



Scottish Antimicrobial Prescribing Group

Primary Care Prescribing Indicators

Annual Report 2010-11

Contents

	Page No.
Executive Summary	3
Purpose	5
Introduction	5
Data and Definitions	5
Format of indicators	6
Results	
Overall use	7
Seasonal variation of fluoroquinolones	9
Antibacterials associated with higher risk of CDI	11
Co-amoxiclav	14
Fluoroquinolones	16
Cephalosporins	18
Clindamycin	20
Recommended antibacterials	22
Doxycycline	25
Nitrofurantoin	27
Appendix 1 – list of prescribing indicators available in PRISMS	29

Executive summary

This is the third annual report from the Scottish Antimicrobial Prescribing Group (SAPG) information workstream presenting data from national prescribing indicators on use of systemic antibacterials in primary care in Scotland. It focuses on the prescribing indicators related to the initial priority areas for SAPG; minimising unnecessary prescribing and restricting the use antibacterials associated with a higher risk of Clostridium difficile infection (CDI).

The purpose of this report is to support the work of NHS board Antimicrobial Management Teams (AMTs) and SAPG by enabling identification of areas for detailed local analysis and discussion with prescribers to support improvement in prescribing practice.

The SAPG national prescribing indicators are accessible as standard reports within Prescribing Information System for Scotland (PRISMS). PRISMS is the web based application maintained by Information Services Division (ISD) of NHS National Services Scotland (NSS) giving access to prescribing information on all prescriptions dispensed in the community in Scotland in the last five years.

The results indicate significant progress in 2010-11 towards improving the use of antibacterials in Scotland. Key findings include;

- In 2010-11 there were 28,000 (0.5%) more prescriptions for systemic antibacterials in primary care in Scotland than in 2009-10. This small increase was not statistically significant ($p=0.73$).
- There were 12 NHS boards below the target for seasonal variation in fluoroquinolone use as part of the prescribing indicators in support of HEAT target for CDI. The remaining 2 NHS boards were only slightly above the target in 2010/11. This improvement in quality of prescribing reflects the impact of initiatives led by AMTs to reduce the use of fluoroquinolones since the introduction of this indicator.
- There were 163,000 (24%) fewer prescriptions for antibacterials associated with a higher risk of CDI in the primary care setting in Scotland than in 2009-10. This is the second successive year in which a reduction in the use of these antibacterials has been observed. Reductions have been observed in all NHS board areas. This illustrates that ongoing progress is being made to restrict and reduce the use of antimicrobials associated with a high risk of CDI.
- An increase of 184,000 (6%) prescriptions for recommended antibacterials in the primary care setting in Scotland than in 2009-10. This builds upon the increase observed last year. The increase was observed across all NHS boards. The increase suggests increased compliance with local prescribing policies.

These improvements in prescribing practice show the ongoing positive impact AMTs and SAPG are having on the use of antibacterials in Scotland through working with prescribers in primary care to reduce unnecessary prescribing, promote recommended agents and minimise use of antibacterials associated with a high risk of CDI.

The report, by highlighting patterns of change in the last twelve months will enable AMTs to monitor the impact of local and national interventions which aim to further improve the quality of antibacterial prescribing and will enable local interventions to support improvement in prescribing practice to be appropriately targeted.

Purpose

The purpose of this report is to support the work of NHS Board Antimicrobial Management Teams (AMTs) and the Scottish Antimicrobial Prescribing Group (SAPG) by providing information on key national prescribing indicators on use of systemic antibacterials in primary care in Scotland. It is intended to enable AMTs to identify areas for detailed local analysis and discussion with prescribers to support improvement in prescribing practice. By highlighting patterns of change in the last twelve months the report is intended to support AMTs to monitor the impact of local and national interventions which aim to enhance the quality of antimicrobial prescribing in a primary care setting.

Introduction

In 2009 a set of national prescribing indicators related to the use of antibacterials in primary care were agreed by SAPG after consultation with AMTs and other stakeholders. The national prescribing indicators are accessible as standard reports within Prescribing Information System for Scotland (PRISMS). PRISMS is a web based application maintained by Information Services Division (ISD) of NHS National Services Scotland (NSS) giving access to prescribing information on all prescriptions dispensed in the community in Scotland in the last five years. Further information can be found on the PRISMS website: <http://www.prismsweb.scot.nhs.uk/>

The national prescribing indicators allow authorised users to analyse antibacterial use at NHS Board, Community Health Partnership (CHP) or GP practice level. This enables AMTs to have a broad overview of the pattern of antibacterial use in a primary care setting. This information will empower AMTs to undertake more detailed analysis of particular prescribing patterns at local level and identify areas for improvement with local prescribers.

This is the third report from the SAPG information workstream on national prescribing indicators related to the use of antibacterials in primary care. It contains information for the key prescribing indicators related to the priority areas for SAPG. A list of the national prescribing indicators available in PRISMS is shown in appendix 1.

Data and definitions

Data Sources

Data on use of systemic antibacterials comes from a database of all NHS prescriptions written by general practitioners, nurses and community pharmacists which are dispensed in the community in Scotland. The information is supplied to ISD by Practitioner Services Division (PSD) of NSS who are responsible for the processing and pricing of all prescriptions dispensed in Scotland.

Items

The primary measure of antibacterial use in Scotland presented in this report is the number of items. This refers to the number of times an antibacterial appears on prescription.

Defined Daily Dose

The Defined Daily Dose (DDD) is a technical unit of measurement of medicine use developed by the World Health Organisation. It is internationally recognised and used to standardise the comparative use of medicines over time and between different locations. For further details on DDD see WHO Collaborating Centre for drug statistics methodology website at <http://www.whocc.no/atcddd/>

Statistical Significance

Confidence intervals (95%) for proportions were calculated to indicate robustness of the proportions presented. To test for a significant difference between two proportions a ratio of the estimates and a 95% confidence interval based on this were calculated.

Format of indicators

The report presents key national prescribing indicators showing overall use of systemic antibacterials, seasonal variation of fluoroquinolones and patterns of prescribing for groups and certain individual antibacterials.

Items/1000 patients/day

This indicator presents use of antibacterials in a given NHS Board area over a given period of time expressed as the number of times an antibacterial has been prescribed. To allow comparison between areas with a different population it is presented as number of items per 1000 patients per day.

Percentage of total antibacterial use

This indicator presents use of selected antibacterials in a given NHS Board as a percentage of all antibacterial use expressed in items.

Seasonal variation of fluoroquinolone use

This indicator presents the difference in the use of fluoroquinolones in DDDs in the winter (October to March) compared to the preceding summer (April to September) for 2008-09, 2009-10 and 2010-11.

Interpretation of data

The use of antibacterials should normally reflect prescribing policies, guidelines or formularies for each NHS Board. When interpreting the graphs it is important to note that the y axis scales vary between graphs and care is needed in interpretation. On each trend graph a line has been included to show data at Scotland level.

Results

Overall use

The main driver for the development of antimicrobial resistance is exposure to antimicrobial agents and there is evidence that resistance is greatest where use is greatest. Antibacterials are used in the treatment of bacterial infections but are sometimes used inappropriately in viral infections. Reduction in inappropriate use is a key aspect of antimicrobial stewardship. This indicator presents information on the overall use of antibacterials in a given NHS Board area over a given period of time.

In 2010-11 there were 28,000 (0.5%) more prescriptions for systemic antibacterials in primary care in Scotland than in 2009-10. This small increase was not statistically significant ($p=0.73$). Figure 1 illustrates the use of antibacterials in primary care by NHS Board expressed as items/1000/day. This shows wide variation in the use of antibacterials across NHS Boards. NHS Lothian had the lowest use at 1.7 items/1000/day and the highest was in NHS Lanarkshire at 2.4 items/1000/day.

