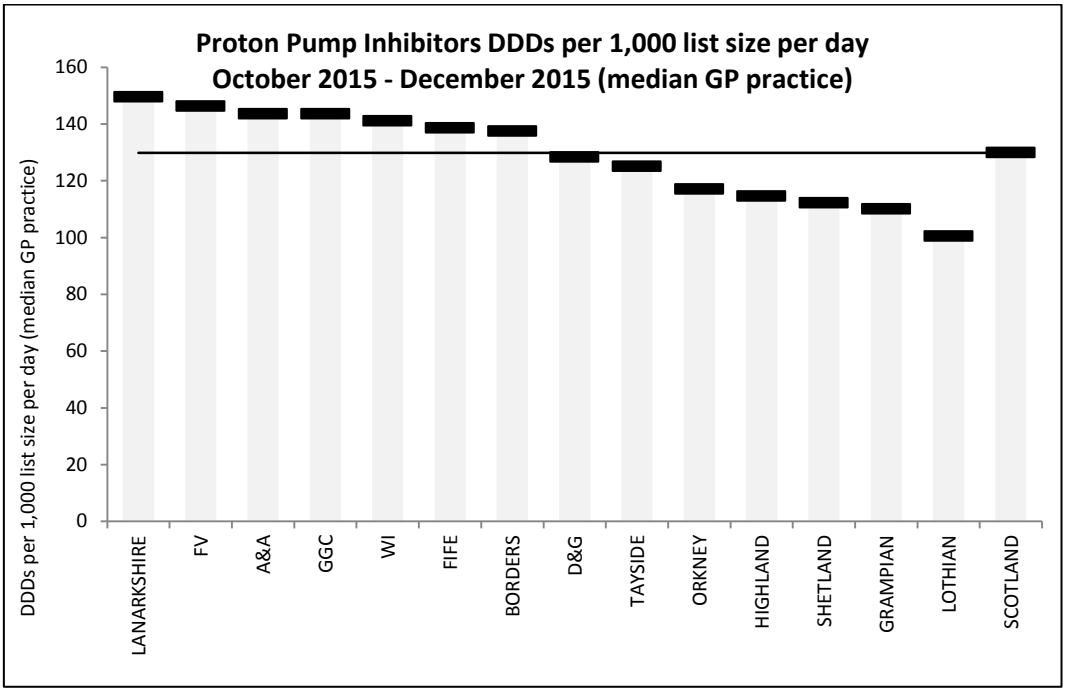
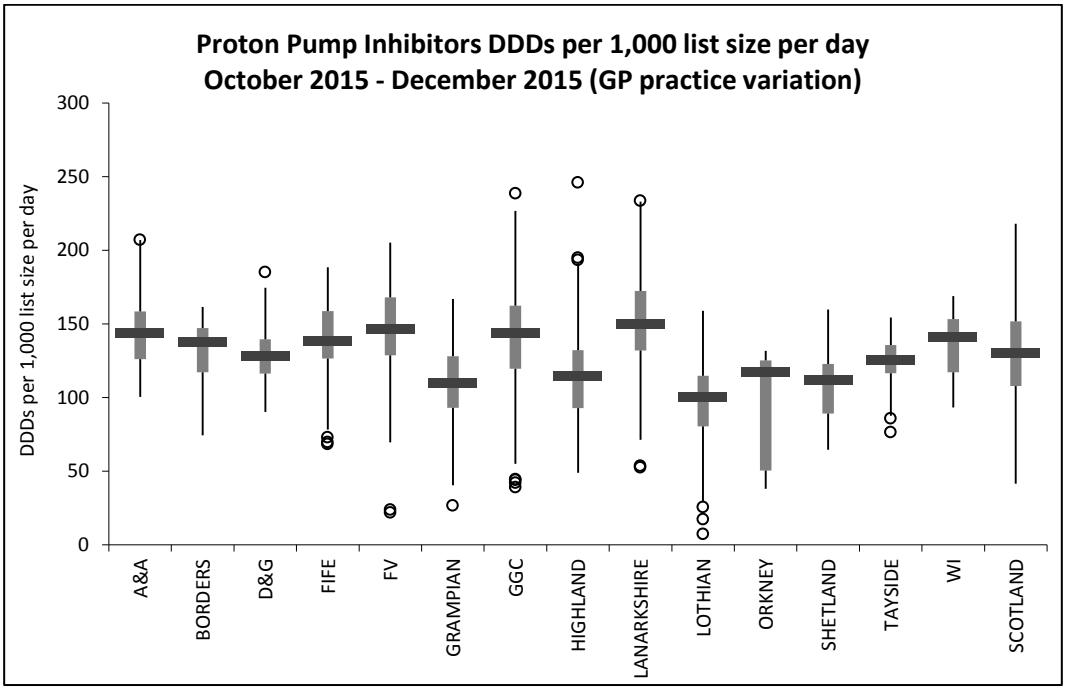
[8] Joint Formulary Committee. *British National Formulary.* Edition 69, March 2015
[9] Zagari RM, et al. *BMJ 2008*; **337**: a1400
[10] Van Pinxteren B, et al. *Cochrane Database of Systemic Reviews 2010,* Issue 11. Art. No. CD002095
[11] SIGN 68 Dyspepsia, March 2003 (Due for review in 2012 – overdue)
[12] NICE CG17 Dyspepsia, August 2004
[13] Laheij RJF, et al. *JAMA 2004*; **292** (16): 1955-60
[14] Kahlili H, et al. *BMJ 2012*; **344**: e372
[15] Howell MD, et al. *Arch Intern Med* 2010; **170**(9): 784-790

NTI1a - Proton Pump Inhibitors: DDDs per 1,000 list size per day

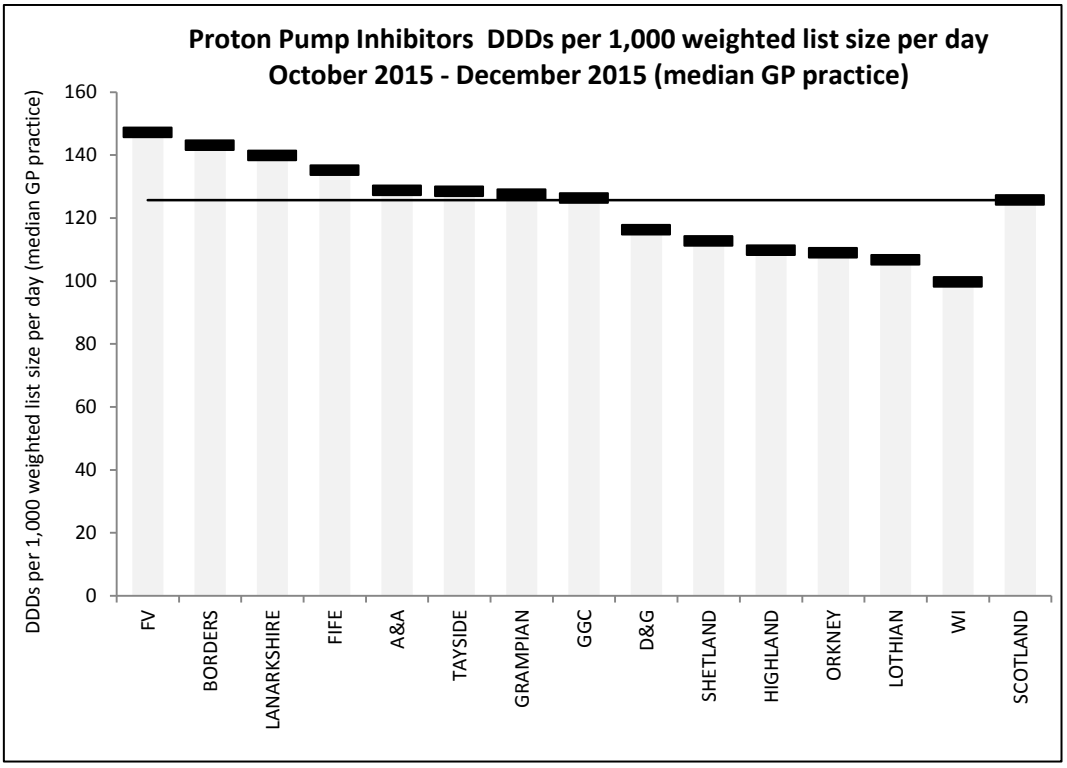
This NTI looks at the increased risk of community acquired pneumonia, fragility fractures and Clostridium difficile infection due to PPIs. Patients prescribed PPIs should ideally be reviewed at least annually and where appropriate the drug stopped. When it is not possible to stop then 'as required low-dose' PPI should be used. The measure looks at the amount of PPI (DDD) used per practice registered patient.

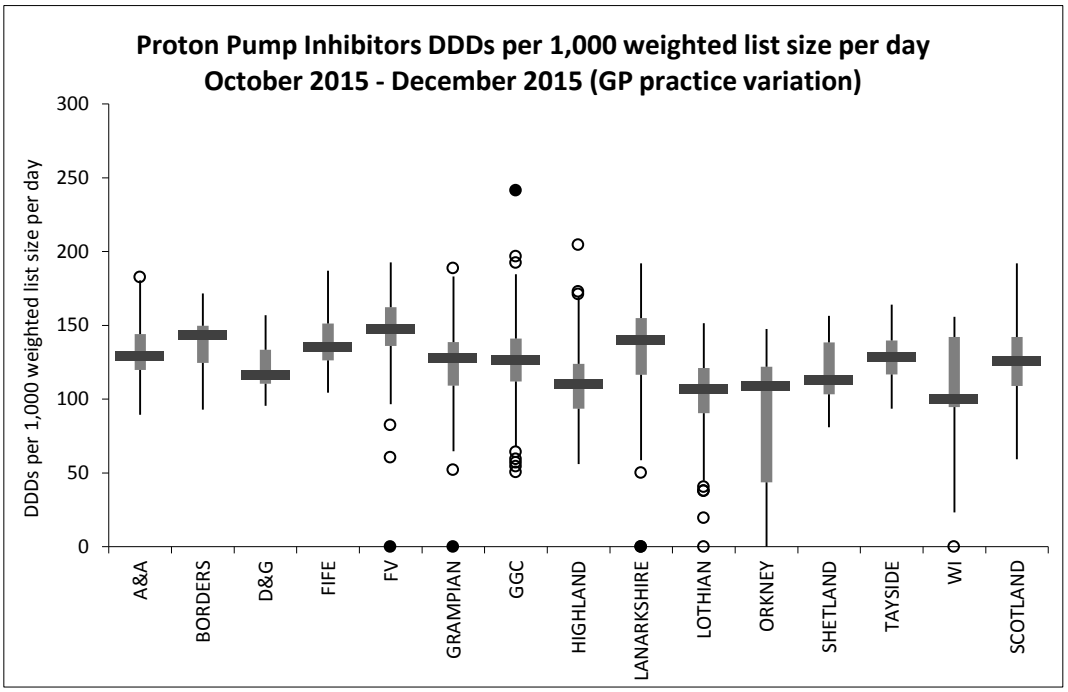




NTI1b - Proton Pump Inhibitors: DDDs per 1,000 weighted list size per day

This NTI looks at the increased risk of community acquired pneumonia, fragility fractures and Clostridium difficile infection due to PPIs. Patients prescribed PPIs should ideally be reviewed at least annually and where appropriate the drug stopped. When it is not possible to stop then 'as required low-dose' PPI should be used. The measure looks at the amount of PPI (DDD) used per weighted practice registered patient.





Anticoagulants and antiplatelets

This NTI looks at the increased risk of gastrointestinal bleeding for patients prescribed a combination of oral anticoagulants (OAC) and antiplatelet agents. This combination is used in patients who require anticoagulation for the prevention of stroke and systemic embolism, and antiplatelet therapy for the prevention of myocardial infarction (MI) or stent thrombosis. A recent review by the UK Medicines Information service highlighted the risks of using antiplatelet agents in combination with the oral anticoagulants in patients with atrial fibrillation.[16]

For those patients taking warfarin, studies and reviews have shown up to a 3.7-fold risk in bleeding events with triple therapy (i.e. two antiplatelet agents plus warfarin) compared to warfarin monotherapy and when compared to aspirin monotherapy the risk is fourfold.[166] A meta-analysis of 10 randomised controlled trials (RCT) found an increase in the relative risk of bleeding of 2.2 when warfarin was part of triple antithrombotic therapy, versus combination therapy with antiplatelets.[166] Combination therapy with antiplatelets (essentially aspirin with clopidogrel), plus a direct oral anticoagulant (DOAC) was associated with an approximate two- to four-fold dose-dependent increase in clinically significant bleeding as compared to antiplatelet therapy alone.

Gastro-intestinal bleeding was the most common form of major bleeding due to combination of OACs and antiplatelets.[166]

The evidence behind the increased risk of the direct oral anticoagulants (DOACS) in combination with antiplatelets is less clear. All of the trials studying the use of DOACS to treat acute coronary syndromes, excluded patients on long-term anticoagulant therapy. This included all patients with high risk atrial fibrillation (AF). The landmark trials that evaluated the efficacy of DOACs in prevention of thromboembolism in AF also usually excluded patients who required dual antiplatelet therapy, so it is difficult to directly determine the increased risk of bleeding.[166]

The review concludes that gastroprotection with a proton pump inhibitor should be considered in all patients on any combination of antiplatelets and anticoagulants.[166]

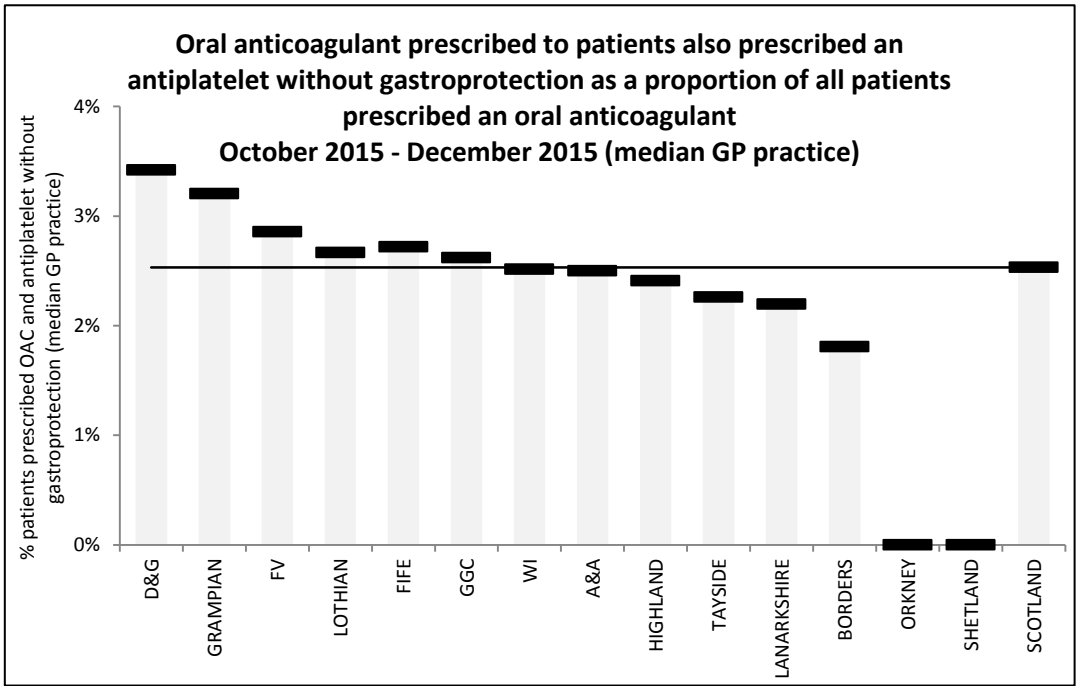
This measure is one of six relating to drug combinations in specific patient cohorts that are known to increase the risk of gastrointestinal bleed that were included in the Effective Feedback to Improve Primary Care Prescribing Safety (EFIPPS) study. Prescribing feedback was provided to GP practices and this resulted in a statistically significant reduction in the use of combination OAC and antiplatelet with no gastroprotection, from 2.0% to 1.2%.[17]

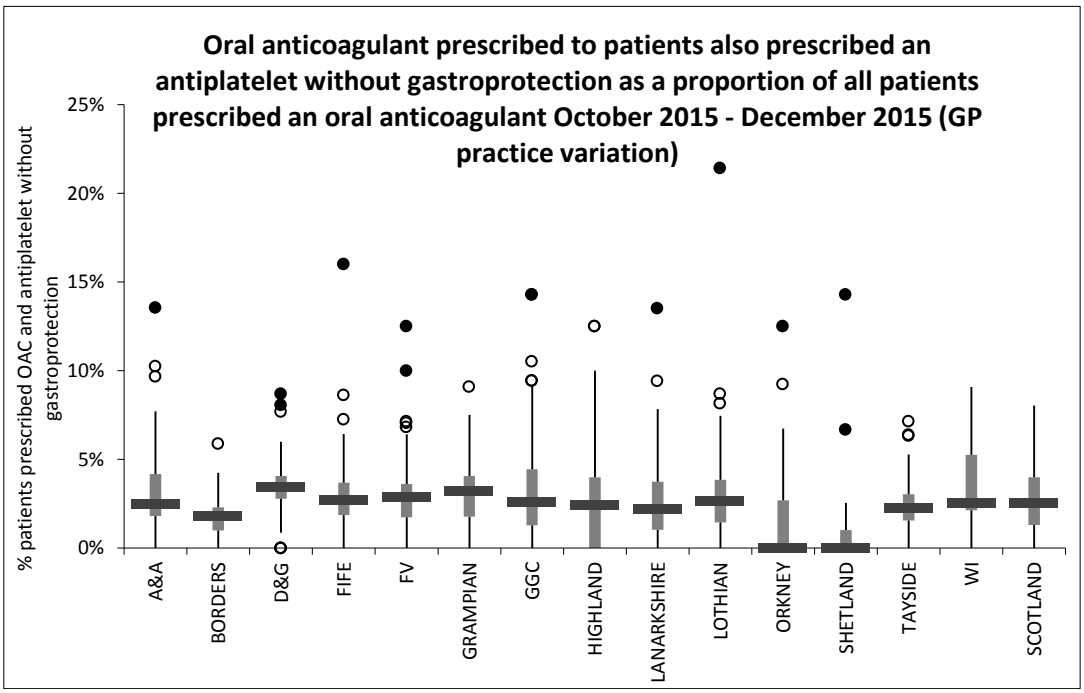
[16] What are the risks of using antiplatelet agents in combination with the Novel Oral Anticoagulants (NOACs) in patients with atrial fibrillation, and how should the potential risks be managed? UKMi Medicines Q&A 224.1 24th November 2015

[17] Dreischulte T, Donnan P, Grant A, Hapca A, McCowan C, Guthrie B. Safer Prescribing — A Trial of Education, Informatics, and Financial Incentives. N Engl J Med 2016; 374:1053-1064

APM1 - Oral anticoagulant (OAC) prescription to people also prescribed an antiplatelet without gastroprotection as a proportion of all people prescribed an oral anticoagulant

This additional prescribing measure (APM) looks at the significant increased risk of gastrointestinal bleed for patients prescribed combined antiplatelet and oral anticoagulation therapy with no gastroprotection. The measure looks at the number of people on combination OAC and antiplatelet with no gastroprotection. There should be **no** patients in this category.





High Strength Inhaled Corticosteroids

This NTI focuses on the safety concerns regarding the inappropriate use of high strength corticosteroid inhalers and the importance of ensuring that the patient's steroid load is kept to the minimum level, whilst effectively treating symptoms. It is recognised that some patients will require treatment with high-dose ICS.

The pre-2016 SIGN/BTS classification of corticosteroids has been used for this report.

Standard-dose ICS* (200 to ≤ 800 micrograms/day in adults; 100 to ≤ 400 micrograms/day in children 5 to 12 years) should be prescribed for patients who require use of their short-acting $beta_2$ agonist more than twice a week, or if symptoms disturb sleep more than once a week, or if they have suffered exacerbations in the last two years requiring systemic corticosteroids or nebulised bronchodilator, (Step 2 BTS).[18] [19]

High-dose ICS* (>800 to 2000 micrograms/day in adults; >400 to 800 micrograms/day in children 5 to 12 years) should be prescribed for patients who respond only partially to standard-dose ICS with a long-acting $beta_2$ agonist or another long-acting bronchodilator, (Step 4 BTS).18 19 High-dose should be continued only if there is clear benefit over standard-dose.

There are recognised, potentially serious, systemic side effects from ICS. The most concerning is adrenal suppression, but others include: growth failure; reduced bone density; cataracts and glaucoma; anxiety and depression; and diabetes mellitus. Marked adrenal suppression can occur with doses greater than 1,500 micrograms beclometasone per day (375 micrograms fluticasone proprionate per day in children).

Of particular concern is the use of high-dose ICS in children. A UK observational study found that high-dose ICS prescribing occurred in 5.6% of the under 5s and 10% of the 5 to 11 year olds.[20] In addition very high-dose ICS (> 800 micrograms beclometasone or equivalent) was prescribed to 3.9% of the under 5s and 4.9% of the 5 to 11 year olds.
Advice in early 2016 for children on ICS can be summarised:

- Regular growth monitoring (unreliable indicator of adrenal suppression)
- High-dose ICS should be used only under the care of a specialist paediatrician
- Adrenal insufficiency should be considered in any child with shock and/or reduced consciousness who is maintained on ICS

Patients should be maintained at the lowest possible dose of ICS. This is a dynamic process requiring **stepping down therapy.** Reductions in dose of ICS should be considered every three months, reducing the dose by 25 to 50% every time.

The linked respiratory additional prescribing measure (APM) looks at potential over use of short acting beta agonists (SABA) as an indicator for poor control in asthma. The National Review of asthma deaths recommends that all asthmatic patients who have been prescribed more than 12 SABAs in the last 12 months should have an urgent review of their asthma control.[21]

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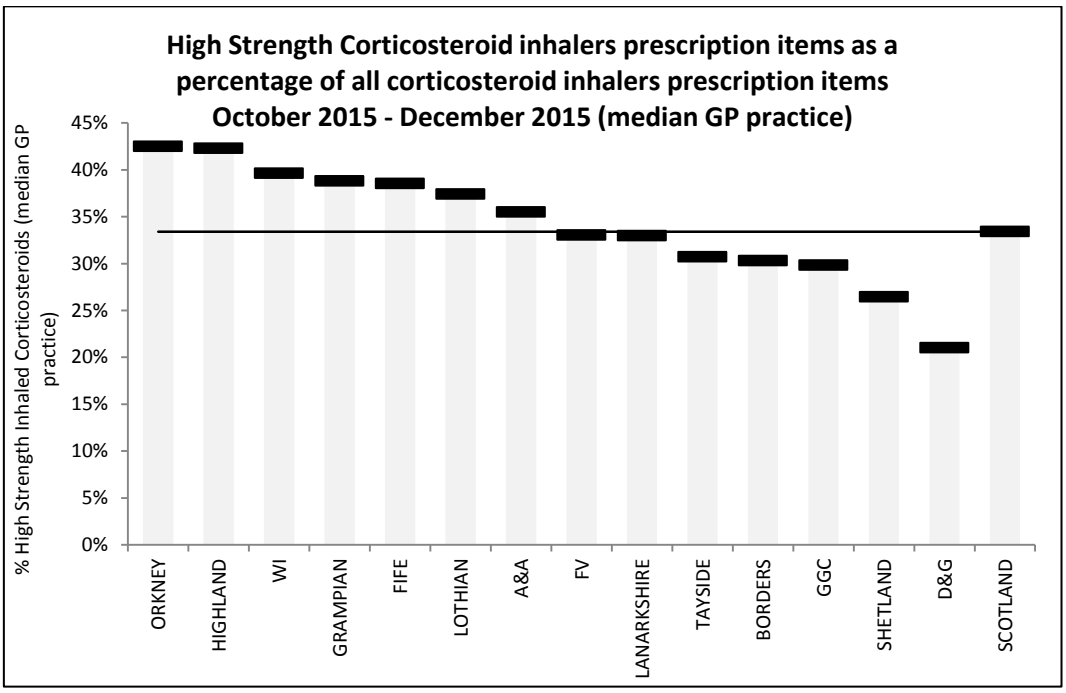
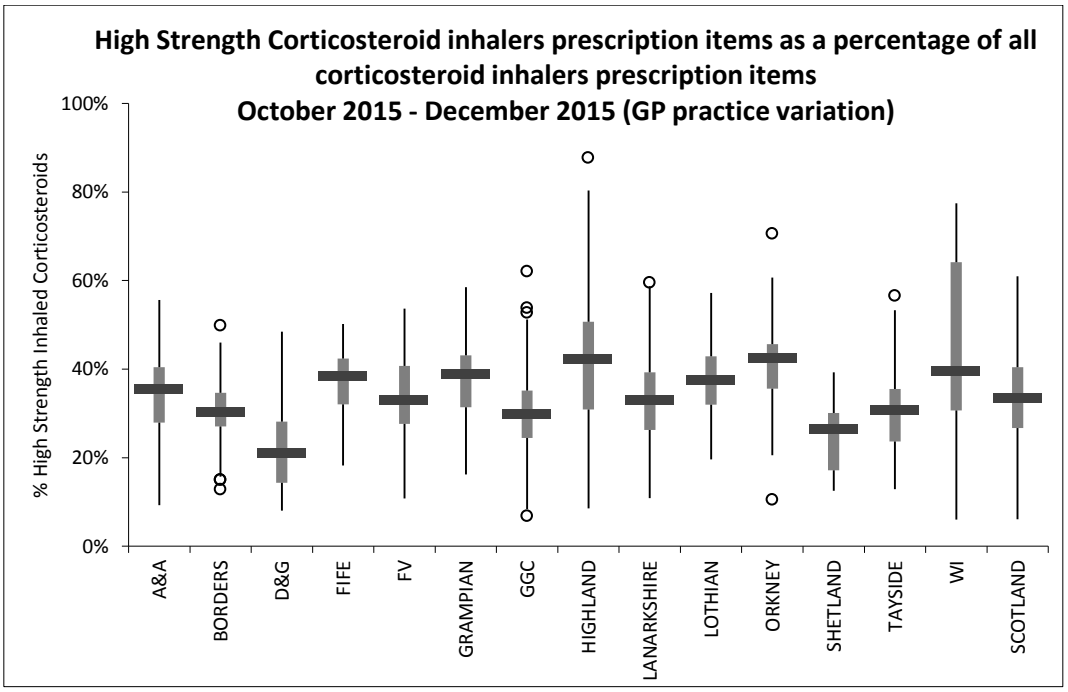
[18] Joint Formulary Committee. *British National Formulary.* Edition 69. March 2015
[19] Sign/BTS British guideline on the management of asthma, May 2008 (revised May 2011)
[20] Thomas M et al. *Br J Gen Pract 2006*; 56: 788-90
[21] The Royal college of Physicians *Why Asthma Still Kills* August 2015 https://www.rcplondon.ac.uk/projects/outputs/why-asthma-still-kills

NTI2 – High strength corticosteroid inhalers as a percentage of all corticosteroid inhalers

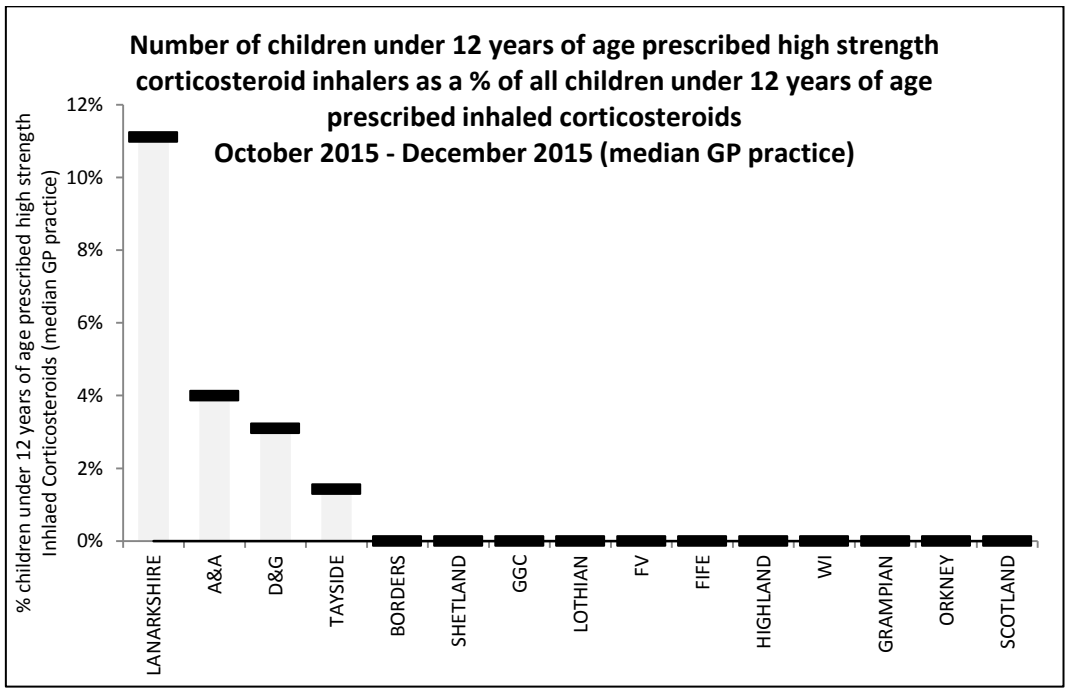
This NTI looks at the safety concerns regarding the inappropriate use of high-dose ICS and the importance of ensuring that the patient's steroid load is kept to the minimum level, whilst effectively treating symptoms. The measure looks at the amount (items) of high strength corticosteroid inhalers prescribed as a percentage of all corticosteroid inhalers. The measure cannot identify the high-dose use of moderate or low strength corticosteroid inhalers. The pre-2016 SIGN/BTS definition of high-dose corticosteroid has been used.