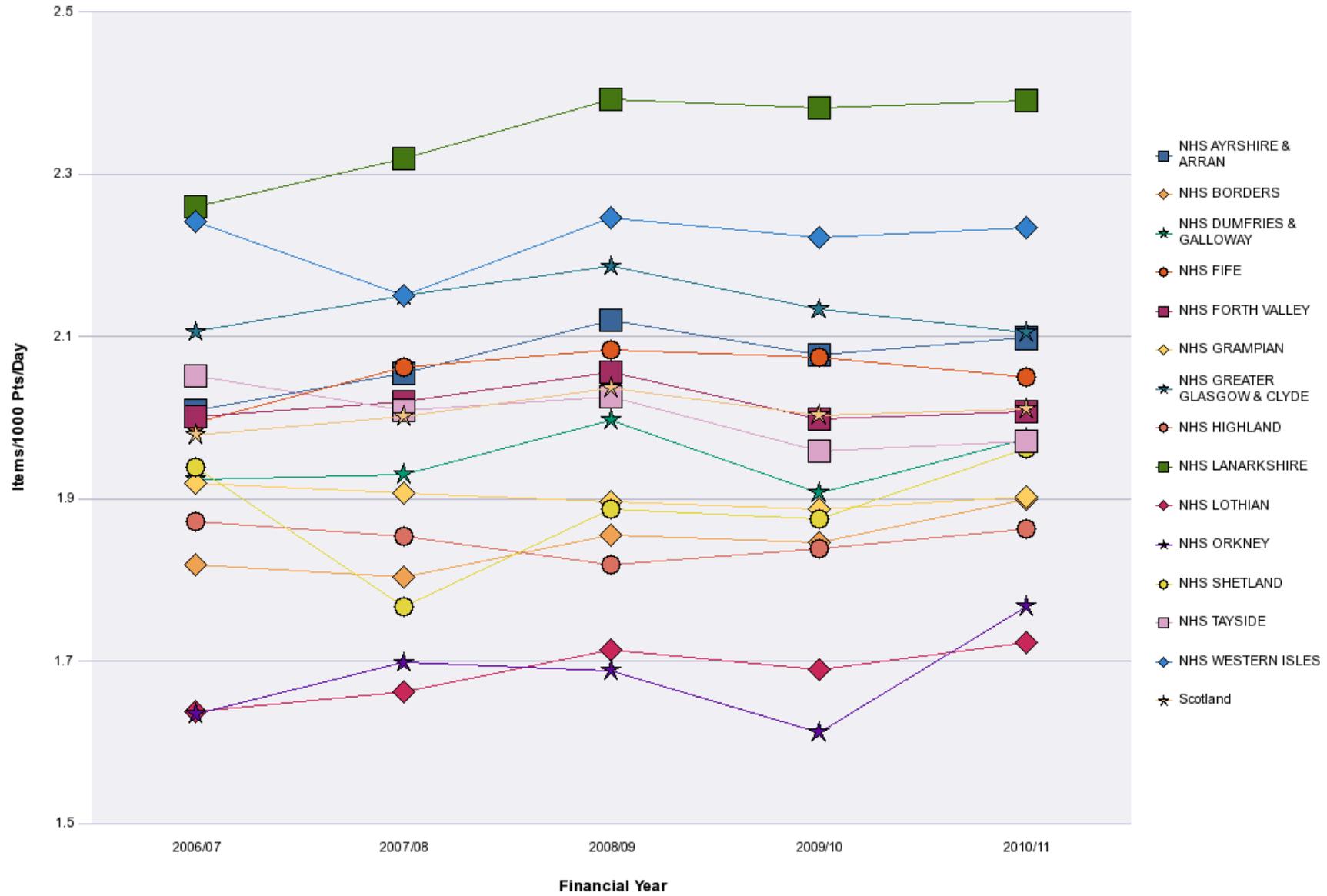


Figure 1: NHS Scotland use of antibacterials in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

Seasonal variation in use of fluoroquinolones

Use of fluoroquinolones is associated with a significantly increased risk of *Clostridium difficile* infection (CDI). Fluoroquinolones are not recommended for use in treatment of most commonly encountered infections in primary care, except for a few specific infections.

CEL 11 (2009) issued by the Scottish Government in April 2009 defined the HEAT target for reduction in CDI. The Scottish Government and SAPG have agreed three supporting antimicrobial prescribing indicators. In relation to primary care the indicator is that seasonal variation in fluoroquinolone use should be less than 5%.

Seasonal variation is defined as the increase in use of antibacterials during the two winter quarters (October to March) relative to use in the preceding two summer quarters (April to September). In the winter quarters more respiratory tract infections are seen but many are caused by viruses, are self-limiting and do not require treatment with an antibacterial. Excess use of fluoroquinolones in the winter months suggests inappropriate use for respiratory infections

Figure 2 shows the percentage seasonal variation of fluoroquinolone use (in DDDs) by NHS Board in primary care. It shows that in 2008-09 only three NHS Boards met the target. In 2009-10 progress was made and this improvement was sustained and built upon in 2010-11 with twelve NHS boards below the target. The remaining 2 NHS boards were only slightly above the target. This improvement in quality of prescribing reflects the impact of initiatives led by AMTs to reduce the use of fluoroquinolones since the introduction of this indicator.

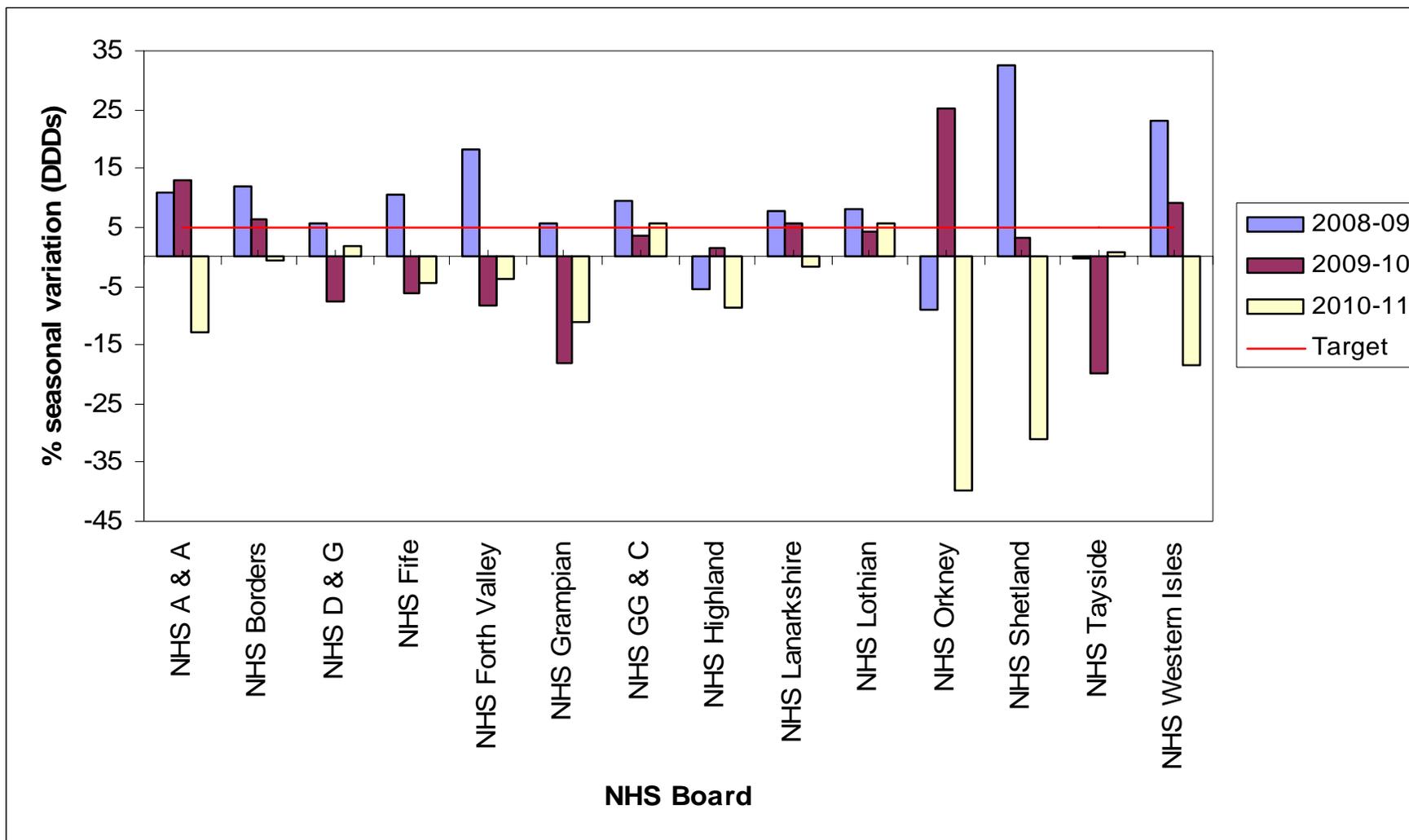


Figure 2: NHS Scotland use of antibacterials in primary care by NHS Board, % seasonal variation of fluoroquinolones (DDD) 2008-09 – 2010-11

Antibacterials associated with a higher risk of CDI

All antibacterials can increase the risk of acquisition of CDI but some are associated with a greater increased risk. Included in this group are co-amoxiclav, fluoroquinolones, cephalosporins and clindamycin. These antibacterials are not recommended as first line agents for management of commonly encountered infections in primary care.

Reduction in the use of antibacterials associated with a higher risk of CDI has been an initial priority for SAPG. AMTs have developed prescribing policies for first line empirical treatment of infections commonly encountered in a primary care based on an evidence based template from Health Protection Agency (HPA). A benefit of this approach is that it restricts the use of high risk antibacterials.

In 2010-11 there were 163,000 (24%) fewer prescriptions for antibacterials associated with a higher risk of CDI in the primary care setting in Scotland than in 2009-10. This is the second successive year in which a reduction in the use of these antibacterials has been observed.

Figure 3 shows the use of antibacterials associated with a higher risk of CDI in primary care by NHS Board expressed as items/1000/day. This shows wide variation across NHS Boards. NHS Shetland had the lowest use at 0.14 items/1000/day and NHS Western Isles had the highest at 0.38 items/1000/day. In all NHS Boards there has been a reduction in use of these antibacterials.

Figure 4 shows the number of items of antibacterials associated with a higher risk of CDI as a proportion of total antibacterial use in primary care by NHS Board. In 2010-11 antibacterials associated with a higher risk of CDI accounted for 12% of overall use of antibacterials. This is lower than in 2009-10 where the percentage of overall use was 17%. In all NHS Boards there has been reduction in use of high risk antibacterials as a proportion of overall use.

These indicators show that ongoing progress is being made to restrict and reduce the use of antimicrobials associated with a high risk of CDI. This is a key finding and shows the positive impact AMTs and SAPG are having on the quality of antibacterial prescribing in Scotland.

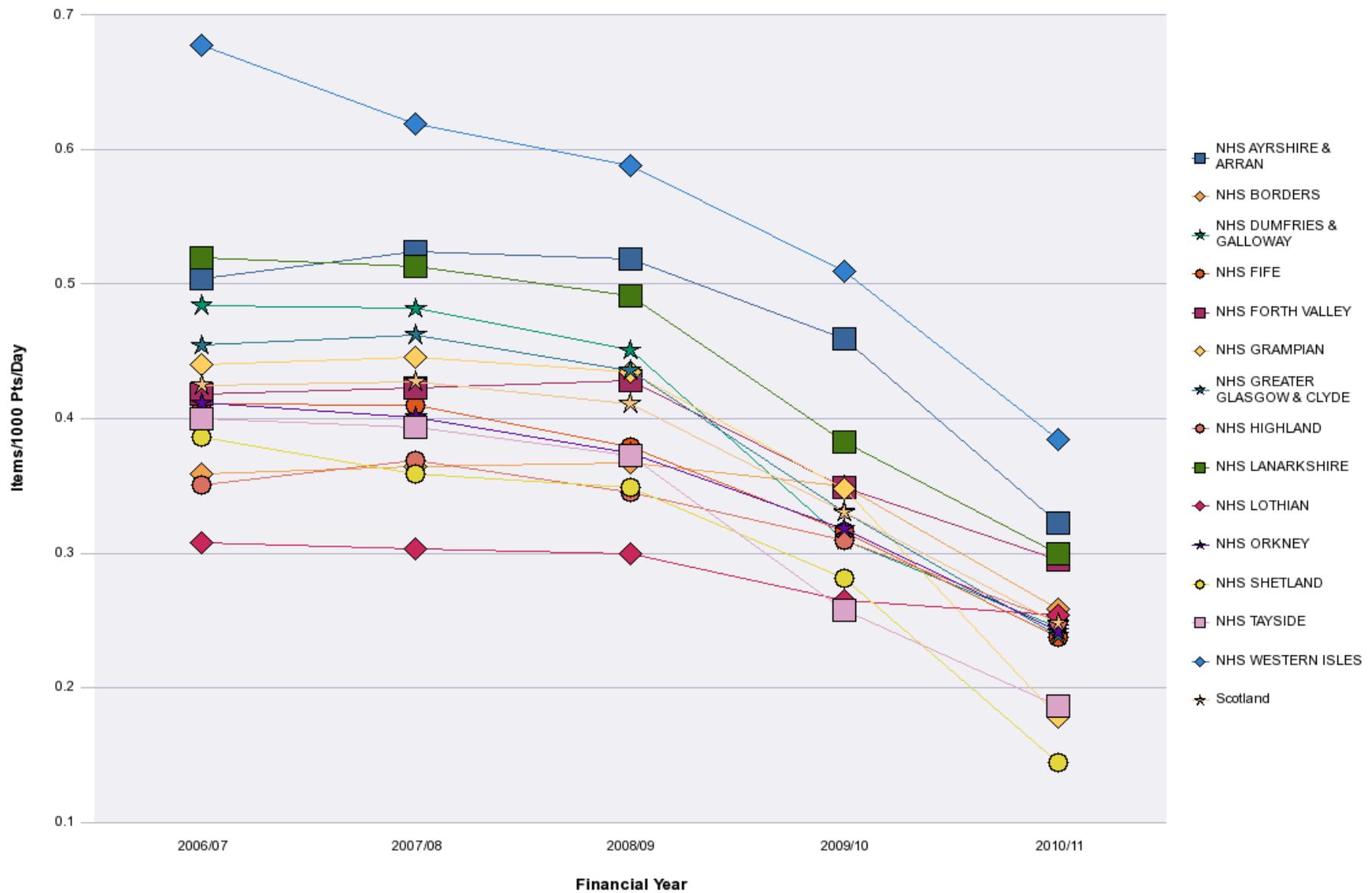


Figure 3: NHS Scotland use of antibacterials associated with a higher risk of Clostridium difficile infection in primary care by NHS Board, Items/1000/day 2006-07 – 2010-11