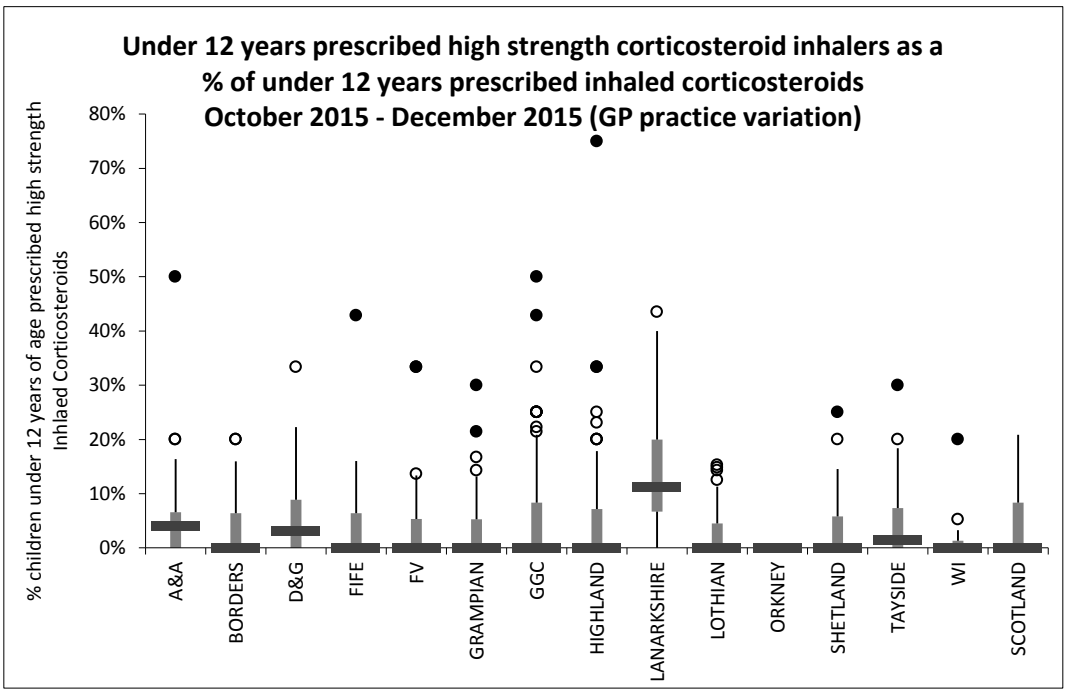




APM2 - Number of children under 12 years old of age prescribed high strength corticosteroid inhalers as a percentage of all children under 12 years of age prescribed inhaled corticosteroids

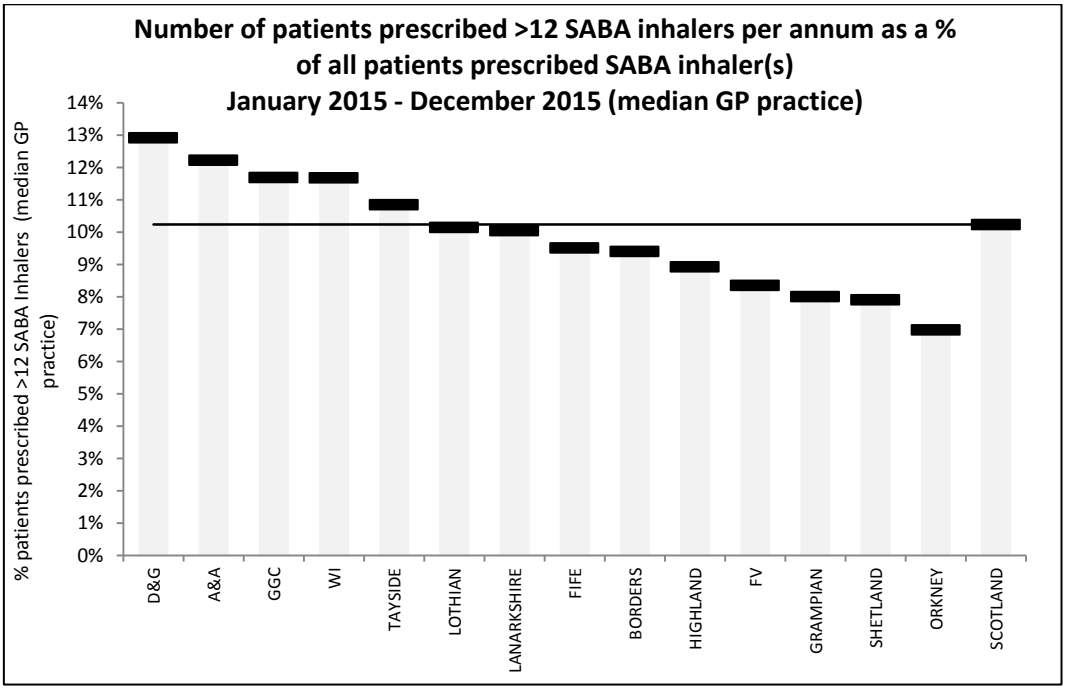
This APM looks at the safety concerns of using high-dose ICS in children under the age of 12 years where the potential risks of growth retardation and adrenal suppression are the greatest. The measure looks at the amount of high-dose ICS (as defined for an adult) prescribed to children under the age of 12. This practice should only be done in exceptional circumstances, and only under specialist supervision. The pre-2016 SIGN/BTS definition of high-dose corticosteroid has been used.

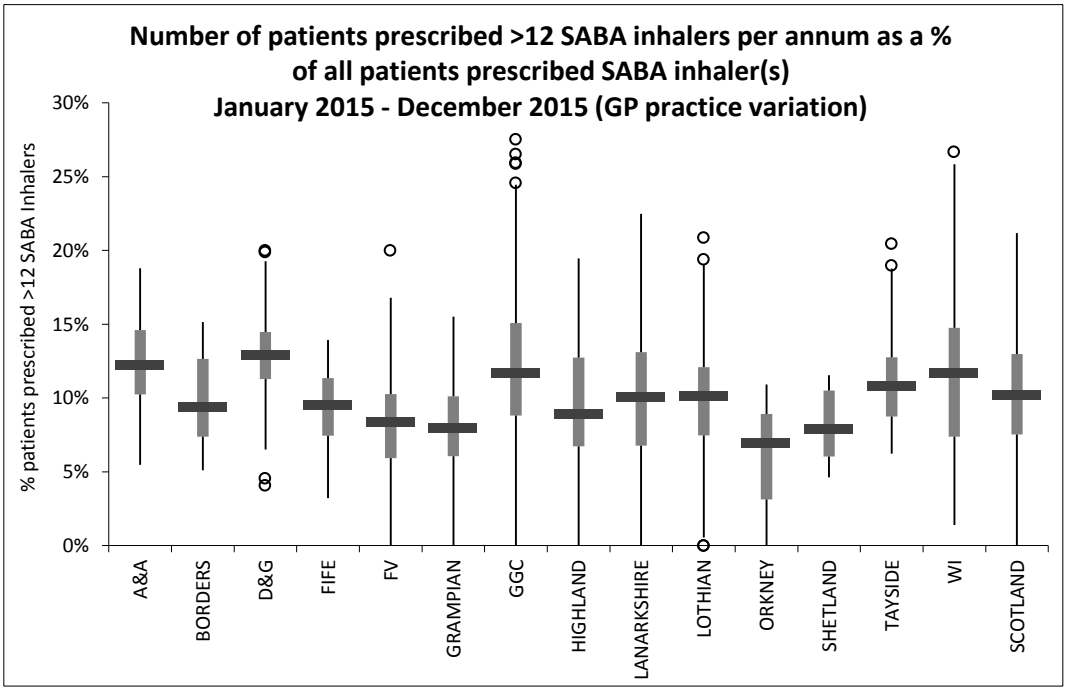




APM3 - Number of patients prescribed >12 SABA inhalers per annum as a % of all patients prescribed SABA inhaler(s)

This APM looks at the safety concerns for asthmatic patients prescribed more than 12 SABAs in a 12 month period. The National Review of Asthma Deaths recommends that these patients should be reviewed urgently to assess their disease control. The measure is intended to act as a guide to identify patients potentially at risk and is unable to distinguish between patients with asthma and COPD, where high SABA use may be necessary. It is acknowledged that PRISMS/PIS data is based on medicines dispensed in NHS in Scotland and does not necessarily correlate to patient use of their medicines.





Hypnotics and Anxiolytics

This NTI focuses on the use of benzodiazepines and 'Z drugs' (non-benzodiazepine hypnotics). It is recognised that differing drug-maintenance and drug-withdrawal policies between Boards can act as confounders to using this measure for comparative data.

Hypnotic use in all ages is linked with tolerance, dependence, rebound insomnia and abuse. In the elderly, hypnotic use is associated with falls, cognitive impairment and fatigue.[22]

Before a hypnotic is prescribed the cause of the insomnia should be established. It is important to recognise that some patients have unrealistic sleep expectations. Others underestimate their alcohol consumption, which may be the cause of the insomnia. It is a common problem and 30% of the population have insomnia at any one time.[23] The majority (88%) of cases are secondary and treatment of the underlying cause should be sought: depression and/or anxiety (50%); physical illness affecting sleep (43%); restless leg syndrome (22%); sleep apnoea (9%); delayed sleep phase syndrome (2%).[24]

For primary insomnia, 30% of cases improve with 'sleep hygiene'. 'Bed-time restriction' has also shown to be a beneficial treatment.[25] Hypnotics are not actually effective at treating insomnia and have a high potential to cause harm. For 13 people taking a hypnotic for one week, only one person will experience sleep improvement (NNT13) and two patients will experience an adverse event (NNH6).[26]

There is clear evidence demonstrating the link between benzodiazepine use and an increased risk of developing dementia.[27]

A Norwegian study found that taking a hypnotic increased the risk of having a road traffic accident four-fold.[28] This finding has been confirmed by a more recent French study.[29] Data from the USA show that there is also an association with hip fracture rate.[30] The risk of hip fracture is highest in the first two weeks.

'Z drugs' offer no therapeutic advantages over benzodiazepines.[31] Reported prescribing practices were often at variance with the licence indication for short-term use.

Hypnotics should not be prescribed indiscriminately and should be reserved for short courses in the acutely distressed. Tolerance to their effects develops within 3 to 14 days of continuous use. Withdrawal after long-term use can cause rebound insomnia and withdrawal symptoms.

A supporting additional prescribing measure (APM) looks at the recommendation for diazepam to be prescribed in multiples of 2 mg as there is greater street diversion of the 5 mg and 10 mg forms, and phased dose reduction may be more straightforward with the lowest strength forms of diazepam.

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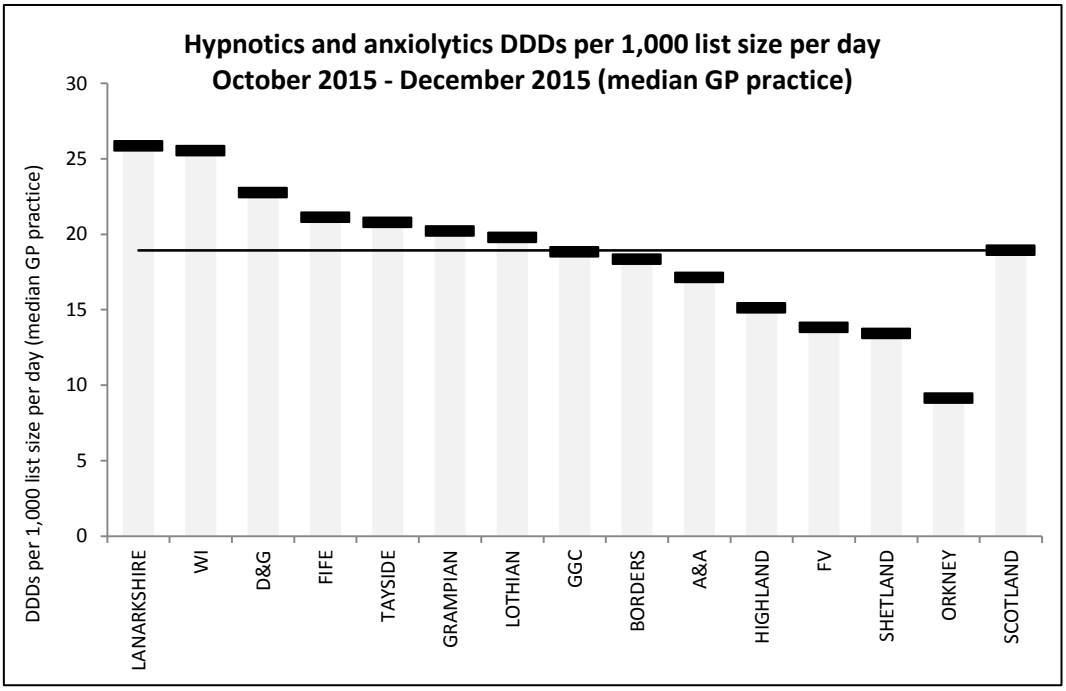
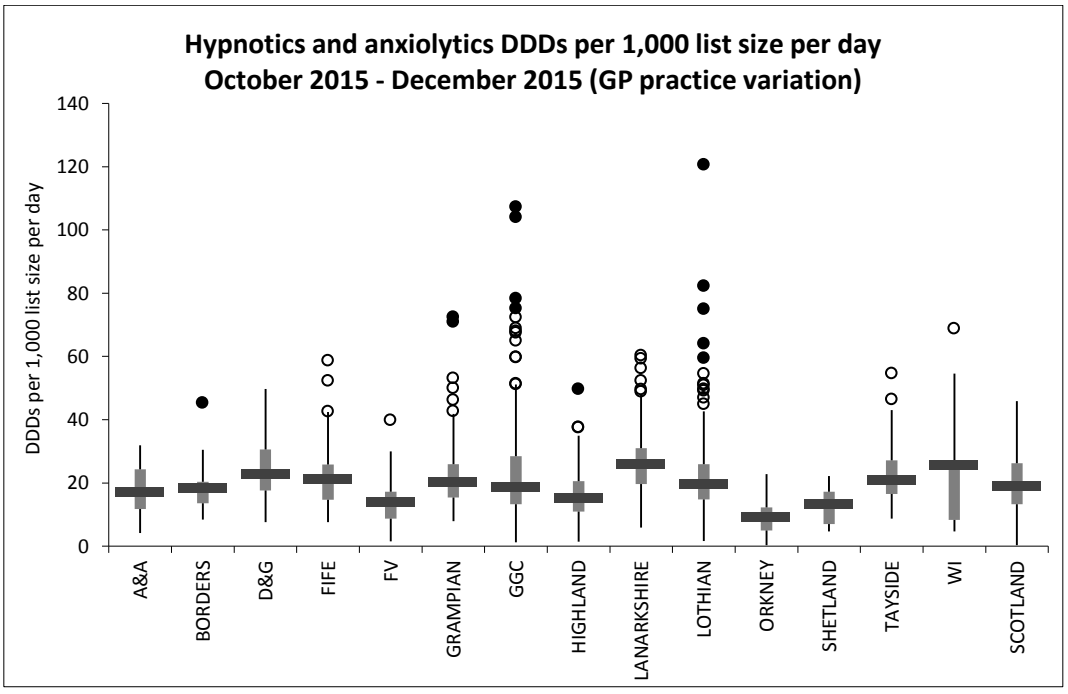
[22] Joint Formulary Committee. *British National Formulary.* Edition 69, March 2015
[23] Faloon K et al. *BMJ2011;* **342:** d2899
[24] Arroll, et al. *BJGP2012;* ***62****: e99-e103(5)*
[25] Spielman et al. *Sleep* 1987 Feb; 10(1):45-46
[26] Glass J et al. *BMJ2005;* **331:** 1169
[27] Billoti de Gage S, et al. *BMJ2012;* **345:** e6231
[28] Gustavsen I, et al. *Sleep Med2008;* **9:** 818-22
[29] Orriols L, et al. *Clinical Pharmacology and Therapeutics.* 2011; **89**(4): 595-601
[30] Wagner AK, et al. *Arch Intem Med 2004*; **164:** 1567-72
[31] Siriwardena AN, et al. *BJGP 2008*; **58**: 417-22

NTI4a – Hypnotics and anxiolytics: DDDs per 1,000 list size per day

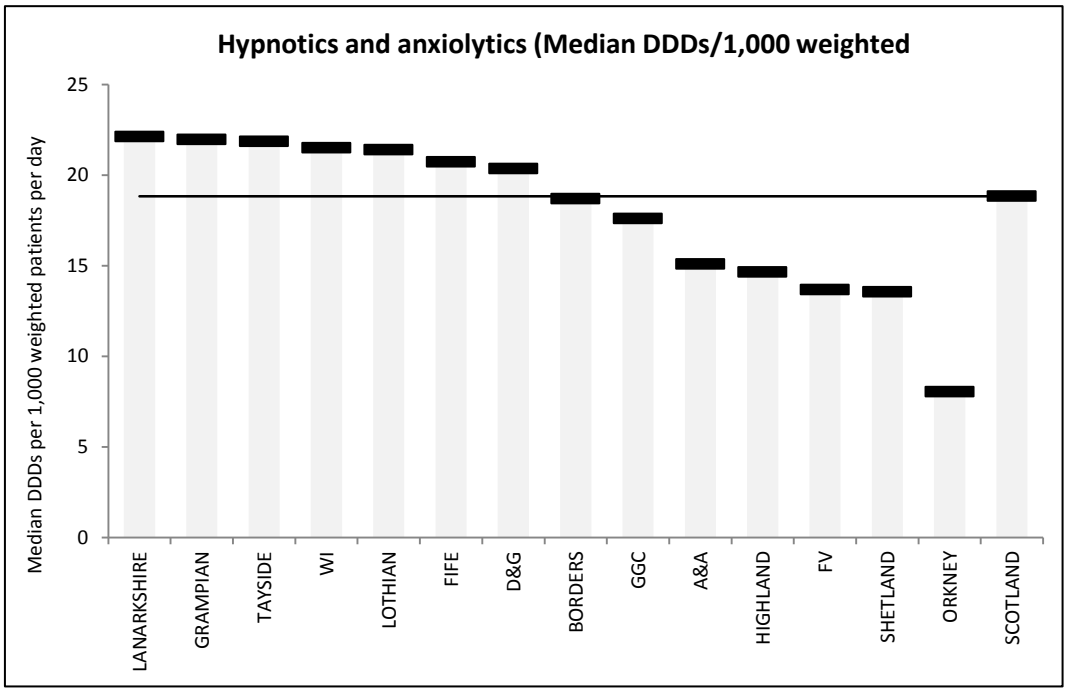
This NTI looks at the risks of developing tolerance, dependence, rebound insomnia, abuse, falls, cognitive impairment and fatigue through inappropriate use of hypnotics and anxiolytics. Use in all ages is clearly linked with tolerance, dependence, rebound insomnia and abuse. The measure looks at the amount (DDD) of hypnotics prescribed per 1,000 list size per day. The measure may be confounded by local drug misuse management policies.

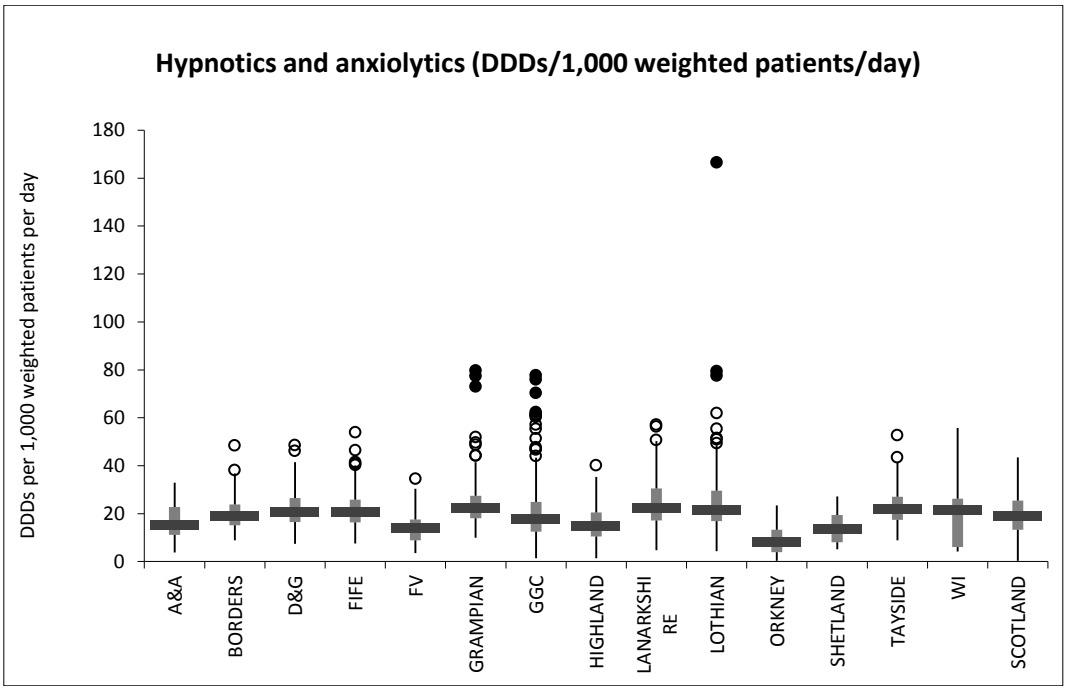




NTI4b – Hypnotics and anxiolytics: DDDs per 1,000 weighted list size per day

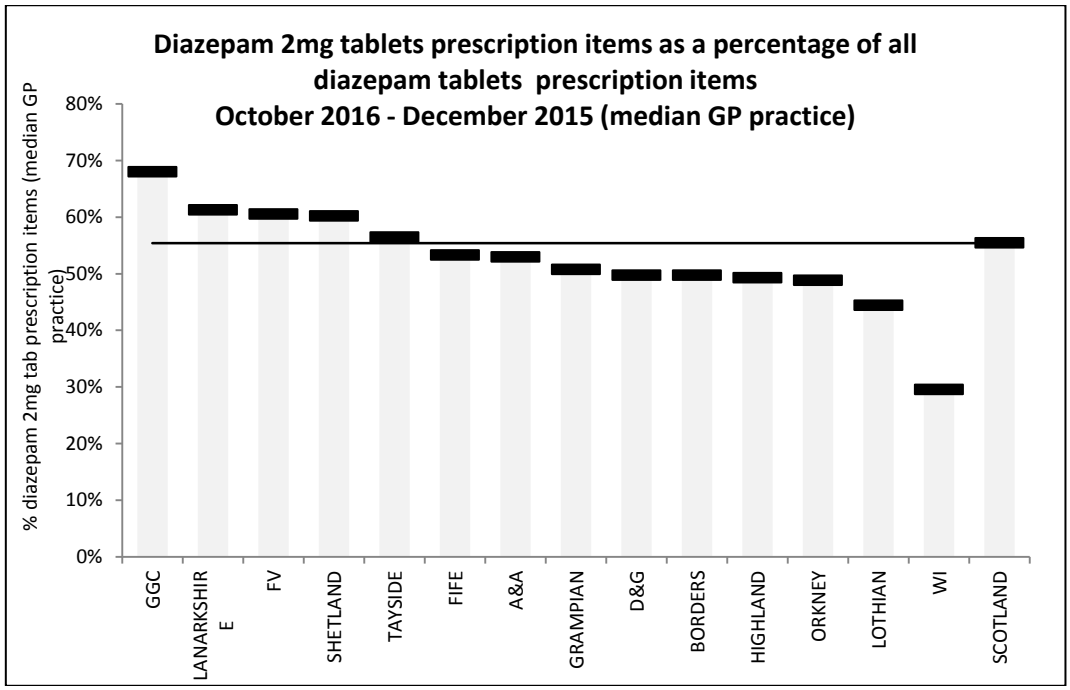
This NTI looks at the risks of developing tolerance, dependence, rebound insomnia, abuse, falls, cognitive impairment and fatigue through inappropriate use of hypnotics and anxiolytics. Use in all ages is clearly linked with tolerance, dependence, rebound insomnia and abuse. The measure looks at the amount (DDD) of hypnotics prescribed per 1,000 weighted list size per day. The measure may be confounded by local drug misuse management policies.

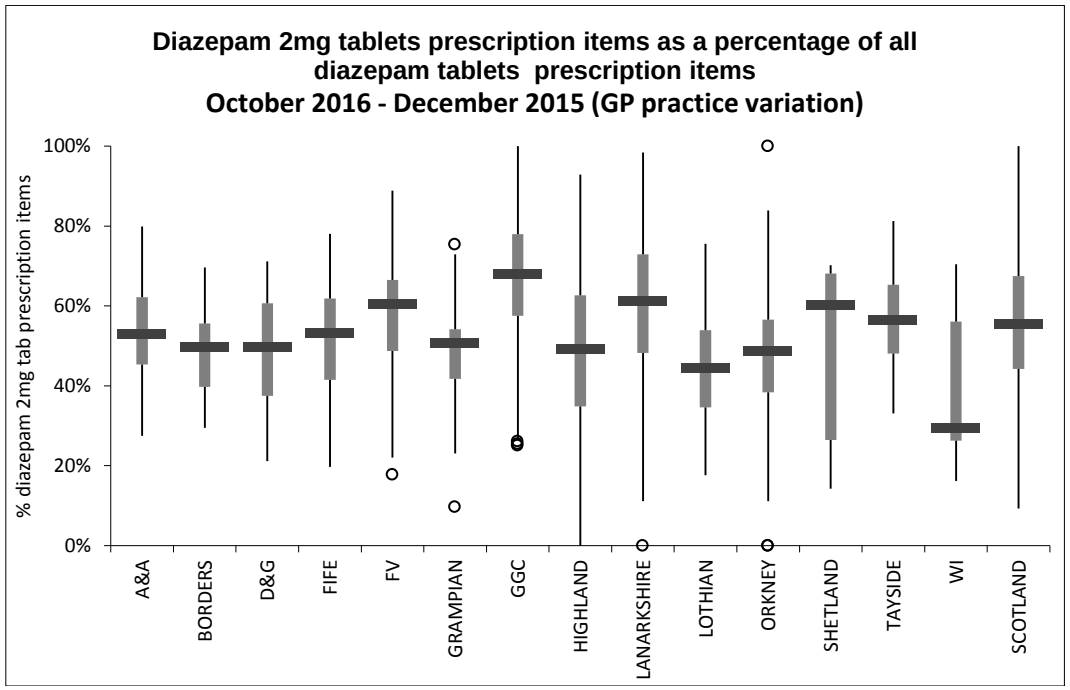




APM4 - Hypnotics and Anxiolytics: Diazepam 2 mg tablets as a % of all diazepam tablets (items)

This APM looks at the preferred use of 2 mg diazepam tablets. It is recognised that there is a greater street value for higher strengths of diazepam (5 mg and 10 mg), and increased potential for the diversion of prescribed medicines. It is anticipated that restriction in the use of higher strength will help to reduce the overall use of diazepam. The lower strength allows people who are dependent on benzodiazepines to implement extended withdrawal programmes that have the flexibility of 1 mg or 2 mg reductions in dose.





Antipsychotics

This APM looks at the use of antipsychotic medicines for elderly patients. Antipsychotics remain appropriate for the management of psychotic illness in all patient age groups, however their use to treat behavioural and psychological symptoms of dementia (BPSD) is now considered to be unsafe and largely ineffective.

Symptoms of BPSD include hallucinations, delusions, anxiety, agitation or aggression, and it is recognised how distressing these may be to patients, family and carers. Though antipsychotics may help with some of these symptoms their use must include recognition of the considerable cardiovascular risks, and only once non-pharmacological interventions have been tried and failed.[32]

In 2009 the Department of Health published a report which concluded that antipsychotics were greatly overprescribed to older people and that up to two-thirds of prescriptions were unnecessary.[33] Antipsychotic use in patients with dementia causes an additional 1,800 deaths and 1,620 cerebrovascular adverse events every year in England.

Clinical trial evidence on stopping long-term antipsychotics prescribed to patients with dementia shows that this can be successful, but additional social interventions may be required.[34]

In 2014 the Mental Welfare Commission for Scotland showed continued significant use of antipsychotics in Care Homes, often in combination with anxiolytics and antidepressants.[35] The report also highlighted that a third of patients were prescribed risperidone, the only antipsychotic with a licence to be used in patients with dementia. The licence is for use in up to six weeks of treatment. Haloperidol was prescribed for a quarter of patients, despite it's association of significant side effects when used for patients with dementia.