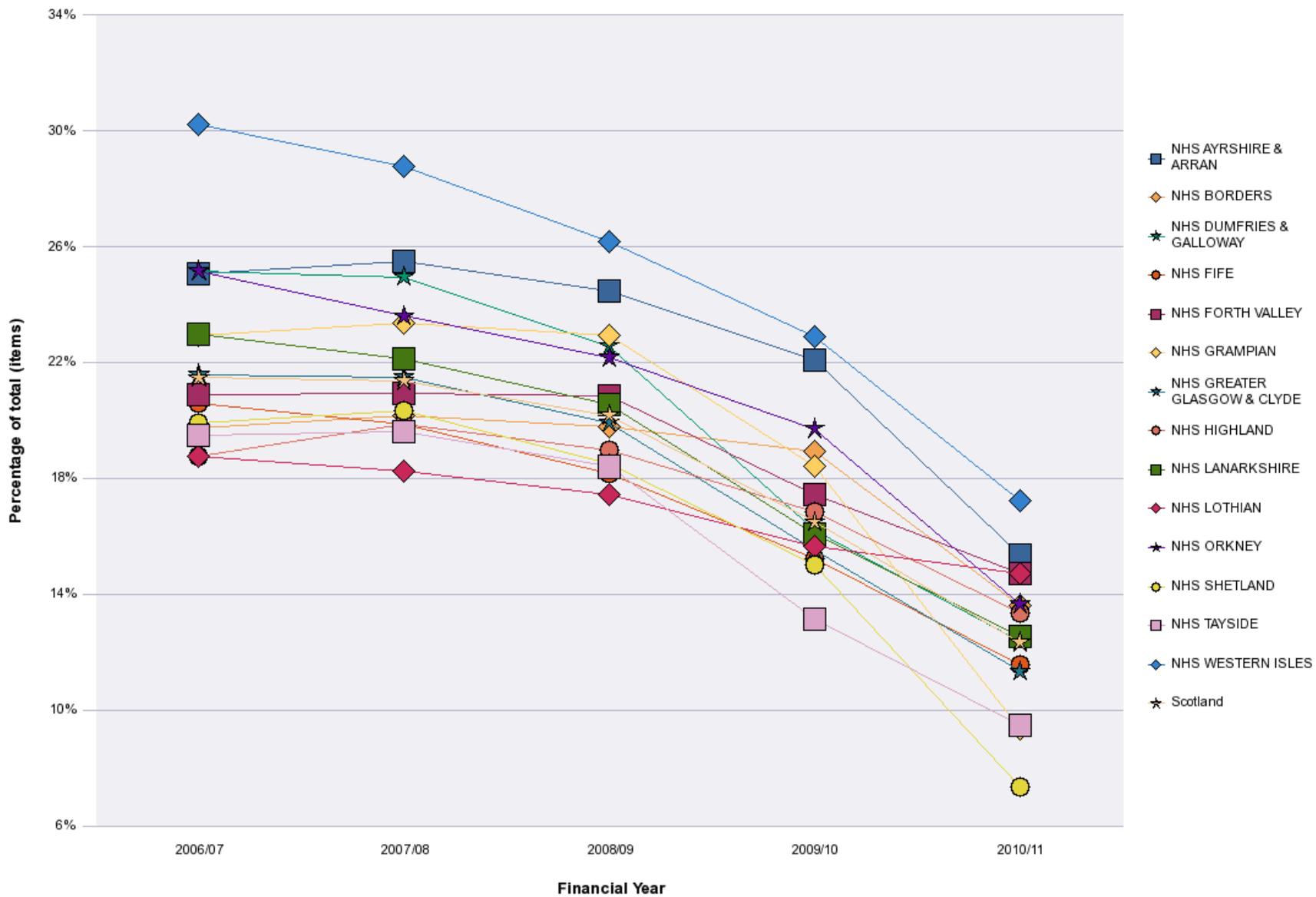


Figure 4: NHS Scotland use of antibacterials associated with a higher risk of Clostridium difficile infection in primary care by NHS Board, proportion of total items, 2006-07 – 2010-11

Co-amoxiclav

The combination of amoxicillin and a beta lactamase inhibitor, which extends the spectrum of activity, is not a first line agent for empirical treatment of most commonly encountered infections in primary care. The broader spectrum is counterbalanced by the development of resistance and an increased risk of acquiring CDI.

In 2010-11 co-amoxiclav accounted for 36% of use of antibacterial items associated with a higher risk of CDI. In 2010-11 there were 59,000 (25%) fewer prescriptions for co-amoxiclav in the primary care setting in Scotland than in 2009-10. This builds on the reduction observed in 2009-10.

Figure 5 shows the use of co-amoxiclav in primary care by NHS Board expressed as items/1000/day. This shows wide variation in the use of co-amoxiclav across NHS Boards. NHS Shetland had the lowest use at 0.04 items/1000/day and NHS Ayrshire and Arran the highest at 0.14 items/1000/day. The trend toward lower use of co-amoxiclav was observed in most NHS Boards

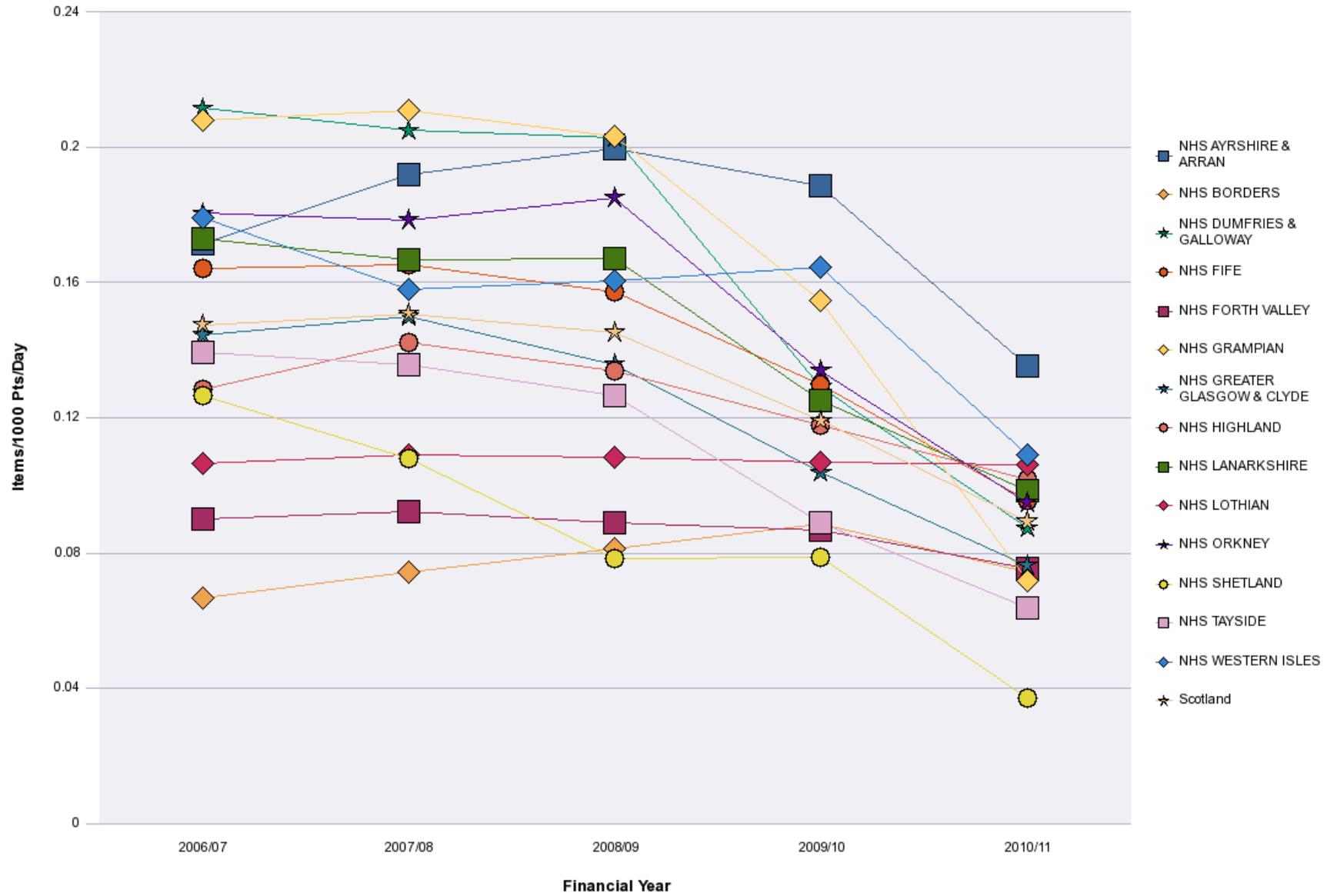


Figure 5: NHS Scotland use of co-amoxiclav in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

Fluoroquinolones

Fluoroquinolone use is associated with a significantly increased risk of CDI. They are not recommended for use in treatment of most commonly encountered infections in primary care except for a few specific infections.

In 2010-11 fluoroquinolones accounted for 31% of use of antibacterial items associated with a higher risk of CDI. Ciprofloxacin, the most commonly prescribed fluoroquinolone accounted for 91% of all fluoroquinolone items in 2010-11.

In 2010-11 there were 37,000 (20%) fewer prescriptions for fluoroquinolones in the primary care setting in Scotland than in 2009-10. This builds on the reduction observed in 2009-10.

Figure 6 shows the use of fluoroquinolones in primary care by NHS Board expressed as items/1000/day. It shows variation between NHS Boards. NHS Shetland and NHS Tayside had the lowest use at 0.05 items/1000/day. NHS Dumfries and Galloway had the highest at 0.12 items/1000/day. There have been reductions in fluoroquinolone use in all NHS Boards in 2010/11.