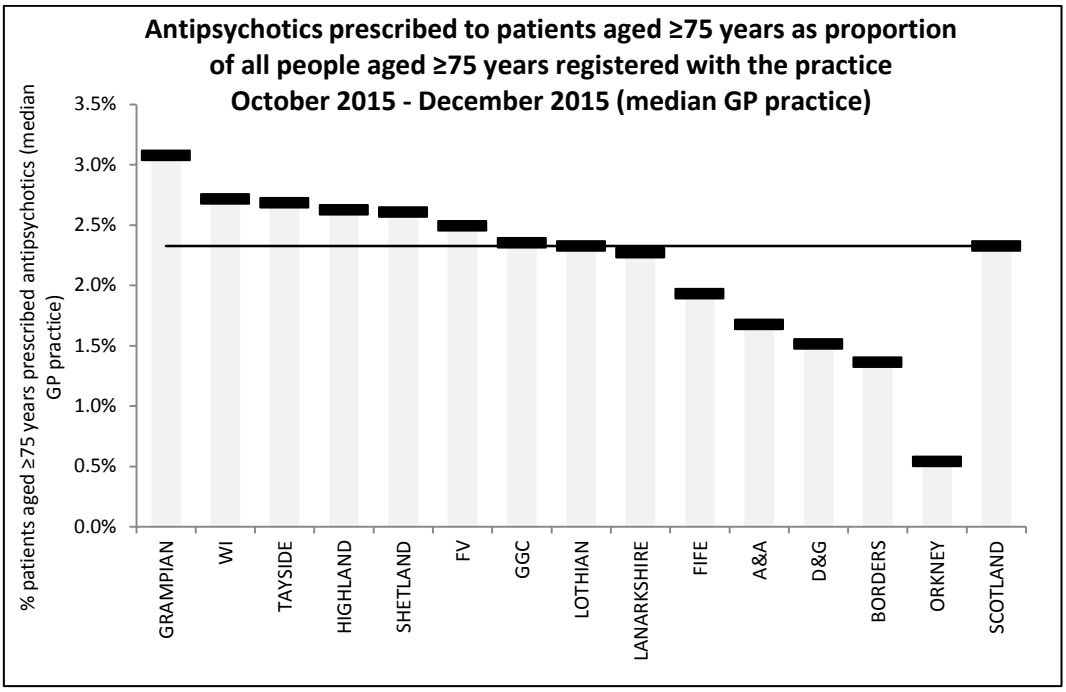
Patients who have dementia and who are prescribed an antipsychotic should have this treatment reviewed at least every six months. Patients who have who have been treated with antipsychotics for more than 3 months and have stable symptoms should be reviewed with a view to reducing or stopping antipsychotic medication.

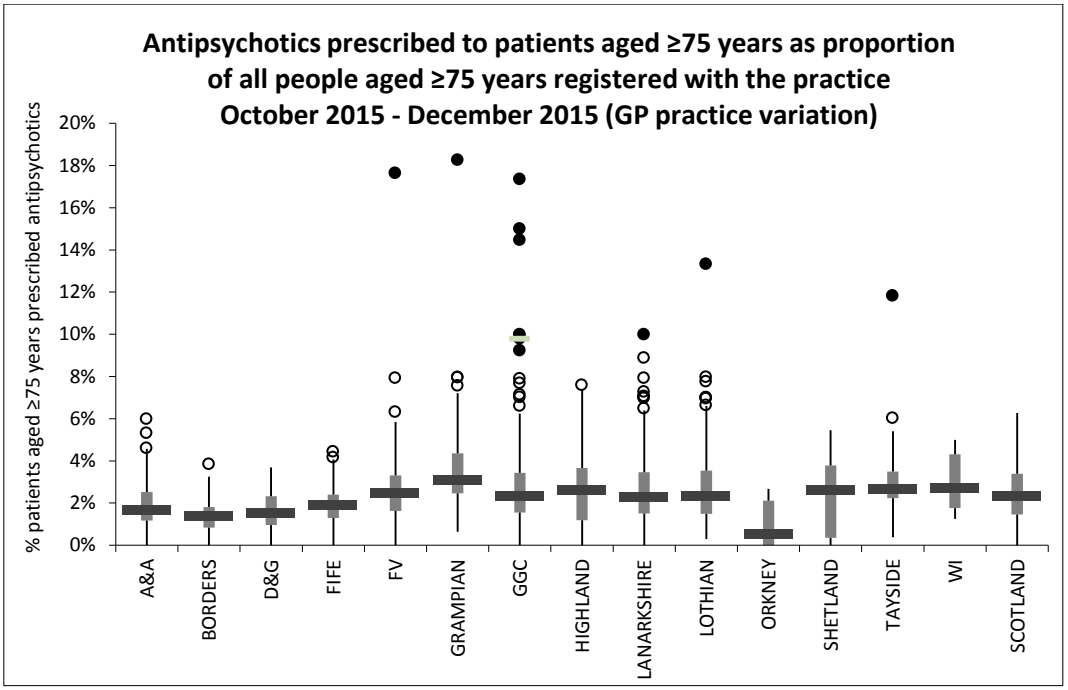
Advice on the rationalisation of antipsychotics prescribed for patients with dementia can be found in the National Polypharmacy Guidance.

[32] NICE CG42 *Dementia: supporting people with dementia* November 2006 (Updated September 2016)
[33] DoH *The use of antipsychotic medication for people with dementia: Time for action* October 2009
[34] Ballard C et al *The American Journal of Psychiatry* 2016 **173**(3) 252-262
[35] Mental Welfare Commission for Scotland. Dignity and respect: dementia continuing care visits (2014)

APM5 - Antipsychotics prescribed to patients aged ≥75 years as proportion of all people aged ≥75 years registered with the practice

This APM Looks at the increased risk of cerebrovascular accident, death, falls, and accelerated cognitive decline for patients who are prescribed an antipyschotic for behavioural and psychological symptoms of dementia (BPSD). Over 75 years of age is used as a proxy measure for dementia, whilst recognising that psychotic illness also occurs in this age group.





Opioid Analgesics

This NTI focusses on the use of opioid analgesics in the management of chronic non-cancer pain. This condition affects 18% of the population and presents a major clinical challenge.[36] Most patients are managed in primary care and there is evidence of wide variation in clinical practice. Best practice would include: supported self-management; pharmacological management; psychological based interventions and physical therapies.

First-line pharmacological management is with paracetamol and /or non-steroidal anti-inflammatory drugs, but, published data shows a continual increase in the volume of prescribed opioids to manage moderate to severe, chronic non-cancer pain.[37]

Comparison of opioid analgesics for chronic non-cancer pain (arthritis) with placebo or no treatment shows that the small benefit is outweighed by the large increase in adverse events.[38] A systematic review of long-term use of opioids to manage chronic non-cancer pain concluded that the evidence for pain relief was weak and that the effect on quality of life or functional improvement was inconclusive.[39]

The challenges of managing chronic pain are reflected in patients' experiences of the condition.[40] Common themes include: a struggle to maintain a sense of worth, while feeling misunderstood and not believed; a diagnosis is highly valued; negotiation of the healthcare system is complex. The recommendation is to recognise that the patient with chronic non-cancer pain is someone whose life has deeply changed.

A BMJ paper suggests that we should adopt a novel approach to pharmacological management of chronic non-cancer pain.[41] The key concept is to recognise that individual response to analgesia is bimodal, so pain relief is either good (above 50%) or poor (below 15%). Responders should achieve good (above 50%) pain relief and improvements in fatigue, depression and sleep interference without side effects. Non-responders (below 15%) will be apparent after two to four weeks, and treatment should be stopped.

The standard way to assess medicine efficacy is to measure the average response of a population, as used in clinical trials. This approach does not work well in pain management due to the bimodal response. Focussing on the individual response instead changes the standard medicine management approach. '*Clinically this means expecting failure, assessing pain, and understanding options for stopping and switching.'*[7] Individuals respond to different medicines in the same class and in different classes. This suggests that an extended formulary for management of chronic non-cancer pain is required. This should allow greater flexibility in identifying individual responders, the support to stop treatment for non-responders, and may reduce the use of opioid analgesics.

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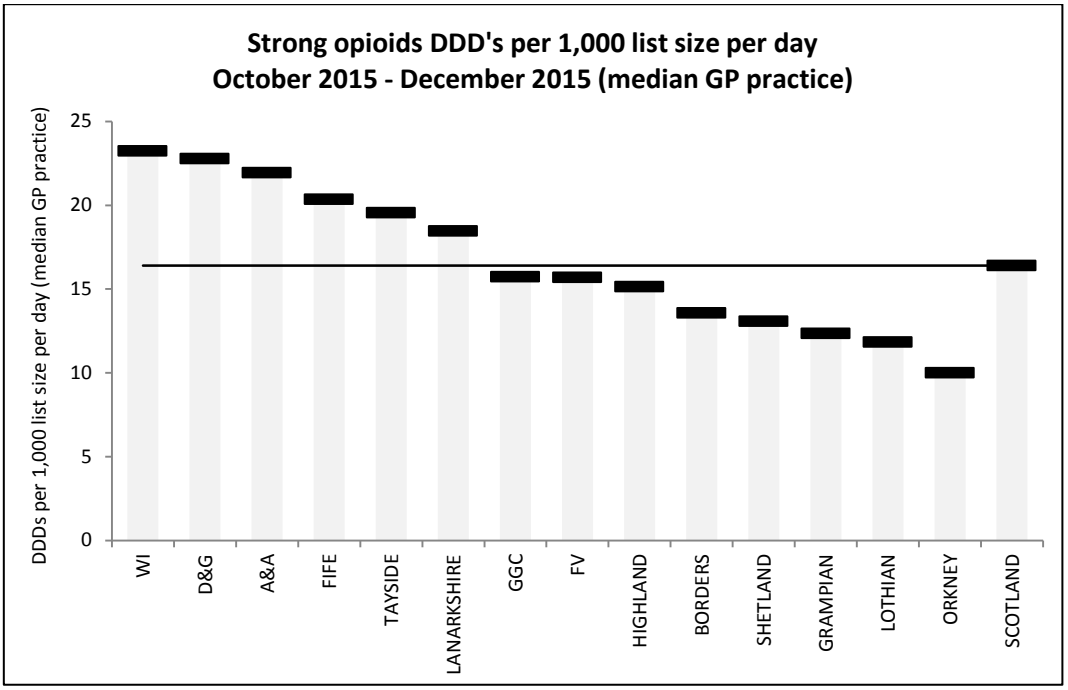
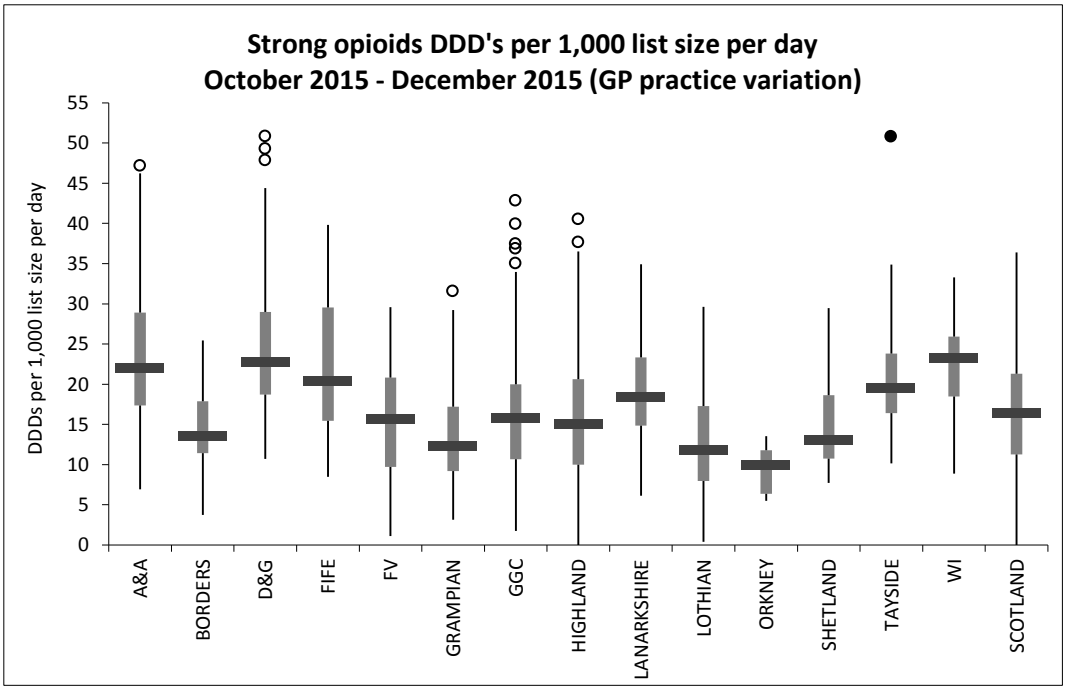
[36] SIGN 136 Chronic pain
[37] Freynhagen R, et al. BMJ 2013; 346:f2937
[38] Nuesch et al. *Cochrane Database Syst Rev* 2009;(40):CD003115
[39] Noble et al. *Cochrane Database Syst Rev* 2010;(1):CD006605
[40] BJGP 2013:63:641
[41] Moore A, et al. *BMJ* 2013;346:f2690

NTI5a - Strong opioids (BNF 4.7.2 excluding codeine, diamorphine, dihydrocodeine, dipipanone, meptazinol, methadone, papaveretum, tramadol, tramadol with paracetamol) (DDDs per 1,000 list size/day)

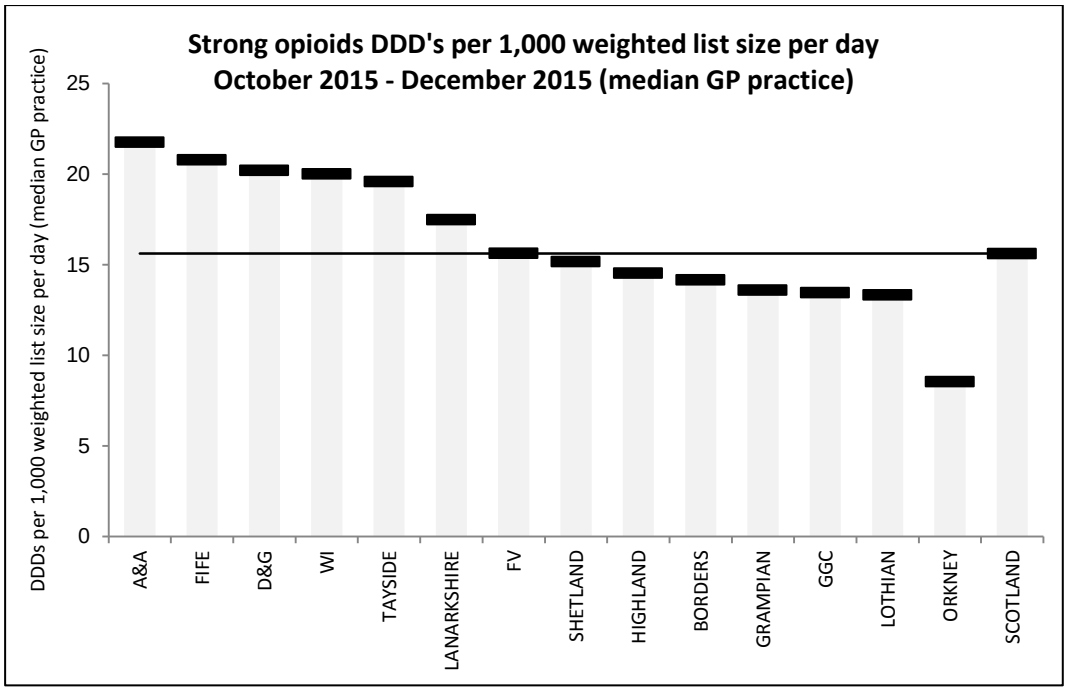
This NTI looks at the use of strong opioids. Opioids are well established in the management of acute pain and pain associated with terminal illness. Opioids can also provide symptomatic benefits for chronic non-cancer pain, however, repeated administration may cause problems of tolerance, dependence and addiction. The measure looks at the amount (DDD) of strong opioids (all opioids except codeine, dihydrocodeine and tramadol) prescribed per 1,000 patients per day.

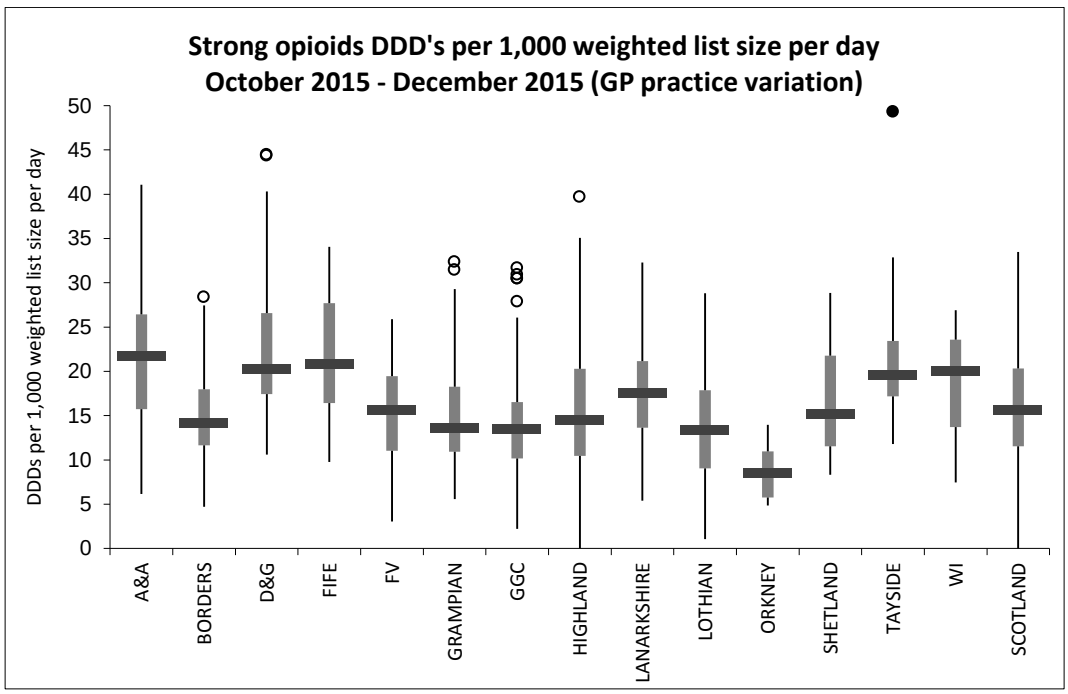




NTI5b - Strong opioids (BNF 4.7.2 excluding codeine, diamorphine, dihydrocodeine, dipipanone, meptazinol, methadone, papaveretum, tramadol, tramadol with paracetamol) (DDDs per 1,000 weighted list size per day)

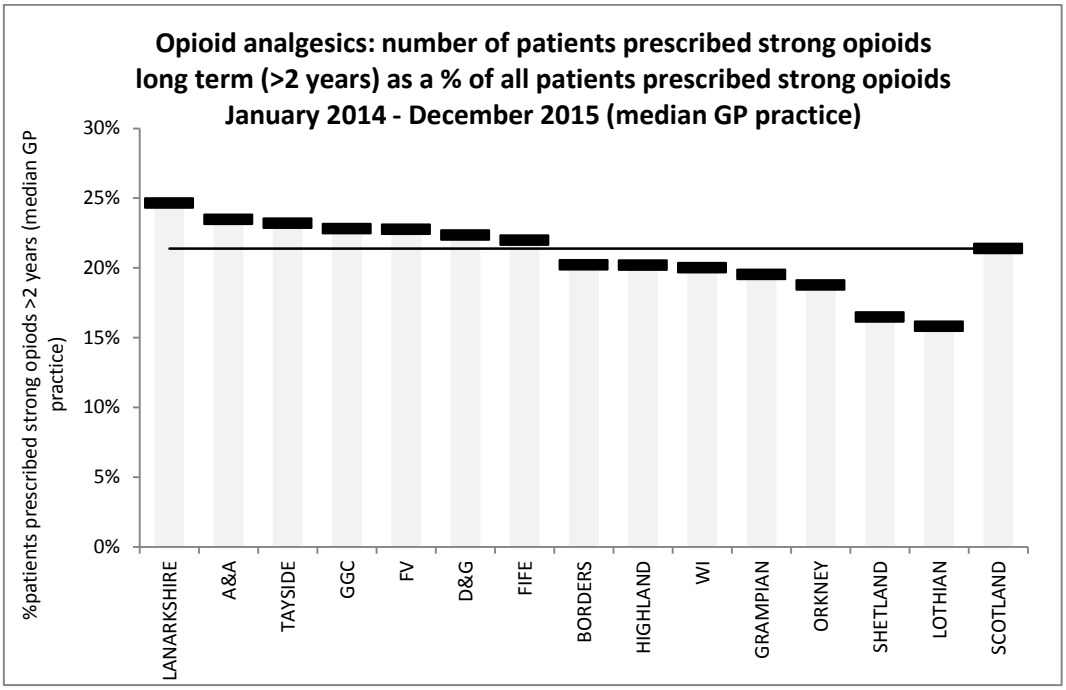
This NTI looks at the use of strong opioids. Opioids are well established in the management of acute pain and pain associated with terminal illness. Opioids can also provide symptomatic benefits for chronic non-cancer pain, however, repeated administration may cause problems of tolerance, dependence and addiction. The measure looks at the amount (DDD) of strong opioids (all opioids except codeine, dihydrocodeine and tramadol) prescribed per 1,000 weighted patients per day.

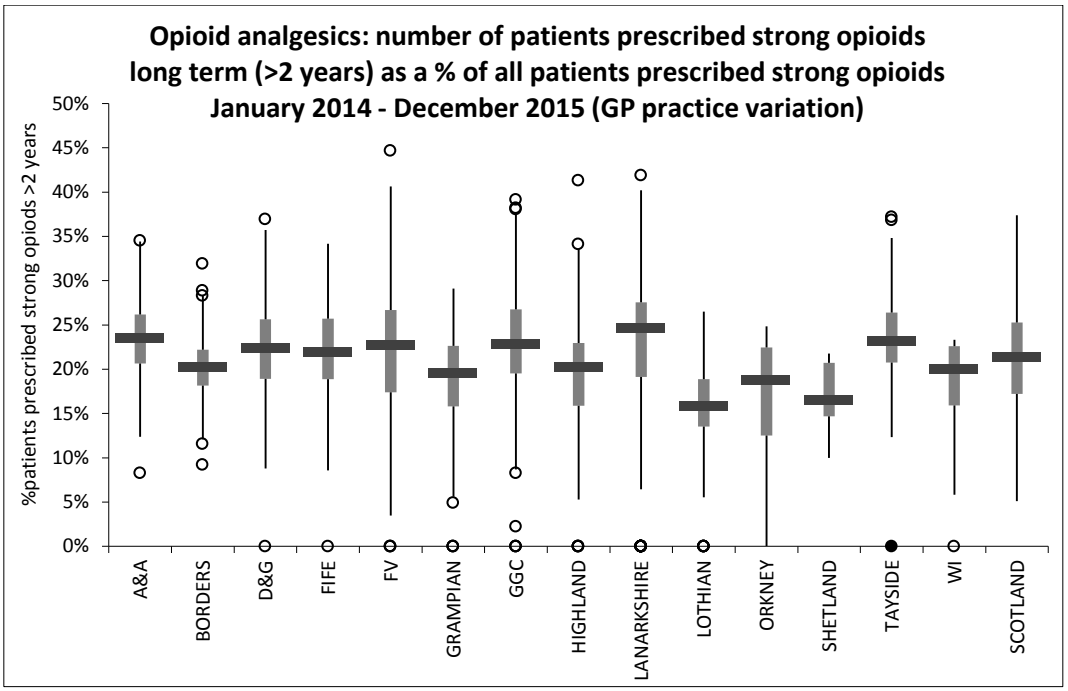




APM6 - Opioid analgesics: number of patients prescribed strong opioids long-term (>2 years) as a % of all patients prescribed strong opioids

This APM looks at the long-term use of opioids. Whilst there is no reported evidence for the benefit of long-term opioids there is increasing evidence of harm due to overdose, abuse, fractures, myocardial infarction and sexual dysfunction.[42] Prescribing of opioids should not be viewed as lifelong therapy. The measure counts the number of patients on opioids for more than two years.

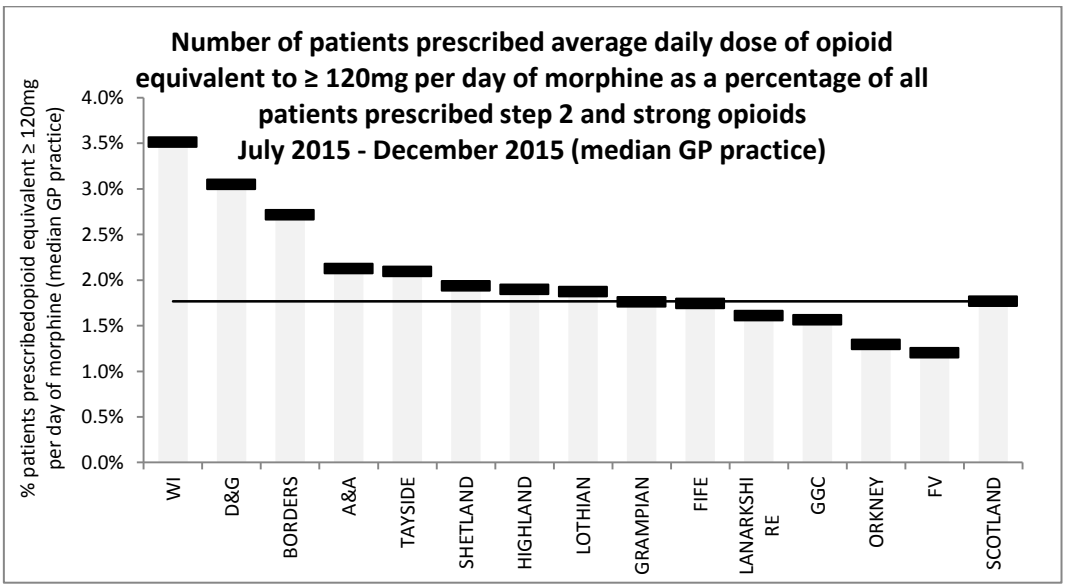


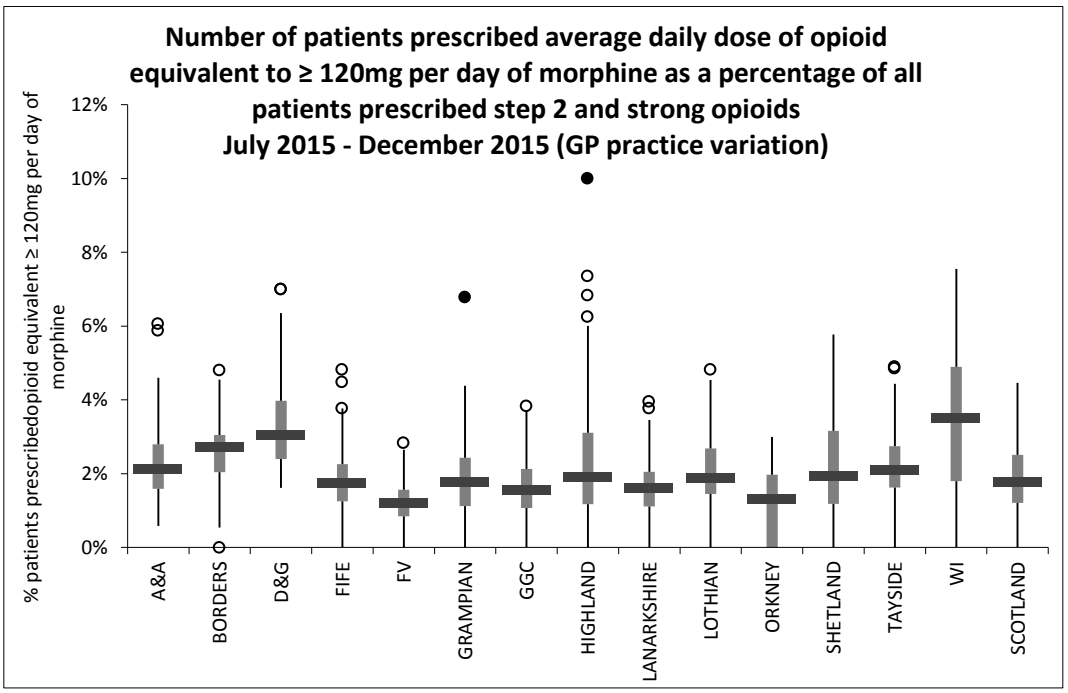


[42] Chou R et al. The Effectiveness and Risks of Long-Term Opioid Therapy for Chronic Pain: A Systematic Review. Ann Intern Med. 2015;162:276-286. doi:10.7326/M14-2559

APM7 - Number of patients prescribed average daily dose of opioid equivalent to ≥ 120mg per day of morphine as a percentage of all patients prescribed step 2 and strong opioids

This APM looks at the use of greater than 120 mg morphine (or equivalent dose of another opioid) per day. Guidelines recommend that for patients with chronic non-cancer pain there is no additional benefit to exceeding a daily dose of equivalent to 120 mg morphine, and considerable increased risk of adverse drug events.[43,44] The measure counts the number of patients on these very high daily doses of opioid.

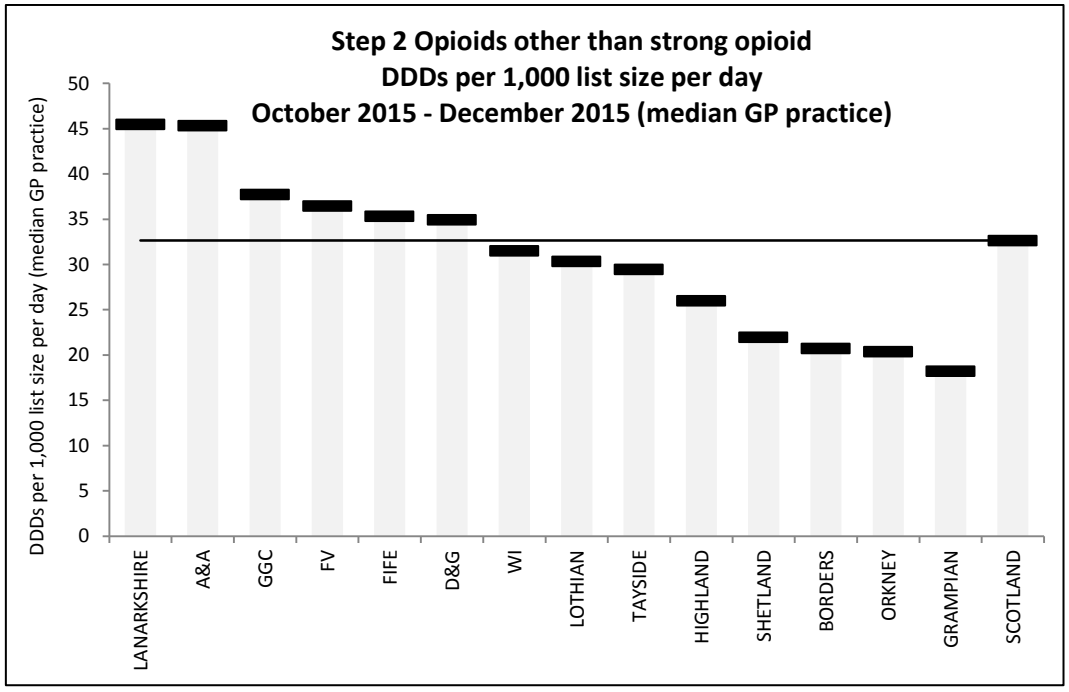


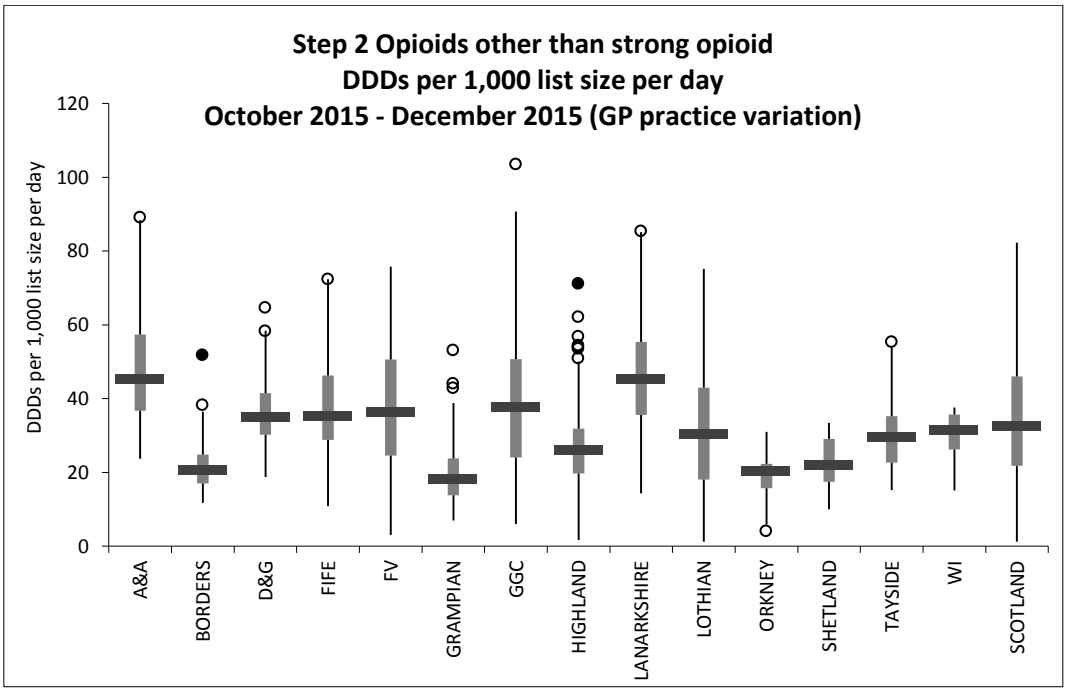


[43] NICE KTT21 *Medicines Optimisation in long-term pain* January 2017
[44] SIGN 136 *Management of Chronic Pain* December 2013

NTI6a – Step 2 opioids other than strong opioids DDDs per 1,000 list size per day

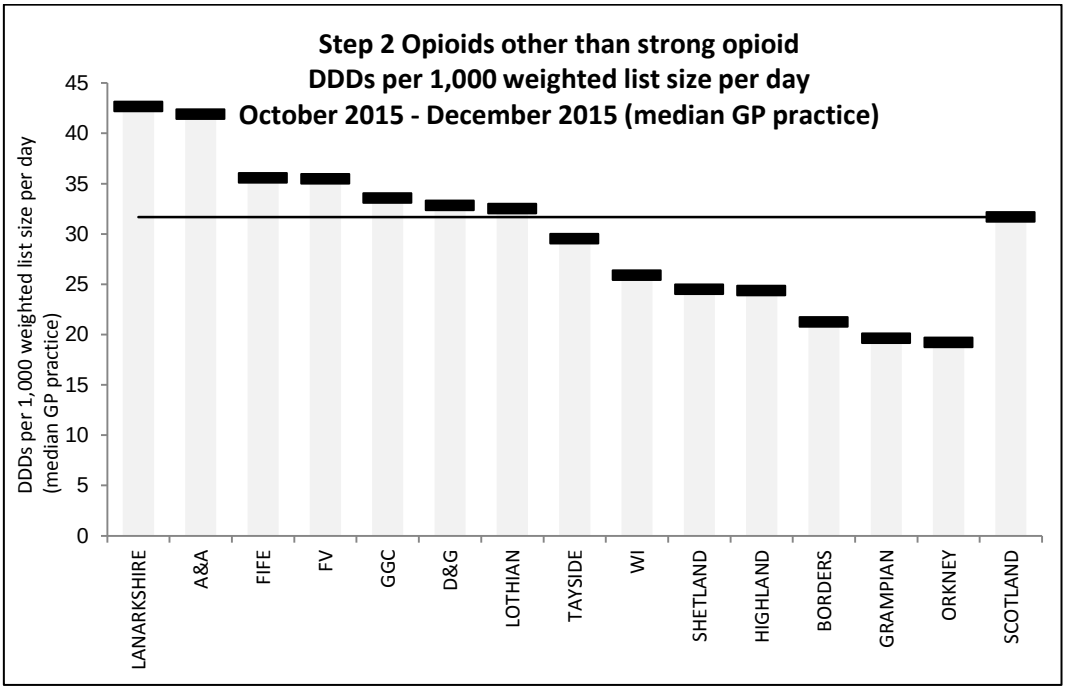
This NTI looks at the use of opioids, other than strong opioids. Opioids are well established in the management of acute pain and pain associated with terminal illness. Opioids can also provide symptomatic benefits for chronic non-cancer pain, however, repeated administration may cause problems of tolerance, dependence and addiction. The measure looks at the amount (DDD) of step 2 opioids, (codeine, dihydrocodeine and tramadol) prescribed per 1,000 list size per day.

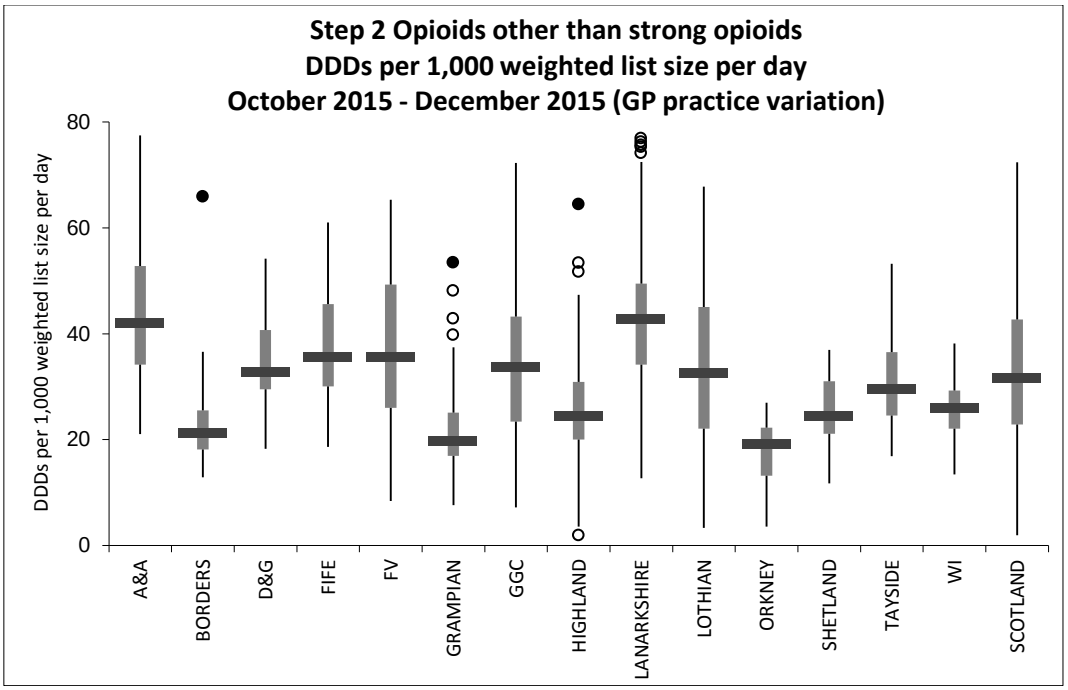




NTI6b – Step 2 opioids other than strong opioids DDDs per 1,000 list size per day (weighted)

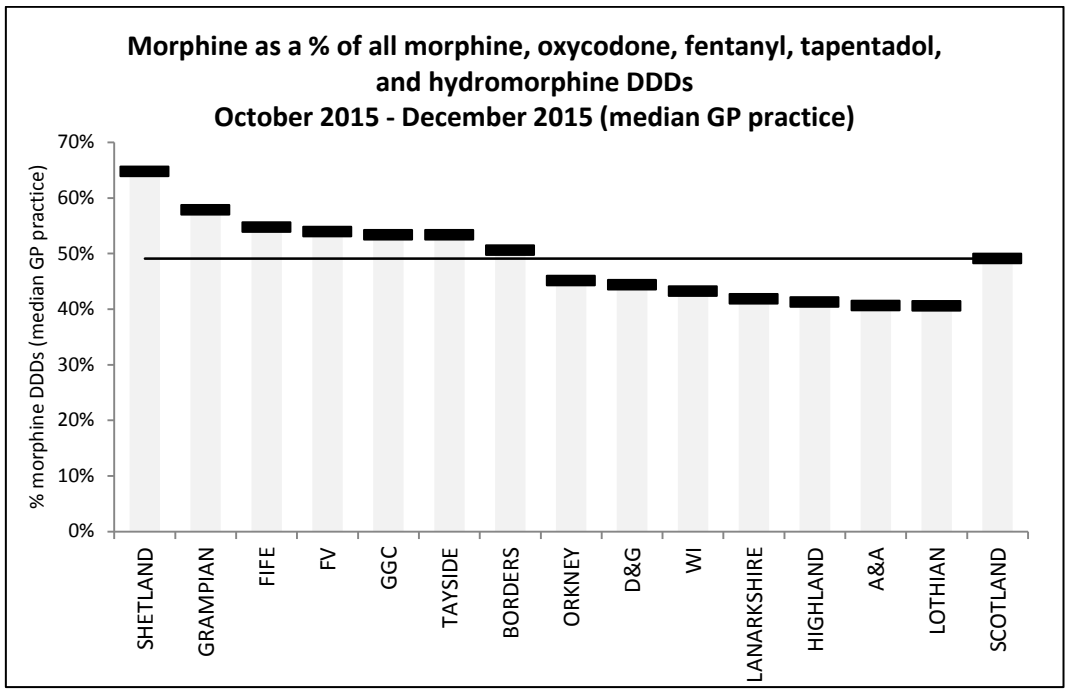
This NTI looks at the use of opioids, other than strong opioids. Opioids are well established in the management of acute pain and pain associated with terminal illness. Opioids can also provide symptomatic benefits for chronic non-cancer pain, however, repeated administration may cause problems of tolerance, dependence and addiction. The measure looks at the amount (DDD) of step 2 opioids (codeine, dihydrocodeine and tramadol) prescribed per 1,000 weighted list size per day.

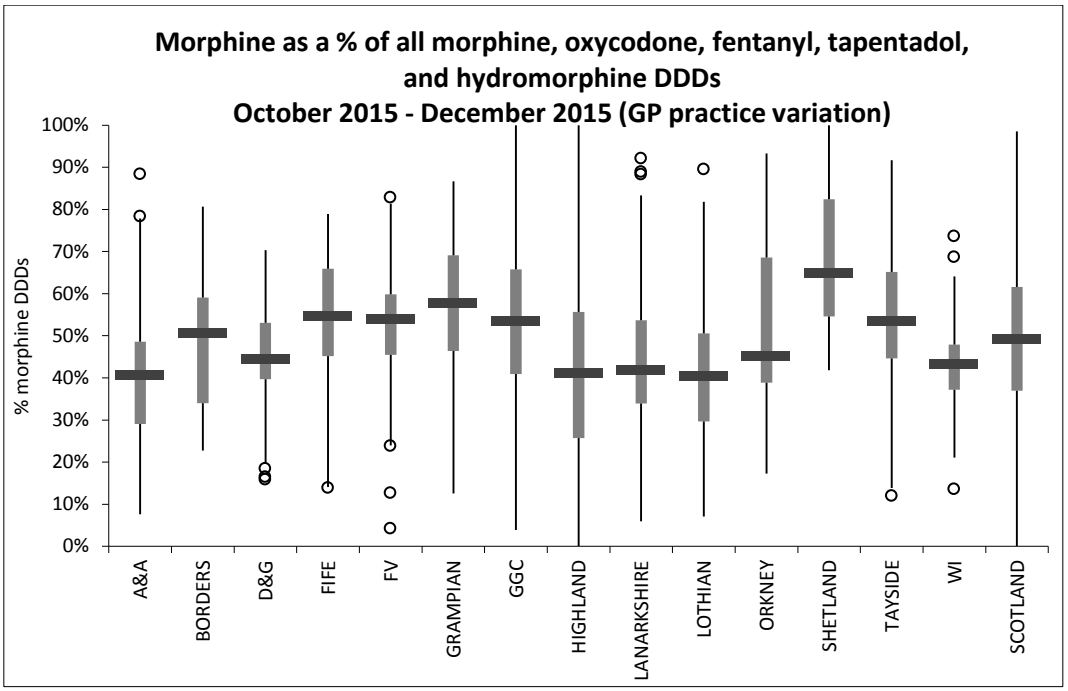




APM8 - Morphine as a % of all morphine, oxycodone, fentanyl, tapentadol, and hydromorphine

This additional prescribing measure (APM) looks at the first line recommended strong opioid morphine, as a percentage of all strong opioids. Morphine is the recommended first line strong opioid due to established combined safety, effectiveness, and efficiency. The measure looks at the amount of morphine (DDD) as a percentage of all strong opioids.





Gabapentoids

This NTI looks at the use of antiepileptics in the treatment of neuropathic pain. It has been estimated that up to 8% of the European population is affected by neuropathic pain, the two most common causes of which are peripheral diabetic neuropathy and post-herpetic neuralgia. The next most common group are those patients with chronic low back pain where there is a combination of inflammatory and neuropathic pain (mixed neuropathic pain).[45]

Gabapentin and pregabalin are antiepileptics with a licence in the UK for the treatment of neuropathic pain. Both are effective in the treatment of neuropthic pain: NNT for a >30% reduction in pain for gabapentin versus placebo of 6.8 for diabetic, post herpetic or mixed neuropathic pain and 5.4 for fibromyalgia: NNT for a > 50% reduction in pain for pregabalin versus placebo of 5 for diabetic and post herpetic pain and 11 for fibromyalgia. Both gabapentin and pregabalin have similar side effect profiles. [46]

Most organisations that have developed treatment pathways for neuropathic pain recommend gabapentin as a treatment option before pregabalin is initiated. However, there is published evidence that both gabapentin and pregabalin are subject to abuse.[47] Prescribing for neuropathic pain treatments should be reviewed and discontinued (gradually) if it is ineffective.

A systematic review for neuropathic pain identifies the number needed to treat to achieve a 50% reduction in pain.[48] The results strongly suggest the order in which to trial the different medicines:

- Tricyclic antidepressants NNT 4
- Tramadol NNT 5
- Duloxetine NNT 6
- Gabapentin NNT 7
- Pregabalin NNT 8
- Capsaiscin patches NNT 11
- Lidocaine patches – undetermined benefit

This study suggests that the NNT for pregabalin is higher than was previously believed.

The goal of therapy is pain reduction, not pain removal. Each medicine may take 2 to 4 weeks to provide maximum benefit. Dose should be titrated every 2 to 4 weeks. Ideally each patient would be commenced on the medicine most likely to work, and reviewed every 4 weeks for dose titration. If 50% pain reduction at maximum tolerated dose is not achieved then the medicine should be withdrawn and the next option started. Based on the numbers needed to treat, tricyclic antidepressants would be expected to work in 25% of people and pregabalin in 12.5% of people.

45 *DTB*2012 50: 114-17 doi: 10.1136/dtb.2012.10.0133

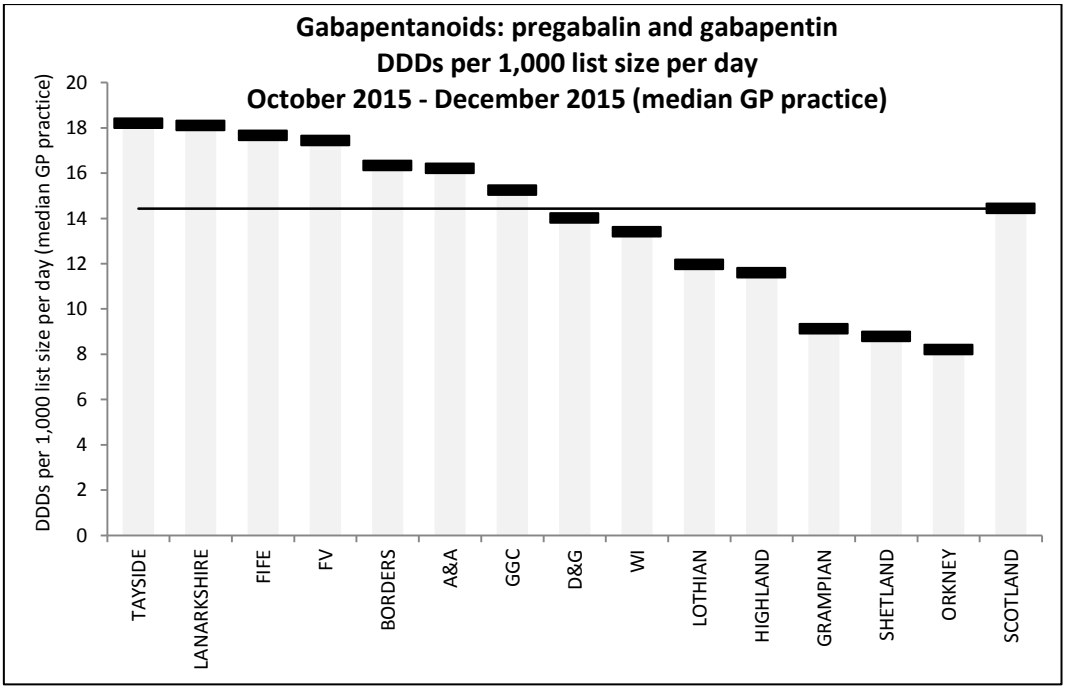
[46] SIGN 136

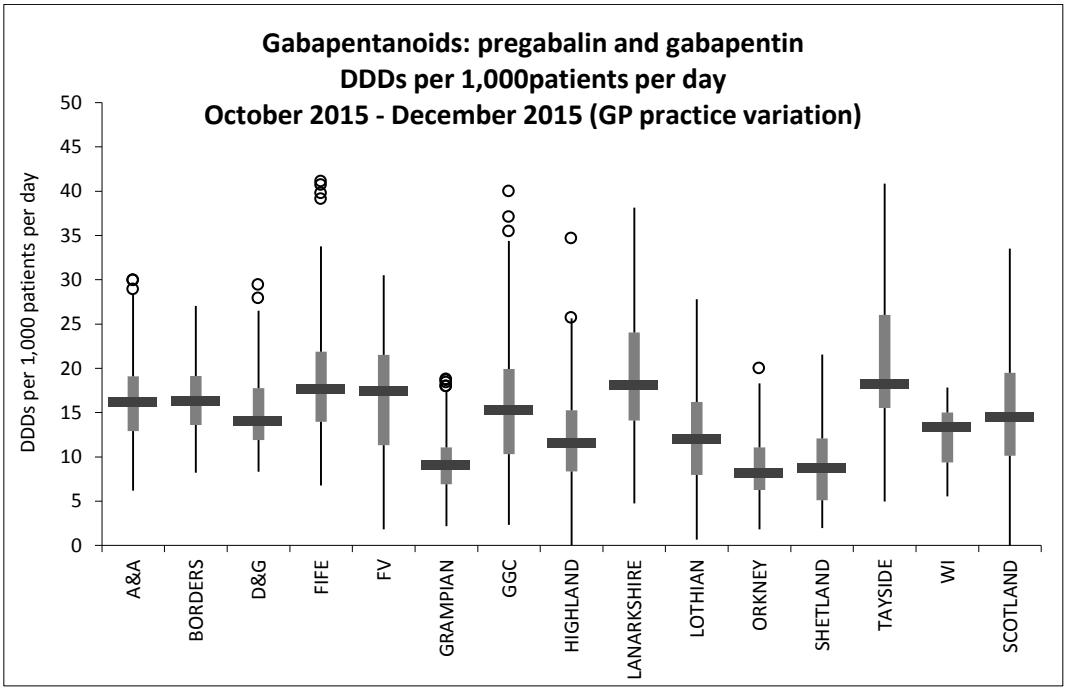
[47] Stannard C, Brew I, Browne, E et al Expert group for Public Health England. Advice for prescribers on the risk of the misuse of pregabalin and gabapentin. 2014

[48] Lancet Neurology 2015 Feb;14(2):162-73. doi: 10.1016/S1474-4422(14)70251-0. Epub 2015 Jan 7

NTI7a - Gabapentanoids: pregabalin and gabapentin DDDs per 1,000 LS per day

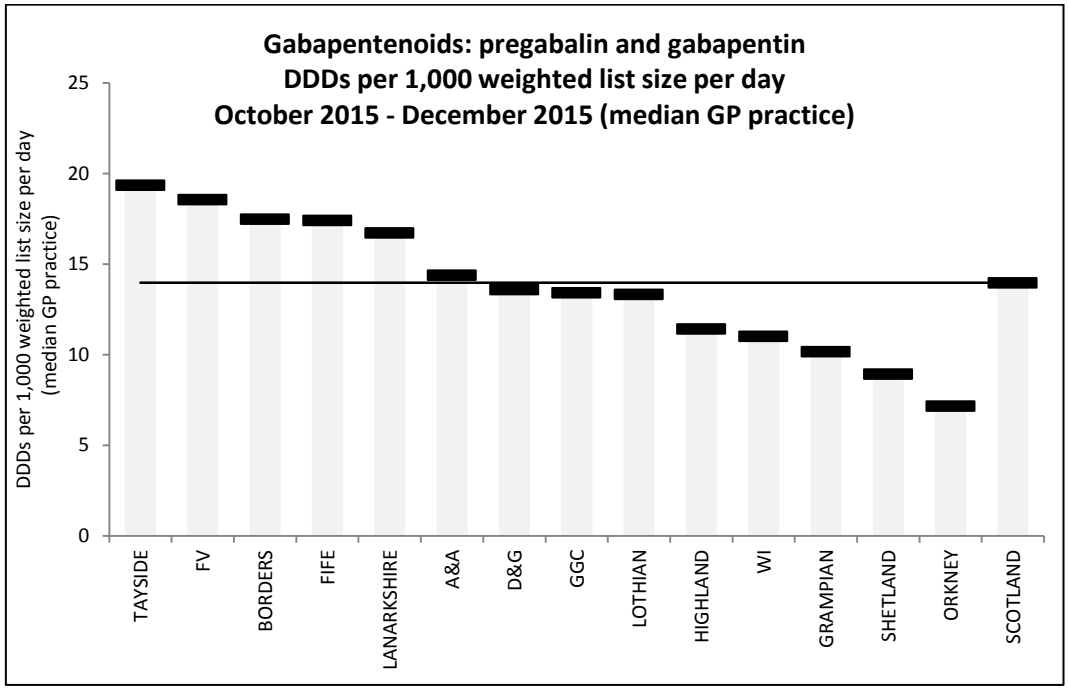
This NTI looks at the use of the gabapentanoids: pregabalin and gabapentin, which continues to increase every year. Gabapentin and pregabalin have a role to play in the management of neuropathic pain, however they are not the most effective agents available and they carry a risk of diversion and abuse. The measure looks at the DDD for patients registered at a practice.

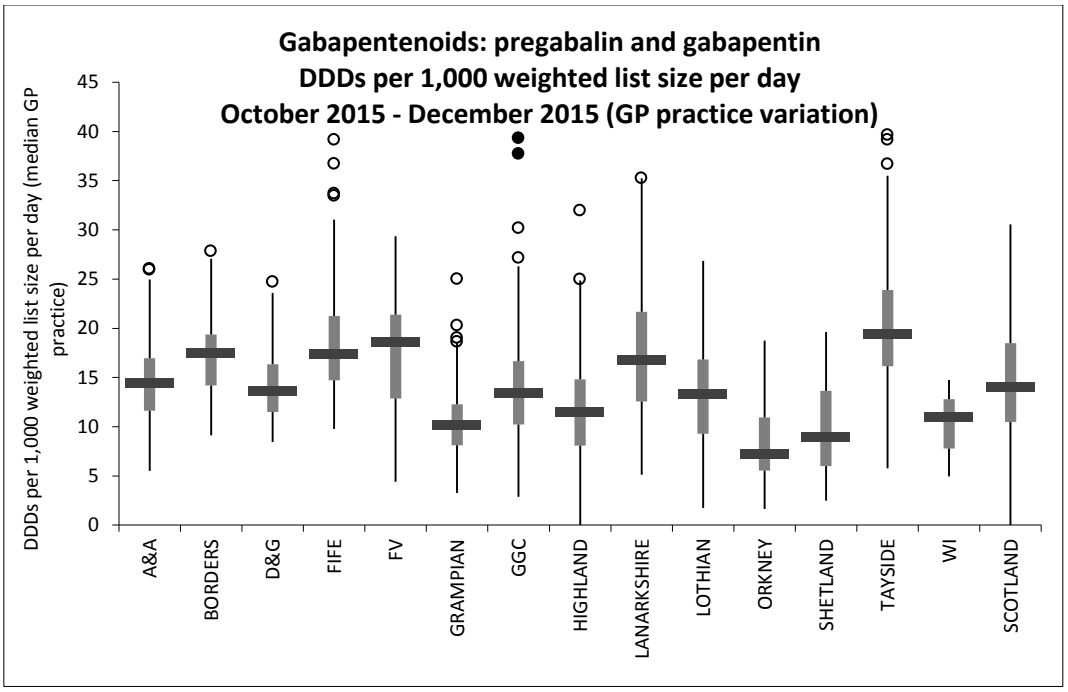




NTI7b - Gabapentanoids: pregabalin and gabapentin DDDs per 1,000 weighted list size per day

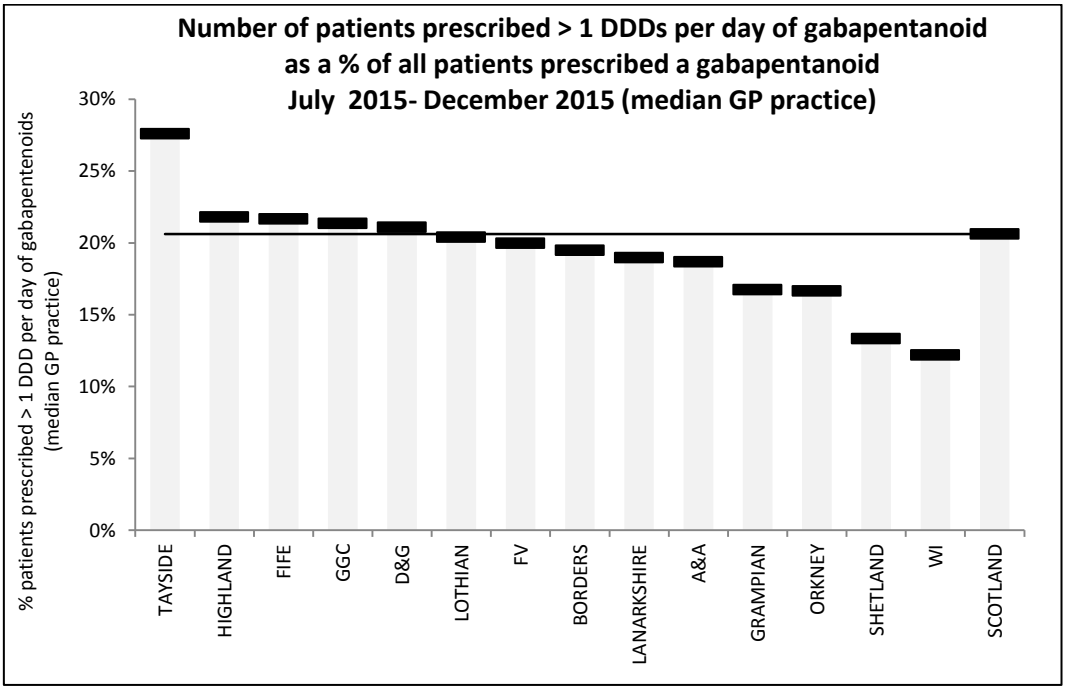
This NTI looks at the use of the gabapentanoids: pregabalin and gabapentin, which continues to increase every year. Gabapentin and pregabalin have a role to play in the management of neuropathic pain, however they are not the most effective agents available and they carry a risk of diversion and abuse. The measure looks at the DDD for weighted patients registered at a practice.