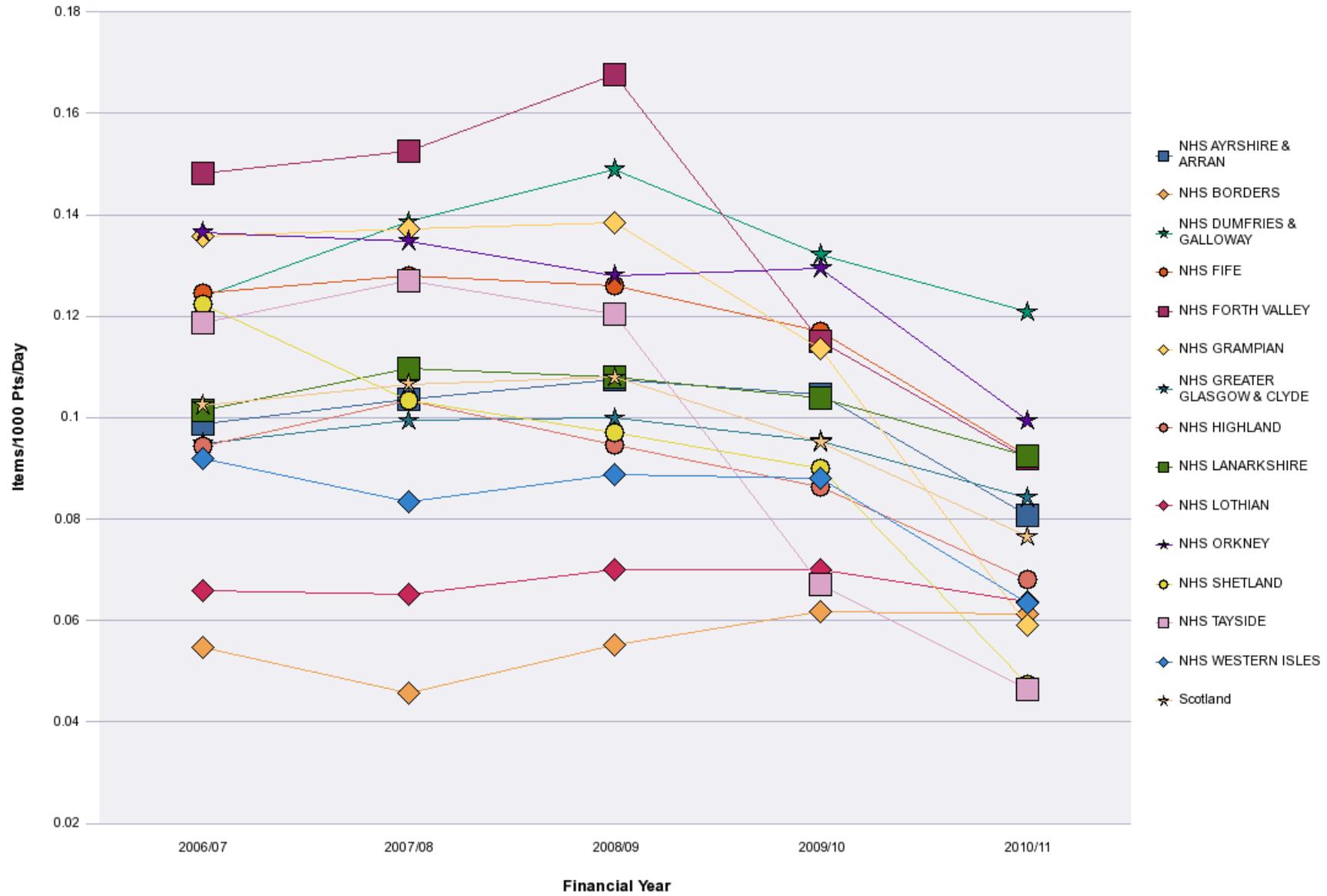


Figure 6: NHS Scotland use of fluoroquinolones in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

Cephalosporins

Cephalosporins are not routinely recommended for management of commonly encountered infections in primary care. Cephalosporin use is associated with an increased risk of CDI.

In 2010-11 cephalosporins accounted for 32% of use of antibacterial items associated with a higher risk of CDI. Cefalexin accounted for 87% of all cephalosporin items in 2010-11.

In 2010-11 there were 67,000 (27%) fewer prescriptions for cephalosporins in the primary care setting in Scotland than in 2009-10. This builds on the reduction observed in 2009-10.

Figure 7 shows the use of cephalosporins in primary care by NHS Board expressed as items/1000/day. This shows wide variation in the use of cephalosporins across NHS Boards. NHS Dumfries and Galloway had the lowest use at 0.03 items/1000/day and NHS Western Isles the highest at 0.21 items/1000/day. The trend toward lower use of cephalosporins was observed in most NHS Boards.

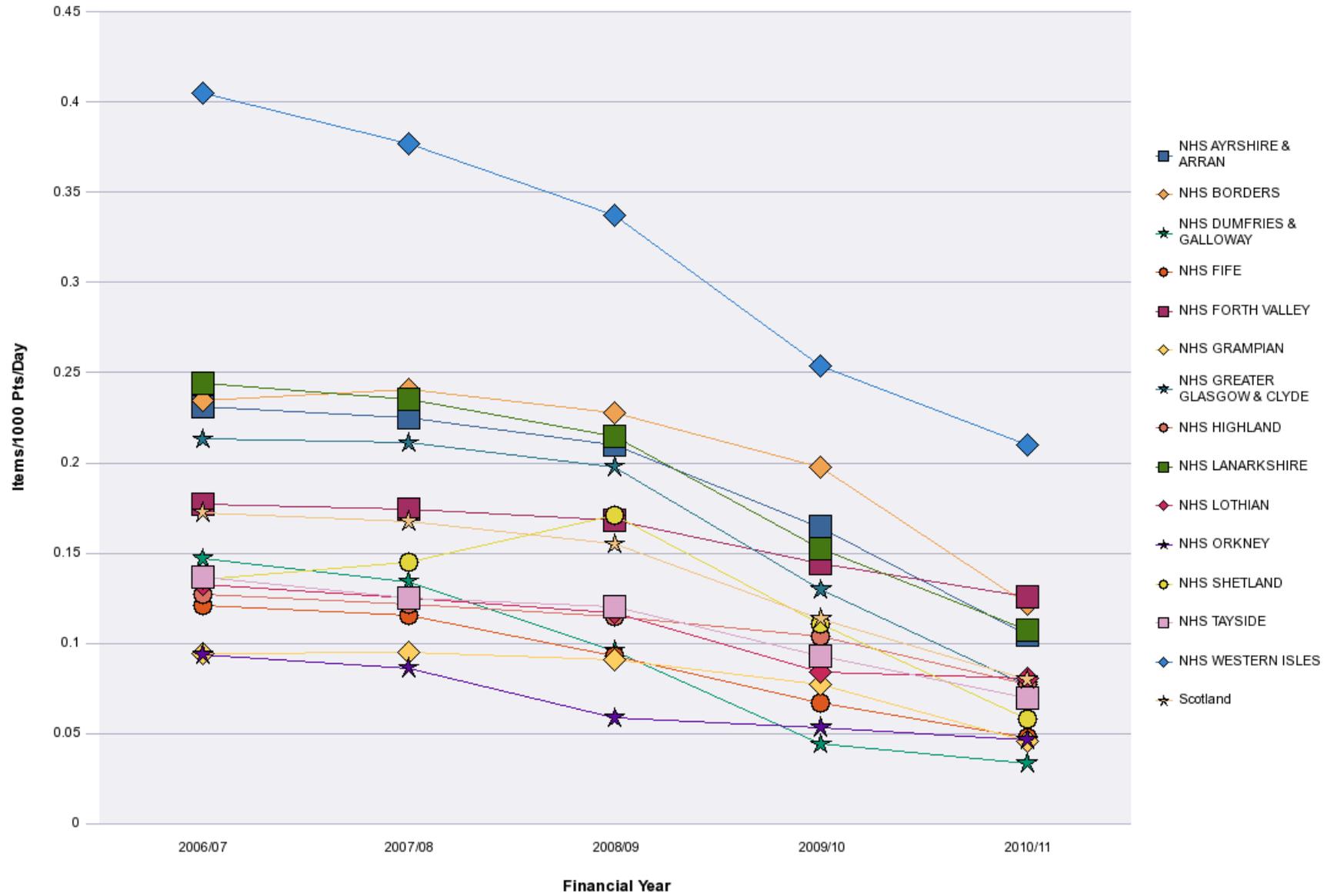


Figure 7: NHS Scotland use of cephalosporins in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

Clindamycin

Clindamycin is not recommended for management of commonly encountered infections in primary care. Clindamycin use is associated with an increased risk of acquiring CDI.