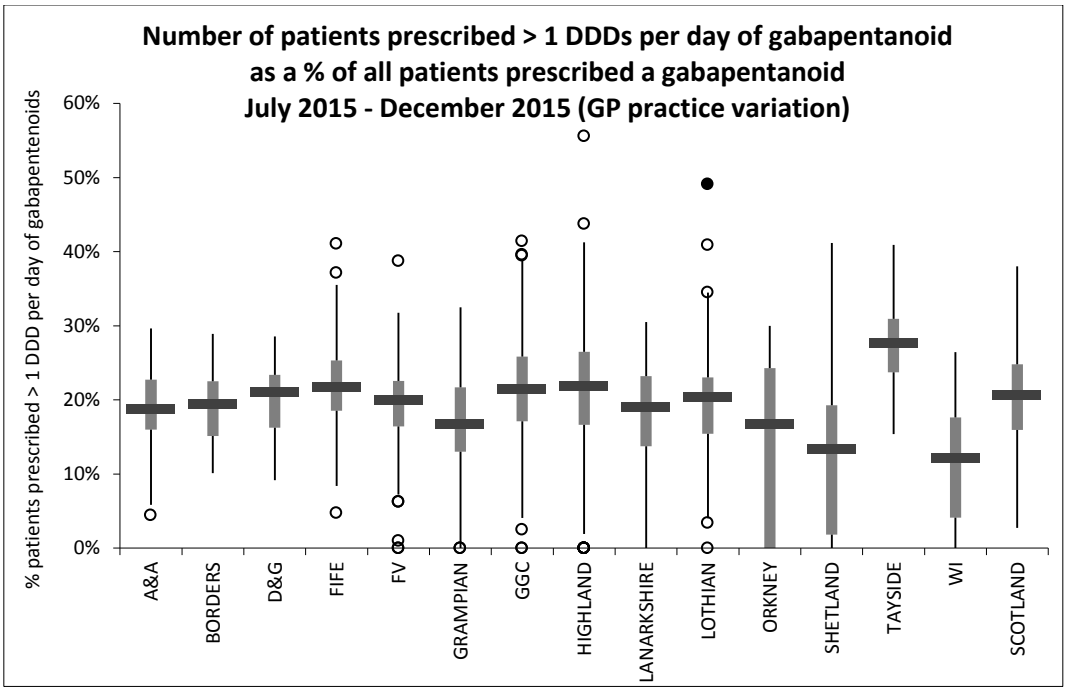




APM9 - Gabapentanoids: number of patients prescribed > 1 DDDs per day of gabapentanoid as a % of all patients prescribed a gabapentanoid

This APM looks at patients on high daily doses of gabapentoids. While it is recognised that some patients may tolerate and require such high doses, there is concern of an increasing risk of harm. Patients prescribed high doses of gabapentoids should be regularly reviewed. The measure counts the number of patients prescribed more than the recommended define daily dose of gabapentoid every day.





Drugs for urinary frequency, enuresis and incontinence

This NTI looks at the use of medicines to help treat urinary incontinence. The majority of these manage urinary symptoms by blocking muscarinic acetylcholine receptors to prevent bladder contractions, hence they are often referred to as antimuscarinics. The exception to this is duloxetine, which is not included in this measure.

NICE Clinical Guideline CG171 for urinary incontinence in women (updated in 2015) recommends that bladder and pelvic floor re-training should be offered to women with urgency or mixed urinary incontinence for a minimum of 3 months as first line treatment.[49] Although this guideline focuses on the management of symptoms in women, the main principles also apply to men. Patients are encouraged to use non-pharmacological methods including:

- Pelvic floor exercises
- Bladder retraining
- Lifestyle interventions such as caffeine restriction

Patients who do not find sufficient relief from these measures may benefit from pharmacological management.

Antimuscarinics should be started at the lowest dose, with 4 weekly reviews to assess: symptom control; development of side-effects and consideration for dose increase.
Patients prescribed long-term antimuscarinic therapy for urinary frequency, urgency and urge incontinence should have their treatment reviewed in line with NICE Clinical Guideline CG171:

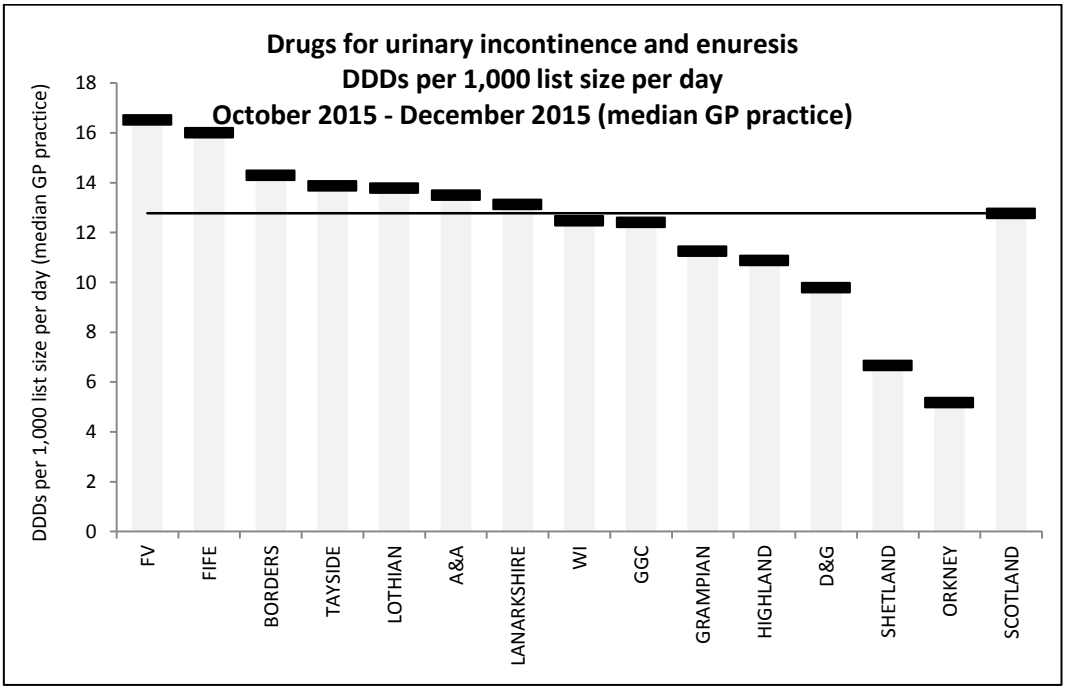
- Annually for patients younger than 75 years old
- 6 monthly for patients 75 years or older

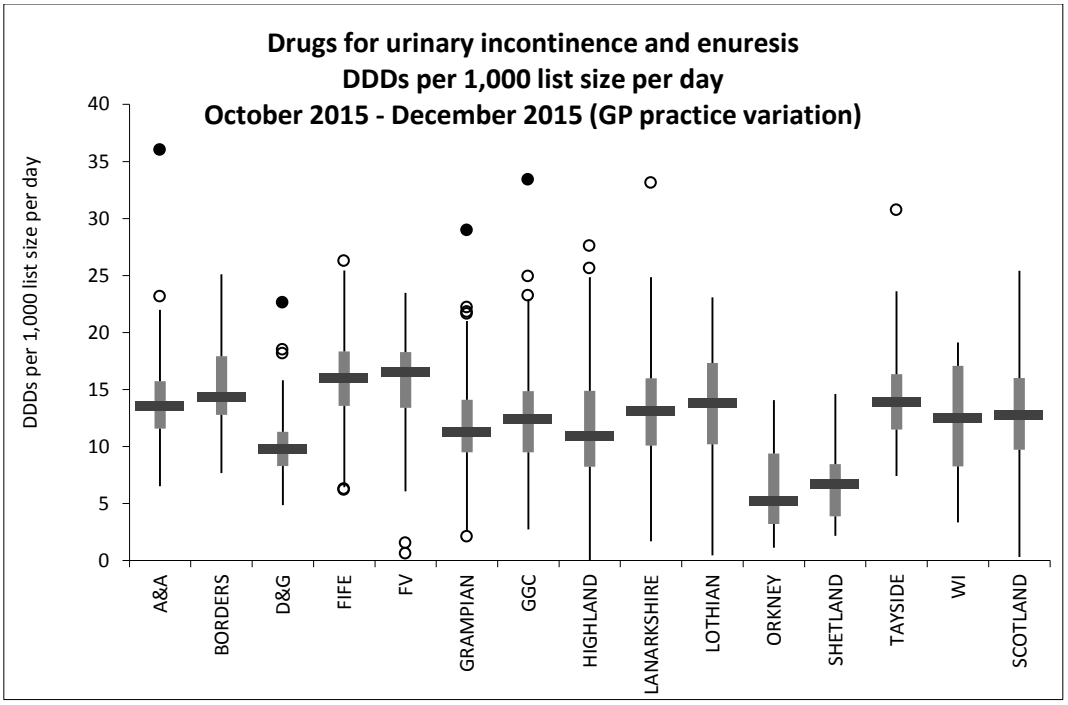
At each review, consideration should be given as to whether a trial of discontinuation of therapy is appropriate. Consideration should also be given to the continued appropriateness of anticholinergic drugs in frail adults, especially when co-prescribed medicines with anticholinergic properties for other indications.

[49] NICE Clinical Guideline 171: Urinary incontinence in women.

NTI8a - Drugs for urinary Incontinence and enuresis: DDDs per 1,000 list size per day

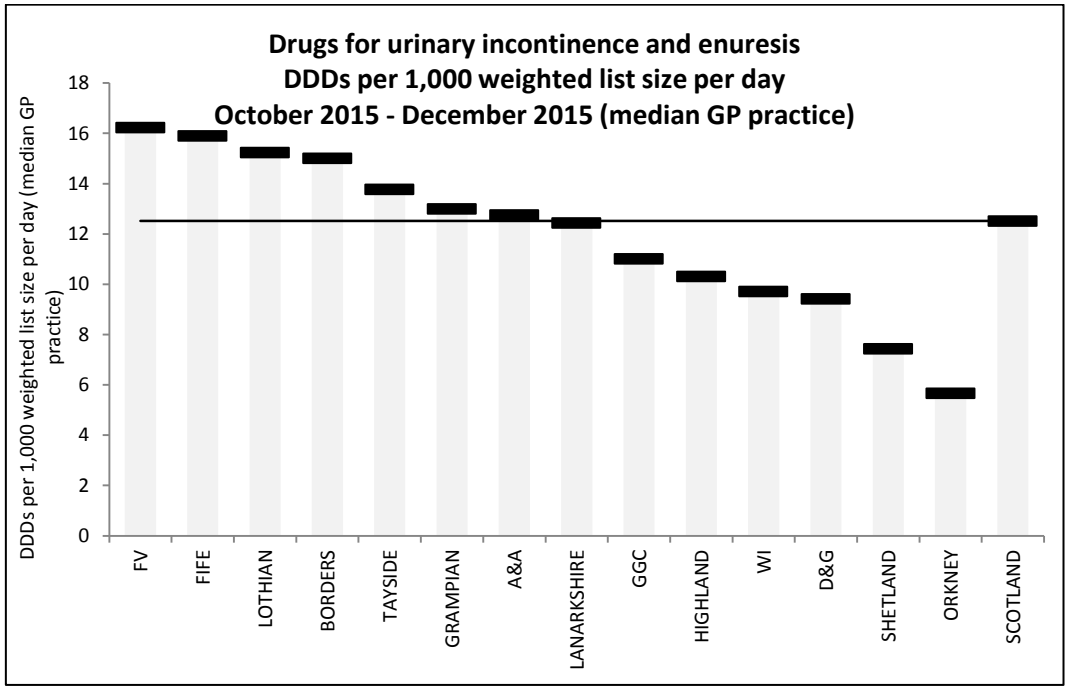
This NTI looks at the use of antimuscarinic drugs to manage urinary frequency, enuresis and incontinence. The marginal benefit provided by these drugs should be viewed in the context of the anticholinergic effects of: reduced physical ability; falls; cognitive impairment and trend towards increased mortality. The measure looks at the defined daily dose of antimuscarinics prescribed per registered patient

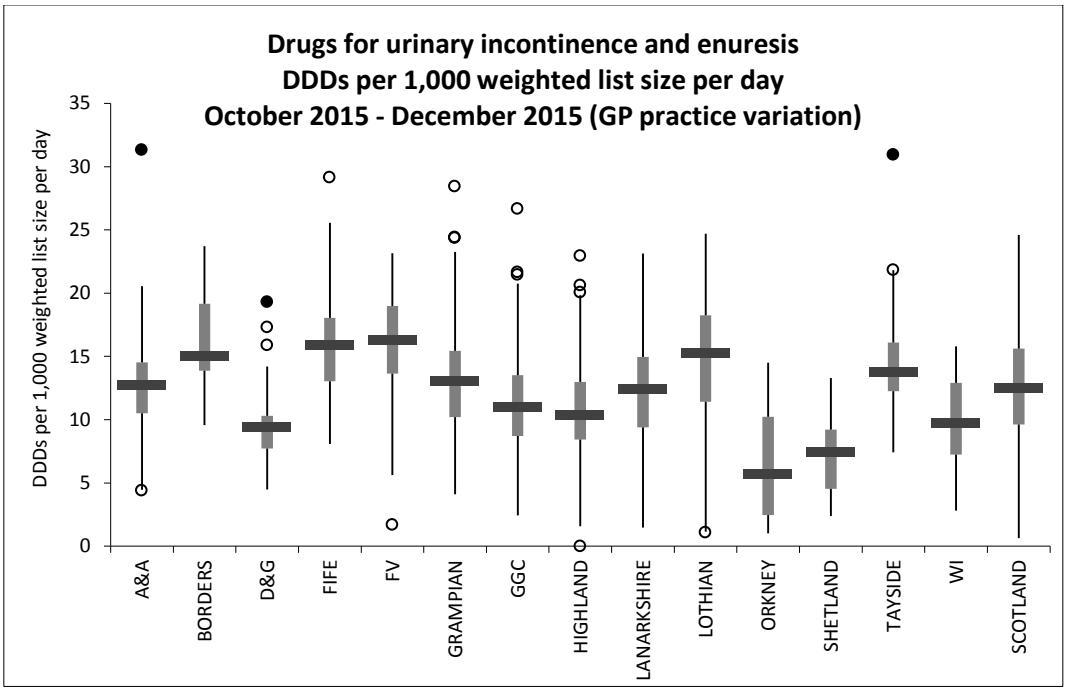




NTI8b - Drugs for Urinary Incontinence and Enuresis: DDDs/1,000 weighted patients/day

This NTI looks at the use of antimuscarinic drugs to manage urinary frequency, enuresis and incontinence. The marginal benefit provided by these drugs should be viewed in the context of the anticholinergic effects of: reduced physical ability; falls; cognitive impairment and trend towards increased mortality. The measure looks at the defined daily dose of antimuscarinics prescribed per weighted registered patient.





Anticholinergics

This APM looks at the use of anticholinergic medicines in elderly patients on multiple medicines. The use of anticholinergics is linked with: impaired cognition; increased falls risk; constipation; urinary retention and an increase in mortality. Age related changes in pharmacokinetics and pharmacodynamics contribute to the higher incidence of adverse outcomes in older people.

Despite the risks, anticholinergics are commonly prescribed to older people, and to those with mental illness, who are at even greater risk of adverse outcomes. [50]

Although not all medicines with anticholinergic properties will put patients at significant risk of adverse outcomes it is recognised that different drugs have different potencies, and that there is an accumulative effect. The anticholinergic risk scale (ARS) has been developed to identify the comparative anticholinergic effect of different medicines, to allow clinicians to understand the anticholiergic load for an individual patient.[51] The scale has been subsequently been changed to the modified anticholinergic risk scale (mARS) to include medicines identified by other anticholinergic risk scores and exclude medications not available for use in the UK.[52,53]

The following table summarises the relative anticholinergic risk of commonly prescribed medicines where: category 1 = moderate; category 2 = strong and category 3 = very strong.

mARS category 1	**mARS category 2**	**mARS category 3**
haloperidol	clozapine	chlorpromazine
quetiapine	notryptiline	amitryptiline
mirtazapine	olanzapine	imipramine
paroxetine	baclofen	chlorpheniramine
trazodone	cetirizine	oxybutynin
ranitidine	loratadine	hydroxyzine
lofepramine	cimetidine	
	loperamide	
	prochlorperazine	
	tolteridone	
	sertraline	

Review of patients should follow the recommendations holistic principles outlined in the Polypharmacy Guidance 2015.[54]

[50] Sumukadas, D, McMurdo, MET, Mangoni, AA, Guthrie, B 2014, Temporal trends in anticholinergic medication prescription in older people: repeated cross-sectional analysis of population prescribing data. *Age and Ageing*, vol 43, no. 4, pp. 515-521.

[51] Rudolph JL, et al The anticholinergic risk scale and anticholinergic adverse effects in older persons. *Arch Intern Med* 2008;168:508-13

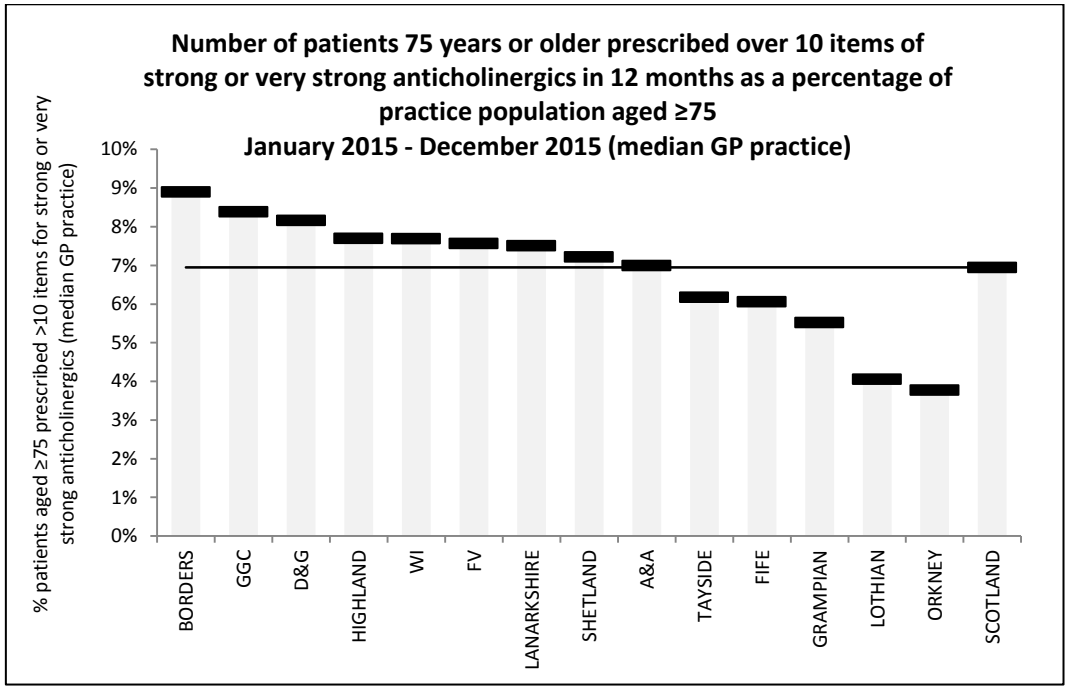
[52] Boustani MA, et al The impact of anticholinergics on the aging brain: a review and practical application. *Aging Health* 2008;4:311-20

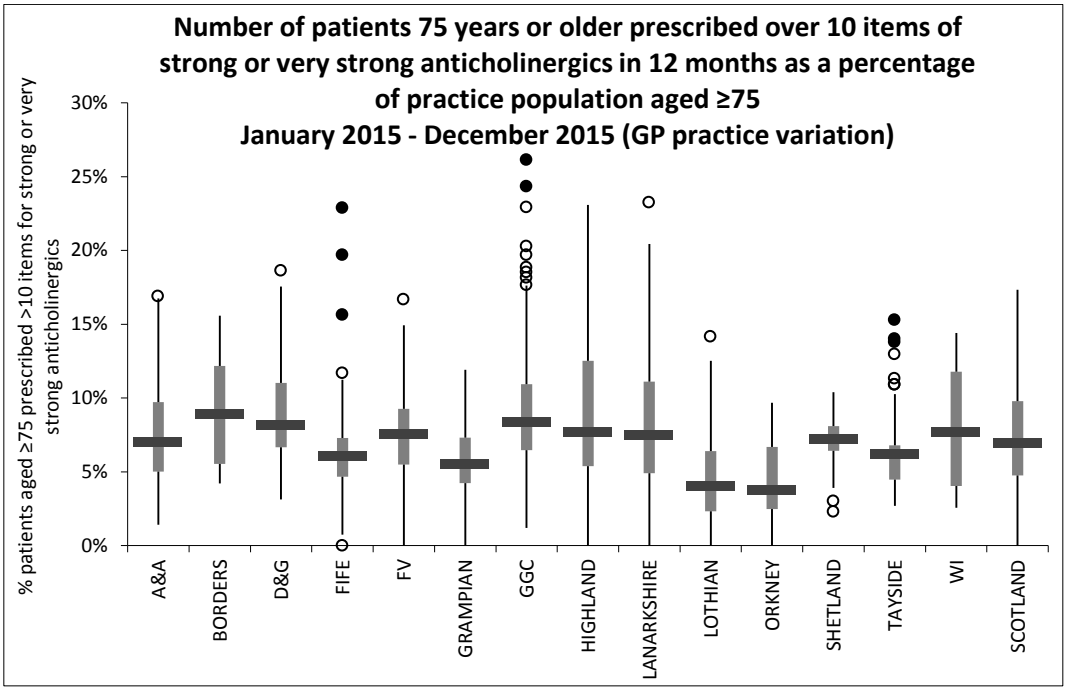
[53] Carnahan RM, et al The anticholinergic drug scale as a measure of drug-related anticholinergic burden: associations with serum anticholinergic activity. *J Clin Pharmacol* 2006;46:1481-6

[54] http://www.sign.ac.uk/pdf/polypharmacy_guidance.pdf

APM10 - Anticholinergics: number of patients aged ≥75 dispensed > 10 items of strong or very strong anticholinergics (mARS 3&2) in 12 months as a % patients aged ≥75 years registered with the practice

This APM looks at the use of medicines with a strong or very strong anticholinergic effect (mARS 2&3) in elderly patients. The anticholinergic effects include: reduced physical ability; falls; cognitive impairment and trend towards increased mortality. The use of these medicines should be minimised, particularly in the elderly.





Antibiotics

This indicator is proposed and supported by the Scottish Antimicrobial Prescribing Group (SAPG).[55] Reductions in overall use of antibiotics is a key part of improving antimicrobial stewardship. The aim is to reduce antimicrobial resistance and reduce health-care associated infections in a safe manner that does not put patients at risk.

Evidence shows that antibiotic use in primary care drives bacterial antibiotic resistance for the individual and for the population.[56] [57] Higher levels of antibiotic resistance are associated with high use of antibiotics.[58]

The solution is not just to use fewer antibiotics: *'Our mission is not to prescribe as few antibiotics as possible, but to identify that small group of patients who really need antibiotic treatment and to explain, reassure and educate the large group of patients who don't.'*[59]

There are many clinical areas where antibiotic use clearly benefits an individual patient and the associated risks are outweighed. For example, pyelonephritis, cellulitis and community acquired pneumonia, are all infections that should **not** be targeted for a reduction in antibiotic use as the risk to the individual of not treating is too great.

However, 70% of antibiotics in primary care are used to treat self-limiting respiratory tract infections (acute sore throat, acute otitis media, acute rhinosinusitis and acute cough/bronchitis). The benefit of using antibiotics to treat these conditions in most patients is so marginal that it is outweighed by the risks to the individual and to society.[60]

The SAPG has produced a toolkit (ScRAP) to aid the process of using fewer antibiotics.55 The Public Health England (PHE) template has been formally adopted for use in Scotland and gives clear guidance on the subgroups of patients that may benefit from use of antibiotics.[61]

The second antimicrobial NTI focuses on restricting the use of broad spectrum antibiotics. Use of the broad spectrum '4C antibiotics' (fluroquinolones, particularly ciprofloxacin, cephalosporins, co-amoxiclav and climamycin) is a well-recognised risk for *Clostridium difficile* infection (CDI),[62] MRSA and resistant UTIs in secondary care.[63] Evidence of the link between 4C antibiotics and CDI in primary care is emerging.

Antimicrobial APMs look at the use of three day courses of empirical antibiotics to treat uncomplicated lower urinary tract infection and at the use of recurrent courses of antibiotics.

Boards are required by Audit Scotland to report on what they are doing to reduce antibiotic use in primary care. This approach is further supported by the level 3 HEAT target to reduce total antibiotic use.

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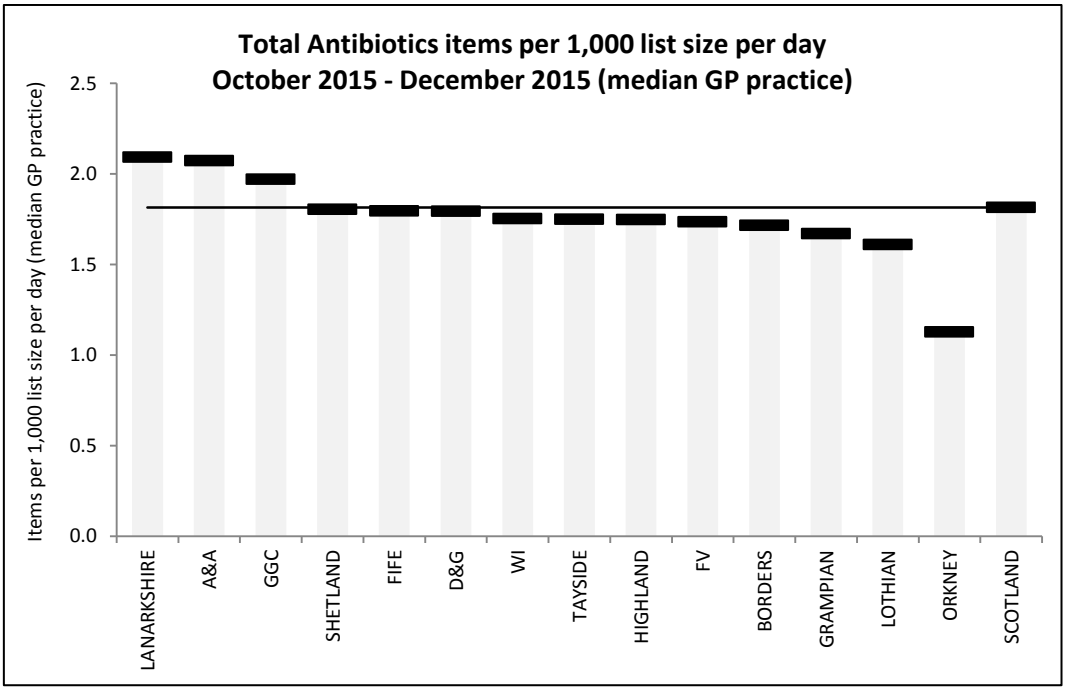
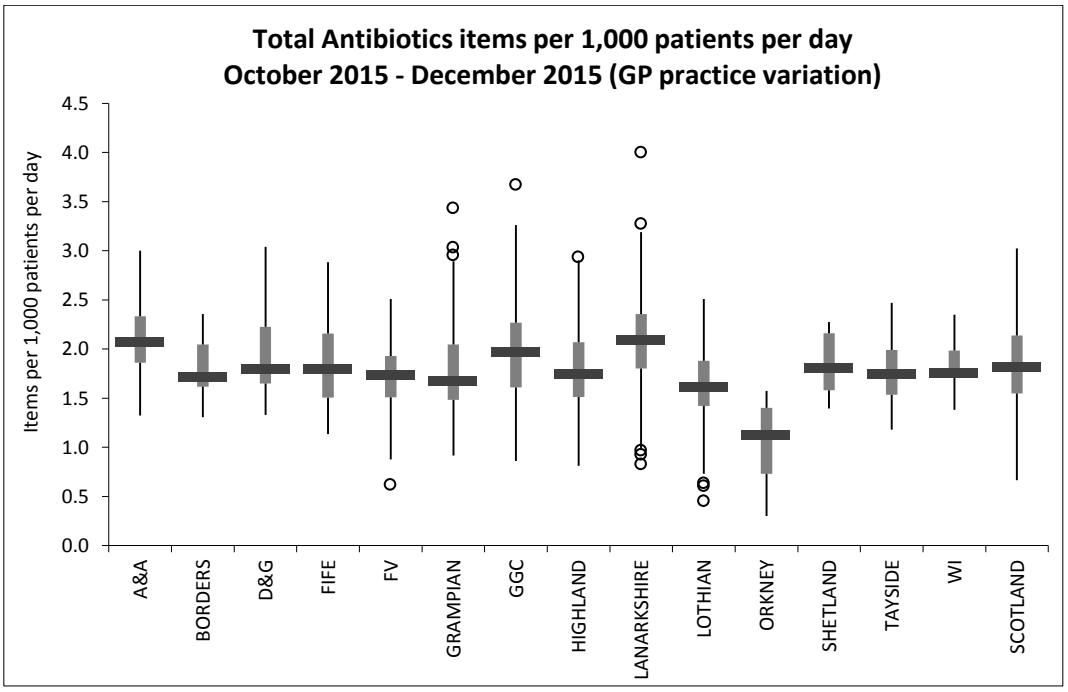
[55] The SAPG, Scottish Medicines Consortium, Delta House, 50 West Nile Street, Glasgow, G1 2NP
[56] Costelloe C, et al. BR Med J 2010; **340**: c2096
[57] Priest P, et al. BR Med J 2001; **323**: 1037-41
[58] European Antimicrobial Resistant Surveillance System (EARSS). Interactive Database
[59] Verheij TJM, Br J Gen Pract. 2009; **59**(567): 716-7
[60] NICE CG69 Respiratory Tract Infections, July 2008
[61] HPA *Management of infection guidance for primary care for consultation & local adoption, updated* July 2010
[62] Pepin J, et al. Clinical Infectious Diseases 2005; **41**(9): 1254-1260
[63] Davey P, et al. Emerging Infectious Diseases 2006; **12**(2): 211-216

NTI9a - Total antibiotic script items per 1,000 list size per day

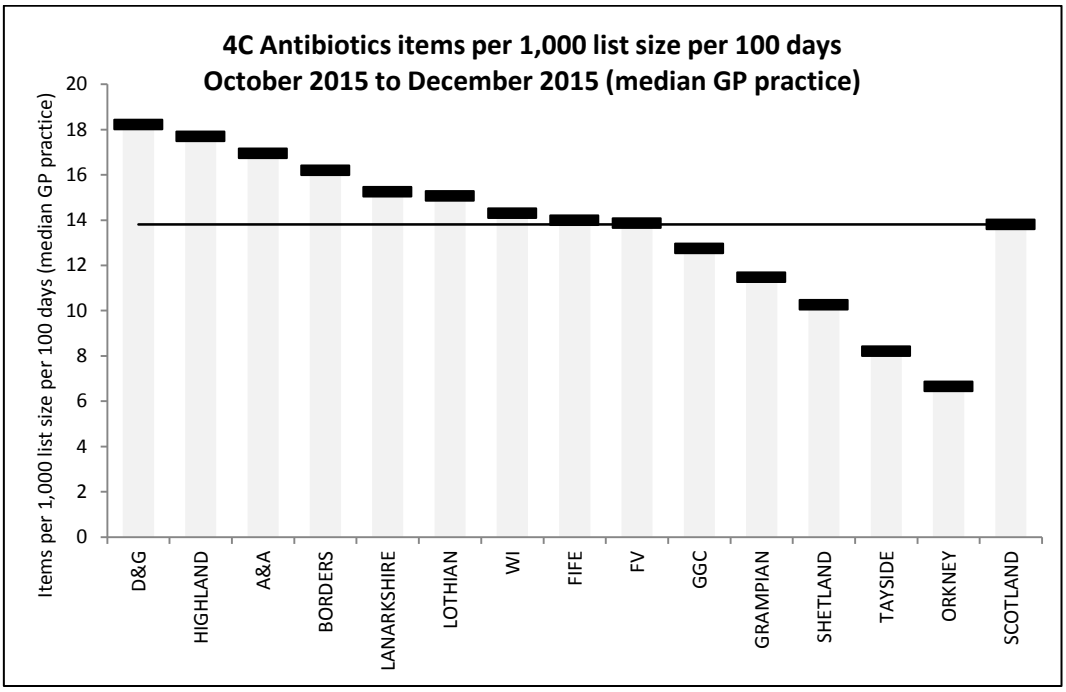
The Scottish Antimicrobial Prescribing Group (SAPG) agreed to use this NTI as a new national quality indicator for reduction of total antibiotics. It is now a key HAI Level 3 HEAT indicator. The measure will use January to March 2013 data as the baseline and to achieve the quality indicator, practices must either achieve a prescribing rate lower or equal to that of the Scottish 25th percentile or achieve an acceptable minimum reduction towards that level.

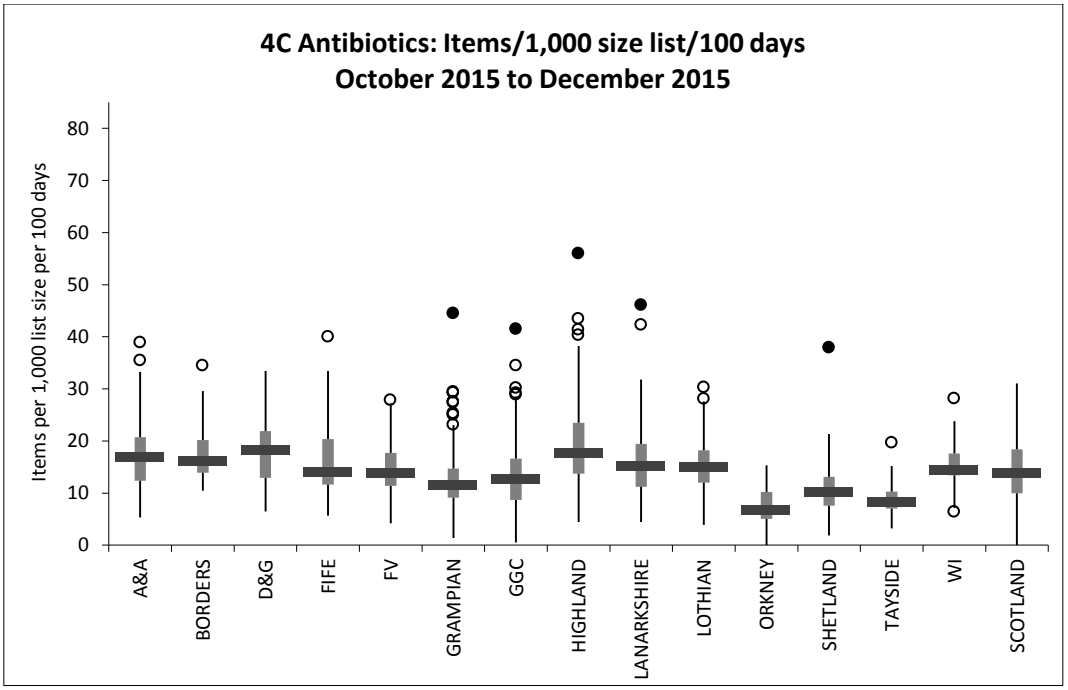




NTI10a - Total 4C antibiotic script items per 1,000 list size per 100 days

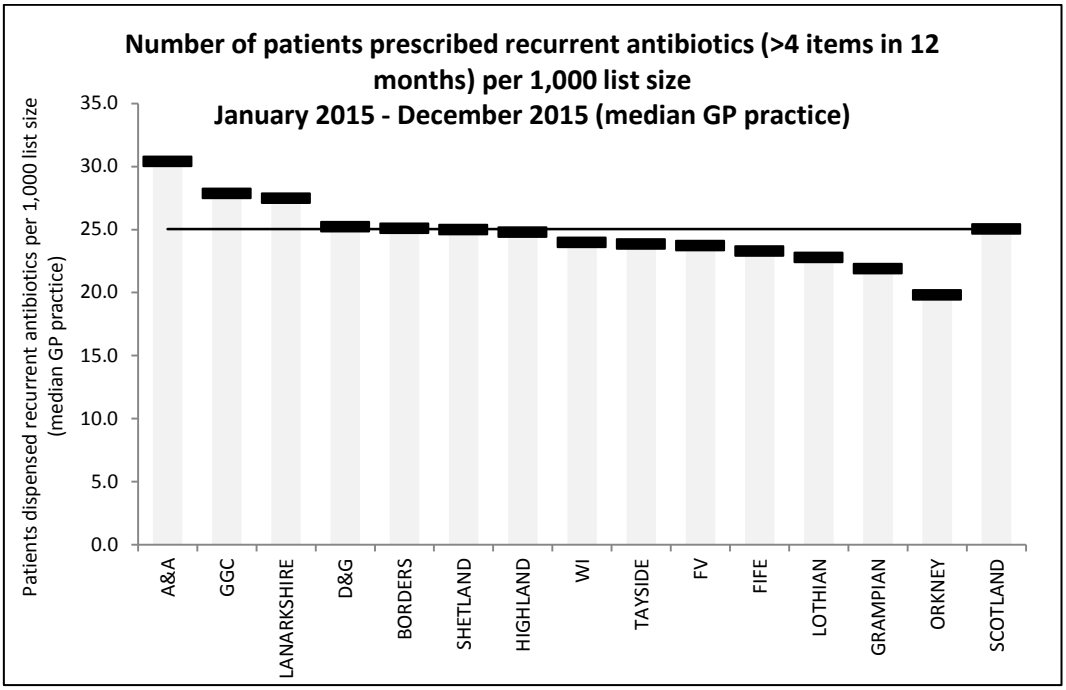
This NTI looks at the comparative use of broad spectrum 4C antibiotics (co-amoxiclav, clindamycin, fluoroquinolones and cefalosporins). The risks of healthcare associated infection (MRSA, CDI and ESBL) is far higher with broad spectrum antibiotics and their use should be reserved for a limited range of conditions. The measure counts the number of treatment courses per registered practice patient.

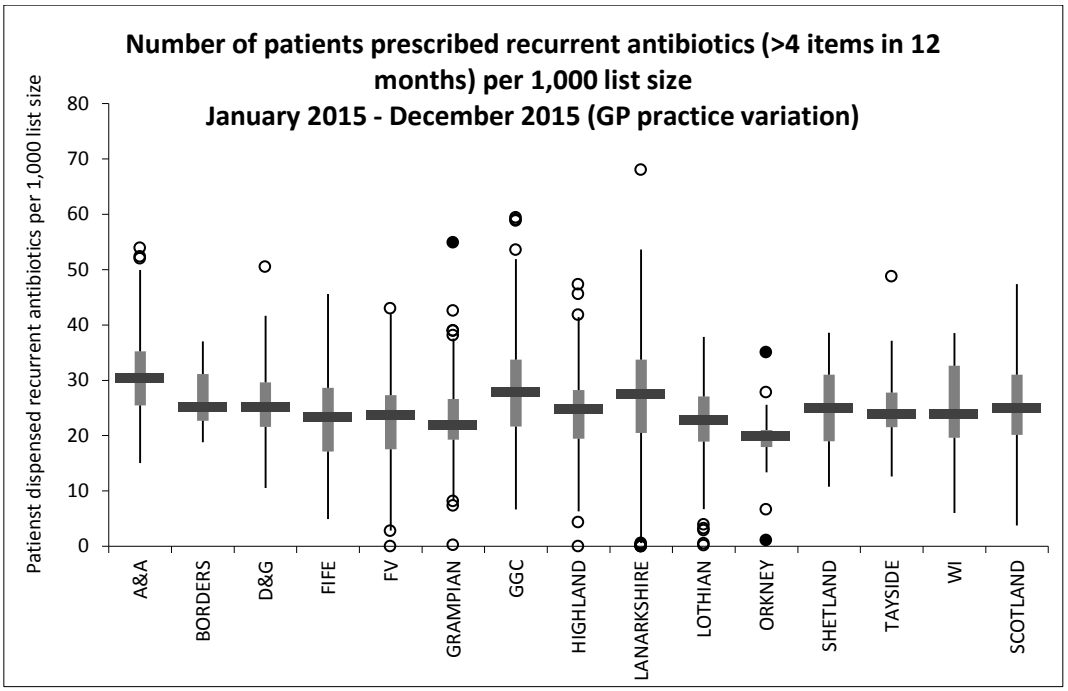




APM11a - Number of patients prescribed recurrent antibiotics (>4 items in 12 months) per 1,000 list size

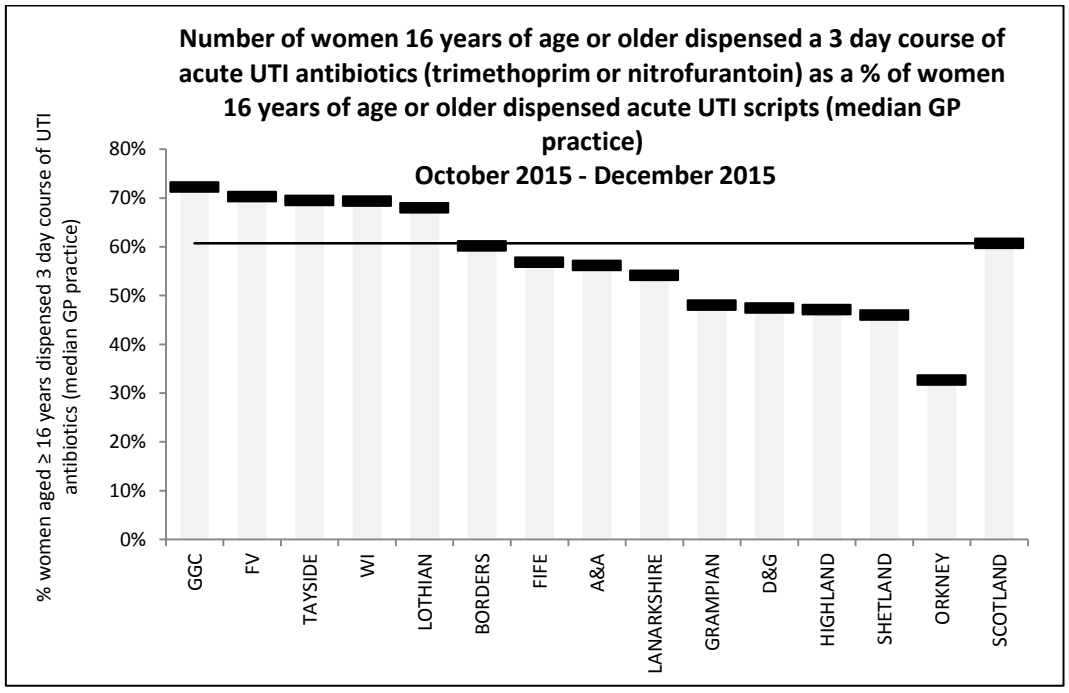
This APM looks at the use of multiple courses of antibiotics to individual patients. Whilst it is recognised that multiple courses of antibiotics are required for some patients, there is an associated increased risk of developing healthcare associated infection (MRSA, CDI and ESBL). The measure counts the number of patients receiving four or more courses of antibiotic in a 12 month period.

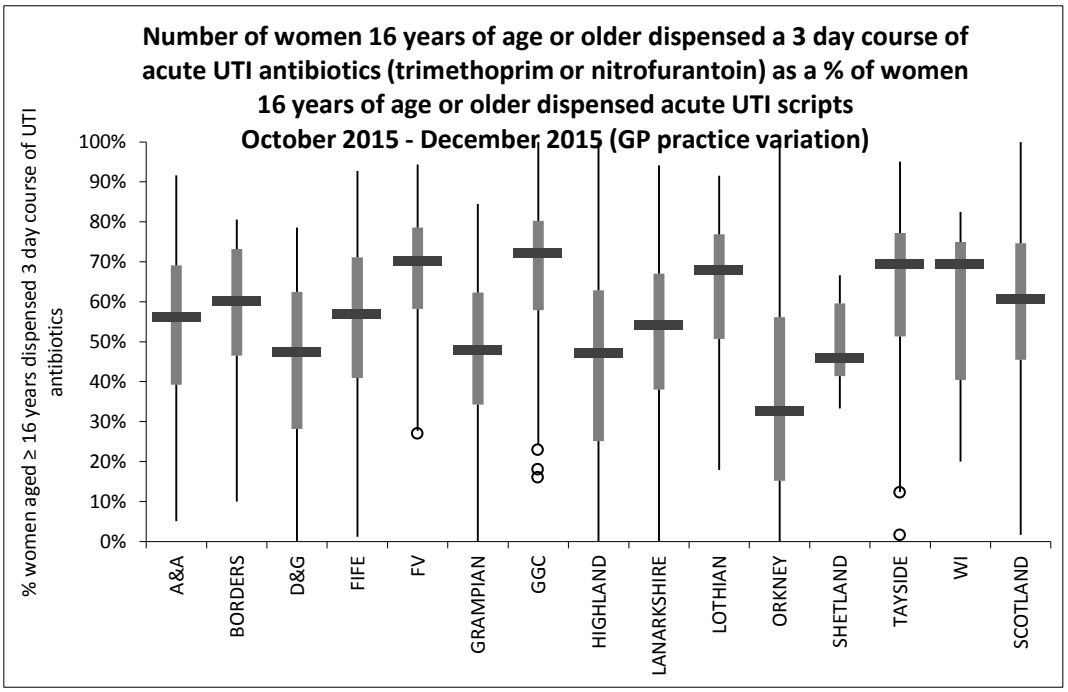




APM12 - Antibiotics: number of women 16 years of age or older dispensed a 3 day course of acute UTI antibiotics (trimethoprim or nitrofurantoin) as a % of women 16 years of age or older dispensed acute UTI scripts

This APM looks at the number of patients who receive the recommended empirical treatment course duration of three days for uncomplicated lower urinary tract infections in women. The measure counts the number of women receiving a three day course of trimethoprim or nitrofurantoin compared to all course durations, e.g. 3, 5 or 7 days.





Antidiabetics

This NTI has been developed with support from the national Diabetes Managed Clinical Network. It looks at the use of metformin as the established first line antidiabetic agent for type two diabetic patients.[64] Metformin remains the antidiabetic with clear positive patient orientated outcomes, though the sodium-glucose co-transporter 2 inhibitor, empagliflozin, has now been shown to reduce cardiovascular risk.[65]

The importance of lipid lowering and blood pressure control over blood glucose control for type two diabetics is highlighted. Antidiabetic drugs should be used to augment the effect of diet and exercise, not replace it.[66]

The *Cardiff UK GPRD Study* was a retrospective cohort study that showed HbA1c of 59mmol/L (7.5%) was the lowest risk for all-cause mortality.[67] Increase above or decrease below this level is associated with an increased risk of all-cause mortality.

A meta-analysis looked at the effects of intensive glucose lowering on all-cause mortality, cardiovascular death and micro-vascular complications.[68] Intensive treatment had **no** significant effect on all-cause mortality or cardiovascular death, although risk of non-fatal myocardial infarction (NNT=117) and developing microalbuminuria (NNT=32) was reduced. However, the risk of severe hypoglycaemia was doubled (NNH=15).

The result of this meta-analysis should also be put into the context of the relationship between reductions in cholesterol, blood pressure and HbA1c with improvements in coronary heart disease and cardiovascular outcomes.[69] It has been calculated that the absolute reduction in cardiovascular events prevented by the different interventions per 1,000 patients per one year of treatment are:

- Lowering HbA1c by 1% = 3 events prevented
- Lowering LDL by 1 mmol/L = 8 events prevented
- Lowering BP by 10/5mmHg – 12 events prevented [70]

'the emphasis in type 2 diabetes should remain on tight control of lipids and blood pressure with reasonable but not exaggerated attempts to control glycaemia.'

The management of type 2 diabetes should emphasise the importance of weight reducing diet and increased activity. Lipid lowering and BP control should be managed optimally when such treatment is required. Metformin should be the first line agent. Sulphonylureas, pioglitazone, DPP4 inhibitors, GLP1 agonists and SGLT2s should be considered as second and/or third line agents with unique merits and weaknesses, and in the context of the risks of intensive HbA1c lowering.

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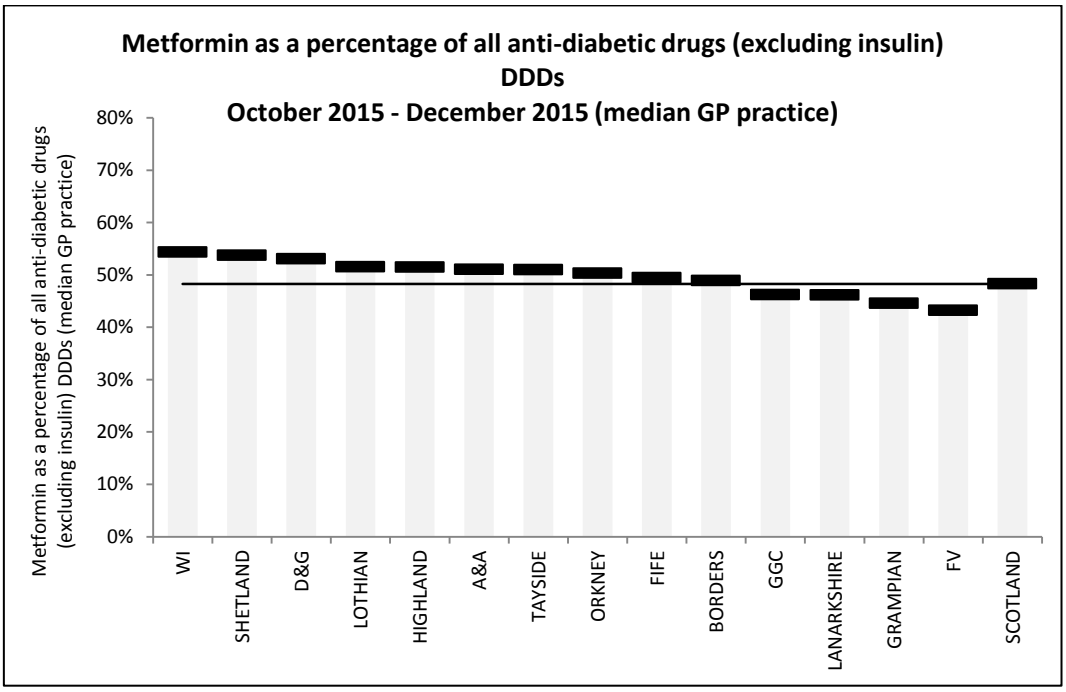
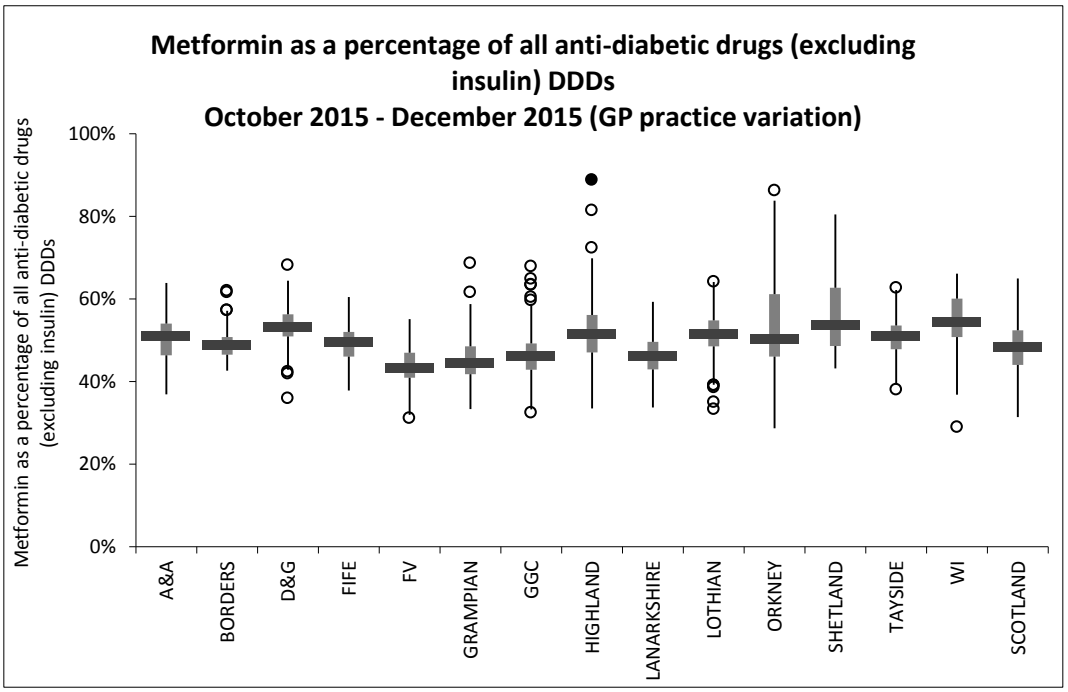
[64] Holman RR, et al. *N Engl J Med 2008*; **359**: 1577-89
[65] N Engl J Med 2015; 373:2117-2128 November 26. 2015 DOI: 10.1056/NEJMoa1504720
[66] Joint Formulary Committee. *British National Formulary*. Edition 69. March 2015
[67] Boussageon R, et al. *BMJ2011;* **343:** d4169
[68] Yudkin JS, et al. *Diabetologia 2010;* **53:** 2079-85
[69] Preiss D, et al. *BMJ2011;* **343:** d4243
[70] Opie LH. *Lancet 2011;* **378**(9713): 103

NTI11 - Antidiabetic Drugs: Metformin as % of all anti-diabetic drugs (excluding insulins) (DDDs)

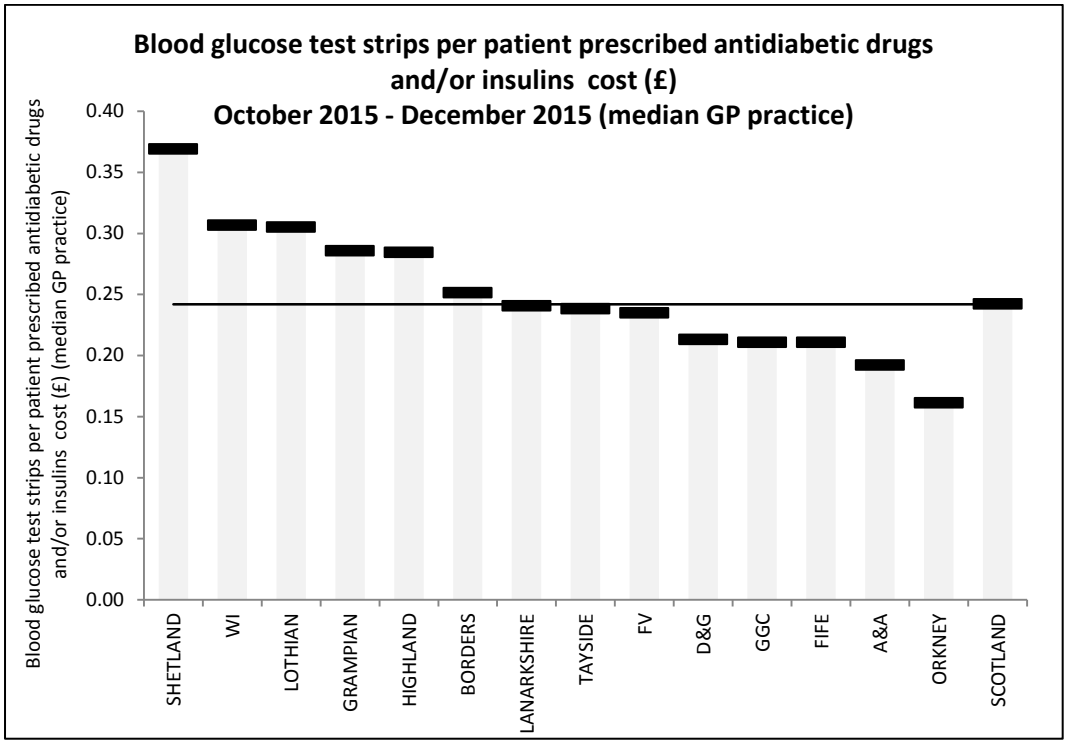
This NTI promotes the first line use of metformin when antidiabetic therapy is required. Sulphonylureas, pioglitazone, DPP4 inhibitors, GLP1 agents and SGLT2s should be considered as second or third line agents with unique merits and weaknesses, and, in the context of the risks of intensive HbA1c lowering. The measure counts the use of metformin compared to all other antidiabetics, excluding insulin.