In 2010-11 clindamycin accounted for 1% of use of antibacterial items associated with a higher risk of CDI. It accounted for 0.1% of total antibacterial use in a primary care setting in Scotland in 2010-11.

Figure 8 shows the use of clindamycin in primary care by NHS Board, expressed as items/10,000/day. This shows wide variation between NHS Boards. The lowest use is in NHS Grampian and NHS Orkney at 0.01 items/10,000/day and the highest in NHS Tayside at 0.07 items/10,000/day.

It should be noted that this indicator is presented as use per 10,000 patients per day as the amount of clindamycin used in primary care in Scotland is very small.

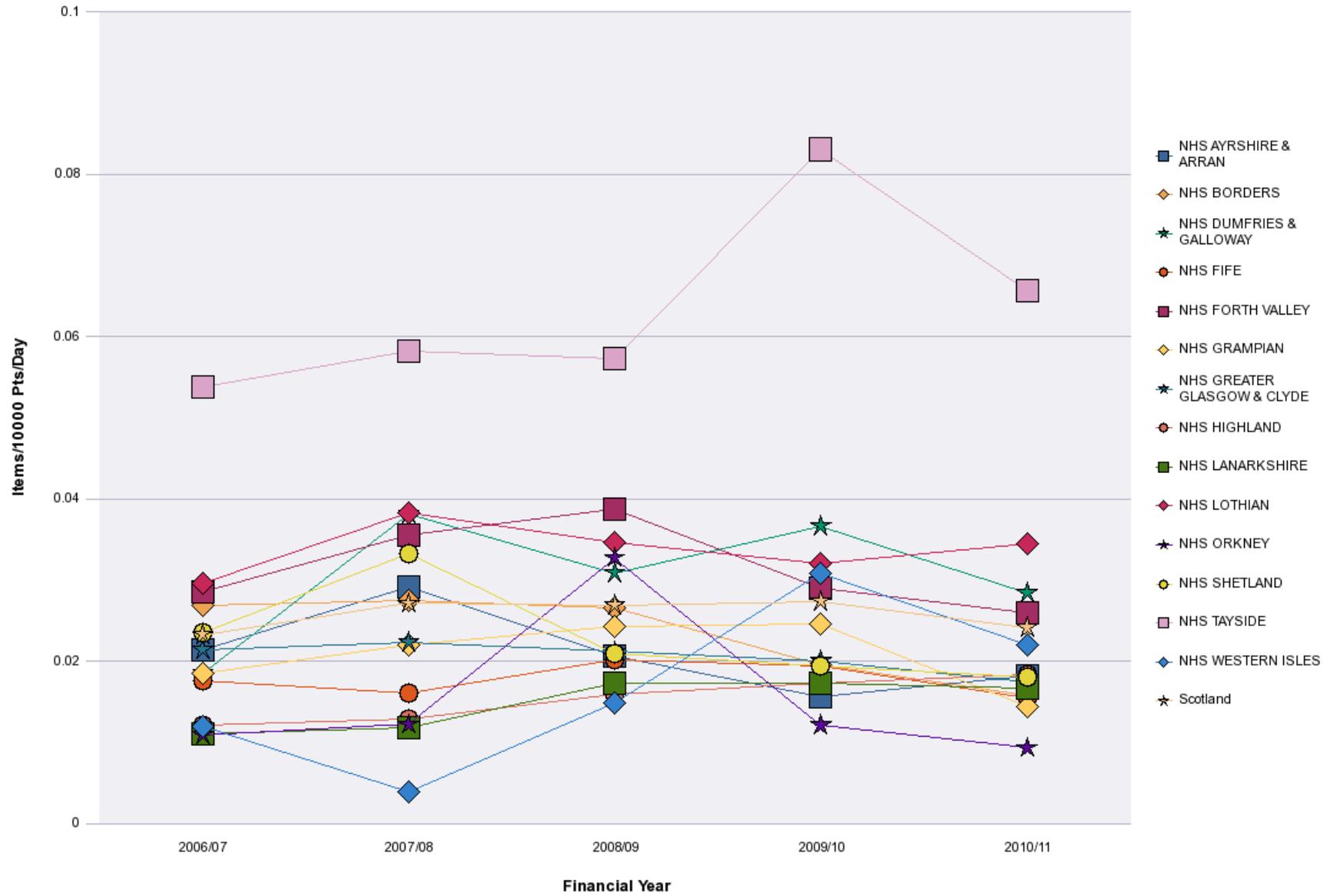


Figure 8: NHS Scotland use of clindamycin in primary care by NHS Board, Items/10,000/day, 2006-07 – 2010-11

Recommended antibacterials

This indicator presents the use of antibacterials that are recommended as first line therapy in commonly encountered infections in primary care. It includes a group of narrow spectrum antibacterials; amoxicillin, clarithromycin, doxycycline, erythromycin, flucloxacillin, nitrofurantoin, phenoxymethylpenicillin, and trimethoprim. These are the antibacterials that are recommended in the national evidence based guidance from HPA that SAPG advises as a template for the development of local primary care prescribing policies. A benefit of this approach is that it promotes the empirical use of these first line agents.

In 2010-11 there were 184,000 (6%) more prescriptions for recommended antibacterials in primary care in Scotland than in 2009-10. This builds upon the increase observed last year.

Figure 9 shows the use of recommended antibacterials in primary care by NHS Board expressed as items/1000/day. It shows wide variation in the use of antibacterials across NHS Boards. NHS Lothian had the lowest use at 1.3 items/1000/day and the highest was in NHS Lanarkshire at 1.9 items/1000/day. The pattern of increased use is observed across all NHS Boards.

Figure 10 illustrates the number of items of recommended antibacterials as a proportion of total antibacterial use in primary care by NHS Board. The use of recommended agents accounted for 79% of antibacterial items in 2010/11. There has been an increase compared to 2009-10 when recommended antibacterials accounted for 74% of overall antibacterial use. The increase in recommended agents as a proportion of overall prescribing of antibacterials was observed in all NHS boards in 2010/11.

These indicators show ongoing progress has been made to increase the use of first line recommended agents in line with national guidance. This suggests increased compliance with local prescribing policies. This is a key finding and shows the positive impact SAPG and AMTs are having on the quality of antibacterial prescribing in Scotland.

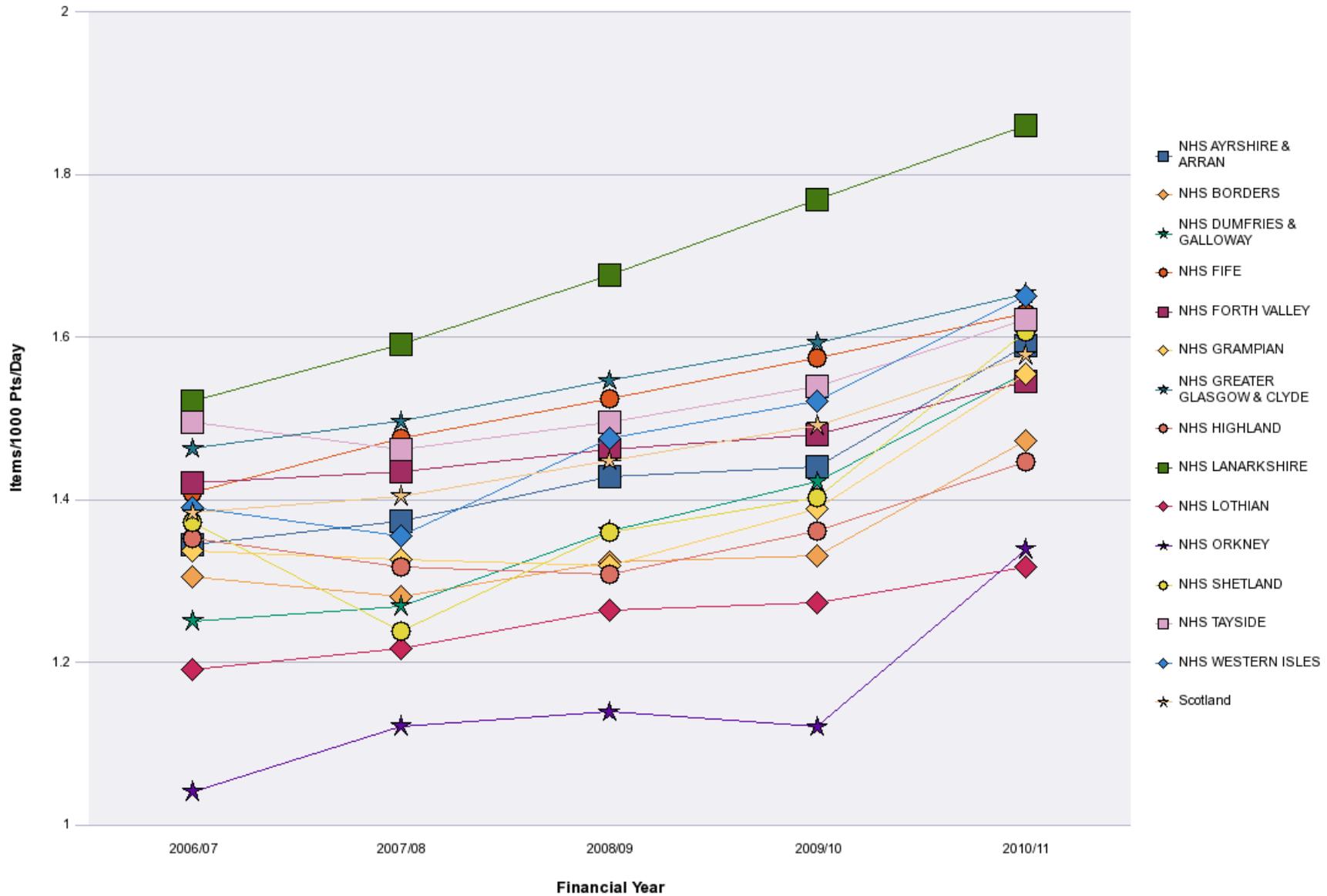


Figure 9: NHS Scotland use of recommended antibacterials in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

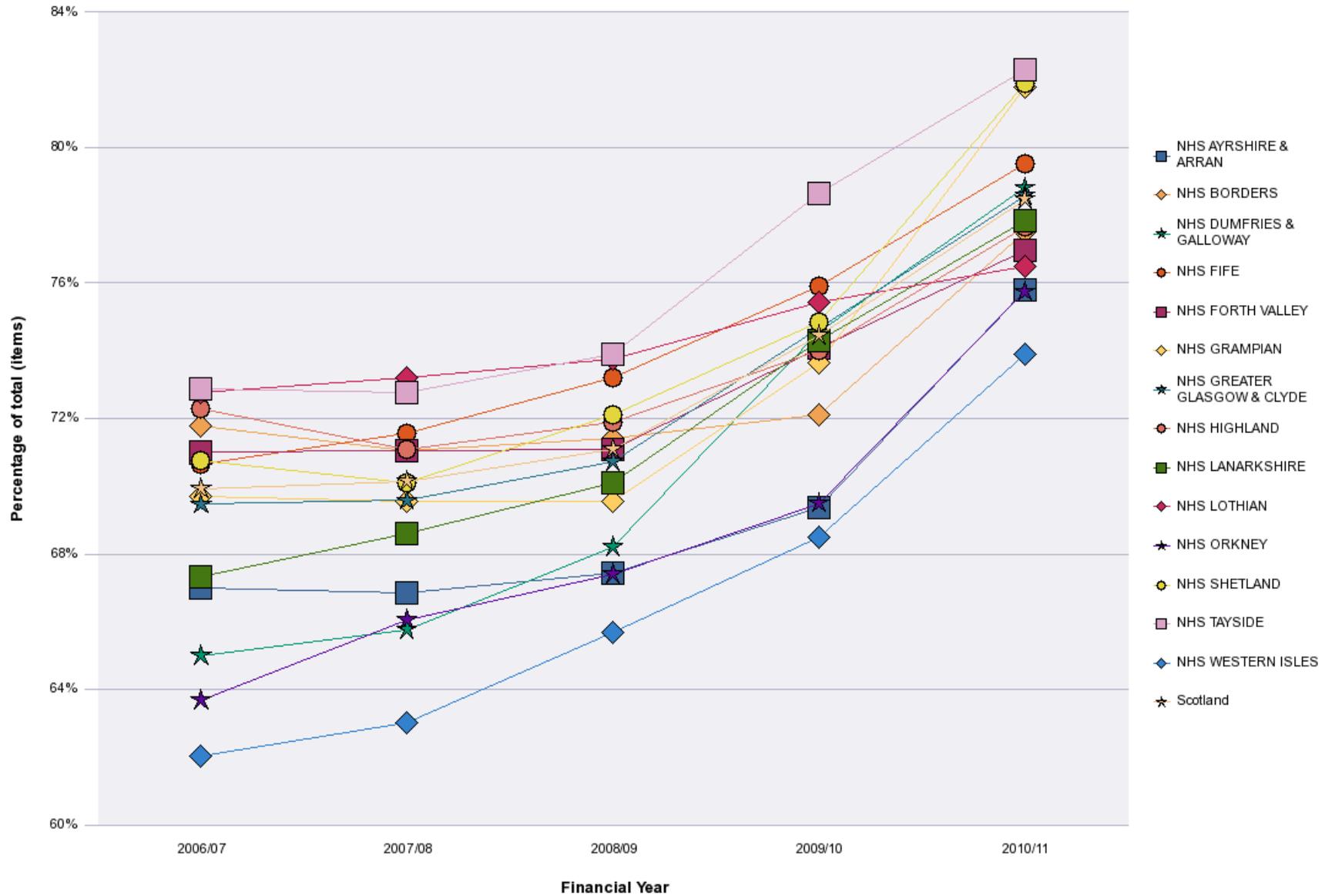


Figure 10: NHS Scotland use of recommended antibacterials in primary care by NHS Board, proportion of total items, 2006-07 – 2010-11

Doxycycline

Doxycycline is recommended as a first line treatment for management of a number of commonly occurring infections in primary care such as acute bronchitis, acute exacerbation of chronic obstructive pulmonary disease and acute rhinosinusitis where use of antibacterial is clinically required. It is often used as the treatment of choice in individuals with penicillin allergy.

In 2010-11 there were 39,000 (33%) more prescriptions for doxycycline in primary care in Scotland than in 2009-10. This builds upon the increase observed last year. Figure 11 illustrates the use of doxycycline in primary care by NHS Board expressed as items/1000/day. This shows wide variation between NHS Boards. NHS Tayside had the highest use at 0.18 items/1000/day and NHS Lothian had the lowest at 0.04 items/1000/day. The increase in use of doxycycline was observed in all NHS boards.