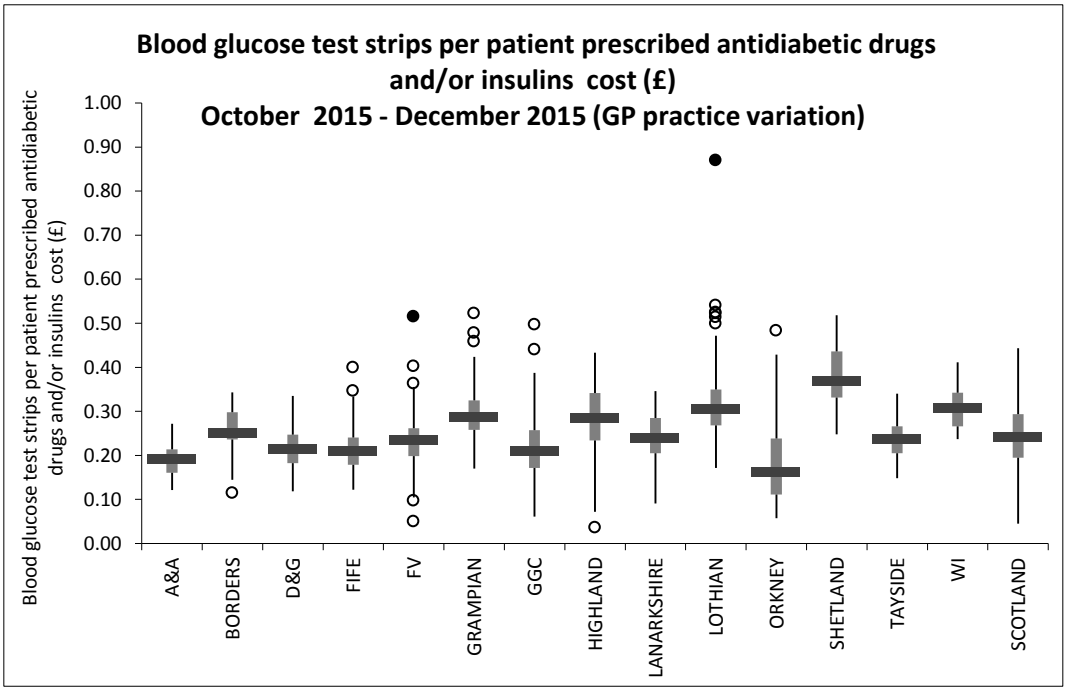




APM 13 - SMBG: average cost per day of blood glucose test strips per patient prescribed antidiabetic drugs and/or insulins

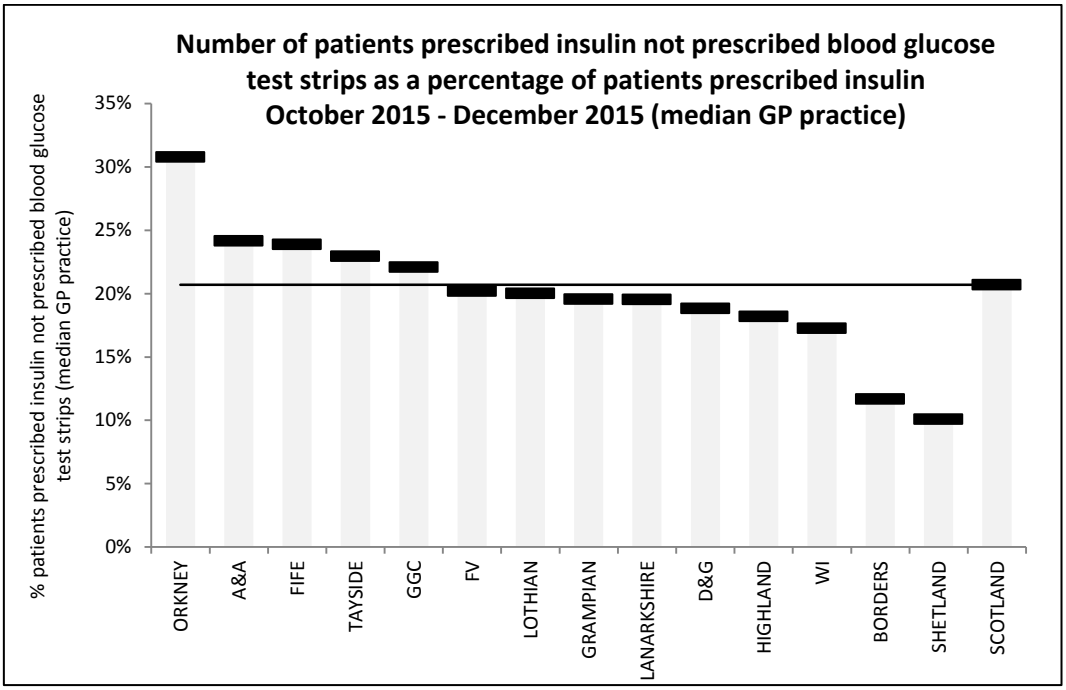
This APM aims to identify the efficient use of self-monitoring of blood-glucose (SMBG). SMBG should mostly be used for patients treated with insulin and for those at risk of hypoglycaemia, particularly before activities like driving. They can also be used **short-term** after changes to management. The measure counts the cost of SMBG per patient treated for diabetes with an antidiabetic or insulin.

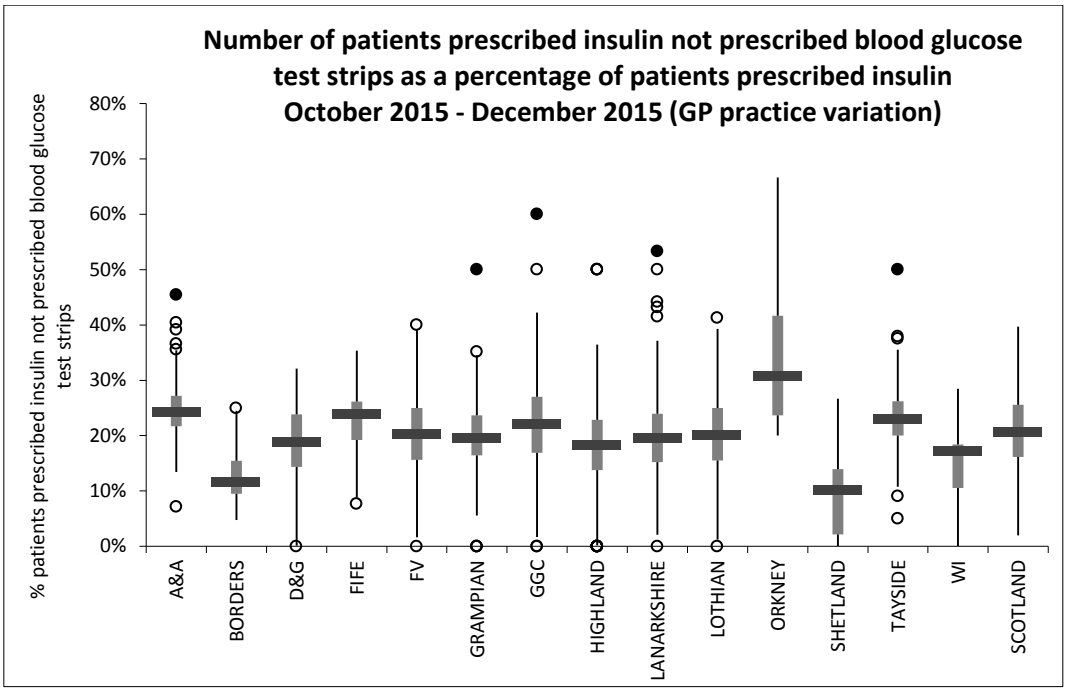




APM14 - SMBG: Number of patients prescribed insulin not prescribed SMBG as a % of patients prescribed insulin

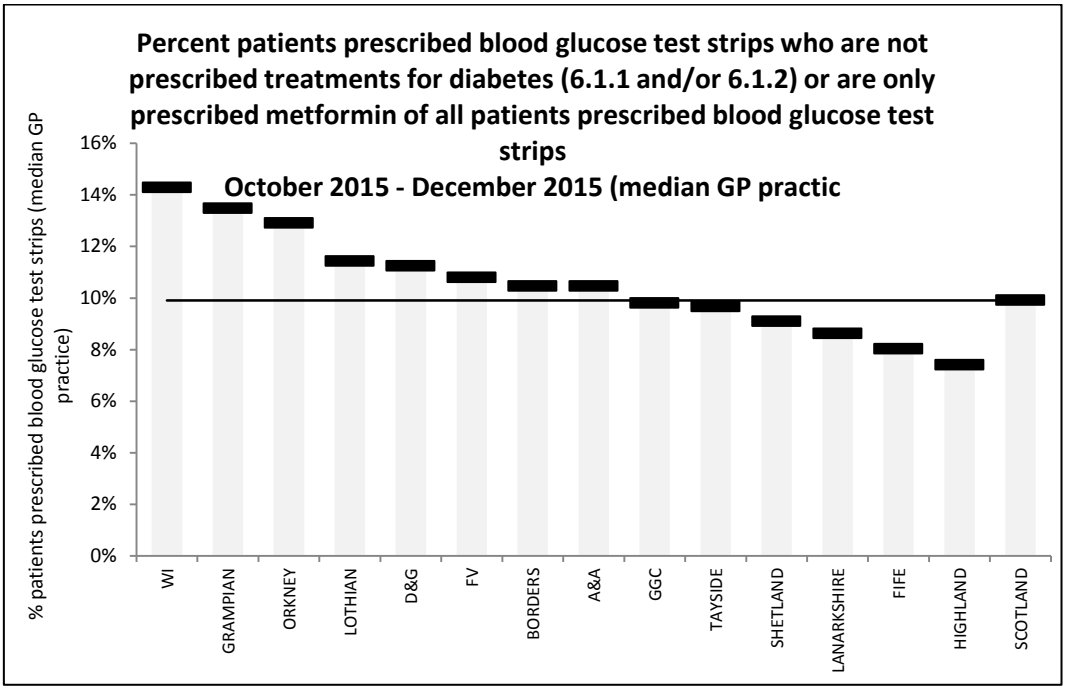
This APM looks at the underuse of self-monitoring of blood glucose for patients on insulin. SMBG should be used by all patients treated with insulin to monitor for hypo and hyperglycaemia. The measure identifies the number of patients prescribed insulin but no SMBG as a percentage of all patients prescribed an insulin.

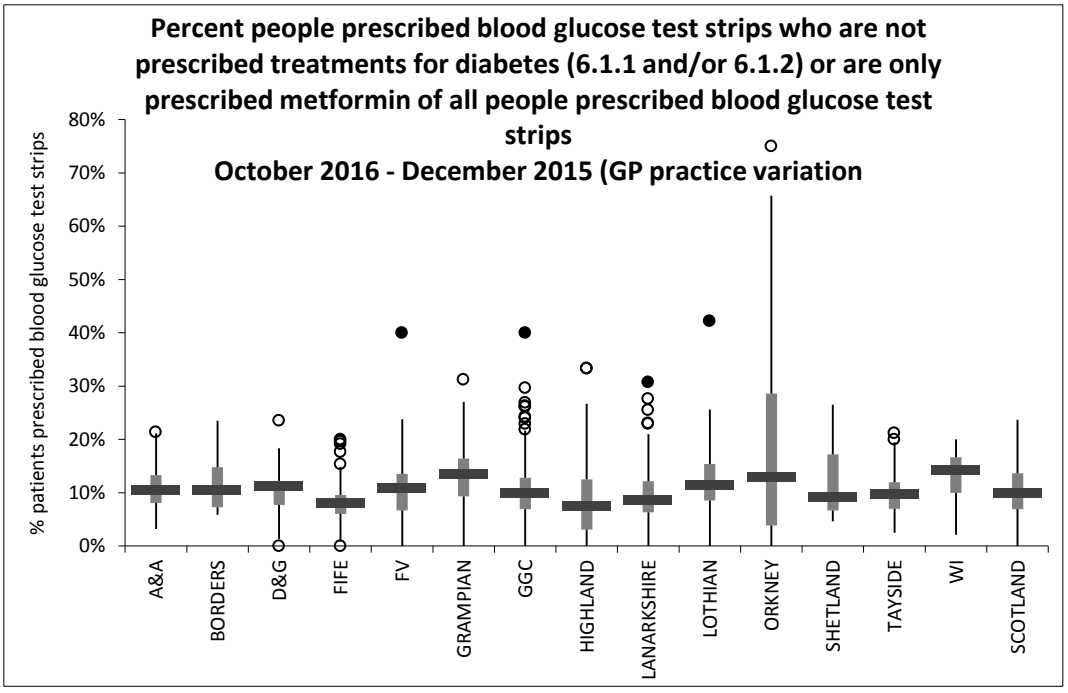




APM15 - SMBG: number of patients prescribed blood glucose test strips who are not prescribed treatments for diabetes (insulins and/or antidiabetic drugs) or are only prescribed metformin as a % of all patients prescribed SMBG test strips

This APM looks at the overuse of self-monitoring of blood glucose for patients on diet treatment or metformin alone. There is no good reason for prescribing SMBG for these patients and evidence that it can cause harm. The measure identifies the number of patients prescribed SMBG with no insulin, no antidiabetic or metformin alone.





Non-steroidal anti-inflammatory drugs (NSAIDS) including COX-2 inhibitors

This NTI looks at the use of NSAIDs in the management of acute and chronic non-cancer pain. They reduce the production of prostaglandins by inhibiting the enzyme cyclo-oxygenase.[71] Selectivity for inhibiting different types of cyclo-oxygenase varies. This and a number of other factors affect their susceptibility to produce gastrointestinal effects.

The use of NSAIDs in the management of chronic non-cancer pain is likely to be most successful when focussing on individual response. A responder can be defined as someone who experiences good (>50%) pain reduction and improvements in fatigue, depression and sleep disturbance without side effects.[72] [73]

A Cochrane Review of NSAIDs in chronic lower back pain demonstrated improvements in pain intensity and some small improvement in disability however the quality of the trials are low and the size of the effect is small.[74]

The majority (60%) of people respond to any NSAID, and so a first-line agent should be selected with minimal risk of side effect. This will usually be ibuprofen or naproxen. Responders experience pain relief soon after taking the first dose, and full analgesic effect will usually be obtained within a week. Individual dose titration by responders, to balance pain relief with tolerable side effects, is likely to produce a better result.[75] Full anti-inflammatory effect with an NSAID will not be apparent for three weeks of regular treatment.

Non-responders to first-line NSAIDs may respond better to an alternative one. This possibility is not currently reflected in evidence-based clinical guidelines where the trend is to recommend a limited list of medicines, based on the assumption of a class effect, despite important differences in pharmacokinetics.

Gastrointestinal (GI) adverse effects with NSAIDs are well established. Greatest risks of serious upper GI events are with non-selective NSAIDS and those with a long half-life, including modified release preparations. Highest risk is with piroxicam, followed by naproxen, whereas COX-2 inhibitors are associated with the lowest risk.

Major vascular events are increased by a third with the use of diclofenac, celecoxib, entoricoxib and parecoxib, mainly due to an increase in major coronary events. [76] 1000 patients treated with coxib or diclofenac versus placebo for a year resulted in three more major vascular events, one of which was fatal .[52] Diclofenac and the COX- 2 inhibitors are now contraindicated in patients with ischaemic heart disease, cerebrovascular disease, peripheral arterial disease and/or heart failure. Use the lowest dose of NSAID for the shortest time to control symptoms and review long-term treatment periodically. [50]

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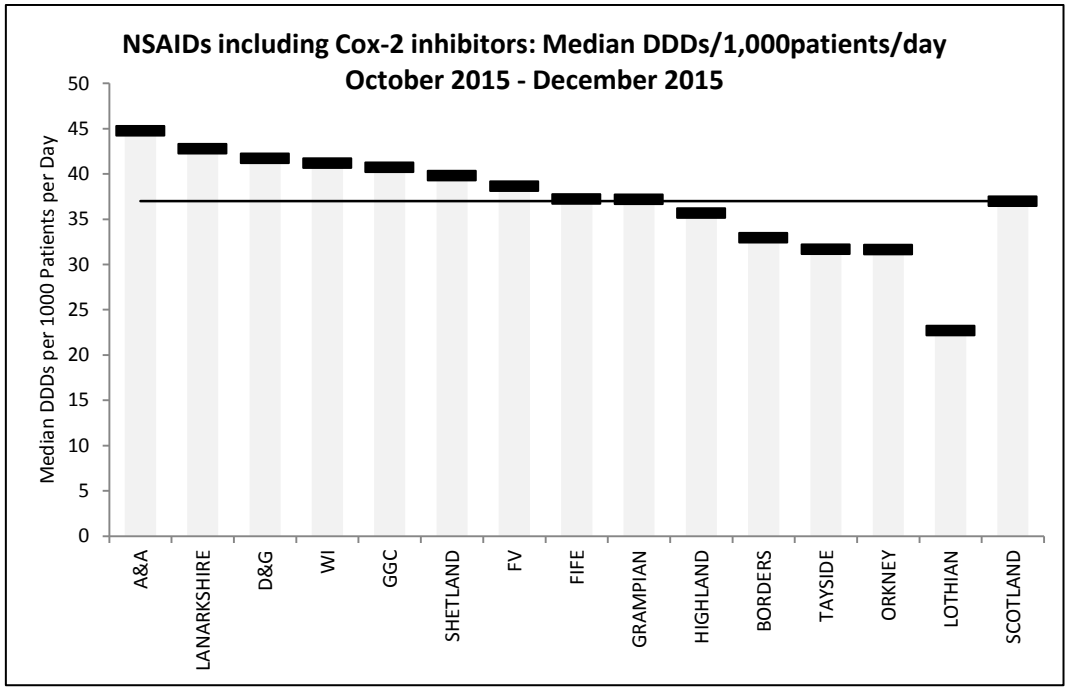
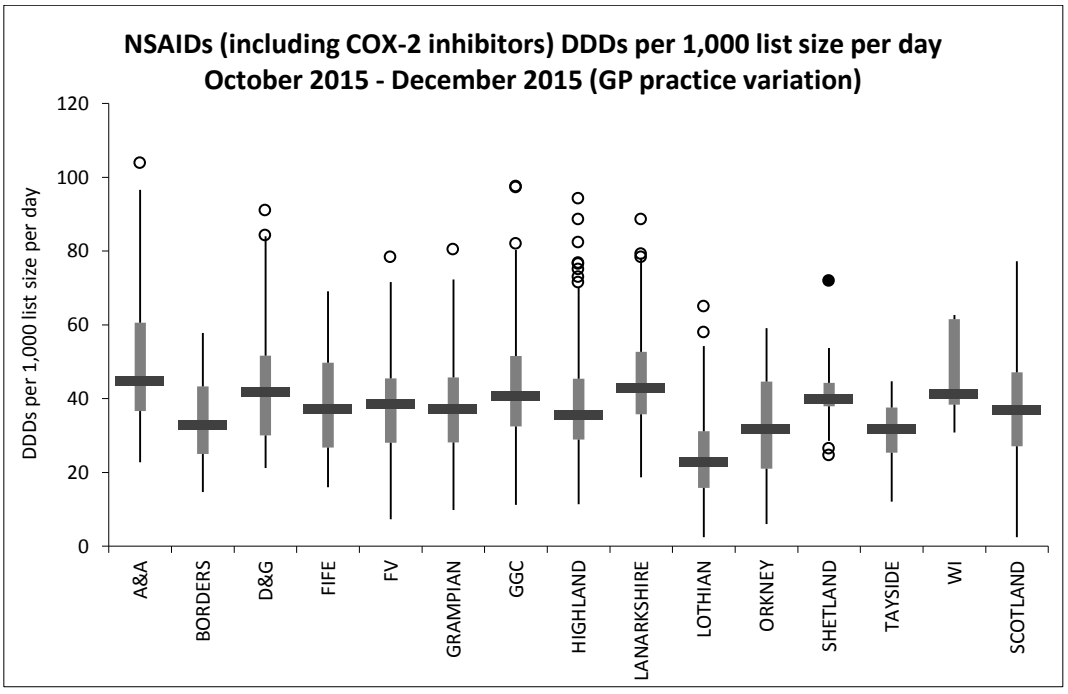
[71] BNF 70 accessed 03.10.16
[72] Moore at al. *BMJ* 2013;346:f2690
[73] SIGN 136
[74] Enthoven WTM, Roelofs PDDM, Deyo RA, van Tulder MW, Koes BW. Non-steroidal anti-inflammatory drugs for chronic low back pain. Cochrane Database of Systematic Reviews 2016, Issue 2. Art. No.: CD012087. DOI: 10.1002/14651858.CD012087.
[75] Crofford LJ et al. *Pain* 2008;136:419-31
[76] Bhala N, et al. *Lancet* 2013;382(9894):769-79

NTI12a - NSAIDs (including Cox-2 inhibitors): DDDs per 1,000 patients per day

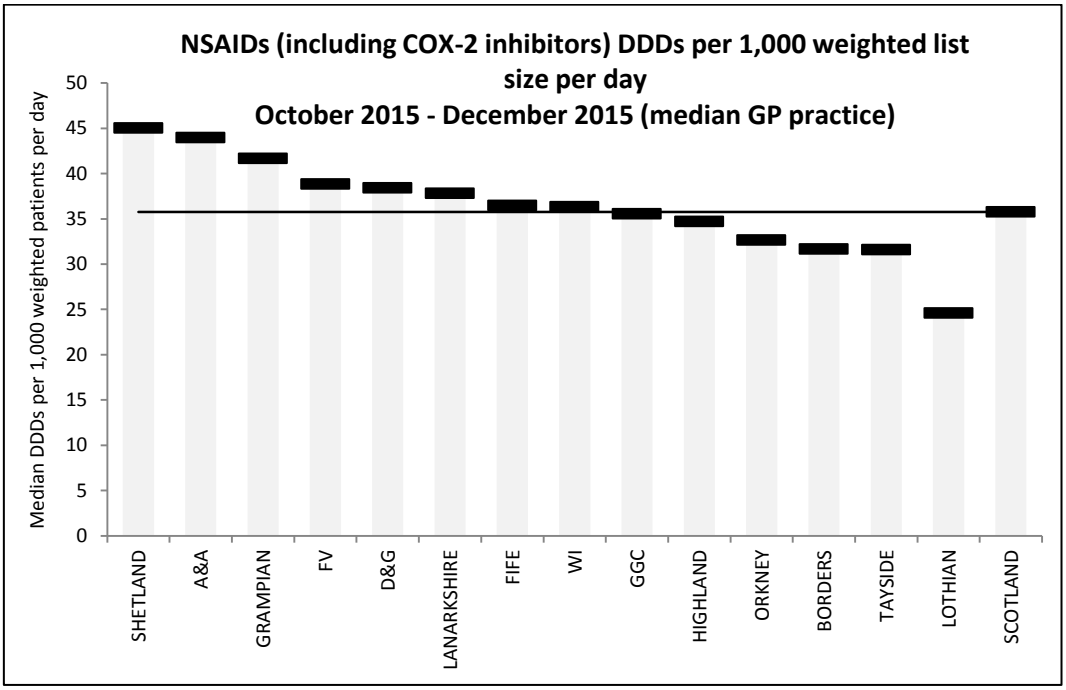
This NTI looks at the total use of NSAIDS. Due to the gastrointestinal, cardiovascular and renal adverse risk profile of NSAIDS, prescribing should be minimised, especially in the elderly. Prescribers should aim to reduce NSAID prescribing where possible without detriment to symptom relief or quality of life. The measure counts the total DDD
prescribed for registered patients.

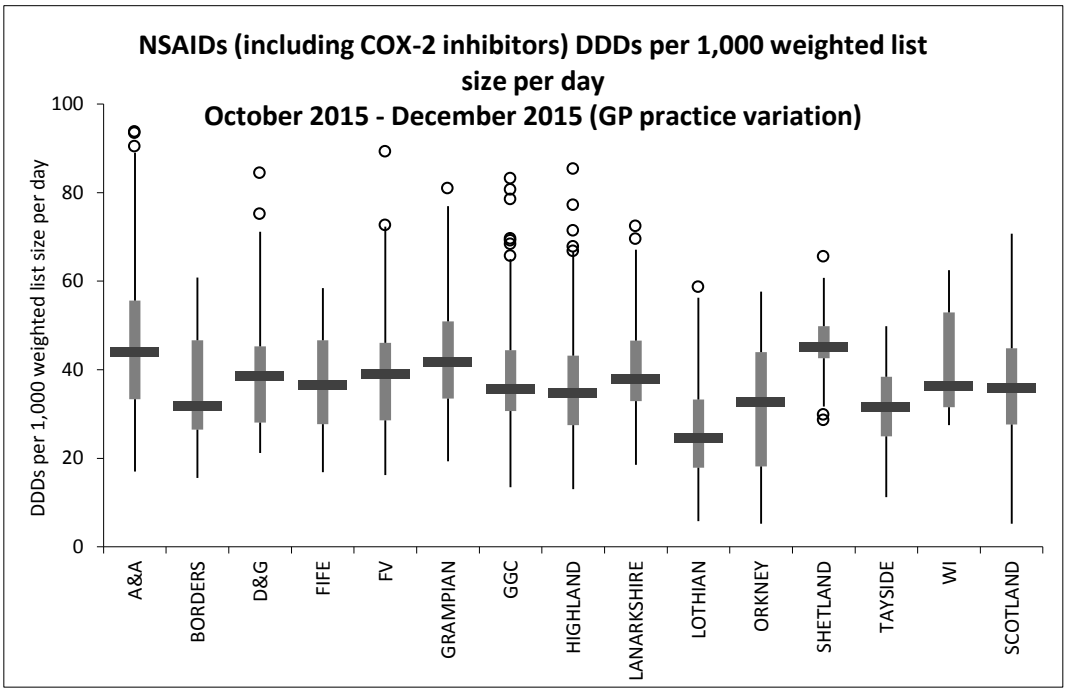




NTI12b - NSAIDs (including COX-2 inhibitors): DDDs per 1,000 patients per day (weighted)

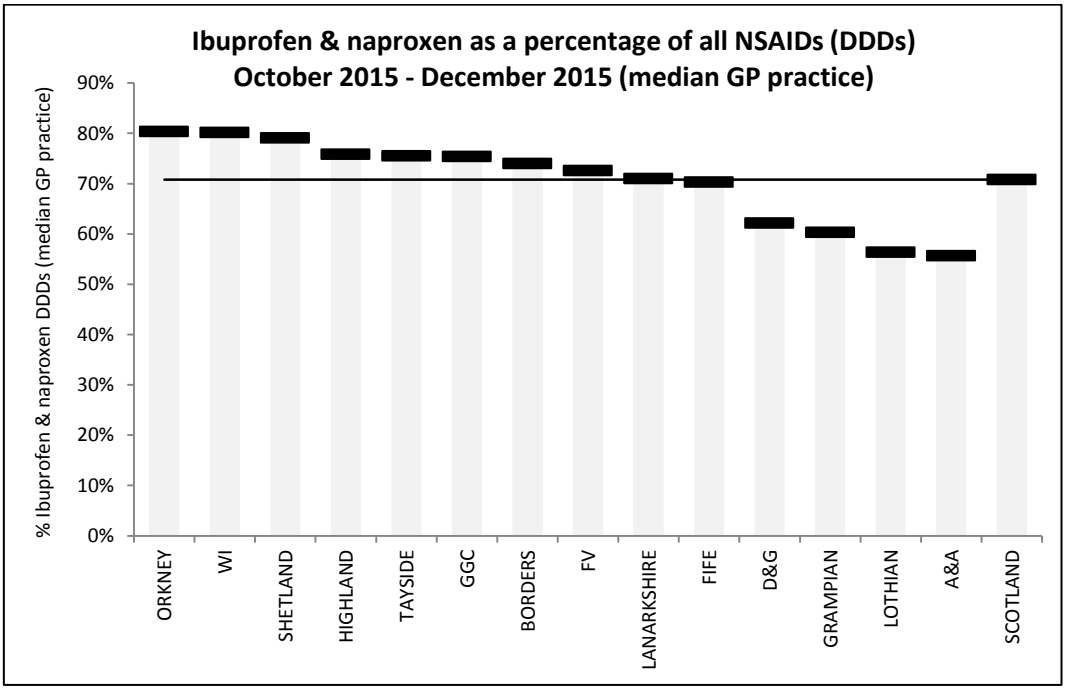
This NTI looks at the total use of NSAIDS. Due to the gastrointestinal, cardiovascular and renal adverse risk profile of NSAIDS , prescribing should be minimised, especially in the elderly. Prescribers should aim to reduce NSAID prescribing where possible without detriment to symptom relief or quality of life. The measure counts the total defined daily doses prescribed for weighted registered patients.

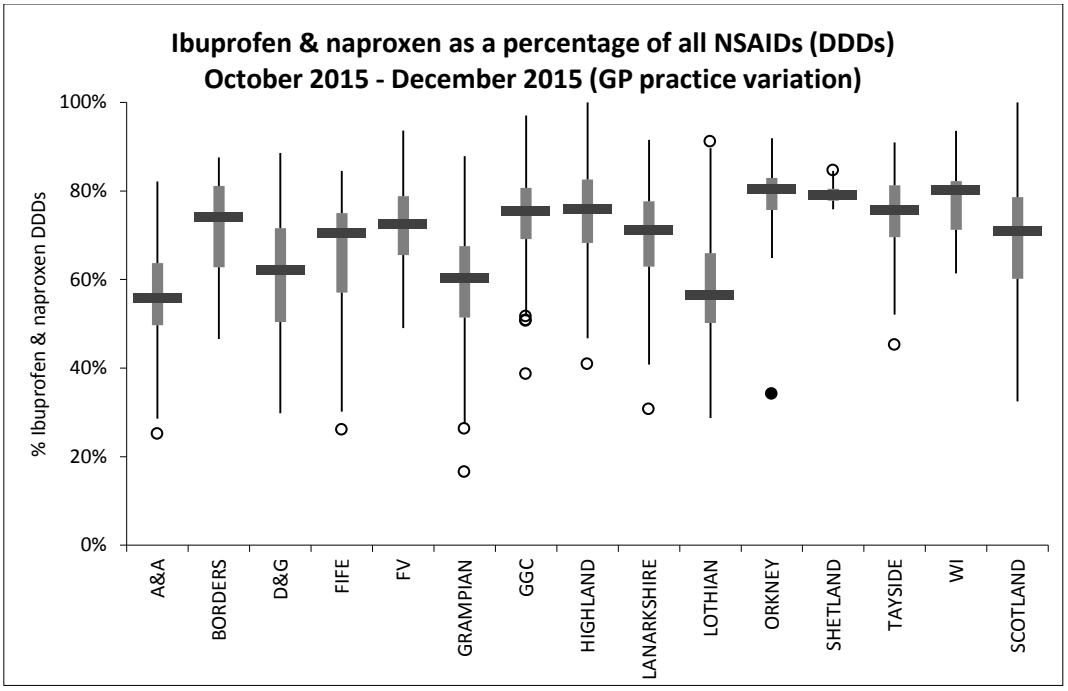




NTI13 – NSAIDS including Cox-2 inhibitors: ibuprofen and naproxen as a % of all NSAIDs (DDDs)

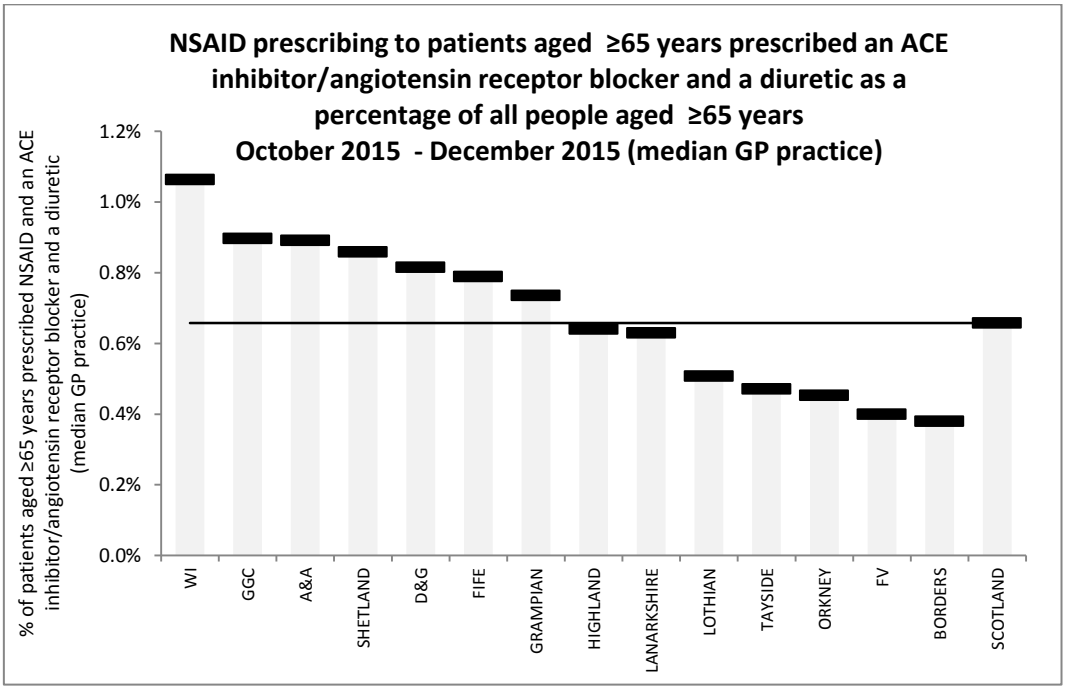
This indicator looks at the use of the recommended first-line NSAIDs, ibuprofen and naproxen. 60% of people are likely to respond to first-line NSAIDs, with a positive response being apparent soon after the first dose. Maximum analgesic effect is apparent after one week and anti-inflammatory effect after three weeks. Low dose ibuprofen and naproxen are considered to have the most favourable thrombotic cardiovascular safety profile.

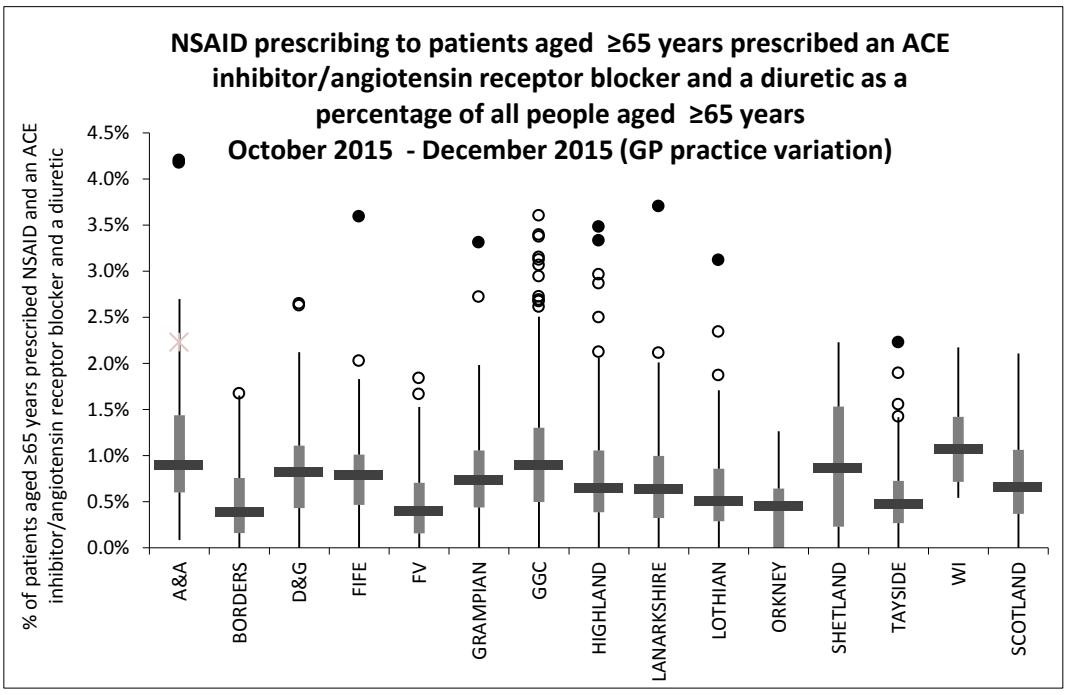




APM16 - NSAID prescribing to people aged ≥65 years prescribed an ACE inhibitor/angiotensin receptor blocker and a diuretic as a percentage of people aged ≥65 years registered with practice

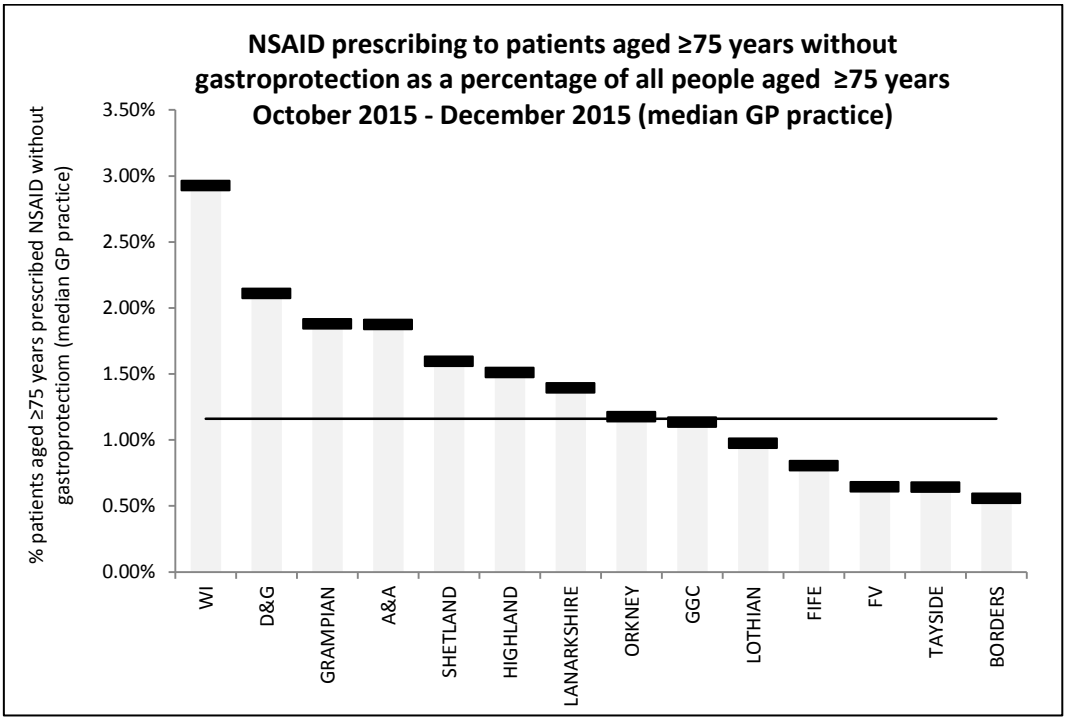
This APM looks at the combined use of a NSAID plus ARB or A2RA plus a diuretic ('Triple Whammy') in people over the age of 65 years. The use of the 'Triple Whammy' increases the risk of developing acute kidney injury, particularly for patients over the age of 65 years. The 'Triple Whammy' should be avoided where possible for patients over the age of 65 years. Where use is deemed appropriate those patients should be reviewed regularly.

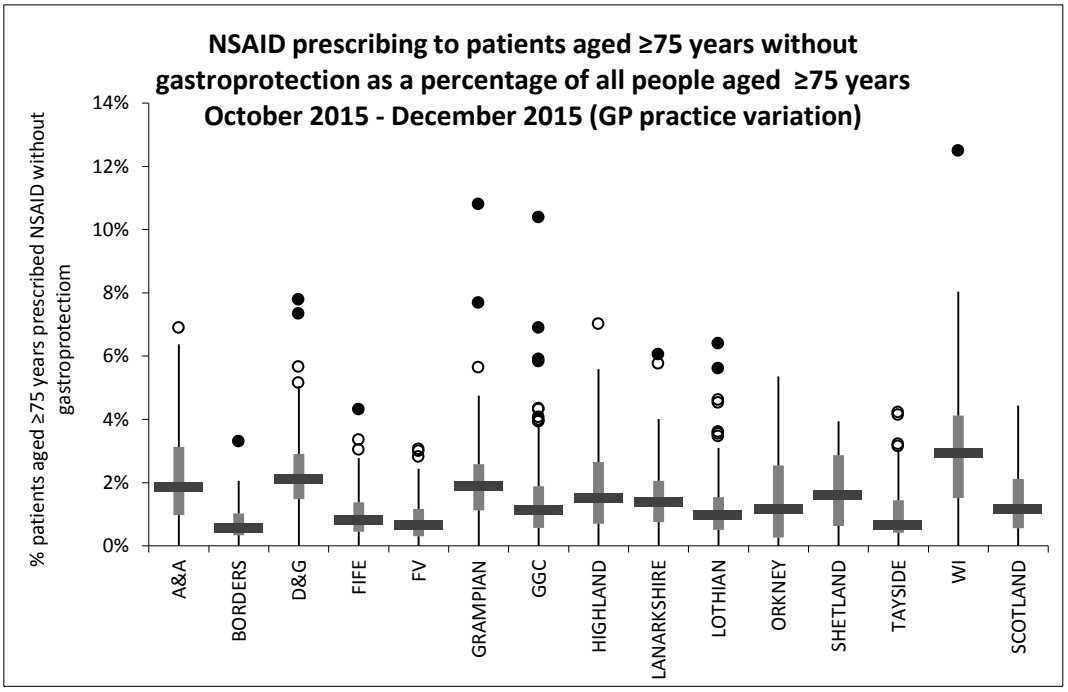




APM17 - NSAID prescribing to people aged ≥75 years without gastroprotection as a percentage of all people aged ≥75 years

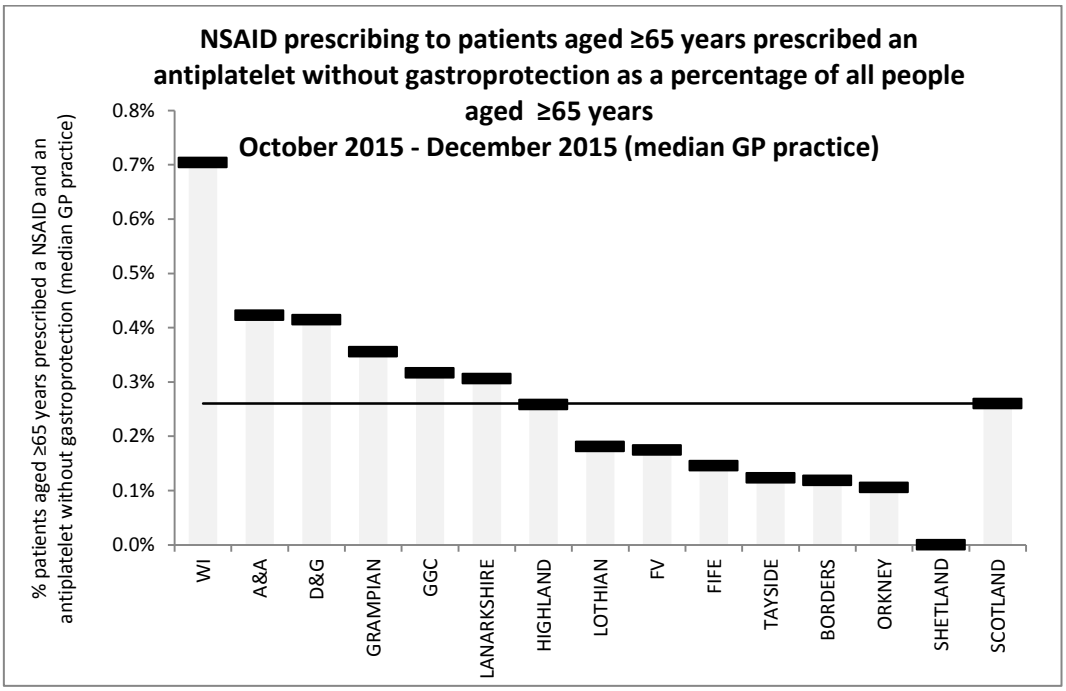
This APM looks at the prescribing of NSAIDs for patients over the age of 75 years where there is an increased risk of preventable hospital admissions due to adverse drug events. The use of NSAIDS for elderly patients should be avoided where possible, however, where their use is deemed appropriate then the addition of a PPI can mitigate some of the increased risk. The measure counts the number of over 75 year olds prescribed an NSAID with no gastroprotection.

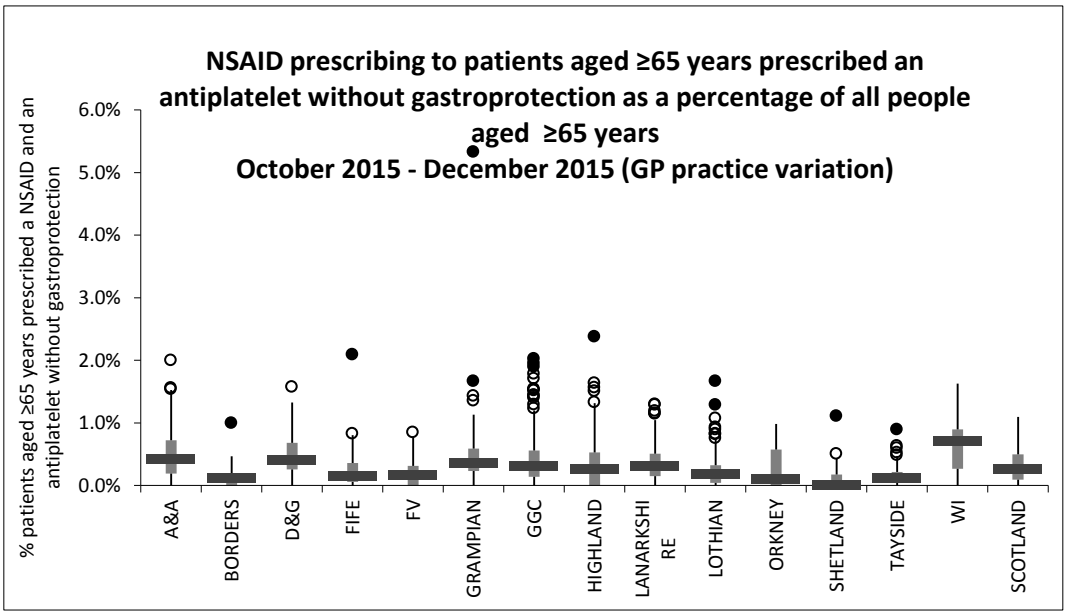




APM18 - NSAID prescribing to people aged ≥65 years prescribed an antiplatelet without gastroprotection (EFIPPS) as a percentage of all people aged ≥65 years

This APM looks at the prescribing of an NSAID for patients, older than 65 years, also taking an antiplatelet. There is a significant increased risk of gastrointestinal bleeding with this combination and it should be avoided if at all possible.[77] For those patients where the combination of an NSAID plus antiplatelet is deemed appropriate then a PPI can mitigate some of the increased risk.

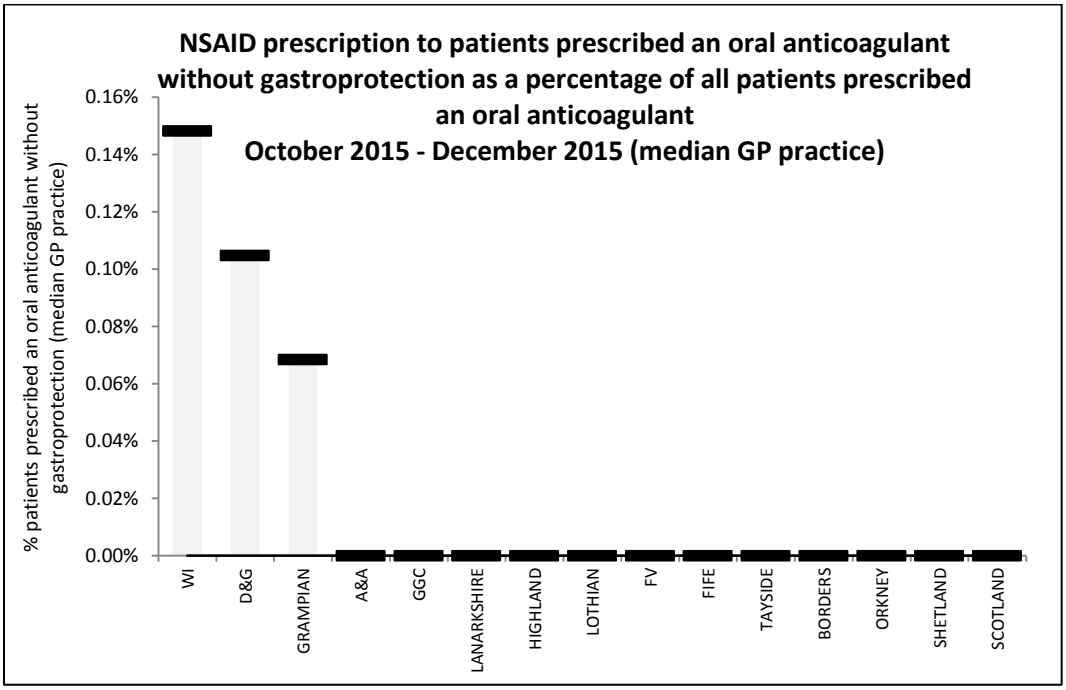


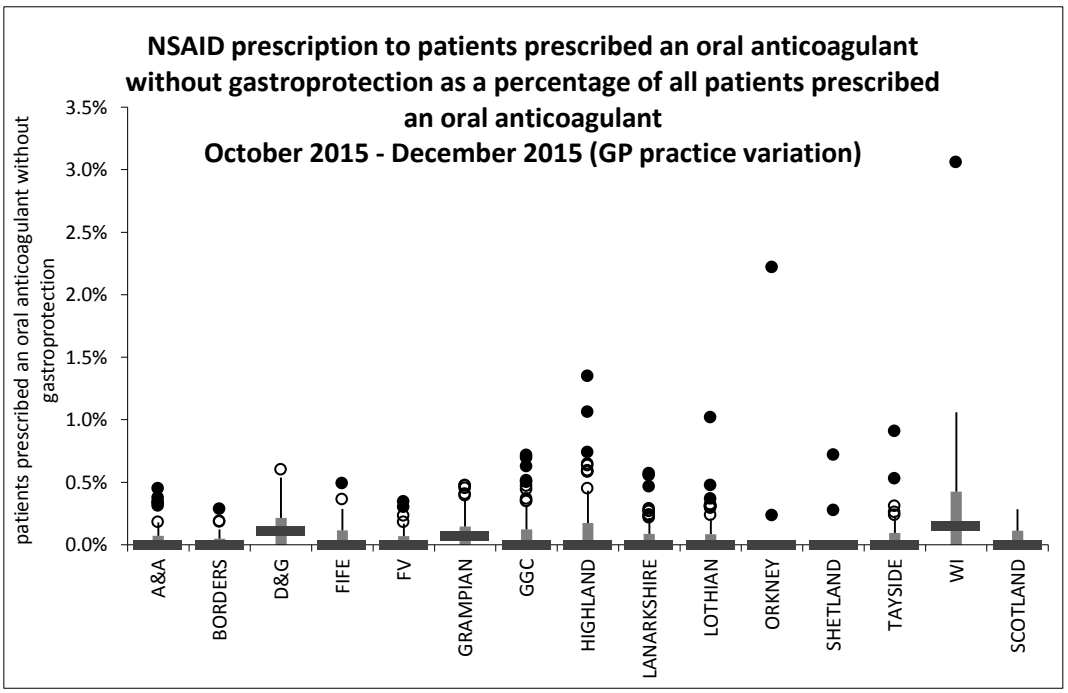


[77] Pirmohamed M, James S, Meakin S, et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. BMJ2004;329:15-9

APM19 - Number of patients prescribed a NSAID and an oral anticoagulant without gastroprotection as a % of patients prescribed an oral anticoagulant

This APM looks at the prescribing of an NSAID for patients also taking an oral anticoagulant. There is a significant increased risk of gastrointestinal bleeding with this combination, and it should be avoided if at all possible. For those patients where the combination of an NSAID plus oral anticoagulant is deemed appropriate, the addition of a PPI can mitigate some of the increased risk of gastrointestinal bleed. The measure counts the number of patients prescribed an NSAID plus oral anticoagulant with no gastroprotection.





Antimicrobial Wound Dressings

This NTI looks at the use of antimicrobial wound dressings. Their use has increased rapidly in recent years, despite the fact that the clinical and economic advice for the use of these agents remains poor. This indicator recognises that prescribing in this area is often nurse-led and highlights the need to engage nurses in the quality agenda. Support from the nursing profession at all levels will be required if change is to be achieved.

Spreading infection at the wound site requires treatment with systemic antibiotics.[78] An antimicrobial dressing may reduce bacteria at the wound surface but will not eliminate a spreading infection. If used, there should be regular review of the antimicrobial wound dressing and it should be stopped after two weeks if there is limited benefit.

A Cochrane Review looked at the use of topical silver for preventing wound infection.[79] The trials compared silver-containing products (dressings and creams) against products that did not contain silver. Most of the studies were small and of poor quality. The authors concluded that there was little evidence to support the use of silver-containing dressings.

Another Cochrane Review looked at the use of topical silver for treating infected wounds.[80] Three randomised controlled trials (RCTs) assessing the effectiveness of topical silver in the treatment of contaminated and infected acute or chronic wounds were identified. The review found that silver-containing foam dressings did not result in faster healing.

The VULCAN study was a non-blinded RCT and cost-effective analysis undertaken in the UK.[81] Patients (213) with venous leg ulcers (not necessarily infected) were randomised to silver or non-silver non-antimicrobial, low adherence dressings beneath compression. There was no difference between the groups in the proportion of patients achieving complete healing at 12 weeks, 6 months (RR 1.34; 95% CI 0.88 to 2.03) or at 12 months (RR 1.03; 95% CI 0.51 to 2.08). The authors concluded that there was little to support the use of silver dressings in the treatment of venous leg ulcers.

Healthcare Improvement Scotland recommends that, *given the lack of clinical and cost effective evidence to support or refute the use of silver dressings to either prevent wound infection or completely heal wounds, it is suggested that their continued use should be supported only in the context of local research and audit examining their effectiveness in these key endpoints.*[82]

Current prescribing data strongly suggests that antimicrobial wound dressings are often used inappropriately. The poor evidence base should be recognised by all clinicians using these products. Only short-term use is recommended and clinical effect should be regularly reviewed.

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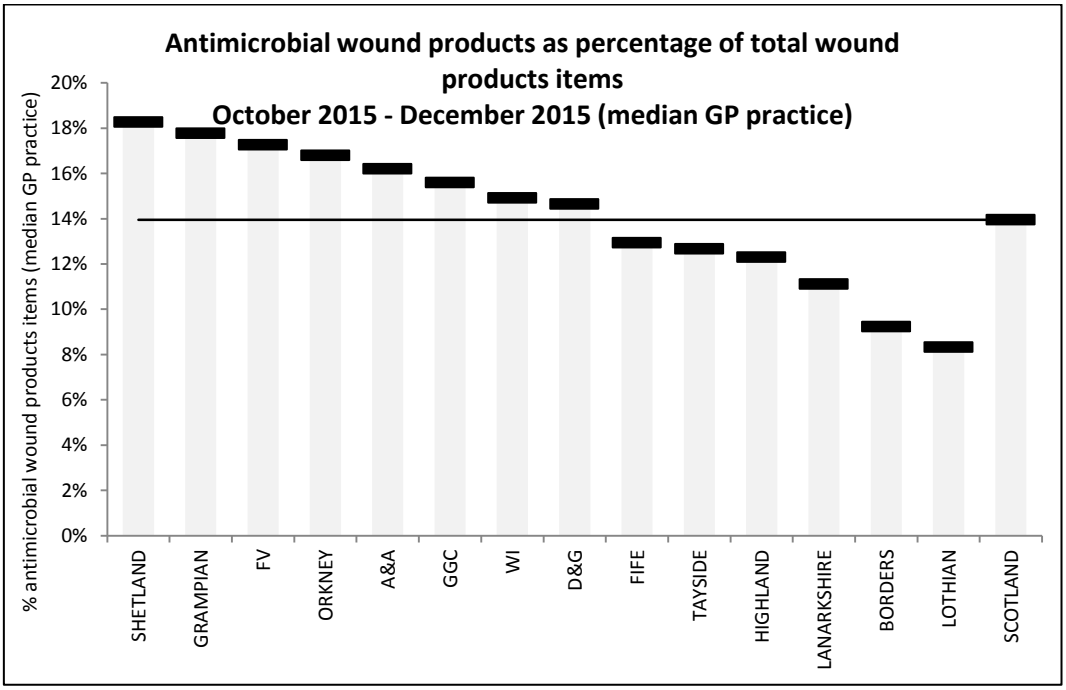
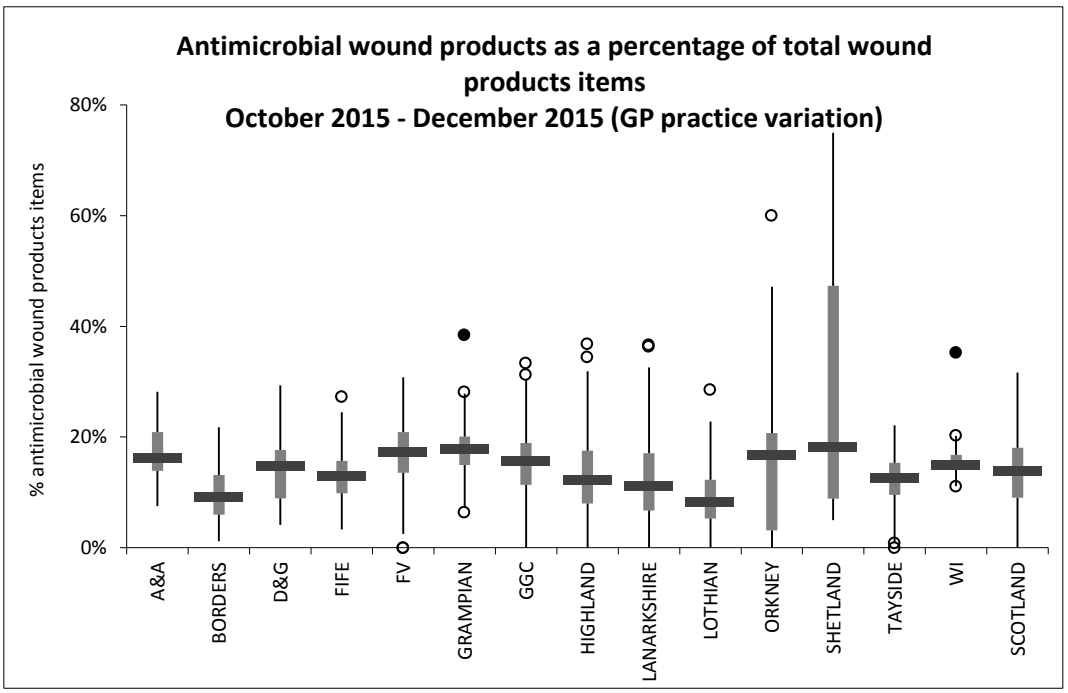
[78] Joint Formulary Committee. *British National Formulary.* Edition 69, September 2015
[79] Storm-Versloot MN, et al. *Cochrane Database of Systemic Reviews 2010,* Issue 3. Art. No: CD006478
[80] Vermeulen H, et al. *Cochrane Database of Systemic Reviews 2007*, Issue 1. Art. No: CD005486
[81] Michaels JA, et al. *Br J Surg 2009;* **96**: 1147-56
[82] Healthcare Improvement Scotland. Advice statement 001/13, January 2013

NTI14 – Antimicrobial Wound Products: antimicrobial wound products as % of total wound products (items)

This NTI looks at the use of Antimicrobial wound dressings. They have a role to play in managing localised infection only in exceptional circumstances. Prescribing data suggests that these products continue to be used inappropriately. The lack of evidence for their use should be recognised by all clinicians using and prescribing these products. Only short-term use is recommended and clinical effect should be regularly reviewed. The measure counts the number of antimicrobial wound product treatments prescribed.





APM20 – Black Triangle Meds as a % of all Meds in BNF Chapters 1-7 and 9-13 (items)

This additional prescribing measure (APM) looks at the use of black triangle medicines. The measure looks at the volume of medicines prescribed for BNF chapters 1 to 7 and 9 to 13 and identifies the percentage of those that are black triangle medicines.