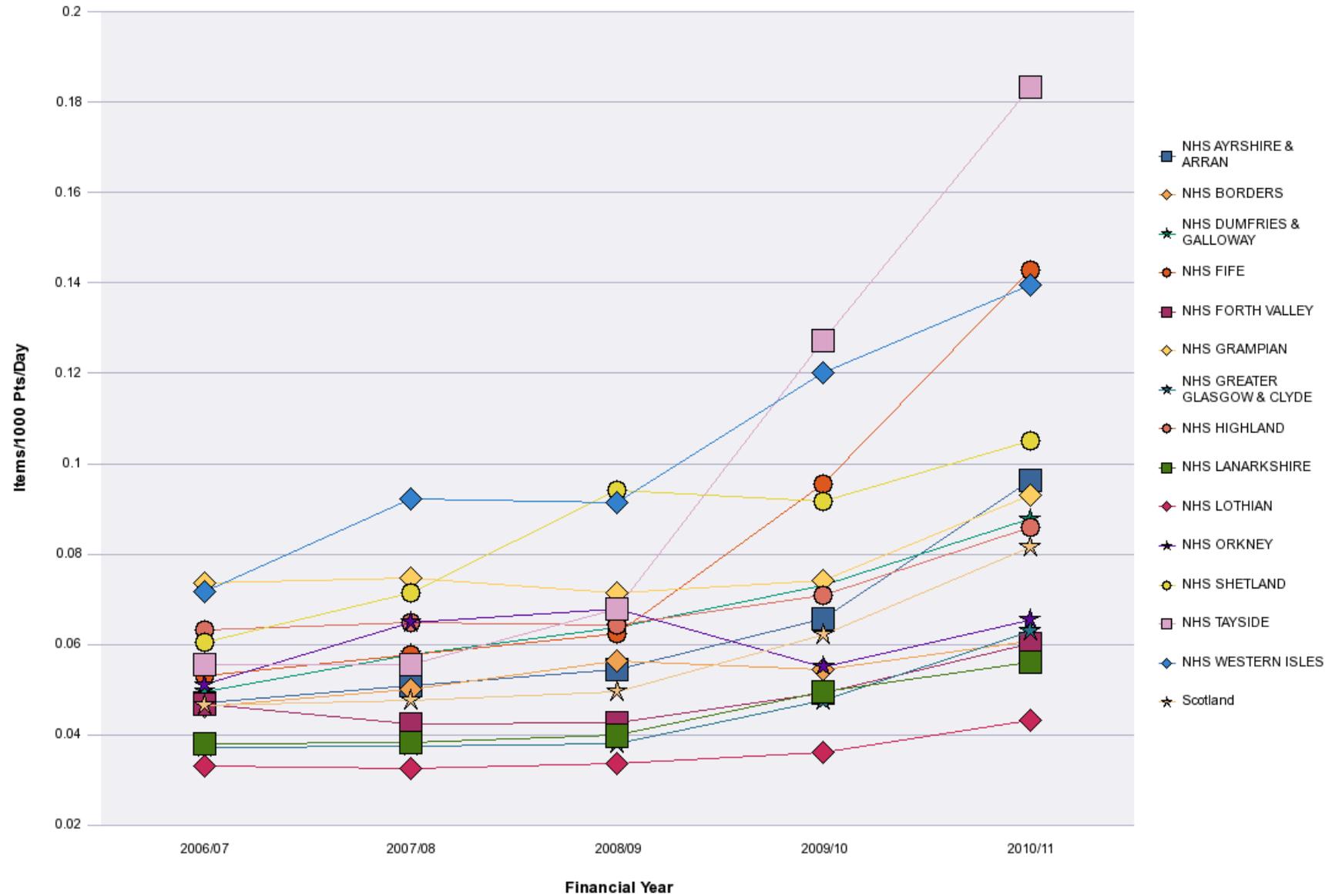


Figure 11: NHS Scotland use of doxycycline in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

Nitrofurantoin

Nitrofurantoin is recommended as a first line treatment for management of urinary tract infections.

In 2010-11 there were 46,000 (60%) more prescriptions for nitrofurantoin in primary care in Scotland than in 2009-10. Figure 12 illustrates the use of nitrofurantoin in primary care by NHS Board expressed as items/1000/day. This shows wide variation between NHS Boards. NHS Grampian had the highest use at 0.11 items/1000/day and NHS Borders had the lowest at 0.03 items/1000/day. The increase in use of nitrofurantoin was observed in all NHS boards.

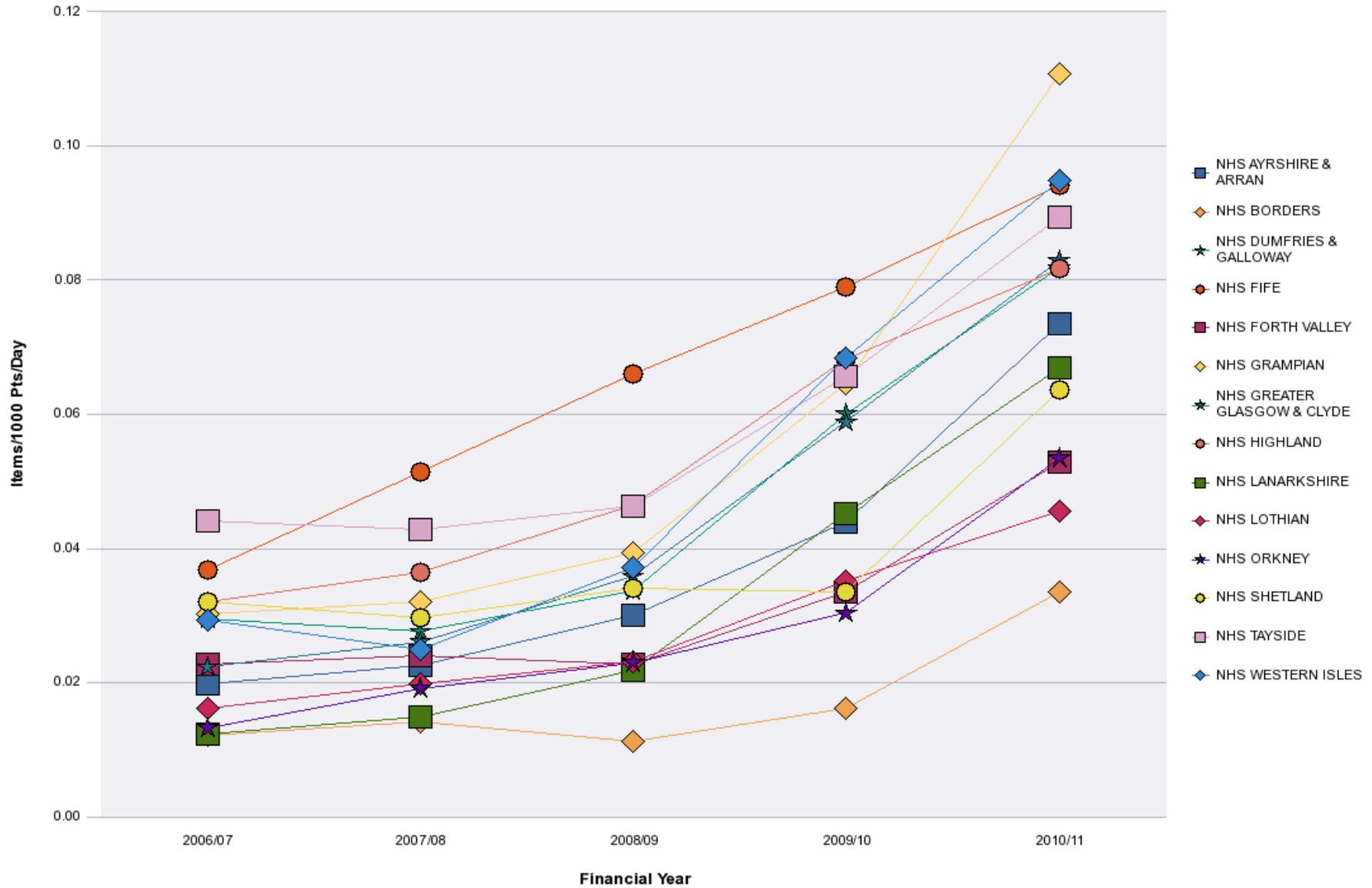


Figure 12: NHS Scotland use of nitrofurantoin in primary care by NHS Board, Items/1000/day, 2006-07 – 2010-11

Appendix 1

List of all measures in PRISMS (available at NHS Board, CHP and GP practice levels)

	DDD/1000/ day	Items/1000/ day	DDD/Item	Proportion of total (Items) (new in 2011)	Proportion of total (DDDs)	Seasonal Variation (Items) (new in 2011)	Seasonal Variation (DDDs)
Seasonal variation of fluoroquinolone use						X	X
Overall antibacterial use	X	X	X	X	X	X	X
Recommended antibacterials – total use	X	X		X	X		
Antibacterials associated with a higher risk of Clostridium difficile infection – total use	X	X		X	X		
Total penicillin use	X	X	X				
Amoxicillin use	X	X	X				
Flucloxacillin use	X	X	X				
Phenoxymethylpenicillin use	X	X	X				
Co-amoxiclav use	X	X	X				
Total tetracycline use	X	X	X				
Doxycycline use	X	X	X				
Total macrolide use	X	X	X				
Trimethoprim use	X	X	X				
Co-trimoxazole use	X	X	X				
Total fluoroquinolone use	X	X	X				
Ciprofloxacin use	X	X	X				
Nitrofurantoin use (new in 2011)	X	X	X				
Clindamycin use	X	X	X				